



JUST IN TIME TRAINING IN THE CONTEXT OF MEDICAL, FLOOD AND CBRN RESPONSE OPERATIONS

Best practices & recommendations from
past and recent disasters



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Foreword

In June 2020 five pan-European networks of practitioners and other actors in the security research domain joined forces to present a webinar on the topic of Just-In-Time Training (JITT) applied to the field of civil protection.

The webinar provided the participants with the opportunity to gain insights into the current approaches and best practices as well potential future applications of the concept of JITT within response organisations.

Based on first-hand experiences that the speakers have gathered through their involvement in past and recent disasters, in particular the COVID-19 pandemic, did the webinar provide a forum to share knowledge and experiences about how JITT can enable first responder to rapidly acquire specific skills or knowledge when the immediate need arises.

Following the success of the webinar this paper aims at summarizing the challenges and practices identified to make the results available to a wider audience.

The recordings and presentations of the webinar can be accessed via:

www.practitionernetworks.eu/media-center/

Just-in-time training

“Compared to traditional classroom learning, the concept of JIT learning is more closely associated with informal, learner-driven knowledge acquisition and use. [...] JIT learning is viewed as a dynamic and adaptive approach to learning where standards and outcomes are not controlled or contrived by designers, but are considered fundamentally user centered, user designed, and user managed”

BRANDENBURG, D. C., & ELLINGER, A. D. (2003). THE FUTURE: JUST-IN-TIME LEARNING EXPECTATIONS AND POTENTIAL IMPLICATIONS FOR HUMAN RESOURCE DEVELOPMENT. ADVANCES IN DEVELOPING HUMAN RESOURCES, 5(3), 308-320

In the field of civil protection Just-In-Time Training is delivered to first responder to allow for the rapid acquisition of specific skills or knowledge when the immediate need arises. In a sudden onset disaster, Just-In-Time Training is normally delivered immediately before the deployment of first responders to issue assignments and equipment necessary for their role in the incident. It generally includes instructions on the operational procedures, safety and security training and information specific to the type and magnitude of the incident. This technique proved to be useful both to refresh responders on standard operating procedures that will be utilised during the response, clinical information and to provide technical guidance to operate equipment or other aspects specific to the first responders team. A wide range of education methodologies and tools can be used to deliver just-in-time training, including face-to-face didactic, job specific hand-outs with reminder action cards, videos, high-fidelity simulation, table-top or Virtual Reality exercises. While JITT have been widely and successfully delivered to first responders in the past did the dynamics that unfolded during recent events, in particular the COVID-19 pandemic, help to identify new challenges and reflect on how to best apply the concept in the future.

The experiences from the following three examples formed the starting point of the webinar with the aim to provide a State-of-the-Art overview of the field while discussing potential approaches and improvements for future events:

MEDICAL JUST-IN-TIME TRAINING IN THE COVID-19 CRISIS

A concrete example from a tertiary referral hospital in Northern Italy

FLOODS JUST-IN-TIME TRAINING OF VOLUNTEERS

Learnings from past and recent incidents

CBRN JUST-IN-TIME ONLINE TRAINING

How to maintain response in a time of crisis by taking face to face training on-line

JUST-IN-TIME TRAINING IN THE COVID-19 CRISIS

A concrete example from a tertiary referral hospital in Northern Italy.

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Monica Linty leads the coordinator's team of the NO-FEAR project, which brings together a Pan-European network of practitioners, decision and policy makers, suppliers and academia in the field of Emergency Medicine, sharing knowledge, experience and necessities, thus overcoming the current state of overwhelming fragmentation.

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Dr Luca Ragazzoni is the Scientific Coordinator of CRIMEDIM. He is a medical doctor, graduated from Università del Piemonte Orientale in Novara, Italy and specialized in anesthesiology and intensive care. He also obtained a PhD in disaster medicine from Università del Piemonte Orientale. Currently, he is a researcher in disaster medicine and humanitarian health. He is the deputy-director of the European Master Disaster Medicine (EMDM) and the coordinator of different international programs, such as NEMS – National Emergency Medical Service in Sierra Leone and humanitarian medic. He is the coordinator and principal investigator of the European founded projects TEAMS and TEAMS 2.0 – Training for Emergency Medical Teams.

INTRODUCTION

The COVID-19 pandemic is threatening numerous health systems around the world, requiring an extraordinary international response to contain and control the virus. This response includes effective education and training of healthcare workers to attain operational public health skills, which are often beyond the experience and knowledge base of most practitioners, not familiar with public health emergencies arising from infectious disease outbreaks.

With the activation of the hospital contingency plan for massive influx of patients at the Maggiore Hospital, ED and ICU surge capacity was expanded with more than 200 COVID-19 beds and more than 300 healthcare workers were asked to change roles. As a result, many health workers found themselves working outside their field of expertise.

In his talk Dr Luca Ragazzoni illustrated his experience in designing and delivering a just-in-time training for the healthcare workers in the second largest third-level referral hospital in Piedmont Region, Northern Italy, one of the worst affected areas during the recent COVID-19 outbreak. Starting from the key challenges that were identified several best practices and recommendations were presented.

KEY CHALLENGES

Topic	Description
1 Pandemics response requires immediate and efficient training of healthcare workers	The rapid insurgence and spread of COVID-19 generated an immediate need of training and education of all the healthcare personnel working in the hospital receiving COVID-19 patients. An ad hoc curriculum needed to be developed and an appropriate way of delivering the training needed to be chosen.
2 Hospital reorganisation and health workers working outside their field of expertise	At the peak of admissions, the emergency department and the intensive care unit expanded their operational staff, stuff and structures to surge capacity and more than 200 COVID-19 beds were made available by converting orthopedic and cardiac surgery, internal medicine, cardiology, neurology and otorhinolaryngology wards in COVID-19 treatment units. More than 300 healthcare workers were asked to change roles and tasks to equip these newly opened hospital units. The required skills were beyond the experience and knowledge base of most practitioners, not familiar with public health emergencies arising from infectious disease outbreaks.
3 Lack of education in disaster medicine	The majority of healthcare workers were responding to a large-scale public health emergency for the first time. Most of healthcare workers never studied disaster medicine or global health in medical or nursing schools, thus missing important concepts and skills to be applied during a big scale emergency.

BEST PRACTICES

Description

- 1** Face-to-face just-in-time training designed and delivered immediately (started on March 9, running for 3 weeks) to equip the entire staff of the Maggiore della Carità University Hospital (Novara, Italy) with a common background, competencies and proper attitude to proficiently and safely work inside the hospital during the COVID-19 pandemic response. Given the strong traditional public health measures in place during the COVID-19 pandemic, e-learning has been the favorite training methodology worldwide. However, taking the proper precautions and safety measures, we decided to use a classroom-based approach to ensure that participants could really practice the correct use of PPE (donning and doffing) and could discuss any possible doubts directly with us.

- 2** Through a face-to-face, 4 hours long just-in-time training each healthcare worker of the Maggiore della Carità University Hospital learnt how to:
 1. Proficiently and safely work inside the Hospital
 2. Understand the working principles and the Standard Operating Procedures in place at the Hospital
 3. Correct putting on and taking off of the PPE
 4. Understand basic principles of disaster medicine applied to the COVID-19 pandemic

- 3** Disaster medicine, operational public health concepts and population-based health management concepts were addressed. This helped healthcare workers to understand the operating principles during a big crisis and instilled in them confidence to operate in such a difficult and unprecedented situation.

CONCLUSION AND RECOMMENDATIONS

This experience proves the importance and necessity to address disaster medicine concepts in medical education and stimulates to consider introducing disaster medicine and global health in the medical and nursing school programs.

References

This experience was documented in a scientific article recently accepted in Academic Medicine: Ragazzoni, L ; Barco, A; Echeverri, L ; Conti, A; Linty, M; Caviglia, M; Merlo, F; Martini, D; Pirisi, A; Weinstein, E ; Barone-Adesi, F; Della Corte, F, Just-In-Time Training in a Tertiary Referral Hospital During the COVID-19 Pandemic in Italy. Academic Medicine. 2020; Publish Ahead of Print. doi:10.1097/ACM.0000000000003575

Other references and experiences available at www.crimedim.uniupo.it/

JUST-IN-TIME TRAINING OF VOLUNTEERS

Learnings from past and recent incidents

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Christian Illing is the coordinator of the DAREnet project, a network of practitioners dealing with flood resilience in the Danube River Region. DAREnet aims at identifying gaps and challenges and translate them into a joint innovation strategy to improve flood resilience in the future.

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Head of the EUSDR PA5 Disaster Management Working Group, Head of the Budapest Firefighters' Association, Hungary.

Zsolt Kelemen is the coordinator of INTERREG Cross-border Cooperation Programme projects of Romania-Hungary (VOLUNTEER) and Slovakia-Hungary (RISKHUB). Both projects aimed at developing bilingual e-learning modules for firefighters focusing on technical rescue and a mobile app for event and incident management. Zsolt Kelemen is also the project manager of a multiyear critical infrastructure maintenance of the Hungarian Power Grid Operator (Mavir) requiring sufficient pre- and just-in-time / on-the-spot training of engaged staffs, including proper documentation of such.

INTRODUCTION

Volunteers are, besides career first responders, of central importance to the work of many civil protection organisations. In addition to volunteers that are affiliated to and trained by response organisations did the phenomenon of so called “spontaneous volunteers” (i.e. untrained and unaffiliated citizens appearing at the scene of a disaster to offer their assistance) become increasingly present in recent years.

The efficient training of both trained and spontaneous volunteers is associated with numerous challenges that requires innovative approaches and concepts in order to equip the first responders with the skills and competencies required to respond effectively and efficiently in the event of disasters, such as floods.

In his talk Zsolt Kelemen illustrated his experiences during the Danube floods in 2013 and other disaster events in Hungary by highlighting different approaches how JITT training was applied in response to these events. By reflecting on the challenges that arose Zsolt Kelemen introduced current approaches and ideas how the involvement of trained and spontaneous volunteers as well as engaged third parties (career practitioners e.g. public utilities, industrial/technological foremen and spontaneous volunteers) could be improved, in particular by focussing on the aspect of verification.

KEY CHALLENGES

Topic	Description
1 Provision and verification of training received by volunteers	Only competent volunteers (trained and spontaneous) shall be able to enter the scene of an incident. Therefore, volunteer first responders are provided with a situation specific and relevant safety and security guidelines on the spot, prior to entering the work zone (spontaneous) or danger zone (trained). However, there is uncertainty on whether the information and training provided (i.e. advance, on-the-spot, online) to volunteers is perceived/understood correctly and completely.
2 Lack of harmonised training material and procedures for volunteers responding outside their country	In case of major incidents (e.g. floods, storms, etc.) volunteers from other countries may be involved in the response operations. While Union Civil Protection Mechanism allows for the engagement of foreign disaster management professionals through national bodies (e.g. MoI) can volunteer firefighters of the affected county also invite fellow fire fighter associations and their volunteers through their networks. In such cases the foreign volunteers will be integrated into the regular chain of command of the host country. However, due to the lack of harmonised training material and procedures as well as language barriers, it may be challenging to verify the skills and competencies of the foreign volunteers.
3 Comprehensive overview of volunteers, their skills and competencies are lacking	The effective involvement of volunteers requires a comprehensive overview of their skills and competencies (e.g. training received, state of health, mental, physical status etc.) but the current uncertainty on the number of potential candidates and their abilities poses significant challenges.

BEST PRACTICES

Description

- 1** In response to the Danube flood an online registration portal was created where all spontaneous volunteers could sign up and register for two-hour shifts. This enabled an even distribution of the workforce as well as the provision of information to the volunteers in advance.

To verify all forms of training (advance/on-the-spot/normal/e-learning), a “work safety log” will be applied. Such a log is a specific form that needs to be completed before volunteers can enter the scene of an incident. The form’s objective is to prove that information and just-in-time/on-the-spot training provided has been understood properly. The completion of the just-in-time training can be certified through a questionnaire that has to be completed correctly by the trained person. In case a certain threshold of correctly answered questions is not reached, the volunteer may not enter the danger zone / cannot participate in the measures. Such a safety log can be provided as simple paper sheet but also digitally (e.g. mobile application). This practice is currently applied for contractors responsible for the maintenance of critical infrastructure in Hungary (e.g. if more than 2 out of 10 questions answered incorrect, no entry to facility is granted). Additionally, such a form will narrow down the responsibility of the person(s) in charge at the incident scene.
 - 2** Currently no harmonised and event specific training materials and procedures for the involvement of volunteers that are responding outside their country exist in Europe. A potential solution may be a smart ID-card containing the latest relevant information on the competencies and skills of the card owner, who has to present the card at the scene towards the responsible commander in charge. Due to the smart character of the card, the information is immediately available and translated into the commander’s language. Furthermore, the information on the card can be used for the overall planning of the measures on spot (allocation of resources, grouping, general planning, etc.).
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BEST PRACTICES

- 3** Creating and structuring a pool of volunteers could be done through a technology-based solution such as a mobile application. Such an application which would register and notify trained first responders, in particular volunteers, is currently developed as part of the INTERREG project ROHU 10 VOLUNTEER. The app works on all common mobile platforms as a closed system for registered users who are authorised by the application provider. The database contains all information about the volunteers (e.g. their skills, competencies, qualifications, certificates, etc.) and the heads of volunteer units are responsible for the accuracy and actuality of the information.

The application is connected to an online training tool through which the candidates can receive e-learning. These e-learning need to be completed by a questionnaire to ensure verification. Alerts can be issued to individuals/groups of persons with specific characteristics to provide volunteers with relevant information in advance.

For spontaneous volunteers, a registration facility could be implemented which needs to be completed with a questionnaire that needs to be passed to ensure verification.

CONCLUSION AND RECOMMENDATIONS

Harmonised just-in-time training material and/or modules that are incident/event-specific for trained volunteer first responders would ease cross-border cooperation involving volunteers in the event of major incidents. Such material could also be shared with spontaneous volunteers and third parties in general to facilitate their engagement in the response operations.

For this, good practices will need to be identified in various European countries and deriving from that formulating recommendations that could lead to standardised elements / harmonised practices, procedures and protocols of just-in-time training for volunteers.

A common platform for such a knowledge sharing would fill the gap in this area. The EUSDR PA5 Disaster Management Working Group's objective is to fulfil this role for the Danube countries.

JUST-IN-TIME ONLINE TRAINING

How to maintain response in a time of crisis by taking face-to-face training online

AUTHORS

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Olga Vybornova coordinates network of practitioners eNOTICE – European Network of CBRN Training centers. eNOTICE aims at mapping the existing EU CBRN training capacities, improving European preparedness, resilience and incident response to CBRN attacks and emerging threats through close multi- (stakeholders) and single-discipline (practitioners) interactions.

Elizabeth Benson

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Inspector Benson is a British police officer. Currently serving as head of performance and development at the UK National CBRN Centre, part of UK Counter Terrorism Policing. She is a qualified CBRN commander, tactical advisor, responder, and radiation protection supervisor. Importantly, she is part of a dedicated cadre of UK commanders, providing support to CBRN incidents throughout the UK. Her portfolio includes being the exercise director for national CBRN exercises, leading on the development and delivery of CBRN continuous professional development, and providing advice to UK Government.

INTRODUCTION

The concept of just-in-time training (JITT) is to provide training at the time it is most needed. The main goal of Just-in-time training is to deliver the right material, in the right educational modality, to the learner at the right time, at the right location, and exactly in the needed amount.

This emergency training is always specific for a crisis or incident at hand, aiming to train first responders for certain tasks, procedures, use of equipment, safety and security in the conditions specific to the particular type and scale of the incident. Just-in-time training cannot replace normal training. It can be provided only as a complement, for instance to help first responders of one discipline to master skills of another discipline, to compensate for the shortage of experts in the required field during the crisis.

The talk addressed the online just-in-time training concept with the UK National CBRN Centre's Strategic response to give them the knowledge and understanding of the procedures, tools and protocols employed during a pandemic, in order to prioritise and ensure that critical training continues.

KEY CHALLENGES

	Topic	Description
1	The loss of the non-verbal communication	Taking training online, the trainer and delegate will find the ways to communicate dramatically reduced. A person's ability to relate, engage and interact are changed, and care must be taken to ensure the strong relationship between trainer and delegate are maintained.
2	Reduced confidence in the delegate by not having the opportunity to reach out and ask the question, or clarify the point	An excellent trainer will be able to react to a delegates concern, who is in a classroom, or take the time after a class to go over a point where they need to reinforce a point of learning. As online delegates, there must be ways for delegates to raise a hand, ask a question or react to a point of learning.
3	For training on a practical procedure, the loss of the structure usually balanced with the theory that re-enforces the learning, and assures assessors that delegates are competent in dangerous or critical safe system of work practices	For CBRN there is a sense of dynamic team work, which bonds in the classroom, or scenario exercise. This can be simulated with specific team work set on line, or video interactions. Standard operating procedures, and safe systems of work need to be practiced. This can go so far with online training, but there must be recognition that there is some learning/training which cannot be achieved unless it is done as in person training. There is not an ambition to leave in person training, and not return.

BEST PRACTICES

Description

- 1** Real time learning must be fast tracked through any governance structure and shared widely and in fast time

- 2** Have the trainer visible through as much of the training as possible, and at least the start and end, it is very good for engagement and confidence.

- 3** Online joining instructions need to be as good if not more so than 'in person' joining instructions for attendance.

- 4** When a situation requires a rapid change – the decisions made, and rationale behind them need to be recorded

- 5** Capturing JITT through online delivery allows responders the opportunity to revisit the delivery, and having a repository to store relevant JITT is well worth considering

CONCLUSION AND RECOMMENDATIONS

The COVID-19 crisis brought an opportunity to accelerate the use of online training. In order to deliver a product which is state of the art, accessible to multiple stakeholders and partners, and provides an assured level of competence, the training department worked tirelessly and with true enthusiasm. Maintaining response whilst working against the backdrop of a crisis is always a challenge worth taking up.

THE ORGANISING PROJECTS

DAREnet

(DANUBE RIVER RESILIENCE EXCHANGE NETWORK) is a 5-year Coordination and Support Action which builds a network of practitioners dealing with flood resilience in the Danube river region, supported by a continuously evolving multi-disciplinary community of stakeholders consisting of policy makers, academics, industry and many more. The DAREnet enables flood management practitioners in the Danube river region:

- to connect and exchange with national and European stakeholders in a truly collaborative environment;
- to identify and analyse by and for themselves relevant innovation gaps;
- to translate the gaps into a joint innovation strategy to improve flood resilience in the future

www.darenetproject.eu

MEDEA

(MEDITERRANEAN PRACTITIONERS' NETWORK CAPACITY BUILDING FOR EFFECTIVE RESPONSE TO EMERGING SECURITY CHALLENGES) is a 5-year Coordination and Support Action aiming to reach the following objectives:

- Establish and operate the MEDEA network, a multi-disciplinary network of security practitioners, with active links to policy makers and users/providers of security innovations across the Mediterranean and Black Sea countries focusing in border protection and other security- and disaster-related tasks.
- Engage participants in anticipatory governance on emerging security challenges that the Mediterranean and Black Sea regions would face in the coming years (present until +10 years), which concretely operationalizes the backbone of the project in a triple structure: a) understanding unsatisfactory state of play, b) design the desirable future and c) define a resilient pathway on how to achieve this.
- Push for the “co-creation” of security technology and capabilities innovations between practitioners and innovation suppliers, which is based upon their evaluation and prioritization on multi-criteria analysis and also linked to human development, policy making and organizational improvements in-terms of facilitating its use by the practitioners.
- Establish and annually update the Mediterranean Security Research and Innovation Agenda (MSRIA), identifying areas where security and defence research is needed and establishing recommendations for future investments.

www.medea-project.eu

FIRE-IN (FIRE AND RESCUE INNOVATION NETWORK)

The ultimate objective of the FIRE-IN project is to raise the security level of the EU citizens by improving the Fire & Rescue services capabilities to address various forms of hazards, natural or manmade. The project success relies on the active participation of experts. FIRE-IN Associated Experts community is a dynamic and constantly growing network, which includes professionals from the whole Europe and beyond, representing practitioners, research and technology organizations, industry and standardisation bodies, policy makers and other fire and rescue stakeholders. The overarching result of the project will be a proven process for organising F&R capability-driven research based on a wide practitioner and research and innovation network. The network will be linked at cross-domain and cross-border level and will feed harmonised operational requirements (or challenges) into national and EU capability development, i.e. research, innovation, procurement and standardisation programmes.

www.fire-in.eu

eNOTICE

(EUROPEAN NETWORK OF CBRN TRAINING CENTERS) is a 5-year Coordination and Support Action. This project aims to build a dynamic, functional and sustainable pan European network of CBRN training centres, testing and demonstration sites (CBRN TC) strengthening capacity building in training and users-driven innovation and research, based on well-identified needs. We seek to better European preparedness, resilience and incident response to CBRN attacks and emerging threats through close multi- (stakeholders) and single-discipline (practitioners) interactions.

www.h2020-enotice.eu

NO-FEAR

(NETWORK OF PRACTITIONERS FOR EMERGENCY MEDICAL SYSTEMS AND CRITICAL CARE) is a 5-year Coordination and Support Action that brings together a network of emergency medical care practitioners, suppliers, decision and policy makers to collaborate and exchange knowledge, good practices and lessons learned. Members of the network work together and collaborate to develop a common understanding of the innovation potential that fills operational gaps and pinpoint areas for future research. This multi-disciplinary, multi-national, and multi-sectorial collaboration is supported by virtual tools, including the NO-FEAR portal and regular workshops, webinars, demonstrations and exercise.

www.no-fearproject.eu

To download the webinar and the speakers presentations visit:

www.practitionernetworks.eu/media-center/

MEDICAL TRAINING

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More info about the speakers : www.practitionernetworks.eu/speakers/

DISCLAIMER

The opinions stated in this document are the result of the collaborative work of the organisers of the Just-in-Time Training webinar and are not necessarily in-line with the innovation strategies and aims of the individual organisations and project partners involved. The information and views set out in this publication are those of the authors and do not necessarily reflect the official opinion of the European Union. Neither the European Union institutions and bodies nor any person acting on their behalf may be held responsible for the use which may be made of the information contained therein.

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