

### An overview of Healthreats Project

(Carmelo Scarcella, ASL Brescia, Italy)

A crisis, understood as an event that threatens the functioning of an organization by interfering with its normal activities and undermining the welfare and safety of the community, is an issue of major importance to every sector. The management of a crisis is a complex process the preparation for which must be completed in "ordinary times", during which the organizational structure and procedures to be implemented are defined. The proper synergy between these two aspects is the focal point which influences the effective capability of the organization to successfully manage a crisis. Crisis management is one of the greatest problems for the European Public Health system, not only because of the complexity of the management process, but also because of the disconnection existing between the international, national and local plans for the management of health threats. This gap is due to the fact that said plans often devote qualitatively and quantitatively different resources to address the issue and do not offer solutions that may be applied in other contexts as well. It is therefore important to develop tools able to work at a local level in order to translate the strategic plans into operational plans. For this reason, in 2007 the General Directorate of the Local Health Unit of the province of Brescia promoted a consortium of public and private institutions, at a national and European level, representative of expertise not only in health matters but also in technological innovation, management development and training planning to propose a project to develop integrated solutions aimed at increasing the capacity of European health care institutions to respond in an efficient and coordinated manner to health threats. Nowadays we are at the end of this Project and the conference "Health Threats in the European Union" held in Brescia on 24<sup>th</sup> September was the final project dissemination step. In this newsletter you can find the summary of the conference presentations related to Healthreats and some information about other European Projects in the field of crisis management in Public Health.

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## Healththreats PDT

The following presentations illustrate the Healththreats PDT (Processes-Decision Support System-Training) package. The presentation by Dr. Baitelli concerns the activities carried out to analyse and describe the events and intervention plans involved in pandemic flu crisis management. Events and plans represent the main inputs to the Decision Support System, the web-based application described in the presentation by Prof. Baroni. Finally, Dr. Ferrari presents the training activities designed, planned and implemented by Laser in collaboration with the other partners.



### The processess (Baitelli Guglielmino, ASL Brescia, Italy)

Faced with a highly diffusive biological health emergency, which is a pandemic, it is certainly important to know the appropriate procedures to deal with the situation.

For the definition of these processes has been set a work group comprised of experts with differentiated and specific health roles, both organizational and procedural/managerial. The work started from the analysis of the high-level international decision-making processes and the requirements for the pandemic alert period phases (phases 3, 4, and 5), the pandemic period (phase 6) and the post-pandemic period defined in the "WHO global influenza preparedness plan", and then continue with the analysis of the resulting local and national decision-making processes.



Therefore the processes were represented by means of a semi-formal graphic language easily understandable by both domain experts and knowledge engineers and software designers in anticipation of the following steps regarding the implementation of the Decision Support System because all process models are then destined to become the main inputs to the Decision Support System as a central part of its knowledge base.



### HT-DSS: The Healththreats Decision Support System (Pietro Baroni, Loredana Parasiliti Provenza, University of Brescia, Claudio Greppi, Argonet Srl, Italy)

The Decision Support System developed in the context of the Healththreats project (called HT-DSS for short) provides support to health crisis managers at different organizational levels in making decisions about the activation and execution of action plans in response to critical events and in allocating and monitoring the relevant human and material resources. While pandemic flu was the reference case study for its design and development, the HT-DSS has been conceived as a general and reusable tool. In particular, the standard BPMN modelling language has been adopted, ensuring that the HT-DSS can be applied in any context where the same kind of plan representation and decision support is appropriate. The HT-DSS features a web-based architecture providing ubiquitous access and an interaction style familiar to most users.





## The training (Giacomo Ferrari, Laser Soc. Coop., Italy)

The training activities designed and carried out under the Healththreats project have accompanied the various phases in which it was divided, intervening on different levels and connecting closely with the other two macro objectives of the project: analysis and reorganization of processes and the development of the DSS. The organization of the training activities provided 4 moments that were particularly defined by:

- the organization of training sessions aimed at the representatives of the partnership;
- the construction and promotion of a Virtual Learning Community inside the partnership;
- carrying out the training activities for the operators of the structures involved in the project and of those which are not involved;
- the organization and implementation of a training session for using the computer tools for supporting the decisions (DSS).



## PDT localizations

This part illustrates the results of the localizations of the PDT package in Italy, Slovenia, Spain and Romania, plus the experimentation activity carried out in Portugal. Dr. Besozzi presents the Italian localization performed in ASL Brescia, Dr. Schwarz describes the experience in Catalonia region, Dr. Pribakovic shows the results at the National Institute of Public Health of the Republic of Slovenia, Dr. Zolotusca presents the Romanian localization. Finally Eng. Correia speaks about the Portuguese experimentation.



### The Italian localization (Fabio Besozzi Valentini, ASL Brescia, Italy)

Localization in Italy took place in the territory of the ASL of Brescia, more precisely, in Valle Trompia District N°. 4.

The test was prepared between mid-May and mid-June 2010 and included:

- specific training of the personnel of the district involved;
- computer implementation of the pre-selected data set;
- preparation of the local environment, both hardware and network; to improve the localization activities of the Decision Support System that was connected to and made available to the internal ASL network;
- establishment of two separate rooms for the central crisis Team



Manager and local emergency Team Manager for the specific test activity days;

- the presence of two people with the role of observer and evaluator throughout the localization testing days.

The localization phase took place on the 14<sup>th</sup> and 16<sup>th</sup> of June 2010 and during the specific team activities 7 plans triggered by three events were tested.

The Decision Support System tested is an initial prototype; there is room for further improvement and interesting re-



search ideas.

The Decision Support System seems to be a useful tool for monitoring actions taken and those to undertake in a crisis situation; it is certainly effective as a guide which facilitates staying in line with a chartered course; it can prevent too many people from simultaneously making decisions regarding the steps to undertake and makes operators feel more involved in a complex organization.

The Decision Support System represents a new way of modelling knowledge which enables greater clarity with regard to key documents of a certain course and especially to have them readily available.

The Decision Support System tested could also be a useful tool in the management of other emergencies in addition to pandemic influenza.

The effectiveness of the Decision Support System is strongly linked to the quality of input data, particularly regarding the completeness and updating in real time. Crisis management requires multiple skills and the crisis manager needs specific theoretical expertise. The team that deals with crises must, therefore, be trained and know the model and the organization in depth (PDT - Processes, Decision Support System, Training).



### **The Spanish localization** (Simon Schwarz, Secretary's Office for Strategy and Coordination of the Ministry of Health of the Catalan Government, Spain)

The Subdirector General on Surveillance and Response to Public Health Emergencies, responsible for the epidemiological surveillance of contagious diseases and epidemic outbreaks in Catalonia conducted the experimentation trial of the Healthreats Decision Support System.

The simulation scenario selected was an outbreak of Legionnaire's disease .

The simulation was not carried out at a centralized level but on a complementary infrastructure, in a kind of in-vitro experimentation, as Public Health databases are undergoing a migration process and all historical information is currently being migrated. The experimentation trial demonstrated positive results but some drawbacks must also be mentioned. The system



provides real knowledge of the event's situation, decision making steps are suggested in an automated reasoning way, information display is friendly and easy to follow by users at any level, and quick, timely, comprehensive communication among all actors involved in the event is facilitated. The main drawback concerns the human resources needed to maintain the updated information (user guidelines and contact list information) requested by the HT-DSS.



### **The Slovenian localization** (Rade Pribakovic, National Institute of Public Health, Ljubljana, Slovenia )

The localization was organized within the Centre for Communicable Diseases (CCD) at the National Institute of Public Health (NIPH). The CCD's key tasks include national epidemiological surveillance, cooperation in international epidemiological surveillance, laboratory diagnostics, preparation of vaccination strategy, training for health workers, etc. Because of these tasks the CCD's representative represents the NIPH in the National Coordinating Committee for Pandemic Preparedness in Health Care at the Ministry of Health.

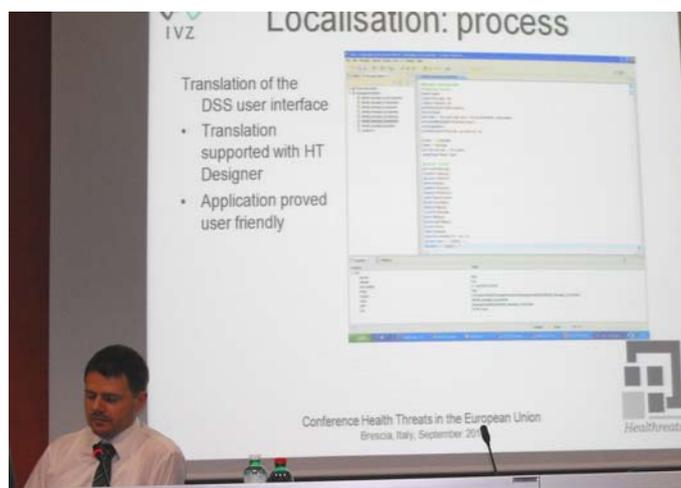
The DSS prototype was adapted to the specific context of the Slovenian experimentation site.



We decided that the DSS localisation and experimentation phases should focus on two different crisis situations:

- An influenza pandemic as an example of a major emergency situation with a broad spectrum of interlinked activities at different levels of intervention.
- A meningococcal invasive outbreak as an example of a rapidly evolving crisis situation in a localized environment.

During the experimentation phases we identified several benefits and strengths of the PDT. We see the DSS as having great potential for a European-wide approach to pandemic management.



### The Romanian localization (Laurentiu Zolotusca, Romanian Society for Disaster and Emergency Medicine)



In this first phase of project implementation and testing of the DSS prototype, the central institutions are the National Centre for Disease Surveillance and Control, the Romanian Ministry of Health and the General Inspectorate for Emergency Situations and at local level is the Public Health Department of the Municipality of Bucharest. According to the needs, the system will gradually include up to all 42 districts of Romania, respectively all District Public Health Departments and all District Inspectorates for Emergency Situations.

Initially, the procedures will include pandemic influenza, followed by avian influenza and afterwards by SARS. Gradually, the DSS prototype will include the procedures for other health threats, according to their occurrence and the DSS-users decisions.



### The Portuguese experimentation (Joao Correia, INOVAMAIS)

The Portuguese localisation was carried out at INOVAMAIS with the aim of providing a Portuguese language version of the Healththreats PDT system. Although INOVAMAIS is not a final user, it was important not to miss the opportunity to make a Portuguese version available that shall be helpful not only to Portuguese health authorities but also to the community of Portuguese-speaking countries.

The localisation process began with training sessions for the localisation team composed of elements from the RTD and the Training Units. The translation to Portuguese of the Processes, Events, DSS software and all its data and parameters were based on the English generic sample. A practical experimentation of the entire system was conducted in order to test the DSS and the Portuguese localization in particular.





## Healththreats Project internal evaluation (Martin Znidarsic, Jozef Stefan Institute, Slovenia)

The internal evaluation of a project is a collection of activities that are conducted in order to provide regular self-assessment of the project's activities and status. The aim of self-evaluation is to monitor the activities and achievements of the project, to present and evaluate them in an objective manner and to provide feedback in the form of warnings and recommendations. This helps to detect potential project weaknesses that need timely response and improvement, thus preventing potential problems before they become real ones. Internal project evaluation is one of the good managerial practices that should be followed in order to improve the success rate of collaborative projects. The methodology of internal evaluation is mostly based on the methodology of multi-attribute decision support, but also has some specific approaches that facilitate the monitoring and evaluation of a project's status, such as continuous



intermediate evaluation of specific objectives and planned work package achievements. The methodology was established in the formal evaluation plan and during the project lifetime adapted and refined to a minor extent. Every six months during the Healththreats project the available intermediate evaluation results were reported in the form of an internal report for the project partners. The main component of these reports was the evaluation of specific achievements, which was then used as a monitoring and work focus orientation tool.

The methodology presented was well-accepted by the project partners and received particularly good feedback from the project officer. As a result of our experience we can also now make some remarks and suggestions. It is very important that the project partners, especially the WP leaders, are involved in the planning of the self-evaluation and that they provide relevant and measurable indicators for their specific tasks. Further, it is important to review and convey the findings of self-evaluation in easily readable (graphic) form and as frequently as possible. The six-month interval that was chosen in the Healththreats project could ideally be shortened to three months to keep the initiative more up-to-date.





## The EU projects on preparedness in health emergency

The last part of this newsletter includes the presentation summaries of some ongoing European projects funded by the Executive Agency for Health and Consumers (EAHC) related to the preparedness in health emergency. Dr. Pugliese presents the FluModCont project, whose aim is modelling the spread of pandemic influenza and strategies for its containment and mitigation. Dr. Riccardo shows the results of EPISOUTH, a network for communicable disease control in southern Europe and Mediterranean countries. Finally, Dr. Amlôt describes the ORCHIDS project, which is concerned with the evaluation, optimization, trialling and modelling of procedures for mass casualty decontamination.

### FluModCont Project (Andrea Pugliese, University of Trento, Italy)

The FluModCont is a project funded by the EU Seventh Framework Programme (FP7). The call was issued in recognition, especially after the emergence of the highly pathogenic avian H5N1 virus, of the potentially catastrophic threat posed by novel strains of influenza A gaining transmissibility in people and causing a human pandemic. The emergence of the novel A/H1N1 swine flu strain has made the need to be prepared for an influenza pandemic even more obvious, but has also been a challenge for researchers in terms of applying techniques of real-time modelling, and for health authorities in re-assessing



public health strategies, planned in view of much more severe infections. FluModcont Project aims to improve the theory of disease spread and to implement, by means of statistical studies and designing new software, accurate and data-based modelling of the expected course of an influenza pandemic and of the impact of public health measures on its scale and severity. The emergence of A/H1N1 pandemic flu has been a challenge in real-time parameter estimating and modelling. In this experience mathematical modelling has been widely used and has offered useful advice, but much better interactions between modellers and public health institutions should be built.



### EPISOUTH Project (Flavia Riccardo, Istituto Superiore di Sanità, Italy)



Apart from few infectious diseases for which a valid and efficacious vaccine is available, surveillance is the only instrument that public health personnel can use to contain them. As these diseases know no international borders and spread through the movement of people and goods, participative approaches to disease surveillance and outbreak control are essential in order to foster trust and allow dissemination of information. The countries of the Mediterranean area have common sea borders in the remarkable ecosystem of the Mediterranean Sea; they form a recognized migration system and share common public health problems.

EpiSouth is a collaborative network of 27 Countries in the Mediterranean and Balkans that for the past three years has focused on strengthening exchange of information and assessing gaps in communicable disease surveillance and control. The unique framework of collaboration and trust that has developed has enabled the specific study of training needs, emerging zoonosis and vaccine preventable diseases among migrant populations and the development of an intra-national epidemic intelligence and cross border surveillance system in the region.



## ORCHIDS Project (Richard Amlot, UK Health Protection Agency, United Kingdom)

Effective decontamination showering will be crucial to the outcome of any incident involving the deliberate release of potentially hazardous substances and large numbers of contaminated casualties. The ORCHIDS project aims to investigate fundamental aspects of civilian mass casualty decontamination which have not been subject to prior scientific scrutiny. Response capabilities may be enhanced by identifying ways in which decontamination processes for emergencies can be optimised; thereby reducing the risk of secondary contamination of emergency



response personnel and facilities. The ORCHIDS project addresses fundamental aspects of mass casualty decontamination which have not been subject to prior scientific scrutiny. In this way, the project brings significant added value to existing public health knowledge. By directly addressing the application of this knowledge in operational research trials and a mass casualty decontamination exercise, the project makes a new, significant contribution to public health practice in this area. The project will help to inform policy on decontamination provision in the European Union and contributes to the protection of all EU citizens from deliberate or accidental health threats requiring emergency decontamination.



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The conference presentation are available on the Healththreats Project