Home Front Command | State of Israel | Ministry of Health | ISRAEL EXPORT INSTITUTE | MAGEN DAVID ADOM IN ISRAEL מגן דוד אדום בישראל

IPRED V

INTERNATIONAL PREPAREDNESS & RESPONSE
TO EMERGENCIES & DISASTERS

Abstract eBook

Dear Friends and Colleagues,

It is great pleasure and an honor to welcome you to the 5th International Conference on Healthcare System Preparedness & Response to Emergencies & Disasters (IPRED V), January 14-17, 2018 in Tel Aviv, Israel. The conference provides a unique opportunity for professionals from world-wide to learn, share and present the latest findings and insights regarding health system readiness, preparedness and functioning in disasters and emergencies along with preparedness and response of first responders to emergencies. IPRED V is hosted, as in previous years by The Israeli Ministry of Health and the IDF Home Front Command.

Building on the success of preceding previous IPRED conferences conducted in 2010, 2012, 2014 and 2016, IPRED V provides a platform for networking with the world's leading experts, focusing on assessing best practices and State of the Art preparedness to emergencies, coping with disaster events, along with non-formal joint learning, founded on the experience of the participants. The main issues at the Conference engage in urban terrorism, CBRN threats, natural disasters, consequences of prolonged conflicts.

The conference features a highly interactive, stimulating and multidisciplinary program including workshops, plenary sessions as well as oral abstract and poster sessions, presentations, round-table discussions and hands-on experiences, based on advanced training tools.

One of the highlights of the conference is a regional, Mega Mass casualty Event drill that is being conducted in the central region of Israel on Wednesday, January 17. The drill will simulate a Mega terror attack, and the response, management and treatment provided for the mock casualties will be based on lessons learnt from large-scale exercises and real-life events. The drill will include Home Front Command medical teams, Emergency Department of The Ministry of Health, civilian emergency medical services, hospitals, first responders and other primary care organizations, both medical and non-medical professionals.

We hope you enjoy the beautiful city of Tel Aviv, including its attractive entertainment, night life and a beautiful beach.

We wish you a fruitful conference.
"Coming together is a beginning, staying together is progress, and working together is success" Henry Ford.

Col. Dr. Olga Polyakov, MD
Chief Surgeon
Home Front Command
Co-Chair IPRED V

Prof. Itamar Grotto, MD
Deputy Director M.O.H
Co-Chair IPRED V

Dear Colleagues,

It is my honor to welcome you to the 5th International Conference on Preparedness & Response to Emergency & Disasters (IPRED), 14 to 17 January, 2018, Tel Aviv, Israel.

In recent years, we have witnessed terrorist incidents in the heart of peaceful cities that have not known this reality in the past; vehicle-rammings, stabbings, shootings and explosive devices. Terrorist attacks carried out by emissaries of international terrorist organizations are intended to kill and injure as many innocent civilians as possible in order to sow panic, insecurity, and physical and psychological damage.

Effectively dealing with urban terrorism necessitates preparation and training of rescue forces, cooperation between civilian and military rescue forces, international collaborations, and being amply prepared to deal with the intensification of the types of threats that have to be faced – including non-conventional terrorist threats. Moreover, cyber terrorism has also emerged as a real threat to national and medical infrastructures, requiring national and international intervention to stop it in its tracks.

Ongoing violent conflicts in many countries have lead international states and organizations to be faced with a multitude of complex challenges such as civilian populations living in war zones who are exposed to death and injury, shortages of resources, hunger and disease and who, as a result, are dependent on ongoing assistance; Conflict zones filled with millions of refugees living in refugee camps who are dependent on the kindness of states and organizations; Massive waves of immigration and the need for mass absorption of immigrants. These challenges require cooperation between countries and organizations, mutual learning and discussion.

At the same time as these man-made events become increasingly commonplace, nature continues to hit by way of earthquakes, floods and deadly storms that leave thousands of people without shelter and supportive infrastructures and exposed to hunger and disease. In addition, domesticated and wild animals find themselves abandoned, untreated and unable to have their basic needs met. It is crucial that we continue to learn from organizations who have vast experience with preparing for and coping with disaster events in order to improve the response given to disaster areas.

Advance preparation by rescue organizations through cooperation, ongoing study and academic research, is key when dealing with emergency events and disasters.

Following the tradition of the previous successful conferences, we believe that IPRED V is an opportunity for experts from international organizations, national military and civilian organizations, academic institutions and research institutions to meet and discuss various issues and, in so doing, to contribute to the development of knowledge in the area of emergency preparedness and response.
Welcome to IPRED V.
Kind Regards,

Dr. Erez Onn
Director General
The Baruch Padeh Medical Center, Poriya
Chairman – IPRED V Scientific Committee

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Organizing Committee Members

Angela W. Rabinovich, MBA (IM)	Director, Life Science Department, IEI – Israel Export Institute
Anna Erel, MHA	Senior Coordinator of Disaster Preparedness for Emergency Personnel & Essential Facilities, Ministry of Health
Benjamin Davidson, MD, MHA	Director of Emergency & Disaster Management Department, Emergency & Disaster Management Department Ministry of Health Israel
David Azoulay, BSc	Overall Work plans and First Aid Section Health Division, Ministry of Health
Eli Jaffe	Magen David Adom, Israel
Eran Tal-Or, MD, MHA	Director of Emergency medicine department Pade-Poria Medical Center, Ministry of Health, Bar-Ilan University
Erez Onn, MD	General Director Baruch Padeh Medical Center Chairman, Scientific Committee, Ministry of Health
Eyal Furman, Col. MD, MHA	
Itamar Grotto, Prof. MD, PHD	Deputy Director General of the Ministry of Health, Ministry of Health
Liran Matityahoo, BEMS, MPH	Deputy Chief Surgeon of the Home Front Command, IDF
Merav Inbar, BA	Coordinator of computer projects, Emergency & Disaster Management Department Ministry of Health Israel
Michal Yaakovi, LTC	
Noa Tamir-Hasdai, MPH	Head of Emergency Hospitalization & training Director of the National Emergecy Operation room, Emergency & Disaster Management Department Ministry of Health Israel
Nona Abu-Dalu, MBA	Senior Manager Income and Budget Control, Ministry of Health
Olga Polyakov, Col. MD	Chief Surgeon, Home Front Command
Ran Edelshtain, MBA	Logistic-manger, Emergency & Disaster Management Department Ministry of Health Israel
Mr. Ronen Bashari	Director Operations Division, Magen David Adom, Israel
Roni Tzadok, MBA	Coordinator of pharmaceuticals and medical equipment, Emergency & Disaster Management Department Ministry of Health Israel
Ronit Ringel, RN, MA	Director of community health services preparedness for emergencies and disasters, Emergency & Disaster Management Department Ministry of Health Israel
Sara Streissfeld, MBA	Director of Administration and Human Resources, Ministry of Health
Tal Gershon Nikkhou, BSn, MHA	Director of Coordinates in the Community Sector the Field of Emergency Health Offices, Ministry of Health
Vered Arbiv, MBA	Budget and purchasing coordinator, Emergency & Disaster Management Department Ministry of Health Israel
Yair Talmon, BA, BSC, MPP	Economics, Ministry of Health

Scientific Committee Members

Scientific Committee Chair

Dr. Onn Erez	Scientific Committee Chair – Baruch Padeh medical center, Israel

Scientific Committee Secretary

Mr. Gershon Nikkhou Tal, RN, MA	Scientific Committee Secretary, Ministry of Health, Israel

Scientific Committee Members (Israel)

Prof. Aharonson Daniel Limor	Ben-Gurion University, Israel
Prof. Ash Nachman	Maccabi Health services, Israel
Prof. Ashkenazi Isaac	Harvard University & Ben-Gurion University, Israel
Mrs. Ashkenazi Mity, RN, MPH	Carmel Medical Center, Israel
Prof. Azulay Yossi	I.D.F
Prof. Balicer Ran	Clalit Health Services, Israel
Prof. Bar-On Elhanan	Center for Humanitarian, Emergency and Disaster Medicine, Sheba Medical Center, Israel
Dr. Bellaiche Michel	Veterinary Institute, Israel
Dr. Benin Goren Odeda, RN, CEN PhD	Emergency Preparedness & Management, Israel
Mr. Caspi Guy	Magen David Adom, Israel
Dr. Cohen Odaya, RN, MEM, PhD	Ben-Gurion University, Israel
Dr. Farchi Moshe	School of Social work, Tel-Hai College, Israel
Dr. Furman Eyal	IDF Home Front Command, Israel
Dr. Ginat Keren	I.D.F
Prof. Glazberg Elon	I.D.F
Dr. Goldstein Liav	IPS, Israel
Prof. Goldberg Avishay	Ben-Gurion University, Israel
Mrs. Grinberg Tami	Rabin Medical Center, Israel
Mrs. Hyams Gila, RN MA	Rambam Medical Center, Israel
Dr. Jacobo Chen	I.D.F
Prof. Jacob Moran Gilad	Ministry of Health & Ben-Gurion University, Israel
Mrs. Keinan Tamar	Hadassah University Medical Center, Israel
Dr. Kugel Chen	Director of the National Center for Forensic Medicine, Israel
Mrs. Margalit Gila, RN MPH	Sheba Medical Center, Israel
Dr. Michaelson Moshe	Rambam Medical Center, Israel
Dr. Ofir Anna, RN, MA, PhD	Hillel Yaffe Medical Center, Israel

Mrs. Utitz Liora, RN MA	Rambam Medical, Israel
Dr. Strugo Refael	Magen David Adom, Israel
Dr. Tal-Or Eran	Baruch Padeh medical center, Israel
Mrs. Waknine Nurit, RN. MA	Emergency Event Coordinator Soroka Medical Center, Israel
Mr. Wimisberg Jacob (Kobi)	Defense Attaches Coordination Unit, NATO & International Defense Organizations Coordinator Policy & Politico-Military Bureau, Israel Ministry of Defense

Scientific Committee Members (International)

Prof. Arquilla Bonnie	Department of Emergency Medicine, SUNY Downstate Medical Center, USA
Dr. Arafat Raed	Ministry of Health, Romania
Dr. Berger Abraham	Beth Israel, USA
Dr. Biederbick Walter	Ministry of Health, Germany
Dr. Cole Lenny	New Jersey Medical School & Rutgers University, Newark, USA
Dr. Debacker Michel	Disaster Medicine University, Belgium
Dr. Downey Erin	Harvard Humanitarian Initiative, USA
Prof. Francesco Della Corte	EuSEM, Maggiore Hospital School of Medicine, Università del Piemonte Orientale, Italy
Dr. Frogel Michael	APF, MCS, USA
Dr. Galwankar Sagar	Chairman INDUSEM, USA
Dr. Harald Veen	ICRC, Switzerland
Dr. Klausner Howard A.	Henry Ford Hospital, USA
Prof. Koenig Kristi	University of California at Irvine, USA
Prof. Krassimir Metodiev	Medical University Varna, Bulgaria
Prof. Latasch Leo	Frankfurt Health Department, Germany
Prof. Lynn Mauricio	FACS, Surgery Ryder Trauma Center Jackson Memorial Hospital University of Miami, USA
Dr. Mapar Jalal	Department of Homeland Security, USA
Dr. McGlown Joanne	International Medical Corps, USA
Dr. Nelson Olim	ICRC Senior Surgeon Switzerland
Mr. Neiter Christian	EMT-P
Dr. Pillgram-Larsen Johan	Norwegian Armed Forces, Department of Cardiothoracic Oslo University Hospital, Norway
Dr. Preblick Christine	Mount Sinai, Beth Israel, USA

Plenary Speakers

Dr. Bonnie Arquilla

Professor, Emergency Medicine
State University of New York Downstate Medical Center
Director of Emergency Preparedness, University Hospital Brooklyn

Dr. Arquilla completed medical school at the New York College of Osteopathic Medicine and her Emergency Medicine residency at Lincoln Hospital and Mental Health Center, Bronx New York. She board certified in Emergency Medicine and Palliative Care. She joined the Emergency Department at SUNY Downstate in 2000. Since then she has been active in the SUNY Downstate residency educational mission. Her area of interest has been in Disaster Medicine and Emergency Preparedness. Dr. Arquilla is the Medical Director of Emergency Management and Disaster Medicine at SUNY Downstate and its affiliate clinics.

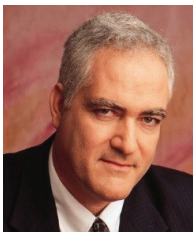
The New York Institute, All Hazards Preparedness (NYIAHP), was started in 2003 by Dr. Bonnie Arquilla and Dr. Michael Augenbraun. NYIAHP and has been grant funded since its inception. She works collaboratively with The New York City Department of Health and Mental Hygiene, The Greater New York Hospital Association, and the New York City Emergency Management. Dr. Arquilla has extensive national and international experience in Emergency Management and Education where she provides consultation on system problems and disaster readiness to local and national governments.

Dr. Arquilla is the founder and director of the Disaster Preparedness Fellowship Program at SUNY Downstate, a non GME fellowship. Additionally, Dr. Arquilla has been both a primary and secondary grant reviewer the Centers for Disease Control. In July of 2017 Dr Arquilla became president of Academic College of International Medicine.

Prof. Sandro Galea

Dr Galea is a physician and an epidemiologist. He is Dean and Professor at the Boston University School of Public Health. Prior to his appointment at Boston University, Dr Galea served as the Anna Cheskis Gelman and Murray Charles Gelman Professor and Chair of the Department of Epidemiology at the Columbia University Mailman School of Public Health where he launched several new educational initiatives and substantially increased its focus on six core areas: chronic, infectious, injury, lifecourse, psychiatric/neurological, and social epidemiology. He previously held academic and leadership positions at the University of Michigan and at the New York Academy of Medicine. In his own scholarship.

Dr Galea is centrally interested in the social production of health of urban populations, with a focus on the causes of brain disorders, particularly common mood-anxiety disorders and substance abuse. He has long had a particular interest in the consequences of mass trauma and conflict worldwide, including as a result of the September 11 attacks, Hurricane Katrina, conflicts in sub-Saharan Africa, and the American wars in Iraq and Afghanistan. This work has been principally funded by the National Institutes of Health, Centers for Disease Control and Prevention, and several foundations. He has published over 500 scientific journal articles, 50 chapters and commentaries, and 9 books and his research has been featured extensively in current periodicals and newspapers. His latest book, co-authored with Dr Katherine Keyes, is an epidemiology textbook, Epidemiology Matters: a new introduction to methodological foundations. Dr Galea has a medical degree from the University of Toronto, and graduate degrees from Harvard University and Columbia University. He was named one of TIME magazine's epidemiology innovators in 2006. He is past-president of the Society for Epidemiologic Research and an elected member of the American Epidemiological Society and of the Institute of Medicine of the National Academies of Science. Dr Galea serves frequently on advisory groups to national and international organizations. He has formerly served as chair of the New York City Department of Health and Mental Hygiene's Community Services Board and as member of its Health Board.



Prof. Boaz Ganor

Prof. Boaz Ganor is the Dean and the Ronald Lauder Chair for Counter-Terrorism at the Lauder School of Government, Diplomacy & Strategy, as well as the Founder and Executive Director of the International Institute for Counter-Terrorism (ICT), at the Interdisciplinary Center (IDC), Herzliya, Israel. Prof. Ganor serves as the Founding President of the International Academic Counter-Terrorism Community (ICTAC), an international association of academic institutions, experts, and researchers in fields related to the study of terrorism and counter-terrorism.

Prof. Ganor previously held positions at Stanford University, U.C. Berkeley, the Hoover Institution (Koret Distinguished Visiting Fellow). He was also a member of the International Advisory Team of the Manhattan Institute (CTCT) to the New York Police Department (NYPD).

Prof. Ganor is a member of the International Advisory Council of the International Centre for Political Violence and Terrorism Research at the Institute of Defense and Strategic Studies (IDSS), Nanyang Technological University, The Republic of Singapore. He is also was a co-founder of the International Centre for the Study of Radicalization and Political Violence (ICSR).

In 2001, Prof. Ganor was appointed as a Member of the Advisory Committee of the Israel National Security Council on Counter-Terrorism. In 1995, he was a consultant to Prime Minister Benjamin Netanyahu on his book "Fighting Terrorism – How democracies can defeat domestic and international terrorism".

Prof. Ganor has published two books "The Counter-Terrorism Puzzle - A Guide for Decision Makers" (Transaction Publishers, 2005), and "Global Alert: Modern terrorism rationality and the challenge to the democratic world" (Columbia University Press, 2016), and edited several others.

Prof. Ganor is a frequent media and television commentator and has appeared on the BBC, CNN, CBS, ABC, the New York Times, the Guardian, The Wall Street Journal, the Jerusalem Post, Haaretz and many other Israeli and international publications.

Dr. Dan Hanfling

Dan Hanfling, MD is a consultant on emergency preparedness, response and crisis management. He is a Contributing Scholar at the Johns Hopkins Bloomberg School of Public Health Center for Health Security, Clinical Professor of Emergency Medicine at George Washington University and adjunct faculty at the George Mason University School of Public Policy. He currently serves as the Co-chair of the (US) National Academies of Science, Engineering and Medicine Forum on Medical and Public Health Preparedness for Catastrophic Events, and is a Special Advisor within the Office of the Assistant Secretary (HHS) for Preparedness and Response (ASPR). He also holds operational responsibilities as a Medical Team Manager for the Fairfax County, Virginia based FEMA and USAID international urban search and rescue team (VATF-1, USA-1), and has responded to catastrophic disaster events across the globe, most recently to the Nepal earthquake in 2015 and the Caribbean islands following Hurricanes Irma and Maria.

His areas of expertise include biodefense and mass casualty management, catastrophic disaster response planning with particular emphasis on scarce resource allocation, and the nexus between healthcare system planning and emergency management.

Dr. Hanfling received his undergraduate degree in political science from Duke University, including a General Course at the London School of Economics, and completed his medical degree at Brown University. He completed his internship in Internal Medicine at Brown University and his emergency medicine training at the combined George Washington and Georgetown University residency program. He has been Board Certified in Emergency Medicine since 1997 and continues to practice at Inova Fairfax Regional Trauma Center.

Prof. Tatsuhiko Kubo

Dr. Tatsuhiko Kubo is a senior consultant for the Japanese International Cooperation Agency.

(JICA) and Assistant Professor from the School of Medicine University of Occupational and Environmental Health, Japan.

During the last years Dr Kubo is Japan International Corporation Agency (JICA) Leader, MDS Dissemination Support Unit, Japan Disaster Relief Medical Team.

JICA Leader, Public Health Module Program Development Task Force, Japan Disaster Relief Medical Team.

Previously at 2009 Assistant Professor, Department of Public Health, School of Medicine, UOEH.

from 2006 – 2009 Dr Kubo worked as Occupational physician, Asahi-Kasei Nobeoka Office Health Care Center.

2003 – 2006Department of Clinical Epidemiology, Graduate School of Medical Science, UOEH.

2002 – 2003 - Senior resident doctor, Japan Labor Health and Welfare Organization Moji Rosai Hospital.

On 2001 – 2002after residency Dr Kubo worked as Chief resident doctor, Advanced critical care center of Kyorin University.

Major General Patrick A. Murphy

Director of the National Guard Bureau Joint Staff (DNGBJS)
Washington, DC
Since: January 2017

SOURCE OF COMMISSIONED SERVICE OCS

EDUCATIONAL DEGREES
Iowa State University - BS - Agronomy
Shippensburg University of Pennsylvania - MS - Publ Admin
U.S. Army War College - MS - Strategic Studies

MILITARY SCHOOLS ATTENDED
Army War College (AWC)
ASLDP-Basic
Syracuse University, National Security Leadership Course (NSLC), Syracuse, New York
ASLDP-Intermediate
United States Judge Advocate School, Reserve Component - General Officer Legal Orientation Course (RC-GOLO)
ASLDP-Advanced

FOREIGN LANGUAGE(S) None Recorded

PROMOTIONS	DATE OF APPOINTMENT
2LT ARNG	1 Jul 79
1LT ARNG	30 Jun 82
CPT ARNG	1 May 86
MAJ ARNG	19 Feb 92
LTC ARNG	3 Apr 96
COL ARNG	18 Mar 02
BG ARNG (LINE)	29 Feb 08
MG	22 Dec 10

FROM	TO	ASSIGNMENT
Jan 17	Present	Director of the National Guard Bureau Joint Staff (DNGBJS), Washington, District of Columbia
Mar 16	Jan 17	Director, Strategic Plans and Policy (J-5), National Guard Bureau, Washington, Distrcit of Columbia
Feb 10	Mar 16	The Adjutant General, New York
Jul 07	Feb 10	Director, Joint Staff - (NY) Joint Force Headquarters (JFHQ)
Nov 04	Jun 07	Assistant Chief of Staff - National Guard Affairs, Third Army/United States Army Central /Coalition Forces Land Component Command, Camp Arifjan, Kuwait
Aug 03	Oct 04	Chief, Civil Support Plans Division, J-5, United States Northern Command, Peterson Air Force Base, Colorado
Dec 01	Jul 03	J-3 (Director of Operations), Joint Task Force - Civil Support, Fort Monroe, Virginia
Oct 01	Nov 01	Chief, Deliberate Plans Branch, United States Joint Forces Command, Norfolk, Virginia
Jul 00	Sep 01	Antiterrorism/Force Protection Officer, United States Joint Forces Command, Norfolk, Virginia
Jun 99	Jun 00	Student, Army War College, Carlisle Barracks, Pennsylvania
Jan 99	May 99	Executive Officer, 2nd Brigade, 34th Infantry Division, Boone, Iowa

Nov 95	Dec 98	Commander, 1st Battalion, 133rd Infantry, 34th Infantry Division, Waterloo, Iowa
Jan 94	Oct 95	Executive Officer, 1st Battalion, 133rd Infantry, 34th Infantry Division, Waterloo, Iowa
Oct 91	Dec 93	S-3, 1st Battalion, 133rd Infantry, 34th Infantry Division, Waterloo, Iowa
Mar 90	Sep 91	Assistant S-3 (Air), 34th Brigade, 47th Infantry Division, Boone, Iowa
Feb 89	Feb 90	S-1, 1st Battalion, 133rd Infantry, 47th Infantry Division, Waterloo, Iowa
Dec 85	Jan 89	Commander, Company B 1st Battalion, 133rd Infantry, 47th Infantry Division, Oelwein, Iowa
Nov 83	Nov 85	Aero-Scout Team Leader, Troop D, 1st Battalion 194th Air Cavalry Squadron, 47th Infantry Division, Waterloo, Iowa
Sep 82	Oct 83	Weapons Platoon Leader, Company C, 1st Battalion, 133rd Infantry, 47th Infantry Division, Charles City, Iowa
Dec 79	Aug 82	Rifle Platoon Leader, Company C, 1st Battalion, 133rd Infantry, 47th Infantry Division, Iowa Fall, Iowa
Jul 79	Nov 79	Support Platoon Leader, Headquarters Company 1st Battalion, 133rd Infantry, 47th Infantry Division, Waterloo, Iowa

SUMMARY OF JOINT ASSIGNMENTS DATE GRADE		
Director, Strategic Plans and Policy (J-5), National Guard Bureau, Washington, Distrcit of Columbia	Mar 16 - Jan 17	Major General
Assistant Chief of Staff - National Guard Affairs, Third Army/United States Army Central /Coalition Forces Land Component Command, Camp Arifjan, Kuwait	Nov 04 - Jun 07	Colonel
Chief, Civil Support Plans Division, J-5, United States Northern Command, Peterson Air Force Base, Colorado	Aug 03 - Oct 04	Colonel
J-3 (Director of Operations), Joint Task Force - Civil Support, Fort Monroe, Virginia	Dec 01 - Jul 03	Colonel
SUMMARY OF OPERATIONAL ASSIGNMENTS DATE GRADE	Nov 04 - Jun 07	Colonel
Assistant Chief of Staff - National Guard Affairs, Third Army/United States Army Central /Coalition Forces Land Component Command, Camp Arifjan, Kuwait		

US DECORATIONS AND BADGES
Bronze Star Medal
Defense Meritorious Service Medal (with 2 Bronze Oak Leaf Clusters)
Meritorious Service Medal
Army Commendation Medal (with 2 Bronze Oak Leaf Clusters)
Army Achievement Medal
Army Reserve Component Achievement Medal (with 1 Silver Oak Leaf Cluster and 2 Bronze Oak Leaf Clusters)
National Defense Service Medal (with 1 Bronze Service Star)
Global War on Terrorism Expeditionary Medal
Global war on Terrorism Service Medal
Armed Forces Reserve Medal (with Gold Hourglass and "M" Device)
Army Service Ribbon
Overseas Service Ribbon
Joint Meritorious Unit Award (with 2 Bronze Oak Leaf Clusters)
Army Superior Unit Award
Expert Infantryman Badge
Army Aviator Badge

Dr. Dorit Nitzan

Dr. Nitzan is Coordinator of the Health Emergencies and Programme Area Emergency Operations at World Health Organization (WHO) Europe. Previously, from 2012 to 2016 she served as WHO Representative and Head of Country Office in Ukraine. From 2005 to 2012, she was the WHO Head of Country Office in Serbia and the Manager of Public Health Services for South-East Europe.

Before joining WHO, Dr Nitzan was the Director of the Food and Nutrition Administration in the Israeli Ministry of Health. She was active in global health work through the Israeli Ministries of Health and Foreign Affairs, World Food Program and was a consultant to Ethiopia, China, Moldova and the Russian

Prof. Uzi Rabi

Professor Uzi Rabi, Ph.D (Tel Aviv University, 2000) is the Director of the Moshe Dayan Center for Middle Eastern and African Studies, and a senior researcher at the Center for Iranian Studies, both at Tel Aviv University. Formerly, he was the Head of the Department of Middle Eastern and African History at Tel Aviv University.

From 2004–2005, he held a visiting professorship at the Lipinski Institute of San Diego State University.

Prof. Rabi research focuses on the modern history and evolution of states and societies in the Middle East, Iranian–Arab relations, oil and politics in the Middle East, and Sunni–Shi'i dynamics; within this framework he has supervised the dissertations of numerous doctoral candidates in this field over the years.

Dr. Harald Veen

23-9-1959
Trauma surgeon since 1992.

Practiced in the Netherlands (1992-2003), in the UK (2003-2006) and for the British Royal Navy in Gibraltar (2006-2012).

Between 1992 and 2012 around 30 missions in war zones for different humanitarian organisations, mostly with ICRC.

ICRC chief surgeon from 2012-2017.

Currently surgical lead for the ICRC project on Complex Attacks Preparedness.

Main focus throughout the professional career: good quality surgical patient care, under whatever circumstances, defining the minimum required quality level for staff, equipment, and treatment protocols.

Oral Presentations

The Middle East - A Changing Geopolitical Landscape

Prof. Uzi Rabi

Israel

Following the events of the "Arab Spring," the Middle East got caught up in a continuous spiral. The massive protesting seen in the public squares, the ousting of dictators who had ruled with an iron fist and the consequent breaking out of bloody civil wars engendered dramatic changes in the Middle East. It is clear that the region underwent a process of historical significance, perhaps the most important since the formation of modern nation-states after the First World War. The turbulence experienced by the Arab world is still in progress - and it seems that it is far from dying down - and this will have long-term implications for the Middle East in the 21st century.

The Next Mass Trauma. Understanding the Causes, Mitigating the Consequences

Prof. Sandro Galea

Dean, Robert A Knox Professor, School of Public Health, Boston University, USA

Mass traumatic events happen with regularity. Although we tend to think of these events as random, we do know that they will happen and can predict, to some extent, which areas are more likely to experience these events. This presents us with an opportunity to anticipate these events, and to mitigate their consequences.

I shall discuss how we may think about potential traumatic events so that we may anticipate and present the worst consequences that can accompany these events.

Medical Preparedness for Radiological Emergency: Gaps Assessment

Michael Zagatsky

Israel

The medical preparedness to a terrorist attack, involving a radiological dispersal device, poses an enormous challenge for national health services worldwide. As a result, there is considerable concern that the government agencies may not be appropriately prepared to respond to such an event. The objectives of this presentation are to identify the critical areas of concern as well as any possible gaps in stockpiles, capabilities or training (i.e. adequate medical supplies and pharmaceuticals stockpiles, pre-developed advisories that provide emergency information to the public, the capabilities to deal with large numbers of casualties, etc.').

Clinical Triage of Radiation Victims - Development of Early and Easy to use Tools for the Acute Radiation Syndrome

Matthias Port

Oberstarzt und Institutsleiter Institut für Radiobiologie der Bundeswehr in Verbindung mit der Universität Ulm, Germany

Novel treatment regimens for therapy of the acute radiation syndrome (ARS) have been developed over the last years. Their application and the overall guidance of radiation casualties rely on an early and high-throughput diagnosis. We developed a new scientific triage tool (called H-module) for early prediction of the later developing ARS. Based on differential blood cell counts measured within the first three days after a radiation exposure a prediction of the H-ARS severity can be performed with this tool. Our H-module was tested in table top exercises of radiation expert groups and radiobiology students. The required patient data were generated from real case histories. Overall the H-module proved to be an easy to train and easy to use precise and promising new tool to assist and guide the treating physician in a large-scale radiation scenario. An introduction into this new tool and other diagnostic tools will be provided in the context of a NATO-teaching class. Knowledge on clinical triage as well as on means of biological dosimetry is mandatory for physicians involved in emergency treatment of acute radiation casualties.

Fast Individual Dosimetry in Large Scale Radiological Emergencies: The European Experience

Andrzej Wojcik

Molecular Biosciences, Stockholm University, Sweden

Co-author/s: Laurence Roy, Institut de Radioprotection et de Sûreté Nucléaire (France); Ulrike Kulka, Bundesamt fuer Strahlenschutz (Germany)

Introduction:
Large scale radiological emergencies pose a particular problem for emergency preparedness because of the necessity to quickly identify exposed people. An indispensable element is individual, retrospective dosimetry that can help to classify people according to the absorbed dose. The primary aim is speed of performance and not precision of dose estimate. Triage dosimetry should permit a correct categorization of a victim into a low (below 1 Gy), intermediate (1–2 Gy) or high (above 2 Gy) dose category.

Methods:
The European Commission has been financially supporting research and coordination activities with the aim of building an EU-wide dosimetry network that would guarantee fast individual dosimetry in a large emergency event. Today the RENEB network is established with a battery of validated assays and experience from several inter comparisons. Doses can be estimated in tissue samples and in portable electronic devices. Each assay has advantages with respect to sensitivity, speed of analysis and signal stability.

Results:
A number of inter comparison exercises were carried out to test the capacity of the network. A short overview will be given. The network is able to handle ca 1000 cases per week. Shipment of samples works fine within the EU but not always outside.

Conclusions:
The EU network RENEB is operational and ready to carry out retrospective dosimetry in a large-scale radiological emergency. Regular inter comparisons are carried out to maintain efficiency both with respect to speed of analysis, precision of dose estimate and logistics of sample and data handling.

Medical Casualty Distributions Resulting from a Nuclear War between India and Pakistan

Cham Dallas

Institute for Disaster Management, University of Georgia, USA

Co-author/s: Cham Dallas, Samir Desai, Curt Harris, and William Bell, Institute for Disaster Management, College of Public Health, University of Georgia, USA

Introduction:
The medical consequences of a nuclear exchange between India and Pakistan in the near future are envisioned, with a focus on the distribution of casualties in urban environments.

Methods:
Model estimates of nuclear war casualties employed ESRI's ArcGIS 9.3, blast and prompt radiation were calculated using the Defense Nuclear Agency's WE program, and fallout radiation was calculated using the Defense Threat Reduction Agency's (DTRA's) Hazard Prediction and Assessment Capability (HPAC) V404SP4, as well as custom GIS and database software applications. Further development for thermal burn casualties was based on Brode, as modified by Binninger, to calculate thermal fluence. ESRI ArcGISTM programs were used to calculate affected populations from the Oak Ridge National Laboratory's LandScanTM 2007 Global Population Dataset for areas affected by thermal, blast and radiation data.

Results:
Trauma, thermal burn, and radiation casualties were thus estimated on a geographic basis for six Indian and five Pakistani cities, for single and multiple (three and six) 20kT detonations. Nuclear weapon detonations in the densely populated cities of India and Pakistan will result in an unprecedented millions of numbers of dead, with millions of injured suffering without adequate medical care.

Conclusions:
Strategic use of surviving medical response and collaboration with international relief could be expedited by these predicted casualty distributions and locations. The consequences for health management of thermal burn and radiation patients is the worst, as burn patients require enormous resources to treat, and there will be little to no familiarity with the treatment of radiation victims.

Adaptable, Selective Bone Marrow Shielding as an Approach to Protect Nuclear and Radiological Response Forces

Gideon Waterman

Research and Development, StemRad Ltd., Israel

Co-author/s: Gideon Waterman, StemRad Ltd.; Tamar Nix, StemRad Ltd.; Oren Milstein, StemRad Ltd

Introduction:
An undetonated Radiological Dispersal Device (RDD) of high activity could potentially lead to Acute Radiation Syndrome (ARS) among EOD (Explosive Ordinance Disposal) personnel neutralizing the device. Currently, EOD personnel lack effective protection from penetrating gamma radiation.

Up to a uniform whole-body dose of 10 Gy, the life-limiting factor is irreversible bone marrow (BM) damage. Due to the extraordinary regenerative potential of hematopoietic stem cells, it is enough to protect only a fraction of the BM to preserve hematopoietic viability. The BM, gastrointestinal system and ovaries are also especially sensitive to stochastic effects as reflected by high tissue weighting factors. Thus, selectively shielding the BM and gastrointestinal organs residing in the abdominal and pelvic areas may prevent ARS and concomitantly mitigate stochastic effects.

Methods:
We developed a device which selectively shields a critical volume of BM, gastrointestinal system and ovaries which is adaptable for multiple source-geometries to minimize both deterministic and stochastic effects of radiation exposure. The device was evaluated using Monte Carlo n-Particle Code (MCNP) simulations with Cs-137 sources presented as cloud and volumetric geometries.

Results:
In an undetonated RDD scenario, this equipment results in an absorbed dose reduction of 54%, 53%, 34% and 20% respectively for intestines, stomach, pelvic BM, and ovaries.

Conclusions:
This device is of a manageable weight and compatible with EOD PPE. The dose reduction provided to the pelvic BM and other organs is more than sufficient to allow for hematopoietic recovery and avoidance of ARS mortality for the projected use-cases while also significantly reducing stochastic effects.

Placenta-derived PLX-R18 Stromal Cells improve Survival following Lethal Exposure to Ionizing Radiation and Induce Bone Marrow and Peripheral Blood Lineage Recovery in H-ARS Animal Models

Arik Eisenkraft

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Introduction:
Acute Radiation Syndrome (ARS) is a syndrome involving damage to multiple organs caused by exposure to a high dose of ionizing radiation over a short period of time; even low doses of radiation damage the radiosensitive hematopoietic system (causing H-ARS). PLacenta eXpanded (PLX)-R18 is a 3D-expanded placenta-derived stromal cell product designated for the treatment of hematological disorders. These cells have been shown in vitro to secrete hematopoietic proteins, to stimulate colony formation, and to induce bone marrow migration. We assessed the potential effect of PLX-R18 treatment on H-ARS.

Methods:
PLX-R18 cells were administered intramuscularly to mice and NHPs, 1 and 5 days after total body irradiation (LD70/30 in mice and LD30/45 in NHPs). Weight, survival, peripheral blood and BM cellularity were monitored at several time points.

Results:
PLX R18 treatment significantly increased survival after irradiation and rescued radio-induced weight loss. In addition, PLX-R18 treatment significantly increased the number of colony forming hematopoietic progenitors in the BM and raised peripheral blood cellularity of all three lineages to values near those of un-irradiated control values. PLX-R18 cells responded to radiation-induced hematopoietic failure by transiently secreting haematopoiesis related proteins to enhance reconstitution of the hematopoietic system. In mice, CyTOF analysis or bone marrow and peripheral blood indicated rescue of the blood lineages to levels near those of naïve mice when PLX-R18 cells were administered to irradiated mice.

Conclusions:
Taken together, PLX-R18 stromal cells have the capacity to increase survival and alleviate bone marrow failure symptoms in the H-ARS model.

NexoBrid® as a Solution to Nuclear War Burn Injury

Yaron Shoham

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Co-author/s: Lior Rosenberg, Plastic Surgery Department, Meir Medical Center, Israel

Introduction:
It is estimated that even a single detonation of a relatively small nuclear warhead in a metropolitan area will lead to tens of thousands of burn victims. Nuclear war will undoubtedly lead to many more. Modern burn care depends on a small number of highly specialized surgically oriented burn centers, which will not have the surge capacity to deal with even 1% of the victims, rendering standard burn care virtually non-existent in a nuclear war scenario. This will result in the deaths of tens of thousands of burn victims who will be left untreated. A change of concept is needed to deal with the magnitude of burn victims in this scenario.

Methods:
NexoBrid is a safe, rapid, minimally invasive, enzymatic debridement agent for burns. NexoBrid can be easily applied as a dressing by non-surgical personnel in the field, thus having the capacity to treat a large magnitude of patients very quickly. It significantly reduces the need for surgery which in many cases is not needed at all [Burns. 2014 May; 40 (3):466-74].

Results:
NexoBrid is a viable solution for burn victims in a nuclear war. With NexoBrid, tens of thousands of victims which would otherwise be left untreated to die would have much better chances for survival.

NexoBrid has already been identified by the US government (BARDA) as a medical countermeasure for burn mass casualties.

Conclusions:
NexoBrid allows the capacity to treat a large magnitude of burn victims in the field and is thus the only solution for burn victims in a nuclear war scenario.

Emergency Planning for Mass Evacuation

Christian Neitzer

Fire Service and Disaster Management Academy of the State of Rhineland-Palatinate, Germany

After the Fukushima accident in 2011 new guidelines for preparation for accidents in nuclear power plants are developed by the federal government. The main difference between the old and the new guidelines are, that the circles around the power plants are now twice as big as in the old guidelines.

That leads to, that only in the state of Rhineland-Palatinate more than 300,000 people have to be evacuated within 24 hours. In the beginning the planners have to know wether it is possible to bring such a big amount of people out of the area within such a short time. Therefore the University of Kaiserslautern did mathematical simulation that shows surprising results. After these simulations was done, the emergency planning starts with a group of experts which took care in six different small projects: general emergency planning, self-evacuation and traffic guidance, supported evacuation for disabled or older persons as well as patients in hospitals, take over the evacuated persons, crises media support and radiological detection and measurements. After more than 2 years of work, the lecture shows the current results and planning how to deal with such a big amount of evacuees. Therefore the experiences of the large number of refugees that came to Germany in 2015 and 2016 was very helpful and cool be used as lessons learned. Since Germany decides to shut down all nuclear power plants within the next years all the planning will be used as a model for other areas and in other disaster scenarios.

Coordinated Public Health, Medical Reserve Corps, and Academic University Response for Evacuee Sheltering During Hurricane Irma

Kyle Schwartz

National Disaster Life Support Foundation, USA

Co-author/s: Becky Abell, Augusta University; Stephen Goggans, Georgia Department of Public Health; Joseph Webber, Augusta University; Michael Willis, Augusta University; Richard Schwartz, Augusta University

Introduction:
Prior research demonstrates that academic institutions have capabilities to assist with disaster response, but the most effective method is unclear. The study community was an evacuation locus for coastal counties during Hurricane Irma. We present a coordinated model for Universities and Academic Medical Center's (AMC's) to support the Department of Public Health (DPH) and the Medical Reserve Corps (MRC) during a mass sheltering event.

Methods:
University classes were cancelled and volunteers were trained through the local MRC. Physicians, nurses, pharmacists, and non-medical volunteers were deployed at shelters to alleviate the impact on local medical facilities. For staffing efficiency, evacuees with the highest medical complexity were preferentially placed in one shelter.

Results:
7 Red Cross shelters housing approximately 2100 people operated for 4.5 days and received coordinated medical support from the DPH, MRC, and University. 400 volunteers were recruited from the University and these predominated the MRC response. The majority of evacuees received an initial medical screen. Medical support was continually available at the shelters. Most medical encounters occurred in the high complexity shelter and the most frequent medical encounters were insulin and oxygen administration. The vast majority of patients were treated on-scene. 42 patients were transported to hospitals; 23 transports went to the AMC, of which 9 were admitted.

Conclusions:
Universities with associated AMC's can be an integral part of sheltering to promote timely care, prevent unnecessary ambulance transfers, and reduce Emergency Department utilization. This collaboration may serve as a model for the involvement of Universities in disaster response.

Large Scale Exercises in Romania

Raed Arafat

Department for Emergency Situations, Ministry of Internal Affairs, Romania

During the last three years, the Romanian Department for Emergency Situations changed the general approach towards the preparedness of the population as well as the training and exercising by the national emergency response system. The population is being more informed about the risks and vulnerabilities surrounding them whilst the emergency response services are being put in near real situations through un-announced exercises involving major national mobilization and response in case of simulated catastrophic events. During the year 2016, the Department ran two major exercises involving the emergency response system at a national level. In the field exercises, more than 6000 emergency response personnel were involved.

During the month of July 2016, the Department, together with NATO EADRCC, ran an international virtual reality exercise involving 14 countries. The virtual reality exercise had as a scenario a major industrial emergency with thousands of civilians involved. During the year 2017, a major earthquake exercise was planned involving the response capacities countrywide. The author will present the main aspects and conclusions of the large scale exercises involving all emergency services at a national level.

Global Migration, Displacement, and Transnationalism - Overview 2018

Albert Shimkus

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Introduction:
In 2015, 201 million people lived outside of their country of origin, representing 3.5% of the world's population, compared to 75 million (2.5%) in 1960. Human migration in a global issue that has no universally accepted solution.

Methods:
The push and pull factors of human migration will be identified. Also identified will be the types of migration and human displacement. Also discussed will be the contexts in which human migration and displacement occur.

Results:
Although the international rights though United Nations Resolutions of the migrants and displaced persons have been identified there is little being done to address this global issue.

Conclusions:
Policy makers of all nations must begin to recognize the extent of this vital issue and then begin to apply resources to ameliorate the suffering.

Mega Sheltering Functional Need Support Services (FNSS) Guideline Compliance during Response to Hurricane Harvey in Dallas Texas

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Introduction:
During Hurricane Harvey, over 3000 evacuees were transported to the Mega Shelter at the Dallas Convention Center. Creating a sheltering environment that supports evacuees with physical, sensory and cognitive limitations, and chronic medical conditions is a primary objective. In 2010, Federal Emergency Management Association (FEMA) published the Guidance on Planning for Integration of Functional Needs Support Service in General Population Shelters (FNSS Guidelines). FNSS guidelines require all persons, regardless of limitations, when evacuated from home to be provided all services necessary to allow them to remain in general population sheltering. Sheltering operations during Hurricane Harvey is one of the first large shelters, to be operationalized following these federal guidelines.

Methods:
Observational

Results:
Over 3000 people were evaluated at the Dallas convention center Mega-Shelter for functional needs support services. Resulting in over 2000 evacuee-patient encounters at the onset medical unit were utilized to support FNSS guidelines compliance. Maintaining FNSS guidelines created public health and well-being risks to the general shelter population. The manifold services and required personnel onsite to support FNSS guideline compliance for a limited number of evacuees created many challenges.

Conclusions:
Maintaining a safe, public health compliant large-scale general population sheltering operation that is required to maintain FNSS guidelines compliance is quite challenging. FNSS guidelines aim to support family unit integrity and the personal independence of each evacuee. Compliance is costly, presents risk to the public health integrity of the shelter, and creates a challenging logistical burden onsite to provide and sustain all these support services.

Wars and Mass Casualty Events, Debriefings, Lessons learned and Improvement Processes

Gila Hyams

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Introduction:
Rambam Health Care Campus is the largest hospital in Northern Israel, tertiary referral center for 12 district hospitals and the only Level 1 trauma center in the region.

During the past 20 years we found ourselves involved in MCE due to drills, terror attacks and wars.

This presentation will deal with the constant quality improvement and debriefing in order to improve the hospital preparedness for mass casualty events.

Methods:
For the last 2 decades the Hospital Emergency Preparedness Directing Committee, together with the Rambam HCC management team, has been holding discussions to improve hospital preparation for MCE.

Work processes are being conducted to improve –
1. Medical treatment in Mass Casualty Events
2. Logistics improvements and manpower
3. Communication and Collaboration with the rescue forces

Results:
Improvement processes were led by Rambam HCC management which included first and foremost the construction of an underground hospital.

Improvements were made in the fields of the headquarters, upgrading hospital education programs for team preparedness, teams training simulation methods and development of "Emergency" computerized systems.

Conclusions:
The Commitment of the hospital administration for the continuous improvement and lessons learned after debriefing led to vas improvement in the different areas mentioned above.

At every level of care professionalism was shown and lead to better results in routine and in MCE.

Attack on Christmas Market in Berlin

Carola Behling

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Introduction:
On December 19th, 2016 a Truck crashed into a Christmas Market in Berlin.
A presentation from the point of view of the first emergency physician on scene.

Methods:
Report.

Results:
Lessons learned.

Terror Attack Berlin Breitscheidplatz Lessons learned

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Introduction:
Some years ago the Berlin Fire Department changed the response plan and the equipment for Mass Casualty Incidents (MCI). One of the aims was a more flexible response in case of mass shootings or other types of criminal activity and a change in strategy away from stay and play on the scene of the incident.

Methods:
Luckily Berlin has not been the target of a major attack since the La Belle discotheque bombing until December 19th 2016. On this day a terrorist drove a truck into a Christmas market at Berlin Breitscheidplatz. The Presentation is about the incidence and the response of the Berlin Fire Department and the lessons we learned from that event.

Results:
The new plan for MCI proved to be effective. Most of the patients that had a chance to survive were transported to a hospital in a reasonable time.
Anyway there were some problems which have to be addressed. Those include radio communications, triaging and situation awareness.

Conclusions:
As a result of the attack the collaboration between Police and Fire Department was further enhanced. Additional training and equipment was iniated.

Urban Terrorism: The Evolving French Medical Emergency Organization

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Introduction:
Recent events in Paris and Nice have impacted our way of evaluating the compatibility of our current countermeasures, and demonstrated the need to accurately secure and increase the pre and intra hospital organization.

Methods:
Attacks occurred simultaneously in multiple sites and with an ongoing threat of a second accident at these same sites and complicated the organization work. Managing multiple similar injuries strained hospital resources. Moreover, the lack of predictable situational awareness and the difficulty of using daily communication devices at night in a hostile and noisy environment added to the complexity of the situation and needed further analyses.

Results:
In any type of attack, the general doctrine relies on a 3-"S" strategy: real time Situational awareness, Safety measures, and security issues and Safe Health. We aim at giving the best treatment without delay whilst providing our medical teams with the highest safety measures. And this is a case by case analysis where the medical leadership, with field partners, has a continuous follow up of medical actions, from the scene to the operating room or ICU, relying on close coordination with the medical dispatch center.

Conclusions:
In France, the civilian emergency medical services have learnt from the expertise of the corresponding French military service. Recent events led us to adapt this experience to the civilian setting and to adjust our contingency plans accordingly. Enhancing specific aspects like protecting hospitals, training and educating the population were the first goals. However, improvements in technological means are mandatory.

Use of HEMS Teams in Mass Casualty Incidents

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Introduction:
The Polish National Medical Emergency System includes 21 HEMS centers which significantly complement the ambulance network. One of the advantages of the comprehensive system is the option of deploying HEMS teams in mass events.

Methods:
A retrospective analysis of operations of HEMS teams in mass casualty events from 2015 to September 2017 was made.

Results:
In the analyzed period, the HEMS teams were deployed 120 times to mass casualty incidents, provided that only incidents when at least two (and a maximum of five) helicopters were used. The circumstances in which HEMS support was required varied, including road and train accidents as well as fires and construction disasters. The support of HEMS teams was necessary in case of accidents in remote locations, significantly distant from large centers and if transportation to specialist centers was required (mostly in case of burns and child trauma).

Although the HEMS teams are invaluable in terms of speed and level of knowledge and skills they are subject to certain limitations specifically in case of disadvantageous weather conditions and operating at night.

Conclusions:
HEMS provides significant support in mass casualty events, its main advantage being the ability of quick distribution of patients and of transporting patients to distant specialist centers. The main flaw in the work of medical coordinators at the location of the incident was involving HEMS teams in action on location and thus extending their stay before transporting the victims. That could be explained by the teams' proficiency, but it does delay transport of the victims.

Addressing the Psychological Effects of Terrorism

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Introduction:
The Rutgers New Jersey Medical School in Newark, USA, offers a 2-week elective course on Terror Medicine. This paper draws in part from the course material.

Methods:
Reactions to Terror
Reactions to a terrorist attack may be emotional, physical, or cognitive. Immediate emotional responses that require 'regulation' include anger, fear, anxiety, shame, and sadness. Some victims may believe that acknowledging emotions leads to a loss of control. Caregivers must beware of the possible impact even on those not overtly showing impairment.

Beyond emotion, victims may suffer physical effects. These include sleep disturbances, decreased immune response, persistent fatigue, and elevated cortisol levels. Finally, cognitive reactions may present as difficulty concentrating, replaying the trauma, and memory problems. Cognitive issues also may later surface as flashbacks, difficulty making decisions, and magical or even suicidal thinking. All can exacerbate fragile emotions.

Results:
At-Risk Populations
Survivors of multiple destructive events are especially vulnerable long afterwards. Emergency responders and medical personnel who have witnessed mass carnage are at increased risk of post-traumatic stress disorder (PTSD), anxiety, and depression. The effects on children appear more acute than on adults. Other above-average risk groups involve those with a history of major life stressors associated with poverty, homelessness, unemployment, or discrimination.

Conclusions:
On the psychological effects of terrorism, the Israeli population's experience also offers valuable lessons. Studies show that societal resilience in Israel is strengthened by a community's shared values, trust in protective authorities, and availability of support groups and agencies.

Complex Attacks Preparedness for the European setting

Harald Veen

Switzerland

Recently, Europe is facing an increased incidence of terror attacks.

The resulting circumstances and patient pathology require specific preparedness.

Besides penetrating trauma, blasts, and CBRN, the trauma care chain needs to be able to deal with ethical dilemmas and security aspects.

Training for this should ideally be embedded in the standard medical curriculums. Where are we currently?

After the Brussels Attacks

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Introduction:
The 22nd march 2016 Brussels was the target of 2 terror attacks - one at the international airport, one in the subway.

Methods:
The national preparedness plans at that moment were plans designed for dealing with 'a single incident, at a single location, with a single command structure'. The Paris attacks in 2015 had pointed out the possibility of having to face a multiple incident/location. At the strategic level the national medical preparedness plan was under revision in order to adapt it to this new risk, however at the operational level the insights were not yet available.

Results:
On the 22nd march the instruments were available for the strategic medical management team. The instruments had never been tested, exercised or played. The decision was made to play jazz - using all the skills and knowledge available within the medical chain to improvise and play the game, using new rules and new instruments.

Conclusions:
National preparedness plans can only plan the event that already occurred. No plan can plan the event that will occur tomorrow, no plan can plan the unplannable. Therefore preparedness plans should prepare the key-persons within the command and control structure to wisely use the instruments at their disposal, and the preparedness plans should allow them to intelligently improvise the response - playing jazz as an evidence based crisismanagement tool in medical and psychosocial preparedness.

An Experience of Hospital Evacuation during the Great East Japan Earthquake and Review of Literature

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Introduction:
When the Great East Japan earthquake occurred, many disaster-affected hospitals had to transfer their in-hospital patients to other hospitals. Hospitals within 30 km of the Fukushima Dai-ichi nuclear power plant also had to evacuate hospitalized patients because of the evacuation order. However, in some cases, evacuation was started without adequate knowledge of the destination hospital, and many geriatric patients with chronic diseases died during and after transportation. The aim of this study is to reveal risk factors of geriatric patients.

Methods:
The Aizu Chuo Hospital is located in the same prefecture as the nuclear power plant. Ninety seven geriatric patients with chronic diseases were transported and admitted in this hospital from the hospitals within 30 km of the plant. Data regarding their medical conditions, age, sex, level of consciousness, activities of daily living, and nutrition pathway were obtained from their medical records.

Results:
The average age was 84.2 ± 8.4 years. Sixty-seven patients did not obey verbal commands, 44 had prolonged immobility, 37 were fed through a tube, and 23 received nutrition through a central vein. No patients died during transportation, but 13 patients died within a month and 38 patients were dead by the end of 2011.

Conclusions:
Hospitals near the disaster-affected area should prepare for not only patients with acute disease but also geriatric patient with chronic disease during disaster.

The role of ADRO (Aso Disaster Recovery Organization) as an On-site Coordination Center in Kumamoto Earthquake

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Introduction:
The great East Japan earthquake (Mw 9.0) on March 11th in 2011 had made more than 400,000 people stay in the shelter. Because lots of local governments were washed away by Tsunami, the public health support delayed. Since then, the early establishment of public health support system has been recognized as one of the most important issue in Japan. However, the method to establish the public health support in acute phase was not still prepared enough when we experienced Kumamoto earthquake (Mw 7.0) on April 14th in 2016. In Kumamoto earthquake, I entered in Aso district as a director of DMAT (Disaster Medical Assistant Team) on April 19th. Aso district is a sector which Aso public health center administers, and includes 7 cities and villages. There were 65,000 people in it. When I entered, because many medical support teams had already come, the needs of medical support reduced. On the other hand, the lack of electricity and water supply made 15,000 people still stay in the 150 shelters. However, Aso public health center was too small to manage so many shelters. And it was in confusion. Therefore, the public health support system seemed to be the most important issue, rather than the medical support. I persuaded the director of Aso public health center to establish on site coordination center named ADRO (Aso disaster recovery organization), as soon as possible. I hereby present the role and the significance of ADRO.

Methods:
It's based on my actual experience and the proceedings of ADRO conference.

Results:
ADRO started on April 21th. The organizer of ADRO was the director of Aso public health center. The secretariat of ADRO was made up by the supporters in order to relieve the burden on the local people. ADRO opened the conference in every evening. All kinds of supporters, medical doctors, dentists, nurses, public health nurses, policemen, fire fighters, pharmacists, joined the conference and discussed both medical and public health problems. The subjects of the conference were the prevention of the infectious diseases, locomotive syndrome, malnutrition, and deep vain thrombosis (DVT). We also discussed adequate supply for foods and medicines, and arrangements for newly arrived supporters. ADRO was closed on May 26th, and its function was handed over to Aso public health center. In Aso district, the pandemic of infectious diseases and DVT did not occur.

Conclusions:
The one feature of ADRO is the case that not public health, but a medical team, DMAT, played an important role to establish a public health support system. The reason was that DMAT could move quickly and effectively more than the public health supporters in Japan.
Another feature of ADRO is that the early establishment of public health support system made a smooth return to the local public health system.
ADRO standardized the support method and reduced the frequency of the conference. It's very important for the supporter to establish the public health coordination center with local people like ADRO from acute phase.

A Hospital based Study of 2015 Earthquake Injured Patients Attending the Medical College Hospital in Western Region of Nepal

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Introduction:
On April, 2015, 06:11:26 UTC, a catastrophic earthquake with a magnitude of 7.8-8.1 on Richter scale and lasted approximately fifty seconds with Mercalli Intensity of IX (Violent) hit the north west of Kathmandu, Nepal. Its epicenter was at Barpak and its hypocenter was at a depth of approximately 8.2 km. It was the worst natural disaster to strike Nepal since the 1934 earthquake. The earthquake caused over 9,000 individuals death, injured 22,000 people and 3.5 million people were homeless. The study has been design to study the morbidity pattern, duration of hospital stay and mortality incidence among the earthquake injured patient.

Methods:
Retrospective analyses of the earthquake injured patients attending the emergency department from 25th April to 24th May were enrolled.

Results:
Hundred and seventy patients were triage and 63% were female. Almost 45% of patients were from 15-34 years group. Eighty one percent of patients where from Gorkha district, the epicenter site of the earthquake. The three most common diagnoses were Trauma and Orthopedic Injuries (52.4%), Mental health issues and Psychological problems (21.2%) and Reproductive health issues (16%). Among the 83% of patients who had been hospitalized, almost 34% were discharged within one week. Mortality rate was 1.2%.

Conclusions:
Since 1993, an earthquakes of more than or equal to 5.0 on the Richter scale have occurred in Nepal every year and this makes Nepal 11th most vulnerable country in world. Therefore, every hospital should have well-functioning Earthquake Disaster Management Plan to handle this high intensity emergency situation in our country.

Analysis of the Role of CADENA in the September 2017 Mexico Earthquakes

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Introduction:
In this paper we will demonstrate how CADENA played a crucial role in the rescue efforts that were carried out in Mexico after the first and second Earthquake in September 7th and 19th, 2017. In both cases, CADENA utilized its crises protocols, which include physical rescue interventions, with a special "Go team", which not very unlike an IDF elite unit, are constantly ready to be sent for any situation which arises, in order to engage in rescue missions. In the second stage, CADENA took upon itself the role of rebuilding communities and educating for psychological resilience, courage and tolerance to pain. We will also show which conclusions and lessons were obtained for the future.

Methods:
This is a qualitative study with an inductive analysis of the recorded material from the events which served as a base for reflection on action and improving of practice, together with Interviews with key players in CADENA for further triangulation

Results:
The analysis shows that CADENA, similarly to other NGO's in places like Israel in the second Lebanon war of 2006, took upon itself the roles that ideally the government should be able to take. As an organization, it reached a high level of professionalism, learning "on the go" and quick to adjust itself to changing circumstances.

Conclusions:
CADENA is an example of a "Best Practice" in the area of Crisis Intervention. The international and national acclaim is justified, and as long as governments are not able to act in a professional way like this unique NGO, its role would be to learn from the NGO and support its existence for future events.

Comparative Analysis of Seven Disaster Triage Methods in Severe Adult Patients based on West-China Earthquake Database

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Introduction:
Many disaster triage methods were used for disaster rescue. But the evidence of the accuracy of these triage methods was limited. Our hypothesis was some disaster triage methods predict important clinical outcomes more accurately than others.

Methods:
We retrospectively analyzed the data from West-China Earthquake Victims Database. From the original data, we could got the results of START methods, According to the medical records, we calculated the six triage methods, such as Care-Flight, FDNY, RTS, REMS, MEWS and PHI. Based on 30-day mortality, the ROC curves were used for comparison of these Disaster Triage Methods.

Results:
13173 cases were enrolled in our study, who were injured during Wenchuan Earthquake, Lushan Earthquake, Yushu Earthquake and Jiuzai Earthquake in recent years. The maximum area under ROC curve was REMS AUC 0.752) ,followed by RTS(0.724).But there were no statistical difference between the two methods.

Conclusions:
As a accurate triage methods, RTS, which was a simple score, can be used in earthquake. Furthermore, the study was an retrospective study. We need more evidence to select the triage methods.

The American Red Cross Experience to the 2017 Disasters

Anne Palmer

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Introduction:
During a 2 months period in the 3rd quarter of 2017, the American Red Cross had to respond to an unprecedented volume of large scale disasters – 3 category 5 Hurricanes and large wildfires (the deadliest in the last decade).

Methods:
The activities conducted by the American Red Cross in response to the disasters will be presented.

Results:
The lessons learnt by the American Red Cross from the operations will be presented

Conclusions:
The institutional learning and adaption of lessons learnt from one operation to the other will be presented.

The Canadian Red Cross Response to the Alberta Fires Evacuations

Melanie Soler

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Introduction:
In 2015, a large wildfire, caused the evacuation of the town Fort McMurray (Alberta). The Canadian RC (CRC) was tasked to manage the support the evacuees and later the reconstruction efforts.

Methods:
The activities conducted by the CRC will be described, being this the largest domestic cash transfer operation in the CRC history.

Results:
The lessons learnt from the operation will be presented.

Conclusions:
Cash transfer should be considered as a viable option to support evacuees also in middle-high income countries, but the systems should be set up.

Kibbutz Eyal Poisoning - An Overview of how can things look like, in a Dairy Cows Herd, following a Chemical Attack

Michel Bellaiche

Kimron Veterinary Institute, Israel

Introduction:
In June 2005, in the dairy herd of Kibbutz Eyal, feeding cattle were sprayed against flies, with high concentrated out label diazinon, a powerful organophosphate.

Methods:
The cattle were sprayed on the head, neck and back. Approximately, fifteen minutes after the spraying, the cows started to show clinical symptoms such as salivation, recumbency, rapid breathing, ataxia, diarrhea, polyuria and death.

Almost all the 220 cows showed some of the mentioned clinical symptoms, and the scene of the poisoned herd was very impressive. In the presentation, slides of the outbreak will be showed, to demonstrate how a chemical or biological attack can look like, in a dairy herd.

Atropine treatment IV was started to cows showing clinical symptoms. The response to treatment was very good to most of the cows. Those who didn't recover after the first injection of atropine received another dose IV. Recovering cows were injected with a supplementary dose IM.

Cows that showed atropinization but couldn't get up received a treatment of 2- PAM (Oxime), and in most of the cases, the recovery was rapid.

The safety of the staff that treated the animals was seriously considered, including the possibility of touching poison and the steps that should be taken while handling high doses of atropine. The marketing of the milk and meat was immediately stopped until the residues of the poison and the medicines reached acceptable levels.

Results:
In this outbreak, 164 of 220 milking cows found their death in less than three hours, and the other cows of the herd were treated and saved.
The carcasses were transferred to the incineration center in the north of the country.

Conclusions:
This massive poisoning can reflect how can be presented a chemical or biological attack in a dairy cows herd, and what is the ultimate treatment of a massive organophosphate poisoning in such a herd, including the way of disposal of the carcasses.

Management of Wildlife during Disasters

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Natural and anthropogenic disaster(s) places animals, especially wildlife, under serious threat of survival. Saving them is a complicated task that require a sophisticated approach which can be an impossible assignment. Early warning systems to predict the disasters will enable the authorities to be prepared prior to their arrival. Saving captive wildlife depends on the evacuation possibilities of the individuals which vary among different species, influenced by their physical and behavioral characters. Furthermore, saving wildlife in the wild is more challenging, limited to very few optional scenarios.

Natural catastrophic events such as wildfires, floods, wind storms and locust's outbreak can risk wildlife. In addition, manmade events as oil spills and marine and fresh water contamination at different magnitude, are threatening wildlife survival. Therefore, we at the Israel Nature and Park Authority are looking for solutions to save wild animals life.

The most common solution is to translocate the animals from the site, but it is not always practical. In most cases, we need to improvise solution at the site. For example, the spill of highly concentrated solution from Agan Chemicals to the nearby riverbed, and the oil spill in the nature reserve of Evrona at the ARAVA.

Another scenario is a pandemic, that makes evacuation useless and captive wildlife might be saved in situ (vaccination, isolation etc…).

Wild and Domestic Animals as Reservoirs of Leishmaniasis in Israel

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Introduction:
Three zoonotic species of Leishmania infect humans in Israel, Leishmaia infantum causing visceral leishmaniasis, and L. major and L. tropica which both cause cutaneous leishmaniasis. The identification of the animal reservoirs of these species is important for control and prevention programs.

Methods:
A study was conducted by the Israeli Ministries of Health and Environmental Protection in collaboration with the Hebrew University to detect wildlife animals infected with Leishmania spp. It included trapping of wildlife mammals by the Israel Nature and Parks wardens. Tissue and blood samples were tested by Leishmania ITS1-HRM-PCR followed by DNA sequencing.

Results:
L. major infection was recorded in 14 of the 28 mammal species. High infection rates were found in: Psammomys obesus (22/45; 49%); Meriones crassus (3/7; 43%); Gerbillus dasyurus (7/30; 23%); and Meriones tristrami (89; 14%). L. tropica infection was recorded in 6/28 species examined with the highest infection rate in the hyrax Procavia capensis (46/233; 20%) afollowed by jackals Canis aureus (8/134; 6%) and Acomys cahirinus (21/620; 3.5%). L. infantum which infects domestic dogs was also found in C. aureus (2/134; 1.5%) and in two rodent species (<1%). A distinction was found between L. major and L. tropica distribution zones with L. major significantly more prevalent in the southern arid zone and L. tropica in the Mediterranean and semi-arid zone.

Conclusions:
These results substantiate the role of the hyrax and desert rodents as main hosts for L. tropica and L. major, respectively. It contributes to understanding the complexity of Leishmania infection in Israel and outlines environmental risk factors to assist in prediction of human disease.

Events in Animal Farms in Times of Emergency

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Introduction:
In Israel, disasters such as hurricanes, tornadoes, floods, earthquakes etc. are fortunately not common. But natural phenomena such as extreme winter weather and extreme summer that is accompanied by drought and fires, may also be an emergency problem. This is in addition to the causes of human hands events such as acts of terror, acts of war, grazing land and forest fires, poisoning of feed or water sources, etc. Hazardous material spills, or even nuclear power plant accidents can occur any time.

In addition, emergency events arise regarding the outbreaks of fatal diseases and their treatment, risks and challenges associated to the removal of carcasses that may pose a health and environmental hazard.

The event may occur suddenly or be anticipated for several days. Government preparation for these events should take place long before they occur. In the relevant government ministries and even at the farm level, procedures and manuals should be written. They should be kept in a fireproof safe, quickly accessible, with other important documents.

The lecture will describe the preparedness, cases and response of the Veterinary Service in the Ministry of Agriculture in emergency situations in agricultural farms.

For example direct hit by missiles in the Dairy cattle farm & barn in one of the kibbutzim in the north, which caused the death of many cattle and the injury of many others and obviously damage to the structures.

Methods:
Case description.

Results:
Review & Observation.

Conclusions:
Applications.

Animal Care during a Disaster Event in Haifa

Yair Weiss

Municipality Veterinarian Haifa, Haifa Municipality, Israel

Introduction:
Animal crises in Haifa (war & forest fires).

Methods:
Changing priorities and working with other departments to maintain animal welfare.

Results:
Good.

Conclusions:
At time of crisis you have to change and adjusted for the benefit of the animals and citizens.

Why Should you have a Vet on your Epidemic Management Team?

Tal Brosh-Nissimov

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Introduction:
Unusual Biological Events are naturally-caused or man-made infectious diseases with significant public health consequences, Preparing and managing these events require a coordinated multi-professional effort. A complex and reciprocal human-animal interface mandates incorporating veterinary specialists into management teams.

Methods:
A bried review of animal-human interactions and their implications for epidemic management will be presented, with emphasis on the Israeli Epidemic Management Team perspective

Results:
Some zoonotic diseases would usually manifest first in wild or cultivated animals. In these cases, an incorporated surveillance and reporting system would serve as a sentinel to human risk. Human medical professionals should, on their part, assess risk to animal caregivers and workers, provide means of protection and treatment. A recent Israeli experience with H5N8 avian influenza outbreak will serve as an example.

Other zoonotic diseases might only manifest in men, but are driven by animal reservoirs and vectors. Understanding the epidemiology and pathophysiology of pathogens in animals serves to better protect human health. The case of MERS-CoV and dromedary camels is presented as an example.

Some extremely rare human diseases, such as anthrax, constitute a well-known risk for bioterrorism. Veterinarians and veterinary laboratory personnel might be much more experienced with the diagnosis and management of these pathogenic agents, therefore are valuable assets in an emergency.

Pets can serve as a cause of serious contagious outbreaks. This was well presented in a few cases of pet-derived plague. On the other side of the spectrum is the risk for pets to get infected during epidemics, necessitating risk assessment and pre-planned management.

Conclusions:
Public health and infectious diseases specialists should insist on veterinary experts participation in epidemic management.

Animals as Early Threat Detection Sentinels

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Introduction:
Animals have been used by people as sentinels since early history due to better senses, higher susceptibilities or are exposed to the agent to be detected in higher concentrations or for longer periods than humans. Thus, animals are used in a variety of sentinel duties such as dogs sniffing out drugs or explosives and rats finding landmines. In addition, animals may act as sentinels for air and water pollution.

Methods:
For animals to serve as sentinels for infectious diseases, several conditions must be fulfilled: they have to be more susceptible or have shorter incubation periods, they are at a higher exposure risk, their living niche overlaps that of the humans at risk, the epidemiological background of the disease has to be known and the time for diagnosis has to be shorter than the difference in incubation period between animals and humans.

Results:
The benefits to be expected from animals sentinels are source point identification, spread direction and area demarcation. Since ruminants and mice are more susceptible then humans to anthrax, they will act as sentinels for the disease, the former in rural areas, the latter in urban ones. For plague a die-off of rodents is known to be an early warning for plague.

Conclusions:
The capacity of animals to act as sentinels may change in time: crows were affected before humans when the West Nile Virus was introduced to the US but not in Israel, endemic for a disease. This may be the result of a status of immunity induced in these cases.

Bolstering Organizational Resilience to Earthquakes in the Israel Hotel Industry

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Introduction:
The presentation reports on an ongoing examination of organizational resilience to earthquakes and tsunamis within the Israeli hospitality sector. Initial inquiries among executive and government role holders found that the industry lacks regulatory codes for building and decorating hotels and harbors dangerously low levels of awareness to the significant damage a serious earthquake could render to its infrastructure.

Methods:
The study combines social researchers from the Dead Sea and Arava Science Center and the Department of Hotel Management and Tourism, Ben-Gurion University of the Negev. The team are conducting ethnographic fieldwork among relevant hospitality industry executives and local and national government role holders in Eilat and the Dead Sea. The researchers are fusing qualitative (participant-observation) and quantitative (surveys and questionnaires) fieldwork to collect data for a gap analysis of existing and lacking readiness activities. Suggestions for improving resilience levels will be correlated with readiness and recovery models found in other high-risk tourism sectors throughout the world and adjusted to account for local resources and the applicability of these systems within an Israeli context.

Results:
The researchers intend to devise a metric for monitoring rates of resilience and readiness at hotels and other tourism-oriented organizations based on a series of interrelated objective factors derived from the fieldwork.

Conclusions:
Initial conclusions suggest a need to create more user-friendly protocols; procedures for pre-quake preparations exists but are nominally applied by the hotels. It is essential to configure government standards for earthquake preparedness for hotels and create a collaborative inter-organizational mechanism for imposing their implementation.

Numerical Comparison of the Performance of different Train Geometries subjected to Explosions

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Introduction:
In the last decades, the number of terrorist attacks in public transport systems has risen. In many of these attacks, explosive devices were used. Therefore, the focus of this study is to compare numerically the performance of different train geometries in order to give recommendations for wagon designs.

Methods:
The numerical simulations were conducted in Europlexus. The complex structures of the train geometries and the passengers were modelled using Lagrange elements. The air was modelled using Euler elements. The "compressed balloon" method was used to model the explosive. The peak overpressure and positive impulse were calculated for each Euler element. These two values were used to compute the probabilities of eardrum rupture and death of the passengers.

Results:
Numerical simulation results are presented, where three different train geometries (short wagon without glass intersections, short wagon with glass intersections, long wagon) and three explosive amounts (5kg TNT, 10kg TNT, 20kg TNT) were varied. The number of passengers with eardrum rupture and their risk of death were compared.

Conclusions:
The number of affected passengers is the lowest in the long wagon, followed by the short wagon with glass intersections and then by the short wagon without glass intersections. This trend is independent of the explosive amount.

Methods for Rapid Prediction of Structural Damage Induced by Explosions

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Introduction:
In the past years, security in urban areas has been extensively discussed in politics, media and society. Once intelligence services define certain threat scenarios, it is the responsibility of engineers to assess consequences on both people, buildings and infrastructure. During an early planning phase, it needs to be assessed if protective measures are required for building components due to the expected damages.

Methods:
This paper deals with two methods for predicting damage caused by explosions for different construction components (e.g. windows, concrete/ masonry walls or steel structures). Based on available experimental data, e.g. by Kinney&Graham (1985), various damage categories are presented. The lower and upper bounds of the categories are specified by means of incident peak overpressures. Using the semi-empirical formulae of Kingery&Bulmash (1984), overpressure solely depends on the charge mass W (kgTNT) and on the distance from the charge to the building R (m). For a given incident peak overpressure, the combination of W and R can be determined and plotted in W-R-diagrams.

Results:
In the first prediction method, W-R-diagrams are derived based on the defined damage categories. The second method is applicable when only charge mass is defined by a threat scenario. Based on a hemispherical shock wave propagation, circular regions of damage categories are plotted in a plan view. Thus, different levels of expected damage in urban areas can be shown in a practical manner.

Conclusions:
Applying these two predictive methods, the expected structural damage can be rapidly predicted, especially when limited information is available in an early planning phase.

A Risk-based Decision-Support-Model for Protecting an Urban Emergency Ward (EW) from a Nuclear Explosion in Order to Retain Maximum Performance

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Introduction:
Nuclear explosion is probably the worst physical man made threat to human society. It has immediate and long term implications including blast wave, extreme heat radiation, immediate and residual radioactivity, fallout, ground shock, cratering, debris and electromagnetic pulse. An explosion occurring above or in an urban environment, as a desired target to cause maximum casualties, could harm also EW located within the attacked area. The continuous performance of EW could decrease the consequences of the event by rescuing lives. Nevertheless, it depends on the availability of medical staff that was not hurt and the resilience of the structure and its technical equipment and systems.

Methods:
A scenario of a terror or warlike 1kT ground nuclear explosion (US Defense Threat Reduction Agency criterion) was analyzed. Calculations to estimate the structural response of the building, the performance of the facilities and the different interior radioactive and heat radiation intensities were carried out for various explosion distances. A comprehensive model for risk analysis and evaluation of the scenario was developed. The model aggregates the direct and indirect implications of the explosion effects except cratering and ground shock.

Results:
Retrofitted EW was suggested including new reinforced concrete walls, protected entrance array and radioactive air filtering. The nuclear explosion effects between close range and far range of several miles and fatalities, injuries (mainly by radioactivity) and physical damage were estimated for the existing and the retrofitted EW structure.

Conclusions:
Benefit-to-Cost-Ratio analysis of the existing and the retrofitted facilities revealed that the retrofit is cost effective at a minimal explosion occurrence probability of 0.016 for 100 years in relation to an assumed urban area. This model could be implemented for decision making also for other explosion and disaster scenarios.

Critical Infrastructure Protection: A Holistic Analysis of the Rail-bound Transport

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Introduction:
Critical infrastructures in general, and public transport in particular, are so-called 'hard targets' and frequent aims of terrorist attacks. In previous research we have extensively analyzed the resilience and vulnerabilities within public rail-bound transport systems. However, in order to get a holistic security view on the railway system, more aspects need to be considered. In Europe, both passenger and goods transports are often done on the same rail infrastructure. Thus, it can be expected that vulnerabilities strongly shift over the system when considering goods' transport additionally to passenger transport. This gets even more severe when thinking of hazardous goods such as chemicals, e.g. toxic, highly flammable or explosive gases or fluids that are moved on rail carriages.

Methods:
We introduce a conceptual graph-theoretic analysis framework that considers all those different influences. Here, we extend our previous work by additionally considering train stations for goods' transports and cargo train flows.

Results:
Preliminary results of the analysis imply the strong need of such a global perspective on rail infrastructures as vulnerabilities shift within the network. Also, individual analyses are carried out through a multi-disciplinary approach and based on concrete threat scenarios.

Conclusions:
Our goal is to weigh different types of trains based on their contribution to dangerousness (hazardous impact) on the overall system's vulnerability. The novel network analyses are merged in a multiplex network and finally aggregated to a global vulnerability level.

Vulnerability Assessment Model of Urban Area Structures Exposed to Seismic Loads: Tiberius as a Case Study

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Introduction:
Israel is situated in an area prone to earthquakes. The research focuses on implementing US fragility curves for typical reinforced concrete structures in Israel, whereby Tiberius was selected as a case study. Tiberius is situated along several active faults of the Dead Sea Transform fault system, the return period of moderate and major seismic events in this area is estimated to be between 200 and 300 years. Furthermore, buildings in Tiberius have a low level of seismic design, since most of them were built before the standard for earthquakes was implemented. To present, the estimation of casualties that might be incurred during an earthquake in the region has not taken into consideration the different types of buildings and the presence of the population in the different structures at different time-frames.

Methods:
A detailed field survey was carried out in six census tracts included: data collection and engineering documentation of the building inventory. Twelve different seismic scenarios were simulated using HAZUS-MH.

Results:
The findings reveal that in scenario of an earthquake at magnitude of 7.0 (in Mw scale), between 13 and 46% of the structures in Tiberius are expected to completely collapse, the number of casualties is expected to be several hundreds, and the number of moderately and severely injured are over 2,000, between 1,700 and 15,000 will require shelters, and the direct economic loss range is between 1.3 and 10 $ Billion.

Conclusions:
The economic benefit of seismic retrofitting of the building inventory in Tiberius was examined and was found to be cost-effective.

Hospital Emergency Readiness Improvement by Hospitals' Physical Parameters Analysis and Engineering and Maintenance Department on-job Training

Michael Vatenmacher

Israel

Israel given to diverse threats that requires preparation and operational continuity of medical system. The two main threats, which are dictates the preparedness process are rocket strikes and earthquakes.

Hospitals functionality during emergency situations is affected by many factors including:

a. The value chain and state of each component of critical infrastructures – the ability of operational continuity.
b. Medical personal and patients' survivability during the event – the ability of protection and evacuation.
c. The skills of engineering and maintenance staff – the ability of leading the preparedness process and ability of effective and quick response to incidents.

The Ministry of Public Health, together with Home Front Command (HFC) lead the project of hospitals readiness improvement.
The project include three parts:

a. Engineering and Maintenance staff **education and training** for rapid visual seismic evaluations of buildings, checking the physical protection levels of different spaces and determining of value chains and critical components of infrastructures. This part was done as on-job training.
b. Doing the rapid visual seismic evaluation of buildings and **collecting the data** about physical protection levels and value chains of critical infrastructures.
c. Hospital **emergency protocol** writing based on collected data.

During this process, was established cooperation with Ministry of Housing and Construction, which send recruited engineers to fortify hospitals' engineering staff.

This project improved the readiness level, made possible to determine critical components of infrastructures gave hospital management emergency protocol with comprehensive data and based the cooperation with different players of engineering.

The project products will be the part of medical system preparedness process and can be used as one of the subjects in decision making of future hospitals design.

Hospital Evacuation: Planning for the Unthinkable and Mitigating the Chaos

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Introduction:
Hospital evacuation is a difficult and complex process from decision making to execution. Several factors weigh in the decision and type of evacuation including disaster specific factors, patient specific factors and available resources in order to minimize risk and ensure patient and staff safety. Prioritization of patients during an evacuation may vary depending on the urgency of the evacuation and the physical resources available. During and evacuation, emergency managers and clinicians must be able to quickly identify and classify patient needs to effectively prioritize and allocate resources.

Methods:
Evaluation of available literature for clinical decision tools, and examined the variables utilized in each tool.

Results:
Three "buckets" of tools emerged: Triage; Acuity and Functional Status; and Risk Stratification

Conclusions:
No one priority model that will work well in all disasters or hospitals was identified

No one tool is applicable to all patient populations for disaster triage

Few tools are specific to disaster or hospital evacuation

Some tools require coalition participation to be meaningful

Additional research is needed to identify way to identify how "sick is sick" and who should be moved first during a hospital evacuation.

"Responding from the Gut": Do Emergency Medical Teams in a Multi-casualty Event Perform a Triage Accurately according to the Protocol that is supposed to be implemented?

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Introduction:
The relative lack of resources in a multi casualty incident (MCI) necessitated the development of algorithms intended to rapidly identify the casualties for whom treatment and evacuation will be most significant. Despite the variety of methods worldwide, no research proved these methods reduce mortality in an MCI.

The research objective was to find weather EMS teams perform triage according to the suitable protocol. We hypothesize that responders in an MCI rely on "gut feeling" and past experience when performing triage and that they also perform actions that exceed the protocol.

Methods:
Retrospective questionnaires based research among 410 responders of MDA's and 118-Piedmont's EMS services.

Results:
51.14% were in favor of relying on gut feeling; 84.51% were favor of relying on past experience; 77.6% reported checking central pulse during triage; 92.6% thought it is important to check central pulse; 42.6% checked central pulse even though they knew this test is not required in the triage algorithm.

Past experience is considered a meaningful element in medical treatment. "Gut feeling" might be linked to subjective and intuitive treatment and experienced responders tended more to rely on it.

Conclusions:
Responders perform actions that exceed the triage protocol they are supposed to implement they turn to what is known and familiar, which might explain evaluating the central pulse, which is not required in any triage protocol.

Since there is no gold standard, possibly in a non-catastrophic MCI in an urban area, finding simpler solutions closer to the responders' daily work should be considered.

Israel's National Preparedness for Tsunami

Amir Yahav

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It is a documented fact that tsunami waves have occurred in the Mediterranean Sea, in the past, and have even hit the very shores of Israel.

Such waves hitting the shores of Israel today would cause a disaster on the national level and will cause the day-to-day lifestyle in the country to roll back generations.

During the last few years the National Emergency Management Authority and the National Steering Committee for Earthquake Preparedness have led the preparation of every single relevant government entity in the state: research institutions (the Geological Survey, the Geophysical institute, the Israeli Center for Oceanographic and Limnological Research), the academy (Haifa, Tel Aviv, and Ben-Gurion Universities), the various governmental offices, local authorities, first responders, and the IDF for the projected scenario of a tsunami disaster on the shores of Israel.

The international awareness for the need to prepare for tsunamis on a national level began rising following the devastating 2004 tsunami that took place in the Indian ocean that caused some 250,000 deaths, and kept on rising following the 2011 Japan tsunami, which caused 20,000 deaths in its own right and further caused a nuclear disaster due to the Fukushima nuclear power plant being hit by the monster waves.

Israel has about 200 kilometers of coast that are exposed to the Mediterranean Sea, and serve as a source of income and as a place of leisure and residence for hundreds of thousands of people.

It is another fact that 45% of Israel's current electricity production is done in power plants along the coast, 99% of the importation to the country (in tonnage) arrives by sea, and 100% of the water-purification plants- upon the waters of which depends 50% of the population for drinking water- are located along the beach, and 100% of the refined oil in Israel is produced along the shore of the Mediterranean.

A tsunami in Israel can cause thousands of deaths and devastation to the national economy, the recovery from which may take months and even years.

The complex and rewarding cooperation between the aforementioned agencies has led to the creation of a doctrine for the national preparation of the country and its people for tsunamis, and has gone as far as instruction of the masses and the positioning of warning and directional signs along the beaches in case of a tsunami.

Israeli activity in the matter has aroused much interest around the world and attracts professionals in the field to come and study the local doctrine and related preparations.

Empowering Bystanders to Intervene: Chicago South Side Trauma First Responders Course

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Introduction:
The city of Chicago has one of the highest rates of violence in the country, and this violence has been shown to disproportionately affect socioeconomically disadvantaged neighborhoods in the south side. The paucity of trauma centers in the south side of Chicago leads to prolonged transport times, increasing morbidity and mortality for those affected by penetrating traumas. A community based Trauma First Responders Course (TFRC) designed for bystanders could potentially mitigate this effect.

Bystanders are present at 60-97% of traumas and more likely to assist if given prior training. We seek to design and implement an evidence-based, community driven course designed for the general public to empower bystanders to intervene.

Methods:
A three-hour TFRC was designed using community based focus groups and qualitative analysis of the bystander effect. The course addressed basic first aid, trauma wound care, principles of bystander care, and the psychological impact of trauma. The course was taught in community centers, churches, and schools, to both minor and adult participants. Pre- and post-course questionnaires were offered. Eight evidence-based empowerment questions were assessed on a scale of 1 to 10. Ten knowledge-based questions were presented as single best of four multiple choice answers. The change in empowerment measures and knowledge scores were analyzed using chi-squared methods with $p<0.05$ considered significant.

Results:
Over the 7 courses offered thus far, 92 participants completed both the pre- and post-course assessments. The mean increase in empowerment was 2.42 out of 10 (0.41-4.66). The area with most improvement was ability to apply a tourniquet, followed by ability to render first aid. Improvement in 5 knowledge-based questions reached significance: tourniquet usage ($p<0.01$), management of impaled object ($p=0.01$), exposure to bodily fluids ($p<0.01$), initial trauma care ($p<0.01$), and scene safety ($p<0.01$). Over all 10 questions, participants had a 14% improvement ($p=0.02$).

Conclusions:
An evidence-based community TFRC is currently being offered throughout Chicago's south side. The course has been shown to improve both bystander empowerment and knowledge of initial trauma care in the field, particularly trauma wound management and scene safety. Enrollment is ongoing and will improve the power of the study. In addition, 6-month follow-up assessments will be performed to assess knowledge retention and applicability.

Using Spontaneous Volunteers as a Responder Substitute

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Introduction:
Germany and some other European countries rely on a professionalized volunteer-based emergency management system. Spontaneous Volunteers (SV) are recognized as additional personell resources. In emergency situations personnel drops or traffic infrastructure breakdown can influence the availability of emergency management personnel. In contingency planning SV can be a substitute.

Methods:
We conducted a non-systematic literature review. 11 in-depth interviews with managers and platoon leaders of German Agency for Technical Relief and St. John Ambulance Service in Germany were additionally conducted from July to October 2016.

Results:
We could not find any concept for utilizing SV in personnel drops. We found approaches to use preconfigured volunteers in infrastructure breakdowns after earthquakes, usage of volun-teer databases, and SV staging areas.

Personnel drops as well as infrastructure breakdowns with influences on the operational capability aren't fully in mind of operational personnel and managers. In those scenarios several tasks can be assigned to SV under clear conditions.

Conclusions:
Generally, resilience planning has to focus on responder's capability shortcuts as well. SV can be utilized for tasks based on their individual knowledge and skills. An approach to meet these challenges successfully has to recognize three levels. First, individual level: operational personnel as well as managers should be able to deal with SV. Second, resource utilization: pre-configuration and SV database give the opportunity to select and dispatch SV specifically. Third, system stabilization: SV staging areas give the opportunity to control the inflow of con-vergent SV.

Analysis of the Medical Coverage of High Risk Mass Gatherings

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Introduction:
From 26 July to 1 August, 2016, Kraków, a one million agglomeration, hosted the World Youth Day attended by over 2 million pilgrims and classified as a high risk event due to situation in Europe at the time. Medical support provisioning for a mass event subject to terrorist threat, including CBRN incidents, had to be organized.

Methods:
A retrospective analysis of procedures planned for mass casualty incidents was made and compared against the actual events.

Results:
National Medical Emergency System and Fire and Rescue Service cooperated to provide medical and rescue coverage with the support of a Military Medical Unit to be used in mass casualty incidents and CBRN threats. A joint operations team coordinated all services.

Kraków Ambulance Service was aided by 97 additional ambulances, 500 medical foot patrols, 17 quads, 90 field medical centers and 5 HEMS helicopters. 14 ED departments with reinforcements were on stand-by.

The fire service and the military monitored for threats of contamination and organized decontamination teams. Exceptionally, Level II Military Field Surgical Hospital with biological isolation module was available to mass casualty victims. The air force provided 2 MEDEVAC airplanes for transporting patients to other facilities in Poland. Two potentially dangerous incidents, overcrowding and a train accident, occurred.

Conclusions:
Threats that we face nowadays necessitate provisioning for all scenarios when planning coverage of mass events, including terrorist and CBRN threats, which requires comprehensive cooperation of all services and drawing on the potential of the armed forces, though consistent resource management system is the key.

Emergency Water Supply - Assessment of Preparedness in German Municipalities

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Introduction:
The reliable supply of drinking water in sufficient quantity and quality is essential for social and economic development. Water distribution networks represent the greatest asset of a municipality; therefore, water supply is regarded as a critical element of infrastructure.

As the most decisive resource for life on earth, the protection of water, including ensuring drinking water security, is a primary objective for water supply companies and municipalities.

Extraordinary events, such as natural hazards (earthquakes, tsunamis, windstorms) or man-made hazards (terrorism, war, human error) can impact the functioning of water supplies. The mentioned risk factors have the potential to endanger water supply systems. This leads the necessity of an emergency water supply strategy by local governments to ensure the availability of drinking water – during any phase of a disaster.

Methods:
A study on behalf of the Federal Office of Civil Protection and Disaster Assistance identifies the level of preparedness of municipalities in Germany for natural and man-made disasters in relation to water supply. The organizational aspects of accessibility and availability of emergency facilities and emergency ground-water wells are analyzed.

Results:
This study includes the participation of more than 360 municipalities, which embodies over half of the population of Germany. Study results suggest that concepts and measurements of emergency water supply of the municipalities vary considerably in Germany, especially concerning preventive measures.

Conclusions:
It is evident that awareness exists amongst local officials, however level of urgency and planning varies depending on the institution (water utility companies, local government, state government, etc.).

Multivariate Factors Analysis on Length of Stay in Lushan Earthquake Victims

Zhi Wan

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Introduction:
The length of stay is an important indicator for medical resource assessment, especially during the time of a disaster. However, the evidence on it during disaster was limited. The aim of our study was to clarify the factors associate with the length of stay (LOS)in Lushan Earthquake victims.

Methods:
We retrospective1y analyzed the medical information of traumatic patients admitted to West China Hospital, Sichuan University after the Lushan Earthquake. Eight variables extracted for the analysis.

including gender, age, injured time, multiple injury, infection, comorbidities, Injury Severity Score (ISS), and Revised Trauma Score(RTS).
Univariable analysis using multiple stepwise regression analysis was performed to identify the factors associated with extended LOS.

Results:
263 cases were enrolled in this study. Infection, ISS score, and Pre-hospital Time were associated with extended LOS, and infection was the most weighted factor.

Conclusions:
This study demonstrated that trauma patients with infections and high ISS scores were at increased risk for extended LOS and shorter pre-hospital time decreased the risk.

Application of the Sacco Triage Method for Trauma Patients in Lu-shan Earthquake

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Introduction:
Sacco Triage Method STM. is the new methods for the field triage in a disaster. But its accuracy is still lack of evidence. The purpose of this study was to assess their application value for Lushan Earthquake victims.

Methods:
A retrospective analysis on the patients records in the Lushan earthquake Database that were directly transferred from the earthquake site to emergency department of West-China Hospital in between Apr. 20th and 29th, 2013 was completed. Remaining 263 patients was assigned to different triage level by STM and START respectively. Subsequently, both of the triage methods whether injured was ICU admittion in a consequence, using area under the receiver-operator curve (ROC).

Results:
263 victims in Lushan Earthquake were enrolled in this study. The area under the ROC curve of STM and START are: 0.714 and 0.649.

Conclusions:
As an accurate triage methods, STM can be used in the Mass Casualty Incident, such as Lushan earthquake.

Exploring Challenges to Improvements in Humanitarian Supply Chains

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Introduction:
Humanitarian supply chain processes have not evolved as quickly as commercial supply chain management for a variety of reasons. Literature shows that there are common challenges across different humanitarian organizations but an absence of a deep understanding of the nature of the challenges faced in improving humanitarian logistics effectiveness and efficiency which can be gained through qualitative analysis.

Methods:
As humanitarian logistics is a process implemented by individuals their experiences are constructed also individually. This study took a qualitative approach, using semi-structured in-depth interviews with individuals involved in humanitarian logistics to explore and give meaning to the experiences of the individuals involved in the deployments being studied.

Results:
The experiences of the participants revealed multiple factors which influenced their experience. These factors, when categorized as technical or relational in nature, expose the internal and external organizational challenges to efficient implementation of humanitarian logistics efforts. Technical elements, such as donor requirements, and relational elements like changeable customs and regulatory regulations were among the prime influences on their experiences.

Conclusions:
Technical and relational issues faced by participants are multi-faceted and cannot be fully resolved by improvements in the supply chain mechanisms alone, but require strategic level change within humanitarian organizations and among donors.

Preparing a Tertiary Medical Center for a Severe Earthquake

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Introduction:
Natural disasters in general and earthquakes in particular, pose a severe risk to public health. In these instances, the number of casualties and the complexity of injuries is likely to overwhelm even a well-functioning, disaster ready health system. Additionally, earthquakes do not tend to spare healthcare facilities, thus potentially severely hampering their response and creating a severe and unique challenge. We describe the preparations and drill conducted on August 2017 at the Beilinson tertiary medical center.

Methods:
Descriptive analysis of the drill design and the preparatory actions.

Results:
Preparations included: assessment of the hospital's buildings and infrastructures for structural resilience, enlisting and training civilian construction engineers to re-enforce the hospital in case of an earthquake, Identifying and preparing an alternative outdoor care site, educating all hospital staff on necessary actions during an earthquake, training of ED and ED reinforcement staff on necessary logistical and medical actions during and following an earthquake. The chosen scenario included severe structural damage to hospital buildings and infrastructure, necessitating immediate evacuation.

Main sites prepared and later drilled included: An initial triage and registration site for patients, staff.

A main triage and emergency care site. Additional sites provided on-going care for patients awaiting secondary transfer. Over 250 hospital employees participated in formal training sessions, preparatory internal drills and the final drill in which 150 simulated earthquake victims were cared for.

Conclusions:
Preparing a hospital for an earthquake in which it sustains sever damage is extremely challenging. It requires evaluation and augmentation of earthquake resilience of hospital buildings and infrastructure as well as preparing for possible evacuation and the need to initially provide care in an alternate outdoor site.

A Multi Sector Approach Environmental Management Project to Alleviate Overcrowded Evacuation Shelters: An Intervention to Facilitate Mental Health a Psychosocial Wellness in Evacuees

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Introduction:
Life stresses and lack of social support are identified risk factors of post-traumatic stress disorder in people who have experienced disaster. Currently post-disaster interventions worldwide focus on psychosocial and mental health supports including the provision of Psychological First Aid and Skills for Psychological Recovery. However, the Kumamoto earthquake of 2016, resulted in damage to more than 95% of houses in the town A and the evacuation of more than half of the residents to emergency shelters which became severely overcrowded. These conditions led to secondary health risks including long term adverse mental health outcomes. To alleviate or lessen these risks for those residing in the shelters a task force of certified trainers of Quality and Accountability in humanitarian work, affiliated with different aid organizations, collaborated with A town government to try and solve the problem.

Methods:
The task force team requested specialized support for more than 50 organizations across the Clusters. Based on Sphere Standards additional shelters were planned and constructed with the input of town residents. Ongoing evaluations of and revisions to shelters were made as necessary also with input from the town residents. Simultaneously, some existing shelter residents were temporarily relocated to hotels thus relieving congestion at the shelters.

Results:
On 27th of April (2016) there were 12 over populated shelters and the team set four shelters with more favorable living environment opened by 5th of May (2016). The team continued to improve shelter conditions, especially as related to non-food items and on strengthening social services until the 31st of October (2016) at which time the last shelter was closed. Suicide is one of the adverse markers of mental health after experiencing disasters. As of September 2017, there are two suicide case reports from the town.

Conclusions:
In order to protect and promote mental health in affected people, the health cluster should put more importance on improving living environment with supports from the other all clusters.

Value of Rehabilitation Evaluation in Patients of Lushan Earthquake: A Pilot Study using MBI and ICF Tool

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Introduction:
The purpose of the pilot study was to assess the function outcome of patients after Lushan earthquake using common functional measurements and a newly developed tool based on the International Classification of Functioning, Disability and Health (ICF), and find the correlation.

Methods:
78 earthquake injured patients were recruited in this study after April 20th. 2013 in west China Hospital, Sichuan University. MBI score and international comprehensive version of ICF Core Set score were calculated in each case. The relationship between MBI score and ICF score was analyzed by correlation analysis and curve estimation.

Results:
A total of 78 patients were enrolled, including 43 male (55.1%),and age of (32.44±21.62) years old, MBI score was 46.240±21.676, and ICF score was 24.667±5.921. The Spearman correlation coefficient between MBI score and ICF score was -0.628 (P=0.000), and that among the linear model, Logarithmic model, Inverse model, Compound model, Power model, S model and exponential model R 2 were 0.339, 0.270, 0.052, 0.341, 0.247, 0.037, 0.341, 0.341, respectively (all $P < 0.01$), and the most suitable description for relationship between MBI score and ICF score curve was Compound model.

Conclusions:
MBI was a useful score for assessing the International Classification of Functioning, Disability and Health.

Patient's Rights and Humanitarian Medicine - Can they go Hand-in-Hand?

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Introduction:
Emergency Medical Teams (EMTs) usually encounter chaos, disorganization, dire need and baffling cultural differences immediately upon arriving at a sudden onset disaster (SOD) area. This can be overwhelming. These circumstances, combined with an unfamiliar field working environment, tend to focus aid and rescue mission efforts on providing immediate medical care, sometimes disregarding even basic patient privacy and patients' rights.

The IDF Field Hospital makes special efforts to avoid this pitfall. We believe that chaotic circumstances require us to be even more sensitive and heedful of patients' rights. It is precisely when we find ourselves outside of our customary and comfortable medical care environment that we must make a special, conscious and concerted effort to remain true to our ethical principles and obligations. These ethical principles serve as a constant reminder of who we are and of our professional duties of care.

Methods:
A comparative analysis of the IDF Field Hospital's activities and the requirements of the Israeli Patient's Rights Law, using the IDF Field Hospital's mission to provide emergency medical assistance to the Nepalese people in the SOD

Results:
The analysis determined that the IDF Field Hospital implemented initiatives that successfully provided the victims of the SOD with professional medical treatment while safeguarding privacy and basic patient rights as defined by Israeli law.

Conclusions:
The IDF Field Hospital experience demonstrated how increasing awareness of patients' rights and implementing relatively simple measures can both enhance the patient experience and safeguard patient rights.

Teaching Limb Surgery in Disasters and Conflicts A WHO

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The last years have witnessed an increase in the number of natural disasters worldwide with a growing number of emergency medical teams (EMTs) responding to these disasters, mostly in underserved regions. Coupled with this is the recent surge in worldwide urban terrorism. These events cause large numbers of severe limb injuries and mass casualty situations, necessitating a change in treatment policy to a Damage Control approach. Most surgical teams working in an advanced technologic setting in high income countries are unfamiliar with these injuries and this approach. This has resulted in suboptimal treatment being administered by some teams in mass casualty and disaster scenarios.

As a response to these problems, the WHO – EMT initiative was established in order to set standards for delivery of care by EMTs, with one of its objectives being to collect best practices and create knowledge hubs.

In 2014 a workgroup was established by WHO, ICRC and the AO foundation in order to define best practices for the treatment of limb injuries in disasters and conflicts.

The products of this workgroup include:

1. An open access downloadable handbook dedicated to the all aspects of treatment of limb injuries during disasters and conflicts.
2. A series of open access downloadable powerpoint presentations summarizing the handbook chapters.
3. A series of open access downloadable videos of specific surgical procedures performed on sawbone models and cadavers.
4. An instructional course given in December 2017 at the AO annual course venue in Davos. The course included lectures, discussions of cases and context considerations and a full day of surgery on cadavers which were prepared with typical specific injuries.

The goal of the project is to prepare surgical teams deploying in disaster areas, conflict zones and austere environments to gain a better understanding of the context to which they are deploying and teach methods of adapting their clinical and surgical approach to be appropriate for these situations.

The handbook is downloadable at:
https://extranet.who.int/emt/sites/default/files/_A%20Field%20Guide_7.8%20MB.pdf

WHO - UN Preliminary Report: Building Standards - EMT Burn Care

Josef Haik

The Sheba Medical Center, Israel

A first encounter of international leaders in burn care took place in the Center for Global Burn Injury Policy and research at the Swansea University conducted and lead by Prof. Tom Potokar and Ian Norton (WHO).

Participants from all over the globe cooperated to get a preliminary plan for the construction of Burn Specific EMT.

In Accordance to evidenced based articles, practical knowledge and infield practice the technical team tried to delineate the main issues of burn care. Modes of diagnosis treatment and care were discussed as well as the level of care and caregivers.

Subjects and considerations will be presented although no conclusions are still made.

On going work and elaboration is needed to start a new standardized era of quality burn care and humanitarian aid on global level.

The Shift from Forensic Odontology to Craniofacial Forensics: A Paradigm Change in Victim Identification - An Update on Mass Casualty Algorithm

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Introduction:
The central dogma of forensic odontology (dental identification) is a comparison and match of postmortem dental remains with ante-mortem records including written notes, study casts, clinical images, radiographs, etc. Individuals with a history of numerous and complex dental surgeries are easier to identify than those with little or no past treatment. The teeth not only represent a valuable repository for unique and identifying features, they also survive many pre- and post-mortem events that disrupt or change other body tissues. Accurate forensic dental identification usually requires point-by-point comparisons of a complete set of as many as 21 intra-oral x-ray images. Obtaining postmortem radiographic evidence by conventional x-ray techniques is a complex, time consuming, and often difficult process. Accuracy and image quality are very much dependent on the experience and manual dexterity of the forensic dentist and the degree of rigor mortis of the victim. Burn victims present a special challenge.

Methods:
Full body, postmortem computerized tomography (CT) imaging is now being widely used in the forensic setting, sometimes replacing a formal autopsy. We designed a novel protocol which is adequate for identification purposes using high resolution, skeletal CT to produce high quality panoramic images of the facial skeleton and dentition from post-mortem CT scans.

Results:
The proposed protocol exhibits significant advantages over the existing scheme including the following: (1) addition of craniofacial comparison points, (2) extremely short data acquisition time, (3) high image resolution, (4) lack of potential invasiveness for acquisition of the data, (5) versatility of data transfer.

Conclusions:
This non- invasive method saves time and improves accuracy of dental identification by adding additional craniofacial features. The efficiency of this method is of particular importance in mass casualty events when time-consuming, conventional dental identification is not feasible.

Mass Fatality Preparedness & Management of DVI in Israel

Onn Peer

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Introduction:
Disaster Resilience is the ability to manage change, by maintaining or transforming living standards in the face of shocks, without compromising their long-term prospects.

DVI ultimate goal: Allow the next of kin to initiate the grieving process.

Methods:
Special political and religious challenges are faced by those involved in the identification of victims of a disaster, mainly because of the special population composition that characterizes the State of Israel.

In addition, Israel's isolation in the geographic area requires special preparation and the ability to handle events independently until preparations are made for assistance from other countries.

Results:
In view of the many challenges, the deployment should be based on a number of key processes Routine work processes.

Logical reference scenario or reference number of fatalities, leading to readiness working according to Interpol's international standards, based on the assumption that there are victims who are not residents of Israel and to enable effective assistance from other countries.

Conclusions:
As part of the readiness, professional cooperation is established with other authorities, such as - Military forces, civilian guard, border control, government agencies, etc.

Facial Recognition - Is this the end of DNA Profiling?

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Introduction:
After large-scale disasters, victim identification frequently presents a challenge and a priority for responders.

Methods:
Much like automated fingerprint identification, facial recognition (FR) can provide responders with a valuable tool for casualties identification. Despite the notion that FR suffers from much lower rates of accuracy when compared to fingerprints, it was established that FR provides benefits when fingerprint data is lacking or when multiple independent verification methods are desired.

Long before the use of automated FR, FR was implemented in the form of visual identification and has been the subject of a great deal of research. Attempts to automate FR started in the 1960s, but only in 2007, NIST published the results of its Face Recognition Vendor Test (FRVT) 2006 stating that the technology had reached a point where the operational use of FR is feasible.

Today, a decade later, depending on the software used, whether "off the shelf" commercially available and non-forensic or an FR algorithm for the identification of occluded, injured and mutilated faces, a responder could expect to get a correct match between 40% and up to 95% of submissions.

Results:
When considering factors like low cost, short processing time, availability of ante-mortem data and no qualifications required by the operator, even the lowest success rates (40%) demonstrate the great benefit of using FR.

Yet still, we can expect much better results in the near future.

Conclusions:
Cutting edge products, which are gradually becoming available today are no longer based on linear or angular measurements of the various feature of the face but are the result of "deep learning" and artificial intelligent. The new software might indeed bring the next step in the evolution of the forensic science. While this might not mark the end of DNA profiling, it most certainly marks the beginning of the end for fingerprints identification.

Scientific Dental Identification, based on X-rays not specified for Teeth

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Introduction:
Dental identification is one of the most powerful means of identification, and is sometimes the only way to identify unknown individuals.

The identification is determined on the basis of a comparison between the teeth collected on the missing person (AM), and the dental data taken from the body (PM).

Methods:
The quality of the data, AM and PM, is the main factor influencing our ability to identify. X-rays intended for diagnosing teeth are status X-ray (including bite- wings)- taken with sensor inserted in the mouth, and panoramic photography.

This lecture will elaborate the ability to determine dental identification, based on x-rays that are not specifically directed to the teeth.

Results:
All bodies treated at the Institute for forensic medicine undergo routinely a whole body CT scans. From that CT, we are able to collect dental information.

On the other hand, there is scaling in medical imaging preformed to the "missing person": X-rays directed to head and neck, full body CT scans, and CBCD oriented to dental implant procedures. The data is stored in digital storage repositories in hospitals and public clinics, thus can be easily collected comparing to the data collected from the private dentist's office.

Conclusions:
I will discuss the options of dental identification based on comparison dental data collected from "non dental" X-ray, of the dead body to that of the missing person, in treated and not- treated teeth.

Death Investigations in Ontario, Canada: From Single to Mass Fatalities

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The Office of the Chief Coroner/Ontario Forensic Pathology Service is the largest death investigation service in North America. It carries out over 16,000 investigations per year that vary in complexity with the goal of "learning from the dead to protect the living." Its vision of high quality death investigations for a safer and healthier Ontario is predicated on an effectively resourced system, reliable services as well as knowledge building and transfer to ensure this vision is realized.

This presentation will review death investigations in the Province of Ontario, Canada. These investigations involve a partnership between Coroner and Forensic Pathologist as well as the various other specialists required to complete the investigations of individual deaths as well as mass fatalities. It is a system capable of dealing with both Natural and Human-made disasters both locally and globally.

There are various investigative modalities such as individual/multiple death investigations, inquests, death review committees and special investigative reports. These combined with partnerships with other governmental and non-governmental agencies helps ensure a healthier and safer Province.

This talk will highlight how death investigations in Ontario occur, how they meet the needs of the criminal justice system and more importantly how it is fulfilling its Public Health and Safety mandate.

Remote Digital-based Technology for Improving Preparedness for Victim Identification in Mass Casualty Events

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Introduction:
Preparedness for victim identification in mass casualty events, when the number of fatalities exceeds the capabilities of the responsible jurisdiction, remains to be a major worldwide challenge. Factors that complicate the victim identification effort even further include (but are not limited to) the magnitude and severity of the disaster (natural or hostile), accessibility of the site, presence of commingled remains, presence of hostile forces, and presence of dangerous situations such as chemical, biological, radiological, or nuclear (CBRN) contaminated remains that may jeopardize the lives of DVI personnel.

Methods:
A multidisciplinary collaborative team from the Institute for Research in Military Medicine (IRMM) of The Hebrew University and the IDF Medical Corps was formed to develop digital-based, interactive, low-cost, technology to be applied non-invasively to all relevant subjects (soldiers or civilians).

Results:
Our initial investigation and discussion established goals for: (1) development and implementation of the implanted technology, (2) determination of the essential identifying information to be embedded, (3) evaluating options for remote monitoring of digital information (earth and/or satellite-based, unmanned drone, other), (4) application of methods of imaging, (5) development of advanced, remote, unmanned techniques of tissue sampling (and/or earth, clothing, or equipment), and (6) central command monitoring.

Conclusions:
Once fully developed, remote digital-based victim identification (RDVI) will dramatically increase preparedness and revolutionize victim identification in mass casualty events particularly when the event is complicated by either a severely inaccessible event site, active hostilities, or presence of CBRN contamination--without endangering the lives of DVI investigators.

Recent Advances and Planned Modifications in DNA Processing and Analysis in the IDF

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Introduction:
Israel's recent military engagements have been asymmetric in nature, defining the captivity of a solider as the enemy's' strategic achievement. The capabilities of the enemy have been augmented by the subterranean setting that requires much additional attention in advance of future conflicts. We believe that genomics will have a crucial role in determining the vitality status of a missing solider with related data being of utmost importance during war. Current efforts are focused on improved sample collection and advanced genomic tissue typing protocols.

Methods:
Sample collection - past experience has taught us that a combat theater, in which one of our soldiers is declared as MIA, should be declared a crime scene as soon as possible. We are currently training a designated, elite unit in scene sampling. This poses significant challenges:

1. Personal safety - dangers of an active combat zone
2. Quality of Samples - collection of tissue by non-professional front line army personnel vs forensic crime scene specialists.
3. Preservation of Samples - problems with obtaining necessary means for optimal preservation in an active combat zone where resource priorities are heavily weighted to combat casualty care.

Results:
Genomic tissue typing - in the era of Next Generation Sequencing (NGS), histology will no longer be the sole means of tissue typing. Studies originating from cancer research have revealed underlying mechanisms by which cells differentiate into different tissues. Racing epigenetic markers (e.g. methylation, miRNA etc.) might enable tissue typing even in cases where normal tissue architecture is destroyed following trauma or decay

Conclusions:
Phenotyping can produce synergism between the biometric and intelligence communities. Augmenting both victim & terror suspects identification process even in cases of a missing solider, from minor traces left in the combat theater in the heat of battle.

Special Pathogens: Consequences of EVD in your City!

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Introduction:
Following the 2014 Ebola Viral Disease (EVD) occurrence and outbreak in Dallas, Texas many issues raised and initiatives surrounding special pathogens were undertaken. One of those was the implementation of continuous screening of every person entering any part of our health facility for any reason. This included new signage with travel and exposure risks posted on every computer screen of every patient contact area from emergency departments, hospital wards, laboratory, clinics, etc. and the travel and contact questions uploaded into the patient's encounter screening page. Was this prudent disease surveillance or a business decision response to "not going to happen here" regarding hospital impact and risks associated? And/or was it useful in identifying any special pathogen risks or impacting patient care?

Methods:
Observational

Results:
Observationally, initially the clearly focused threat of EVD further entering the USA in the fall of 2014 was the intent, and the required screening of every single patient entering was done as mandated on "hard stop" data entry screens in all areas of the hospital. However, as time went on, the geographic threats grew, and the vagueness of early symptoms better understood, demonstrated that such the sensitivity of such screening could capture a multitude patients, that required further screening that was not feasible nor warranted clinically. Additionally, as the events of EVD faded, the utility of screening for all possible early recognition of all patients for risk of special pathogen exposure or related symptoms, again became overwhelming. No special pathogen cases were identified during the years long implementation of this process.

Conclusions:
Screening the general population of people seeking heath care service in hopes of leading to identification of a person with EVD was cumbersome and was financially costly for institutions to initiate. In examining published reports in the US and in our medical stem, screening in this way, did not identify a single patient that was not captured by classic assessment of presenting symptoms and signs by a prudent clinician.

A Drill with the Support of Three Federal States of Germany: Challenges and Experiences of a Real Biological Scenario Crossing the Internal Boundaries in between Three German Länders

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Introduction:
The German healthcare System is in the responsibility of the German federal states.
In the state of Hesse a competence center for high consequence infectious dieseases (HCID) was established at the Health Protection Authority in 2001 and is actually extended to the federal states of Rhineland-Palatinate and Saarland.
In a real case scenario the respective supreme state health authorities, the competence center at the public health office, the corresponding clinics and the lower security authorities (fire brigade, police, public order) are involved.

Methods:
In this drill the Competence Center, and all involved actors were challenged of transferring a patient from Saarbrücken/Saarland with a HCID across two national boundaries (Saarland, Rhineland-Palatinate, Hesse).
The Competence Center organized the transfer of the patient under high level precaution conditions from the hospital in Saarbrücken together with the fire brigade's transport unit under police escort. The route led from Hesse via Rhineland-Palatinate to Saarland and vice versa. The structure of the communication channels was one of the pivotal points of this exercise.e

Results:
The definition and preparation of the communication channels between all participants was found to be very time-consuming but proved to be successful during the exercise. The participants were able to operate under almost real conditions (the exercise was announced) and test the established structures.

Conclusions:
All involved participants have contributed greatly to the success of this exercise. The communication channels have proved of being suitable, although it ties up many resources with all authorities involved to carry out such a procedure. Potential for a better tackling with such cases has been identified and optimization is being worked on.

Preparing the Antwerp University Hospital for the Admission of Patients with a Highly Contagious Disease

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Introduction:
In March 2014 an Ebola outbreak was confirmed in WestAfrica. Belgium's national airport was one of the few European airports maintaining commercial flight schedules to and from the affected countries in WestAfrica. Early October 2014, a national Ebola preparedness coordinator was appointed and three hospitals were asked to prepare for the admission of suspected or confirmed Ebola cases.

Methods:
The Antwerp University Hospital was one of the three Belgian hospitals which accepted to be a reference center for suspected and confirmed Ebola cases. The hospital management established a task force to guide and implement the process of the preparation.
The first isolation unit was constructed within the emergency department, be it a separate unit. Three twin patient rooms were refurbished, resulting in a one-way flow of the Healthcare workers (HCW) taking care for the admitted patients.
Personal Protective Equipment (PPE), based on the standards as applied by the Médecins sans Frontières teams was modified according the local hospital standards. These modifications resulted in an acceptance of the medical and nursing staff of the PPE as it was perceived a safe way to deliver patient care in these high contagious situation.
Doctors and nurses from the emergency department, intensive care department, infectious disease and tropical medicine and the infection prevention and control unit were offered training in 'donning' and 'doffing' of the PPE. Almost 150 staff received a theoretical overview of the disease and a practical training in 'donning' and 'doffing'.
A good collaboration with the Institute of Tropical Medicine Antwerp resulted in an state of the art medical follow up of the admitted patients and a fast diagnostic flow.

Results:
All the knowledge and experience gathered in the preparation of the hospital resulted in the construction of a new – stand alone – isolation unit, with more capabilities for the hospitalization of the highly contagious patients.
On national level a useful exchange of experiences between the three reference hospitals and the national Ebola preparedness coordinator strengthened the preparedness.

Conclusions:
Good collaboration with all different departments, resulted in a safe environment for the hospitalization of the highly contagious patients. Also healthcare workers need to be trained in using in safe PPE, ensuring safe patient care.

Drug-resistant Tuberculosis: A Global Security Disaster

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Introduction:
Drug-resistant Tuberculosis (DR TB) is an emerging infectious disease with mass global impact. Specifically, the prevalence of multidrug-resistant TB (MDR TB), extensively drug-resistant TB (XDR TB), and totally drug-resistant TB (XXDR TB) continue to increase. This pandemic coincides and is in direct conflict with the World Health Organization (WHO) Sustainable Developmental Goals (SDGs) "End TB Strategy" which calls for a world free of TB with zero deaths, disease, and suffering by 2035.

Methods:
Literature review

Results:
Since TB is passed by respiratory contact, it is an easily communicable disease for overcrowded countries and health systems. This transmission, in combination with the worsening refugee crisis in Africa, the Middle East, and Europe, creates a breeding ground for DR TB. Moreover, the delayed symptom onset and long treatment requirements allow travelers between all countries to spread the disease in a continued global pandemic manner.

Conclusions:
DR TB is the unfortunate perfect disease for imperfect health systems that suffer from poor or inadequate testing, treatment, and governance. DR TB is a threat to global security that requires international disaster preparedness.

International and Inter-organizational Train-the-Trainer Network for Health Care Workers in Outbreak Situations

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Introduction:
Health care workers (HCW) present the first line of outbreak mitigation and the most vulnerable and most important group since HCW must detect suspected cases in order to initiate isolation, contact tracing, laboratory confirmation, and communication. If HCW contract a highly contagious disease such as Ebola, the maintaining of the entire health care facility is endangered.
The Train-the-Trainer concept aims to establish a trusted network between different organizations and countries which is able to function and train during outbreaks beyond borders.

Methods:
In 2014 the project developed with experts from Burkina Faso, Senegal and Germany in a participatory and iterative process a training method for HCW to be better prepared for an Ebola outbreak. Now the program settles to focus on the transcultural trainer network. Knowledge as well as didactical skills are deepened and refreshed regularly.

Results:
About 700 hundred HCW were trained in Burkina Faso and Senegal since 2014. A training venue for regular train-the-trainer-programs was identified and tested in Burkina Faso in 2017. The target group remains clinical personnel with the focus on management of highly contagious diseases; the trilingual website www.effo.rki.de provides training material for the international network of experts in nongovernmental, governmental and research institutions.

Conclusions:
EFFO stands for Efficiency by Edification and constitutes a holistic, interdisciplinary and translational approach. Trainers are able to conduct trainings for HCW and to support directly in an outbreak situation. This approach helps to quickly surge capacity if necessary and provides a "standby preparation" beyond borders and organizations.

Nurses' Self-perception about Coping with an unusual Biological Event

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Introduction:
SINCE January 2017 the nurses at the Israeli "Meuhedet" health maintenance organization Participated in a computer based training program regarding their coping abilities during an unusual biological event.
The purpose of the study was to determine if there is a connection between the nurses knowledge after they completed the computer based training and what is their Self-perception of preparedness for an unusual biological event.

Methods:
A questioner that was translated into a computerized survey containing questions regarding how prepared the nurses feel they might be in case of an unusual biological event was given to the nurses who completed the computer based training program.
The second part of the questioner contained questions regarding the knowledge the nurses had attained which will be compared to their Self-perception of preparedness.

Results:
The data received from 300 samples proves that nurses who displayed a higher level of knowledge are those who considering themselves better prepared to cope with an unusual biological event.

Conclusions:
The computer based training program was an extremely essential intervention presented by the 'Meuhedet' health clinic because it raised the nurses self-perception regarding their preparedness in case of an unusual biological event.

Management of Norovirus Outbreak in Wards of a Hospital Managed by Two Different Healthcare Systems

Ong Biauw Chi

Singapore

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Norovirus is the most common viral cause of epidemic gastroenteritis worldwide. Noroviruses are very contagious and is easily spread from person to person. In October 2017, a Norovirus outbreak occurred in 1 of 2 satellite wards operated by another healthcare group in our hospital, which affected 21 hospital staff and 17 patients. The authors would like to share our experiences and lessons learnt in our hospital's response to this outbreak. We will include the infection prevention and control measures undertaken, management of resources, and communications that allowed us to manage the outbreak expeditiously.

Mitigation of Potentially Dangerous Microorganisms from Overseas Military Customs Operations

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Introduction:
To describe the process of decontamination of United States military equipment from a historical perspective in national preparedness in order to discuss the future implications for the potential of weaponization of contaminants attached to returning military equipment.

Methods:
The process of military customs inspections in national preparedness was examined through historical narrative. The potential for weaponization of biological contaminants from microorganisms introduced into the water table and soil from military equipment washed, stored, and transported back to the United States following deployment.

Results:
1. Inadequate storage of cleaned equipment in "sterile" lots posed the potential for the weaponization of biological contaminants from foreign soil, water, and vegetation.
2. Duplication of sanitization efforts of equipment by personnel due to the lack of cover and protection of equipment after first sanitization process during storage awaiting transport.
3. Increased potential for contaminated water used for population consumption in decreasing effective national preparedness.
4. Increased unprotected equipment storage time led to the threat of accessibility to microorganisms and biological contaminants.

Conclusions:
1. Potential for the weaponization of microorganisms from foreign soil, water, and vegetation attached to equipment in unprotected storage awaiting transport back to the country of origin.
2. Potential contamination of the water table and soil from the contamination of inadequately protected equipment being stored and transported back to the country of origin.
3. Decrease in national preparedness as it relates to water and agricultural consumption from contaminated and weaponized microorganisms.

Update on Emergency Medical Team Initiative

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Introduction:
The WHO Emergency Medical Teams (EMT) Initiative is supporting organizations and Member States to strengthen their preparedness for the provision of rapid, quality assured clinical care in emergencies.

The focus of activities of the EMT initiative is shifting more and more to the regional and national focus. This development is underlined with the recent decision of the EMT Strategic Advisory Group to further enhance the regionalization of the EMT initiative and adapt the organization of EMT Regional Groups according to the same six-region approach as the overall WHO governance structure.

Methods:
An update will be provided on the way forward and upcoming priorities and activities of the Emergency Medical Teams initiative in the WHO European and Eastern Mediterranean Region.

Results:
Priorities in the WHO European and Eastern Mediterranean Region in the areas of Emergency Medical Teams include the continued development of the cadre of quality-assured, WHO classified teams that are committed to adhere to the EMT principles and core standards as well as the building of capacities at national level, while fostering regional collaboration.

A very high priority is given to training and exercising to help prepare EMTs to respond to emergencies and to support Member States to establish mechanism for timely and efficient coordination of an EMT response when it is required. Here the seamless integration in other WHO preparedness activities including the support provided in the development and maintenance of National Health Sector Emergency Response Plans and the establishment or strengthening of Health Emergency Operations Center is a particular priority.

Joint technical working groups, including on Mass Casualty Management and Chemical, Biological and Radio nuclear emergencies as well as joint interregional trainings and exercises are areas where the WHO European and Eastern Mediterranean Regional Offices are aiming to collaborate in the coming years.

Conclusions:
Over the past years, great progress has been made regarding the capacities and self-sufficiency of EMTs as well as in the coordination of emergency medical teams in the aftermath of a sudden onset emergency.

Building on these achievements, the national and regional approach of the EMT initiative are timely decisions to further strengthen the international response to health emergencies.

Decision Support Framework for the Deployment of Emergency Response Relief Teams after Sudden Onset Disasters (SODs)

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Introduction:
When a disaster exceeds the capacity of the affected country to cope with its own resources, external emergency relief teams, such as rescue and health services, are required. The effectiveness of each response strongly depends on the time of arrival (the deployment of such units may involve travelling over long distances) and usually no international teams arrive in the immediate aftermath of a disaster, or without an awareness of the real needs of the population and with the risk of creating problems to the coordination of the relief activities.

Methods:
This work presents comprehensive research on past events' deployments and on the needs of affected populations based on existing literature. The results of the research have been used to develop a practical tool based on a decision support framework for "smart deployment" of relief units that can contribute to improve disaster literacy and inform decision-makers on whether they should deploy a team.

Results:
In case of a SOD, the tool calculates the total time required for operation to commence (request, preparation, travel, entry and set up) and the expected needs of the affected population. The total time is used to give information on which type of relief team should be deployed, taking into account the variations over time of needs of the population and use of relief resources.

Conclusions:
This research aims at improving both response policy and practice, and to obtain better outcomes in terms of resources provided, arrival time, and value for money for those affected by disasters.

From Field Hospital to EMT Type 3 - What did the IDFFH Gain from the Verification Process?

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Introduction:
The number of sudden onset disasters (SOD) is increasing; while the global number of emergency medical teams (EMTs) which deploy to these disaster areas is rising. The global humanitarian response to the 2010 Haiti earthquake was well needed. But at the same time the recognition that some of the providers deploy with no standards, brought an initiative, led by the WHO, to set minimum standards for EMT's. The IDF Field Hospital (IDFFH) has gained experience of over 60 years of deploying humanitarian assistance, and decided to join the verification process by the WHO

Methods:
Describing the process of being verified by the WHO.

Results:
The IDFFH was the first in world to be verified as EMT Type 3.

Conclusions:
The IDFFH underwent a through process, in which treatment protocols, medical equipment, logistics challenges, manpower, legal issues and more were examined. This was a challenging and important process for the unit, which gained much from it. I will present different aspects in which the IDFFH improved along this verification process.

Rapid Deployment Hardened Medical Support Facility

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Introduction:
This paper describes the development of a protected modular relocatable medical support facility that includes an operating room, emergency room, pharmacy, laboratory, radiology, essential services, intensive care unit, and ward with 15 inpatient beds. The facility could function uninterrupted in a theatre of operations with an associated risk level that requires the addition of defensive barriers against direct and indirect weapons effects. Because of the requirements for protection, modularity, and relocatability, an in-service medical ISO container is the basic building block to house the separate services of the hospital. In all, 12 expandable ISO containers with a 20x20 ft. expanded footprint were required. The design included generators, HVAC systems, and passageways for interconnecting the ISO units and maintaining sanitary conditions.

Methods:
- Applied the principles of protective design to safeguard an expeditionary medical facility to shield against projectiles, fragment penetration, and blast forces created by specified threat weapon effects for .50 caliber, RPG 7, 81 mm Mortar, 122 mm HE rockets, and 155 mm HE artillery projectiles.
- Ensured the design is modular and flexible while utilizing readily available materials or easily transported materials for the construction of the defensive works. The construction must be achievable using manual labor minimally assisted by air transportable construction equipment.

Results:
- Designed a layout for the efficient construction of the protective features, and allowance for the effective flow of hospital operations, and 3-D drawings to illustrate the construction sequence.
- Provision of perimeter defensive barrier walls and overhead protection with protective entrances to shield from blast, projectile and fragmentation penetration, and prevent wall overturning from blast loading.

Conclusions:
This approach could be adopted for rapid deployment of protected medical support facilities.

Light Field Hospital. An Italian Model of Preparedness and Response during Disasters and Humanitarian Emergencies

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Introduction:
The authors describe an Italian Model of Mobile Light Field Hospital (FH) of ANA - (The Italian Association of Alpini) as "a mobile- flexible hospital smart structure, self -sufficient health care of rapid deployment".

This structure is designed to be quickly deployed during disasters and humanitarian crises. The Field Light Hospital is a new conceptual hospital, designed with a new architectural structure, lighter and easy to use as support of the local emergency services. In particular civilian personnel are trained as volunteers to work together, with innovative training programs in emergency preparedness and response, with specific drills and exercises.

Methods:
The Hospital on Field of Alpini actually operates in Italy, in support to the activities of civil protection, but also works in different national and international context, based on the activity of volunteers, experts in maxi-emergency, critical medicine, and with military tactical background. In particular the authors focus the attention not only on logistic and architectural facilities proposed but also on new combined models of teaching methods that combine military and civil skills to better prepare volunteers.

Results:
The Alpini Light Field hospital show a new model of civilian cooperation, able to be rapidly deployed in national and international long mission.

Conclusions:
During disasters should be useful to utilize FH as support to population affected and countries, suggesting new form of deployment and civilian cooperation. FH is called in support of civil protection activity, and also implementing new form of research program in training, preparedness and response.

South Sudan - A Case Study of Humanitarian Crisis

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Introduction:
Wars, internal conflicts, diseases and climate change are the main factors which cause the current humanitarian crisis around the world, the worst since the end of the Second World War in 1945. Figures published by the United Nations showed that more than 20 million people are facing famine and starvation, while more than 65 million people displaced from their homes.

One of the most affected countries is South Sudan, the world's youngest country which became independent in July 2011. A civil war which erupted in December 2013 left tens of thousands of dead, more than one-third of its population (12 million people) were displaced and now live in camps in South Sudan and neighboring countries and half of the population in need of humanitarian aid. Beside the armed conflict, the local population is facing threats of famine and diseases like cholera.

South Sudan is a case study for some of the main themes of the IPRED 5 conference, including refugees and migrants, vulnerable populations, disease prevention and control and international and inter organizational cooperation.

Methods:
The paper I intend to present will describe the main consequences of the conflict in South Sudan, the challenges facing the local health workers and the international aid workers, and the scope of operations of international governmental and non-governmental organizations.

Results:
Not yet.

Conclusions:
The purpose is to examine which lessons of this case study can be applied to other humanitarian situations around the world.

Establishing a Field Hospital (EMT Type 3) on a Green Field - Challenges and Solutions

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Introduction:
The IDF field hospital (IDFFH) has gained experience of over 60 years of deploying humanitarian assistance. On 2016 the WHO certified the IDFFH as the only Emergency medical team (EMT) Type 3 Field Hospital in the world. The IDFFH is capable to treat 200 casualties a day, has 3 OR beds, 12 Intensive Care beds and 80 in-patients bed, together with other auxiliary departments such as radiology, laboratory and Blood-Bank. The IDFFH is totally self-sufficient in terms of electricity, oxygen, food and water.

Methods:
We will describe the rational, logistic challenges and solutions in establishing a Field Hospital of this scale.

Results:
The IDFFH is ready to deploy, in a short notice, almost anywhere on the globe, an EMT type 1,2 or 3.

Conclusions:
Deploying a Type 3 Field Hospital is a challenging task, particularly in a chaotic disaster area. We must keep our moto to reach as fast as possible to the devastated area, with the best team and infrastructure in order to treat the wounded.

We will present the structure of the IDFFH and our guiding principles for deploying and operating the hospital.

The verification process faced us with additional logistics challenges which we had to solve in order to become an EMT Type 3 certified Field Hospital.

The Role of Public Health Labs in Outbreak Response

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Introduction:
Government Central Laboratories (GCL) are an operational branch of the Public Health Services and its mission is aligned with public health goals

Methods:
Public health laboratories generate data for decision makers at the National level and for District health officers. The activities include analytical and diagnostic testing, education and training, scientific expertise and consultation.

Investigations of infectious disease outbreaks and emergencies of new pathogens are accompanied by ongoing innovation under strict quality assurance system.

Results:
GCL core activities are: (1) National Reference Centers for 17 reportable diseases (bacterial and parasites). (2) Food & Water safety. (3) Medical Entomology.

National Reference Centers are the qualified experts for specific pathogens. Their activities include: (1) Pathogen Identification and typing. (2) Integrated data management. (3) Emergency response. (4) Quality assurance obliged for on-going improvement. (5) Applied research. (6) Training and education. (7) Partnerships and professional collaboration with academy, governmental, clinical institutes in Israel and worldwide. Challenges presented continuously to PHL are various health threats and continuously apply new technologies.

Conclusions:
We will discuss demonstrate ative outbreak investigations that occurred recently. These investigations emphasize the crucial role of the public health laboratory in multifocal, inter-ministerial, complex outbreak events. The opportunity of supporting evidence based decisions, made under complex circumstances will be discussed

Laboratory Methods in Response to Emerging Viruses in Israel

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Introduction:
In the past few years, emergence of infectious disease episodes, particularly zoonotic viral diseases, have significantly increased globally. As a major crossroad for bird migration between Africa and Eurasia and with the recent establishment of the Asian tiger mosquitoes, Israel is more prone to emergence of vector-borne viral outbreaks. Therefore, laboratory preparedness and enhanced capacity for surveillance and response is essential.

Methods:
Countrywide mosquito surveillance for West Nile Virus (WNV), established since 2000 in Israel, and the recent use of Next Generation Sequencing (NGS) have generated a stable foundation for identification of known and novel mosquito-borne viruses which may be circulating in Israel. Close collaboration with travel clinics in Israel and with research and diagnostic labs in Europe and the US allowed rapid detection of imported viral diseases by generation of diagnostic capabilities.

Results:
Mosquito surveillance from 2013-15 in Israel has identified circulation of several subtypes of WNV, the neurotropic Usutu virus and Sindbis virus, an alpha virus causing arthralgia, rash and malaise in humans in Finland and Sweden. Furthermore, NGS of mosquito lysates uncovered 2 novel viruses which may potentially be pathogenic for humans. Laboratory response to the Zika virus outbreak included assessment of commercial diagnostic kits and identification of the most suited sample type for enhanced sensitivity of Zika viral detection.

Conclusions:
Development of highly sensitive surveillance methods in combination with rapid and reliable diagnostic tests in the rapidly changing global and local landscapes have been achieved and proven useful for emerging viral zoonozes.

Next-generation Sequencing for Public Health Microbiology

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In the clinical and public health settings, prompt response is warranted for emergency diagnostics in epidemic and outbreak scenarios. With the rapid advances in next generation sequencing (NGS) technologies, clinical and public health microbiology laboratories are increasingly adopting NGS technology in their workflows into their existing diagnostic cycles. In this talk, we review aspects and considerations for applying NGS in the clinical microbiology settings, with emphasis on bacteriology.

We will highlight the impact of implementation of the new technology on the analytical and post-analytical stages of diagnosis, and their subsequent effect on clinical and public health readiness to emergency events.

A Comparative Analysis of International Public Health Preparedness Efforts

Raphael Barishansky

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Introduction:
The Aum Shinrikyo Sarin Gas attacks in Tokyo in 1995 and the Anthrax attacks that shook the US in 2001/2002 were wake up calls to the fact that, globally, Public Health Preparedness capabilities had diminished. This included, but was not limited to, personnel with expertise, laboratory and epidemiological capabilities as well as dedicated preparedness funding.

Methods:
Critical analysis of public health preparedness efforts across three Nations – the US, Israel and Australia – will be reviewed for best practices, lessons learned and indications for future preparedness. Information from the primary sources was studies and a literature review was additionally conducted.

Results:
Various public health emergencies of all sizes – ranging from environmental emergencies to Pandemics – have been handled effectively by Public Health entities, traditionally in cooperation with other responders.

Public health departments of all sizes (local, county and state) have embraced their preparedness roles and made significant advances in various areas, including response. Interaction with traditional emergency response partners – Police, Fire, EMS and EM – have also been fruitful.

Conclusions:
There has been documented success seen in various areas of public health preparedness, specifically in operational response, interaction with more traditional emergency responders and planning efforts.

Continued efforts, and funding, must be put into place in order to sustain these successes.

GRC Isolation Hospital as a Pool Resource from the German Government for European Medical Corps

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Presentation of the new Health Moduls for the GRC Disaster Response Tools.

Health Security Interface

Lucia Mullen

Italy

Co-author/s: Maurizio Barbeschi, Sabri Gmach, Lucia Mullen, Rebecca Hoile, Dorit Nitzan, Kai Von Harbou, Paul Arbon

Introduction:
In 2002, the World Health Assembly's Resolution 55.16 on "Global public health response to natural occurrence, accidental release or deliberate use of biological and chemical agents or radionuclear material that affect health", underlines that the World Health Organization focuses on the possible public health consequences of a chemical, biological, radiological, or nuclear incident, regardless of whether it is natural, accidental or deliberate. This resolution acknowledges that natural occurrence or accidental release of chemical, biological, radiological, and nuclear material could have serious global public health implications and jeopardize the public health achievements of the past decades.

In an effort to harmonize the World Health Organization's security-relevant programs, a Health Security Interface was created to serve as a platform for initiatives with health/security implications and consequences and work as a repository of experiences. Dr Mauizio Barbeschi, Dr Sabri Gmach, Dr Dorit Nitzan and Dr Kai Von Harbou are heading the Health Security Interface for the World Health Organization.

The concept of health security interface applies to those public health activities whose performance involves, to some extent, the security sector (law enforcement, police, national armies, ministries of defence, military doctors, international and non-governmental organizations with a security relevant mandate). These activities encompass inter alia (1) specific areas of work (smallpox and other high-risk pathogens, dual research and development for biosecurity, toxic chemical agents); (2) deliberate events and joint-activities of various degrees of overlapping with security-relevant actors (research, operations, training, networks and labs); (3) outbreak response operations in non-permissive environments, highly politicized contexts, conflicts, and wars. Within the World Health Organization, the Health Security Interface focuses on providing preparedness and response for any biological outbreak with an emphasis on deliberate events. To this end, the Health Security Interface is reviewing and revising existing tools in relation to chemical, biological, radiological, and nuclear events, identifying current gaps and challenges in the realm of health security, and developing new discussions, protocols, and tools to combat these gaps and challenges.

Overview of a Doctor-staffed Ambulance in Japan

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Introduction:
Doctor-staffed ambulances allows us to start treating severe patients and play an important role all over Japan, however, little is known about their activities. The aim of this study revealed the present situation of a doctor-staffed ambulance in Japan.

Methods:
First, we asked for all fire department in Japan and determined whether a doctor-staffed ambulance is present in their district boundary. Second, we asked the hospitals which operate doctor-staffed ambulance their system and activities for certain one week.

Results:
One hundred thirty-three hospitals operate a doctor-staffed ambulance. Seventy-three hospitals (55%) replied our questionnaire among them. Only 37% of them provided 24-hour deployment. In a week, 345 doctor-staffed ambulances were dispatched, however, 97 (28%) were cancelled. Sixty-two patients (28%) were diagnosed with cardiac arrest; 48 patents (19%) were diagnosed with trauma or burn; 36 patients (15%) were diagnosed with stroke; 22 patients (9%) were diagnosed with acute coronary syndrome. The patient transferred to tertiary emergency medical center account for 58%.

Conclusions:
This is the first investigation of actual condition of doctor-staffed ambulance in Japan. A doctor-staffed ambulance has an advantage of night time and urban area compared with a doctor-staffed helicopter and dispatched almost as frequent as doctor-staffed helicopter. Future prospect is collecting data to reveal the effectiveness of a doctor-staffed ambulance among hospitals which operate it.

Addressing Disasters and Emergencies in Lower- and Middle-Income Countries

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Introduction:
Trauma burden in Lower- and Middle-Income Countries (LMIC's) is underestimated and garners less attention than disasters or mass casualty events. However, the cumulative effect of 5 million global trauma deaths annually represents a global health disaster. Small- and large-scale event responses depend on the same infrastructure in LMIC's.

Methods:
We assessed the burden of trauma and the capacity for response to emergencies and disasters in Santa Cruz de la Sierra, Bolivia. We used a combination of published indicators, ICD-10 data from hospitals and morgues, and stakeholder interviews and surveys to guide our assessment.

Results:
We found that 1.4% (77/5377) of in-hospital deaths and 23.4% (318/1360) of pre-hospital deaths are associated with trauma confirming the importance of pre-hospital care. ICD-10 code V03, "Pedestrian injured in collision", was the second most frequent cause of pre-hospital death. 18 of the top 20 causes of pre-hospital death are sensitive to pre-hospital systems, representing 84% (1143/1360) of all pre-hospital deaths. We discovered that urban Santa Cruz operates with 21% of the required ambulances while, on average, the outlying provinces operate with 424% of the required ambulances, representing poorly distributed services. We identified the following system deficits: no single public emergency or disaster telephone number or dispatch center; no ambulance regulatory services; and no legislatively recognized training programs for emergency or disaster responders. In response, the Department of Health invited our group to create legislation supporting capacity development.

Conclusions:
Our assessment of trauma burden and system capacity in an LMIC resulted in legislative change supporting emergency and disaster systems.

Comprehensive Life Support: Superior Outcome in Out-of-Hospital Cardiac Arrest by Improving the Whole Chain of Survival

Clemens Kill

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Introduction:
Out-of-hospital cardiac arrest (OHCA) is associated with high mortality and a favorable outcome is lower than 10 % in most regions worldwide. Favorable outcome strongly depends on all parts of the so called Chain of Survival and seems to be influenced by multiple factors. For this reason we established a concept of comprehensive life support improving all links of the chain of survival in OHCA in order to increase the survival with favorable outcome.

Methods:
Since 2012 a comprehensive life support concept (CLS) was established in a county with 252,000 inhabitants and a two-tiered physician-staffed EMS-system. CLS included: 1. Protocol-based EMS dispatch; 2. Telephone CPR instructions; 3. Implementation of a first-responder system; 4. Certified ALS-training and structured team-feedback in EMS; 5. Protocol-based post-resuscitation-care in a single university hospital cardiac arrest center. Incidence and outcome following OHCA was compared between 2009-2011 (control) and 2014-2016 (CLS intervention) (Chi-square testing). Incidence was calculated to 100,000 inhabitants/year, neurological favorable outcome was defined as Cerebral Performance Category (CPC) 1or 2.

Results:
Control vs. CLS: CPR attempts n=577 (76.4/100,000 inhabts/yr) vs. n=670 (88.7/100,000 inhabts/yr), n.s.; mean age 67,9(±16,4)yr vs. 69(±16,6)yr, n.s.; admission with return of spontaneous circulation (ROSC): n=225 (29.8/100,000 inhabts/yr) vs. n=276 (36.5/100,000 inhabts/yr), n.s.; discharged alive n=75 (9.9/100,000 inhabts/yr) vs. n=121(16/100,000 inhabts/yr), p=0.014; neurological favorable outcome n=49(6.5/100,000 inhabts/yr) vs. n=86(11.4/100,000 inhabts/yr), p=0.018.

Conclusions:
Comprehensive life support (CLS) as a concept of optimizing all links of the chain of survival including protocol based dispatch and CPR instructions by EMS dispatch center, first-responder system, certified ALS-Training with structured team feedback in EMS and post-resuscitation care in a cardiac arrest center lead to better and remarkable high rates of survival in OHCA.

One Number to Call (ONTC) A Provincially Coordinated Inter-facility Transport Service

Donna Thomson

Administration, CritiCall Ontario, Canada.

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Introduction:
Because Ontario has a large geographical area with few tertiary health care providers, there are many inter-hospital transfers. Small emergency departments had to make their own transport arrangements.

This distracted staff from providing clinical care, and resulted in delays in patient arrival at definitive care and took scarce staffing resources away from the department of long periods of time. These delays contributed to deaths or poor outcomes.

For many years CritiCall Ontario had coordinated the acceptance of a patient to a larger center. In 2014 a formal Life or Limb – "No refusal" policy was implemented, reducing time to achieve acceptance of a transfer but patients were still dying waiting for appropriate transport.

In Dec 2015 CritiCall Ontario also assumed the responsibility for transport coordination.

Methods:
An Advisory Committee that included the Ministry of Health, CritiCall Ontario, Critical Care Services Ontario, Emergency Medicine leaders, both air and land transport providers, and paramedics was established to develop the following: Accountability document, a Transport decision algorithm to assist in selecting the most appropriate transport provider, and a communication/education plan. IT systems were interfaced.

Results:
One year post implementation study shows:
Reduced effort in the ED to arrange an inter-facility transfer providing more time to provide clinical care.

Better utilization of scarce transport resources.

Appropriate level of care is provided during transport. Patients are arriving at their destination faster and more safely.

Conclusions:
The One Number to Call (ONTC) initiative has improved the efficiency and effectiveness of emergent inter-facility transfers.

Training Three-wheeler Drivers for Pre-hospital Emergency Medical Care Service Provision in Anuradhapura City Sri Lanka

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Introduction:
Since Tsunami 2004, the most destructive natural disaster in the country, Government of Sri Lanka, together with private organizations attempted establishing pre hospital care service provision, however failed to establish such up to date. World Health Organization (WHO) recognizes, the development of layperson first responder program as the initiation towards establishing proper EMS in resource poor settings.

Methods:
Descriptive study was carried out over a two weeks in Teaching Hospital Anuradhapura, the only tertiary care center in the district, to identify the contribution made by the TWDs on emergency patient transport. A group of TWD (N=37) was trained on first aid; some components of BLS and safe patient transport Pre and post assessments were compared to assess the effectiveness of the training program.

Results:
Three quarters of patients admitted to emergency medical and surgical units were transported in TWS (74,7%, n=454). Cardiovascular incidents including MI (14.9%), snakebite and poisoning (3.3%) were the commonest medical emergencies, while Trauma including RTA was the commonest surgical emergency (44.9%, 204). Participants for the training program had an average of 13 years (SD 5.4) experience as a TWDs and has handled 12 emergency patients, a year (SD=7.95). Nevertheless, none of them has had a previous exposure to training on EMS; Paired t test showed significant improvement on the post training assessment (t=16.954, 95% CI 6.47 to 8.23, p<0.00).

Conclusions:
Considering the pattern of emergency patient handling in the area, TWDs could be the best layperson group to train on EMS.

Africa Rising - An Update

Zeyn Mahomed

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Introduction:
2 years ago at IPRED IV, I presented on this topic. Since then much has happened. We have set up a USAR team which is now UN accredited. South Africa is now the second country in Africa to have a UN USAR accredited team. In addition, much has been done nationally and internationally by African based NGOs and Emergency Medicine programmes are mushrooming across the continent. This presentation will continue from my first presentation, providing evidence of Africa's rise.

Methods:
The authors conducted interviews with key personnel from the South African based medical response teams.

The authors accessed all available patient and logistics records that the response teams have archived.

The authors have searched for and retrieved any related media reports or publications linked to any of the above response missions.

Results:
For centuries, Africa has been viewed as a continent that is critically dependent on the first world. That mind-set has become entrenched in both the minds of Africans and the international community. Africa has almost resigned itself to waiting for handouts and help from the developed nations. However, this attitude needs to be challenged and discarded. African has the potential to help itself as well extend help to rest of the world.

Conclusions:
South African based medical response teams are rapidly establishing themselves as amongst the best in the world and have responded to more than 60 countries within the African continent and beyond.

Africa has tremendous potential and needs to further develop its disaster response capability in order to challenge and break the engrained antiquated mind-set.

Dual Paramedics, Does it improve or Cost: Assessing the Utility of a Dual Paramedic Ambulance Crew in our Emergency Medical Service (EMS) System on Improving Pre-hospital Care in the Dallas, Texas Area of USA

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Introduction:
Among many urban EMS systems, there exists a dogma that dual advanced life support (ALS) provider ambulances having more advanced training equals better care provided. Though much research has focused on the benefits of ALS versus basic life support (BLS), far fewer studies have been devoted to whether there is any true benefit of dual ALS staffed ambulances. Although intuitive appearing, the limited published medical literature is not conclusive.

Methods:
IRB approved retrospective chart review, of 14 EMS provider agencies in the Dallas county area (population > 2,300,000) for a year from October 2012-October 2013 looking at ALS calls and their complexity. We examined de-identified ALS EMS records from one year to assess for medical complexity to begin to assess which calls might have needed two or more ALS providers.

Results:
18,792 of ALS charts spanning one year were reviewed for case complexity with only five procedures or pharmaceutical interventions deemed by the reviewing team as being complex. This resulted in 65 (0.35%) instances of use that after review would be deemed complicated and possibly needing greater than 1 ALS provider.

Conclusions:
Paramedics are an important component for a small percentage of pre-hospital emergencies, but its widespread promotion and use of double paramedic / ALS providers might not be necessary medically and likely is not a fiscally sound option in the Biotel/Dallas, TX region.

Overview of India - U.S. Collaboration on Global Health Security: A Case Study

Christie Vu

USA

India is the largest of the 17 Global Health Security Agenda (GHSA) phase 1 countries, and also sits on the 10-country GHSA Steering Group, which puts India in a unique position to be true leaders in GHSA implementation. Drawing on extensive experience with infectious disease surveillance, emergency response, and lab strengthening, CDC India began working with India's Ministry of Health and Family Welfare (MoHFW) to support GHSA goals in 2014. In September of 2015, CDC India received over $15 million in new funding for the Indian government and local partner organizations (16 institutions total) to establish or expand on existing "detect, respond, and prevent" activities and to begin implementing GHSA activities. CDC India works with the Government of India to help build capacity within local and regional public health entities, which include strengthening surveillance networks, such as antimicrobial resistance; supporting public health laboratory systems; providing technical assistance to improve outbreak response; and bridging the human-animal interface to detect emerging zoonotic disease threats.

Developing Public Health Emergency Management in Jordan: A Cross-Ministry Approach

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US Centers for Disease Control and Prevention

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Introduction:
The Hashemite Kingdom of Jordan faces several health threats, including potential outbreaks and CBRN attacks, due to its geographical location and exposure to prolonged conflicts in the region. The need to increase public health emergency management (PHEM) capacity is essential. However, national-level health emergency responses require participation from all Ministries across the government.

Methods:
CDC utilized a two-pronged approach in developing PHEM capacity: 1) strengthened general PHEM concepts across whole of Government through cross-Ministry trainings and workshops on EOC Management & Operations and ICS in the context of health emergencies; 2) CDC provided direct technical assistance to the Ministry of Health (MOH) to develop a Public Health Emergency Operations Center (PHEOC) as well as the plans and procedures to support its functionality.

Results:
1) The Ministry of Health is better integrated into the national response structure. Partners such as the Ministry of Defense, Interior, Agriculture etc. are aware of the response capabilities of the MOH and how their individual Ministries can work together in the event of a national health emergency. 2) The MOH of Jordan has a state-of-the art PHEOC that can be activated in the event of any type of health emergency.

Conclusions:
This model of direct assistance to the MOH while furthering integration into the national response model has proved to be an effective strategy for public health emergency management capacity development. This approach has created new partnerships and capacities will serve to reduce the morbidity and mortality of health emergencies in a country that faces a myriad of threats.

Simulacro Quindio: Using a Full-scale Exercise to Test a Public Health Emergency Operations Center

Kimberly Hanson

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Co-author/s: Luis Hernandez, Rumph & Associates; James A. Banaski, Jr., US Centers for Disease Control and Prevention

Introduction:
The US Centers for Disease Control and Prevention (CDC) supported the development of a public health emergency operations center (PHEOC) with the National Health Institute (INS) of Colombia.

The PHEOC was inaugurated in January of 2017. INS and CDC developed a full-scale exercise (FSE) aimed at testing the ability of the PHEOC to activate and coordinate the response to a national-level public health emergency.

Methods:
CDC worked with INS, using the principles of the US Homeland Security Exercise and Evaluation Program (HSEEP), to develop FSE materials based on a cholera outbreak scenario. The scenario consisted of international cruise ship passengers making port in Cartagena, Colombia and visiting several tourist sites around the city before being admitted to a local clinic with symptoms consistent with cholera. The PHEOC in Bogota activated, deployed a rapid response team to investigate, and coordinated incoming information from the field to determine response actions.

Results:
The overall result of the FSE was highly successful. Areas for improvement were identified and captured in an after action report. INS has demonstrated and validated its capacity to activate their PHEOC and manage a national level public health emergency response.

Conclusions:
The principles of HSEEP can be successfully applied to public health emergency preparedness exercises and provide a sound methodology for evaluation. The ability of INS to inaugurate their PHEOC and conduct a full-scale exercise within 7 months demonstrates exceptional success. The INS PHEOC can be used as a model for public health emergency management capacity development throughout the Latin American region.

Interdisciplinary Organizational Collaboration for Sustainable Health Security

Sagar Galwankar

WACEM, University of Florida, Jacksonville, USA

Organized Medicine plays a major role in Policy development both nationally and globally. When it comes to Health Sustainability role of clinical organizations is key. More important are the roles of Academic Strategist who coin interventions which can make a mass impact. Working together towards health sustainability is the most important step for a nation and its health. A presentation about Interdisciplinary partnerships in India and the process of building effective networks will be presented in this session. Academic Engagement in National and International Policy development is important to Health Diplomacy. Common Goals and Creative Ideas can give Constructive Solutions.

Planning for Public Health Emergencies: The Role of Global Health Security Efforts in Preparedness for all Hazards

Henry Falk

Office of Noncommunicable Disease, Injury and Environmental Health (ONDIEH)/CDC, Total Solutions,, Inc., USA

Pandemics and epidemics of infectious diseases have been the major stimuli for the development of the global health security programs. At the same time, a variety of factors, including industrialization, environmental pollution, war and civil disturbances, large scale refugee migration, weather related calamities, natural disasters, climate change, and large scale terrorist events have led to increasing concerns about the potential for widespread public health impact. The CDC, for example, in recent decades has increasingly been engaged in the response to chemical, radiological, nuclear, natural disaster and terrorist events from the Three Mile Island nuclear accident, the Mount St. Helens volcanic eruption, and the Bhopal chemical disaster to the World Trade Center attack, Hurricane Katrina, and most recently the cluster of Hurricanes Harvey, Irma and Maria this past summer. Better planning, response and post-disaster rebuilding are essential and share many aspects with infectious disease emergencies; for example, excellent emergency operations centers benefit response to all hazards. The public health role and all hazards approach to non-infectious disasters will be reviewed in this presentation.

WHO Health Emergencies Programme - Activities in the European Region

Dr. Dorit Nitzan

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1. Coordinator, Health Emergencies Programme & Programme Area Manager Emergency Operations.
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Regional Office for Europe, World Health Organization.

Introduction:
The new WHO Emergency Programme (WHE) has operational capabilities, added onto the WHO's technical and normative roles through the establishment of one single Programme, with one workforce, one budget, one set of rules and processes and one clear line of authority. It is designed to address the immediate health needs of populations affected by health emergencies, whilst tackling the root causes of their vulnerabilities. Everything WHE does must contribute to the delivery of better results at the country level.

Methods:
- WHE was designed as a single three-level programme.
- As One Programme, WHE has one workforce, one budget, one line of accountability, one set of processes and systems, and one set of benchmarks. Its mission is to help countries, and to coordinate international action, to prevent, prepare for, detect, respond to and recovery from outbreaks and emergencies.
- WHE focuses efforts to address country preparedness as a priority.
- The principles of comprehensive Emergency Cycle Management, grading, Incident Management System (IMS) and Health Partnerships, including Sector Cluster, GOARN and EMTs are embedded in the WHE.
- The WHO Emergency Response Framework II has been developed.

WHE ensures:
- All hazards approach
- Flexibility
- Rapid and responsive actions
- "No regrets" principle

The conceptual framework that underpins the new programme is geared towards achieving those results:
- Strengthened capacity in the areas of early warning, risk assessment and emergency response enhances WHO's ability to work with Member States and partners to rapidly detect outbreaks as they arise, and to provide a package of essential services to populations in times of need.
- Lessons learned from health emergency responses guide on how best to remedy underlying vulnerabilities through prevention and control strategies for all hazards, including high-threat infectious hazards.
- The actions must be integrated into health-systems strengthening and universal access to quality people-centered health services.

- The health system as a whole, including it technical and expert arms, provides the foundation on which the The International Health Regulations (2005) [IHR (2005)] core capacities are developed and achieved ensuring state parties readiness and resilience across the board.

Results:
The International Health Regulations (IHR, 2005) require States Parties to develop core capacities for rapid detection, assessment and response, including for surveillance, laboratories, and risk communication, with suitable legislation, financing, and is operated through the national IHR focal points. The health system as a whole provides the foundation on which the IHR core capacities are established. The IHR Monitoring and Evaluation Framework which consists of country reports, external evaluation, after-action review and simulation exercise, supports the assessment of core capacities.

All countries are encouraged to participate, reveal their gaps and develop concrete action planes to ensure their health security. In the WHO European Region the focus is on Priority Countries to support the advancement of their capacities. These capacities are especially important during emergencies, when access to and quality essential health services can be severely compromised.

In the European Region, we are seeing this especially in the two large scale emergencies that WHE is responding to – the Syrian Crisis and the crisis in Ukraine.

Conclusions:
The new WHO Emergency Programme is now fully functional and its capacities are being strengthened. New standard operating procedures, SOPs, are now in place, the updated, second edition of the Emergency Response Framework is already being implemented, defining roles, responsibilities, accountabilities, timelines and partnerships.

When the War is Over. Middle and Long Term Deployments after Disasters and Conflicts

Dr. Harald Veen

Switzerland

Emergency medical assistance after natural disasters or man-made conflicts has traditionally been beyond criticism, and only recently quality and efficiency are being defined.

The 'aid scene' for long-term programs, with classical mistakes and many agendas is well known.

What is an acceptable short mission duration, and if necessary, how to transform it into a useful long-term program?

A Breakthrough on Health Data Collection during Disaster - The WHO EMT MDS

Prof. Tatsuhiko Kubo

Department of Public Health, University of Occupational and Environmental Health, Japan

Introduction:
Ensuring the collection of accurate and appropriate health data and protecting people's lives and health during disasters, has been a universal challenge. Since a disaster is "a situation or event that overwhelms local capacity and needs external assistance", no matter how well we prepare, a disaster commonly destroys every local capacity and disables all prepared systems.

Methods:
To tackle this gap, the working group of the WHO hosted by MASAV and JICA has developed the Emergency Medical Team (EMT) Minimum Data Set (MDS). The MDS defines a package of essential data items derived from medical records of patients treated by EMTs and its practical daily reporting forms.

Results:
EMTs are trained to provide an extremely rapid response after the occurrence of a sudden onset disaster (SOD), and can provide services self-sufficiently. During the very acute phase, the attending EMTs may be the primary, or sometimes even the only, medical provider in the designated location, and their bases can be utilized as "sentinel reporting sites" for the disease early warning systems.

So by adopting the EMT daily report standard MDS, Ministry of Health can let not only national but international EMTs as additional sentinels for the national health information system immediately after a SOD.

Conclusions:
It is regarded that the MDS is an innovative technique for health data collection in disaster situation; and further the best available methodology to accept and utilize external assistance as additional emergency workforce for national health information system.

The Art of Counter - Terrorism

Prof. Boaz Ganor

Dean, Lauder School of Government, Diplomacy & Strategy; Ronald Lauder Chair for Counter Terrorism; Founder & Executive Director, The International Institute for Counter-Terrorism (ICT); The Interdisciplinary Center (IDC), Herzliya, Israel

With the rise of terrorism, conventional wars were replaced by a new kind of warfare. Countries have had to adjust accordingly, creating new policies, doctrines and tactical units all to handle this change in warfare. The Chinese philosopher Sun-Tzu viewed the military strategy of warfare as an art, So too should counter-terrorism be viewed, not only as a profession requiring a specific set of skills and expertise, but also as a form of art.

Asserting that the fight against terrorism is in fact the art of modern warfare is no simple matter, considering the range of complex dilemmas imposed on governments by terrorists. The lecture will discuss the complexity
of the main counter terrorism dilemmas:

Defining the enemy - Who are the terrorists carrying out attacks around the world and can they be classified into various categories?

Addressing rationality - Are terrorists in general, and terrorist organizations in particular, rational players?

The counter-terrorism equation's "boomerang" effect- How to understand the variables that influence the growth of terrorism and the challenge of dealing with those variables.

The democratic dilemma in counter terrorism - How is it possible to find the delicate balance between a country's liberal-democratic values and the need for an effective fight against terrorism.

Public's role in counter-terrorism - How is it possible to balance between public awareness and public resilience in the fight against terrorism?

Katrina to Harvey: Andrew to Irma Reflecting on Four Hurricanes

Dr. Bonnie Arquilla

SUNY Downstate, USA

This presentation will focus on the contrast between four events highlighting the improvements in planning and response.

Since 1975 the number of people affected by disaster has steadily risen. Hurricane Katrina was a watershed moment in US emergency management.

A category five storm is anything with sustained winds of over 250 km/h (157 mph). It does not consider the storm's size, surges or flooding. These factors often prove more deadly, like Hurricane Katrina in 2005 (August 23, 2005 – August 31, 2005), which was the costliest natural disaster and one of the five deadliest hurricanes in the history of the United States, with a documented 1,836 fatalities. After the storm when the levees protecting New Orleans failed, approximately 80 percent of the city flooded. More troubling, were the unheeded warnings of possible levee failure one year before Katrina during Federal Emergency Management Agency's exercise Hurricane Pam.

Shelters and how they were accessed and used also proved to be a major problem on multiple levels. Residents who could not leave on their own were driven out by bus, but the main route out of the city quickly became clogged. Officials then sent poorer residents to the city's Superdome stadium, where 30,000 eventually gathered in deteriorating conditions. Evacuation chaos and mostly unfounded panic over riots and violence made issues of race, poverty and government failures impossible to ignore.

Hurricane Harvey 12 years later in Houston Texas was a contrast also a Category 5 hurricane it developed into a three weather events the hurricane, storm surge and then the unprecedented over 50 inches of rain as a result of a "stalled" weather system. However at the George R Brown Convention Center staff had supplies of nappies, food, water, clothes, books, games and other essentials for evacuees. Spanish and Vietnamese translators were also on site. While Katrina showed a failure to build well and maintain infrastructure, Harvey might come to represent climate change.

Hurricane Andrew was also a Category 5 Atlantic hurricane that struck Florida in mid-August 1992, with 65 fatalities. It was the strongest in decades and the costliest hurricane until Katrina surpassed it. In the aftermath of Andrew multiple building codes and Emergency Preparedness initiatives where embraced in Florida. The lessons learned by both Katrina and Andrew was visible in the response and speedy recovery witnessed in Florida after Irma. Hurricane Irma, which struck August 30, 2017, was an extremely powerful hurricane, the strongest observed in the Atlantic since Wilma in 2005 in terms of maximum sustained winds. Causing a total of 132 fatalities. More than 116,000 were reported to have taken refuge in some 530 shelters across Florida.

These shelters were smaller in scale than those in Katrina and evacuee's received detailed instructions of what to expect at the shelter further highlighting improvements over the last 20 plus years.

Phone Went Dead: Defining a Framework for Catastrophic Disaster Response

Prof. Dan Hanfling

Contributing Scholar, Johns Hopkins Bloomberg School of Public Health Center for Health Security; Co-chair, National Academy of Sciences, Engineering and Medicine Forum on Medical and Public Health Preparedness, USA

Is there a doctor in the house tonight?

If there's a wrong, he could make it right?

Tell me I'm wrong. Tell me I'm right.

Tell me there's nobody else in the world. [My Morning Jacket, Phone Went West, 2001]

Regardless of the precipitating cause – infectious pandemic, earthquake or nuclear terror – disaster planners and responders require a framework that can be implemented when the event is catastrophic and the ability to provide healthcare services are severely constrained. When the phones go dead, who would you choose? Who should receive services when not all can be treated? When there is limited availability of staff, resources and access to care, which patients get priority to receive care? This presentation will highlight the key features of "crisis standards of care", including the ethical, clinical and operational basis upon which scarce resource allocation decisions will have to be made. Using case studies from past disaster events, this presentation will describe the systems framework that outlines catastrophic disaster planning and response. It will review key publications in the peer reviewed literature pertaining to these concepts, and provide an overview of the operational framework that is rooted in the fundamental public health tenet that decisions for care delivery be based upon population, not individual patient, outcomes.

Complex Networks in Medical Image Analysis

Alessandra Rossodivita

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Introduction:
Although artificial neural networks and other machine learning algorithms become attractive for image processing Disaster Medicine domain puts some limitations: real-time and huge volumes of records demand high performance techniques. Alternative scope is to convert images into complex networks (CNs) and then apply network science for thorough studies. However, researchers noted that if convert an image into a network traditionally (i.e. connect proximal pixels) the latter will include nodes with similar number of admissible links and thus display not a complex topology but a regular one. In few works some tricks are used to escape regularity and reach network complexity. But those are too formal and hardly transparent

Methods:
In current study for converting images into genuine CNs bitmap is partitioned according 3 spatial scales: local, medium, and global ones. The meaning of those is following: local space is defined by a pixel itself ; medium regions are grouped by several neighbor pixels; and further along the scale, a global region cover a much larger portion of the image square and grouping neighbor medium regions.

Results:
A series of SEM images of osteoresorbtion due to penetration of selenium in the process of fusion of a standard femoral fracture in rats has been converted into pertinent CNs. Several network metrics and structure mapping demonstrated their sensitivities to severity of local osteoresorbtion and osteoclastic activities of fracture area.

Conclusions:
The proposed approach might be applicable for transformation of any structured data into CNs and for further effective analysis.

Proactive Cyber Defense of Healthcare Organizations

Itamar Grotto

Management, Israel Ministry of Health, Israel

Introduction:
The cyber era brings with it many threats. Cyber has become a tool that used by states and terrorist organizations as a single or as a supportive tool to achieve their goals. This era is characterized by the rapid pace of technological changes; the anonymity of the attackers and the extent of the phenomenon. Many institutions, government and private entities, have experienced in recent years an increasing number of cyber-attacks. A striking characteristic of these attacks is the relative ease with which an attacker manages to circumvent the organization's defense system. This defense failure is especially resonant in view of the enormous amount of money available in the world of cyber-development and innovation.

Methods:
The organizational strategic plan should include a protection program based on the knowledge and experience accumulated worldwide: closing common breaches; blocking popular attack methods; updating protection versions of operating programs; preventing direct access to unauthorized users, intelligent management of the array of access permissions to databases; and a significant increase in organizational awareness. It should also deal with attacks based on new tools and unknown vulnerabilities. In order to cope with this reality, proactive protection is required.

Results:
Effective organizational protection requires a highly professional and skilled staff; monitoring and detection systems that constantly improve the process of reducing false alarms, all within the framework of the focus of cyber protection on the main defense objectives (what is important to the organization?).

Conclusions:
My presentation will detail the strategic plan of the Israeli MoH, according to these elements.

Facilitating Decision-making and Provision of Medical Care during Disasters through Utilization of a Comprehensive Computerized Information System

Victor Bero

Medical Quality Control, Emergency & Disaster Management, Meuhedet Health Fund, Israel

Co-author/s: Gal Horowitz, Meuhedet Health Fund; Adi Giladi Levy, Meuhedet Health Fund

Introduction:
To present contribution of a comprehensive computerized information system to decision-making and provision of medical care during disasters.

During disasters the healthcare systems are required to ensure provision of medical services to vulnerable populations. In order to monitor vulnerable patients and ensure efficient management of resources, information systems are needed.

Methods:
"Meuhedet", an HMO which insures 1,200,000 patients, developed a comprehensive information system which includes a database concerning patients, infrastructure and personnel, as a unique management tool. The GIS-based system enables to identify the location and current status of patients and providers at all times. During large-scale fires that occurred in Israel between 22.11.16 to 27.11.16 which necessitated mass evacuation of populations, the information system was used to locate vulnerable patients and plan provision of needed services.

Results:
Following the decree of mass evacuation of all populations from the risk zones due to the fires, the information system enabled the HMO to locate all vulnerable patients within minutes and plan provision of specifically needed services: 2 patients from a nursing home and 1 home-care ventilated patient were located and evacuated within 2 hours. Specific medications were supplied within two hours to patients who were evacuated to absorption centers or hotels, based on their personal files available through the information system. One terminally ill patient was tracked and treated by the home-care unit within 3 hours, based on the data provided by the information system.

Conclusions:
The comprehensive information system facilitated decision-making and improved ability of primary healthcare workers to provide efficient and continuous medical care in the community during the disaster. During the recent fires in Israel, vulnerable patients were located within minutes and provided with individually-needed medical care within 2-3 hours, due to the availability of the information system that provided vital data concerning each patient.

Cyber Threats as a Major Hospital Emergency Management Challenge

Dagan Schwartz

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Co-author/s: Michal Hayat, Emergency Management-nursing, Rabin Medical Center; Dorit Nagar, Emergency Management-administration, Rabin Medical Center; Eran Rothman, Management, Rabin Medical Center

Introduction:
The last decade has seen a rapidly increasing reliance of the healthcare industry in general and hospitals in particular, on Information Technology systems. This reliance, coupled with the exponential growth in cyber-crime and cyber-terrorism have synergistically made cyber-security a major challenge for hospital emergency management. In 2016, the healthcare industry was the lead target for cyber-attacks including breach of healthcare data and ransomware attacks. In May 2017 the world witnessed the worldwide cyber-attack "Whannacry" reported to have infected more than 230,000 computers in over 150 countries. The attack affected many National Health Service hospitals and up to 70,000 devices, including computers, MRI scanners, blood-storage refrigerators and operating room equipment. In response, Beilinson medical center has recently commenced a cyber-risk assessment and mitigation process.

Methods:
A descriptive analysis of current hospital cyber security challenges from an emergency management viewpoint and primers on cyber-risk mitigation.

Results:
A risk analysis survey was performed as a preparatory stage to a hospital-wide cyber-attack drill. Major risks were identified in: Electronic Medical Records and laboratory and imaging capacities.

These weaknesses were assessed to have the potential to cause immediate danger to patient lives in the emergency department, intensive care units, operating rooms and imaging intensive procedure units (such as cath labs).

Conclusions:
Cyber-attacks have become a major challenge for hospitals. A risk most hospitals are unfamiliar with and unprepared for. Comprehensive risk management is needed to minimize the risk of a successful attack as well as minimizing patient harm if an attack succeeds.

Push-to-Talk Apps in Recent Disasters

Alexander Chang

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Introduction:
Effective communication in crisis is paramount during emergencies and disasters. Recent hurricanes impacting the United States and its territories have drawn attention to the potential utility of push-to-talk applications through news and media coverage. One such highlighted app, Zello, reportedly garnered six million signups during the week prior to Hurricane Irma. Zello functions similarly to traditional two-way radio, acting as a direct messaging service and operates over 2G, 4G, 3G and GPRS/EDGE networks. This study investigates the reported usage of push-to-talk apps during disaster events, including recent hurricanes and examines its advantages and drawbacks.

Methods:
A literature review of push-to-talk applications during disasters was performed. A separate search strategy using keywords (("Zello" OR "push to talk") AND (hurricanes)) was formulated for media sources and a LexisNexis search, followed by sequential searches of multiple Internet-based English-language news agencies was conducted spanning a five-year period. Dates, geographical location, type of users, format of usage and reported success or failure of push-to-talk applications were abstracted.

Results:
Literature search revealed no studies on push-to-talk applications for use during disasters. Keyword searches on push-to-talk apps during hurricane disasters yielded 37 unique results as of 31.10.17; however, there were many instances of duplicated content with relatively few uniquely documented successes or failures.

Conclusions:
In the context of disasters, push-to-talk apps may be a promising communication channel for victims and emergency personnel. In a rapidly changing technological world, the advantages and drawbacks in real world contexts warrant further study.

Improving Response Capacity for Medically Vulnerable Populations following a Destructive Earthquake: A GIS-based Information-sharing Model Linking Local Authority and Health Institutions

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Introduction:
Lessons learnt from previous disasters demonstrated that maintaining continuity of care among medically vulnerable persons is one of the most significant tasks of medical relief efforts. In light of expected shortage of resources during disasters, there is a potential gap in the health system's ability to care for these individuals. This study aimed at building an information-sharing framework between health and local institutions that will assist to better meet the needs of these persons.

Methods:
Qualitative semi-structured interviews with key informants from health and local institutions (of the city of Beer-sheva, Israel) mapped the capabilities and resources related to medically vulnerable populations following an emergency. Based on these interviews, a GIS-based information-sharing model was designed. The model was approved by legal advisors of the ministry of health and tested using mock data.

Results:
We observed a lack of uniformity among health institutions in coding and storing medical information. Limited ability to manage data during emergencies was also reported. Employees (e.g. social workers) and volunteers of the local authority can implement a proactive approach in providing care to vulnerable populations following a disaster, given the availability of relevant information. A standard operating procedure using a GIS-based tool was constructed based on the current abilities, including reference to legal and ethical issues of privacy, confidentiality, and securing data.

Conclusions:
Pre-establishing cooperation between health and local institutions can facilitate rapid assessment of health impacts on affected populations following an earthquake, and support a proactive approach for ongoing medical care for the medically vulnerable, thus minimizing adverse health outcomes.

Studying the Way Emergency Service Providers Operate during Emergency Situations

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Introduction:
Learning how people operate during emergency situations will allow us to improve the tools and methods they use under these situations. One of the tools that are currently in use to train emergency responders is in situ simulation drills. These drills simulate emergency situations, allowing a team of emergency responders to handle the situation as they would do in real-life.

As researchers, our challenge is learning how people act during these situations. The complexity of the situation and the number of participants makes it difficult to capture the interactions. A lot is happening simultaneously, and our ability to learn and provide meaningful feedback is limited. In search for a tool that will help us asses these situations we use a multi-point of view video cameras to capture the simulation dynamics.

Methods:
We developed a method of using synchronized video cameras from different angels, including an eye-tracking device that provides us with the main subject point of view. Together with a voice channel that record the conversation and the audible information around the main subject, we can capture information about the situation in high level of granularity. Using post production video editing tolls, we can review the simulation and learn the activities in detail.

Results:
We will present the implementation of this method on a Magen-Daviv-Adom mass casualty incident drill, and demonstrate the insights we gained using our method.

Conclusions:
Our method shed light on the decision making process and provide measurable information on the participants' decision making process.

Resilience with Spontaneous Volunteers in Disasters - Coordination using an IT System

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Introduction:
The goal of this project was to increase the resilience of the population as well as rescue organizations to make both quality and time-related improvements in handling crises. A helper network was created for this purpose.

Methods:
Social questions regarding the structure and purpose of helper networks were considered – specifically with regard to helper motivation, the level of commitment and collaboration between populations and agencies. The exchange of information, the coordinated use of volunteers, and the distribution of available resources will be ensured through defined communication and cooperation routines. Helper smartphones will also be used provide a picture of the situation on the ground.

Results:
The helper network was established and deployed based on the RESIBES information technology system. It consists of a service platform, a web portal and a smartphone app. The service platform is the central element for collaboration between the various rescue organizations, as well as for persons, associations, and companies from the population offering voluntary aid. The platform was used for: Registering helpers and resources and then requesting and assigning it in case of a disaster. These services allow the population's resources to be organized. The service platform also allows for a secure data exchange between services and external systems.

Conclusions:
The social and technical work priorities have allowed us to cover a full cycle of advance structural work, gaining an overview, damage management, evaluation, and feedback on experiences. This cycle allows experiences gained while handling the crisis to feed back into the cycle and improve preparations and management strategies.

Introduction for MSTC (Military Surgical Training Course)

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Introduction:
Firearms in Japan have been controlled very strictly. Additionally, the number of traffic accidents has been decreasing. So, young surgeons have small chances for their training.

In order to learn the surgical technique and strategy for damage control surgery by young surgeons effectively, using anesthetized live pigs in wet laboratory looks good. Medics who are expected to perform several surgical procedures in combat front line may be trained in the same ways.

Methods:
We anesthetized live pigs (weight 50kg). To follow the ethical consideration to animals, we monitor the electrocardiogram, SpO2, and blood pressure, and keep the depth of anesthesia appropriately.

Cricothyroidotomy, needle chest decompression to tension pneumothorax, intraosseous needle insertion, and compression technique to active bleeding were trained by Medics. Several techniques and tactics for damage control surgery were instructed to young surgeons by ATOM (Advanced Trauma operative Management) instructor.

Results:
From 2014 to Sep. 2017, we performed 24 training courses, which used 24 pigs totally. The numbers of participants are 30 for surgeons and 154 for Medics. As Ministry of Defense's instruction permitted the front line medics to perform several surgical skills in Oct. 2016, this training course could contribute them to improve surgical skills.

Conclusions:
We have another simulation training course whose names are JPTEC (Japan Prehospital Trauma Evaluation & Care) and JATEC (Japan Advanced Trauma Evaluation & Care), which use simulator for dry laboratory. We believe that not only dry laboratory but also wet one will improve medical personnel's surgical technique and improve the mortality and morbidity in battle field.

Evaluation of a Course to Professionalize Doctors in Training in Humanitarian Assistance

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Introduction:
Training for humanitarian workers should include simulation-based exercises and evaluation. We assessed the efficacy of a training program for senior residents implemented by the Research Center in Emergency and Disaster Medicine (CRIMEDIM) and Médecins Sans Frontières (MSF).

Methods:
The first three levels of the Kirkpatrick's evaluation model (Reaction- Learning- Behavior) were evaluated. Eight residents were enrolled. Reaction was assessed through a Likert scale questionnaire. The three dimensions of Learning were evaluated separately through a pre- and post-test using a multiple-choice test to assess knowledge, a Likert scale questionnaire to evaluate attitudes and simulation-based performance tests to evaluate skills. The Ottawa Global Rating Scale (GRS) was used to measure residents' performance. Differences were assessed using paired ttests. Pvalues of less than 0.05 were considered significant. After completion of the training program, residents were deployed in MSF field projects. Behavior was assessed qualitatively at the end of students' missions by their immediate field supervisors, who were blind to the residens' participation in the training program.

Results:
The average median score for the overall course was 5 (excellent). There was a significant improvement in post-test multiple choice scores (p = 0.0011) and in residents' overall performance scores (P = 0.000001). Field supervisors highlighted the participants' compliance with MSF principles, their flexibility, their good team working skills and their cross-cultural sensitivity. Their professional competence was never questioned. All residents were recommended for future MSF missions.

Conclusions:
This study showed that residents were highly satisfied with this training program and that their knowledge and skills in low-resource simulated humanitarian environments improved as a result of their participation in the course.

Running a Global Surgery Workshop: Why Training the Next Generation in Disaster Management and War Surgery Matters

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Introduction:
Preparing medical students for practice in the modern world in which there is an ever-present threat of climate change and disaster, terrorism, and civilian and conflict-related trauma is a pressing concern.

There is a need to maintain a focus on clinical priorities while students learn their role in disaster response, mass casualty scenarios, and trauma and war surgery.

Methods:
A Global Surgery workshop was run over two half-days during the medical student surgical rotation. The first day focused on global surgical priorities, setting up essential surgical and trauma services and innovations in biomechanical engineering. The second day focused on disaster response, triage and providing trauma and emergency care in austere environments.

Results:
After an initial lecture on both days, students rotated through 30 minute practical workshops in delivering trauma, surgical and emergency care. The lecture, workshops and feedback sessions were recorded for further training. Students designed disaster response plans, assigned triage tags, resuscitated patients in line with ATLS principles, decided on the surgical management of patients suffering blast injury, and diagnosed and managed surgical complications.

Conclusions:
Practical training in trauma and disaster response is important for medical students. Training provided within the wider context of Global Surgery adds value as students learn to deal with surgical and non-surgical global health challenges in austere environments.

Training Surgeons for Practice in Resource Constrained Environments: The Alliance for Global Clinical Training

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Introduction:
Although most hospitals and health care systems have disaster plans, the professionals called upon to effect these plans often have no experience with practice under resource constrained conditions. Tanzania is a stable democracy in East Africa with a population of 47 million people, a mean life expectance of 54 years and a cohort of only 180 fully trained surgeons who have a completed a 3 year surgical residency. The Alliance for Global Clinical Training (Alliance) has a collaborative educational relationship with the Muhimbili University of Health and Allied Sciences (MUHAS) to provide volunteer surgical educators and residents from the United States and Israel to assist in the education of MUHAS surgery trainees. We describe the results of the 5 year collaboration and the experience gained by the American and Israeli surgeons working with limited resources.

Methods:
The previously published experience of the American and Israeli residents and educators was reviewed and data extracted outlining the exposure to clinical situations involving limited personnel, limited access to the operating room, limited access to blood, anesthesia personnel with limited skill sets, and limited equipment for intra- and post-operative care.

Results:
During the five year period 2012-2016, 12 surgical educators and 11 surgical residents provided a total of 21 months of collaborative clinical education at MUHAS. They scrubbed on over 400 complex surgical procedures and introduced 14 new procedures to the skill set of their Tanzanian colleagues.

They introduced 2 multi-day courses on Trauma and Acute Care Surgery and Peri-Operative Care as well as a surgical skills course and Laparoscopy Course. The visiting Alliance surgeons gained experience during their one month rotations hand sewn anastomoses, open surgery, functioning in an environment with limited resources and dealing emotionally with the inevitable death and disability that would be otherwise preventable in another setting.

Conclusions:
A one month clinical rotation in a resource constrained environment for High Income Country surgeons is a mutually beneficial educational experience for the visiting and local surgeons and provides valuable experience for surgeons involved in Disaster and Mass Casualty Events as well as humanitarian efforts.

A Novel Approach to Pre-credentialing of Individuals to Serve on Emergency Medical Teams

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Introduction:
The World Health Organization (WHO) currently accredits emergency medical teams (EMTs) prior to deployment to sudden-onset-natural disasters, and anticipates a similar process for Public Health Emergencies of International Concern (PHEICs) and Complex Humanitarian Emergencies (CHEs).

However, no generally accepted mechanism currently exists to identify individual healthcare and other responders who have demonstrated an interest and a degree of competency in disaster and global health preparedness and response through education and training and/or personal experience. Such individuals, if properly identified, could serve as candidates for service on EMTs or other global health response teams.

Methods:
The Society for Disaster Medicine and Public Health (SDMPH), the National Disaster Life Support Foundation (NDLSF), and the American Academy of Disaster Medicine (AADM) collaborated, utilizing a modified Delphi approach, to create a model for such pre-credentialing.

Results:
The resulting model is based on a 100-point score that encompasses civilian or military practice and experience, education and training, scholarly activity including research and instruction, active participation or leadership in disaster and global health related organizations, and critical life experiences such as cultural sensitivity and language proficiency. Individuals attaining a pre-determined score would be recognized as potential Global Health Responders® and would be entered into a database which would be made accessible to legitimate and authorized users.

Conclusions:
Pre-credentialing of individual members of EMTs could facilitate selection of qualified candidates. This effort is intended to supplement and support such programs as the WHO EMT accreditation initiatives, and is not intended to supplant or compete with them.

"Things you see from there cannot be seen from here": Security Surveillance Cameras as a Tool for Evaluation of Surprise Mass Casualty Incident (MCI) Drills (video Presentation)

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Introduction:
The Israeli MCI Committee and the Home Front Command perform surprise drills in order to evaluate public hospitals' readiness for MCI. These drills concentrate on readiness issues pertaining to the initial phase following an MCI with limited amount of victims during non-office hours. Since drills are carried out in the evening or nighttime without previous notification, the hospitals' emergency and disaster committees (EDCs) are dependent on observations made by the external auditors and interview of the hospitals' personnel who were involved in the drill. The objective of this study was to evaluate the feasibility of security surveillance cameras in adding critical information not identified by neither the external auditors nor the hospital's personnel following a surprise drill.

Methods:
Videos recorded by one hospital's security cameras during a drill were analyzed by the local EDC. Conclusions drawn out following the evaluation of a video recorded by different cameras were compared to observations made by the external auditors and information provided by the local hospital's personnel.

Results:
The videos verified the findings made by the auditors. Furthermore, the videos identified critical gaps in preparedness not identified by neither the auditors nor the local personnel.

Conclusions:
Hospitals that routinely record activities around the emergency department for security reasons may use these videos in order to evaluate events such as an MCI surprise drill presented in this study. The videos help place external auditors' comments into context. More important, the videos help identify critical gaps not identified by neither auditors nor local personnel.

DARWIN - Expect the Unexpected and Know how to respond: Training, Simulation and Virtual Reality for Action based Resilience Management

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Introduction:
Resilience is an important concept for enhancing crisis management. There is a need for efficient tools that support resilience concepts training. This paper compares different innovative tools developed and used in the DARWIN project.

Methods:
DARWIN Horizon 2020 project operationalizes resilience concepts through developing DARWIN Resilience Management Guidelines (DRMG) and associated Concept Cards (CC). The CCs integrates generic and adapted guidelines, in which health care is an important domain. Target users are Critical Infrastructure (CI) managers and operators, crisis and emergency response managers, policy makers, practitioners, researchers, professionals. The different training tools, such as Virtual Reality (VR), serious gaming, in the form of mini games and table-top based Emergo Train System (ETS) contribute to different aspects of deployment of the guidelines.

Results:
Training modules on resilience management guidelines are used as introduction to the DRMG. DARWIN Training for Operational Resilience Capabilities (D-TORC) enables organizations to develop their resilient capacities, while also meeting compliance requirements. We see resilience concepts described in the CCs resonate with the TORC, simulation, mini-games, innovation games and academic course. A dynamic ensemble of coherent training activities is created supported by simulation technology. A sequence of interventions is introduced and investigated in detail by means of the TORC gaming. VR is used to enrich and visualize the situations, choices and consequences. ETS is used during the training and evaluation.

Conclusions:
The conclusion is that these innovative tools support the DARWIN main objective, closing the gap between theory and practice.

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Health Care in Danger - Dealing with Violence against Ambulance Personnel

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Introduction:
Health Care in Danger (HCiD) is an international initiative, led by the International Committee of the Red Cross (ICRC) aiming at raising the attention to attacks against health care providers and facilities, and to the denial of access to healthcare caused by conflict. As part of this initiative, the Norwegian Red Cross created the community of action of "pre hospital providers acting in volatile situations". The objective of this community of action is to facilitate the exchange of knowledge, experience and best practices as well as to discuss dilemmas and issues affecting the members of the CoA.

Methods:
The workshop will consist of a short introduction to the HCiD initiative, 2 short presentations on the experience in the Mexican RC – dealing with the gang Violence and the Philippines RC, on their lessons learnt from the current conflict in Mindanao. This will be followed by an interactive session, where 4 case studies will be presented and discussed with the audience.

Results:
The results of the interactive discussion will represent different views on the response to real life situations.

Conclusions:
Attacks against health care providers are an issue of growing concern globally. While some "high level" initiatives are in place to penalize these actions, more attention is needed at the responders level to provide them with this emerging threat.

Experience in Marawi Conflict

Von Ryan Ong

Philippines

Update on New Approaches for Diagnosis and Treatment of Nerve Agent Poisoning

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The recent events in Syria with hundreds of deaths and the assassination of Kim Jong Nam in Malaysia, probably with VX, underline the need for fast detection of contaminated patients and improved therapy. In order to allow rapid identification of patients with a nerve agent contamination a Ready-to-use Kit for the detection of nerve agents or organophosphorus pesticides on the skin was developed. It was shown that this "OP Skin Disclosure Kit" which is based on the reaction of agents with acetylcholinesterase is highly sensitive, rapid and able to detect generically subclinical concentrations of organophosphorus compounds on the skin.

Although standard treatment of nerve agent poisoning with atropine and an oxime shows good effectiveness in case of several nerve agents, important gaps are remaining. At first, acetylcholinesterase inhibited by various nerve agents, e.g. soman and tabun, cannot be sufficiently reactivated by oximes. Hence, an alternative option could be to modulate the nicotinic receptor in order to enable neurotransmission in spite of persisting acetylcholine excess. First results with bispyridinium non-oximes showed promising results. In detail, it appears that the nerve agent induced desensitization of the nicotinic receptor may be antagonized by such compounds. A further problem in therapy is the persistence of several nerve agents, e.g. VX, after percutaneous exposure for several days. Therefore methods to enhance elimination by small molecule scavengers (cyclodextrins, calixarenes) or catalytic enzymes (phosphotriesterases, paraoxonase mutants) are matters of research. Preliminary results from in vitro and in-vivo studies showing clear improved efficiency of several lead compounds will be presented.

Chemical Attacks: Gaps and Lessons Learnt from EU Projects and French National SOP's

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Introduction:
Nowadays unexpected events can have multiple facets and can impact the civilian population in various ways. In this case our goal is to take care of victims and to keep the FRs safe while performing their tasks at the scene and in hospitals.

Methods:
European projects offer the opportunity to explore standard CBRN operational procedures throughout large-scale field exercises. Two chemical scenarios involving nerve agents and blister agents are often tested in table-top and field exercises. The rise of UAV devices and the number of suicidal bombers is included as part of the scenarios.

Results:
Dry and wet decontamination procedures are discussed in both cases considering the high mortality rate in nerve agent intoxication and the delay of symptoms to appear for the second agents. In addition, having trauma injuries or haemorrhages makes decontamination countermeasures more difficult. The experience in training medical teams is relatively high in most countries; however the experience of facing an overwhelming number of victims is unfortunately poor, and becomes poorer upon treating pediatric patients. Post-event decontamination of structures is also questioned.

Conclusions:
These toxic trauma scenarios highlight the need to manage the crisis case by case with highly resilient capacities. Simulation training tools are built to force decision makers and responders to reason and conceive a common understanding of the threat and educational program.

Enhanced Potency of Cholinergic System Reduce Anticholinergic Toxicity

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Introduction:
Anticholinergic agents (ACA) course delayed cognitive impairment (COI) after the exposure. Cholinesterase inhibitors (CI) not provide significant protection. Reinforcement of cholinergic activity may improve cognition after terroristic attack with ACA.

Methods:
29 patients severely poisoned with ACA admitted to SPB Poison Center (PC); randomly divided into 2 gr. Both gr. received galantamine (CI) 30±0,2 IV. The 2d gr additionally received choline alfascerate (acetylcholine precursor) 1g IV + Cytoflavine (adenosine mimic) 20 cc IV in saline, up to 3 days of stay in PC. Vital signs, severity of psychosis was recoded. MMSE test was performed of the 3day (discharge from ICU) and 15 day (active call) after ACA exposure. Statistics done using Wilcoxon "U" criteria (p=0,05).

Results:
There were no changers in vital signs and severity of psychosis. MMSE on the 3 day, and 15 day differs: 23,1±0,7/26,1±0,5 controls/treated 27,3±0,3/29,1±0,5 controls/treated, correspondently (p=0,05).

Conclusions:
Presynaptic acetylcholine precursor (choline alfascerate) in combination with adenosine mimic, and cholinesterase inhibitor ameliorate memory impairment after anticholinergic exposure.

Intubation with a Gum-elastic Bougie while Donning Chemical Personal Protective Equipment

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Introduction:
The use of chemical warfare agents or other toxic chemicals might lead to a toxicological mass casualty event (TMCE). Besides antidotes in the relevant cases, respiratory support is the mainstay of treatment for poisoned victims, and must be instituted immediately. Providing medical care for a large number of casualties in a chemical scenario is challenging. Medical personnel must use chemical personal protective equipment (PPE) which are known to hamper performance, including orotracheal intubation. The gum-elastic bougie (GEB) is a visual stylet commonly used to improve success rate in cases of difficult intubations. We aimed to determine whether the application of a GEB reduces the time and number of attempts required to achieve successful intubation while using PPE.

Methods:
We performed a randomized cross-over study with 50 treating practitioners. Each Participant performed orotracheal intubation on an AirMan® Mannequin, both with a semi-rigid stylet and with a GEB, in a randomized order, while using PPE. Primary endpoint was success or failure to achieve airway control. Secondary endpoints were the number of attempts and the time required to achieve airway control. Associations between self-assessment of skills and the parameters of a successful intubation were also evaluated.

Results:
Success rate was lower with the GEB than without it, more attempts were needed and time to airway control was longer (82%, 1.4±0.7, 43.6±14.6 sec. vs 100%, 1.0±0.2, 23.1±10.5 sec.; P=0.002, P=0.005 and P<0.001, respectively). Correlations were found between the number of attempts needed to intubate with and without a GEB (Pearson coefficient 0.349, P=0.025, and between the time required to intubate with and without a GEB (Pearson coefficient 0.415, P=0.007). In the paramedics group, a negative correlation was found between self-assessment of GEB skills and the time for airway control with a GEB (Pearson coefficient -0.615, P=0.009). High self-assessment of GEB skills was associated with less attempts for airway control with a GEB (1.0±0.0 vs. 1.4±0.8, P=0.001).

Conclusions:
Using a GEB did not improve intubation performance while using PPE. Nevertheless, in a TMCE, caregivers who are well trained and confident in airway management should consider using a GEB when orotracheal intubation is challenging.

Botulism Clinical Update

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Introduction:
BAT® [Botulism Antitoxin Heptavalent (A,B,C,D,E,F,G)-(Equine)] anti-toxin is a mixture of equine immune globulin fragments indicated for the treatment of symptomatic botulism in adult and pediatric patients. The effectiveness of BAT anti-toxin is based on efficacy studies conducted in animal models.

A general explanation of the pivotal animal studies, post market surveillance and outcomes of an observational patient registry for patients treated with BAT product distributed in the USA is briefly discussed.

Methods:
Overall it took 20 animal studies for two well-designed and appropriately powered pivotal efficacy studies – one in which the effectiveness of BAT was assessed against all 7 serotypes in the guinea pig, and the other where efficacy is confirmed in the Rhesus macaque using Serotype A.

Results:
Clinical Experience for BAT to date involves approximately 700 adult and pediatric patients with suspected botulism. In pre-licensure, patient data was recorded under the US CDC expanded access program (231 adult and pediatric patients between 10 days to 88 years of age). In post licensure greater than 350 patients to date have received BAT and been followed up by enhanced expanded access program.

Conclusions:
The analysis of the post market surveillance data provided a unique opportunity to demonstrate clinical benefit in the field study required by the animal rule. While the animal rule is applied because human efficacy studies are not ethical or feasible, a post-marketing requirement is to conduct a study to evaluate safety and clinical benefit when circumstances arise and demonstrate the favorable benefit-risk profile that supported licensure.

Inhalational Therapy of Mice Exposed to Toxic Agents in Mass Casualty Events by Novel Drug-Carrier Formulations

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Introduction:
The first phase of feasibility studies in mice, reported here, focuses on testing an innovative approach, developed to address respiratory damage from chemical and biological agents potentially used in a non-conventional terror attack. It combines hyaluronan- liposomes encapsulating anti-inflammatory and/or antioxidant drugs and administering these formulations in an aerosol form, using a mobile clinical nebulizer, thus enabling immediate treatment in the field.

Methods:
Mice, in an inhalation chamber, were exposed to aerosols of Cl2-air mixtures or LPS, representing chemical and biological toxic agents, respectively. Inhalational treatment was administered using a drug-liposome formulation. Control mice were exposed to air alone. The respiratory damage and treatment efficacy were measured by non-invasive and invasive means. The encapsulated drugs tested were Zileuton, NAC, or NAC+dexamethasone.

Results:
The therapeutic goal was to bring the mice exposed to Cl2 or LPS to the levels of control mice, monitored by both invasive and non-invasive means. Non-invasive: On day=2 from exposure the mice exposed to the toxic agent lost significant weight compared to control animals. Treatment with the liposomal formulations allowed almost complete weight recovery compared to un-treated mice - whereas the latter failed to reach the therapeutic goal with time. Invasive: lung TNFα levels increased in the exposed mice (vs control mice) and were brought down to control levels upon treatment with the liposomal formulations.

Conclusions:
Proof-of-concept was obtained for our novel inhalational therapy, showing good correlation between the invasive and the non-invasive measures. Continued studies, optimizing the liposomal formulations, also pursuing additional invasive and non-invasive means, are underway.

The Training Disaster Medicine Trainers (TDMT) Experience: Creating a Resilient Generation of Future Health Care Practitioners

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1. CRIMEDIM - Research Center in Emergency and Disaster Medicine
2. IFMSA International Federation of Medical Students' Association
3. SISM Segretariato Italiano Studenti di Medicina

Introduction:
The number of disasters has exponentially increased and disaster medicine education has become indispensable to ensure effective prevention, preparedness and response. Although medical students have recognized the importance of enhancing education and training in disaster medicine, only few universities worldwide have included disaster medicine into their curricula. Training disaster medicine Trainers (TdmT), delivered by the Research Center in Emergency and Disaster Medicine (CRIMEDIM) and the International Federation of Medical Students' Association (IFMSA), aims to fill this gap by training medical students to become trainers for their peers. The key objective of the course is to create a wide and sustainable capacity building network for medical students around the globe.

Methods:
TdmT consists in three months of e-learning phase, 1 week of residential course and distance planning activities. At the end of the course, students acquire knowledge in the field of disaster medicine, skills in peer education and competencies in planning courses, including International Trainings in Disaster Medicine (ITDM), to be delivered to their peers at a local, national and international level, using the IFMSA network.

Results:
Since 2015, 50 medical students from 30 different countries have been trained to become trainers. Graduate trainers hosted 16 national courses and 12 ITDM, influencing more than 1000 medical students worldwide.

Conclusions:
The diffusion of the culture of prevention and disaster risk reduction is a fundamental step to protect people's health and minimize the impact of disasters. TdmT has widened the spectrum of medical students with disaster risk reduction knowledge, enhancing the resilience of communities towards disasters.

The Enhancement of Family based Community Resilience in Natural Disasters and Massive Civil Emergencies

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Introduction:
"Traditional community resilience" development approaches have placed a relatively greater emphasis on building physical and human community infrastructure: leadership, community process and social empowerment and other determinants of economic productivity.

Without any doubt these are critically important but not sufficient components of a comprehensive community resilience building effort.

We can say that FBCR (Family Based Community Resilience) can be a broader and more integrated approach. It considers strategies that invest in the human and social capital of the family as the main resource of a community as well as its productive and educative capacity.

Methods:
This is a quality methodology which will used the recorded materials from family focus groups.

Results:
The quality research emphasizes the relevance and effectiveness of the Family Based Community Resilience in Crisis

Conclusions:
The Enhancement of Family Based Community Resilience is one of the effective integrative and multi modal strategies in Natural Disasters and Massive Civil Emergencies.

First Responders' Wellbeing- Air Force Crew Experience

Eyal Fruchter

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Introduction:
The air-crew in evacuation teams are exposed to difficult sights and a huge psychological dichotomy between the safe air-force base and the middle of danger and agony. This gap puts them among the first line in danger first responders to develop acute reaction to stress.

Before the second Lebanese war (2006) they were prepared to their mission in every aspect but the mental one. During this war, the teams needed an urgent psychological intervention and after the war they agreed to a change in their preparedness.

Methods:
The intervention during war will be shown as well as the mental health preparedness afterwards.

Results:
Prior to the intervention, the unit's spirit was down and there were team members refusing to go on missions. After the intervention, people volunteered to the missions. By introducing the mental preparedness to the profession school, we managed to reduce these outcomes in the conflicts that came since 2006.

Conclusions:
Metal preparedness is a crucial subject for optimizing the functioning of first responders.

The Resilient Emergency Responder: Resources and Coping Strategies

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Introduction:
Based on theoretical concepts of stress theory (Lazarus & Folkman, 1984) and salutogenesis (Antonovsky, 1979), this contribution focuses on the question, how the resilience of emergency responders can be improved. Former research e.g. shows, that social support can help to reduce post-traumatic stress disorder and increase resilience (Southwick et al., 2005). A specific focus of this contribution lies on the dual role of rescue forces as being a professional crisis manager on the one hand and being self-affected by a disaster on the other hand.

Methods:
Within this contribution, we will present results from a qualitative content analysis (Mayring, 2000) of semi-structured interviews with professional and honorary rescue forces conducted in 2017. In total, 26 rescue forces and professionals have been interviewed.

Results:
The results show the complexity of stressors (e. g. complexity of the disastrous situation, responder's own living area or acquaintances being affected or aggressive behavior towards rescue forces) as well as resources (e.g. social support or experiences) and coping strategies (e.g. dealing with the situation or avoiding the experienced).

Conclusions:
The data serve as a starting point for the improvement or development of education and training tools for emergency responders.

Outreach following Terrorist Attacks: Does it reach or should it be out?

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Introduction:
Immediate psychological treatment to prevent the development of PTSD following terrorist attacks is mandated and funded in Israel. Little is known about the feasibility, uptake and efficacy of this intervention. This study presents a naturalistic follow up of 130 adult terror attack survivors from Hadassah Medical Center, 2015-2016.

Methods:
Individuals presenting to the Emergency Room after a terrorist attack were followed up with an outreach telephone assessment, within 10 days of the attack. Symptomatic patients were invited to a clinical assessment within a month of the attack, and 12 weeks of immediate treatment. A one year follow up was also carried out.

Results:
71 (61.2%) were men, and 45 (38.8%) were women, with an average age of 39. Most patients (77%) were treated for their physical injuries in the ER only, and 23% were hospitalized. 37% were victims of terrorist stabbing, 35% of shooting. At the initial outreach, 23% could not be reached, and a further 9% refused assessment. 20% were symptomatic and were invited fr further assessment. At the one year follow up, 26% reported severe PTSD symptoms.

Conclusions:
The data from this naturalistic study indicate that successful outreach and prevention are difficult to achieve, and acceptability and feasibility are low. In addition, patients who presented with high levels of symptoms at one year were often those with low levels of initial difficulties, raising the question of whether two phase assessment is more appropriate. Potential solutions to these issues will be discussed.

Medical Resilience in NATO

Stefan Kowitz

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Introduction:
Resilience is a core element of collective defence and supports civil preparedness and consequently, the theme of 'resilience' became a leading topic after the NATO Summit in Warsaw.

Methods:
Therefore the strategic NATO Headquarter for Allied Operations (ACO), under the leadership of ACO Medical Advisor, will organize a Medical Workshop with NATO and NATO Partner Nations end of October 2017. The workshop will focus on three medical aspects of resilience defined during the Warsaw Summit:

- MASCAL Scenarios during a Major Incident
- Medical Support for refugee camps.
- Food and water safety in a hybrid scenario.

Based on the experiences of the Medical Services of NATO and NATO Partner Nations, we will collect and compare best practice. Additionally, we will analyse doctrine and capabilities to improve our preparedness for future events and missions.

Results:
I would be happy to provide an overview about the results of the upcoming WS as a possible Key-Note speaker for your conference.

Conclusions:
Medical resilience as part of civil-military preparedness and requires early cooperation of civilian and military medical stakeholders.

Posttraumatic Growth in Psychosis

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Introduction:
Recent research has shown high rates of exposure to trauma among people with serious mental illness (SMI). In addition studies suggest that psychosis and mental illness-related experiences can be extremely traumatic. While some individuals develop full blown PTSD related to these experiences, it has been noted that some may also experience posttraumatic growth (PTG). However, few studies have examined PTG as a possible outcome in people who have experienced psychosis.

Methods:
To further understand the relationships between psychosis and PTG, 121 participants were recruited from community mental health rehabilitation centers and administered trauma and psychiatric questionnaires.

Results:
High levels of traumatic exposure were found in the sample. Regarding our main focus of study we observed that people who endured psychosis can experience PTG, and that PTG is mediated by meaning making and coping self-efficacy appraisal. Psychotic symptoms were found to be a major obstacle to meaning making, coping self-efficacy, and PTG, whereas negative symptoms were found to be significantly related to PTG when mediated by meaning making and coping self-efficacy.

Conclusions:
The current research provides preliminary evidence for potential role of meaning making and coping self-efficacy as mediators of PTG in the clinical, highly traumatized population of people with SMI who have experienced psychosis. This may have both research as well as clinical practice relevance for the field of psychiatric rehabilitation.

Attention to Vulnerable or at Risk of Mistreatment Elders by out of Hospital EMS SAMUR- Proteccion Civil

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Introduction:
SAMUR-Protección Civil is an EMS providing emergency medical care in the pre-hospital setting in the City of Madrid (Spain) and, as such, has to be concerned with the phenomenon of vulnerability, social isolation or abuse of elderly population. Therefore, in 2010 a procedure aimed to provide a comprehensive care for elderly people at risk or victims of mistreatment. The objective is to describe the epidemiological profile of the elderly assisted, their health needs, the indicators of abuse as well as the social intervention carried out.

Methods:
Prevalence study, Scope: Emergency Medical Service that develops its activity in the urban environment Inclusion: Cases treated for suspected abuse of the elderly between March 1, 2010 and December 31, 2016 Variables: epidemiological, types of abuse, health needs and social intervention. Statistics: measures of central tendency and dispersion and relative frequency distribution. SPSS v.17

Results:
n = 711. Mean age 82 years (IQR: 11). 263 (37%) men with a median age of 80 years (IQR 12) and 448 (63%) women with a median age of 82 years (IQR 9).
In 221 (31.4%) cases, cognitive impairment was detected.

Conclusions:
6 out of 10 cases detected were women. 50% were over 82 years old. 31, 4% had cognitive impairment. 4 out of 10 cases patients were transferred to the hospital. Vulnerability due to isolation is the most frequent indicator of abuse detected, reaching almost 80% and practically in 100% of the cases, monitoring by social services is achieved.

These data support that EMS should encompass not only clinical aspects but also the psycho-social well-being.

We had Good Mornings during "Protective Edge"': Deaf Persons Coping with Emergencies using Smartphones

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Introduction:
In emergency situations, alerts are frequently transmitted via sound. People with hearing limitations are exposed to an increased risk. For years, authorities provided a pager that vibrates whenever a sound alarm is operated. However, warnings sometimes were late. New, free smartphones technologies (such as applications and social networks) offer warning alternatives. During 2014 (operation "Protective Edge") the Israeli population was exposed to approximately 4,000 alarms. This study explored the experiences of deaf Israeli citizens using a smartphone during this period.

Methods:
A quantitative study was conducted in the last two weeks of "Protective Edge". Questionnaires were distributed via electronic media including questions about the type of warning received, preparedness, and demographic questions. The questionnaires were written in accessible Hebrew (not in sign language).

Results:
Fifty-eight people completed the survey, 52% deaf people, 36% hard-of-hearing and 36% cochlear implanted. Most (93.3%) reported they used a Smartphone in their routine and during emergencies. Pagers were not used in routine life, and the population reported not being accustomed to their use. Seventy percent had received warnings via a Smartphone (Apps and WhatsApp groups) in the daytime. However, and similar to the situation with the pagers, smartphone warnings during sleep time were deficient, and deaf people depended on hearing family members or neighbors.

Conclusions:
Smartphones technologies improved deaf and hard-of-hearing persons during emergencies, but they are still exposed to increased risk at nights. It is important to provide different types of warnings to overcome each ones' disadvantages.

Lessons Learned from 28 Hospitals and City Agencies: Pediatric Disaster Exercise

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1. New York City Pediatric Disaster Coalition
2. New York City Emergency Management
3. New York City Department of Health & Mental Hygiene

Introduction:
Children are frequently victims of disasters. However, gaps remain in pediatric disaster preparedness.

The New York City Pediatric Disaster Coalition (NYCPDC) is funded by the NYC Department of Health and Mental Hygiene (DOHMH) to prepare NYC for mass casualty events that involve large numbers of children. On May 25, 2017, the NYC PDC conducted a functional exercise testing surge, communications, and secondary transport. Participants included 28 NYC hospitals, the NYC Fire Department-Emergency Medical Services (FDNY-EMS), NYC Emergency Management (NYCEM), NYC DOHMH and the NYC Medical Reserve Corps (MRC).

Methods:
The hospitals and agencies participated in group and individual planning meetings. Scenario-driven, operations-based activities challenged participants to employ their facility's existing pediatric surge and secondary transport plans' during an event.

The Exercise assessed: Communications, Emergency Operation Plans, Surge, Patient Tracking, Patient Transfer, Supplies and Staffing. Internal and external evaluators rated exercise performance on a scale from 1 to 4 using an internet-based software application.

Results:
An After- Action Report was written based on information from evaluation data, site specific and group hot-washes, and an after-action conference. Strengths included meaningful improvement of plans before/after the exercise and doubling pediatric critical care capacity through implementation of the exercise objectives. Challenges included: gaps in communication/patient tracking, lack of sufficient sub-specialty support, the need for "baby-sitters" and inadequate supplies of blood products and ventilators.

Conclusions:
Conducting a multi-hospital and agency pediatric specific exercise produced lessons learned to address exercise gaps that can improve citywide capabilities during future full-scale exercise and real-time events.

Emergency Services and Pediatric Population with Special Health Care Needs: Results of a Retrospective Review

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Introduction:
Approximately 20% of children in the United States have some form of developmental delay, cognitive/intellectual disability, sensory or speech and language impairment, behavioral or mental health disorder, significant learning disability or chronic health issues. Described collectively as patients with "special healthcare needs (SHCN)", these patients and their families often require services, beyond that required by children generally, and are often served through multiple healthcare providers, educational institutions and social service agencies.

Children with SHCN have unique needs during emergency and crisis events. However, few disaster and emergency medical service (EMS) personnel have the skills and training needed to successfully work with this complex population.

Methods:
In order to understand the extent to which pediatric SHCN patients received services from EMS personnel, we conducted a retrospective review of all emergency calls made to a large urban EMS system in Midwest state in the United States. Through a review of every patient record in last three years, we identified all EMS runs involving pediatric SHCN patients and evaluated the nature of the emergency, chief complaint, and description of emergency services provided and any challenges encountered by the care team.

Results:
In this presentation, we expect to discuss the results of this study and plans for follow up research.

Conclusions:
We will provide implications for emergency provider training, and suggestions for inclusion of children/youth/adults with SHCNs in emergency preparedness and mass casualty incident response planning.

The US National Pediatric Disaster Coalition: A National Framework for Advocacy for Children in Disasters

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Introduction:
Children are frequently victims of disasters; they have age-specific vulnerabilities that heighten their risks and magnify their unique needs. This can become more difficult when planning for the special needs of pediatric patients with access and functional needs who may have pre-existing conditions and physical, developmental and psycho-social disabilities. Critical gaps in pediatric disaster planning include the provision of increased staffing, specialized equipment, training and matching resources to needs.

Methods:
To address these gaps a National Pediatric Disaster Coalition (NPDC) Conference was held in 2015. 208 individuals attended the Conference, from healthcare coalitions, hospitals, community and behavioral health entities, access and functional needs advocates, and government. Expert speakers, addressed disaster planning, response, resilience, recovery and lessons learned for coalitions.

Results:
Challenges identified included: 1) lack of pediatric disaster mental health services and training; 2) silos among community partners, hospitals and governmental agencies 3) lack of capabilities for transporting pediatric patients; and 4) general hospitals (who see 90% of pediatric patients) not being trained and equipped to care for children in disasters. The NPDC was created as a direct outcome of the conference. It includes nationally-recognized experts on pediatric disaster preparedness, coalitions, government liaisons from FEMA, Health and Human Services, Homeland Security, the CDC and national pediatric disaster advisory committees, commissions, agencies, and nationally-recognized organizations.

Conclusions:
The NPDC's mission is to advocate for and advance preparedness, mitigation, response and recovery for infants, children, and their families in disasters. Expert knowledge necessary to plan and allocate the appropriate and essential resources is utilized to address pediatric specific needs in disasters.

The Potential Contribution of Elders for their Communities during Emergency Situations

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Prevention Centre (CSPC), Israel; Limor Aharonson-Daniel, Faculty of Health Science; PREPARED Center for Emergency Response Research Ben-Gurion University of the Negev, Israel

Introduction:
Community resilience is perceived as a core element in preparedness and response plans, since the community members have a significant role in functioning in a time of a crisis. During emergencies, it is important to identify resources beyond needs in order to promote coping with these situations. In the professional literature, the ageing population is described as a vulnerable population with special needs. The aim of this study is to present the community resilience scores among elders.

Methods:
Study included small and mid-size towns in Israel. Community resilience was assessed by the Conjoint Community Resilience Assessment Measure (CCRAM) tool. The study was conducted using randomly selected address surveys, and web-based surveys that were distributed to electronic mailing lists of small communities. Correlation analysis examined the relationship between the CCRAM scores and age. Multi-variant analyses modeled the CCRAM score as a dependent variable.

Results:
The study included 2222 adults (mean age 44.13, SD= 14, range 18-93 years), from midsize towns (n=976, 43.6%) and small communities (n=1246, 55.7%). Correlation between age and CCRAM score was positive $r(2222)= 0.120$, $p<0.001$. Multiple regressions explored the age of 61-75 with significant positive association to CCRAM score, in comparison to the reference group of 31-45 years ($p<0.001$).

Conclusions:
The study exposes an increase in community resilience scores among elders living in their community. Based on this, beyond providing the needs of the elders, it is important to take into account the unique contribution of the ageing population to the general community in a time of a crisis.

Operation Bushmaster: A Unique Educational Exercise

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Introduction:
Operation Bushmaster is a unique large scale training exercise conducted annually by the Uniformed Services University of the Health Sciences (USUHS) for its medical students and graduate nurses. The exercise has the students simulate the operation of U.S. military field hospitals in a hypothetical country with an ongoing insurgency.

Methods:
The fourth year medical students and graduate nurses for the exercise are divided into platoons and faculty are assigned to each platoon to evaluate the students' performance and to provide clinical and operational instruction. A few military medical students from other countries also participate. The students receive extensive preparatory instruction on the hypothetical country situation and on practical skills. The students then relocate to Fort Indiantown Gap (a National Guard training facility) where Operation Bushmaster is carried out. The faculty come from USUHS and other U.S. military medical facilities, and from Canada and the United Kingdom. The students then provide care for simulated medical and combat injury cases (acted by first year medical students from USUHS). The faculty also present the students with multiple operational problems which they must analyze and solve.

Results:
The students learn to provide advanced medical care despite the difficulties associated with the combat environment. The capstone event of the exercise is a mass casualty simulation where two of the platoons come together to treat and extricate a large number of simulated casualties.

Conclusions:
Operation Bushmaster is USUHS's capstone exercise, and has been rated by the students as a major highlight in their medical education. It integrates USUHS's four year military medicine curriculum where the students are called upon to demonstrate proficiency in the three curricular pillars: military medicine, tactical combat casualty care, and leadership. Replication of the Operation at a smaller scale should be useful for other countries' militaries.

The Left of Bang Concept: Reducing Injury by Considering Pre-injury Medical Interventions

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Introduction:
Combat Injuries have devastating effects on those affected both physically and psychologically. The recent conflict in Afghanistan demonstrated a year on year improvement in survival following advances in point of wounding care, rapid transfer to trauma center facilities and consultant delivered care. To improve outcomes further there is the requirement to innovate trauma management. One potential conceptual shift is to consider delivering medical interventions pre-injury.

Methods:
This paper aims to discuss the basic science and clinical studies exploring some of the potential interventions that could be considered. In addition the ethical considerations relating to those interventions that are purely prophylactic and those interventions which may enhance performance, appearance and capability.

Results:
The ethics of utility, accountability, responsibility will be discussed along with potential special military considerations in relation to the two types of left of bang medical trauma intervention.

Conclusions:
Current military use of prophylaxis centers on infectious disease with the use of pre-deployment vaccinations and antimalarial drugs. The left of bang concept introduces the idea of using medical interventions to improve outcomes in trauma survival.

An Inter-professional Educational Team Helps Improve NYC's Disaster Response Posture.

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Introduction:
The goal, to teach Basic Disaster Life Support (BDLS), a course that prepares health professionals for the management of injuries and illnesses, caused by disasters, and public health emergencies, to members of the New York City, Medical Reserve Corps (NYC, MRC). BDLS is one of a series of courses of the National Disaster Life Support Foundation (NDLSF) that provides training programs for strengthening public health preparedness. The guiding principles of the course are an all-hazard approach, with emphasis on the vulnerable and underserved populations.

Methods:
This was accomplished by a team of experienced, inter-professional faculty members, at the New York University, College of Dentistry (NYU/Dentistry). NYU/Dentistry is a designated training center of the NDLSF group. The training center staff includes a physician (MD), a dentist (DDS), a medical sociologist (PhD), and an oral pathologist (DDS, MA). They prepare, and present together, each year, with shared values, to the MRC class, of over 100 health professionals.

Results:
Those registered for the course take an on line pre-test, that assess their knowledge of disaster preparedness and response. Subsequently, they are required to take a post-test, that they must pass to earn a Certificate of Completion, and so outcomes and improvement of scores are readily measured, and demonstrated.

Conclusions:
The NYC, MRC created by the city's Department of Health and Mental Hygiene (DOHMH) after the 9/11 terror attacks, enhances NYC's emergency preparedness by ensuring that a trained group of volunteer health professionals is ready to respond. This BDLS course improves its readiness posture.

Improving Public Health Readiness for Sea Level Rise: A Progress Report on a New Training Initiative

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Co-author/s: Christine Ortiz-Gumina, National Environmental Health Association (NEHA), Washington, DC

Introduction:
As the National Oceanic and Atmospheric Administration and others have noted, global sea level has been rising. Furthermore, in recent decades, the rate of sea level rise has increased. Rising seas can result in a range of serious public health impacts. Addressing this emerging health threat creates new preparedness challenges for public health professionals and agencies.

Methods:
In response to sea level rise, a new effort to help prepare future public health professionals was begun in 2014–15 in the Hampton Roads region of Virginia. Involving Old Dominion University, Eastern Virginia Medical School, and various stakeholders, the effort began by incorporating substantial content on sea level rise into public health training. This was followed by the creation of new opportunities for public health students to work directly with agencies/organizations currently dealing with sea level rise issues. An initial report on the pilot training effort and its early accomplishments was released in 2017. The current presentation provides an updated progress report and outlines future steps.

Results:
Though still a work in progress, this innovative training project continues to grow and build on initial successes. More training content is being developed, formal competencies and learning outcomes are being refined, additional practical training opportunities are being created, and knowledge acquired through the training initiative has begun to find its way into public health agencies.

Conclusions:
With global sea level rising, it is essential for public health to be prepared. Efforts such as the one in Virginia have an important role to play in meeting the challenge.

A Prospective Cross Sectional Study on Ethical Issues in Residents Attending a Post Graduate Disaster Medicine Course in Italy

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Co-atuhor/s: Federico Nicoli and Mario Picozzi - Center for Clinical Ethics - Insubria University, Varese, Italy

Introduction:
The Sendai framework for disaster risk reduction recommends promoting and enhancing the training capacities. If clinical and managerial educational topics in disaster medicine are strongly depicted, this discipline still reveals a complexity of concerns about several ethical topics. The purposes of the present pilot study, realized by the Center for Clinical Ethics of the University of Insubria in Varese, Italy, were to investigate the educational interest and cognition by a cohort of critical care medicine residents on ethical issues attending a disaster medicine and humanitarian health response (HM) international program delivered by the Research Center in Emergency and Disaster Medicine of the University of Eastern Piedmont in Novara. Italy.

Methods:
An anonymous questionnaire, divided in four parts, was proposed to the MDs students attending the HM program in three academic sessions (2015-2017).

Results:
Forty nine questionnaires were received. The interest about ethical issues is robust for the 96% of the respondents. As assumed disasters ethical dilemmas are perceived dissimilar to the ordinary medicine practice ($\chi 2$ 0,951, p=0,003). About the importance of sixteen main topics proposed, like disaster triage, allocation of resources, informed consent, palliative care for non-salvageables or disaster research the range of acceptance was demonstrated ($\chi 2$ 0,978, p=0,044). A significant portion of attendees consider useful the contribution of an ethical consultant to draft a mass casualty protocol (88%) or in case of debriefing (82%), less in the operational phases (57%).

Conclusions:
The interest about ethical dilemmas by trainers in disaster medicine courses represents an educational component to be considered.

Communications Science as a Core Competency in International Public Health Emergency Management

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Introduction:
In a resource-limited international public health response, often the focus is emergency management and epidemiology. While these components are crucial, communications is another vital part of public health emergency management (PHEM). Communication science is a diverse field with many meanings in the context of a response - media relations, strategic communications, risk communications, social mobilization, and health promotion. However, resources are often limited given the extent and breadth of humanitarian responses. Frequently, limited staffing capacity or perceived lack of need results in an unoccupied Public Information Officer (PIO) or Communications Specialist position within an Incident Management System.

Methods:
Core competencies for international PHEM specialists are in development. Including communications science as a required competency would allow for PHEM specialists, often those who serve as Incident Managers (IMs) in humanitarian responses, to be cross-trained in the basics of PIO responsibilities and other aspects of communicating during emergencies. International Health Regulations core capacities already include preparedness and risk communications, emphasizing that both are crucial components to a response.

Results:
Including communications science as a core competency will result in IMs and humanitarian responders who are better prepared to meet imminent communications needs. IMs and PHEM specialists with emergency management and communications expertise will result in a better-informed response and address staffing capacity.

Conclusions:
In a world inundated with emergencies, multi-disciplinary public health responders are essential. International PHEM specialists must understand and embrace the principles of communication science during a response in order to achieve a more effective response with reduced morbidity and mortality in those affected.

IN-PRO-SIM® Is there such a thing as Inter professional Communication? And if there is - can it be improved?

Dorothea Eisenmann & Fabian Stroben

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Introduction:
The emergency room is notoriously prone to preventable errors which can lead to patient harm and death. Evidence demonstrates that standardized procedures and communication on the paramedic/emergency care interface are key aspects to reducing handover time and rate of error. We conceptualized and are implementing and evaluating a simulation training module for students of three emergency care professions: final year medical students, advanced trainees of emergency nursing and student paramedics. Our objective is to develop competences and promote interdisciplinary cooperation and communication in order to improve operational safety.

Methods:
The longitudinal simulation-enhanced training format consists of nine sessions between 09/2016 and 02/2017. Each training module consists of various realistic emergency situations, each containing a pre-hospital, a handover, and an emergency room section.

With the Mixed Method Approach and KODE® method we developed competence observation sheets. Six competencies, out of 64 defined partial competencies, were selected in consensus.

Participants exchanged individual concepts of professional roles on the paramedic/emergency care interface and uncovered common misconceptions and communication barriers that undermine the handover process.

Results:
First interim results indicate that inter professional simulation training enables the development of various competences between and within groups of emergency medicine professionals.
Within one session participants developed the ability to communicate and team up across professional borders. So far 100% of the participants are satisfied with the simulation training; 98% stated that it helped to improve interface-communication in interdisciplinary teams.

Conclusions:
Strengthening the interlinkage between preclinical and inpatient care is just as important as cross occupational cooperation and information sharing among all stakeholders.

This is possible only through continuous training, further development of individual areas of competence and intensified interdisciplinary cooperation.

Utilizing the Social Media to Enhance Emergency Preparedness

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Introduction:
A major challenge in hospital emergency preparedness is dissemination knowledge to staff members from multiple disciplines, busy schedules and shift work. Last year our medical center successfully utilized short educational video clips disseminated via employee "What's-App" groups to enhance knowledge in preparation for an accreditation process.

Methods:
We describe hospital preparations for a major earthquake drill and the effectiveness of utilizing social media disseminated educational clips as assessed by questionnaires and drill evaluations.

Results:
Enhanced preparations for the drill started 7 months before the drill date and included updating departmental emergency plans and role specific action lists, preparing and posting of informational posters throughout the hospital, uploading of presentations, action plans and other educational materials to the hospital's emergency-management portal and educational lectures, to which all hospital staff were invited. Despite these preparations the assed level of staff knowledge midway through the preparations were found to be unsatisfactory. A short video including earthquake preparedness questions and answers and demonstrations was produced and disseminated through employee "Whats-App" groups. All nursing supervisors were equipped with knowledge evaluation forms to use during all routine rounds for the 3 weeks prior to the drill date. Following the dissemination of the clips they found significant improvements in staff knowledge. Following the drill the hospital was commended by controllers for the excellent and widespread staff knowledge.

Conclusions:
Utilizing emergency preparedness education clips, via hospital employee social media proved, in our experience to be effective and its potential roles needs to be further evaluated.

Identification of Individual Stress Coping Profile from Social Media during Emergencies

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Introduction:
Reports of unfortunate and stressful events on social media sites trigger various reactions and appraisals among users. Some of these appraisals are translated into textual expressions, and offer a unique opportunity to observe how the public processes and copes with the changing reality. The objective of the study was to build an automated tool for tracking textual signatures for human ways of coping, from social media's textual expressions. Monitoring public psychosocial pulse can enhance situational awareness, interpret the public's state of mind, detect at-risk users, and direct decision makers during crisis communication phases.

Methods:
A rule-based, Hebrew lexical resource aiding in the tagging and identification of human coping in users' expressions on social media platforms was constructed. The developed resource, Coping Lexicon (CopLex), is based on twelve core families of coping (Skinner, Edge, Altman, & Sherwood, 2003). CopLex directly assesses patterns of people's expressions triggered by potentially challenging or threatening events. CopLex's reliability and accuracy was examined. Next, the utility of the tool was examined on four text collections (N = 569,219) extracted from social media, containing comments related to emergency incidents. To find anomal patterns and potential state transitions in coping families frequencies over time, Seasonal Hybrid ESD (S-H-ESD) and E-Divisive with Medians (EDM) algorithms were used.

Results:
CopLex showed acceptable indices of reliability and search accuracy, and its utilization enabled detection of examples of each one of the twelve families of coping in the examined corpora. CopLex captured 66-75% of the documents in several crises-related corpora. The most common families of coping were information-seeking, opposition, self-reliance, and accommodation, while social isolation, problem solving, and escape tended to be least common. Coordination of actions and contingencies in the environment was dominant in corpora reflecting more sporadic and short-term crises, while coordination of preferences and available options, was dominant during a more prolonged period of crisis. During the days of the military operation "Protective Edge" (2014), representation of families of coping fluctuated and changed in response to external events and content of social media posts.

Conclusions:
To the best of our knowledge, this is the first attempt to develop a comprehensive rule-based lexicon for the identification of coping based on social media content. The outcomes of the study demonstrated the ability to capture public reactions and tendencies from a psychosocial perspective. This enables the establishment of a solid ground for organizations and emergency and communication teams to actively engage in ongoing conversations with the public, listen to stakeholders' concerns, and explicitly reply to affected population' requests for assistance in a timely manner.

Media Coverage inside Hospitals during Mass Casualties Events: The Israeli Phenomenon

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Israel

Introduction:
On august 7th, 2017, at 21:00, an Israeli military "blackhawk" helicopter crashed inside a remote Israeli air force base in the Negev desert. Less than 30 minutes later, most of Israeli news outlets and journalists already shared the news about the crash (and the fact that one pilot died and the other was seriously injured).

The news travelled fast through the renowned immediate messages network – "whats up". An hour later, dozen reporters and photographers already waited at the "Soroka" hospital's helipad, in the southern Israeli town of Beer Sehva, to document and report the arrival of the injured pilot who survived the crash.

This event is only one example of the speed news travel in Israel: public events or discreet & security affiliated news – all travel fast thanks to one key factor. Geographically, Israel is a very small country with a smartphone and social network penetration rate, which is one of the highest in the world. This fact means that not only everyone is sharing the news with each other; it also means that every person inside a hospital holding a smartphone may adopt the role of a "news reporter".

When one combine the fact that everyone is informed all the time of every event, with the fact that in Israel the media has almost free access to enter public hospitals, we can explain the unique Israeli phenomenon: the media is reporting freely from inside hospitals during mass casualty events.

The presence of media inside hospitals area at the same time the hospital staff is dealing with treating large amount of casualties, anxiety of families and etc – is adding even more stress to an already stressed system.

In Israel, hospitals had to adopt creative tools to deal with this phenomenon.

In my short lecture, I will share some of these tools.

Risk Communication about Natural Hazards - How Audiovisual Narratives can Stimulate Home Owners' Information Seeking and Protection Motivation

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Introduction:
Our research examines the role of emotionally engaging audiovisual messages in stimulating cognitive elaboration, information seeking, and intention to implement protective measures against natural risk among home owners.

Methods:
The study was conducted with a sample of 842 participants, who watched one of four risk awareness videos in a 2 x 2 experimental design. The first experimental factor was the vividness of emotional images and testimonials in the video (high, low), and the second factor was the type of natural risk presented in the video (storm, hail). Participants were asked to watch the video, then browse a mirrored version of the original website of the German Federal Office of Civil Protection and Disaster Assistance at their convenience, and answer several questions afterwards.

Results:
Exploratory data analyses revealed that all variables were significantly and positively correlated as expected. To test our hypotheses we've conducted two-way ANCOVAs. The results show that the experimental variation of emotional vividness had a main effect on the dependent variables: being moved, $F(1, 818) = 12.05$, $p < .001$, perspective taking, $F(1, 818) = 7.80$, $p < .01$, cognitive elaboration, $F(1, 818) = 3.85$, $p = .05$, time spent reading the website, $F(1, 818) = 5.95$, $p < .05$, and intention to take protective measures, $F(1, 818) = 3.43$, $p = .06$.

Conclusions:
We found that among our sample of home owners emotionally moving and empathy inducing messages were effective in promoting perspective taking, cognitive elaboration, further information seeking on a relevant website, and ultimately intention to protect their homes from natural hazards.

Real Time Monitoring of Public Mental Health during Conflict using Smartphones: Insights and Lessons Learned

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Introduction:
How can we monitor psychological distress in civilians during a crisis or a conflict? Which war-related events and exposures spike distress? Which coping mechanisms are most effective? Can we identify high-risk groups for subsequent mental health problems? This novel study aimed to answer these and other questions by assessing war exposure, psychological states, symptoms, and emotions in real time using smartphones.

Methods:
During the Israel-Gaza 2014 conflict, 182 Israeli civilians exposed to rocket fire, including 86 with a serious mental illness, completed assessments twice daily for 30 days via mobile phone. There was very high compliance, with over 9000 assessments completed in total.

Results:
We identified overall trends in mental health distress in line with national events. For example, traumatic stress symptoms sharply increased in line with IDF losses, and reduced during ceasefires. In addition, we tracked how rocket siren exposure impacts on individuals' psychological distress and emotional states, identified high risk groups, mapped out recovery trends for different groups, and investigated the mediating effect of sense of threat.

Conclusions:
This study showed that it is feasible to monitor public mental health during conflict in both the general population, and in high-risk groups. This approach can be used to identify vulnerable individuals and communities, to track recovery, and to disseminate online interventions.

SIPAPSI: A Software for Psychological First Aid Evaluation

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Introduction:
Psychological First Aid (PFA) is a set of guidelines to help victims of disasters in a humane and proper way. We use a PFA protocol adapted to the Argentine culture it is in line with the guidelines for victim help proposed by the World Health Organization (2011) and by Farchi's 6C Model (2012, 2013; Farchi & Hantman, 2013). We developed a software to test PFA performance and to measure several psychological variables.

Methods:
First, a script was developed. It included 10 protocol steps ordered in a successive way. Each of the 10 steps comprises 4 victim-helper interaction variants (only one is correct). Second, the 40 scenes were recorded. A green background was included in the recorded scenes to contextualize the victim-helper interaction with different scenarios in a post-production stage. Third, the videos were included in a software. The software registers the number of correct answers, reaction time, number of video review, etc. The evaluation of psychological variables was also included. The software is accessed through web browsers.

Results:
The result was an internet and intranet accessible software to test the interactions with disaster victims, called SIPAPSI (Psychological First Aid Interactive System; Sistema Interactivo de Primera Ayuda Psicológica, in Spanish). SIPAPSI was validated by expert judgment.

Conclusions:
SIPAPSI is validated user-friendly software designed for a rapid assessment of the reactions to a disaster victim. It measures several variables to find a psychological profile associated with correct performances in PFA. SIPAPSI is appropriated for the general population and for first responder population.

Rubrum Coelis: A Randomized Trial assessing the Measured and Perceived Utility of Real-time Tele-mentoring of Acute Trauma Resuscitation Scenarios by Military Medics

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Introduction:
Most deaths in military trauma occur soon after the time of wounding, and demand immediate interventions. First responders often have limited clinical experience. In the case of disaster preparedness, there is a case for provision of experienced trauma mentoring in place for first responders and surgical teams. We hypothesized that real-time communications with a senior medically experienced caregiver might improve the efficacy of first responders to catastrophic trauma and/or mitigate their stress.

Methods:
Thirty-one military medics were randomized to either perform a medical exercise with telementoring support (TMS) or no telementoring support (NTMS). The exercise consisted of a single casualty having suffered trauma after a mortar shell explosion. Communication with the mentors was carried out using a helmet-mounted camera and headset-mic. Two simulations suites were identically configured with a human patient simulator and a leg tourniquet trainer.

Results:
Performance of care was better in the TMS group compared with the NTMS group in terms of airway clearance (100% vs. 67%), decision to apply a Tourniquet (100% vs. 86%), CAT efficiency in terms of blood loss (395cc vs. 638cc,), completion of primary survey (100% vs. 67%), and more. A needle thoracostomy had a 26.67% success rate in the NTMS group and 100% in the TMS group.

Conclusions:
Telementoring has been shown to improve delivery of care in the operating room. We suggest that it may also aid the single provider, bringing real-time expert medical knowledge to the frontline. Future work should assess the challenges and benefits to operational implementation.

My Location, My MDA - Locating Victims of Disaster

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Introduction:
One of the major challenges during disasters is locating the victims, especially when the incident extends over a large area. Magen David Adom (MDA), the Israeli national EMS organization developed "My MDA" app to allow calling for help through the app coupled with immediate geolocation of the patients during routine and during disasters.

Methods:
During the "EUROBASKET" event which took place at "Menora" Arena in Tel Aviv, Israel we conducted a drill simulating the response to an explosion in a stadium during a game. Two methods were compared: 1. Traditional - calls to EMS dispatch after the explosion, teams arrive at scene and scan in terms of uncertainty. 2. App Report to EMS Dispatch - geolocation of the caller and victims status in the different locations. All that before arrival of teams.

Results:
With the traditional method four calls describing an explosion were received in the EMS dispatch, MCI was declared and all teams were dispatched to the same general location. In comparison to the app method where in about 30 seconds the dispatch received four different and accurate locations accompanied by images of the wounded. The dispatch responded by sending different ambulances to the specific perimeters.

Conclusions:
This feature allows managing disaster resources from the beginning of the incident. Searching for victims is more effective and arrival time is shortened. The app allows to break a complex large scale incident to small and controlled incidents with proper resource allocation.

First in Human Allogeneic Cell Therapy after Muscle Trauma Boosts Functional Regeneration

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Introduction:
Insufficient muscle regeneration following trauma represents an unaddressed clinical need. Based on pre-clinical experiments, placenta-derived mesenchymal-like adherent stromal cells (PLX-PAD) for the treatment of iatrogenic muscle damage were assessed in a phase I/II clinical study. The purpose of the study was to evaluate the safety and functional outcome following local PLX-PAD injection after elective total hip arthroplasty (THA).

Methods:
In this prospective, randomized, double blind, placebo-controlled study, 20 patients undergoing THA via a direct lateral approach were randomized into 3 groups, receiving either 300x106 (n=6), 150x106 (n=7) PLX-PAD or placebo (n=7) into the gluteus medius muscle at the end of surgery. Follow-up was performed at 6, 12, 26 and 52 weeks and included safety assessment, strength measurements, MRI and muscle biopsies.

Results:
No severe or serious adverse events were observed. The primary efficacy endpoint, change of the maximal isometric contraction moment of the medial gluteal muscle after 26 weeks, showed significant increase in the 150M group compared to placebo (p=0.0067). Muscle volume also increased significantly in the 150M group (p=0.004). Treatment with 300M cells did not reach statistical significance in strength or in volume.

Conclusions:
This application of PLX-PAD cells for treatment of acute muscle trauma is the first study in humans that demonstrates a beneficial effect in function and recovery. The data alludes to a safe therapy with improved functional outcome in acute muscle damage, which could substantially improve patient outcomes in orthopedics, traumatology, and sports medicine after soft tissue damage from acute injuries to muscle structures.

A New External upper Airway Opening Device combined with a Cervical Collar

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Introduction:
Airway occlusion is a main cause of mortality in survivable trauma. The LuboTM is a novel external airway protector and cervical collar.

Methods:
This was a usability study of the LuboTM, during an international competition for professional EMS, n=139. Crews used the device in a simulated vehicular accident after training by the manufacturer, then filled a questionnaire.

Results:
1. 75% were strongly or likely to recommend the Lubo, 4.5% would not recommend the device.
2. 92% described the Lubo's ease of use as "Natural", "Easy", "Very easy".
3. 92% described the Lubo's immobilization as: "Natural", Good immobilization", "Complete immobilization".
4. Compared to manual jaw thrust, 89% described the ability to maintain the patient's airway as "Good", "Very Good", "Excellent".
5. Compared to the cervical collar they normally use:
   a. 90% described the Lubo's quality immobilization as: "As Good" as or "Better".
   b. 98% described their ability to perform the Jaw Thrust maneuver as: "As Good" as or "Better".
   c. 97% described the Lubo's Ability to maintain an open airway as: "As Good" as or "Better".
   d. 91% described the Lubo's Ability to allow intubation as: "As Good" as or "Better".

Conclusions:
The LuboTM offers a new concept for EMS Providers to simultaneously protect the C-spine and manage the airway, overcoming difficulties that occur with traditional cervical collars. Users found the LuboTM easier to apply and providing benefits when operating in difficult environments.

The results indicate that the LuboTM is an easily applied C spine protection device with significant potential benefits over legacy devices.

The Novel IDF Pre-hospital Wearable Medical Record

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Introduction:
: to present a novel digital, web-based, on-line or off-line medical data recording system design that allows for multiple, simultaneous peripheral acquisition modules with central command monitoring. Combat casualty care is divided into the pre-hospital phase and the hospital phase. It is a well-recognized that during the transfer of the patient between the two echelons, vital medical information is very often, not recorded or lost.

Methods:
We have developed a pre-hospital documentation eco-system, which harnesses emerging technologies like the internet of things (IoT), near-field communication (NFC) and cloud based data, including a smart automated wearable wrist-watch-like intermediary for medical file creation. The design device is flexible, lightweight, inexpensive, fast and intuitive to operate; thus, it is easy to implement in the harsh combat theater or in mass casualty events.

Results:
Comprehensive digital information including location of the event, nature, and severity of the injury, clinical signs, procedures performed, instruments used, drugs administered, and evacuation sequence is recorded. Any instructions or special emphases by the treating medical officer or support staff can be added to the system with the aid of a PDA (personal digital assistance) android based, by using the application attached or verbally.

Conclusions:
Use of this data eco-system, provides an efficient mean for data transfer and mining. Data are readily available to following echelon of care, central medical command and receiving hospital at the same time. This revolutionary system will, improve information transfer, and reduce morbidity and mortality. Noteworthy, such a device can also be implemented in sport events, when injured athletes are transferred from one medical echlon to the other.

An Implementation of ICT-assisted Disaster Nursing - EpiNurse Nepal

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This paper presents an implementation of a disaster nursing incorporating ICT and healthcare professionals' insight with an epidemiological approach to ensuring health security in disaster, named EpiNurse (Epidemiology+Nurse). An ICT platform is designed with SHINE OS+, a crowd-based service using smartphone apps, for data collection complying health surveillance items recommended by WHO. The ICT platform helps the local nurses in data collection daily basis, not only in emergency situations, so that stakeholders can monitor potential health risks to improve effectiveness of disaster risk reduction. This monitoring enabled communication in near real-time and provides necessary information for community people. The information is linked with map information by using volunteered geographic information, such as the OpenSteetMaps, and geo-tagged photos for better understanding about situations with descriptive epidemiology.

The team conducted workshops for the implementation of EpiNurse by collaborations with the Nepal Nursing Association. The workshops comprise trainings on data collection using smartphone tools powered by SHINE OS+ and mapping literacies necessary for contextual information in descriptive epidemiology. The paper will report results and observations from the trainings and responses activated to the recent disasters in Nepal.

Keywords: disaster nursing, participatory monitoring, Information and communications technology, health security, disaster risk reduction

Internal Security Policies in the German National Election Campaign Period 2017: Political Reactions to the Berlin Christmas Market Attack in December 2016

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Introduction:
As part of the vertical separation of powers, internal security is German Länder competence. But when shocking, focusing events occur – like the Berlin Christmas market attack in 2016 – federal-level political actors reflexively criticize the security-federalism in general, particularly because the state monopoly on the use of force might be questioned by the voters. This dynamic has become visible in the political de-bate that followed the Berlin attack, but, more importantly, the debate and the immediate policies had an effect on the German national election campaign.

Methods:
Starting point of the analysis is the counter-terrorism position paper by the Federal Interior Minister published in January 2017, which was strongly criticized by the Länder Governments. The paper compares the various party positions and reactions to the paper in the light of the ongoing campaign and upcoming federal election. The argumentation is complemented by a view on voters' choice and preferences.

Results:
Independent from the general party positions – except for the party Die Linke –, federal-level political ac-tors demand to further centralize and extend the federal-level's internal security competences in the field of counter-terrorism. Here we hardly find any arguments supporting the vertical division of powers in the field of internal security and only very few who argue restraint on the extension of security measures.

Conclusions:
Subnational Governments function as advocates of the existing security federalism, while national-level forces press for a centralization of internal security competences. This dynamic and the political debate on internal security regarding counter-terrorism follow specific federalism-theory-arguments.

Emergency Services and Disaster Management in the Federal State System of Germany

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Introduction:
Germany is a modern, highly federal state. Within the federal republic of Germany there are 16 states. To deal with disasters and mega events in Germany, an efficient disaster management system has developed in the Federal Republic of Germany. This System is highly supported by more than one million volunteers in fire brigades, NGO's like the German Red Cross and the federal agency for technical relief. Within this framework of the disaster management the 16 German states are responsible for managing situations caused by natural disasters, major events, pandemics and also by the dangers of international terrorism. The Federal Government supports the states in dealing with particularly large claims or those of national importance and is responsible for civil protection in state of defence. And in these cases the federal government takes over control for the states disaster response units. In any case, a close coordination between the federal government and the federal states in risk assessments and corresponding measures is required. But how does such a complex system work in every day cases and in large scale emergencies? Which interfaces to support each other in large scale or even mega events are necessary? Who has to pay for it? How can it be embedded into international disaster support systems? The lecture will give answers to these questions, talk about experiences and the main advantages and disadvantages of disaster management in a federal system from the point of view of one state.

Civilian-Military Collaboration during Natural Disasters

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Introduction:
Civilian Orthopedic Surgeon's perspective will be outlined in this presentation based on experience following two natural Disasters: In Haiti on a board of US Navy Ship "Comfort" in 2010 and earthquake in Nepal with Israeli Field Hospital in 2015.

Methods:
Experience as a civilian trauma orthopedic surgeon working side by side with US and Israeli military orthopedic surgeons will be presented. Topics covered will be partnership and organizational structure, team configuration and adaptability, injury sub-types and unique treatment modalities.

Results:
Impact of the work with two military medical teams is summarized at different levels:
1. Approach to the pathology on a ground.
2. Integration into military medical team.

Conclusions:
Large scale natural disasters often require participation of international medical teams. First responders often include military teams, reinforced by civilian orthopedic surgeons. The training and experience of military and civilian orthopedists differ as their work environments, patient populations, pathology types vary considerably. Yet in an acute-onset disaster both are thrust into a scenario distinct from their usual practice. Working under a military umbrella presents certain challenges but also opportunities. Among the most advanced of military disaster responders are the US Navy Ships/ Hospitals "Comfort" and "Mercy" and the Israeli Military Field Hospital. The authors perspective while working with these two organizations represents an interesting and useful experience that author would like to share with the IPRED participants.

National Capacity Assessment for Disaster Risk Reduction and Preparedness for Disaster Response in Papua New Guinea (PNG)

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Introduction:
PNG is an island located north to Australia, bordered with Indonesia in the west.

PNG location where natural phenomena such as earthquakes, volcanos, tsunamis, tropical cyclones, flooding, frost and droughts are quiet prevalent.

A national capacity assessment on Disaster Risk Reduction, Disaster Preparedness and Response made to identifying national capacity and to propose recommendations capacity improvement.

Methods:
The assessment performed in December 2016 and was based on working meetings with governmental and NGOs, site visits and interviews

Results:
There is a good legislative and implantation ground. However, there is lack of national operational concept to allow proper implementation. There is a big gap in risk assessment, risk prioritization and ongoing risk monitoring as well as cooperation among agencies involve in disaster response.

Conclusions:
The recommendations related to issues needs immediate attention such as: to define National Operational Concept for Risk Assessment including Early Warning Plan. To train the stakeholders as well as the communities as the first responders for various disasters. To establish an organized and systematic approach for immediate response.

In the level of contingency plan, it is recommended to review and debrief drills of various risks, with all relevant organizations in order to identify gaps and prioritize needs, all based on needs assessment of every stakeholders and develop unique contingency program for each agency.

Morbidity and Mortality of Texas Tornado Outbreaks

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Introduction:
Tornadoes, due in part to limits in forecasting and warning, are a significant cause of disaster-related morbidity and mortality in the United States. Texas has experienced the highest number of tornado related fatalities in the last century. An improved understanding of the role of tornado outbreaks (informally defined as a grouping of six or more tornadoes) in morbidity and mortality is necessary in order to mitigate future casualties. However, outbreak severity, though long studied, has not been formally standardized.

Methods:
Utilizing the Fujita Scale as a severity measure, we examined the impact major tornadoes have in outbreaks and outbreak-related morbidity and mortality rates. This study was IRB approved (IRB2017-0507) and funded in part from The National Science Foundation grant (NSF Grant #1560106) in support of the CyberHealthGIS Research Experience for Undergraduates (REU).

Results:
Among tornado outbreaks in Texas between 1980 and 2009, there was a statistically significant relationship between the inclusion of a major tornado in an outbreak and higher numbers of injuries and fatalities.

Conclusions:
This finding has important implications for improving forecasting, warning, and preparation to shelter in place, which is critical during an outbreak continuing a major tornado to reduce morbidity and mortality. While remaining public health and emergency management focused, insights to risk levels in Texas, especially to improvements in emergency management funding, severity-specific policy and public education, are addressed. This research could help to discern the different impacts of the major tornadoes as well as the number of tornadoes on morbidity and mortality.

An Analysis of Wildfire Disasters and Health Care

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Introduction:
Background/Purpose: In the path of the 2017 wildfires, five California hospitals were evacuated. Major healthcare organizations are mostly silent on wildfire disasters, particularly related to acute care. The purposes of this study are to: understand the context and dimensions of wildfire disasters, the implications for healthcare, and the roles of nurses and acute healthcare providers in wildfire disasters.

Methods:
This dimensional analysis research study was conducted using the concept of wildfires disasters from the perspective of nursing, in the context of the phases of disaster, using the dimensions of acute care, and accrediting agencies' critical areas of disaster response. The literature search consisted of examining and synthesizing publications on nursing and wildfires, health impact reports, governmental documents, organizations' position statements, data from climate reports, fire reports, case studies, interviews, and anecdotal reports.

Results:
Health impacts from wildfires include: exposure to smoke, flames, heat, toxic substances, traumatic injuries, and psychological effects. "Smoke rivers" carry noxious chemicals thousands of kilometers leading to related health events. Dimensional analysis revealed that, in part, many hospitals lack plans for total evacuation. Evacuation and continuity of operations plans (COOP) are inadequate for total evacuation and/or loss of facilities.

Conclusions:
Conclusions/Implications: Nurses have an obligation to analyze risk, develop plans, assess needed assets, provide education/training, deliver first aid, and engage in recovery activities. We must develop universal plans that are supported by our accrediting bodies and train for evacuation and COOP. Basic and wildfire-specific disaster education and training must be part of academic nursing and nursing practice.

The Grapes are Burning: Emergency Hospital Evacuation Response and Lessons Learned from the Tubbs-Nuns Fire

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Introduction:
On October 8th, 2017 the most destructive fire event in California history began. The fires resulted in the loss of 8,400+ structures, 42 deaths, and emergency evacuation of two community hospitals. This paper aims: 1) to outline the emergency evacuation plan of one hospital. 2) To define the disaster coordination between hospital and county emergency services. 3) To identify key components for successful hospital evacuation due to natural disaster.

Methods:
A retrospective qualitative analysis of standardized interviews of Kaiser Permanente Santa Rosa Medical Center's key hospital administrators, physicians, surgeons and nurses, and emergency services involved in the evacuation was conducted. The responses were categorized as: demographics, decision to evacuate, pre-event planning, implementation, what worked well, what problems were encountered, lessons for the future.

Results:
The fire reached Santa Rosa, CA on 10/8/2017 at 9:45 PM. The hospital was notified of potential danger at 1:40 AM. The decision to evacuate was made at 3:40 AM on 10/9/2017 due to in-hospital smoke conditions and imminent fire threat. The hospital evacuation command followed a predetermined disaster management plan. The hospital incident commander was in direct contact with county emergency services. All patients and staff were safely evacuated.

Conclusions:
The hospital evacuation was part of an integrated disaster emergency response coordinated by the county. The key components to success: 1) well defined chain of command on the hospital level and within the regional emergency services. 2) Built in communication redundancies to allow coordinated logistics. 3) Full scale emergency evacuation drills are essential despite obvious inconvenience.

Enzymatic Debridement as a Medical Countermeasure in National Preparedness for Nuclear and Conventional Burn Mass Casualty Events (BMCE)

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Introduction:
Burn disasters, unfortunately common worldwide, may result from natural causes such as earthquakes and large forest fires, but are mostly due to human caused fires in public places. This includes the growing threat of urban terrorism, and the doomsday scenario of detonation of an improvised nuclear device in an urban setting, estimated to result in thousands of burn victims. Burn injuries are a major determinant of late deaths and have the highest specific mortality (40%) among all types of injury.

One of the main determinants of survival is an early as possible removal of burned tissues as they are the major cause of sepsis and subsequent multi-organ failure. The current standard of care for this removal is surgery, dependent on scarce highly specialized burn surgical personnel and facilities, which are the main bottleneck limiting surge capacity to a handful of victims per burn center.

Methods:
NexoBrid, an enzymatic debridement agent for burns, has been proven to significantly reduce the need for surgery while achieving a significantly shorter time to complete removal of burned tissues [Burns. 2014 May;40(3):466-74].

Results:
NexoBrid has been identified by the US government (BARDA) as a medical countermeasure in preparedness for BMCE. Its use on 39 victims during the Romanian nightclub disaster in 2015 serves as a proof of concept for its use in BMCE.

Conclusions:
NexoBrid can serve as a medical countermeasure for BMCE, increasing surge capacity by significantly lowering dependency on surgery. In the doomsday scenario of thousands of victims NexoBrid use may be the only solution possible.

New Frontiers in Combat Wound Management Technologies - Expanding the Limits by Intensive Wound Care

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Introduction:
Prolonged duration from injury to full wound closure is associated with infection, increased morbidity and mortality, increased costs and poor outcome functionality. The purpose of this study was to evaluate the yield of a combination treatment composed of the TopClosure® Tension Relief System (TRS) and simultaneous administration of supplemental oxygen and antibiotic irrigation within a dedicated negative pressure-assisted wound therapy (ROI-NPT) in the treatment of soldiers injured in combat suffering of significant soft tissue injuries.

Methods:
Retrospective study of 7 soldiers injured in combat in July-August 2014.

Results:
Complete wound closure was achieved in all seven soldiers within 2 to 4 days without skin grafts or flaps.

Conclusions:
1. TRS is a novel device for stretching, and securing wound closure, applying stress relaxation and mechanical creep for primary closure of large skin defects that otherwise would have required closure by skin grafts, flaps, free flaps or tissue expanders.
2. Irrigation may accelerate evacuation of infectious material from the wound and may provide a novel method for antibiotic administration.
3. Supplemental oxygen to the wound reverses reduced pO2 levels in the wound's atmosphere inherent to treatment with conventional vacuum therapy limiting anaerobic contamination and possible infection.
4. Combined ROI-NPT and TRS may transform the traditional 3-phase text-book wound healing sequence into a short, more efficient 2-phase method.

The TRS - ROI-NPT system allowed for reduced surgical complexity, short hospital stay, early postoperative mobilization and physiotherapy with good to excellent functional results in victims of combat soft tissue injury.

Rescuing Submariners from a Disabled Submarine: National Preparedness and International Cooperation

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Introduction:
Submarine accidents may result in the bottoming of the vessel without immediate loss of crew. If the situation allows, the submariners may choose to await the arrival of rescue assets such as Submarine Rescue Vehicles (SRVs), which can mate with the submarine and extract the submariners unharmed.

Methods:
Most countries that operate submarines do not own the full scope of potential rescue assets, and even those that do may find themselves needing assistance in certain locations or in specific scenarios. Therefore, rescuing a submarine crew will require extensive cooperation between different nations. In order to facilitate this coordination, NATO established The International Submarine Escape and Rescue Liaison Office (ISMERLO). International drills and workgroup meetings take place several times a year.

Results:
Israel possess certain submarine rescue assets, such as search capabilities, diving units, and hyperbaric medical teams, but lacks many other capabilities, such as SRVs. Therefore, in the case of a submarine accident in or near Israeli waters (either an Israeli submarine or a foreign submarine), the response will require extensive international assistance and massive mobilization of Israeli assets, including: chartering an appropriate civilian ship to accommodate the rescue assets, receiving and unloading at least half-a-dozen large cargo planes, transporting equipment and personnel from the airport to the seaport, providing the marine and shore-based medical responses, and more. Precise coordination of civilian, military and international operations will be required, with time being of the essence.

Conclusions:
As of this date, Israel lacks an established protocol or contingency plan for such a response.

Emergency Preparedness in a Personal Suit

Shanit Azar
Israel

Introduction:
Health systems around the world are often involved in assessments of various emergency situations that may affect the functioning and ability to respond. Most assessment theories refer to the perception of medical and organizational responses, but usually they do not deal with a scenario in which the health institutions themselves may be harmed. The role of the Ministry of Health is to promote preparedness in all medical institutions including the community to cope with the various emergency scenarios. In order to do this optimally and in light of the fact that the practice of community medical institutions is relatively new (about 8 years), it is of utmost importance to prepare a personal program for each institution according to their needs.

Methods:
Over the last few years, it was decided to tailor a suit to every community medical institution as part of a multi-year program. During the construction of this program, a number of variables were taken into account: A. Experience and coping with an emergency event: An institution that has dealt with an emergency event in the past will strive to deepen its preparedness for the emergency scenarios and is already ready in advance of a higher level of awareness and readiness .B. the reference scenario to be dealt with in view of the geographical location of the institution: Some institutions are located in a geographic area that is highly likely to be damaged by an earthquake, as opposed to other institutions located in geographical areas that are highly likely to be damaged during a missile attack in a war scenario. The same applies to hospitals, health districts and health maintenance organization. For each institution new training has been prepared that prepare them for the relevant scenario. C. The complexity of the institution in terms of types of patients (respirators / respiratory support): Preference was given to the practice of institutions in which the level of complexity of hospitalized patients is higher, eg evacuation exercises for geriatric hospitals where coping with the evacuation process of ventilated patients and/or requires a long process of study and preparation compared to the other institutions, in which there are usually independent patients who can leave themselves or by means of small assistance. D. Exercises and training carried out in the past: An examination of the extent to which the institution is able to cope with emergency events, the ability and performance of the institution during the training are an indication of the degree of readiness for the scenario and its ability to function in an emergency.

Results:
Matching exercises to specific descriptors for each health institution has led to success in emergency events, for example, "Fliman Hospital" in Haifa, which used to practice an evacuation exercise in the past and learned how to work with all the forces that assist in evacuation, succeeded in real time evacuating emergency as a result of the fire in Haifa in November 2016. The evacuation was very good, organized and in systematic manner that ended without harm to human life. Adapting the exercises to the institution-specific descriptors has led to better compliance and collaboration of the institutions and to harnessing the practice of those who describe the institutions as their own threats.

Conclusions:
We must continue to create a platform for adapting a personal suit to each health institution according to its needs and characteristics, in order to advance the emergency preparedness of medical institutions in the community, within the framework of a multi-year program.

What are the most Effective Methods of Disaster Preparation for Health Professionals and Support Staff? Perspectives at a Sydney Private Hospital - Phase 1 of a Multi-site Study

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Introduction:
To effectively respond to disasters and use resources wisely, we need to identify effective methods of disaster preparedness.

A literature review identified little high quality research evaluating best practice preparedness (Gowing, et al., 2017). The review found that research to date has mostly focused on doctors and nurses; that health professionals may not be fully prepared; and may elect to not work during disasters. Thus, the most effective methods for preparedness have not been established. Quality research is required which engages all disciplines and ancillary staff to better understand how all staff can prepare to effectively respond during disasters.

Methods:
Qualitative multi-site, multi-stage study

- Multiple exploratory case study design
- Semi-structured interviews and focus groups
- Purposive sampling
- Validated interview and focus group guide
- Thematic analysis

Results:
Nineteen medical, nursing and allied health professionals and support staff participated (phase 1). The majority were allied health and support staff. Preferred preparation was short, generic, practical or face-to-face. Online learning was only desired as a supplement. Content required included management structures, clinical, technical and human skills. Participants expect facilities will provide necessary resources e.g. PPE or antivirals. Many do not wish to provide care during disasters considered dangerous for their wellbeing. Participants with disaster experience discussed having a plan and access to experts as most useful during or immediately before disasters.

Conclusions:
To promote an effective response all members of the healthcare team should be involved in disaster preparedness and research. These findings can guide health services and professionals in the most effective methods of disaster preparedness.

Preclinical assessing of Mass Casualties in Emergency Events - A Comparison of Preliminary Triage Algorithms

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Introduction:
Mass casualty incidents are a challenge for all emergency medical units. Different triage algorithms support emergency medical units to assess and cluster the patients according to their injury severity. The authors conducted a structured assessment of the applicability of various preliminary triage algorithms for mass casualty incidents in Germany to measure their accuracy and effectiveness.

Methods:
To do so, a new evaluation methodology has been developed to assess the accuracy and the application time of preliminary triage algorithms using standardized training exercises with predefined casualties. The authors define "accuracy" as the right classification of an injured person in his/her triage category provided by the algorithm under realistic conditions.

The "application time" is defined as the time required from the beginning of the patient's triage until the end of the algorithm and the associated assignment to a triage category.

The study compares eight triage algorithms with a population of over 300 applications per algorithm. The assessment showed a higher accuracy for the modified Simple Triage and Rapid Treatment-Algorithm for Preliminary Triage and a low accuracy for the Lenne-MANV-Algorithm. To illustrate the results, the inaccurate cases are divided into over- and under triage of patients. For most of the algorithms, a tendency towards over triage as opposed to under triage was observed.

Results:
The results of the study are presented in the following form: name of algorithm, abbreviation [year, country of development] (accuracy in %, over triage in %, under triage in %): modified Simple Triage and Rapid Treatment-Algorithm for Primary Triage, mSTaRT-preliminary triage [2013, Germany] (85.15%, 8.79%, 6.06%); Simple Triage and Rapid Treatment-Algorithm, STaRT [1983, USA] (75.15%, 13.94%, 10.91%); modified Simple Triage and Rapid Treatment-Algorithm, mSTaRT [2005, Germany] (69.1%, 12.42%, 18.48%); Amberg-Schwandorf Algorithm for Preliminary Triage, ASAV [2012, Germany] (65.99%, 18.61%, 15.04%); Primary Ranking for Initial Orientation in Emergency Medical Services, PRIOR [2014, Germany] (56.71%, 38.41%, 4.88%); Sort, Assess, Lifesaving Interventions, Treatment/Transport-Algorithm, SALT [2008, USA] (56.51%, 31.87%, 11.62%); Primary Ranking for Initial Orientation in Emergency Medical Services Checklist format; PRIOR-Checklist [2017, Germany] (58.2%, 38.39%, 3.41%); Lenne/Hanno-MANV-Algorithm, Lenne/Hanno-MANV [2016, Germany] (53.49%, 42.25%, 4.26%).

Conclusions:
The assessment program developed can be used to optimize triage algorithms as well as sensitization

of emergency medical staff in training situations. The authors of this paper continue to optimize assessment strategies and training systems for mass casualty events in a "Laboratory for Mass Casualty Incidents".

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2nd Integrated Exercise on Disasters Management in Sao Paulo - Brazil (Public and Private Forces)

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Introduction:
Albert Einstein Hospital promoted the 2nd International Symposium for Crisis and MCE Management on May 2016. Having IPRED as a model, on the last day we organized an exercise to check what will happen on a real situation for a Terrorist Attack on a Subway Station (first in Brazil)

Methods:
Planned together with Sao Paulo´s Militar, Civil and Metropolitan Police; Military Firefighters, Regional Civil Defense Department, Brazilian Red Cross (SP), Brazil´s Scout Group (SP), Hospital das Clínicas (Public Hospital), Hospital Albert Einstein (Private Hospital) and others entities. As an exercise for the Olympic Games in Sao Paulo, a bomb exploded inside a subway station and the forces had to react and conduct as they were trained. About 390 volunteers' actors, 18 red/yellow victims, (split between three hospitals), 2 dead victim and about 38 green victims that arrived to Albert Einstein Hospital. Air and land rescues used. Simulation was implemented, followed by debriefing to register lessons learned.

Results:
Most of the goals achieved. Many lessons learned. An 8 minute film was made to register and make consulting possible for learning. Some process must be reviewed.

Conclusions:
Interaction between private and public forces is a must in case of a disaster/catastrophic scenario and it can be done. The need and the wish for more shared drills become very clear

New York City Mass Casualty Burn Plan: A City-Wide Exercise

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Introduction:
The borough of Brooklyn, NYC has no burn centers, requiring transfer of burn victims in an MCI. A city wide drill was used to test the secondary transfer of burn victims utilizing the NYC Burn Plan under development.

Methods:
A full scale exercise evaluated the secondary transfer of victims in a burn MCI utilizing the proposed NYC Burn Plan. FDNY centrally coordinated the transfer of 69 victims using Patient Transfer Request forms. NYSDOH e-FINDS was utilized for patient tracking. An electronic Situational Assessment Tool (SAT) delivered prompts and collected data.

Results:
e-FINDS tracked 96% of patients. 100% of hospitals reported the required Patient Transfer Requests forms were too long. 38% of hospital transfer requests required 3 or more attempts to reach FDNY. 26% of victims were refused transfer. 52% of victims were identified as patients requiring physician presence during transfer.

Conclusions:
Secondary transfer of burn victims was successfully drilled. e-FINDS was a reliable tool during this drill. Communication between the hospitals and FDNY failed for multiple facilities, highlighting the need for alternative methods of contact. The required Patient Transfer Request form was too lengthy to utilize during an MCI. Many transfer requests were denied, leaving facilities to manage burn victims. These results made it evident that non-burn centers need to develop contingency plans for burn victims of an MCI. These identified gaps are impacting the current development of the NYC Burn protocol.

Medical Response to Terrorism in Japan

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Our country has experienced several terrorism. What deserve special mention among the terrorism incidents occurred in Japan are the only one or the first ones in the world. Japan is the only one country that suffered from the Atomic Bombs (1945). The Mitsubishi Heavy Industries Building Bombing (1974) was the first bomb terrorism indiscriminately targeting lay citizen in the world. Also the Tokyo subway sarin gas attacks (1995) was the first chemical terrorism targeting lay citizen in the world. On top of that we experienced the Nuclear Power Plant Accident in 2011.

From the experience of those terrorism and accidents the Japanese government has developed medical response systems especially focusing on NBC terrorism for more than 20 years. However, an overwhelming majority of the measures that used for terrorism is explosion - bombing.

For the bombing terrorism it is less prepared in Japan. We have developed a good trauma system with proven better outcome. But we have almost No experience to treat the patients suffered from bombing and also the number of severe trauma cases has been markedly reduced recently. To cope with these situations the Japanese Association for Disaster Medicine (JADM) developed a training course, mass-casualty life support (MCLS), that is the most widespread in Japan. On top of that JADM have developed the MCLS-CBRNE that covers CBRNE terrorism as an advanced MCLS course. Additionally the Ministry of Health, Labor and Welfare has started a new training program for the surgeons who are doing daily elective surgeries to become familiar with trauma surgery especially managing blast injuries and gunshot injuries.

I will introduce those situations regarding medical response to terrorism in Japan.

The Challenges of a Vertical Evacuation Drill

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Introduction:
Recent natural and infrastructural disasters such as Hurricanes Sandy and, Katrina, and the Northeastern power outage of 2003, have emphasized the need for hospital staff to be trained in disaster management and response. An internal hospital disaster may require the safe and efficient evacuation and transfer of patients with varying medical conditions and complications. A notably susceptible population is renal transplant patients, including those with post-transplant complications.

No New York state hospital has previously published an emergency vertical evacuation drill of renal transplant patients. This study evaluates a simulated power outage with subsequent vertical evacuation drill of these patients at SUNY Downstate Medical Center.

Methods:
Thirteen standardized patients, 12 of whom received a renal transplant, with varying medical histories, ambulatory ability, and mental status, required a vertical evacuation from the 8th floor to the ambulance entrance. Non-ambulatory patients were transported on Med Sleds.

Results:
All patients were evacuated successfully within the allotted 3.5 hrs. The evacuation drill highlighted several immediate deficiencies, including staff reticence, poor training retention, lack of staff leadership, and Med Sled implementation flaws.

Conclusions:
Drills help clarify the shortcomings of current trainings and protocols as well as the necessity for the continuous development of decisive and thorough evacuation protocols.

Concern and Death Anxiety during an Ongoing Terror Wave: The Moderating Role of Direct Vs. Indirect Exposure

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Introduction:
The media often provides a wide-ranged and detailed coverage of terror incidents, thereby exposing people to varying degrees of stressful and traumatic events on a daily basis. Such exposure to threatening life events may raise concerns over one's own safety situation and subsequently heighten death anxiety and psychiatric morbidity.

The current study examined whether emotional concern over one's security situation is connected with death anxiety during an ongoing terror wave, and whether types of exposure (media exposure vs. contact with witnesses) moderate this connection.

Methods:
Using an online survey questionnaire, a total of 345 adults were recruited and sampled during an ongoing terror wave in Israel. Participants were asked to fill out scales measuring death anxiety, concern over security situation, and type of exposure.

Results:
Results indicated that increased concern over one's security was associated with enhanced levels of death anxiety. Moreover, this association was more pronounced among individuals exposed to the terror events through the media, in comparison with individuals who had first-hand contact with witnesses.

Conclusions:
Our results may provide a better understanding of the underlying defense mechanisms which are aimed at warding off the awareness of personal mortality of individuals who are subjected to a prolonged exposure of national terrorism, with periods of escalation, which create additional sources of threat to their well-being, and, in some cases, to their actual lives. The findings may also provide a better understanding of the possible consequences of media coverage of terror attacks.

First Responder Wellbeing United Hatzalah Psychotrauma Unit

Miriam Ballin

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Introduction:
For over 10 years United Hatzalah did not provide its medics with any formal psychological help and or interventions. Additionally United Hatzalah did not train its medics in psychological first aid until just two years ago with the start of the Psychotrauman and Crisis Response Unit.

Methods:
The Unit is made up of three parts and has been proven extremely successful and effective.
1. Our group of 250 mental health professionals trained to provide immediate psychological support and stabilization.
2. To date, over 250 of our medics, paramedics, and doctors have elected to and have been trained in psychological first aid.
3. United Hatzalah has also opened a clinic and hotline available 24/7 to assist our medics experiencing acute stress reaction or even suffering from long term PTSD.

The courses have been given by trauma experts from all over the world, primarily Israel based. Each with his own expertise.

There has been a emphasis in understanding different cultures and societies.

Thereby allowing our responders to be as sensitive and culturally appropriate as possible. We are proud to have responders from every part of Israeli society.

Results:
Our results have shown that having a fully integrated Psychotrauma Unit has helped assist at tragic and chaotic scenes immensely. Not only has the general public responded appreciatively, but our medics have expressed that having a Psychotrauma team to call in to back them up has given them a feeling of hope and empowerment. Our work has been proven to help any person on scene who has experienced, or is experiencing trauma on some level.

The patient who is injured, or a family member, neighbor, friend, whiteness or just a bystander are able to be identified by our responders and provided with emotional stabilization.

Conclusions:
In conclusion, United Hatzalah, believes that a fully integrated Psychotrauma Unit should become a standard form of practice in all EMS organizations worldwide. It is clear through feedback and followup that the citizens of Israel feel our interventions have helped them return to routine after experiencing a traumatic event.

Transfer Actions and Training in First Psychological Aid: Relationship between Effectiveness and Urgent Decision Style

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Introduction:
The goal of this work is to present the results of a training of volunteers from organizations responsible for the response to catastrophe situations, based on a modified Psychological First Aid (PFA) protocol, starting from the premises of the Farchi's original model (2012, 2013; Farchi & Hantman, 2013), known as the Six C's Model. Consequently, we studied the relationship between the decision style and the effectiveness in decision-making in crisis situations.

Methods:
Five training sessions were carried out - 115 volunteers - in fire stations with voluntary firemen of the province of Buenos Aires, Argentina. The impact of training on the effectiveness of the volunteers was evaluated by the number of correct answers on a software (SIPAPSI). The effectiveness of the trained group was compared with a non-trained group. The urgent decision-making style of the volunteers (affective or rational) was evaluated through the BUDECI, and the association of the previous variable with the number of correct answers was studied.

Results:
The comparison of the trained group with another non-trained showed the effectiveness of the training. A negative association was found between the urgent affective decision-making style and the number of correct answers only in the group that received the training in PFA.

Conclusions:
The rescuers trained characterized by an urgent decision style based on the affect in crisis situations, showed less effectiveness in choosing the right response in the SIPAPSI. This result supports the Farchi's model, in which the effectiveness of the action, precisely, lies in the cognitive functional activation avoiding any action that appeals or encourages the emotional aspect of the crisis.

The Multiple Loyalties of the Medical Professional Serving in Uniform

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Introduction:
Discussions about the notion of a military oath and loyalty in the Western tradition are increasing. Two recent articles, "The Oath as a Sacred Covenant" (Naval Institute Proceedings, February 2017) and "Loyalty and the Oath" (RealClearDefense, May 19, 2017) are important contributions to this topic. However, their absolutist black-and-white premise – that military officers simply need to look to the constitution for the hierarchy of their loyalties – is an insufficient answer to this complex subject. Every individual has multiple loyalties that compete for priority via the juxtaposition of personal and professional ethics. Complicating matters further, some military members such as medical personnel are bound to dual oaths that can potentially conflict with their respective professional ethical and legal obligations.

Methods:
Review of literature on the multiple loyalties a physician, nurse or other health care professional may have when serving in uniform.

Results:
There are multiple loyalties that the the individual person may have. Some loyalties may conflict with those of the profession versus the State.

Conclusions:
It is not enough for direction from above to say that one is necessarily right or wrong in all circumstances.

In the final interpretation, each person must continually reflect on the key elements of personal and professional ethics and consider the following questions: What should I do; What can I do; What will I do; and What will I not do. Notice that only the last has a negative. This guardrail or "red line" must be established – even if hypothetically – well before one is faced with the events of the moment and potentially overcome by them.

Medical Conditions and Treatments in a Transit Camp in Serbia for Syrian, Afghani and Iraqi Migrants

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Introduction:

Objectives:

This study describes the health conditions, treatments and demographic correlates of migrants from Syria, Afghanistan and Iraq treated in a transit camp clinic in Serbia, on their way to Europe.

Background:

Europe faces waves of migrants from war-torn countries. Many have multiple health conditions. To help camp clinics use scarce resources effectively, it is crucial to map the health problems and their correlates.

Methods:

A total of 3,723 migrants visited an Israeli-German clinic between December, 2015 and February, 2016 in Preshevo, Serbia. Complete data were available for 2,981 patients. The equipment at the clinic was basic, e.g., a sphygmomanometer, glucometer, a pulse oximeter, gynecological ultrasound machine, thermometers, etc. Diseases were grouped into eight categories: Chronic diseases, pain, infection, trauma, obstetrics and gynecology, dental problems, environment related and psychiatric. Beyond descriptive statistics, we examined the associations between diagnostic and treatment groups with age, gender and country of origin.

Results:

The most prevalent diagnosis was infections followed by pain. While the most prevalent treatment was analgesics, these were prescribed for pain and fever. Concerning specific types of diagnoses and age, the diagnosis of pain among infants (2.5%) and pre-school children (3.9%) was considerably lower compared with their percentage in the study sample (7.7%, $p < 0.001$ for infants, and 15.4%, $p < 0.001$ for pre-school). In contrast, 79.3% of patients diagnosed with pain were adults, considerably higher than their percentage in the sample (59.9%; $p < 0.001$). Finally, while a higher proportion of men had upper respiratory infections than women, an equal proportion of men and women had gastrointestinal infections.

Conclusions:

Infections and pain were most often diagnosed, disproportionally more in adults than children. Gender differences were observed in types of infectious diseases. Medical teams should be aware of demographic differences in health conditions and increase sensitivity to children's health conditions

Reducing Patient Surge into Hospitals: A Community based Solution

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Introduction:
A major challenge for health services worldwide is providing adequate medical care during mass disasters. A constraint to this ability is due to patient surge of psychosocial trauma persons into medical facilities that can severely disrupt and overwhelm effective acute care health provisions.

Methods:
To ameliorate such patient surge, we offer an innovative evidence based solution that relies on community based social networks. We do this by utilizing evidence on patient surge, community disaster behaviors and informal social networks to examine the reasons for patient surge to hospitals. This knowledge is then framed as a modified classic 'migration' model that involves factors inducing and retarding movement of injured populations toward hospitals.

Results:
The model stresses that leveraging community based social networks for basic medical and psychological care can act as a potent deterrent for non-critically injured, mainly those who have experienced psychosocial trauma, from seeking hospital care. By examining a case study and emphasizing the social capital inherent in community based social networks, the model posits an alternative cost-effective means of reducing patient surge that can be implemented to accommodate most health care systems.

Conclusions:
A proposed solution to avoid hospital facilities from being overwhelmed by patient surge during a mass disaster has until now focused on restructuring and prioritizing hospital resources. Yet, as the majority of patient surge are those who do not need immediate acute medical care, an alternative solution may well rest outside the formal hospital care facilities, namely within their community of residence. Unlike proposals that suggest setting up community trauma clinics, that would very likely be compromised during a mass disaster, our suggested solution goes beyond such local trauma facilities and lies within the context of the social capital inherent in the members of communities themselves.

Training Nurses in Evacuation Categorization in a Teaching and Non-teaching Hospital, Differences?

Christel Hendrickx

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Introduction:
In hospital disaster preparedness, evacuation and more specific on patient categorization is an essential competence that nurses are not trained in. Training nurses is essential to improve the knowledge and skills about the Hospital Incident Management System and pursuing validity of patient categorization. A comparison between a teaching and non - teaching hospital in Belgium was made.

Methods:
After an introduction, the nurses were divided in two groups. Both groups were asked to categories all present patients and to place them in evacuation order. An exercise evaluation and a comparison between groups was performed. An adjustment of the exercise was made depending on type of department: patient characteristics (mobility) and duration of intervention.

Results:
For the teaching hospital 93 wards, functional units, operating rooms, ED and critical care units participated. In type 2 exercises, the equal scores were 82,11%. The comparison resulted in a high correlation ($r^2>0.87$). For the non - teaching hospital 25 wards, functional units, operating room, recovery, radiology, nuclear medicine and ED participated. In type 2 exercises, the equal scores were 71,16 %. The comparison resulted in a good correlation ($r^2>0,78$).

Conclusions:
Categorization has another purpose and executer than triage in incident situations. Namely, prioritizing for evacuation is done by nurses. Nursing professionals represent a large group and the nature of their activities means that they will play an important executive role in the evacuation or relocation of a ward or hospital. Implementation of disaster nursing in Belgium is highly recommended and would really make a difference.

Risk-informed Demand for CBRN Medical Countermeasures

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Introduction:
The deliberate use of CBRN materials in war or terrorist attacks is perceived as a great threat globally.

Consequently, in 2001 several nations established the Global Health Security Initiative (GHSI) to improve global action and strengthen public health response to this threat, with the EU creating its Health Security Committee (HSC) as among its responses. The likelihood of CBRN use stems from the ability of non-state actors to acquire relevant materials. Whilst the probability of access to many CBRN agents has been historically low, one must also consider the recent synthesis and use of sulfur mustard by ISIL and that new dual-use technologies (e.g. nano structures, synthetic biology) are increasingly available and affordable for civilian purpose. In the event of a release of CBRN agents, protection via medical countermeasures (MedCM) could reduce vulnerability. Nonetheless, for some diseases caused by CBRN agents, MedCM do not exist and many of those that do might not be readily available.

Moreover, many existing MedCM could be upgraded with new ones that offer higher efficacy. This necessitates reliable and robust R&D funding and government procurement efforts.

Methods:
Research Paper

Results:
Few governments are willing to pay for MedCM. Yet inappropriate MedCM preparedness can induce health vulnerability in the event of attack, with the resulting adverse economic consequences (e.g. lost income) far exceeding the costs of strong and comprehensive preparedness initiatives.

Conclusions:
This presentation aims to challenge the status quo by exploring contemporary funding models and economic tools. By relying on a risk-informed framework, decision makers' use of monetary resources can be justified and their allocation supported. Components of this approach include the assessment of threat and risk, the identification and cost estimation of alternative measures (e.g., the cost of doing nothing or something else) as well as additional economic aspects associated with prioritization and sustainability. Before related funding and procurement can prevail, however, the level of political motivation must increase. Hence, this presentation introduces concepts associated with behavioural and political economics.

Japanese Disaster Medical System continues to Grow

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Introduction:
Japan has one of the best experienced disaster medical system in the world.

Methods:
January 17th, 1995(1.17), we experienced unprecedented the Great Hanshin Awaji Earthquake with no descent disaster medical system. Japanese government developed Japan Disaster Medical Assistant Team (J-DMAT), designated Disaster Base/Strategic Hospitals in all prefectures, created Emergency Medical Information System (EMIS), and constructed wide-area air evacuation/transfer system for the patient from what we have learned from 1.17. These systems were tested 16 years later when we have faced Mach 11th, 2011 the Great East Japan Earthquake. Most of the system functioned well accordingly, however, new problems were raised since the type and damage of disaster was incomparably different from 1.17. In 3.11, we were unable to arrange medial teams, and committed delay activation of Disaster Public Health care. After 3.11, we have developed Disaster Medical Coordinator to arrange disaster medical team in each prefecture and also developed Disaster Health Emergency Assistant Team (DHEAT) for Disaster Public Health.

Results:
Every after disaster, whether it is major or minor disaster, we go over what we have done, and we learn from what we have experienced. This has been helping to develop better disaster medical system for own.

Conclusions:
We, Japan, are expecting devastating Tokyo Inland Earthquake and Nankai Trough Earthquake in near future, therefore our progress of developing disaster medical system will never stop forwarding.

Rapid Development and Implementation of Hospital Incident Management Program during Increased Risk of Civil Disturbance in West Africa

Chad Priest

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Introduction:
In this presentation we describe the process and outcomes resulting from the just-in-time development of a hospital emergency incident management program at a large tertiary medical center in Monrovia, Liberia. The development and launch of the program was part of a multi-year resilience-building campaign conducted in partnership between a US-based healthcare coalition, a major research university and the medical center. While the formal hospital emergency management committee had not been established, there was an urgent need for the incident management program to be rapidly established due to risk of civil disturbance associated with elections that would include the first transfer of presidential power since the end of a decades-long civil conflict.

Methods:
The long-term resilience building program underway at the medical center was adapted from a model designed by Priest, et al. (2015) and included included a series of projects aimed at building capacity of clinical and administrative leaders to: (1) gather and analyze intelligence about threats to hospital operations; (2) make rapid decisions and flex operations during surge events; (3) respond to a range of emergencies; and (4) plan for rebounding and recovery efforts. A threat of imminent violence accelerated need for an incident management program. The partners held a half-day collaborative Incident Management planning workshop with all hospital service line leaders, academic medical leaders, clinical leaders and key stakeholders. The workshop used several developing scenarios to drive discussion. The purpose of the workshop was to: (1) Develop a common operating picture of the potential threats to the medical center; (2) rapidly identify gaps in surge management and response capacity; (3) identify immediate steps that could be taken to ensure security and safety of staff. Guidance from the International Committee of the Red Cross, the World Health Organization and the US Centers for Disease Control and Prevention were adapted for the problem-solving stage of the workshop.

Results:
A major challenge during for all partners during our years-long resilience building process has been to create a sense of urgency for front-line staff around incident management. A major outcome of this just-in-time incident management process was that staff at all levels had extremely high levels of engagement as evidenced by their participation in the process and their eagerness to engage with their teams around solutions. The impending threat created an environment where planning was valued. Additionally, as a result of the planning exercise, key measures were taken to ensure staff security including specific planning around perimeter security and intra-facility patient movement to protect patients in the case of armed conflict on the hospital grounds.

Conclusions:
The impending threat of civil conflict associated with election activity created a sense of urgency that galvanized staff and leaders to participate rapidly develop and implement a series of critical incident management protocols. Key measures were adopted to ensure staff and patient safety and the workshop process provided a model that the staff can continue to use during non-crisis times to discuss emergency planning.

District Emergency Health Coordinator - Added Value and Lessons Learned from Southern Israel

Adi Berland

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Co-author/s: Adi Berland, Michael Gdalevich – Southern District Health Office, Ministry of Health

Introduction:
Under continuous security threats, the need for close collaboration and a direct line of communication exists between the MoH and the community health system to ensure emergency preparedness and response. In 2013, the role of a district Emergency Health Coordinator (EHC) was established in all health offices. The Southern District, that includes 42 municipalities, constitutes 62% of Israel's territory. The District borders the Gaza strip, thus having been threatened by missiles in the last 17 years, peaking during operations Cast Lead, Cloud Pillar and Protective Edge. This is additional to continuous threats such as biological and toxicological events, earthquakes and tsunamis.

Methods:
The EHC's main role is to lead, coordinate and execute the ministry's emergency policies to optimize health care provision during crises. Preparedness planning and response implementation includes cooperation with the municipal authorities, HMO's, Home front command, the national authority for emergency preparedness and the MoH Department of Disaster and Emergency.

Results:
During Operation Protective Edge, the EHC was in continuous contact with all health organizations and partners. Monitoring and consequent mitigation of impact on health services were achieved mainly by working closely with HMOs and municipalities. Six stress support centers were opened aiming at decreasing hospital admissions and PTSD prevention.

Conclusions:
The district EHC emerged as an essential function underpinning operational continuity, guidance and support to all involved health services and municipalities. Creating a direct link between the municipalities and the ministry improved response time and increased sense of capability. This function should be further enhanced and tailored towards other emergency challenges.

The Challenges Dealing with Migration - An Italian Perspective

Rosario Maria Gianluca Valastro

Italian Red Cross Deputy President, Italy

National Red Cross and Red Crescent Societies engage – individually and together – with the International Federation of Red Cross and Red Crescent National Societies, to address humanitarian concerns of vulnerable migrants throughout their journey, in countries of origin, transit and destination. They provide assistance and protection, promote rights and dignity, help them identify opportunities, and promote social inclusion.

The reason behind our ongoing work is clear: no matter how many borders will be closed, human migration will not stop. People will keep moving, either in search for better living condition, or fleeing war and persecution. They will keep moving, going through longer and more dangerous trails, exposed to the interests of smugglers and traffickers, and facing life-risking situations. Our duty is to provide assistance and protection to vulnerable migrants.

The current arrival of refugees and migrants in Europe is mostly related to the conflicts the Mediterranean is facing. Yet it is not a new phenomenon, nor should we consider it as an 'emergency'. We have actually been tackling this type of 'emergency' since the early '80s. The real emergency resides in the fact that no real and concrete action has been taken in this regards by concerned governments and today, with the increasing arrivals in many European countries apart from Italy, the phenomenon has been made more visible along migratory trails that have become more dangerous due to the closing of many borders towards and between European countries.

As the International Red Cross and Red Crescent Movement our duty is to alleviate human suffering and restore dignity by addressing vulnerabilities at any stage of the migratory trail, and for everyone. While doing so, new vulnerabilities come at stake, derived by the blunt violation of International humanitarian Law that should protect our emblem and allow us to reach those in need without the risk of being targeted by the parties in the conflict.

ePoster Presentations

Bolstering Resilience in Romania

Raed Arafat

Head of the Department for Emergency Situations, Ministry of Internal Affairs, Romania

As many other countries, Romania faced in the last few years major incidents with high numbers of casualties. The most important of these being the club fire with over 150 burn patients in the year 2015.

Meanwhile, NATO is recommending the increase of civil emergency management capacity and the increase of resilience to face civil emergencies regardless of their cause or the context in which they may appear.

Several projects are being run in Romania by the Department for Emergency Situations in order to increase the preparedness level and the resilience of the country to be able to face large scale disasters.

At the same time, a major investment project targeting the increase of civil protection capacity started to be implemented looking at all hazards and risks after a risk evaluation process took place during the years 2015-2016. A project of over 600 million Eur. was launched by the Romanian prime minister to bring the civil protection to a high level of resilience and response capacity. The author will present the main features of the projects under implementation in Romania. As well, the author will present the recent projects regarding population preparedness and early warning system implementation in the country.

The IDF's Mobile Fingerprint Identification Capabilities

Joshua Ashkenazi

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Introduction:
Preparedness for victim identification, especially large-scale events remains a worldwide challenge. In an age of rapid and changing information, the IDF must adapt communication capabilities that will enable him to operate in various scenarios. As part of this reality, the deployed system must be ready to operate at any point on the globe.

Methods:
The IDF used the current abilities of transferring large amounts of data, and established the mobile fingerprint identification array in 2014. In military conflicts or disasters, one of the most important abilities is the ability to make a rapid and trustful biometric identification, without being bound by geographical distance.

Results:
Fingerprint identification by fingerprints is currently conducted done by using Automated Fingerprint Identification System (AFIS). This system enables to identify a fingerprint of an anonymous person, which is compared to the entire database, within minutes.

Conclusions:
There are many challenges in deploying the mobile fingerprint ability - Adopting new technologies versus strict data security demands, is not always an easy balance to achieve, especially in a military environment. Another challenge is the need to train competent personnel and achieve independence in the operation of systems at the field.

Events such as the helicopter disaster in Romania, the terrorist attack in Bulgaria and Turkey, the earthquake in Nepal, and the terrorist attacks in the State of Israel necessitate the rapid deployment of the teams and maintaining a high level of professionalism.

Immediate Psychological Response: The World's First Fully Integrated EMS Pyschotrauma Unit. A Case Series of 212 Consecutive Calls

Miriam Ballin

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Introduction:
The burden of psychological and emotional trauma to patients, bystanders and emergency responders has become increasingly recognized in recent years. In response to this identified need, United Hatzalah of Israel established an emergency Trauma and Crisis Response Unit to respond rapidly to critical incidents to provide psychological first aid to patients, bystanders and responders at scenes of critical incidents. A case series analysis of the first 15 months' operations is presented below.

Methods:
All callouts between 6 March 2016 and 20 July 2017 were recorded for analysis. Datasets included time logs of the calls, incident type and number of patients and responders were analyzed.

Results:
During the study period, 212 psycho-trauma system activations were logged. Out of 212 call-outs 35 were subsequently cancelled and for 27 calls there were no available responders. The average response time 12 minutes.

The average number of responders dispatched to each scene was 2. Average scene time was 1 hour and 6 minutes.

Call types could be broadly categorized into 10 main groups.

Sudden Death/Suicide [n=52], Adult CPR [n=35], Infant/Child CPR [n=42], Motor Vehicle Accidents [n=22], Fire/explosion [n=13], Light Injury panic attack [n=12], drowning [n=5], Murder/acts of violence [n=9], Terrorist attack [n=9] Other [n=14].

Conclusions:
A fully integrated EMS based psycho-trauma response service is a viable and timely modality for the provision of Psychological First Aid to patients, bystanders and first responders in the setting of critical incidents.

An Analysis of the Past 15 Years of US Efforts in Public Health Emergency Preparedness (PHEP)

Raphael Barishansky

Pennsylvania Department of Health, Deputy Secretary of Health, USA

Introduction:
Approximately 15 years ago, in the wake of the Anthrax attacks in the US, the traditional public health role was expanded to include preparedness efforts along the full spectrum of WMD threats (specifically the C-B-R-N-E threats) in addition to such traditional roles as planning for possible infectious disease outbreaks like pandemic influenza.

Methods:
Critical analysis of PHEP efforts -specifically in light of the global threats brought home by SARS, H1N1, Ebola and Zika - will be reviewed for best practices and lessons learned.

Results:
To a greater or lesser degree, public health departments of all sizes (local/city, county and state) have embraced their preparedness roles. This has led to significant advances in various areas, including emergency response. Interaction and collaboration with traditional emergency response partners - Police, Fire, EMS and EM -have proven to be a positive influence and indication of greater organizational adoption of PHEP responsibilities.

Conclusions:
Funding is a critical issue. Additionally, even after more than a decade and a half later, there is still a lingering lack of an "emergency" mindset for most public health entities. When funding for basic services and responsibilities of public health departments is tight these competing priorities make PHEP an easy target for cuts in time and effort.

Smart, Intelligent & Adaptive Systems Laboratory - SIAS Lab - Part of the AFRAN Center, the Israeli National Center for Disaster Reduction

Arriel Benis

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Introduction:
Smart, Intelligent, and Adaptive Systems Laboratory - SIAS Lab , was established, adjoin of the AFRAN Center (Israeli National Center for Disaster reduction) at Holon Institute of Technology - HIT. SIAS is an action-oriented research, supporting preparedness, management, response methodology, and analysis of, emergency and disaster events.

Methods:
SIAS primarily employs and extends Artificial Intelligence approaches:
- Data Science, Big Data and IoT;
- Knowledge Representation, Information Visualization, and HMI;
- Social and Community Intelligence, and Open-Source Intelligence;
- Automation, autonomous systems and Robots.

Results:
SIAS focuses on innovative methodologies and technological systems having a wide variety of capabilities. SIAS mainly concentrates on:
- Decision Support Systems;
- Social and Collaborative environments;
- Uncertainty and Risk management environments;
- Quality Engineering and Resources Optimization tools.

The SIAS lab runs in parallel with Medical Informatics and Systemic point-of-views looking at the disaster field before, during, and after the event by taking into account impact on infrastructures and their management. This holistic perspective requires understanding, implementing, and developing relevant tools to use for events from preparedness to recovery program.
Attention is paid to:
- Cyber-systems and Informatics issues;
- Disabilities and Elderly specific issues in the disaster management;
- Quality, Health, Safety, Security, and Environment;
- Ethics and Innovation Management;

Conclusions:
The SIAS is open for collaboration with local and abroad academic institutions and companies. Collaboration may consist of (1) Sharing data, knowledge, experience; (2) Students and staff exchanges; (3) Delivering research products.

Project subjects will be presented.

Managing and Developing Information of Mental Health during Operation Protective Edge through the Prism of the Boyd's OODA Loop Model

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Introduction:
Managing medical information in emergencies is a huge challenge crucial to effective crisis management. The need to collect various information from several sources, process it, and turn it into actionable knowledge quickly, repeatedly emerges in extreme situations as a complex process laden with barriers, and an Achilles' heel in organizational coping. Boyd's OODA (Observation, Orientation, Determination, and Action) loop is a knowledge management model commonly implemented in armies, including the IDF. It centers on the knowledge gap built into extreme situations, offering a conceptual framework designed to bridge the gap, and support decision-making processes. The model is unique as it combines human and technological factors with a spiral process approach, emphasizing the constant movement and change in information management and knowledge creation required to complete the assignment.

The large number of combat stress casualties treated during Operation Protective Edge has revealed significant gaps in collecting, centralizing, and processing information, resulting in a reduced ability to provide optimal treatment. The paper will present the organizing and learning process using Boyd's model, as well as actions taken by the mental health department during and following the fighting in order to bridge the gaps, culminating in the development of an innovative technological platform for documenting, centralizing, and processing information on stress reactions as a primary lesson learned.

Community Mental Health Rehabilitation Services -Preparing and Coping with Emergencies

Adi Berland

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Introduction:
The "Community Rehabilitation of Persons with Mental Health Disability" Law, 2000, provides rehabilitation services in the community for people coping with mental illnesses. These services, called "Rehabilitation Basket", include housing, employment and leisure activities. 31 private contractors operate 300 different frameworks. In the Southern District, which extends over 62% of the country, including 42 municipalities, 3,800 people receive the rehabilitation basket. Their functional abilities vary from mostly independent to needing close behavioral guidance.

Methods:
During operations Cast Lead, Cloud Pillar and Protective Edge, the district health office rehabilitation staff provided support, developed a comprehensive array of responses to continue care and supervision for the rehabilitation services. The different frameworks were mapped according to location and type of service. Their employees were assigned to essential duties according to availability during emergencies.

All protocols were reexamined after every exercise and real events. An emergency preparedness file and protocols were constructed for each facility, as well as information and emergency instruction cards for each patient.

Results:
Following the introduction of the preparedness procedures frameworks' employees reported improvement in their functional capability during emergency. Emergency management authorities, IDF, HFC and local authorities, now have a higher awareness towards these frameworks during crises. Furthermore, their formal status is currently being upgraded towards the definition of 'vital institution'.

Conclusions:
Emergency preparedness of community mental health service is essential in order to avoid flooding the health sector and the municipalities' social services with needs and challenges arising in such community.

Assembling the most suitable medical delegation to disaster zones

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Introduction:
Deployment in a disaster arena is an extremely challenging task. Personnel will confront many uncertainties, facing unknown medical and ethical issues, altogether while operating in demanding physical conditions.

The IDF field hospital has a long history of deployment of humanitarian missions.

Not every medical or logistic personnel can withstand the difficulties in deploying in the aftermath of a disaster. Bringing an unprepared person to a disaster zone can cause major anxiety and mental burden on this person and of course will influence the entire function of the team. Therefore it is essential to put all efforts in this process of team composition.

Methods:
We will present the recruitment process. Thereafter the maintenance of preparedness through training both of health care and logistic personnel.

Results:
A major understanding is that the right personnel are not the best one in each field, but those who can adapt to unknown and harsh conditions, while able to combine easily in a team

Conclusions:
Choosing the right personnel is a crucial component to a successful mission.

In Vitro Evaluation of RSDL® Product for Efficacy to Select Dermal Toxic Chemical Compounds

Laura Cochrane

Medical and Clinical Affairs, Emergent BioSolutions, U.K

Introduction:
RSDL® (Reactive Skin Decontamination Lotion Kit) is intended to remove or neutralize chemical warfare agents from the skin. Emergency Responders posed several questions of its possible applicability with other dermal threats or toxic industrial chemicals (TICs), and a complex study was undertaken to evaluate efficacy for up to thirteen (13) chemical compounds.

Methods:
The selected chemical compounds were proposed for evaluation included: sulfuric acid, hydrofluoric acid, ammonia solution, fentanyl, capsaicin, methylamine, hydrazine solution, phenylhydrazine, ethylene dibromide, acrolein, formaldehyde, acrylonitrile and azaridine.

Due to the complex proposal of study, a staged approach was proposed as method. The development of requisite analytical procedures with a limit of quantification in stage 1. The application of those methods in the actual determination of surface panel decontamination tests in stage 2. And finally, should outcomes of the first stages prove positive, a kinetic degradation test for particular chemicals of interest.

Results:
Method development, depending on compounds, found use of LC-MS, GC-MS and ion mobility chromatography as the analytical methods. Analytical methods dictated a next step to surface studies, and ten (10) compounds in total were evaluated to NATO protocols for surface decontamination, yielding (>97%) efficacy. Two compounds of interest, Fentanyl and Capsaicin were evaluated for reactivity kinetics.

Conclusions:
Preliminary efficacy was determined against method development and surface decontamination for use in developing in-vitro data or use on equipment. Next step studies are then needed target mode of action understanding of reactivity and pre-clinical studies for applicability to use on skin.

Using Quality Indicators to Evaluate MCI Exercises - Experiences from an Airport Exercise

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Introduction:
Exercises for testing emergency medical personnel's readiness are resource intensive. Plan-ners need expertise both in defining readiness criteria and in setting up a evaluation framework and scheme.

Existing guidelines ask for quantitative measures but give no advice in defining those. In October 2016, the Stuttgart Airport GmbH Fire Department conducted an exercised a MCI with 40 casualties based on ICAO regulations at Stuttgart Airport, Stuttgart, Germany.

Methods:
We used two evaluation schemes in parallel. On the one hand, we implemented the classic approach using observers, which handed in an observation report in the aftermath of the exer-cise. On the other hand, an approach using quality indicators based on quantitative data was used. Data was gathered using a treatment assessment sheet. Data analysis was conducted using MS Excel®.

Results:
We found that results using the classic approach and the indicator approach are at equal. In comparison of both approaches, we stated no deviation in the results. The quality indicator ap-proach made intra-exercise evaluation possible. Additionally results were presentable at the hot wash directly after the exercise.

Conclusions:
It is in the nature of indicators that individual reasons which lead into results cannot mapped. Advantages of this method are speed of presentable results and their objectivity. With this method, demands for quantitative measurements can be met. Additionally the indicator ap-proach can be used to benchmark different exercise-runs, standards and SOPs in MCI-management. Demands for future research are modelling tactical decisions and transfer on other use cases.

Maintaining Public Health Laboratories Operational in Emergency Situations

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Introduction:
A public health laboratory is part of the state emergency team mandated to provide continuous monitoring of water quality and infectious diseases.

Limitations on the number of staff members together with increased variety of laboratory activities led to an increase in outsourcing of services.

In an emergency situation, there is no assurance that outsourced services will be available.

Professional manpower, dedicated equipment, stable infrastructure and validated kits and reagents, are the high priority items in an emergency situation.

Methods:
Risk assessment methodology including 5X5 marix as a common tool for risk evaluation

Results:
Using risk assessment evaluation, we defined critical activities to be performed on the public health laboratory premises by its own personnel:

1. Maintaining the ability to produce medium for microbiological tests as well as keeping a stock of ready-made medium for rapid microbiological water quality tests and rapid clinical diagnostic tests.
2. Keeping proficiency skill to produce microbiological media although it is routinely purchased by outsourcing.
3. Maintenance of equipment in sheltered rooms, connected to emergency electricity generators.
4. Keeping communication lines as well as mobile telephones available. Thus, in an emergency, when there are limited or no outsourcing services available, the lab will be ready to perform critical activities.

Conclusions:
Thus, in the situation of a temporary collapse of the outsourcing services and raw material supplying systems, the lab will be able to perform valid tests, which may be critical for the public health services in emergency situations.

An Extended Hunger Strike of Political Prisoners in Israel - A Challenge to Deal with the Re-feeding Syndrome

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Introduction:
A hunger strike may be life-threatening due to physical deterioration, dependent on length and nature of strike, and pre-existing medical conditions, age, if fluids are consumed, sufficient vitamins and sugars provided etc. There is the risk of Re-feeding-Syndrome, resulting in massive insulin secretion, rapid intra-cellular increases of electrolytes with resultant decrease in plasma levels, possibly sodium and fluid retention, hypervolemia.

An extended hunger strike, of prisoners, in Israel, presented the Israeli Prisons Service and the Ministry of Health with a challenge to prevent Re-feeding-Syndrome and health complications among hunger strikers of more than 40 days.

Methods:
A literature search, consultations with experts, with extensive experience of treatment of hunger strikers, and development of treatment guidelines according to different conditions.

Results:
There were 800 prisoners on a hunger strike. Among some, weight loss occurred, with no signs of major malnutrition. Bradycardia was observed. While striking, some agreed to receive fluids (parenteral nutrition/water with sugar or fruit syrup/soup). All received thiamine, 100 mg daily. At the end of the strike some received Oral nutrition supplement for 3 days. No cases of Re-feeding-Syndrome were recorded. There were a limited number of cases of overnight hospitalization of prisoners with chronic disease backgrounds.

Conclusions:
The greatest complication was the risk of Re-feeding-Syndrome. The large number of strikers, and the long duration, posed great challenges to the Ministry of Health and of the Prisons Service, entities faced with treating and preserving the health of the hunger strikers, incarcerated country-wide. This necessitated full cooperation of multidisciplinary staff.

Pediatric Long Term Care Disaster Planning

Michael Frogel

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Introduction:
Children are frequently victims of disasters; however gaps remain in pediatric disaster preparedness. Planning for the special needs of patients in Pediatric Long-term Care (PLTC) facilities presents many challenges (e.g. Patient's disabilities and needs for specialized equipment). The New York City (NYC) Pediatric Disaster Coalition (PDC) is funded by the NYC Department of Health and Mental Hygiene (DOHMH) to improve NYC's pediatric disaster preparedness. After creating resources for disaster planning in Hospitals' Pediatric Departments, Pediatric/Neonatal Intensive Care Units and Obstetric/Newborn Services, the NYC PDC created the Pediatric Long-Term Care Planning Committee (PLTCPC) to create disaster guidelines and template plans for PLTC facilities.

Methods:
The PLTCPC included physicians, nurses, administrators and emergency planning experts. The committee met bi-weekly, utilizing an iterative process including literature review, participant presentations and discussions to create tools for the specific disaster challenges presented by this population.

Results:
The final guidelines and templates for surge/evacuation of patients in PLTC facilities were created in June 2016. Subsequently, a model plan was completed and implemented at a site with over 100 pediatric residents.

Conclusions:
To our knowledge these are the first pediatric specific resources for long term care disaster planning. They address the importance of matching available resources to the unique needs of PLTC facilities in regard to space, equipment, staffing, training and exercises.

The Pediatric Disaster Mental Health Intervention: A Guide for Primary Care Providers

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Introduction:
Pediatric Disaster Mental Health Intervention (PDMHI) was developed In response to "Superstorm Sandy". The objective was to develop training for primary care providers in PDMH and study its impact on the trainees. The effects of a disaster on a community's mental health can persist after the physical effects of the event have passed. The pediatric population is often overrepresented in disasters and prone to serious mental health disorders.

Methods:
A faculty of experts in pediatric mental health, psychiatry, psychology, and disaster preparedness was convened to develop the PDMHI curriculum. They developed a four -hour intervention to equip health care providers with the skills necessary to care for children with disaster related mental health problems via intervention evaluation, triage, and referral.

Results:
Three training sessions were held. 67 providers were trained; pre/post-tests measured knowledge before and 3 months post intervention. 62.5% of primary care providers made changes to their practice. 92% felt better equipped to identify, treat and refer patients. 81% would be willing to work in a disaster zone.

Conclusions:
PDMHI covers psychosocial responses to disasters from normal to mental health disorders. Participants gained tools for managing pediatric mental health issues in primary care. Data showed an increase in the participants perceived knowledge and skills about pediatric disaster mental health and their willingness to participate in future disasters.

Using High Fidelity Simulation to Compare Residents' Crisis Resource Management Skills in a High Vs a Low-resource Scenario during the Resuscitation of a Critically Ill Obstetric Patient: A Pilot Experimental Study

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Introduction:
After the recent Ebola outbreak response in West Africa, the World Health Organization undertook an internal reform to improve the global health emergency workforce. However, while the presence of young doctors in humanitarian missions is increasing, most of them lack formal training before deployment. As studies reporting on the preparedness of health providers in low-resource settings remain predominantly narrative, the aim of this paper was to compare residents' performance in a simulated high-resource vs a low-resource environment.

Methods:
This was a prospective study with a crossover design. Ten senior residents in Anesthesia acted as lead physicians during the management of two identical postpartum hemorrhages in a high-resource scenario (HRS), which mirrored the operating theater (OT) of a tertiary teaching hospital, and in a low-resource scenario (LRS), which reflected an OT in a developing country. Before entering the study scenarios, residents attended a seminar on the management of a postpartum hemorrhage and a simulation tutorial where the functioning of the simulation setting was presented. Residents' performances were videotaped and their crisis-resource management skills rated by an external and independent evaluator using the Italian translation of the Ottawa Global Rating Scale.

Results:
Residents' overall performance decreased in LRS ($P < 0.05$). Residents also displayed reduced leadership, problem solving, situational awareness, resource utilization and communication skills ($P < 0.05$) in LRS compared to HRS.

Conclusions:
This study suggests that senior residents' resource management skills decreased when managing a critically-ill patient in a simulated low-resource scenario when compared to their usual workplace.

Therefore, attention should be drawn to the potential implications that deploying unexperienced doctors in the field may have on the health of local populations.

The Interest and Previous Experience in Humanitarian Work of Emergency Medicine Residents in the Philippines

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Introduction:
The Philippines is frequently affected by disasters. Future Filipino emergency medicine physicians should be particularly acquainted with humanitarian work. This study explored the engagement of Filipino emergency medicine (EM) residents in humanitarian assistance.

Methods:
In 2015 an on-line survey was sent to all residents enrolled in the 12 EM training programs in the Philippines exploring participants' previous humanitarian experience, existing humanitarian work opportunities in their respective training programs, participants' interest to engage in humanitarian work after completion of their training and related motivations and concerns. No financial incentive was offered. The Institutional Review Board considered the study exempt from approval.

Results:
Ten training programs (83%) participated in the study; sixty-three residents completed the survey (RR 48.09%). Forty-eight percent were males (median age 31). A total of 42.9% had experience working with humanitarian organizations (mostly with the Philippine National Red Cross and local NGOs).

Seventy-one percent could participate in humanitarian work during their recidencies. For 55.6%, there was no prior training available. Thirty-eight (60%) considered a career in the humanitarian field; the top 3 motivations were: desire to save lives, personal/professional development, and desire for a new experience. Safety and security were the main concerns.

Conclusions:
Compared with other countries, Filipino EM residents engaged much more in humanitarian work, mostly with local organizations. Since those organizations are at the forefront when a disaster strikes, it is of paramount importance for national doctors to become acquainted with local protocols and guidelines. However, few EM training programs offered prior training.

Comparing Posttraumatic Symptoms between Individuals Exposed and Unexposed to ongoing Security Threat: Results from a Population based Study

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Introduction:
The posttraumatic consequences of ongoing exposure to security threat go beyond those specified in DSM-5 for PTSD and are not integrated in commonly used PTSD assessment tools. PTSD assessment practices are thus lacking when assessing symptoms in ongoing exposure to security threat. We aimed to characterize the stress reactions observed in individuals exposed to ongoing security threat and to identify correlates of PTSD and 'additional' symptoms (symptoms not explicitly assessed in DSM-5).

Methods:
A population based cross sectional survey of individuals exposed (settlements bordering the Gaza strip) and unexposed (other areas in Israel) to ongoing security threat was conducted between December 2016 and February 2017. Data were collected regarding the occurrence and severity of 45 posttraumatic symptoms; 20 core PTSD symptoms and 25 'additional' symptoms. Statistical analyses included Chi square tests and logistic regression models.

Results:
The sample consisted of 277 responses, 115 (41.5%) exposed to ongoing security threat and 162 (58.5%) unexposed. Compared with unexposed individuals, exposed individuals reported significantly higher rates of 'feeling sense of danger', 'feeling unable to protect those who depend on me', 'changes in appetite' and 'personality changes'. 'Additional' symptoms (i.e. 'personality changes', 'inability to protect those who depend on me') were significantly associated with the duration of exposure to security threat and with the level of fear from various security related traumatic events.

Conclusions:
Our findings highlight some of the posttraumatic symptoms salient to ongoing exposure to security threat. Addressing these symptoms during the diagnosis and treatment process will alleviate unnecessary suffering.

Quality People-centered Crisis Management: A Collaborative Training Initiative Involving Local Government and the Community

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Introduction:
The Tokushima Prefecture initiated the training to facilitate effective future disaster management from the Nankai Thorough Earthquake and Tsunami. Emergency guidelines for disasters cite the importance of accounting for all perspectives. However, past responses to emergencies in Japan often overlook community perspectives, resulting in some persons enduring inhumane conditions such as prolonged stays and overcrowded conditions in shelters. Thus, Tokushima Department of Crisis Management decided to provide people-centered crisis management training.

Methods:
Periodical training based on the Sphere Standards of Humanitarian Assistance and the Core Humanitarian Standard on Quality and Accountability was provided. Both local interested government officers and civilians were recruited for the training, the aim was to develop disaster aid workers who, regardless affiliation, could provide people centered disaster aid. Certified trainers in Quality and Accountability in humanitarian work used a real case scenario to build upon participants' prior knowledge and skills, thus enabling active learning and learning from other.

Results:
The training, involving both professional and lay persons was evaluated based on: ease of learning, thought-provoking and creative, and applicable. Comparisons of pre and post-test scores were statistically significant for knowledge acquisition. Other feedback described the need for more locally pertinent scenarios, and wider recruitment from community resources such as schools, local corporations, and community leaders. Consequently, the Tokushima Prefecture is in the process of refining and offering gratis the training program.

Conclusions:
Local government sponsored training, involving community members and professionals shows promise for building aid worker capacity for effective quality disaster management.

"Nurse to the Trauma Room" Trauma Team Activation in Share Zedek

Amran Jaber

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Introduction:
Our trauma center activates a single-tiered full trauma team response for all cases that fall under accepted physiologic, anatomic and mechanism of injury trauma criteria, even when patients are known to be only minorly or moderately injured. This has been shown to lead to inappropriate resource allocation.

Methods:
Retrospective chart review of all cases of trauma code activation from January 2017-jun 2017 and questionnaire of ED charge nurses analyzing the factors they take into account before activating a trauma code. The Injury Severity Score (ISS) and outcomes of all patients in the study period will be evaluated and compared to the initial trauma code message to determine if a two-tier system could be safely implemented.

Results:
In collection.

Conclusions:
Yet to be determined. We aim to show that there is room to safely consider a two-tiered trauma response, and create an appropriate protocol to this end.

Earthquakes: Fact or Fiction. A look at Preparing Staff and Patients at a Psychiatric Hospital in the Event of an Earthquake

Amran Jaber

Kfar Shaul, Israel

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Introduction:
It is a known fact that our region is expected to suffer a high intensity earthquake. There has been much discussion of expected outcomes and damages.

We would like to speak about the way this potential event is viewed by the staff of a psychiatric hospital, as well as the way an event such as this is viewed by the psychiatric patients. In addition, we will speak about the steps that have been taken by the hospital to prepare for an earthquake.

Methods:
POLL.

Results:
In process.

Conclusions:
Obviously the way reality and unexpected events are viewed by psychiatric patients differs from the ways such instances are viewed by the broad public. Therefore we face an immense challenge- how to discuss the subject of earthquake preparedness with the patients, and how to teach and practice correct behavior in such an emergency.

In the lecture, we will present the workshops that were delivered to the staff, and the workshops and simulated exercises- to practice behavior in the event of an earthquake- that were delivered to the patients. Additionally we will discuss the logistics of these sessions. Furthermore we will discuss the results of a poll testing earthquake preparedness that both the staff and patients answered.

Call for Help, Better Before than After -"Life Guardians"

Eli Jaffe

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Co-author/s: Oren Blustein, Ido Rosenblat, Roman Sonkin

Introduction:
During times of disaster EMS organizations need extra volunteering medical staff. Magen David Adom (MDA), the Israeli National EMS organization has four pillars of response, the 4th pillar is the Crowdsourced Bystander Response (CBR) Program called "Life Guardians". CBR is based on professional medical personnel which are not day to day volunteers and do not participate in regular ambulance shifts. Their purpose is to be called through a dedicated app to respond to life-threatening calls by proximity.

Methods:
MDA database was examined to extract two parameters: 1. Distribution of active medical professionals in the CBR program during the 1st half of 2017, 2. Distribution of Life Guardians activity through the regions of Israel.

Results:
Medical Professionals by qualification: BLS First Responders -42.69%, EMTs -17.79%, Others -21.34%, Army Medics -9.88%, Physicians -5.14% Nurses -1.98%. Regional Distribution: Ayalon -18.17%, Yarkon -14.30%, Jerusalem -13.53%, Dan -13.53%, Negev -12.37%, Carmel -11.60%, Lachish -7.42%, Sharon -6.18%, Gilboa -2.90%.

Conclusions:
"Life Guardians" are spread countrywide and include different medical qualifications. During disasters "Life Guardians" will be notified of victims in their proximity and will be able to provide needed care by their qualification. When needed can also be called to treatment sites.

Early Simulation, Like Early Defibrillation -Using MCI Simulators to Improve Preparedness

Eli Jaffe

Community Division, Magen David Adom, Israel

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Introduction:
In the context of disasters and Multi Casualty Incidents (MCIs), simulations and games can engage Emergency Medical Services (EMS) personnel and provide them with opportunities to practice various MCI scenarios. The purpose of such training is to provide simulation-based experience in managing and participating in the response to such incidents. Magen David Adom, the Israeli national EMS organization, together with the Technion developed a game-like simulator for the MCI commander.

Methods:
Paramedic students engaged with the simulator in preparation to a field MCI drill. Participants responded to two different questionnaires, before and after the drill. Responses were based on a 1-5 Likert scale.

Results:
Participants ran 1.8 simulation runs on average. Training before the drill showed that on average, feeling of involvement -3.88, Interest -3.88, feeling of control -2.63, feeling of success in actions -3.00, feeling game is clear -2.88, game helps to understand MCI guidelines -3.44, game helps construct and maintain picture of situation -3.19, game helps develop decision-making capabilities -3.19. After-drill evaluation showed that 20% of participants have practiced the simulator since first exposed to it. The simulator helped prepare for the drill -3.4, and intention to further train with the simulator after studies -2.57.

Conclusions:
The perception of the participants implies that using the simulator can help prepare for drills by practicing the management protocol and decision-making processes of potential incident commanders with scenarios they yet to encounter. Participants who did not acknowledge the benefit of the simulator before the drill, acknowledged it after the drill, which implies there might have been an additional benefit.

Lifesaving Vacation – EMS Overseas Volunteers Willingness to Assist during Disasters

Eli Jaffe

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Introduction:
Magen David Adom (MDA) Israel's national EMS organization annually trains volunteers living overseas. In a disaster situation, these volunteers might constitute reinforcement. During prolonged disasters, the responsiveness to volunteering and self-sacrifice is significantly higher than during routine. (Harburgh, Vestland & Andreony, 2004). Understanding the link between the type of disaster and willingness to provide supportive assistance, may help MDA prepare appropriately.

Methods:
A cross-sectional study among overseas volunteers trained by MDA, using a questionnaire distributed in July 2017. The overseas volunteers were divided into two groups. The first group finished their training & volunteering period and are currently in Israel, while the second group are overseas volunteers who were on the program and have returned home.

Results:
Of the participants, 85.43% responded stating they had a positive experience volunteering for MDA. Of the volunteers who are currently living overseas 82.64% were willing to come to Israel during a disaster, in contrast to those volunteers currently in Israel of which 64.51% would be willing to come. It is important to note that the responsiveness when asked about a large-scale missile attack was 64.9%, which is significantly lower than any other type of disaster.

Conclusions:
It is important to invest time and resources in training overseas volunteers. Not only have they proven to make a valuable contribution to MDA but to Israeli society as a whole. For the above reasons, it is critical to invest adequate resources in training overseas volunteers, for greater relief at times of disaster.

Seeing is better than Reading – Training by Video Saves Time while Improving Comprehension

Eli Jaffe

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Introduction:
The classic method of studying is reading from a text and requires time and concentration ability, two factors which are deficient during times of disaster. EMS personnel go through vigorous training and require frequent refresher courses to uphold the desired professional level. In addition, during times of disaster it is necessary to train ad-hoc volunteers for many tasks. Magen David Adom (MDA), the Israeli National EMS Organization seeks to improve its training abilities as preparation for disasters.

Methods:
A group of 60 university students which are not MDA Volunteers were divided into 2 groups of 30. Their common goal is to study MDA Volunteer rules and regulations. Group 1 studied in the classic method - reading from a text. Group 2 studied from training videos. After the study session all participants attended a multiple choice questions exam. Two parameters were compared between groups: Total Study Time and Grades.

Results:
The average grade in the classic method group was 71.5 (SD=15.9) while in the video training group the average grade was 79.5 (SD=17.2), a difference of 11%. Total Study Time for the classic method group was 11 hours compared to 8.5 in the video training group, a difference of 23%.

Conclusions:
Watching training videos saves valuable study time and leads to improved grades, this method is preferred to the classic method of reading from text. In preparation to disasters as in training volunteers after disasters, this method may improve the knowledge while saving time.

What Role(s) Can the Ontario's Coroner's Office Play In Public Health

Reuven Jhirad

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Introduction:
The Office of the Chief Coroner in Ontario (OCCO) originated from the English coroner system where coroners had investigative powers and a strong association with the criminal justice (CJ) system. The OCCO investigated over 16, 000 deaths last year and the vast majority were natural, accident or suicide and as such were preventable. The OCCO could, through its investigative abilities, use its data to help prevent similar deaths by working with public health (PH) departments. It is this future relationship that can ensure the OCCO best lives up to its motto to "learn from the dead to protect the living."

Methods:
This qualitative study involved twelve semi-structured in-depth interviews with a purposive selective sample selected from the coroner's, PH or CJ systems in Ontario, Canada. An interpretivist epistemological approach was involved in this study and the data was analyzed using thematic content analysis.

Results:
There were four core themes that emerged: (i) Perception of job roles; (ii) Comparison of the OCCO/PH Departments; (iii) Areas for growth between the two departments and; (iv) Global possibilities for the OCCO and their implementation

Conclusions:
The research led to four potential roles for the OCCO in PH: (i) Provide effective, accurate, scientific downstream data; (ii) Provide the reputation and strength of high quality death investigations to PH to help policy implementation; (iii) Share similar data-gathering and data-analyzing (surveillance) techniques to allow for more free flow of information between the departments; (iv) To promote effective upstream programs to improve the health as well as decrease the morbidity/mortality that exists in society.

Using Statistical Simulation to compare two Emergency Medical Services Deployment Settings for Nature Disasters

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Introduction:
Preparing rescue and emergency health services in advance is critical for saving lives in nature disasters such as earthquakes. All municipalities in Israel are required to prepare Emergency Treatment Sites (ETS) that will provide casualties with first aid treatments in the first 24-72 hours after such disaster occurs.

Our study is focused on the optimal location of these sites. The first question that we evaluated was the comparison between two modes of operation -(1) a Static ETS where the ETS locations are determined in advance, and casualties will be brought to the ETS from the locations that were hit by the earthquakes; (2) a Mobile ETS where emergency equipment and services will be moved (partly or fully) from its storage location to a location that is close to the location that was hit by the earthquakes, and bring the casualties to this closer location.

Methods:
Our study compared the time it takes to deploy and bring the casualties to the ETS under the two modes. We hypothesize that deploying the Mobile ETS will result in shorter deployment to treatment time. We used statistical simulation tools to compare scenarios with varied distances, equipment and number of casualties.

Results:
Our simulation results point at the advantage that Mobile ETS has over Static ETS in most scenarios that we tested.

Conclusions:
Our recommendations can serve decision makers in preparing their medical emergency response policy for disasters such as earthquakes. More work has to be done to compare variation of equipment type and quantities.

The Earth is moving, so are EMS

Ilan Klein

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Introduction:
Israel borders with the seismically active Syrian-African rift valley. Amongst natural disasters, earthquakes are known to cause large amounts of casualties. The Israeli authority for earthquake preparation expects a toll of 8,600 mild-serious injuries and 37,000 lightly injured as a result of an earthquake. The response by EMS to an earthquake is a complex challenge which is expected to result in many lives saved. We sought to examine whether activation of mobile and flexible first response outposts is more effective than fixed or scattered outposts in all disaster stricken areas.

Methods:
The study will compare three modes of operation (static, dynamic, and combined) for statewide preparation of first-response treatment, and realistic local drills, to simulate and test the various modes and their application in wider range simulation.

Results:
Importance of the Research:
EMS and their effective immediate pre-hospitalization medical treatment constitutes one of the paramount factors affecting ability to save lives during disasters. During an earthquake, the importance of emergency medical services comes to be realized especially due to the failure of infrastructure and communication systems as well as the difficulty in receiving medical aid from the routine medical system.

Defining the methods of activation, including the erection of a first response outpost will greatly assist MDA as well as other emergency organizations of the IDF, hospitals, and community health clinics in preparation for an earthquake scenario and will ultimately improve the immediate medical response following such a disaster.

Conclusions:
Suggestions to Decision Makers:
This research study will enable the decision makers improve the medical response in Israel during an earthquake disaster scenario and as such will assist in the preparations and readiness of the medical system in an extreme scenario.

Psychological Treatment of Refugees: Current Obstacles and Past Solutions

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Introduction:
Most of the specific best practice examples in the field of refugees' mental health are based on non-validated studies. Therefore, mental treatment of the current wave of refugees may benefit from taking into account positive elements of past treatments, correcting mistakes that have been made. Historically, millions of refugees, displaced due to war and genocide, including Holocaust survivors and displaced German refugees, were relocated and successfully resettled. This success was not emphasized until last years.

Methods:
Lately, the knowledge gained with the resilience and the post-traumatic growth of Holocaust survivors, combined with new research data, provide new tactics for a better management of the current wave of post-genocide, traumatized and tortured refugees.

Results:
Recent outcome studies of available PTSD treatments show only a moderate improvement, thus presenting more clinical challenges. However, we find surprising resilience and longevity among Holocaust survivors -in spite of their chronic physical illness.

Conclusions:
Novel treatment and preventive measures, proven efficient among preceding refugee and post traumatic populations, will be described. They will include the empowerment of local leadership and semi-professionals among the refugee communities, strengthening of alternative community bonds in place of lost bonds, and the use of techniques including self-help groups and positive psychology.

Penta -The Joint Laboratory on Models and Methodology to Predict and Manage Large Scale Threats to Public Health - State of the Art of 5 Year Period of Activities

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Introduction:
Penta Joint Laboratory reached its 5th year of activities. Israeli Ben Gurion University and Italian Istituto Superiore di Sanità (ISS), under the Governmental Agreement signed by ISS and Israeli MATIMOP, funded by Italian Ministry of Foreign Affairs, have done an intensive work in the domain of Public Health to promote Penta main goals: interventions for disaster risk reduction and mitigation (DRR) concerning health threats; capacity building implementation; know-how exchange for improving public awareness and education in complex emergencies.

Methods:
Several methods of investigation were applied: questionnaires, interviews, pilot studies, qualitative and quantitative statistical analysis, SWOT analysis, Concept Cards for creation of guidelines in the field of resilience, participation to national and international projects.

Results:
A H2020 (Darwin) project to develop resilience management guidelines. A series of over-3-year research projects, funded by CEI (Central European Initiative).

Educational modules (based on PBL -Problem Based Learning and open access platforms for e-learning) regarding awareness, dissemination and training on management of DRR in the Western Balkans. Q-Core Questionnaires, a tool created for investigation of the community resilience within the Italian Jewish community, conducted within Italian schools for pre-adolescent.

Development of teaching curricula in the field of emergency preparedness and response and e-learning.

Conclusions:
Penta continues to implement know-how exchange and partnerships, looking at the One Health approach to create policies and fundamental measures to contrast global issues as Anti Microbial Resistance (AMR) and to promote inter-sectoral systems as when dealing with large-scale migration flows; to foster international cooperation among countries through evidence-based education and methodology

Medical Assistance at the Checkpoint during Armed Conflict

Oleg Mazurenko

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Introduction:
Due to anti-terrorist operation in eastern Ukraine, humanitarian corridors for civilian were established. From 4255 to 7112 persons crossing different checkpoints daily. Identified health risk are possible artillery strikes, gunfire, lack of some services, and security. Due to a high number of elderly people, people with specific need, people with children as well as waiting time a medical assistance has been established.
Five checkpoints have been established on the front line. Checkpoint's Medical team consisted of 1 physician, 1 nurse and 1 driver. Operating time was 8:00 - 17:00. More than 20 people visiting medics daily.

Methods:
Based on lessons learned from mission to the checkpoint on March 2017. Data was gathering from the field. Both qualitative and quantitative methods were used.

Results:
During the 30 days a total of 668 persons, among them 639 (97%) adult and 29 (3,0%) children aged 1- 14 years old, received medical assistance from the staff during 30 days.

Among adult patients main reason attending for medical assistance were I. Neurotic, stress-related and somatoform disorder with hypertension (43.0%); II. Abdominal pain due to diseases of the digestive system (16.4%); III. Injuries to the wrist and hand (14.8%).

The main diseases among children population were: I. Diseases of the respiratory system (48.3%), II.Noninfectious gastroenteritis and colitis, Diarrhea (41.4%).

Conclusions:
Medical Unit is an essential part of the checkpoint. Checkpoint's Medical staff should be ready for visiting a significant number of the persons with the neurotic, stress-related and somatoform disorder with hypertension. In addition to Emergency Medical assistance, checkpoint must be equipped with catering solution (provision of food and drinking water) as well as heating for visitors.

ThoraXS - A Novel Device to Shorten Tube Thoracostomy Time in the Pre-hospital Setting

Dean Nachman & Arik Eisenkraft

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Introduction:
Tension pneumothorax is a life-threatening emergency mostly associated with chest trauma, blunt or penetrating. It is considered a leading cause of death and represents a substantial portion of "preventable deaths" in the battlefield. The accepted therapeutic approach is a manual Tube Thoracostomy (TT). It is a relatively simple procedure when performed by skilled personnel and in optimal conditions. Nevertheless, in the battlefield and in other pre-hospital settings or when performed by unprofessional personnel, it may become complicated and time-consuming procedure.

There is a medical need for a new surgical technique.

Methods:
A pilot ex-vivo experiment was performed by skilled military physicians on a swine model, in which the ThoraXS was used to insert a chest tube, instead of the traditional manual tube thoracostomy.

Results:
A chest tube was inserted 10 times using the ThoraXS, with an average penetration time into the pleural space of ~6 seconds and an average total procedure time of ~30 seconds. On gross observation, tissue penetration with the device in its closed configuration was easily performed, overcoming tissue resistance. Expanding the device to its open configuration did not require outstanding force and was done smoothly using one hand. Insertion of the chest tube through the device's channel into the pleural space was easily performed. We did not find any damage to adjacent internal organs.

Conclusions:
The ThoraXS has the potential to change the way we treat trauma victims today, ensuring that every chest trauma patient will receive the appropriate treatment in a timely manner, in the field.

In Vitro Evaluation of a Novel Hemostatic Dressing that uses Low Electrical Current to Induce Coagulation

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Introduction:
Despite the advancements in pre-hospital care, bleeding continuous to be the leading cause of death from trauma. Previous studies have shown that applying a low electrical current on blood, induces coagulation by catalyzing the transformation of fibrinogen to fibrin. We have used an innovative biocompatible fiber to develop a novel hemostatic dressing that uses low electrical current to induce coagulation. In this study, the coagulation capability of the hemostatic dressing was assessed in vitro.

Methods:
Dressings were introduced to a fresh swine blood, anti-coagulated with Citrate. Electrical current was applied for different periods of times, using several pre-specified voltage. Fibrinogen levels were evaluated as a surrogate for coagulation.

Results:
In the control measurements, with no applied electrical current, fibrinogen levels were 623.46±68.5 mg%, there was no correlation with time of measurement. Applying 9V of electrical energy, haven't induced a significant change in fibrinogen levels in comparison to 0V (612.76±105.92 mg%, $p>0.05$), but a trend for reduced levels with time was noticed, and after 10 minutes fibrinogen levels were significantly lower (496.5 mg% vs. 628.3 mg%, $p<0.05$). Applying 37.8V led to a significant reduction in fibrinogen levels with respect to both 0V and 9V (298.37±118.79 mg%), and after 10 minutes in more than half of the cases fibrinogen levels reached 0 mg%.

Conclusions:
In this preliminary study, we have demonstrated that applying low electrical current via our novel dressing induces coagulation in a anti-coagulated blood. Furthermore, a positive correlation of electrical power and coagulation was noticed. Additional studies and device development are planned.

Comparison of the Efficacy of a Bag-Valve-Guedel Adaptor to the commonly used Facemask in Healthy Bearded Volunteers

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Introduction:
Emergency field ventilation is usually performed using bag-valve mask devices, which is difficult to handle for a long period, particularly with lack of skilled personnel. We have developed a Bag-Valve-Guedel Adaptor (BVGA), allowing to ventilate without a facemask, with no need to perform chin lift or jaw thrust maneuvers, and using one hand only. In this study, the efficacy and safety of the BVGA was assessed in healthy bearded young volunteers.

Methods:
25 healthy awake and spontaneously breathing bearded males breathed room air through a regular facemask for 3 minutes, followed by 3 minutes of 100% oxygen. The mask was then taken off and after a 5-minute washout period in room air, the procedure was repeated with the BVGA. Throughout the study, physiological and respiratory parameters were continuously monitored. At the end of the study, the investigator filled a questionnaire regarding the handling of the BVGA.

Results:
Both TV and EtCO2 were significantly higher using the BVGA as compared to the mask, both during inspiration of air or during inspiration of 100% oxygen. Finally, the on-site investigator reported that the BVGA was more comfortable and resulted in less fatigue compared to the mask in all cases.

Conclusions:
The results of this study show that BVGA is more effective and comfortable compared to the facemask. The physiological parameters were better when using the BVGA rather than with the facemask. Future study is planned in anesthetized volunteers in ambulatory setting.

Teaching Intensive Care to Primary Caregivers using Simulation -Experience of the Israeli Navy

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Introduction:
Trauma care at sea, as in disaster medicine, may require primary caregivers to perform prolonged care in an intensive-care-like setting. In the Israeli Navy (IN), primary caregivers are trained at sea for delivery of intensive care using high-fidelity simulations in a yearly exercise. In disasters, this training may be pertinent after the formation of field hospitals or mobilization of the chronically ventilated from major trauma centers

Methods:
The IN's "Extended Pre-hospital Intensive Care" (EPIC) program has been in place since 2011, and has trained more than 50 general practitioners and EMTS and scores of medics to administer intensive care. EPIC is composed of in situ simulation using high-fidelity mannequins, in long training sessions headed by senior anesthesiologists, intensive care specialists and surgeons.

Results:
In situ intensive care simulation has had the following benefits: 1. Adjustment and reform of medical supplies and training in the IN following increased familiarity with the naval setting. 2. Improved self-sufficiency in trainees. 3. Introduction of new monitoring solutions and teamwork paradigms. And 4. Improved skills in trauma and life support.

Conclusions:
Makeshift or ad-hoc pre-hospital intensive care is a potential reality that can be trained and prepared for in advance. Our experience has shown that teaching of IC principles through simulations can prepare even non IC-specialists and non-cohesive medical teams in its provision.

AFRAN -National Research Center for Disaster Reduction

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Introduction:
A novel unique research center was established in 2016. The aim of this presentation is to show the extension of the Quality Management principles to the disaster management and preparedness area. For this purpose a National Research Center for Disaster Reduction, AFRAN, was established at the Holon Institute of Technology –HIT. AFRAN is committed to develop and adapt knowledge of disaster by multidisciplinary researchers and practitioners; to guide the public, scholars, and practitioners; and governmental officers.

Methods:
Vision and Mission of AFRAN
- Leading in updated disaster knowledge by experts that contributes to solving the disaster complex problems.
- Action-oriented research.
- Cooperating with authorities and contributing to their understanding, risk evaluation, analyzing big data, efforts for planning recovery and reconstruction.

Results:
- Development of methodologies for saving lives, reducing damage to infrastructures and property.
- Consultation to decision-makers and the public.
- Reconstructing disaster response, mitigation and preventive approaches.
- Enhancing disaster-resilience and recovery.
- Design and developing a smart digital archive system to serve during the recovery and in later studies of the disaster.

Conclusions:
The Center has a research laboratory, SIAS – Smart, Intelligent, and Adaptive Systems Laboratory, applied for studies by students and staff.

Project subjects will be presented.

Upgrading for Blast and Strong Ground Motions the Resistance of Critical Infrastructures focused on Occupants Protection

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Introduction:
The research reviewed state-of-the-art innovative technologies, methods, and materials of upgrading and retrofitting of critical infrastructure facilities and existing buildings against earthquakes or blasts. A critical literature survey with analytical and computational components as well as a numerical example are presented. Water and gas supply and distribution systems were considered.

Methods:
Seismic retrofit solutions such as friction dampers and base isolators may be used for blast resistance as well. They were examined under a blast event using a typical reinforced-concrete frame. The El-Centro earthquake loading was applied on the frame. The blast loading was the reflected pressure at the front surface of the frame as resulted from an explosion of 1,500kgs of TNT at a distance of 10m.

Results:
Peak displacement of the system without additional dampers is of the same order of magnitude in both scenarios. Under blast scenario the peak displacement is presented at the first cycle, while only at the fifth cycle under the El-Centro scenario. The dampers dissipate energy through the movement of the system, so they become effective only after some cycles. Beams with friction dampers under real blast had significantly lower damage.

Conclusions:
Structures and infrastructures strengthening should be designed and analyzed both against earthquake and blast. These retrofit techniques can prevent mortality caused by collapsed structures and infrastructures. Current protective techniques against blast use excessive number of layers and often can resist only a single event. Passive seismic dampers such as friction dampers, yielding devices and base isolators could be used efficiently also for blast resistance.

The presentation is planned to be in the session: “Protection against explosion and shooting events and non-conventional weapons “, organized by Prof. Limor Aharonson-Daniel

Emotional Reactivity during Conflict: An Experience Sampling Study of Exposure and Mental Health Status

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Introduction:
How do we feel day to day during conflict? Can we experience positive emotions? How do war stressors affect our emotions? These questions have hardly been studied, especially among vulnerable populations, such as people with mental illness, who seem to be more emotionally reactive to daily stressors. We assessed emotional reactivity to rocket warning sirens during conflict, in people with and without mental illness.

Methods:
Experience sampling methodology, an intensive assessment approach, was used to study positive emotions (e.g., calm, happiness) and negative emotions (e.g., sadness, helplessness) and other variables during the 2014 Israel-Gaza conflict. Assessments were made twice a day for 30 days in 182 participants with mental illness (n=86) and from the general population (n=96), exposed to rocket fire.

Results:
For both groups, exposure to rocket sirens was associated with a decrease in all positive emotions and an increase in all negative emotions other than guilt and shame. People with mental illness experienced more helplessness, loneliness, shame, and guilt overall. Following rocket sirens, people with mental illness experienced more sadness and calm and less energy compared with the general population, however no such interaction effect was found for other emotions.

Conclusions:
Rocket sirens are associated with an increase in negative emotions and a decrease in positive emotions. People with mental illness seem to be more emotionally vulnerable during conflict compared with the general population. Further research is needed to understand the mechanisms of emotional reactivity to both war-related and daily stressors during conflict.

DisasterSISM: A Multi-level Blended Learning Program in Disaster Medicine for Medical Students

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Introduction:
Disaster Medicine has been recognized as a fundamental discipline to increase prevention, preparedness and response to disasters. Nevertheless, only few Italian medical schools include this discipline in their curricula. CRIMEDIM (Research Center in Emergency and Disaster Medicine) and SISM (Italian Association of Medical Students) developed DisasterSISM, a project that aims to teach basic knowledge of Disaster Medicine to Italian medical students, covering three main areas: prehospital management and mass casualty triage, hospital preparedness, and national disaster response.

Methods:
DisasterSISM consists of three main courses: Basic, Advanced and Train-of-Trainers (ToT). The Basic courses are managed by medical students who are trained during the 1-week intense ToT. All the courses are delivered using innovative training methodologies, such as e-learning, peer education, table-top exercises and virtual reality simulations.

Results:
From 2012 to now, a total of 97 courses (88 Basic, 4 Advanced and 5 ToT) have been delivered. DisasterSISM reached 34 out of 43 Italian medical schools, training more than 2000 students across Italy. A survey conducted after the end of each course pointed out that participants consider the knowledge in Disaster Medicine essential for their future profession, regardless of the specialty chosen. Furthermore, the comparison between the entrance and the final exam shows a significant increase of knowledge.

Conclusions:
DisasterSISM has proved effective to reach the majority of Italian medical schools, providing disaster medicine knowledge to hundreds of undergraduates. The "DisasterSISM model" might be implemented in other countries to widely disseminate the culture of prevention and disaster preparedness among medical students and health professionals.

Driver + Project - Fostering Crisis Management in Europe

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Introduction:
Current and future challenges due to increasingly severe consequences of natural disasters and terrorist threats require the development and uptake of innovative solutions that are addressing the operational needs of practitioners dealing with Crisis Management. DRIVER+ (Driving Innovation in Crisis Management for European Resilience) is a FP7 Crisis Management demonstration project aiming at improving the way capability development and innovation management is tackled. DRIVER+ has three main objectives:

1. Develop a pan-European Test-bed for Crisis Management capability development:
   - Develop a common guidance methodology and tool (supporting trials and the gathering of lessons learned);
   - Develop an infrastructure to create relevant environments, for enabling the trialing of new solutions and to explore and share CM capabilities;
   - Run trials in order to assess the value of solutions addressing specific needs using guidance and infrastructure;
   - Ensure the sustainability of the pan-European Test-bed;
2. Develop a well-balanced comprehensive Portfolio of Crisis Management Solutions:
   - Facilitate the usage of the Portfolio of Solutions;
   - Ensure the sustainability of the Portfolio of Solutions;
3. Facilitate a shared understanding of Crisis Management across Europe:
   - Establish a common background;
   - Cooperate with external partners in joint trials;
   - Disseminate project results;

Methods:
In order to achieve these objectives, five Subprojects (SPs) have been established. SP91 Project Management is devoted to consortium level project management, and it is also in charge of the alignment of DRIVER+ with external initiatives on crisis management for the benefit of DRIVER+ and its stakeholders. In DRIVER+, all activities related to Societal Impact Assessment are part of SP91 as well. SP92 Testbed will deliver a Guidance methodology and guidance tool supporting the design, conduct and analysis of trials and will develop a reference implementation of the test-bed. It will also create the scenario simulation capability to support execution of the Trials. SP93 Solutions will deliver the Portfolio of Solutions (PoS) which is a database driven website that documents all the available DRIVER+ solutions, as well as solutions from external organizations. Adapting solutions to fit the needs addressed in trials, will be done in SP93. SP94 Trials will organize four series of trials as well as the final demonstration. SP95 Impact, Engagement and Sustainability, is in charge of communication and dissemination, and also addresses issues related to improving sustainability, market aspects of solutions, and standardization.

Results:
The DRIVER+ trials and the final demonstration will benefit from the DRIVER+ Test-bed, providing the technological infrastructure, the necessary supporting methodology and adequate support tools to

prepare, conduct and evaluate the trials. All results from the trails will be stored and made available in the Portfolio of Solutions, being a central platform to present innovative solutions from consortium partners and third parties and to share experiences and best practices with respect to their application. In order to enhance the current European cooperation framework within the Crisis Management domain and to facilitate a shared understanding of Crisis Management across Europe, DRIVER+ will carry out a wide range of activities, whose most important will be to build and structure a dedicated Community of Practice in Crisis Management (CoPCM), thereby connecting and fostering the exchange on lessons learnt and best practices between Crisis Management practitioners as well as technological solution providers.

Conclusions:

A consistent approach is introduced by DRIVER+ in order to ensure cross border and cross sector applicability, to strengthen Crisis Management in Europe, facing more complex and more frequent emergencies.

Do Previous Experience and Geographic Proximity Matter? Possible Predictors for Diagnosing Adjustment Disorder Vs. PTSD

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Introduction:
The minority of people, who have experienced a traumatic event and were diagnosed as either suffering from PTSD or from Adjustment disorder, may suggest that victims of a traumatic event vary in risk factors for the disorders. The current study examined the association between reports of Adjustment disorder and PTSD symptoms and several vulnerability variables: previous traumatic event, previous stressful event and physical proximity to the terror attack.

Methods:
379 adult participants filled out Adjustment disorder, PTSD symptomatology scales, as well as a previous exposure, magnitude of exposure and death anxiety scales.

Results:
Previous experience of traumatic events was a significant predictor associated with both PTSD and Adjustment disorder symptoms. Previous experience of stressful events was a significant predictor associated with Adjustment disorder alone. Physical proximity to the site of the attack was a significant predictor associated with PTSD symptoms but not Adjustment disorder symptoms.

Conclusions:
The results emphasize the distinct definitions of Adjustment disorder and PTSD, showing the different risk factors for the disorders. It is important to differentiate between the two disorders when looking at the impact of a terror attack in order to accurate treatment.

Proposal to do a Feasibility Study for Integrating Registered Dietitians and Dietetic Technicians on Domestic Emergency and Disaster Preparedness and Response Teams in the United States

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Introduction:
"The day after" refers to the time period after the medical and nursing teams have stabilized the disaster scene, and the rehabilitation efforts begin. This is when clinicians of many specialties work to address general public health needs.

We propose to do a feasibility study on integrating Registered Dietitians (RDNs) and Dietetic Technicians (DTRs) on domestic preparedness and response teams in the United States. We aim to create and train a network of advanced practice RDNs and enhanced DTRs who can be deployed to emergencies and disasters.

Methods:
Through interviews with stakeholders we will address: In what roles can RDNS and DTRs best serve on response teams. What skills, techniques, and resources would they utilize. What infrastructure and credentials are needed to recruit, train, and deploy RDNs and DTRs.

Results:
RDNs have long been involved in disaster relief. Their roles have primarily been in food storage, distribution, and mass feeding. They are often called upon to teach food safety and sanitation to affected persons as well as to local and governmental agencies. RDNs have assessed malnutrition, delivered nutrition support, and mitigated re-feeding syndrome.

In disaster settings, people with chronic health conditions such as diabetes and CHF may have restricted diets and may not have access to their medications. RDNs can prevent exacerbation of chronic diseases. RDNs can utilize Nutrition Focused Physical Exams for malnutrition workups.

Conclusions:
We believe that RDNs and DTRs can play a vital role in relief efforts to nutritionally stabilize and rehabilitate persons impacted by emergencies or disasters.

Nanosciences and Non-conventional New CBRN Threats: Risks and Future Resources Perspectives

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Introduction:
Nanosciences and nanotechnologies had an exponential development in the last two decades. In the field of non-conventional CBRN weapons, nanosystems and the devices derived from these objects, present now the risk of a "dual use". Nanotechnology and nano-based materials can be employed as a resource for human kind, in particular providing medical applications and as new tools for the protection and decontamination from CBRN agents, as well as new instruments for the detection of new threats. At the same time nanosystems can offer unpredicted and uncontrolled means of mass destruction, with the design of novel and more effective aggressive agents or enhancing the production of precursors of intentionally toxic systems.

Methods:
The Authors, directly involved in research and preparedness program on CBRN non-conventional threats, analyze in detail these risks and the resources due to these new potentiality; also focusing the attention on international regulations.

Results:
The authors focus the attention on this new field, because actually internationally these issues are overestimated and not well regulated from the official institutions deputy to the banning of weapons of mass destruction. The authors also underlined the need of a multidisciplinary approach with different experts coming from different fields such as researchers, academics, clinicians, military.

Conclusions:
International common efforts in this field jointly with the aid of academia and research organizations could improve the ethical formation of scientists, researchers and decision makers by spreading the knowledge of disarmament and focusing the attention on the possible dual use of scientific discoveries.

Is Post Trauma an Imagination Disorder? The Role of Imagination and Creativity in PTSD

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Introduction:
Evidence of creativity and mental flexibility serve as protective factors for overall psychological difficulties and are significant predictors of resilience after traumatic exposure. This study aims to explore the relationship between imagination and creative capabilities to post-traumatic stress disorder (PTSD) symptoms, and to assess its manifestation over time. A deeper understanding of this relationship and its characteristics could expand the knowledge in the field thus help develop a set of effective tools to better evaluate and treat PTSD.

Methods:
This is a longitudinal quantitative design with paramedic students tested at 3 different time points during their studies. The tools used for measurement includes: Imaginative ability (FRA), creative abilities (ATTA, AUT), PTSD symptoms (PDS-5) and Depression (BDI-PC). After establishing a baseline (July-September 2016), paramedic students will be followed for 3 years. In addition, data were gathered from the general Israeli paramedic population (n=172) for baseline measures and for cross-sectional study.

Results:
Time 1 measurements were collected from a paramedic student population (n=48). Results indicated 89%-94% of participants had Traumatic exposure with 6.4%-16.6% manifesting symptoms beyond the cutoff point for probable PTSD. They also demonstrated significant lower imagination and creative abilities than the general population ($p<0.003$) and a tendency (non-significant) that those abilities decline as time progresses.

Conclusions:
Considering the above findings, and the lack of research on the interface between PTSD and Imagination we believe that using imagination focused PTSD treatment might serve as an entry and focal point for helping paramedics and others suffering from PTSD.

Triage Goals: Should they be improved?

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Introduction:
Triage nurse uses a semi-structured scoring system that categorizes the level of clinical urgency of a presenting problem based on inputs from several sources. Notwithstanding, there is no comprehensive study that assessment the physician response to the urgency classification.

Methods:
A retrospective-archive study was conducted at the Rambam Health Care Campus ED in the north of Israel from January 2011 to December 2015 (n=392,687). For each patient, we measured the waiting time for the triage nurse, and examined the correlation between the urgency rating set by the triage nurse and the waiting time for the physician by using univariate and multivariate analysis. A comparison was performed between several sub-groups: type of season (winter/other), patient arrival time (morning /evening or night shift), area where the patient was examined, the first consultant to examine the patient (insider, surgeon or orthopedist). Finally, we examined which percentage of the patients met the triage guideline.

Results:
The distribution of the classification was heterogeneous. 7,133 (n=1.8%) of the patients were classified as P1, P2- 17,318 (n=4.4%), P3- 148,657 (n=37.8%), P4-113,502 (n=28.9%), P5- 106,077 (n=27%). The median and interquartile range for the time from triage until physician assessment, by triage group, were: P1 0.7 minutes (0.2 - 24.3), P2 35.1 (13.1-75.9), P3 43.5 (21.1-88.4), P4 45.3 (19.8-87.3) and P5 46.0 (21.5-87.8). The percent of visits that met the goal evaluation time, by triage group, was: P1 61%, P2 27%, P3 37%, P4 61% and P5 85%. No statistical significant results were found regard to the sub-groups. In this comparison, too, the physician's adherence were mainly in the P5 level.

Conclusions:
The study results imply that the reason for the poor physician adherence is lack of awareness about the triage classification and its meaning. Training programs should be developed and constructed to improve the adherence of triage classification.

Incident Command Adaptions during Sustained Mega-shelter Medical Clinic Operations during H. Harvey response in Dallas, Texas

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Introduction:
During the unprecedented flooding from Hurricane Harvey, over 3,000 evacuees via buses and airlifts arrived for sheltering at the Dallas convention center. A multidisciplinary medical clinic was established onsite supporting evacuee needs for medical evaluations, emergency care, chronic disease management, pharmaceuticals, durable medical equipment, and local health services integration. The Dallas Mega Shelter Emergency Operations Center (EOC) and the Mega-Shelter Medical Clinic (MMC) Incident Command (IC) are National Incident Management System (NIMS) compliant. Iterations of MMC IC demonstrated maturations in organizational structure while supporting MMC operations that varied from rigid NIMS doctrine.

Methods:
Observational, evolutions of IC organizational chart and operational impact.

Results:
Modifications, through just-in-time iterations of IC organizational chart, were posted and reviewed daily with MMC IC and EOC sector chiefs. Outcomes improvement were observed in identifying logistic supply needs and delivery, coordination with multi-agency liaisons, resource typing and personnel utilization, improved communication leading to timely situational awareness and reporting accuracy.

Conclusions:
MMC medical services were improved through allowing modifications and adaptions to NIMS compliant MMC IC organizational roles and duty assignments. Unique situational awareness, coordination of care pathways within the local innate health infrastructure, compliance with health service regulations, and personnel resource typing all contributed to and benefitted from these IC modifications. Adaptability of IC structure with just-in-time modification during ongoing disaster medical service provision is important. MMC and EOC IC collaboration facilitated effective communication, maintained appropriate span of control and efficient activity reporting.

Maintaining Acceptable Standards of Care providing Medical Services to a Large Volume General Population Evacuee Shelter during Hurricane Harvey Response in Dallas, Texas

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Introduction:
During the unprecedented flooding from Hurricane Harvey, over 3,000 evacuees were transported for sheltering in the Dallas Convention Center. This large general population sheltering operation was medically supported by the onsite Mega-Shelter Medical Clinic (MMC) providing multi-disciplinary medical services including emergency, acute pediatric and adult care, psychiatric behavioral services, onsite pharmaceutical and durable medical equipment distribution, epidemiologic surveillance, isolation observational clinical unit, and limited laboratory services in an altered standard of care environment.

Methods:
Observations, available ambulance transport and medical records review of evacuees seeking medical services in the MMC.

Results:
Evacuees arrived via buses and airlift operations from distant impacted areas with acute illnesses and injuries, exacerbation of chronic medical conditions, behavioral health, medication refills, broken or missing durable medical equipment, were commonplace needs.

During the sustained MMC operations, no deaths occurred, and no iatrogenic morbidity was reported. Variations in clinician practice methods, limited onsite pharmaceuticals, and limited access to evacuee medical records impacted clinical service delivery. Providing these services at no cost and the convenience was touted highly by the evacuees.

Conclusions:
The provision of medical services in this sheltering operation necessitated an altered standard of care compared with the normally functioning Dallas medical infrastructure. The timely provision, free access, compliance with federal sheltering guidelines, and convenience to sheltered evacuees were the justification for these altered care services in a large convention center. The risk for unmet needs and challenges faced by sheltered evacuees self-engaging local health care services further supported this decision. Altered care standards pose an acceptable risk during such operations.

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