Healthreats
Newsletter
2010, Number 1

Where have we got to?

by Carmelo Scarcella (ASL Brescia)

There is just a little more than three months left until the end of the Healthreats Project. The training stages for the technicians in charge of the testing are completed and the training stage to use the decision support system is in progress. Lots of enthusiasm was felt when the steps started becoming clearer, the interaction tools available on the system were acquired and used effectively, and the solutions proposed by the prototype met the expectations of users.

Now that the DSS has been implemented we must just wait for each partner to begin the testing. The results of this last step will be presented on 24th September 2010 in a conference entitled "Healthreats in the European Union", which will end the three years of work on the project.

That will be the opportunity to present the steps followed and the results achieved to the international community, as well as to take the opportunity to invite the leaders of European projects to explore and explain what other paths have been developed in Europe on the topic of health threats.

Even if we are projected toward the future, let's not forget the past and present. In this issue you will find a brief piece on the history of influenza and the report of the Meeting held in April at the Faculty of Medicine of the University of Milan on the influenza pandemic. During this meeting an analysis was presented of the pandemic plans developed by the Lombardy Region following the WHO checklist for influenza pandemic preparedness planning.

6th PMB Meeting - Matosinosh

Summary

Influenza and history, history of influenza

by Alessandro Porro, Bruno Falconi (University of Brescia) - Paolo Maria Galimberti (Fondazione IRCCS Cà Granda Ospedale Maggiore Policlinico. Milan) - Antonia Francesca Franchini (University of Milan)

When there is an outbreak of influenza pandemic (and we are frightened), history helps us to correctly consider current issues.

Often historical studies have been published during epidemic or pandemic events.

How was influenza handled in the past?

Italian examples show us the strategies adopted.

Reliable epidemiological data are available only since the *Russian* pandemic (1889 - 1890) (even thought the virus was isolated only in 1931).

It must be noted that all outbreaks in Europe came from the east, with the exception of in 1580 which originated in France.

In ancient chronicles and stories illnesess with fever, catarrh and

cough are described as benign (as defined in Italian: *mal galantino* or *cortesino* or *male gentile* - "*Kind illness*" *translator's note).*

The diseases that terrorized people included plague, smallpox, cholera and typhoid.

These serious illnesses used to spread rapidly and were difficult to treat: this was not the case for influenza.

Protection against epidemics (whether individually or collectively) was to isolate the patient and increase health care.

Specific therapies were ineffective.

Some of the health precautions adopted included: prohibition of visiting the patient, adequate nutrition, bloodletting, religious processions and fasting.

When disinfectant drugs were available, they were hoarded by the population.

The Spanish influenza pandemic of 1918-1919 changed all strategies to protect against this disease.

The severity of that influenza led to a true medical emergency.

Personal protective equipment (like masks) was completely ineffective.

Gatherings and religious services were banned, and all schools closed.

Sulfa drugs and antibiotics were not yet available at the time.

Serums and vaccines could not be effective and bacterial superinfections were therefore uncontrollable.

Some scientists perceived the seriousness of the problem.

Isolation and disinfection measures were difficult to implement because of the great movements of people in wartime.

The Spanish influenza pandemic caused a profound scientific debate and tested the health organization of nations.

When the *Asian influenza* arrived (1957-1958), viruses were classified, vaccines were available, antibiotics allowed the control of bacterial superinfections and epidemiological data collection was much improved.

The monitoring of production, import, storage and use of influenza vaccines became a top quality process.

The same applies for the influenza pandemic in Hong Kong (1968).

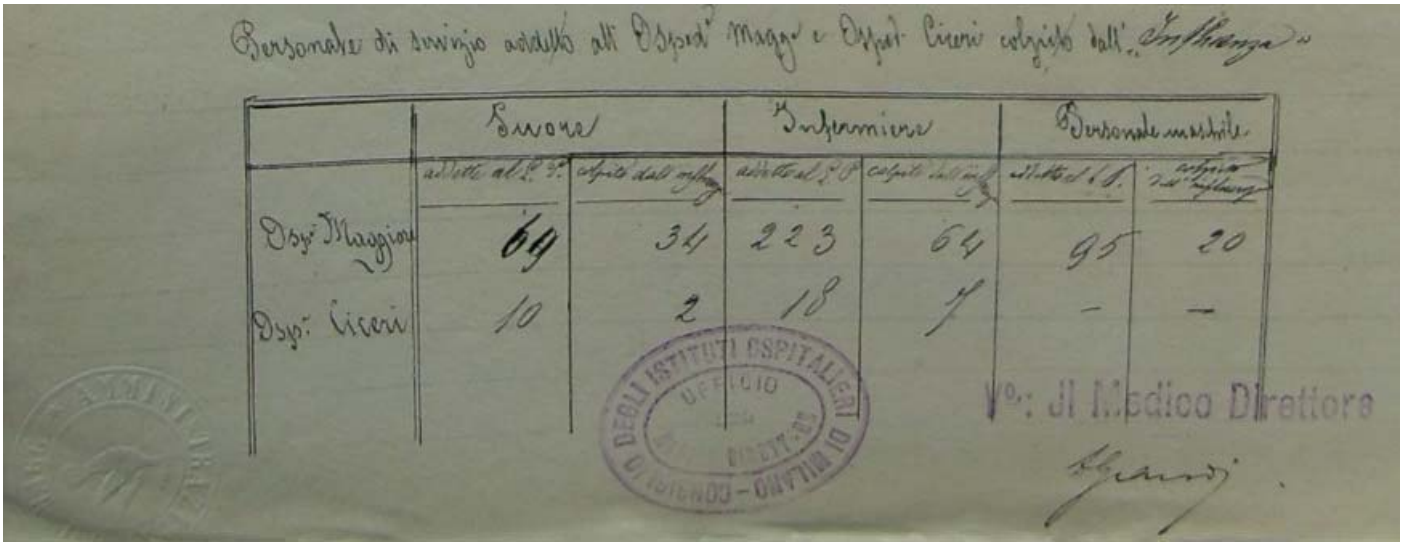
At those time the strategies were based on ensuring the supply of vaccines and on public health protocol (hospital and home care).

The most effective strategies in subsequent pandemics were those based on mass vaccination; only after a case of death (caused by a virus classified as H1N1) occurred in the United States in 1976, was a mass vaccination campaign triggered.

Nevertheless the greatly feared pandemic event never occurred.

The experience of the twentieth century tells us that pandemics recur at intervals of about thirty years and in fact the prediction of a new pandemic around the year 2008 proved to be correct.

Today we must examine the proper use of vaccines, the plan for the diffusion of information and the central role of health education.



Ospedale Maggiore and Ospedale Ciceri Staff affected by flu (Milan 1890)

Courtesy of IRCCS Cà Granda Ospedale Maggiore Policlinico - Milano

Training and DSS localization

by Claudio Greppi (Argonet)

The Decision Support System developed in the context of the Healthreats project has been designed to support a complete adaptation to the specific context and language of all Health Authorities participating in the project.

This is possible through a process called *localization*.

This process goes far beyond the basic IT tasks of installation and configuration at local sites. Instead it comprises a set of high-level activities that started in the context of Work Package 6 (Process Modelling and Improvement), which defined the set of intervention plans to be activated to face health emergencies.

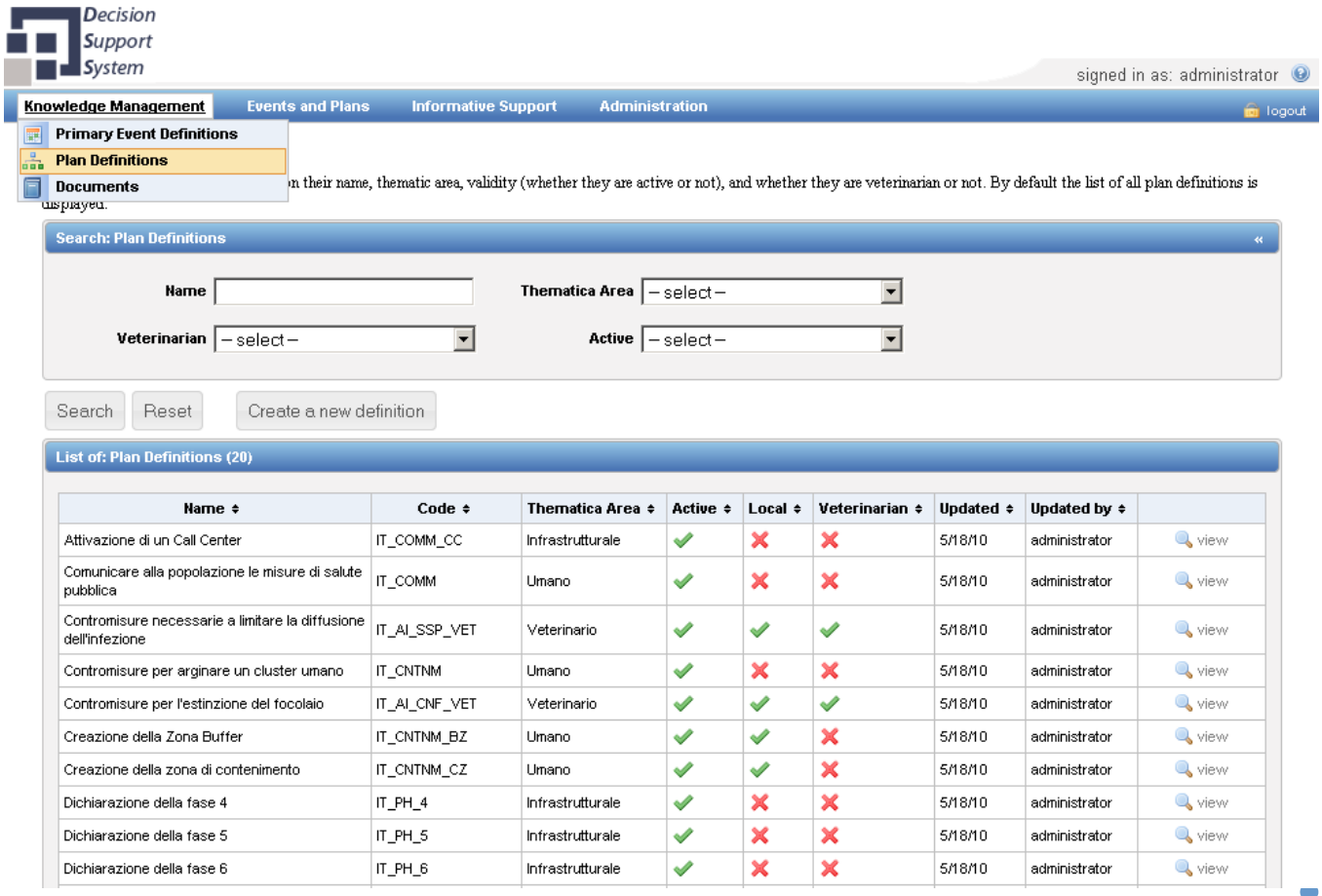
All experimenting Healthreats partners started working on the local adaptation of those processes, matching them to their organizational context, and identifying actual people for the user classes defined in previous stages of the project.

Local sources of information have also been identified, which will be used by the DSS to support the execution of intervention plans, with the built-in reporting and charting functions.

A technical training session was held by the DSS development team in Brescia from May 3 to May 5, 2010, with the participation of all experimenting partners, with the aim to review and discuss the concepts and the technical details of the localization process.

These comprise a complete set of tools, standards, and configuration options that allow one to:

- Load the DSS knowledge base with knowledge adapted to the local context (localized intervention plans to be triggered in response to critical events)
- Upload norms, regulations, and relevant documents to the DSS documental repository;
- Load the DSS engine with information about available resources and the emergency scenario;
- Translate any part of the DSS user interface to the local language, if needed.



Toward Decision Support System Evaluation

by Loredana Parasiliti Provenza, Daniela Fogli (University of Brescia)

The evaluation phase of the HEALTHREATS Decision Support System (DSS) is going to start.

It is meant to assess the DSS prototype as a software implementation of the requirements stated at the beginning of the project.

This phase comprises four evaluation activities: verification, technical quality assessment, validation and usability assessment.

The first three activities will be carried out according to current best practices in software engineering, whilst the method for assessing the usability dimension will be grounded on well-known human-computer interaction (HCI) principles.

Verification and technical quality assessment aim at verifying internal system properties of the DSS prototype by experts in software engineering.

In particular, verification checks system correctness by answering the question "*Did we build the system right?*".

Its goal is to compare the implemented system behavior against the stated DSS requirements.

To measure this conformance, an indicator has been defined as the percentage of functional requirements that pass the test cases established after the DSS requirement specification for each class of stated requirements ("mandatory", "advanced", and "nice to have").

Technical quality assessment evaluates instead the quality of the DSS prototype from a technical perspective, in terms of the following software engineering properties: system architecture, modularity, programming style, data design, development environment and documentation. Also in this case, an indicator has been defined as the average of proper indicators defined for each property mentioned above.

Validation and usability assessment are *user-centered activities,* in that they evaluate with real users whether the resulting DSS prototype satisfies, to a certain degree, their needs.

More specifically, validation checks whether the prototype meets users' expectations by answering the question "*Did we build the right system?*".

It assesses the implemented DSS functions against the stated requirements as intended by the users. Validation will be carried out through experimentation with a set of representative users on the basis of the established test cases. An indicator will be measured to give an account of how much DSS functions correspond to users' expectations.

Finally, usability assessment aims at answering the question "*Did we build a system which is easy to learn and use?*".

It evaluates whether DSS users can perform their tasks easily and effectively by exploiting the interaction tools offered by the system. DSS usability will be measured according to three attributes:

- *efficiency,* as the property of the DSS to be efficient to use, so that once the DSS users have learned the system, they can reach a high level of productivity;
- *robustness*, defined as the property of the DSS to have a low rate of user errors, and, whenever errors occur, to ensure that users can easily recover from errors;
- *memorability*, defined as the property of the DSS to be easy to remember, so that users are able to use the system even after periods of inactivity without having to learn everything all over again.

Usability assessment will be carried out on the DSS prototype through an experimental test with a set of key users, who will be required to execute a set of tasks defined on the established test cases.

A group of HCI experts will then assess the usability dimension by measuring:

- DSS efficiency in terms of the time to complete each task individually and the percentage of tasks completed in a given time slot;
- DSS robustness in terms of the number of user errors which occurred while executing each task and, in the case of errors, the time spent recovering from them;
- DSS memorability in terms of the variation in efficiency after a period of user inactivity with the system.

The final step of the evaluation will consist in the global evaluation of the DSS prototype, the quality of which will be determined by combining the separate assessments of verification, usability, validation and technical quality according to a properly defined rule.

Conference on “The pandemic flu”

by Silvana Castaldi (University of Milan — Fondazione IRCCS Cà Granda Ospedale Maggiore Policlinico. Milan)

On 30th April 2010 a congress was held in one of the public hall at the Department of Medicine and Surgery at the University of Milano to evaluate the preventive strategies used against the recent A/H1N1v pandemic.

The congress was organized by the postgraduated School of Public Health of the University of Brescia, Milan and Pavia, the Italian Public Health Italian Society and Healthreats.

After beginning at the end of April 2009 in just a few months the A/H1N1v virus spred to almost all countries around the world with some differences in each Country. Only one characteristic was similar in all Countries: the main target population of the virus was young people (ages 4-18).

The virus spread very quickly and the number of people infected brought to mind the three flu pandemics of the last century.

The Congress, entitled “Flu pandemic: Lessons from the past and considerations for the present”, began with a very interesting history by Prof. Alessandro Porro of the University of Brescia of the pandemic flu starting with the first one at the end of the 19th century for which we have recorded data.

Dr. Paolo Galimberti and Antonia Francesca Franchini then described the role of the Ospedale Maggiore during the Spanish flu. The Ospedale Maggiore is now a research and teaching hospital in the centre of Milan but it was built in the middle of the 15th century and in its archives it has recorded everything which has happened in the city since then. It was very interesting to examine with them the epidemiological data which show the same characteristics as the 2009 pandemic. The speakers also illustrated some experimental and traditional treatments which were tried to fight the disease.

Prof. Alessandro Zanetti of the University of Milano delivered an excellent lecture on the pandemic virus. He explained the characteristics of the virus, its capacity to modify its surface antigens and the strategic role of vaccine.

Prof. Umberto Gelatti of the University of Brescia, commented on the communication strategies implemented during recent months regarding the pandemic flu by the media and underlined its incapacity to give the population a realistic view of the situation. He analysed the news flow which occurred last summer and autumn in the Italian press and reminded the audience of the uncertainty of those weeks but also noted that official health information was highly understated in its delivery which did not help to make the situation clear.

Dr. Carmelo Scarcella, the chairman of the Healthreats project, illustrated the aims of the EU crisis management program. Other sectors, for example think of the industrial sector, developed crisis management strategies some time ago, whereas the public health sector has only faced this topic for a few years and only now are the first computerised support systems available.

Prof. Silvana Castaldi with the students of the postgraduate School of Public Health of the University of Brescia and Milano presented the application of the WHO checklist for influenza pandemic preparedness planning to the pandemic plan prepared by eight local health authorities of the Lombardy Region.

At the beginning of this century the WHO prepared a check list regarding what must be included in an influenza pandemic plan to face a pandemic event. The WHO invited each member country to write its own pandemic plan and Italy did so in 2002. According to the dispositions of the Italian National Health Service each Local Health Authority had to write its own plan and keep it up to date.

The application of the WHO checklist demonstrated that the eight local health authorities of the Lombardy Region were not ready to face a pandemic event and it is realistic to think that Italy as a whole is not ready to face a pandemic event.

The discussion at the end of the presentations was very interesting and showed the strong participation of the audience/attendees.

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The final conference "Health threats in the European Union" - Brescia, September 24th 2010

PROGRAM

First session: Public health tools to face health crisis at the beginning of the third millenium

Lecture: Information technology in support to Public Health in the EU Union
Dr. Annunziato - Joint Research Centre, European Commission
Lecture: The flu threat in the EU: vaccination and management of the crisis
Prof. Lopalco - European Centre for Disease Control

Second session: The Healthreats project

Overview and main results
Dr. Scarcella - ASL Brescia
The Processes
Dr. Baitelli - ASL Brescia
The Decision Support System
Prof. Baroni - University of Brescia
The Training
Dr. Ferrari - Laser Soc. Cop. Brescia
The Italian localisation
Dr. Besozzi - ASL Brescia
The Spain localisation
Dr. Simon Schwarz-Secretary's Office for Strategy and Coordination of the Ministry of Health of the Catalan Government
The Slovenian localisation
Rade Pribakovic - Institute of Public Health of the Republic of Slovenia
The Romanian localisation
Invited - Romanian Society for Disaster and Emergency Medicine
The Portoguese experimentation
Dr. Joao Correia - INOVAMAIS
The Healthreats project internal evaluation
Martin Znidarsic - Jozef Stefan Institute

Third session: The EU Projects on preparedness in health emergency

An Overview of the EU projects
Invited DG SANCO
FLUMODCONT Project
Prof. Pugliese – University of Trento
EPISOUTH Project
Dr.ssa Declich - Istituto Superiore di Sanità
ORCHIDS Project
Dr. Amlót - UK Health Protection Agency

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Further information will be available on the Project web site the next month

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