EpiSouth

Network for Communicable Disease Control in Southern Europe and Mediterranean Countries

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Foreword

The EpiSouth Network for Communicable Diseases Control in Southern Europe and Mediterranean countries is a project co-funded by the European Commission within the Programme of Community action in the field of public health under the priority area "Responding rapidly and in co-ordinated fashion to health threats" (2005/c 11/10).

The European Commission acknowledges that since health threats can not be confined to boundaries they need to be addressed globally but using the different instruments available such as international agencies, and specific networks of health institutions and professionals .

What is relevant and in a way unique of the EpiSouth Network project has been the capacity to attract and retain 26 countries from the Balkan and Mediterranean areas around hot health topics such as cross-border epidemic intelligence, vaccine-preventable diseases and migrant populations, and epidemiology and preparedness to cross-border emerging zoonoses.

Moreover, in the course of the project, fostered cooperation with international and national organisations competent in the sphere of public health such as World Health Organisation, European Center for Disease prevention and Control (ECDC), European Commission [Health and Consumer protection Directorate General (DG Sanco) and EuropeAid Cooperation Office (AIDCO)], and the Italian Ministry of Health, has been instrumental in supporting the development of capacities in the participating countries through technical advises and training while avoiding overlapping with already implemented activities.

While the training and networking activities have already been an added value for the participating countries and the outputs of the project are encouraging - particularly in terms of availability and exchange of epidemiological information - making EpiSouth Network's approach and tools sustainable for the exchange of experience on best practice in public health and for the effectiveness of health policies will be the future challenge for all the countries in the Mediterranean area.

Germain Thinus
DG SANCO
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Preface

For centuries the land around the Mediterranean area has been home to major centres of civilization and a remarkable place for international trade and cultural exchange. Today, economic cooperation and the movement of populations continue to increase. In addition this region has become a major destination for global tourism thanks to its wonderful seashore, beautiful landscapes, fascinating cultural treasures and the pleasant Mediterranean climate. However, from a public health perspective, these common environmental features mean similar epidemiological patterns of communicable diseases and shared public health risks. To further develop interactions and economic gains in the region, it is crucial that common regional health risks are addressed. Countries in this region have seen the emergence, or re-emergence, of epidemic-prone diseases such as Rift valley fever, plague, Chikungunya, avian influenza, Crimea-Congo haemorrhagic fever, the return of measles outbreaks, as well as the spread of drug-resistant organisms, such as multi-resistant tuberculosis.

By connecting senior professionals from all ministries of health in the region, EpiSouth provides an operational framework for rapid information sharing, mutual support, and collective action on cross-border public health issues.

This formal, though flexible, public health framework has been set up thanks to the support of the European Commission (DG-SANCO) and the Italian Ministry of Health, in partnership with the European Centre for Disease Prevention and Control, and the World Health Organization. The participation of other health institutions in the Mediterranean region including the animal health sector such as the Food and Agriculture Organization and the World Organisation for Animal Health will further facilitate national and regional efforts towards the objective of EpiSouth. These include the timely detection of epidemics or acute public health risks in this region, higher vaccination coverage of mobile populations, improved collaboration between human health and veterinary services, and increased skilled human resources for disease surveillance. By doing so, EpiSouth directly contributes to the implementation of the International Health Regulations (2005) endorsed by all countries. An asset for the health security, and prosperity, of the Mediterranean region.

Guénaël Rodier
Director of International Health Regulations Coordination Department
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1. Introduction

Infectious diseases are potential threats that have no geographical boundaries. Aside from a few for which prevention is possible due to effective vaccinations, one of the most effective tool that public health personnel can use to contain their spread is surveillance. However, in order to translate data into appropriate action, early detection of cases, dissemination of information, and a cross-border, harmonic and prompt response are crucial. The countries of the Mediterranean area have common sea borders in the remarkable ecosystem of the Mediterranean Sea and, as a result, they also share common public health problems.
During meetings held in 2004 in Athens and Venice, experts from Bulgaria, Greece, France and Italy designed a co-operative initiative covering the Mediterranean and the Balkans. Spain soon jointed this initiative. In the occasion of the Year of the Mediterranean (2005), this project, called EpiSouth, was proposed to the countries in this area and to the European Commission for funding.
The project started officially on the 1st of October 2006 with 9 European Union (EU) Countries (Italy, Spain, France, Bulgaria, Greece, Cyprus, Malta, Romania and Slovenia), but has rapidly expanded to include more countries of the Mediterranean and the Balkans. Following the *1st Project Meeting* (Rome, 28-30 March 2007) and the *2nd Project Meeting* (Athens, 10-12 December 2007), several countries from the Balkans, North Africa and Middle East joined the project together with representatives of EC-DG Sanco, European Center for Disease Prevention and Control (ECDC), and World Health Organization (WHO). The *3rd Project Meeting* was held in Sofia (Bulgaria) on 30 March-1 April 2009.
As per March 2010, the EpiSouth Network counts 26 Countries, which have appointed a total of 65 Country Focal Points (30 from EU-Countries and 35 from non-EU Countries) plus 7 representatives from International Organisations.

1.1. Objectives

The general objective of EpiSouth is to create a framework of collaboration on epidemiological issues in order to improve communicable diseases surveillance, communication and training among countries in the Mediterranean and the Balkans.

Several areas of activity and specific objectives were identified and were developed through eight Work Packages (WPs) as follows:

WP1 - *Co-ordination of the project* (lead by the Italian National Institute of Health, Italy)
with the main objective of guaranteeing a high quality performance of the project.

WP2 - *Dissemination of the project* (lead by the Italian National Institute of Health, Italy)
with the main objective of disseminating the information produced by EpiSouth within the participating countries and to those who need to know through an ad hoc created website (*www.episouth.org*) and an electronic bulletin.

WP3 - *Evaluation of the project* (lead by the Padua Teaching Hospital, Italy)
with the main objective of evaluating the project and its achievements in terms of milestones, deliverables, and indicators.

WP4 - *Network of public health institutions* (lead by the Padua Teaching Hospital, Italy)
with the main objective of facilitating the networking process and activities among participants in order to strengthen solidarity and cohesion.

WP5 - *Training in field/applied epidemiology* (lead by Istituto de Salud Carlos III, Spain)
with the main objective of strengthening the early response capacity of participating countries to health threats and infectious disease spread.

WP6 - *Cross-border epidemic intelligence* (lead by the Institut de Veille Sanitaire, France)
with the main objective of establishing a common platform on epidemic intelligence where participating countries may find broad internationally as well as regionally focused information.

WP7 - *Vaccine-preventable diseases and migrant populations* (lead by the National Center of Infectious and Parasitic Diseases, Bulgaria)
with the main objective of assessing the access to immunisation and exchanging information on cases/outbreaks of vaccine-preventable diseases of migrant populations.

WP8 - *Epidemiology and preparedness to cross-border emerging zoonoses* (lead by the Hellenic Center for Diseases Control & Prevention, Greece)
with the main objective of providing a platform for the communication of human public health (HPH) and veterinary public health (VPH) officials, describing risk assessment methods and providing a mechanism for exchanging information between HPH and VPH.

The three WPs, WP6-*Cross-border epidemic intelligence*, WP7-*Vaccine preventable diseases and migrants* and WP8-*Cross-border emerging zoonoses*, constitute the technical pillars on which the project activities have been developed through the Network of participating countries; the two WPs, WP4-*Networking* and WP5-*Training*, work on networking and technical capacity building in order to provide the skills needed to critically develop the vertical WPs. The evaluation of the project is carried out by the dedicated WP3 and it is transversal to all other WPs.

1.2. Framework

The EpiSouth Steering Committee provides guidance on key issues and is composed by the six WP leaders plus European Centre for Disease Prevention and Control (ECDC), European Commission-Directorate General for Health and Consumer Protection, Unit SANCO C3-Health Threats (EC-SANCO C3), World Health Organization Regional Office for Europe (WHO-EURO), WHO Eastern Mediterranean Regional Office (WHO-EMRO) and WHO Headquarter (WHO-HQ) representatives as observers.
The participation of the Countries and International Organisations to the project foresees three different levels of active involvement:

- Focal Points (FPs)
  Each Country has identified and appointed two relevant persons who convey all the communication/information to the relevant officers in their respective Countries/Organisations. Each FP directly interacts with the project coordinator as well as with all the other FPs of the EpiSouth Network

- Collaboration in the Work Packages Steering Teams (WPSTs)
  In order to facilitate and enhance the work, each country/international organisation actively collaborates in one or two WPST, which is in charge for identifying the countries' needs, developing the tools and the conducive project environment in accordance with the specific objective and requirements of the related WP.

- Participation to Work Packages activities
  Each participating country takes part in the activities of one up to all the WPs in accordance with their needs and interests. The participation to the activities of WPs not initially chosen can however be requested by the country at any time.

1.3. Evaluation

The EpiSouth Project has been systematically monitored in order to assess key operations and processes with the aim to contribute to its success. Monitoring has focused its attention on the two following issues: network building and effort produced by technical WPs.
Several tools have been designed and submitted to various stakeholders in order to investigate key dimensions of project performance.

The number of countries and institutions which have joined the Network has been larger than anticipated, and this was a great success which also brought greater complexity. The answers to the several monitoring tools repeatedly filled out by participants converge in revealing that the EpiSouth network has become stronger, answering to expectations of most members, and is managed effectively showing as well consideration towards participant individuals and organizations.

1.4. Added value

The added value of the EpiSouth Network strategy was well highlighted by the words of the welcome speech of the President of Hellenic Center for Diseases Control and Prevention at the 2nd Project Meeting (Athens, 10-12 December 2007):

"*…The importance of the EpiSouth project lies in its potential to strengthen human capacity and resources in the area it covers; an area which is characterized by particular features, composing a special socio-economic context, rather different from that of the North Europe area. It is a project that could bridge the existing geographical inequality and gap between the North and the South, concerning methods of collecting and disseminating epidemiological information. Therefore its added value goes beyond the creation of just another supranational or worldwide network….*"

The added value of EpiSouth is also highlighted by the following aspects which have characterised the activities implementation:

- the project focussed on countries cross-border issues, contributing to ensure an adequate response to sudden major threats to public health, such as infectious disease epidemics with a potential trans-national impact
- the project succeeded in creating cohesion and concrete collaboration among 26 countries, some of them in politically hot areas (e.g. Balkans, Middle East)
- the project filled a geographical area with common public health problems and threats (Balkans and Mediterranean Basin), which is not addressed as a whole neither by European Networks, as it includes also non-EU countries, nor by WHO, as it encompasses three different WHO regional offices.
- the project methodology and approaches adopted (such as the creation of Steering Teams constituted for each Work Package), have enhanced co-ownership of participant countries while the presence of international institutions (ECDC, EC, WHO-EURO, WHO-EMRO, WHO-HQ) has allowed sharing views and facilitated interaction which have amplified the international impact of the project.
- the project has been in line with the EU's external actions of Neighbourhood Policy and the Euro-Mediterranean Partnership where networks are acknowledged as tools for cooperation and integration with neighbouring countries (as also officially stated in the Final Declaration of the Second Euromed Ministerial Conference On Health, Cairo, 17 November 2008)

EpiSouth has been presented and discussed in several international (European and non-European) contexts where the strategy adopted and the results achieved have been appreciated and considered by National Ministries and Supra-national Institutions.

All the efforts made during these three first years of activity of the EpiSouth Network have led to the identification of methodological approaches and strategies useful to ensure and enhance the collaboration among the partners of the Network. At the same time, several data and information, relevant for the Mediterranenan Basin and Balkans, have been collected through surveys and assessments carried out during the project implementation.

Both the above described aspects have guided the elaboration of the four project strategic documents which are presented and discussed in the present document.
The EpiSouth Network is confident that these strategic documents will contribute to improve the communicable diseases surveillance, communication and training among countries in the Mediterranean and the Balkans and will open the door to further fruitful collaboration among the countries and institutions involved.

2. The EpiSouth Network

Actors and organisation

The EpiSouth Network can be defined as a group of public health institutions with a shared purpose to tackle the main public health issues and communicable diseases in the Mediterranean and Balkans area. At the onset of the project 9 countries were involved while 17 countries joined later on the network. The network has established working relationships with international and national organizations such as WHO (LYO, EMRO and EURO), EC, ECDC, and the Italian Ministry of Health.
The active participation of the countries and international organizations to the project is possible thanks to Focal Points (FPs) (one or two relevant persons appointed by the countries to convey all the communication/information to the relevant officers in their respective organisations) and Work Packages Steering Teams (WPSTs) (working groups in charge of identifying the countries' needs and implementing the project activities accordingly).
As per March 2010, the Network counts 26 Countries, which have identified and appointed a total of 66 Country Focal Points (31 from EU-Countries and 35 from non-EU Countries) plus 5 representatives from International Organisations and 2 representatives from the Italian Ministry of Health.

Tools and activities

To let the network work different tools and activities are put in place. The EpiSouth portal (*www.episouth.org*) is a web based system with an area open to the general public and an area restricted to the network members (Network Working Area - NWA). The NWA works as a tool for documents storage and sharing, exchange of rapid communications, management of a common calendar of activities and tracking of the network activities. The NWA has also dedicated areas for *Discussion Forum* and *Entering Data* (online questionnaire compilation). Moreover, EpiSouth electronic bulletins, directories of public health institutions and of human and veterinary public health officials for zoonoses, training materials, and useful links and documents are regularly updated and made available in the public area of the project web site.
All the network participants have attended plenary project meetings in Rome, Athens and Sofia with an average of 70 professionals from the 26 countries and the international organizations as well as international experts in the field. During each meeting, project activities have been monitored and problems and future perspectives have been discussed and agreed upon.
The network has been strengthened also through on-site visits, WPST meetings, ad-hoc meetings, training sessions, and thematic teleconferences.
Finally, the network was presented and promoted in several international events [1].

Future perspectives

Since the start of the project the network has grown in terms of number of participating countries and reciprocal trust. Interviews and group discussions have been carried out among project participants in order to identify the expected development of the network.
The network is expected to find the way and means to become an independent body; this could be achieved by liaising with the international agencies and the involved countries in the provision of services and programmes related to public health in the Balkans and Mediterranean area.

[1] 1st East Mediterranean Public Health Network (EMPHNET) and 4th TEPHINET Regional Scientific Conference (2009); International Meeting on Emerging Diseases and Surveillance - IMED 2009; the Second Euromediterranean Ministerial Conference on Health - Workshop "Controlling infectious diseases in the Euromed region" (2008); the 2008 EuroMeSco Annual Conference; "XXIII Journées Scientifiques" (2008); "Journées de veille sanitaire" (2007); "EuroMed Workshop" (2007); and ESCAIDE Conference (2007).

3. The EpiSouth Strategic Documents

Executive Summary

EpiSouth has put together four strategic documents on the key themes confronted by the project in the Mediterranean Countries and Balkans: 1. Training in Public Health and Applied Epidemiology, 2. Epidemic Intelligence & Cross-Border, 3. Vaccine Preventable Diseases and Migrant Population, and 4. Epidemiology and Preparedness to Cross-Border Emerging Zoonoses. Each document was structured around a sequence of topics, i.e. evidence of the problem to be addressed, scientific rationale for action, objectives and framework, major stakeholders and targets, activities, achievements and lessons learned, expected outcomes and proposed strategy and finally recommendations.

Training in Public Health and Applied Epidemiology

Although academic links among universities are usually reflected in common projects and exchange of professionals, such as ASPHER (Association of Schools of Public Health in the European Region), TEPHINET (Training in Epidemiology and Public Health Intervention Network) associates over 40 FETPs all around the world and other agencies such as WHO promote and deliver short training courses, there is no initiative for promoting training activities of common interest for the Mediterranean and the Balkans. Collaboration within the region is usually fragmented and driven by administrative borders and political rather than public health interests. A first EpiSouth objective was to promote training in Public Health and Applied Epidemiology. The starting point was to assess perceived institutional training needs in the area of the project. Training topics of interest as prioritised by the respondents were risk assessment, modelling and infectious diseases dynamics, epidemic intelligence and advanced data analysis. These results overlap with ECDC areas of core competencies of: Public Health, Applied Epidemiology, Biostatistics, Applied Informatics, Communication. Aiming at harmonizing technical approaches among participant institutions and at exchanging expertise, three one-week training modules/ workshops were offered during the 2007-2009 period. Participants were key professionals working at central level of their national surveillance institutions selected by EpiSouth participating countries through their project focal point.

The Strategic Document proposes a framework for strengthening the Public Health workforce at local, peripheral, national and international levels and designes a Route Map in order to strengthen surveillance and response systems, public health capacities and epidemiological research in the Mediterranean and the Balkans. The Training Strategy focuses on five objectives: to strengthen existing resources, to promote collaborative initiatives, to promote the use of innovative training technology and to integrate a multidisciplinary approach to public health and epidemiology training, and evaluation. Training strategy adopted the following five principles: 1) ownership, i.e. EpiSouth countries set their own training priorities for enhancing their PH institutions, 2) alignment, i.e. donors align with these objectives and promote the use and enhancement of local and regional resources, 3) harmonisation, i.e. donors discuss with EpiSouth Network and national institutions coordinate action plans in order to avoid duplication in training activities, 4) results, i.e. training objectives and activities are results driven, 5) mutual accountability, i.e. Episouth partners are accountable for achieving expected results. The strategic document intends to complement actions for improving training capacities and access to training in the EpiSouth region. EpiSouth could play an important role in promoting regional training activities, discussion fora, multi-institutional agreements, and could help improving the link between surveillance and epidemiological investigations and public health action in collaboration with many other actors currently playing important training roles in the region.

Epidemic Intelligence & Cross-Border

Despite of close epidemiological and historical links, countries of the Mediterranean and the Balkans belong to different international and political systems and that is why bordering countries sometimes have no direct formalised channels with their neighbours, which results in unnecessary delays in communication. A second EpiSouth objective was to develop two strictly connected tools: Epidemic Intelligence (EI) and Cross-Border (CB) alerts. EI detects, using formal and informal sources, internationally occurring health threats that may affect EpiSouth countries. Informal

information is mostly accessible via the Internet, but access to significant information is very difficult and reliability is questionable. To separate relevant from superfluous information is a tedious process requiring qualified staff and the use of specific EI methods and tools. EI has adopted several approaches: early warning CB platform, electronic weekly epidemiological bulletin, and thematic notes, i.e. short documents to complement other formats. Covered threats include both infectious diseases and non-infectious issues such as chemical or environmental accidents and products contamination. Health crises covered by EpiSouth included international health threats (e.g. A(H5N1) outbreaks), potential cross regional health crisis (Al Khurma virus in Saudi Arabia, cholera in Iraq), potentially undetected threat (West Nile in Israel), hoaxes and rumours (false Al Qaeda-related plague in Algeria) and Intra-EpiSouth potential cross border risk (e.g. rabies Slovenia-Italy, hepatitis A France-Turkey) and more recently A(H1N1). Cross-border aims to provide a communication support allowing countries to share health information and alerts of common interest. Confidentiality and secure communication must be guaranteed as press coverage regarding certain threats may result in general public anxiety. Since November 2009, the secure web-based platform allows EpiSouth countries to share relevant information on a voluntary basis. To date, this EpiSouth early warning system is the only one allowing for the rapid, easy and secure sharing of such information across 26 countries of the Mediterranean and the Balkan regions. The information posted on the platform is also immediately available to WHO (including EMRO and EURO regional offices), ECDC and the EU commission (DG-Sanco).

The initial EU-only focus generated an unbalanced representation of countries and sceptical feelings. Concerns were particularly strong regarding information use and perceived as potentially intruding in countries internal health affairs and not always ensuring an equal circulation of information. The first step in responding to these concerns was to assess, through a survey, EI and CB activities implemented by participating countries. This was followed by a strategy aimed at confidence building and familiarising focal points with key concepts. Despite the initial inevitable difficulties, 17 non-EU countries have joined EpiSouth, and perceptions and understanding of EI and CB have evolved remarkably. Within nations, the most important stakeholders and targets included EpiSouth focal points, their Ministries of Health (MoH) and Public Health Institutes (PHI), provincial health authorities, national reference laboratories, and sentinel network. At the international level, main actors comprised WHO, ECDC, EU Commission (Rapid Alert System for Food and Feed) (RASFF) and Medical Information System (MedISys), OIE: World Animal Health Information Database (WAHID), and InVS, which has a mandate for public health surveillance including EI for France. The main objective of the EpiSouth platform is to allow the circulation of information that does not respond to mandatory notification criteria, or could not be readily accessible. EpiSouth early warning platform acts in synergy and conjunction with mandatory systems and aims at facilitating the dissemination of information that would otherwise not be possible or too delayed. EpiSouth EI-CB and diseases surveillance systems are therefore complementary. Main challenges include keeping momentum being achievements still fragile, adopting governance strategies able to promote trust for a sustainable and efficient Mediterranean early warning system, developing a formal institutional framework, promoting a full and active involvement of all countries in early warning activities through national focal points, and assuring the interoperability of information and response systems.

Vaccine Preventable Diseases and Migrant Population

A third objective of EpiSouth was to study and make recommendations regarding Vaccine Preventable Diseases (VPD) among Migrant Population in the Mediterranean Countries and Balkans. Migrants are persons moving to another country or region to better their material or social conditions. There are an estimated 5-8 million undocumented migrants living in the EU. Migration across the Mediterranean and Balkans has deep historical and socio-political causes and is constantly increasing. Migrants are not a homogeneous group, comprising immigrants, internally displaced, internal migrants such as Roma population, refugees, returnees, victims of trafficking, asylum seekers, irregular migrants, and people searching work or education. These groups also present diverse national and ethnic roots which influence the acceptance of preventive public health measures such as immunization. The strategic relevance of vaccination of migrant populations derives also from the fact that some groups are underserved, i.e. geographically, culturally, and economically isolated, and in poorer health in comparison to the general population. Various outbreaks of measles recently occurred in the European countries affected migrant population, like Roma/Sinti people. The intensive migration presents challenges to the national public health care

systems, in particular serious risk of importation and epidemic spread of communicable diseases, considered eradicated (for example poliomyelitis) or eliminated (measles).
Provision of health care for undocumented migrants varies widely among countries. A survey covering 11 European nations revealed that 70% of the interviewees, ranging from 3% to 98%, could theoretically benefit from health coverage, but a quarter of them were unaware of their rights. In the region, there is no universal approach, nor enough information regarding regulations supporting immunizations of migrant population; the immunization coverage of migrants is not monitored separately and the figures are included into the national immunization data. Studies in Croatia, Slovenia, Romania and Bulgaria evidence that Roma population has lower immunization coverage despite the full and free access to immunizations. The participants in the survey consider that the main reasons for the lower immunisation coverage within those groups are lack of information about immunisations, lack of trust in authorities, limited access to health care & financial constraints along with language barriers.

A mix of policy, legal and operational public health tools is required to address the migration challenge and to achieve the goal of better control of the VPD. EpiSouth aimed at creating a framework for collaboration and exchange of information related to the vaccine-preventable diseases and to the specific approaches and national immunization strategies targeting under-immunized migrant groups. The main approach to collect information on country specific migration status and immunisation programmes was to conduct a country based assessment survey for vaccine preventable diseases and migrant populations. This study identified significant gaps in public health activities related to immunization of migrant population, also allowing the exchange of data on immunization coverage and trend of VPD and of successful national practices. Stakeholders of this EpiSouth component included the public health community, epidemiologists and decision-makers in Southern Europe, the wider European Community, Balkans and Mediterranean countries, National, European and International institutions. Key recommendations were to formulate guidelines on legislative framework, on ways to reach political agreement concerning resources mobilization, involve minority groups, research social factors influencing vaccination coverage and raising general population's and health care workers' awareness about the problem, in collaboration with the international organizations concerned with migration and VPD prevention (WHO, ECDC and IMO).

Epidemiology and Preparedness to Cross-Border Emerging Zoonoses

A fourth aim of EpiSouth was to investigate epidemiology and preparedness to cross-border emerging zoonosis. Human and animal demography, changes in the environment, pathogens and farming practices, together with social and cultural factors such as food habits, international commerce, war and political conflicts, human mobility and religious beliefs, contribute to the emergence of zoonotic diseases. About two-thirds of emerging infectious diseases (EID) result from zoonoses; the majority of these have their origin in wildlife and have been increasing in recent years. Over half of EID events are due to bacteria, and a large number of those is drug resistant. Moreover EID emergence strongly correlates with a combination of socio-economic, environmental and ecological factors, that define areas, called "emerging disease hotspots" where EID are most likely to originate, spanning Sub-Saharan Africa, India and China, but also Europe, and North and South America. It is plausible that a warmer climate may lead to a northern shift in the distribution of vectors and vector-born diseases.

Human health is inextricably linked to animal health and production. Therefore we need to highlight the necessity of intersectoral collaboration between Human Public Health and Veterinary Public Health, including a spectrum of distinct disciplines such as internal and infectious diseases medicine, human public health, microbiology, environmental epidemiology, epidemiology, veterinary medicine, veterinary public health, entomology and wildlife biology. In the Mediterranean countries, veterinary public health and human public health services tend to work separately. In response to such challenge, 26 years ago WHO created the WHO/Mediterranean Zoonoses Control Centre (WHO/MZCC) adopting inter-professional and inter-country collaboration. Also the MED-VET-NET network of excellence, is an inter-professional collaboration in zoonoses research with both medical and veterinary perspectives. EU has supported member states through legislative and professional initiatives relevant to the improvement and standardization of diagnostic procedures, surveillance and exchange of information at the national, regional and international levels. EpiSouth has designed its strategy valorizing the activities already in place.

The approaches adopted by EpiSouth included the identification of five zoonoses (Brucellosis, Leishmaniasis, Rabies, Campylobacteriosis and West Nile Virus) on which to experiment ways of enhancing intersectoral collaboration, the description of the epidemiological situation of the selected zoonoses in EpiSouth Countries, and the creation of a Directory with experts' names and contact details among EpiSouth Countries. Numerous actors should act in a coordinated manner at 1) supranational level with a role in devising policies' common guiding criteria, promoting collaboration around priority identification, resources allocation, capacity building and tools development; 2) National Government and Institutions identifying and implementing national policies and identifying relevant experts collaborating in EpiSouth activities; 3) International Public Health Programs and Networks sharing lesson learned, replicating good pilot projects experiences; 4) EpiSouth Partners promoting the adoption of document's recommendations at national level.

The lessons learned by EpiSouth suggest to establish a national multidisciplinary forum on zoonoses and risk assessment of designated scientists with clear responsibilities for the two sectors at country level where it has not been set up yet. Epidemiologists, Veterinarians, Entomologists, Laboratory Officials from Public Health and Veterinary Public Health and, when relevant, Biologists or scientists on Environmental issues should be included. Further, a national network for preparedness and response, working in line with the International Health Regulations should be launched.

Conclusion

EpiSouth, the only project dealing with such topics on both sides of the Mediterranean, has created a strong link between the EU and all participating countries and represents an important source of information to strengthen health security, to expand immunization among vulnerable migrants, and to detect and respond effectively to zoonosis across the Mediterranean. The beginning of the project is very promising; further success will depend on the sustained willingness of countries to contribute actively, and the ability to formalize and strengthen a balanced partnership.

3.1. WP5 Training in Public Health and Applied Epidemiology in the Mediterranean Countries and Balkans

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3.1.1. Evidence of the problem to be addressed

The connected world changes more and more rapidly. Persisting communicable diseases, emergent pathogens, even the climate change effects raise continuous challenges worldwide against which the states, the institutions and the professionals of public health have to be prepared for a timely and efficient public health response.

IHR 2005 is a global commitment to face international public health risks with all the available means. Further than changes of legal, resources, governance or political concern, the common bases for optimising existing conditions is to set up the core competencies and to update the public health workforce in order to improve global surveillance.

IHR implementation implies common efforts for empowering and harmonising surveillance systems in order to accomplish the common interest. If the inequality in capacities among surveillance systems in different countries persists the common benefit will not be reached.

Funded by EC-DG SANCO, DG RELEX, Italian MoH-EpiMed Project, and TAIEX, EPISOUTH (2006-2010) set up a framework of collaboration on epidemiological issues aiming at improving communicable diseases surveillance, communication and training across the countries of the Mediterranean and the Balkans. EPISOUTH Network involves 26 countries, 29 public health institutions, more than 770 public health professionals for an area covering 515,4 million people[2].

EPISOUTH countries share a common epidemiological environment and public health threats and risks. However, there is a great heterogeneity between these countries in terms of size of the country, population (the 55% of the EPISOUTH region population is concentrated in four countries while 15 countries (58%) gather 11% of the population of the EPISOUTH Region), competency of the national institutions in charged of surveillance, number of public health professionals, access to training, diagnostic and laboratory capacity, information systems and resources allocated to public health. The majority of countries have centralised PH systems but there are also important differences in the administrative and political decision making pyramid.

The work package 5 of EPISOUTH is devoted to training. This document reflects the proposed strategy related to training after analysis and reflexion based on information provided by participants in the project trough a Training Needs Assessment (TNA), the evaluation of the training activities and the group discussions carried out during the

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[2] Elaborated from UNFPA 2009, in *http://www.unfpa.org/swp/2009/es/pdf/ES_SOWP09_DemSocialEcon.pdf* visited 29/12/2009 and Wikipedia , in the site *http://es.wikipedia.org/wiki/Kosovo* Visited 03/01/2010

period of the project and the general activities of EPISOUTH such as WP5 Steering Team meetings, Steering Committee Meetings and General Project Meetings.

The starting point of the activities was to assess perceived institutional training needs in the area of the project. A survey was carried out in June-July 2007 among the participating countries at that moment. A self administered, semi-structured questionnaire was sent to decision-makers/senior epidemiologists. The core part of the questionnaire allowed for prioritisation of training topics of interest for training activities foreseen in the project. The complete report on Training Needs Assessment (TNA) can be found *at http://www.episouth.org/outputs/wp5/WP5-survey_Report_v_Fin.pdf*.

Results of the TNA are summarised here below. Public Health Services tend to be understaffed at central, peripheral and local levels. In addition an unequal distribution of the public health workforce is observed. Five hundred and forty five out of the 779 professionals (70%) working in surveillance are concentrated in 4 countries, out of 22 respondents. Other relevant results are out of 127 medical doctors' epidemiologists working in the respondent institutions, (58.2%) work in four countries. Eleven respondent institutions have less than five medical doctors' epidemiologists. Eight institutions (40%) reported having only one person as support staff at central level while three respondents (15.7%) reported having 10 or more supported staff.

Eleven (52%) of respondent institutions provide training courses for keeping their personnel updated, in seven countries advance training in epidemiology and public health is available, 14 offer a master degree in public health and epidemiology and six countries implement a Field Epidemiology Training Programme (FETP) or similar (Egypt, France, Italy, Jordan, Spain and Turkey). Sporadic training courses are carried out in most countries. However, in 6 out of 19 respondent countries, less than 50% of the personnel working in surveillance received training in the two years previous to the survey.

Training topics of interest as prioritised by the respondents were "risk assessment", "modelling and infectious diseases dynamics", "epidemic intelligence" and "advanced data analysis". On one side these results overlap with ECDC areas of core competencies of: Public Health, Applied Epidemiology, Biostatistics, Applied informatics, Communication[3]. On the other side, they also coincide with those domains of the core competencies with associated core learning activities (epidemiology, communication and information technology) suggested by TEPHINET for continuous quality improvement of training process[4]. Coordination among institutions and coordination of activities facing cross border health risks were aspects to deal with suggested by the TNA results.

Aiming at harmonizing technical approaches among participant institutions and at exchanging expertise, three one-week training modules/ workshops were implemented during the WP5 activities in the period 2007-2009. The modules included a wide introduction to the main topics identified in the TNA. Participants were key professionals working at central level of their national surveillance institutions selected by EPISOUTH participating countries trough their project focal point.

Training modules were address to a limited number of key participants with responsibility in cross- border issues and risk assessment & communication at central level. Modules included a broad introduction to the topics of interest and specific countries related issues were discussed from the international point of view. An in-depth training on the priority topics addressing or covering specific national training needs were not in the scope of the project.

WP5 activities covered the training objectives foreseen for the network, allowed for a better training needs identification and training planning and help to build up a real network of public health professional within the EPISOUTH region.

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[3] Reference 13

[4] Reference 9

The activities of the network have generated awareness regarding the necessity of specific capacity building and its importance for effective internal and cross border surveillance and response at national level. Improving collaboration and communication with neighbouring countries and complying with IHR 2005 requirements are perceived as a public health necessity among EPISOUTH partners.

A common regional training strategy would enhance surveillance capacity in the EPISOUTH region.

3.1.2. Scientific rationale for action

Effective training programmes are crucial to improve public health systems and epidemiological surveillance. However, the effectiveness of training programmes is dependent on broader strategies addressing deficiencies in health infrastructures, the availability of essential financial, technical and human resources, the application of scientific methods for investigation and decision making in surveillance and response and coordinated action at national and international level[5].

Efficacy in surveillance, research and risk management at regional level require exchange of knowledge, experiences and tools for improving PH routine work at international level and allowing coordinated and timely responses facing Public Health events of cross- border concern. However because of administrative and political reasons, exchange of experiences between PH institutions, practitioners, researchers, universities and policy makers in the EPISOUTH region is limited.

To train and position sufficient PH staff at different administrative levels would allow for improving evidence base decision making. On the other hand, to avoid the brain drain is one of the challenges for some countries within the EPISOUTH region.

Adapting training programmes and strategies accounting for special characteristics of the region would help to solve both problems mentioned above.

Since the second half of the twentieth century different approaches to PH and epidemiology training strategies have been proposed world wide to cover a diversity of institutional interests, going from academic to hands on the work training. The relevant approaches could be summarized as follows[6]:

University-based public health training programmes:

The university-based model of postgraduate training in public health. Promote high level theoretical training usually expensive and restricted to a small number of professionals. Use to focus on research aspects of epidemiology and public health. This model has been widely implemented in South Asia and African continent, with low PH impact.

The Streamed training model used by WHO, UNICEF, targets junior health workers with limited PH competencies. The model train low positioned PH workers aiming at assuring an acceptable level in key activities in public health practice at local level. This model has been widely implemented in low and medium incomes countries.

[5] Reference 6

[6] Reference 6

Field-based training models:

Field Epidemiology Training Programmes (FETP). Trainees are confronted with real needs at a workplace under the supervision of programme coordinators and supervisors at the hosting institutes. The origin of these models is the Epidemic Intelligence Service of the US-CDC (1951) also known as "learning by doing". With some variations is the base for training programmes in over forty countries, including the five national FETP existing in the Episouth region. Those programmes mainly target junior professionals with little working experience in the field of PH and Epidemiology.

Central America regional model, proposed by the US- CDC. It covers a geographical area of five countries. A pyramidal programme was established (low, medium and advance level) and core competencies common for the five countries established at each level[7].

EPIET Programme. A FETP aiming at professionals in European countries tries to build up a network of epidemiologists sharing common methods, view and language within the EU[8]. It has been considered as a successful programme in achieving the main goals of developing capacity to respond to public health crisis by strengthening workforce among EU member states.

Australian model:

A Master of Applied Epidemiology Programme combining academic and field approaches. Students have academic and field supervisors. A collaborative platform including high level professionals (from health and non-health sectors) was created and discussion fora about emerging problems, outbreaks and policy development were open. This "learning by collaborative problem solving" model was perceived by public health seniors as challenging. It showed as a good strategy for developing and reinforcing surveillance systems and PH policies.

All the three approaches to training in public health target mainly young public health professionals willing to get involved in their national PH systems and/or international institutions. The three models produce well trained professionals that may be available for working at public health institutions. However, all three approaches need important financial and technical resources affecting the number of trainees and quality of training in different countries. The limited access to high level training in public health policy and planning in other countries may generate expectations for accessing high decision making level positions among graduates reducing programme impact in routine surveillance and response systems.

Public health institutions need adapted ongoing training and updating of epidemiologists and public health professionals with functions in surveillance and response. This training should help in building up institutional networks both at national and regional level. Public health activities carried out by these institutions should not be affected by training strategies.

The number of PH professionals formed through such programmes is increasing year by year. However increasing number of graduates doesn't mean a rapid impact on the Surveillance and Response Systems' workforce. The impact of the above mentioned training programmes has to be evaluated in order to compare the effectiveness of the different strategies.

To assure the accessibility of current workers from peripheral, local, national and decision making levels to specific training programmes could help to improve on the routine work of Surveillance institutions at country level.

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[7] Reference 7

[8] Reference 3

Incorporating graduates from these training programmes to PH institutions and a carefully design professional careers would assure long term quality of the PH work.

3.1.3. Objectives

A capacity building strategy for the EPISOUTH region should to establish pillars for developing actions that indeed strengthen systems for a real improvement of the alert and response capacities.

Main goal: This Strategic Document on Field Epidemiology and PH Training proposes the strategic framework for strengthening the Public health workforce at local, peripheral, national and international level and sets a Route Map in order to strengthen surveillance and response systems, public health capacities and epidemiological research in the Mediterranean and the Balkans.

The Training Strategy focuses on five strategic lines: to strengthen existing resources, to promote collaborative initiatives, to promote the use of innovative training technology and to integrate a multidisciplinary approach to public health and epidemiology training, and evaluation.

This strategy considers training the followings targets: the new public health workforce; updating of current public health staff, the specific training for senior professionals and decision makers and the integration of public health related professionals from other fields of knowledge.

The implementation of this strategy should involve a wide range of health related sectors and policy areas working together in synergy at the country and regional level for greater coherence.

3.1.4. Potential audience and roles

This document is addressed to different audiences depending on the different roles in developing partially or wholly the strategic lines proposed (Table 1).

Table 1: Potential audience and roles

AUDIENCES' ROLES	POTENTIAL AUDIENCE
Technical Players: partners participating as programmes and services providers and also trainers, experts, supervisors, training materials providers, etc.	EpiSouth, Institutes of Public Health in the region MoH in the region, WHO (EURO, EMRO, AFRO, Ly Off, HQ), ECDC, EPIET, EpiNorth, Universities, Schools of Public Health, ASPHER, TEPHINET, UNESCO, UNAIDS, Agriculture National institutions, Veterinarian Authorities, Food Authorities, Environment Authorities, Reference Labs, Institut Pasteur, Other Public Health Networks existing in the region, NGO´s, National and Regional Associations of Epidemiologists
Financial Players: partners participating as donors (budget contribution or facilities for training)	European Commission –DG SANCO, AIDCO, others; ECDC, UNESCO, UNAIDS, World Bank, Arab League, OCDE, International Cooperation Agencies
Political Players: partners who assure high decision making, agreements and conditions for developing actions contained in this document.	MoH in the region, Union for the Mediterranean, WHO (EURO, EMRO, AFRO, Ly Off, HQ), European Commission – DG SANCO, UNESCO UNAIDS, International Cooperation Agencies

Monitoring and evaluating Players: external individuals in charged of developing set of indicators and carrying out assessments. Should be different for each strategic line.	WHO, EC, ECDC, Institutes of PH, National Schools of PH, EPISOUTH, EPINORTH, TEPHINET, NGO's

3.1.5. Framework

This document proposes to adapt the principles from the Declaration of Paris (2005)[9] for guiding the development of the training strategy among EPISOUTH countries.

Table 2: Principles of the training strategy for the EPISOUTH region

PRINCIPLES FOR TRAINING STRATEGY[10] FOR THE EPISOUTH REGION
Ownership - EPISOUTH countries set their own training priorities for enhancing their PH institutions *Alignment* – Donors align with these objectives promote the use and enhancement of local and regional resources. *Harmonisation* - Donors discuss with EPISOUTH Network and national institutions coordinate action plans and funding strategies in order to avoid duplication in training activities in the region. *Results* – Training objectives and activities are results driven. Measurable indicators are identified for evaluation. *Mutual Accountability* – EPISOUTH partners are accountable for achieving expected results. Donors should assume follow up of the activities and together with partners evaluate the accomplishment of objectives.

The same year in the World Health Assembly, 194 countries unanimously adopted the International Health Regulation (IHR 2005), the most relevant and comprehensive agreement involving the entire EPISOUTH region. Other lateral or multilateral agreements are currently in effect among the Mediterranean and Balkan countries for improving communication and response for any public health event of international concern.

Focus on training, despite important heterogeneity in the access to and quality of training among the 26 countries participating in EPISOUTH, sub-regional training initiatives in public health medicine and epidemiology are available and different training related "networks", institutions, agencies and/or associations operate in the region at different levels.

Academic links between universities are usually reflected in common projects and exchange of professional. Public health schools (usually between academic and applied training) are associated in the European region in ASPHER (Association of Schools of Public Health in the European Region), TEPHINET (Training in Epidemiology and Public Health Intervention Network) associates over 40 FETPs all around the world. Other agencies such as WHO promote and deliver short training courses at national and WHO-regional level for helping countries to fulfil international commitments and for developing national action plans.

[9] General commitment endorsed in the High-Level Forum on Aid Effectiveness, following the Declaration adopted at the High-Level Forum on Harmonisation in Rome (February 2003) and the core principles put forward at the Marrakech Roundtable on Managing for Development Results (February 2004).

[10] Adapted from Paris Declaration 2005

However, there is no initiative for promoting training activities of common interest for the Mediterranean and the Balkans. Collaboration within the region is usually fragmented and driven by administrative borders and political rather than public health interests.

This strategic document is not meant to replace but to complement actions for improving training capacities and access to training in the EPISOUTH region. EPISOUTH could play an important role in promoting regional training activities, discussion fora, multi-institutional agreements, training opportunities and could help improving the link between surveillance and epidemiological investigations and public health action. However, there are many other actors including international organizations, multilateral institutions, Ministries of Public Health, Universities, Public Health institutes, Schools of PH, Public Health Networks, reference laboratories, certain NGO's, etc playing an important role in training in the region that could be involved in developing this strategy or participate in specific activities.

The table below shows the general framework and training actions proposed for the development of training strategy for strengthening surveillance and response systems in the Mediterranean and the Balkans.

Table 3. Strategic lines, actions, target groups and players for improving core training capacity in the EPISOUTH region

EPISOUTH TRAINING STRATEGIC LINES AND ACTIONS						
Strategic lines	Training and capacity building strategic actions	Targets				Potential Players
		New PH workforce	PH staff	Seniors PH staff and Decision Making	PH related professionals	
1.Strengthening existing resources	Mapping existing training resources in the region and promote links between existing training facilities	X	X	X	X	EPISOUTH, WHO, EC, ECDC, PH Institutes, National Schools of PH, MoH, TEPHINET, EpiNorth, NGO´s, etc .
	Promoting academic certification of current training activities	X	X	X	X	ECDC, TEPHINET, Universities in and out Episouth region, EpiNorth Others
	Disseminate and increase awareness about training activities available in the region.		X	X		EPISOUTH, WHO, ECDC, EC, TEPHINET
	Cascade training strategies at local & peripheral level		X	X	X	MoH and PH Institutes, WHO, Nat. Schools of PH
2.Innovative training and capacity building	Face to face training + E- learning complementary formula		X	X	X	Universities, WHO, Nat. Schools of PH
	Creating E- advisory network for technical consultations		X	X	X	EPISOUTH, Universities, MoH and PH Institutes, WHO, Nat. Schools of PH , NGO´s, Others
3.Promote interdisciplinary approach in Public Health surveillance	Identify, define, agree and disseminate areas of interest for interdisciplinary approach to surveillance and response			X	X	EPISOUTH, WHO, EC, ECDC, PH Institutes, National Schools of PH, MoH, TEPHINET, EpiNorth, NGO´s, among others

	Promote discussions for adapting inter-disciplinary approach within curricula			X	X	WHO, EC, ECDC, PH Institutes, National Schools of PH, MoH, TEPHINET, EpiNorth, NGO,s, etc.
4.Establishing collaborative initiatives	To promote implementation of "strategic regional FETP" in specific geographical areas of interest for instance North Africa and The Balkans	X	X			EPISOUTH, WHO, EC, ECDC, PH Institutes, National Schools of PH, MoH, TEPHINET, EpiNorth, etc.
	External short periods of "on job" training/or visits in EPISOUTH associated institutions		X	X	X	EPISOUTH, WHO, EC, ECDC, PH Institutes, National Schools of PH, MoH, TEPHINET, EpiNorth, NGO's, etc.
5.Monitoring and evaluation	Identification of training impact indicators		X	X	X	EPISOUTH, WHO, EC, ECDC, PH Institutes, National Schools of PH, MoH, TEPHINET, EpiNorth, Ngo´s, etc.
	Develop methodological guides of "good practices" and benchmarking for adult training in applied PH and Field Epidemiology		X	X	X	EPISOUTH, WHO, EC, ECDC, PH Institutes, National Schools of PH, MoH, TEPHINET, EpiNorth, Ngo´s, etc.

3.1.6. Monitoring and evaluation

Evaluating training activities should address both efficiency and effectiveness. While efficiency is usually evaluated in most training programmes indicators for evaluating effectiveness in this domain are not developed.

EPISOUTH may allow for the necessary space for proposing, discussing and agreeing on the set of indicators for evaluating the mid and long term impact of training activities in the region. An institutional approach should be adopted in this process. The following table provides some examples of potential indicators for monitoring effectiveness.

Table 4. Example of indicators for monitoring and effectiveness measure and the potential players

MONITORING AND EVALUTATION				
Strategic lines	Training and capacity building strategic actions	Indicators		Potential Players
		Monitoring	Effectiveness	
1. Strengthening existing resources	Mapping existing training resources in the region and promote links between existing training facilities	- Defined number of training resources mapped (for the different target groups New PH, PH Staff, seniors and decision makers, PH related professionals)	- Percentages of increased use of the mapped resources	EPISOUTH, WHO, EC, ECDC, PH Institutes, National Schools of PH, MoH's, TEPHINET, EpiNorth, NGO´s, etc
	Academic certification of current training activities	- Increase percentage of mapped training with academic certification - Increasing percentage of PH staff within Episouth PH institutions with obtained academic certifications	- The proportion of professionals with certification being increased during X consecutive years at central, peripheral and local level - Certification request included in the profile for employability in Surveillance institutions within EPISOUTH region	ECDC, TEPHINET, Universities in and out Episouth region, EpiNorth Others
	Disseminate and increase awareness about training activities available in the region.	- Increasing percentage of PH professionals (new, seniors and decision makers) within Episouth whom applied to mapped courses - Number of users of the EPISOUTH directory courses	- Decreasing time periods from the last course attendance among seniors and decision makers working in the institutions of Episouth	EPISOUTH, WHO, ECDC, EC, TEPHINET
	Cascade training strategies at local & peripheral level	- Increasing percentage of PH staff within Episouth PH institutions participating in internal cascade training at local and peripheral levels.	- Cascade training strategies included in the regular schedule of the institutions within the region - Tools and new procedures from learnt in training applied in routine of institution	MoH and PH Institutes, WHO, Nat. Schools of PH
2.Innovating training and capacity building	Face to face training + E- learning complementary formula	- Increasing percentage of PH staff within Episouth PH institutions participating in face to face + E-learning at central, local and peripheral levels.	- Face to face + E-learning strategies included in the regular schedule of the institutions within the region - Tools and new procedures from training implemented in the general procedures	EPISOUTH, Universities, WHO, Nat. Schools of PH

	Creating E-advisor network for technical consultations	-Directory of experts for technical supervision and consultation -Number of consults received by each advisor - Discussion for a created	- Linkages created from specific consults made through E- advisors	EPISOUTH, Universities, MoH and PH Institutes, WHO, Nat. Schools of PH , NGO´s, etc
3. Promote interdisciplinary approach in Public Health surveillance	Identify, define, agree and disseminate areas of interest for interdisciplinary approach to surveillance and response	-Number of non PH or Epidemiology related areas identified	- Linkages created from non -EPI fields made through - Percentage of multidisciplinary ad hoc teams established as consequence of the actions within the region	EPISOUTH, WHO, EC, ECDC, PH Institutes, National Schools of PH, MoH, TEPHINET, EpiNorth, NGO´s, etc
	Promote discussions for adapting inter-disciplinary approach within curricula	-Number of multidisciplinary discussion fora of PH concern created	- Number of modification made in the curricula - Reports and scientific papers on the issue submitted	EPISOUTH, WHO, EC, ECDC, PH Institutes, National Schools of PH, MoH, TEPHINET, EpiNorth, NGO,s, etc
4. Establishing collaborative initiatives	To promote implementation of "strategic regional FETP" in specific geographical areas of interest for instance North Africa and Balkans	- Number of preparatory meetings for establishment of a regional FETP - Number of e-mails with new FETP	- Preparatory documents for FETP establishment - Letters of agreements from institutions involved for FETP establishment	EPISOUTH, WHO, EC, ECDC, PH Institutes, National Schools of PH, MoH, TEPHINET, EpiNorth, etc
	External short periods of "on job" training in EPISOUTH associated institutions	- Number of candidates for "on-job trainings" -Proportion of PH staff demanding "on-job training" - Number of stays during a specific period	- Implementation of tools/procedures learnt through "on job training" periods in the institutions within the region	EPISOUTH, WHO, EC, ECDC, PH Institutes, National Schools of PH, MoH, TEPHINET, EpiNorth, NGO's, etc
5. Monitoring and evaluation	Identification of training impact indicators	- Set of indicators created - Number of sets applied to specific actions	- Number of specific mentions to the implementation of training indicators within the countries	EPISOUTH, WHO, EC, ECDC, PH Institutes, National Schools of PH, MoH, TEPHINET, EpiNorth, Ngo´s, etc
	Develop methodological guides of "good practices" and benchmarking for adult training in applied PH and Field Epidemiology	- Number of documents written - Number of uses of the guides	- Changes procedures performed in routines within the institutions within the region	EPISOUTH, WHO, EC, ECDC, PH Institutes, National Schools of PH, MoH, TEPHINET, EpiNorth, Ngo´s, etc

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3.2. WP 6 Epidemic Intelligence & Cross-Border in the Mediterranean Countries and Balkans

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3.2.1. Epidemic intelligence & Cross –Border: Context and Justification

General Context

In an environment where circulation of goods and people is constantly increasing, epidemic risk is also growing. To fulfil their public health missions, States must not only exert a continuous monitoring of their population's health, but also build the capacity to identify emerging international health threats that can affect their population. The SARS outbreak in 2003, the ongoing avian influenza sporadic outbreak, the A/H1N1 pandemic but also the 2007 chikungunya outbreak in Italy, illustrate the nature and the possible dimension of these threats. In order to translate collected data into appropriate action, information sharing is crucial especially for cross-border events where harmonised, synchronised and prompt responses is needed to effectively contain and manage such event.

Mediterranean and Balkan countries share the same ecosystem, the same history and common populations and health issues. Flows of people and goods across the Mediterranean are very important and involve large annual multilateral movements of tourists, people visiting family and relatives and legal and illegal immigration flows.

Despite of these close epidemiological and historical links, countries of the Mediterranean and the Balkans belong to different international and political systems: they are part of 3 different WHO regions (AFRO, EMRO and EURO) and only a third are members of the European Union (EU). Hence, sometimes bordering countries have no direct formalised channels with their direct neighbours (e.g. Algeria belongs to the AFRO region and Israel to EURO while their direct neighbours belong to EMRO), which could result in unnecessary delays in communication.

In order to improve health security, at regional and international levels, supranational organisations have developed specific surveillance and alert networks but they are not interconnected and none can fulfil the need of enhanced health information exchange across the Mediterranean and Balkan area. One of EpiSouth objectives is to bridge this gap in developing two different but closely connected axes: Epidemic Intelligence (EI) and cross-border (CB) alerts.

State of the art at the beginning of EpiSouth

It is worth remembering that at the very beginning, EpiSouth was initiated by only 9 EU countries with funds ensuring their participation only. Although, since the beginning, the objective was the inclusion of all Mediterranean and Balkans countries, it is only at a second stage that non-EU countries were asked to join and that additional sources of funding allowing participation of non-EU countries were identified. This initially EU-only focused initiative generated an unbalanced representation of EU and non EU countries and therefore created or reinforced a sceptical feeling. Concerns were particularly high regarding epidemic intelligence and cross border activities and the use of information. First, Epidemic Intelligence (EI) was a relatively new concept which was not familiar to all countries representatives. Particularly, the EI component was somehow perceived as potentially intruding in countries internal health affairs while not always perceived as potentially ensuring an even circulation of information. For that matter, during the first EpiSouth meeting held in Rome in March 2007, many non-EU countries raised their concerns and sometimes their unwillingness to participate to

EI and or CB activities. Other concerns were also raised regarding the lack of official mandate for EpiSouth, the possible duplication with existing networks and the legal implications especially with international health regulation (IHR). These elements representing potential threats were duly taken into account for the construction of the EI and CB activities.

The first step was to assess the EI and CB activities implemented in the respective countries i.e. strategy, objectives, resources, outputs and expectations. This was carried out through a survey, among a sample of countries representatives of their respective sub-region (see *http://www.episouth.org/outputs/wp6/WP6_Report-Assessment_survey-FINAL.pdf*). Results of the survey indicated that:

- EI perception and understanding were quite homogenous both in terms of expected outcomes and fields of interest. A common interest in improving health security was noted. The contribution of EI and CB for anticipating and responding to health threats was highlighted.
- Most countries perceived a need to formalise their specific methodology and criteria.
- Several countries had not defined procedures to verify or validate information originating from non official sources.
- Most countries have developed retro-information procedures privileging electronic supports.

Taking into account both the concerns raised in Rome and the results of this survey, a strategy based on confidence building and on a progressive approach aiming to familiarise focal points with the EI and CB concepts was adopted. The main steps being:

- The clear separation of EI activities from CB: EI being initially focused on health events occurring outside EpiSouth countries only.
- Phasing the implementation of both components: first EI and at a later stage CB activities.
- Formalising the different means of communication: electronic weekly bulletin and thematic notes for EI and a secured web based platform for CB
- Endorsement by all countries of all major steps (EI criteria, public release of EI bulletin, implementation and functionalities of the CB platform, etc.)
- Active involvement of the WP6 Steering group (EI+CB), The steering team was initially composed by Croatia, Israel, Jordan, Malta, Morocco, Montenegro, Palestine and Tunisia representing the 4 EpiSouth sub-regions (Balkans, South Europe, North Africa and Middle-East). On a later stage, Croatia withdrew and was replaced by Kosovo.

Current perception

Despite the difficulties met at the beginning, 17 non-EU countries have joined EpiSouth, highlighting the common need to exchange health information across the Mediterranean and the Balkans. In practice, perceptions and understanding of both EI and CB have notably evolved since the first meeting in 2007. An evident sign of improvement is the high countries response rate to information requests regarding the A/H1N1 pandemic.

3.2.2. Overview of activities and achievements

The results of activities implemented during the 3 past years correspond to a gradual implementation strategy. During the first phase, the project focused on the evaluation of the regional context and the elaboration of adequate strategies acceptable by the countries. The active involvement of participating countries either through their representative within the WP Steering Team or during plenary session was actively promoted. This process “somewhat slow” was essential to build on confidence and create an ownership feeling.

Epidemic Intelligence

The EI objective is to detect, using formal and informal sources (media internet…) internationally occurring health threats that may affect EpiSouth countries’ population. Most threats are related to infectious diseases though investigation also covers non-infectious issues (e.g. chemical or environmental threats, products contamination, etc). Informal information is mostly accessible via the Internet and thus theoretically available to all. In practice access to relevant information is very difficult and limited. The volume of information is considerable and the signals are often multiple, originally very diverse, sometimes contradictory and their

reliability is highly variable and questionable. This tedious process requires specific dedicated resources including qualified and experienced staff, the use of specific EI tools and a strict methodology to be of any use, information must be collected, sorted out, verified, analysed and, when necessary disseminated (detail of methodology provided in the annex).

In all countries devoted resources to public health are limited and duplication should be minimised as much as possible. The EI carried out by EpiSouth is initially based on the expertise developed since 2002, by the Institut de Veille Sanitaire (InVS). Hence, the centralised information processing and the dissemination of verified information contribute to reduce the unnecessary duplication and allow countries to focus available resources on specific needs.

Cross-border

This second strategic direction aims to provide a secure communication support allowing countries to share health information and alerts of common interest. Confidentiality must be guaranteed; secure communication is imperative as press coverage regarding certain threats may result in general public anxiety. Since November 2009, the implemented secure web-based platform allows EpiSouth countries to share relevant information on a voluntary basis. To date, this EpiSouth early warning system is the only one allowing for the rapid, easy and secure sharing of such information across 26 countries of the Mediterranean and the Balkan regions. The information posted on the platform is also immediately available to WHO (including EMRO and EURO regional offices), ECDC and the European commission (DG-Sanco).

Majors outputs

Epidemic Intelligence criteria and principles were adopted in Athens in December 2007. The most appropriate type of communication support was developed and implemented accordingly:

- The early warning CB platform, tailored to EpiSouth needs, is operational since November 2009. It is too early to assess its use and performances, yet 14 messages have been posted on the platform including 6 on the A/H1N1 pandemic.
- The EpiSouth electronic weekly epidemiological bulletin (e-Web) has been issued since 19th March 2008 and is available on the EpiSouth website since April 2008. The e-Web provides a weekly summary of new health events occurring in both non-EpiSouth and EpiSouth countries (providing that information is already public or directly provided by the affected EpiSouth country). Events are presented in a public health perspective. The e-Web aims neither to present an exhaustive list of all "international health alerts" nor to provide weekly updates on previously reported health crises. E-Webs are posted every Thursday on the EpiSouth website public area. Between the 19th of November 2008 and the 18th of February 2010, 100 e-Web were released. They reported :
  - 390 events corresponding to criteria adopted by EpiSouth countries.
  - Among the 390 events, 374 related to infectious diseases.
  - 274 events occurred outside EpiSouth region while 73 occurred within EpiSouth it.
- Thematic notes: They are short documents produced to complement other communication formats especially the e-Web. They are produced when a rapid and wide dissemination is required, in order to provide in-depth analysis of a more complex event (e.g. multiple countries epidemics) or to update knowledge on a given health topic. They provide background information, facts on the current health event and element for its interpretation. They are produced on an *ad hoc* basis and target a wider audience of public health professional and stakeholders. They are disseminated using the e-web mailing list and are posted on the public section of the EpiSouth website. To date, 11 notes have been posted under this section.

Type of Events reported

Since 2006, several health crises have illustrated the contribution of EpiSouth to streamline information flow in the region. They encompassed a wide range of heath events such as international health threats (e.g. A(H5N1) outbreaks), potential cross regional health crisis (Al Khurma virus in Saudi Arabia, cholera in Iraq, CCHF in the Black Sea area, etc.), potentially undetected threat (West Nile in Israel…), hoaxes and rumours (false Al Qaeda related plague in Algeria) and Intra-EpiSouth potential cross border risk (e.g. rabies Slovenia Italia, hepatitis A France-Turkey) and more recently A(H1NI) [see § 3.2.5 - opportunities]

3.2.3. Major stakeholders, audiences and targets

The EpiSouth Countries

The objective being to disseminate appropriate information collected by EI and CB for the region, the primary target audience is the 26 participating countries. Initially, information was sent to EpiSouth focal points only. EI publications are now more widely disseminated. Focal points were encouraged to forward EI documents to their concerned national audiences, according to Counties. They can be: fellow units of their Ministry of health (MoH) and Public Health Institutes (PHI), provincial health authorities, national reference laboratories, sentinel network: at a second stage, these outputs were also made available on Internet and thus accessible to a wider audience.

Major Epidemic Intelligence Stakeholders: WHO and ECDC

The major regional EI and CB stakeholders are also among the priority targets, and in the first place WHO and ECDC. An overview of the main partners and international organisations is given hereafter:

- WHO : Global mandate
  - Under IHR (2005), WHO has a worldwide mandate that includes EI responsibilities.
  - WHO, at central and regional level, also coordinates and contribute to several alert and surveillance networks of major interest of EpiSouth. For instance the Global outbreak alert & response network (GOARN), Global alert International network of food safety authorities (INFOSAN), Global Early Warning and Response System (GLEW), EMRO Regional Alert Surveillance and Detection of Outbreak Network (RASDON), EURO centralised information system for infectious diseases (CISID), AFRO epidemic alert and verification unit (EAV), etc.
- ECDC :
  - The core mandate of ECDC is "to identify, assess and communicate current and emerging threats to human health from communicable diseases." Under this mandate, epidemic intelligence is a key activity of the centre, focusing on potential threats for the EU. The outputs are communicated through the weekly CDTR.
  - EU's early warning system (EWRS)
  - ECDC/EU diseases surveillance networks: EISN (Influenza); FWD (food- and waterborne diseases and zoonoses); ENIVD/CLRN (imported viral diseases and laboratory); EUROTRAVNET (travel and tropical medicine); VBORNET (medical entomologists and public health network) ESSTI (STI); EU-IBIS (invasive bacterial infections); EuroHIV (HIV/AIDS); EuroTB (tuberculosis); IPSE (hospital acquired infections); DIVINE (food-borne enteric viral infections); EARSS (Antimicrobial resistance); EUVACNET (Vaccine preventable Diseases) EWGLINet (Legionella), SHIPSAN (Health threats in cruise ships), etc.
- EU commission: Rapid Alert System for Food and Feed) (RASFF) and Medical Information System (MedISys)
- OIE: World Animal Health Information Database (WAHID): As most of emerging disease are primarily zoonose, the veterinary surveillance component is essential.
- InVS: has a mandate for public health surveillance including EI for France. Since the implementation of EI by EpiSouth, InVS has been a privileged interlocutor and provided of verified EI information (Bulletin hebdomadaire International - BHI).

Although, supranational organisations have developed their own EI strategies, the review of the activities of the past 3 years proved that EpiSouth can be a potential primary source of information, and as such provide complementary added value.

- For instance, in January 2009, a rumour mentioning "plague related deaths in an Al Qaeda terrorist camp" in Algeria raised international concerns. This hoax was rapidly and officially contradicted through the combined action of Episouth EI team and the active involvement of Algerian focal points, hence allowing EpiSouth to be the first official source of publicly available information.
- An example of active synergy is the of the epidemiology of Crimean–Congo haemorrhagic fever in the Balkan and the countries of the Black Sea that was carried out in collaboration with the countries (Albania, Bulgaria, Greece, Iran, Kosovo, Russia and Turkey), WHO Regional Office for Europe, InVS and EpiSouth EI team.

- Another example is the provision by EpiSouth of an update of the A/H1N1 in the EpiSouth catchments area and its inclusion in the ECDC weekly disease communicable disease threat report (CDTR).

Of course, the role and implication of WHO, ECDC and other EI stakeholders goes far beyond the status of "simple" recipients and active collaboration has been initiated to strengthen collaboration. Furthermore, this collaboration should be a constantly evolving process.

Other Stakeholders

Other regional networks, though not actively engaged in EI activities, are potential audiences and partners:

- The South-Eastern Europe Health Network (SEE). It was founded in 2001 by 8 Balkan countries and joined in 2002 by 4 additional Balkan and central European countries. SEE aims at strengthening communicable disease surveillance and response and to work on harmonisation with those of surrounding EU countries.
- Middle-East consortium on infectious disease surveillance (MECIDS) was created in 2002 to improve regional cooperation on disease surveillance with the objective to promote long-term health, stability and security in the region. Its members are Israel, Jordan and Palestine.

Articulation with pre-existing systems

Obviously, the EpiSouth EI and CB activities especially the early warning function takes its full scope when replaced in the global context. First of all, under Intentional Health Regulation (IHR) but also within European Union regulation, countries have mandatory obligation to notify health threats. However, both systems have specific objectives (e.g. worldwide versus regional), focuses (e.g. EU only countries) and legal constraints that limit information sharing (e.g. information shared in some systems are mandatorily restricted to a limited list of users and extension of the beneficiaries –event to another secure system- could be very difficult to obtain). The main objective of the EpiSouth platform is thus to allow the circulation of information that would not respond to mandatory notification criteria, or that could not be readily accessible to other (e.g. information posted on EWRS is accessible to EU countries only). EpiSouth early warning platform acts in synergy and conjunction with these mandatory systems and aims at facilitating the dissemination of information that would otherwise not be possible or too delayed (not timely).

EI and CB activities implemented in EpiSouth differ fundamentally from the previously mentioned diseases surveillance networks the mains differences could be summarised as follows:

- EpiSouth CB is not an infectious diseases surveillance network. It aims at determining public health threats and disseminates information. It is not restricted to a type of disease or infection (non infectious health event are also included), there is no regular collection of data and there is no objective of exhaustivity or representativity as it is the case for surveillance.
- EpiSouth EI is an early warning system i.e. it is not restricted to the geographical area corresponding to participating countries and allows anticipation regarding international threats.
- Although, some of the diseases surveillance systems include non-EU countries, none covers the 26 EpiSouth countries.

Therefore, EpiSouth EI-CB and diseases surveillance systems are complementary, as disease surveillance network could be the source of information that would be efficiently disseminated to all Mediterranean countries by EpiSouth. Likewise, EpiSouth could be a source of information for the disease surveillance systems especially regarding areas out side of their catchment area. It can also complement the other EW systems.

3.2.4. EpiSouth EI-CB experience and lessons learned

Strengths

A progressive approach: The separation between EI and CB was somehow artificial as both components are very often intricate. This step was important to build confidence in the network. It was essential to familiarise focal points and therefore countries, with the EI concept but also to demonstrate that EpiSouth would be useful for the countries. By starting to provide EI information corresponding to their interest and needs before asking countries to share their own data, EpiSouth demonstrated its usefulness and trustworthiness. This progressive approach allowed relevant countries focal points to overcome the difficulties and particularly the suspicion expressed by participants at the beginning of the project. Now EI is well

established and countries have accepted the CB activities implementation and have started to share information.

A WP steering group The close association of countries to the EI-CB development through the establishment of a specific steering group was essential. First, it helped obtain a representative participation of the all four EpiSouth areas. It was also essential to better appraise needs and expectations of Mediterranean countries. Moreover, it was necessary to understand their constraints and reserves and to develop along with them strategies to over come those. Support and collaboration of the steering group members was important, positive and regular.

The quality of outputs EpiSouth focal points globally perceived EI outputs as pertinent and useful. There is still room for improvement, but this result provides a solid base to build upon in the future.

The network's value: Although EpiSouth is not a formal institution, the focal points of the non-EU countries were officially designated by their ministries of health and therefore represent their countries. The involvement of focal points at a senior but technical position (as opposed to political) was also essential to overcome political difficulties and tensions between countries. Furthermore, the human factor i.e. the trust and relations that individuals have been able to develop is invaluable.

Weaknesses

Heterogeneity of focal points: EpiSouth development's including integration of non-EU countries has been gradual. Focal points were appointed by their respective ministers of health and were selected according to their expertise regarding the activities implemented by one of the four technical initial work-packages:

- Most countries selected alert and communicable diseases surveillance specialists, but some countries chose (for at least one of two focal points) vaccine preventable diseases, zoonoses or training specialists.
- Most non-EU countries appointed a representative of the national public health institute (NPHI) and a representative of the MoH while for the 9 EU countries focal points are all are members the NPHI.
- In a minority of countries, focal points were also IHR focal points.

If this flexibility was initially necessary to facilitate countries' participation, the experience gained over the past three years showed that this heterogeneity resulted in complications for the EI-CB activities:

- Difficulties for some focal points to have access to information issued by their national early warning and surveillance system.
- Difficulties or delays in obtaining decision/agreement regarding information and alert sharing.
- Insufficient involvement of MoH who are often insufficiently aware of EpiSouth and related issues.

Interoperability of systems: EpiSouth addresses uncovered needs and for that purpose it should have its own communication tools and especially an early warning platform. The collaborative process has been initiated to obtain interoperability with other systems, yet achievements are insufficient especially taking into account the long term perspective.

Limited resources: Resources allocated to the implementation of EI and CB activities were initially tailored for 9 countries. In regard to the unexpectedly rapid adhesion of the 17 non-EU countries, the resources were grossly underestimated.

Number of participating countries: Although, the integration of all Mediterranean and Balkan countries was the objective, the number of targeted countries (n=28) and the heterogeneity of their surveillance and alerts systems does constitute a limitation that needs to be taken into account.

3.2.5 The Way Forward: Opportunities, threats and challenges

Opportunities

Mediterranean and Balkan countries share the same ecosystem and therefore have a common interest. The first 3 years' objective has demonstrated the feasibility of establishing such a network and laid the groundwork for future euro-Mediterranean cooperation. This first phase of 3 years has enabled the constitution of a strong network despite a difficult political environment (notably in the Middle East), and financing conditions favouring an unbalanced representation of EU and non-EU countries. The rapidity of the adhesion of the 17 non-EU countries is encouraging. The participation of countries to the project and the exchange of information are uneven but promising. This underlines the importance given by countries to the EpiSouth objectives. EpiSouth has effectively demonstrated that it met a need frequently expressed by the participating countries: the

pooling of scarce available resources both in terms of EI and CB. This momentum must therefore be maintained. Although, the current funding for EpiSouth ends in June 2010 and the second phase, called EpiSouth-plus is in preparation.

The A/H1N1 pandemic has vividly illustrated the rapidity of the spread of an infectious agent. It also justified the need for focused information especially at the earliest stage of the pandemic when countries were all in need of information to set up their national policies (cases and contacts management, immunisation strategies…). The first EpiSouth communication was issued on 25th April 2009 and over 200 documents synthesising internationally available information were issued (most are available on the EpiSouth website). They provided various information including monitoring of affected countries (necessary for establishment of national cases definition), analysis of epidemiological data made available from the first affected countries (North America and Southern hemisphere), dynamics of the pandemic, description of cases and deaths, group at risk, or on the Hajj pilgrimage in a pandemic context. Information focused specifically on the Mediterranean area were although disseminated, especially EpiSouth countries shared data regarding their confirmed cases and deaths, national strategies for cases and contact management and immunisation. For instance, these data allowed documenting the role played by population movements within EpiSouth area in the dynamic of the pandemic in the region.

Threats

Lack of formal institutional framework:So far, EpiSouth has been built outside any formal institutional framework. Initially, the flexibility provided by the "informal" network allowed developing strategies that helped reach acceptability for activities such as EI and CB, initially considered controversial. In the short term, this flexibility will continue to be an asset especially for the consolidation of establishment of a Mediterranean early warning system. Nevertheless, in the medium and long term, this lack of formal framework will be a major obstacle to the survival and functioning of EpiSouth.

Sustainability and allocation of adequate resources: Intricate with the absence of institutional framework, the lack of sustainable sources of funding constitutes a major threat to the future of EpiSouth. Funding sources have to be identified on short notice and on an ad hoc basis which hinders establishing long term plans to allow necessary time for an adequate involvement of all participant countries and does not secure sustainable balanced functioning.

Visibility and governance: EpiSouth has demonstrated feasibility but it remains insufficiently visible. It is not known enough by policymakers and major stakeholders. Moreover, governance rules securing balanced participation of countries have not yet been defined and agreed upon. If these issues were not to be addressed, some countries could reconsider their participation.

Interoperability of systems: The identification of appropriate and functional strategic and technological solutions that would allow the interoperability of the existing early warning and alerts systems will not lay with EpiSouth only. It will also depend on the willingness, the interest of other early warning and alerts systems as well the feasibility (including legal aspects).

Network dynamic: The added value of personal involvement, trust and rapport that have been established over the past 3 years should not be underestimated. The replacement of too many focal points could hamper this dynamic.

Challenges

Keep momentum: Although the first years demonstrated feasibility, acquits are still fragile. EpiSouth must now meet the expectations it has generated. Beyond financial constraints, the success of EpiSouth lies in its ability to establish a genuine partnership between countries. For the second phase, it will be essential to involve more actively countries of the South Shore and the Balkans. This involvement should materialise into concrete actions, including through the allocation of responsibilities and provision of adequate resources to non-EU countries.

Governance: The Identification of appropriate and functional governance strategies is certainly one of the major challenges that EpiSouth will have to face in the coming months. If this is the case for the whole project, it is of pristine importance for EI and CB activities. As a matter of fact, beyond the willingness of participating countries, it is the establishment of balanced governance and decision making process that will allow developing the trust necessary for the full-fledged construction of a sustainable and efficient Mediterranean

early warning system. This governance strategy will have to find a good compromise to allow smooth operation while fully involving the countries and ensuring a balanced representation of EU and non-EU countries. Because the number of countries (n = 26), the systematic involvement of all countries in the all decision making steps is not practically feasible. Alternatives will have to be identified. During the first phase, the establishment of steering committees for each work-package and the involvement of countries from different sub-regions have proved very useful. This strategy could be generalised to the entire project providing the rules of representation in the steering committees (EpiSouth and work programmes) are formalised (method of selecting representatives, period of performance, etc.).

A formal institutional framework: As previously mentioned the lack of formal institutional framework will rapidly constitute an obstacle. It is its integration into a formal institutional framework that will give EpiSouth its true dimension. The Union for the Mediterranean (UfM) aims to strengthen Euro-Mediterranean activities but faces difficulties identifying concrete actions in the field of health. EpiSouth is currently the only health project covering both shores of the Mediterranean and the Balkans. In this context, UfM could represent a potential institutional framework.

Role of national focal points: To ensure the full and active involvement of all countries in early warning activities, national focal points terms of reference should be defined.

- To ensure an even representation, for all countries (including EU) one of the focal points should be from the MoH and the other from the National Institute of Public Health (according to countries specificities).
- Focal points should have institutional responsibilities in terms of early warning, surveillance of communicable diseases or response.
- At least one of the focal points (preferably both) should have an institutional position allowing access to alerts generated by the national alert and/or surveillance system but also to decide the appropriateness of sharing this information. For example, it could be focal points EWRS (for EU countries), IHR focal point, responsible for early warning systems, etc.

Interoperability of systems EpiSouth-plus will enable the further development of health information exchange in the region. A special focus will then be placed on CB alerts and EpiSouth will continue to require a specifically dedicated early warning system. Nevertheless, further reduction of duplication is essential. The synergy between WHO, ECDC and EpiSouth is not only desirable but essential. EpiSouth should identify solutions allowing bilateral interoperability and cross-fertilisation with pre-existing EI and early warning & alert systems and in the first place those supported by ECDC, the European commission and WHO (including regional offices).

Establish balanced communication exchanges: In regards to the early warning component, it will be determinative for all countries to actively participate. However, for EU countries, it will be crucial to strengthen the information exchanges with ECDC and European networks to secure fair ways of communication. The construction of a strong and balanced partnership being both a prerequisite and the best guarantee of success for EpiSouth.

Enhanced articulation with other work-packages: The strategy for EpiSouth-Plus is to re-focus the project on early warning system and strengthening national capacity. Mechanisms should be developed to enhance cross-fertilisation and collaboration with the other work-packages especially those involved in the set up of a reference laboratory network, capacity building and exchange of surveillance data.

3.2.6. Conclusions

EpiSouth is the only project of this nature, covering both sides of the Mediterranean. It provides a real opportunity to create a strong link between the EU and all participating countries. It also constitutes an essential source of information to strengthen health security across the Mediterranean. This project is still under construction, the issues and challenges ahead are significant. If the beginning is very promising, the success of this project will be determined by the continued willingness of countries to contribute actively, the provision of adequate resources for all countries and the ability to create a strong and balanced partnership in a formal institutional framework.

ANNEX

Introduction to Epidemic Intelligence and Cross-Border Methodology

1. Cross-border & Epidemic Intelligence

In an environment where circulation of goods and people is increasing, the epidemic risk is also growing. To fulfil their public health mission, states must not only exert a continuous monitoring of their population's health, but also to set up a capacity to identify emerging health threats at international that can affect their population. The SARS outbreak in 2003 and the ongoing avian influenza outbreak illustrate the nature and the possible dimension of these threats. Infectious diseases as well as other possible health threats do not know geographical borders. For highly infectious diseases and also chemical or environmental threats, the early detection of the event can have a major impact on implemented control measures and their outcome. Epidemiological surveillance and Epidemic intelligence are crucial instruments needed by public health personnel to contain the spread of infectious diseases. In order to translate collected data into appropriate action, i.e. to contain the further spread of diseases, sharing of information is crucial especially for cross-border health events where harmonised, synchronised and prompt responses by more than one authority are needed to effectively contain the spread of the disease.
In attempt to contribute to the strengthening of early warning capacities of the Mediterranean countries, the EpiSouth dedicated WP6 has been divided in 2 specific components

- Monitoring of health events of international importance, i.e. "International Epidemic intelligence";
- Regional Cross Borders issues, i.e. implementation of a "Mediterranean Early warning system"

2. International Epidemic Intelligence (E.I)

There are many supranational and global networks which collect, analyse and disseminate information relating to health monitoring and alerting.

This information is mostly accessible via the Internet. E.I is based on already collected information circulating in various networks and on the Internet. Theoretically information in the Internet is available to all, but in practice relevant information is limited. The volume of information is considerable and the signals are often multiple, originally very diverse, sometimes contradictory, more or less accurate and their reliability is highly variable. To be of any use, information must be collected, sorted out, checked, analysed and, when necessary disseminated. This information processing is one of the added values provided by EpiSouth WP6. The Epidemic intelligence developed for EpiSouth was initially based on the expertise developed by the Institut de Veille Sanitaire (InVS). Since 2003, InVS has developed and implemented International Epidemic Intelligence to respond to France specific needs.

2.1. Objectives and Principles

E.I objective is to detect any threat occurring abroad that may affect EpiSouth population in their national territories or abroad.E.I. must deal with several, often competing principles. The system must be:

- Timely (the time between events occurrence, detection and dissemination of the information should be as short as possible)
- Sensitive (not miss potential threats)
- Specific (no false alarms)
- Reliable

2.2. Methods

Given the amount of information to process and to validate, a strict methodology is crucial to obtain the most reliable possible data. The methodology defined by the WP6 is to:

- Detect primary signals (crude and already processed signals);
- Sort these signals (through criteria developed specifically for this purpose);

- Verify and Validate
- Analyse and Interpret
- Disseminate when necessary using appropriate communication tools

2.3. Detection of signals

2.3.1. *Nature of signals*

The signals mainly concern infectious events and sometimes environmental or chemical issues. These may include:

- Crude signals (untreated) from various sources, most often limited to the description of events (no or little information of a scientific nature)
- Secondary signals (already treated), such as alerts from other countries or institutions

2.3.2. *Information Sources*

Sources that can generate pertinent information regarding potential health threats are relatively scarce:

Official sources

These are generally reliable, but they are often not compatible with an early warning system (time validation, transmission, etc.). Information originates:

- Directly from states :
  - Ministries of Health,
  - National Public Health Institutes,
  - National reference laboratories, etc.)
- WHO Under IHR(2005), WHO has a worldwide mandate that includes EI responsibilities example of formal networks are :
  - Global outbreak alert & response network (GOARN),
  - Global alert International network of food safety authorities (INFOSAN),
  - EMRO Regional Alert Surveillance and Detection of Outbreak Network (RASDON),
  - EURO centralised information system for infectious diseases (CISID),
  - AFRO epidemic alert and verification unit (EAV), etc.
- OIE World Animal Health Information Database (WAHID): As most of emerging disease are primarily zoonose, the veterinary surveillance component is esse
- Inter agencies : WHO-OIE-FAO: Global Early warning and response system (GLEW),
- ECDC has mandate for infectious diseases and threat detection activities in the EU and coordinates:
  - EU's early warning system (EWRS)
  - Rapid Alert System for Food and Feed) (RASFF)
  - ECDC/EU diseases surveillance networks:
    - EISN (Influenza); Enter-net (Enteric Infections); ENIVD (Imported viral diseases); ESSTI (STI); EU-IBIS (invasive bacterial infections); EuroHIV (HIV/AIDS); EuroTB (Tuberculosis); IPSE (hospital acquired infections);
    - DIVINE (food-borne enteric viral infections); EARSS (Antimicrobial resistance); EUVACNET (Vaccine preventable Diseases) EWGLINet (Legionella), SHIPSAN (Health threats in cruise ships), etc.
- Regional epidemiological surveillance and alert networks as PACNET (Pacific), EpiSouth (Mediterranean), Carec (Caribbean), EpiNorth (North Europe) etc.
- International networks specific to a pathogen, e.g. DENG-NET (dengue) or FLU-NET (flu)

Non official sources

A) <u>WP6 created network</u>

This is a formal network of correspondents built up over the years first by InVS and now through EpiSouth. It relies notably on the feedback of verified and pertinent EI information by the

network's members. It is considered reliable. It is constantly growing and should continue to expand with an increasing EpiSouth visibility.

B) Data exchange networks

Some scientific data exchange networks, and in a first place ProMED, can also be a source of reliable signals. However, it is often difficult to know if the disseminated information had been previously validated, which may make them difficult to use.

Media sources and information networks

These are media based sources and other informal sources accessible via the Internet (news, forums, etc.). This type of potential sources and the volume of information they relay is very large. They are generally easily accessible but often of an uncertain reliability. They however make up the large majority of crude alerting signals. In regard to the extremely large volume of information produced daily, a manual treatment (e.g. through search engines like Google©) is impossible.

Therefore, epidemic intelligence is carried out using expert systems. These perform systematic and automated searches on the Internet for potential health threats signals.

WP6 has access to different systems either directly (e.g. MedISys developed by the European Commission) or indirectly through InVS (Gphin, Global Public Health Information Network, developed by Health Canada, government agency)

To improve these tools, the exchange of information and methodologies, the InVS International and Tropical department; therefore EpiSouth WP6 is collaborating with partners in this area.

2.4. Sorting (and selection) of signals

The number of crude and treated signals is very large. Therefore, it is important to define criteria to select the events subject to analyse and monitor. The following criteria help to answer three questions:

1) Can the health threats affect EpiSouth countries or their populations?
2) Is the threat serious?
3) Is there a need for information dissemination (e.g. emerging disease)?

2.4.1.Geographical criteria (population)

To be taken into account, the signal for potential health threats must meet at least one of the following criteria:

- Risk of spread to an EpiSouth country(ies)
- Risk of imported cases into an EpiSouth country(ies)
- Affect the main countries of origin of migrants in an EpiSouth country(ies)
- Affect a foreign country where a large EpiSouth country(ies) expatriate community reside
- Affect major tourist destinations
- Affect EpiSouth neighbouring areas

2.4.2. Criteria related to the nature of the threat

The seriousness of the event is evaluated by considering the following indicators:

- Mortality: number of deaths, fatality ratio mortality rates
- Morbidity: severity of clinical signs, number of patients, incidence rates
- Transmissibility/spread: number of affected people, specific population groups affected (e.g. medical staff)
- Previous knowledge of the causal agent
- Re-emergence of a previously controlled disease

2.4.3. Criteria related to the nature of the agent

- The nature of the infectious or non infectious agent in question is assessed in relation to:
- Its virulence / infectivity (if known)
- Its ability to transmit / spread

- Existence of prevention measures, as well as their availability
- Degree of knowledge: any change in the characteristics of a known agent (resistance to treatment, new serotype…) or any emergence of a new agent will be analysed as potentially dangerous

2.5. Validation

Only the signals that have been sorted on the basis of the above criteria and were retained will undergo the validation process. This stage consists of verifying and supplementing available information from additional sources. These information sources are chosen according to:

- The nature and location of events
- The reliability of the potential sources
- Their official character (on which will depend the further dissemination)

In this process, access to an already build up networks plays a major role. It is crucial to have direct contacts with potential resources people. These contacts will allow, on a case by case basis, to validate and complement information obtained from the primary signals. The data will be supplemented to get an as broad as possible picture of the event: epidemiological context, the number of cases, deaths, clinical signs, and additional scientific information (causal agent ...). Potential sources include:

- Peers (Institutes, Ministries of Health) from the affected countries
- Experts from WHO
- Coordinators of surveillance and alerts networks
- EpiSouth correspondents
- Laboratories (Pasteur Institutes, CDC, etc.)
- Representatives of NGOs
- Etc.

2.6. Analysis and characterization

WP6 Team performs an epidemiological analysis of each verified signal. This analysis presuposes the existence of data, even fragmentary and that are exploitable. Data should enable the best possible description of the event in terms of time / places / people (including risk factors). It could include

- Tables
- Epidemic curves
- Rate calculations (attack rate, case fatality, …)
- Maps
- Characterisation of at risk groups
- Current and historical trends, etc

At the end of this stage, the objective is to obtain an interpretation of the event in terms of risk factors, Public Health significance and potential implications for EpiSouth countries. Information is put into its right perspective and analysed in regards to available scientific knowledge.

At the end of this analysis process a signal will be qualified as "alert" or "no warning". In the latter case, according to the potential evolution of the situation, the signal will be classified as "signal to be followed up" or “rejected”.

2.7. Communication /feedback

In order to provide an efficient feedback to the countries, different communication tools have been proposed.

2.7.1. EpiSouth Weekly Epidemiological bulletin (e-Web)

e-Web presents a weekly summary of new health events occurring:

- In Non EpiSouth countries
- In EpiSouth countries if information is already public or provided by the affected country

The bulletin provides a brief description of events in the most appropriate form (tables, graphs, maps) and in a public health perspective. e-Web does not provide an exhaustive list of all international health "alerts". Except for exceptional situations (e.g. A(H5N1) avian influenza). Likewise e-Web is not intended to provide a weekly update on followed health crises. However, depending on the nature of the event, updates are incorporated if they reflect a change in the epidemiological situation (increase in the number of cases, geographical spread, nature of at risk groups, etc.). e-Web complements other existing tools such as WHO Bulletin and ECDC-CDTR and does not aim to replace them. To the possible extent and according to international situation e-Web is posted on EpiSouth website public area every Thursday. EpiSouth countries are free to post e-Web on their National website (or to provide links) and to disseminate it at their convenience. The e-Web is designed for EpiSouth public health partners (national and international) and not to general public (not specifically design for it).

2.7.2 Thematic notes

For thematic notes a short format (one or two pages) has been selected as the most adequate to communicate with public health partners about international health threats. Theses notes come in complements to other communication supports especially e-Web. They allow to:

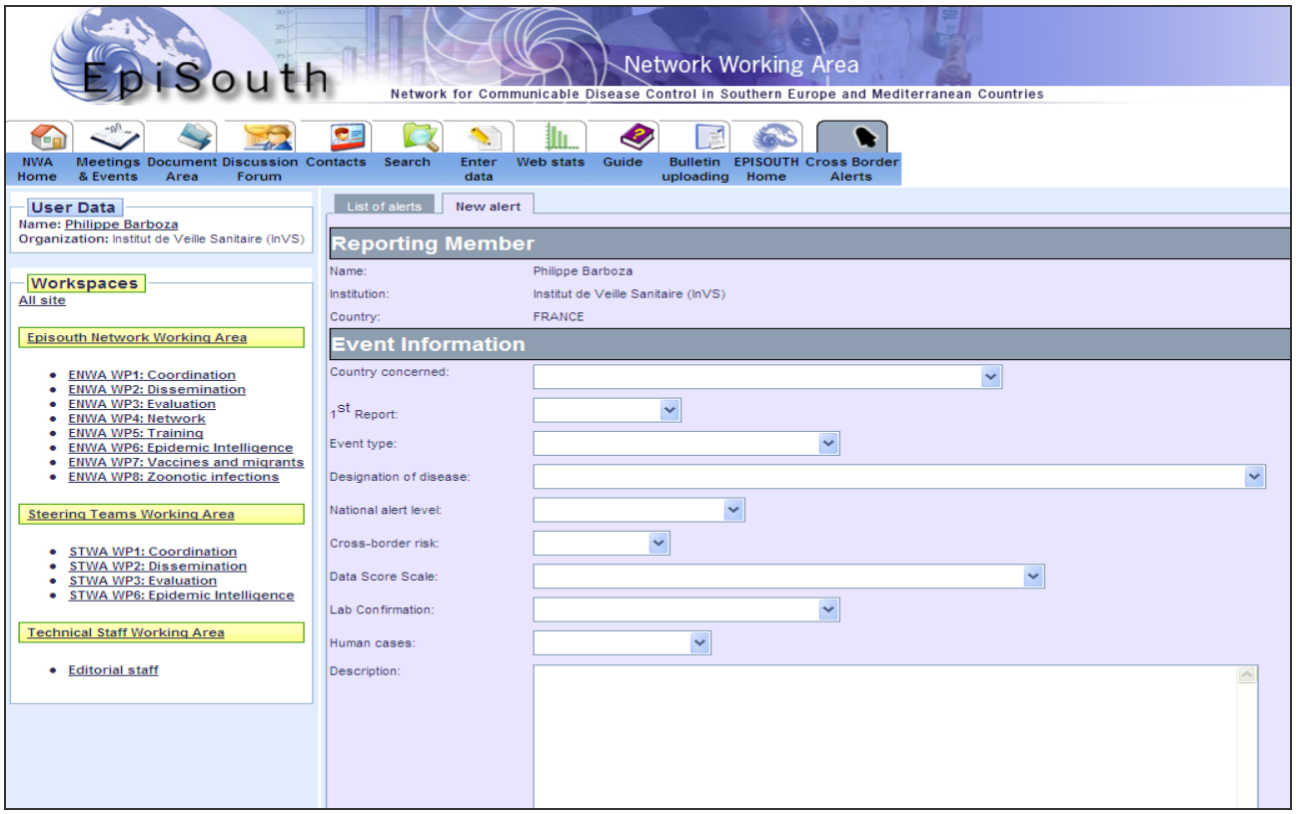
- Rapidly disseminate information requiring special attention
- Provided an in-depth analysis of an epidemic or an environmental threat
- Update knowledge on a given health topic (description of the agent (infectious or environmental), epidemiology, public health measures, possible impact and risk)

These notes include background information, facts on the current health event and a conclusion providing element for its interpretation (schematic risk analysis). Formal recommendations (e.g. travel advices) are not included.

These notes are produced on an *ad hoc* basis according to the evolution of international health crises and therefore there is no specific schedule set for their release.

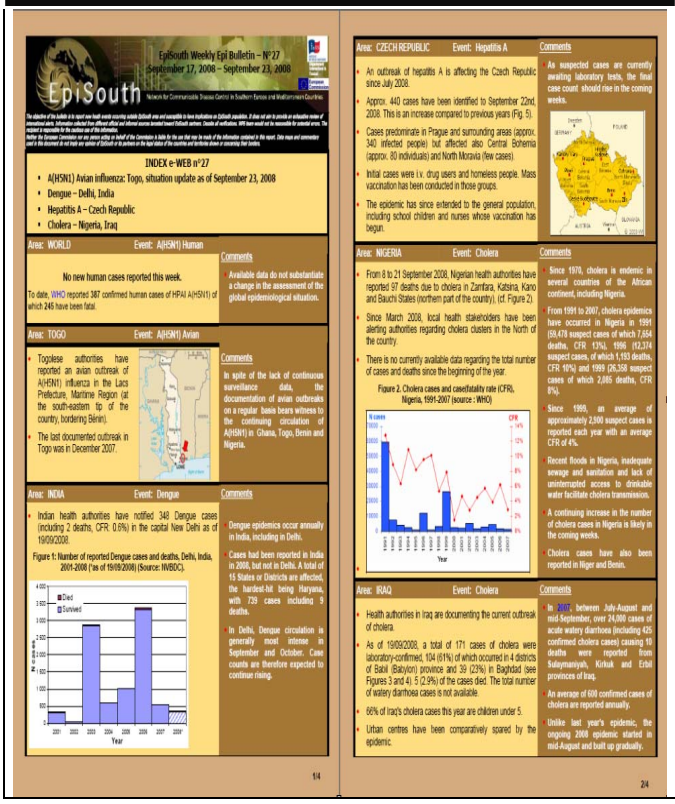
These notes are targeted at a wider audience of public health professional and stakeholders. They are disseminated using the same procedure and dissemination list as e-Web.

EpiSouth early warning system

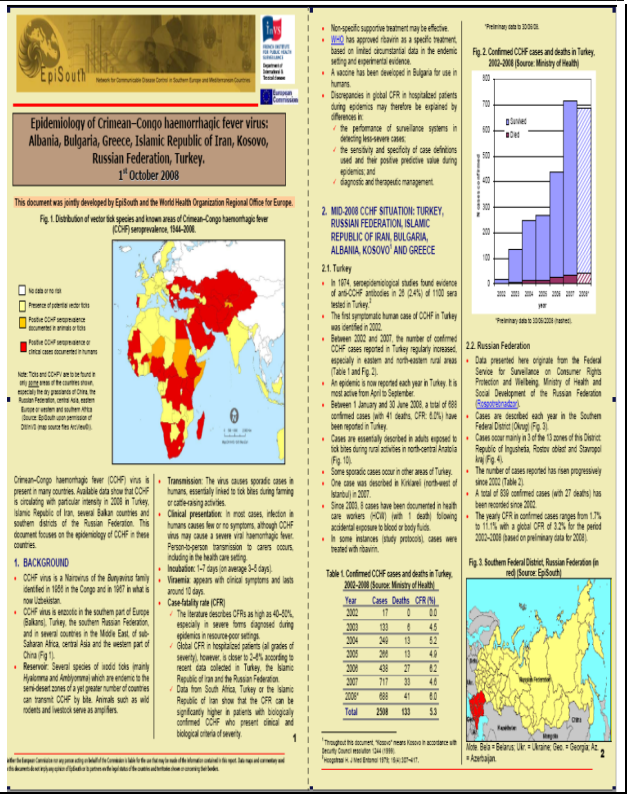


EI Communication supports

e-Web



Thematic note



3.3. WP7 Vaccine Preventable Diseases and Migrant Population in the Mediterranean Countries and Balkans

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List of abbreviations

ECDC	European Centre for Disease Prevention and control
EPI	Expanded programme on immunization
ESEN2	The European Sero-Epidemiology Network 2
EU	European Union
EUVAC	European surveillance network for vaccine-preventable diseases
GIVS	Global Immunization Vision and Strategy
GPEI	Global Polio Eradication Initiative
ICMPD	International Centre for Migration Policy Development
IGOs	Intergovernmental Organizations
IOM	International Organization of Migration
NGO	Non-Governmental Organization
NGOs	Non-governmental organizations
NIP	National Immunization Programme
ST	Steering team
UN	United Nations
VENICE	Vaccine European new integrated collaboration effort
VPD	Vaccine-preventable disease
WHO	World Health Organization
WP	Work package

Key definitions

- Migrant: person moving from one place of residence to another.
- International migrant: person who changes his or her country of usual residence.
- Nomad: Person without a fixed place of residence who moves from one site to another (internal or international migrant).
- Mobile population: person moving form one place to another (including migrant and nomad).
- Refugee: person granted refugee status either before arrival or upon arrival in the receiving country. Refugee status can be granted on the basis of the 1951 Convention and the 1967 Protocol relating to the Status of Refugees or pertinent regional instruments.
- Asylum: Asylum is a form of protection given by a State on its territory based on the principle of "nonrefoulement" and internationally and nationally recognized refugee rights. It is granted to a person who is unable to seek protection in its country of citizenship and /or residence in particular for fear of being persecuted for reasons of race, religion, nationality, membership of particular social group or political opinion.
- Asylum seeker (refugee claimant): person whose application for asylum (under the 1951 Refugee Convention) is pending in the asylum procedure or who are otherwise registered as asylum-seekers.
- Seasonal Labour migration: is very common in agricultural cycles; it is arranged with farmers to provide the necessary help at the seasonal time, often with foreign nationals whose employment opportunities are more limited in their home areas.
- Legal immigrant: immigrant whose stay is legal in the hosted country.

- Illegal immigrant: immigrant whose stay is illegal in the hosted country.
- Visitors (from abroad to the country): Person admitted for short stays for purposes of leisure, recreation, holidays; visits to friends or relatives; business or professional activities not remunerated from within the receiving country; health treatment; or religious pilgrimages. Visitors include excursionists, tourists and business travelers.

Based on: *Recommendations on Statistics of International Migration, Revision 1 United Nations, New York, 1998 (http://unstats.un.org/unsd/publication/SeriesM/SeriesM_58rev1E.pdf).*

Key definitions used for the purposes of WP7 survey "Assessment of countries migration status profile & vaccination access of migrant population".

3.3.1. Evidence of the problem to be addressed

The communicable diseases are perhaps the classic example of where cooperation across countries is essential, given the potential for diseases to spread across national borders (6).
The best opportunities for international cooperation in the field of communicable disease control exist regarding these diseases that can be prevented by vaccines, because the vaccination is proved to be one of the most cost-effective health interventions. Through globally coordinated vaccination was eradicated smallpox and most countries in the world are polio free at present. More recently, goals for progress towards measles and rubella elimination and congenital rubella infection prevention have been proposed by a number of WHO regions, including the European Region (*Eliminating measles and rubella and prevention of congenital rubella infection, WHO European Region strategic plan 2005-2010).*
Vaccinations have an advantage in that they can be delivered with very high coverage even in the most underserved areas, on condition that appropriate policies and strong immunization systems are implemented to ensure that potent vaccines are provided safely to every person who needs them *(Global Immunization Vision and Strategy, 2006-2015).*
One of aims of the GIVS is "the effective management of vaccination programmes within the context of global interdependence" and it is completely relevant to the present situation in the countries of the Mediterranean and the Balkans, where the migration is constantly increasing.

As a matter of fact, migration is a growing phenomenon throughout elsewhere in the EU, as well as all over the world. According to the International Organization for Migration (IOM) some 192 million people are living outside their place of birth, representing about 3% of the world's population.
Migration across the Mediterranean and Balkans is a long-standing feature of the region with deep historical and socio-political causes and implications. The region has traditionally been an economic and cultural crossroads, but that role has increased in recent years.
There are diverse and complex migration flows within and from the Mediterranean:
- The first migration flow consists of South-North movements from North Africa to southern European countries. It also includes migrants from sub-Saharan Africa who transit through North Africa on their way to Europe. Recent data from the IOM *(2008 Report on "World Migration")* indicates that Europe is also increasingly becoming a destination for migrants from Egypt and Lebanon, and to a lesser extent, Syria;
- The second path for migrants is from the South East to the North, which involves migrants from Asian countries such as Pakistan and Bangladesh. Those migrants often transit through Turkey and part of them remain there. The final receiving countries of these South-East-North migrations are Spain and Italy, and to a lesser extent, Greece, Cyprus and Malta;
- South-South flows (from Algeria and Tunisia to Libya and the countries of the Maghreb and Egypt to the Persian Gulf);
- East-West flows (from the Balkans and Turkey to Western Europe).

Each year, tens of thousands of sub-Saharan Africans are believed to migrate to Spain through Morocco. These migrants generally enter Morocco from Algeria after crossing the Sahara and come from Nigeria, Senegal, the Gambia, Liberia, Mali, Ghana, Burkina Faso, Niger, Sudan, the Central African Republic, and Cameroon. Recently, even migrants from Asian countries, such as India, Pakistan, and Bangladesh, have transited through Morocco.

Migrants across the Mediterranean region fit a variety of profiles. Some are temporary workers who plan to work in Europe for a limited period of time. Others are political refugees seeking asylum in Europe as a result of war or persecution in their home country.
Of particular concern, however, are undocumented migrants, the vast majority of which are seeking employment. There are an estimated 5 to 8 million undocumented migrants living in the EU.

The International Centre for Migration Policy Development (ICMPD) has estimated that some 100,000 to 120,000 undocumented migrants cross the Mediterranean each year, with about 35,000 coming from sub-Saharan Africa, 55,000 from the south and east Mediterranean, and 30,000 from Middle Eastern countries.
The intensive migration presents challenges to the national public health care systems, responsible for the implementation of control measures against communicable diseases and in the same time to the human rights in most of the European countries, because the movement of people within and into Europe has implications for the health of both – the general population of the country and for migrating individuals/groups.
In the beginning of the 21st century the movement of people around the world is significantly increasing the epidemic risk. Apart from the increased potential for the spread of infectious disease, that a more mobile global population brings, there are also concerns that migrants' health prevention needs are not always adequately met in the receiving country, especially for certain migrant groups, e.g. irregular migrants and asylum seekers.
Because of this, with increasing numbers of people on the move, migrant health has become a key global public-health problem. It is proved now, that the migrant's health is affected manly by the conditions under which they travel and their residence status and the social conditions in which they live in the receiving country.

The Mediterranean and the Balkans are regions with particular socio-economic problems, experiencing as the rest of the world the consequences of the intensive migration, which poses serious risk of importation and epidemic spread of communicable diseases, considered eradicated (for example poliomyelitis) or eliminated (measles) at that moment, inadequately immunized general population, along with a poor access of the local migrant population and immigrants represent a potential risk for disease transmission, including a cross-border one, to the neighbouring countries.

The dimension of the human displacement, turned migrant health into a priority public-health issue is significantly complicated by the diversity of the involved population, which is not a homogeneous group: they may be immigrants, internally displaced, internal migrants (Roma population, other nomads), refugees, and returnees, victims of trafficking, asylum seekers, irregular (undocumented) migrants, and people searching work or education. Besides, the national and ethnic diversities among and within groups of migrants are significant and this may affect the acceptance of preventive public health measures such as immunizations.

Access to the regular preventive health care, in particular for relatively small migrant groups, new immigrants and especially for undocumented migrants (without a residence permit) is sometimes difficult. Provision of health care for undocumented migrants varies in the countries. A survey covering 11 European countries showed that in some countries the health system may cover part or all of the costs for undocumented migrants who are unable to pay, but in other countries the access to free health care is restricted to emergency care only (48). The report found that overall 70% of the interviewees could theoretically benefit from health coverage (percentage ranging from 3% to 98%), but a quarter of them were unaware of their rights. In the conclusion the authors, estimating that undocumented migrants represent 1.5% of a country's population on average, call for "more open and better performing of the health programmes to support this poorly treated group."
The wider determinants of the health of migrant population and hard-to reach-communities as Roma population and country specific nomads are often found to be different from those of the settled general community and requiring a different approach from the healthcare professionals. An understanding of the background of migrants is essential in order to seek out and attempt to effectively address their preventive health needs and more specifically their immunizations.

In the era of implementation of elimination and eradication programs for VPD, is crucial to have information about whole EU population susceptibility profiles, modeled by different immunization schemes, different acceptance of immunizations by the population and the different access to the immunization services. Subsequently, it is necessary to bring together the available data and practical experience and to develop specific methods for the assessment of vaccination coverage of the vulnerable mobile population and to plan and implement effective routine and outreach immunisation programmes, able to ensure high and sustainable vaccination coverage for the whole EU population including the most vulnerable migrant population groups.
A mix of policy, legal and operational public health tools is required to address the migration challenge and to achieve the goal – better control of the VPD. The critical component is to achieve and sustain high immunization coverage in EU and non-EU countries and to improve the access of migrant populations to vaccination in recipient countries. The key strategy underpinning this policy is a multi-sectoral and international co-operation, coordinated by the WHO and IOM.

3.3.2. Scientific rationale for action

The data, obtained from the answers to the WP7 Questionnaire (see *http://www.episouth.org/outputs/wp7/WP7_9_Report_Assessment_Countries_Migration.pdf*) are confirming that migrant population (documented and undocumented) is available in all participating countries; internally displaced persons are living in countries in Balkans and Near East regions; Roma population is specific for the Balkans and for most EU countries; other country specific nomads are living in North African and Near East regions.
As a total in the region, there is no universal approach, nor enough information regarding regulations supporting immunizations of migrant population; the immunization coverage of migrants is not monitored separately and the figures are included into the national immunization coverage data.
Despite the lack of an official information, 13/22 participants in the WP 7 survey "Assessment of countries migration status profile & vaccination access of migrant population" consider that some population groups are less covered by immunisation than the general population and those are the illegal migrants, Roma people and some country specific nomads. Some studies in Croatia, Slovenia, Romania and Bulgaria evidence that Roma population has lower immunization coverage despite the full and free access to immunizations. The participants in the survey consider that the main reasons for the lower immunisation coverage within those groups are lack of information about immunisations, lack of trust in authorities, limited access to health care & financial constrains along with language barriers.

Seven out of a total of 22 responded countries (31.8%) have information about local/national VPD outbreaks occurred since the beginning of 2006 as a result of an outbreak started among mobile population. Thus, inadequately covered by the immunisation programme migrant population and immigrants are exposed to increased risk for VPD. Furthermore, a potential risk is thus generated for the occurring of outbreaks and epidemics not only in a particular country, but as well as for cross-border disease transmission to neighbouring countries.

The data obtained from measles surveillance systems in Europe are an appropriate example, supporting the survey findings.
Measles elimination is one of the key components of the WHO European region strategic plan and 98% of the Member States have implemented measles and rubella vaccination programme.
Since 1999, the incidence of measles cases has decreased substantially in the WHO European Region. However, further efforts are needed, because the principal barrier to achieving measles and rubella elimination still exists in Europe and it is the lack of an appropriate approach to reach hard-to-reach groups and populations with difficult or limited access to immunisation. As a result, while a number of countries have remained free of indigenous measles for years, others are showing a high incidence and outbreaks continue to emerge, threatening the success of the elimination plan by 2010. The transmission of indigenous measles virus have been interrupted as a result of enhanced vaccination in some countries, but multiple importations from Africa and Asia, and mostly the introduction of the virus into highly mobile and unvaccinated, hard-to-reach communities, caused a massive spread of D4 and B3 strains throughout the European region during the last years. Thus, despite the reduction of endemic measles virus circulation, importation of measles virus from other continents caused prolonged circulation and large outbreaks, after their introduction into unvaccinated and highly mobile European communities.
Various outbreaks of measles recently occurred in the European countries affected migrant population, some of which have affected Roma/Sinti people. Even though most Roma/Sinti does not refuse immunisation, none of the Roma/Sinti patients in the above outbreaks had been vaccinated against measles. Such populations are continuously on the move and for this, as well as other, mainly socioeconomic reasons, they are more difficult to be reached by routine vaccination programme (13, 14, 15, 24, 25, 26, and 41).
The occurrence of the recent measles outbreaks, as well as past poliovirus importations in the region, documented until 2001 (22) underlines the need of purposeful actions to achieve and maintain high vaccination level through routine immunisation in the general population, and to ensure that children from hard to reach populations such as the Roma/Sinti and immigrant communities also have an equal access to immunisations.

The example is clearly demonstrating that the epidemiological data are necessary to develop special methods for the assessment of vaccination coverage; factors that impede children from hard to reach populations from being immunised must be adequately addressed and special strategies should be developed for implementation of effective routine and outreach programs, able to ensure high vaccination coverage in these vulnerable populations.

3.3.3. Objectives

In order to improve the surveillance and control of vaccine preventable communicable diseases across the countries of the Mediterranean and the Balkans, the aim of workpackage 7 (WP 7), as a part of the EpiSouth project, is to create a framework for collaboration and exchange of information related to the vaccine-preventable diseases and to the specific approaches and national immunization strategies targeting under-immunized migrant groups and hard-to-reach populations, such as Roma minority and other country specific nomads.
The specific objectives of WP 7 are as follows:

- To assess the access to immunization of migrant population and hard-to-reach populations in Mediterranean and Balkan countries;
- In collaboration with EpiSouth WP6 to collect data and to establish a regular exchange of information on cases/outbreaks of vaccine preventable diseases among these target groups in Mediterranean and Balkan countries;
- To provide an overview of existing national vaccination schemes and programmes, including specific programmes for monitoring and improving migrant population's immunization coverage and to formulate recommendations facilitating the evaluation and improvement of immunization coverage and related activities among migrant population in the region.
- To build capacity in participating countries for a better organization of the national immunization programmes and for improvement of the VPD prevention and surveillance both in the general population and in high-risk groups of the population.

3.3.4. Framework

The WP7 framework is determined by the main objectives of the integral EpiSouth project, as well as by the existing at present national and international goals and programs in the field of public health policy regarding both migrant's population health and prevention of communicable diseases through immunization.

Four geographically different regions (South Europe, Balkans, Near East, North Africa), represented by 26 politically different (EU and non EU) countries are united in the EpiSouth project. Some of countries experienced intensive immigration; other were/are direct or indirect victims of international or local conflicts and hundreds and thousands of people moved to another places in their own countries or migrated to the neighbouring countries. Some countries are facing public health problems related to the country specific nomads (in North African and Near East regions) or Roma population, having various living stereotype – some groups are predominantly settled at one place, others are in-country nomads or traveling abroad (mostly to the EU countries) – with documents or as undocumented travelers.

The main approach to collect information on country specific migration status profile and immunisation programme, implemented by each country was to conduct a country based assessment survey for vaccine preventable diseases and migrant populations. A Questionnaire was developed during the first two years of the project in two stages. First, a preliminary version of the Questionnaire was prepared and pre-tested by the countries involved in the WP Steering team in 2007. This version served as a prototype of the final version of the questionnaire "Assessment of countries migration status profile and vaccination access of mobile population", intended to be completed on-line. A total 22 countries out of 26 participating into the EpiSouth project have responded to the WP7 Questionnaire for VPD and migrants.

The questionnaire collected information about country specific migrant's groups of people, organization and performance of the national immunisation programmes and VPD surveillance, organization of the immunizations of migrant and hard-to-reach population and problems faced by the national public health system in this area. To clarify the available information, national representative persons and other networks have been contacted. After integrating Questionnaire's data received from participating countries with those available from European networks (i.e. VENICE, EUVAC, ESEN2), the final analysis on Vaccine preventable diseases and migrant population was done (see *http://www.episouth.org/outputs/wp7/WP7_9_Report_Assessment_Countries_Migration.pdf*).

The aim of the WP7, the results obtained and respectively the expected outcomes are within the framework of the goals and programs of International organizations for better prevention, control and surveillance of VPD both in the general population and in the vulnerable populations, such as migrants and hard-to-reach groups, which are generally "underserved" by the preventive medicine, including routine immunisation services.

International organizations goals and programs:

- WHO Global Immunization Vision and Strategy, 2006-2015;

- Global Polio Eradication Initiative and GPEI Programme of Work 2010-2012;
- WHO Regional Committee for Europe resolution from 2005 on strengthening national immunization systems through measles and rubella elimination and the prevention of congenital rubella infection by 2010;
- The revised International Health Regulations (2005) – the legal framework to prevent, protect against, control and provide a public health response to the international spread of disease;
- The framework of the Union for the Mediterranean ("Mediterranean Union");
- The Regional Co-operation Council (The Stability Pact for South Eastern Europe) and it's South East European Health Network;
- ECDC Programme on vaccine preventable diseases and invasive bacterial infections.

3.3.5. Players, partners and audience

The survey results and WP7 expected outcomes are of interest for the public health community, epidemiologists and decision-makers in Southern Europe, the wider European Community, Balkans and Mediterranean countries, National, European and International institutions:

- European Commission
- National health authorities and institutions (Ministries of Health in the EU and non-EU countries and other National public health institutions)
- European Centre for Disease Prevention and Control
- WHO (EURO, WHO Office for national epidemic preparedness and response in Lyon, France, EMRO, AFRO)
- International Organisation for Migration (IOM)
- Global and regional IGOs and NGOs concerned with migration, refugees and human resources
- United Nations, including its respective Offices
- International Committee of the Red Cross
- Union for the Mediterranean (The Euro-Mediterranean Partnership)
- Arabic league
- Maghreb Arabic Union
- The Regional Cooperation Council (South East European Health Network)
- Scientific community of public health experts and epidemiologists

3.3.6. Expected outcomes

An effective collaboration among the Mediterranean and Balkan countries in respect of vaccine preventable diseases and migrant populations will enable the European Commission, National health authorities and WHO to have a wider and clearer picture of this important public health issue in the region:

- Identification of the areas of significant gaps in public health activities related to the immunization of migrant population, where more efforts or more/new funds are needed and should be directed;
- Exchange of experience and adoption of successful national practices for immunization of migrant population and hard-to-reach populations and facilitation and improvement of the access to immunisation of migrant population in the countries in the region;
- Improved communication among partners and routine exchange of data on immunization coverage and trend of the vaccine preventable diseases affecting neighbouring countries, facilitating the detection and response to possible VPD outbreaks, related to inadequate vaccine coverage;
- Capacity building for a better organization of the national immunization programmes to meet the national needs and the requirements and quality indicators of the WHO and EU. Improvement of the VPD prevention and control through updating the disease and vaccine coverage surveillance both in the general population and in high-risk groups by gradual introduction of information systems for registering immunisations and reporting cases.

3.3.6.1. Recommendations

Guidelines on vaccine preventable diseases and migrant populations (general recommendations for improving the access to immunizations of migrant groups and easy VPD data exchange) could be produced in collaboration with the international organizations concerned with migration and VPD prevention (WHO, ECDC and IMO).
Based on a careful analysis of the data, obtained by the performed survey for vaccine preventable diseases and migrant population in the region, the Guidelines could be used for elaboration of National programmes for immunization and surveillance of VPD in migrants and other hard-to reach population groups. These National programmes should also be adapted to the specific country's characteristics, conditions and needs.

The Guidelines should be focused on the improvement of the immunization coverage and surveillance of VPD of migrants and other hard-to reach population groups through various approaches, such as:

- Availability of an appropriate legislative framework for effective prevention and response to communicable diseases, included into the national public health law. The health prevention should be detached from immigration policy and the necessary measures should be undertaken to ensure that access to immunization of undocumented migrants is uniformly implemented by the national and local authorities. The medical confidentiality should guarantee that at least children up to 18 years of age can access the immunization services irrespectively of the migration status of their families.
- Political agreement for mobilization of alternative resources needed for additional incentives and combined multi-sectoral efforts for a common and coordinated national, sub-national and at local level approach to strengthen the immunization programme at place.
- National team's activities: planning, discussion and resource mobilization; involvement of the sub-national and local levels; partnership (important regional and national partners, involvement of the NGOs); taking every opportunity to advice on vaccination; vaccination programme for immigrants to be implement with short time of their arrival.
- Active involvement of minority/marginalised groups/associations (e.g. co-coordinators of medical care for Roma/Sinti communities) to address hard-to-reach populations; to ensure equal opportunities and access to health care and free vaccination for all migrants (regardless of residential status) and to address the language barrier.
- Research on public perception towards vaccination and on social factors influencing vaccination coverage as well reasons for non-vaccination.
- Raising the awareness of the general population and health care workers about the existing problems in the field of migrant's immunizations and about the recognized need and right of every child to be protected against vaccine-preventable diseases; establishment of a framework for advocacy and communication at all country levels to raise awareness and join forces to mobilize resources for high immunization coverage of the general population and of the migrant population. Elaboration of a comprehensive communication strategy and further training of advocates in the field of immunization.
- Coordination at all levels (local, regional, central, European – WHO, ECDC) in case of significant decrease of the immunization coverage, that could lead to disease outbreaks and increased risk for all non-immunized individuals.
- Establishment of a network of experts on public health and migration as a basis for sharing of information on policies, successful vaccination strategies and best practices and for developing adequate actions that protect migrant's health from communicable diseases; establishment of mechanisms for routine inter-country exchange of knowledge and experiences regarding immunization of the vulnerable population, including exchange of experts in the field; regular meetings on vaccination policy in order to enhance cooperation and to share information.
- Strengthening VPD surveillance (staff, education, laboratory capacity, outbreak investigations, and monitoring and evaluation systems). Appropriate outbreak investigations can help to define susceptible risk groups such as hard-to reach-communities and immigrants, needing special attention, to identify the reasons for non-vaccination and to inform decision makers.
- Development of a national vaccination registers (information system for case-based data including vaccines given, batch numbers, dates of vaccination).
- Continuous stakeholder seminars, bringing together the concerned population, healthcare providers and authorities as a part of iterative consultations and meetings on vaccination policy in order to enhance cooperation and sharing of information on the best ways to increase/maintain the vaccination coverage.
- The public health services with its wide range of technical and organizational efficiency can play a key role, especially in the municipal sector, for an effective organization of immunizations for those who have difficulties in gaining access to the system, as well as for developing municipal networks, cooperating with a maximum number of medical service providers, organizations, and regarding specific migrant lifestyles.
- Methods and arrangements should make use of already existing resources of the health care system, but in some cases the acceptance of immunizations could be improved by direct cooperation with migrant communities and the organization of a flexible and economic complementary system, adapted to the needs of not optimally integrated immigrant populations and small ethnic groups (migrant or not).

3.3.7. Monitoring and evaluation

The National programme for immunization and surveillance of VPD in migrants and other hard-to-reach population groups in all countries should be constantly monitored and evaluated at the central and regional levels in terms of the quality of activities and outcomes (output indicators, both for quantitative and qualitative aspects):

- Compliance with the scheduled activities;
- Achievement of the stated indicators, e.g. vaccine coverage in the general population and in migrant populations, number of experts involved in the implementation of the immunisation programme, number of new and updated regulations regarding VPD prevention and surveillance, VPD incidence, number of VPD outbreaks and other approved by the national health authorities specific for each country indicators for evaluation of the immunisation coverage and the quality of the VPD surveillance. Regarding the diseases, subject of WHO programmes for disease eradication or elimination should be implemented universal indicators formulated by the WHO.

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3.4. WP8 Epidemiology and Preparedness to Cross-Border Emerging Zoonoses in the Mediterranean Countries and Balkans

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Abbreviations and key definitions

Directory: catalogue of experts' names and contact details prepared through an on-line questionnaire filled in by the Focal Points of EpiSouth Countries.

Emerging infections (EIs) or Emerging Infectious Diseases (EID): infections that have newly appeared in a population or have existed previously but are rapidly increasing in incidence or geographic range (1).

Epidemic Intelligence (EI).

European Food Safety Authority (EFSA).

Food and Agriculture Organization of the United Nations (FAO).

Horizontal programs: Programs operating under the auspices, the planning and monitoring of distinct disciplines, which act in a balanced mode, with mutual respect.

Human Public Health (HPH).

Mediterranean Area and Balkans: the geographical area interested by EpiSouth (it includes South Europe, North Africa, Balkans and some countries of Middle East).

Med-Vet-Net :Network for prevention and control of zoonoses and food borne diseases.

OIE*:* World organisation for animal health.

One Health: the collaborative efforts of multiple disciplines, working locally, nationally and globally, to reach optimal health for people, animals and the environment (2).

Platform: web location where the directory's experts can share information, can post alerts etc.

Standard Operation Procedures (SOPs).

Steering Team (ST).

Veterinary Public Health (VPH).

World Health Organization – Mediterranean Zoonoses Control Program (WHO–MZCP).

Work Package 8 - Epidemiology and preparedness to cross-border emerging zoonosis (WP8).

Zoonosis: a zoonosis is any infectious disease caused by virus, bacterium, fungus, parasite, prion, which can cross the species barrier and be transmitted from domestic or wild animals to humans and vice versa (zoonosis and/or anthropozoonosis) (9).

3.4.1. Evidence of the problem to be addressed

The Work Package 8 (WP8) - Epidemiology and preparedness to cross-border emerging zoonosis - has, in the framework of EpiSouth Project, the main objective of providing *a platform for the communication of human (HPH) and veterinary public health (VPH) officials, describing risk assessment methods and providing a mechanism for exchanging information between human (HPH) and veterinary public health (VPH) officials.*

The objective for the WP8 was set in the 2004 and, although many progresses have been made since then by the Institutions and Organisations working in this field, EpiSouth has highlighted many areas for improvements especially referring to the Mediterranean area.

Therefore, on the basis of the experience gained by implementing EpiSouth, this document tries to give recommendations for improving the surveillance and control of zoonoses in the Mediterranean Area and Balkans both by considering the Resources already operating in the area and by outlining the possible contribution of EpiSouth to be developed with future lines of activities.

3.4.2. Scientific Rationale for Action

The first and main aim of the document is to call the attention of decision makers as well as of technical operators on the critical aspects which are presently affecting the efficient managing of surveillance, early warning and response for zoonoses with potential cross-border impact among the Mediterranean Countries and Balkans.

Although these issues are being discussed in several contexts, it should be recognized that many aspects are still debated and the high variability (in terms of approaches, legislations, definitions, SOPs etc), existing among the considered countries, often affect the possibility to act in the coordinated and synergic manner that is needed to ensure the proper response in case of potential cross-border threats (8-19).

Therefore, in accordance with the objective set for the WP8, the present document outlines the main constraints to be overcome as well as the opportunities which may be exploited to facilitate the process.

Finally it should be noted that, although EpiSouth has not the resources and the mandate to lead and guide this process, it can contribute to it by facilitating the discussion among the 27 Countries of the Network, by increasing awareness at national level, by setting tools aimed at sharing information and data, and by drawing context specific guidelines.

3.4.3. Objectives

Many factors lead to the emergence of zoonotic diseases. Environmental changes, human and animal demography, pathogen changes and changes in farming practice are a few of them. Social and cultural factors such as food habits and religious beliefs play a role too (4,5,20).

About two-thirds (60.3 %) of emerging infectious diseases (EID) result from zoonoses; the majority of these have their origin in wildlife (71.8%) and have been increasing in recent years (20). There is evidence that over 50% (54.3%) of EID events are due to bacteria, and that a large number of those is drug resistant (4,5). Moreover EID emergence has been found to strongly correlate with a combination of socio-economic, environmental and ecological factors, that define areas (called “emerging disease hotspots”) where EID are most likely to originate (3-5).

While extended “ hot spots” jump out in areas spanning sub-Saharan Africa, India and China; smaller spots appear in Europe, and North and South America (21-27).

Social factors involved with EID emergence include human mobility especially air travel, tourism and outdoor activities, permanent residence in rural areas, food habits, international commerce, war and political conflicts (20-23). From an ecological standpoint it is probable that a growingly milder climate (due to global climatic change) may lead to a northern shift in the distribution of vectors and vector-born diseases (20).

Challenged by this complex scenario in the fight against EID, the concept of *“One Health”*, defined as the collaborative efforts of multiple disciplines, working locally, nationally and globally, to reach optimal health for people, animals and the environment, has emerged and is currently deemed by many as the appropriate strategy to adopt (6-7).

In that respect, we need to highlight the necessity of intersectoral collaboration between Human Public Health and Veterinary Public Health, including a spectrum of distinct disciplines such as internal and infectious diseases medicine, human public health, microbiology, environmental epidemiology, epidemiology, veterinary medicine, veterinary public health, entomology and wildlife biology (10,11,13,14,28-33).

3.4.4. Framework

Human health is inextricably linked to animal health and production (26,40). The provision of health care has gradually diverted from individual patients to the community, large-scale planning techniques were devised and evaluation techniques focused on zoonoses and surveillance over foods of animal origin (31-35).
Regions with close co-dependence of animals and humans are found around the Mediterranean and coordinated efforts are needed to monitor emerging zoonoses and assess appropriate control measures. Discussions and initiatives on collaboration of human and veterinary public health have been ongoing and both bioterrorist agents and emerging zoonoses are once again bringing the subject to the limelight (36,39).
The dramatic possible economic impact on countries ineffective in these fields, can be easely imagined.
Mediterranean countries significantly lag in this area, and veterinary public health and human puclic health services are mostly segregated and tend to work separately (see also *EpiSouth Network experience and lessons learned* for further details). At local level the organisation of intersectoral links and functions in the operational structure of HPH and VPH activities require political and legislative consensus, if this were achieved however identification of problems, policies, strategies, programs with explicit contents and joint distribution of responsibilities would be envisionable. It would also be the basis to establish solid communication channels between the two sectors, establishment of information systems and mechanisms of operational coordination and evaluation of results at the different levels.
These problems have been identified by WHO who created the WHO/Mediterranean Zoonoses Control Centre (WHO/MZCC) an inter-professional organisation 26 years ago (37). This is located in Athens and tackled the problem with a comprehensive approach, trying to identify the problems of, and the suitable solutions for the countries of the three continents facing the Mediterranean sea. Huge quantity of actions have been performed against single zoonoses (e.g. brucellosis, echinococcosis, rabies etc) and problems (e.g. food safety, canine populations control) privileging both inter-professional and inter-country collaboration. For example WHO/MZCC has fostered an inter-disciplinary culture, focusing on brucellosis in Jordan and Syria. Although Brucellosis control programs have been established in these countries, economical, political and other problems have created difficulties to the project. The present situation may provide new hopes, even if difficulties are still relevant.
The MED-VET-NET network of excellence, is an inter-professional collaboration in zoonoses research from a medical and veterinary perspective (38).
The European Union (EU) has supported member states promote the inter-professional approach in the field of zoonoses through a series of legislative and professional initiatives relevant to the improvement and standardization of diagnostic procedures, surveillance and exchange of information at the national regional and international levels.

EpiSouth has inserted its strategy and its activities in the above mentioned framework, with the intention of valorizing the resources and the activities already in place through a complementary approach oriented at filling the gaps, enhancing synergies and promoting the sharing of experience among the countries involved in the Network (39,41,42).

3.4.5. EpiSouth Network Experience and Lessons Learned

As already reported the ultimate objective of WP8 is to promote the intersectotal collaboration (both at national and cross-border levels) between HPH and VPH as a critical aspect of surveillance and response to zoonoses.

To accomplish this, some methodological approaches have been taken:

i) Definition of a set of priority zoonoses on which to experiment ways of enhancing intersectoral collaboration

The final process brought to the selection of five zoonoses: Brucellosis, Leishmaniasis, Rabies, Campylobacteriosis and West Nile Virus (see the related technical report for details at *http://www.episouth.org/outputs/wp8/WP8Report_Public_area_FINALE_REV_9-4-08.pdf*) (41).
It should be stressed that this was not a prioritization exercise as it is meant for early warning measures, risk assessment or preparedeness measures, but it was rather a way of reaching consensus on some zoonoses which, on the basis of some variables, were considered appropriate to strengthen the collaboration between the two sectors.
It is clear that if a prioritization will be carried out for zoonoses in the Mediterranean area, other relevant variables should be considered such as impact on human and animal health; impact on economy (cost of the disease in humans and animals; influence on production, commerce, tourism, intercountry relationship; etc); factors connected with the way of life, with social evolution; with climate; with environment; public and mass media perception; technical and economic possibilities of control; political weight (consideration by public administrators) etc etc.

ii) Description of the national situation of the selected priority zoonoses in the EpiSouth Countries

Scientists representing 13 EpiSouth countries participated in the Meeting on Zoonoses in the context of the 2nd EpiSouth Project Meeting which took place in Athens, in December 2007. They provided experience in the field of zoonoses during the discussions and their national situation regarding the five priorityzoonoses (see Annex 1 for details).

iii) Collection of experts' names and contact details (epidemiologists and microbiologists, from both sectors)

Through an on-line questionnaire, filled in by the Focal Points of EpiSouth Countries, the contact points for the five identified zoonoses were collected. This exercise has given the possibility to put in connection the two sectors in terms of people and related reference centers at the national level.

iv) Creation of a Directory with experts' names and contact details

With the contacts' details collected, the Directory was created with the aim of putting in contact the two sectors not only at national level but also among EpiSouth Countries (see *http://www.episouth.org/search_zoonosis.php).*

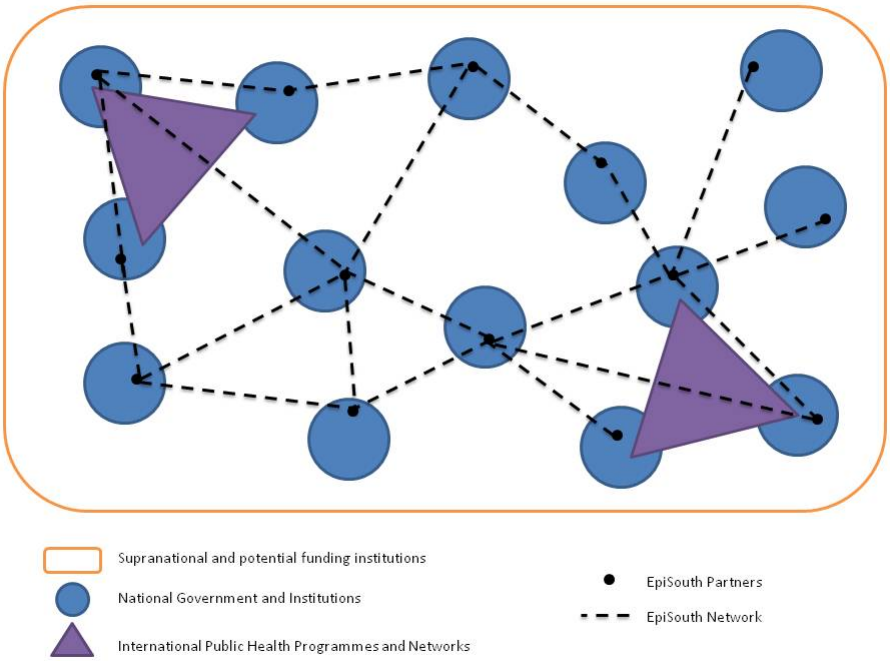
In order to facilitate the active participation of all, the EpiSouth Countries the WP8 Steering Team (ST) was established and parallel sessions were organized during the annual Project Meeting. Finally an *ad hoc* ST Meeting was organized in November 2009 in Malta (*see http://www.episouth.org/doc/Agenda_W8STMalta2009.pdf*).

From the whole process emerged the points in the SWOT analysis (paragraph 5) and the following points indicating future strategies:

- There is high necessity for improvement of intersectoral collaboration in the majority of countries.
- There is the need to facilitate the intersectoral exchange of information, also by setting criteria for prioritization and alerts, harmonization of early warning systems, case definitions and risk assessment methods which can enhance national and cross-border response.
- There is need of field exchange of experiences among countries, experienced staff of one country has had the chance to be sent in another country to provide his/her expertise.
- In the EpiSouth countries, with a few exceptions, there are no Risk Assessment Committees convening regularly. Instead, they are urgently set up and invited to convene upon public health emergencies. Usually they follow the guidance of International Organizations, the Risk Assessment methods of which, they accept and follow precisely even if they do not always respond to internal context specific needs.

3.4.6. Players, Partners and Audience

In order to ensure that this strategic document might have the expected outcomes, several actors should be properly involved and many of them should act in a coordinated and interconnected manner.



i) Supranational and potential funding Institutions:

- European Commission
- European Centre for Disease Control (ECDC)
- World Health Organization Europe (EURO)
- World Health Organization East ----(EMRO)
- World Health Organization Africa (AFRO)
- World Health Organization, office for national epidemic preparedness and response Lyon- France
- EUROMED
- Arabic league
- Maghreb Arabic Union
- FAO
- OIE
- EFSA

Main Role: *"Ensuring international framework"* (Setting of policies' common guiding criteria; collaboration in priority actions identification; resources allocation; capacity building; tools development etc.)

ii) National Government and Institutions

- The political authorities of countries
- Ministries of Health
- Ministries of Agricultural Development
- Human Public Health Sector
- Veterinary Public Health Sector

Media play a complementary role facilitating the comprehension of the problem as well as the implementation of activities.

Main Role: *"Ensuring national framework"* (identifying national policies; ensuring implementation of national policies' related programmes; prioritizing resources allocation; identifying relevant experts for collaborating in EpiSouth activities etc.).

iii) International Public Health Programs and Networks

- Arabic league
- Maghreb Arabic Union
- MZCP
- MED VET NET

Main Role: *"Facilitators in broadening and magnifying the impact without overlapping"* (sharing lesson learned; replicating good pilot and experiences; helping in identifying needs etc.)

iv) EpiSouth Partners

Main Role: All the EpiSouth Focal Points will facilitate the due attention to the document's recommendations at National level and will promote the needed cross-border measures with the other EpiSouth Countries.

The EpiSouth Coordination will ensure that the WP8 Directory might be constantly updated and will facilitate the use of the cross-border early warning platform by the VPH and HPH in coordination with the WP6 leadership.

3.4.7. Expected Outcomes

SWOT ANALYSIS OF PRESENT SITUATION TOWARDS THE POSSIBLE ACTIONS FOR ENHANCING COLLABORATION BETWEEN SECTORS

STRENGTHS AND WEAKNESSES

- STRENGTHS
  - The co-operation at national level between Ministries of Health and Agriculture exists but it is inadequate. Additionally, experts are aware of the need for further enhancement of the HPH VPH collaboration.
  - WHO, FAO, OIE and other relevant agencies may assist in establishing mulitidisciplinary fora consisting of designated experts as official representatives of the two sectors with the aim of developing, implementing and assessing policies strategies programs.

- WHO and WHO- MZCP has established several control and eradication programmes in Mediterranean countries. This experience can be valorized for future actions in the area.

- WEAKNESSES
  - There is a need for international collaboration and coordination of actions taken.
  - Different perception of the problems and different expectations between the two sectors hinder coordinated activities within and between member countries.
  - Variability and timeliness among the systems could delay the information exchange in case of outbreaks with a negative impact on prompt response. Risk assessment capacities at national level do not operate extensively and efficiently.
  - Policies are often written but in practice strategy and programme implementation is not adequately effective as there are no explicit guidelines within the related project descriptions. The lack of written and practically applied programmes in the majority of the EpiSouth countries being evident in the "Outline of the 13 countries involved in the vertical session of the 2nd Project Meeting in Athens, regarding the 5 selected zoonoses", poses the need for solid programs well organized and efficient.
  - Eradication and control programmes have different principles, targets, as well as financial impact and this should be taken into consideration when setting strategies.
  - Illegal animal transportation hampers all efforts for cross-border control of zoonoses.

OPPORTUNITIES AND THREATS

- OPPORTUNITIES
  - EpiSouth can provide evidence of gaps and needs within each country and highlight the preferable solutions.
  - The threat of cross border emergence is an opportunity for collaboration.
  - A basic element of zoonoses control strategies should be education of the public, especially education of people at high risk working in the agricultural sector. Education of children using audiovisual material and leaflets should be introduced. Media can offer a major contribution in the enhancement of safe practices' adoption by the public.
  - A HPH VPH directory will bring scientists together as a first step in the visibility of the EpiSouth network. Mechanisms of control with agreed criteria are indicated as necessary to be established at an international level.
  - Joint training courses for HPH and VPH officials would enhance understanding of the aims and purposes of data collection and of intersectoral and international transparent dissemination. Workshops would facilitate cooperation between the two sectors, information exchange, integration of the HPH VPH officials and would provide the grounds for investigation of zoonotic issues with a potentially cross border expansion.
  - Joint HPH VPH public health investigations will also minimize the gap.
  - More integrated health strategies, after the model of those undertaken by WHO, with intersectoral action for health could ensure the endurance of policies, strategies and programmes. A diversion from the vertical approach to the horizontal one includes common planning and implementation of programmes and activities.
  - A multidisciplinary forum consisting of designated experts as official representatives of the two sectors, can supervise the above mentioned opportunities.
  - A suggestion is that control programs should be continuous and not intermitted when epizootiologic results depict decreasing trends in animals and should involve both HPH and VPH sector so as to evaluate constantly the progress.

- THREATS
  - Developed countries with highly functioning health infrastructures stand to gain much from global surveillance efforts that may help them to protect themselves from the spread of infectious and communicable diseases. But if national health systems of developing countries are seen to be irrelevant to this global project, there is a risk that funding and commitment to those systems will decline as the chart of global health surveillance gets put before the horse of robust national health infrastructures (14).
  - The entity of the problem of EID is expected to increase due to several reasons (the rapid growing of the world human population, the increasing of urbanisation, pollution and environmental problems, the global temperature etc etc).

- As already discussed, zoonoses exhibit a potential for cross-border transmission and in certain countries they are probably imported from neighbours. This poses an important barrier to their effective control.
- Institutions of Public Health cope with the emergence of 30 pathogens per year worldwide.
- Vertical programs for disease prevention and control encounter constraints during their implementation as a result of financial limitations and changes in the policies.

3.4.8. Proposed Strategy

The analysis above and the lessons learned by EpiSouth suggest the following aspects to be considered in for an EI zoonoses cross-border surveillance strategy in the EpiSouth Area:

Actions to be taken at country level

- Encourage integrated surveillance with the close collaboration of Human Public Health and Veterinary Public Health officials at central and periphereal levels.
- Propose and promote national control programs with horizontal implementation, or encourage the horizontal/multidisciplinary evaluation and supervision of already existing ones.
- Avoid interrupting Programs as soon as epidemiologic indices start improving.
- Set guidelines or elaborate the existing ones within the context of operation of the programs of VPH and HPH.
- Define and educate target groups (officials from both sectors, the public, the high risk groups, students, specify the geographic area indicated for each disease).

Actions to be taken horizontally (across countries)

- Mapping of experts HPH-VPH;
- Bring HPH and VPH into collaboration;
- Support the use of the EpiSouth cross-border early warning alert platform;
- Define and educate target populations;
- Set guidelines or harmonise the countries with existing ones;
- Identify common criteria for ensuring cross-border alerts, risk assessment procedures and concerted response;

3.4.9. Final Recommendations and Conclusions

A *national multidisciplinary forum on zoonoses and risk assessment* of designated scientists with clearly explicit responsibilities for the two sectors should be established at country level in those countries where it has not been established yet.
Epidemiologists, Veterinarians, Entomologists, Laboratory Officials from Public Health and Veterinary Public Health and, when indicated, Biologists or scientists on Environmental issues should be included in this multidisciplinary forum, which should be formally appointed by the related national government.

A *national network for preparedness and response*, working in line with the International Health Regulation should be established, starting from the national Human Public Health and Veterinary Public Health authorities, and including all the actors of the process.
The following points should qualify the entire process:

- A formal agreement between the representatives of the relevant ministries;
- Established meetings on a regular basis;
- The inclusion of Stakeholders: OIE, EFSA, WHO, FAO, EpiSouth representative;
- The capacity to build on/ evaluate/ update the existing contingency plans and harmonize them at the national level;
- A culture of multidisciplinary collaboration at national level within borders as a prerequisite to cross border Epidemic Intelligence and response measures;
- Joint training of HPH VPH;
- Elaboration of regional and international containment plans as suggested by international organizations WHO, FAO, OIE, operating in concordance to the national ones. Fora of national and international spectrum should liaise periodically;
- Quality assurance of data and guidelines it's improvement if indicated. National Fora are very close to reality and they can identify the weaknesses in the process of data collection;
- Advocacy action targeting the policy makers of the country also promoting resource mobilisation towards preparedness and response before a crisis occurs; and

- Evaluation of the Public Health sector function, collaboration, integration, efficiency at national level.

3.4.10. Monitoring and Evaluation

In order to ensure the implementation of the actions at country level, detailed plans should be prepared by the countries including also schedules and relevant indicators suitable for monitoring the progresses.

The actions across countries can be supported by EpiSouth and the detailed plan with schedule and monitoring indicators is being developed as integral part of EpiSouth Plus proposal.

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ANNEX

Outline of the 13 Countries on the 5 Priority Zoonoses

The Outline of the 13 countries that participated in the parallel session on Zoonoses in the 2nd EpiSouth Project Meeting which took place in Athens, in December 2007, is analyzed below. The countries participating were: Greece, Romania, Albania, Israel, Spain, Jordan, Slovenia, Turkey, Cyprus, Italy, Kosovo, Morocco. Data from France were also provided.

1. Brucellosis

Of the 13 countries endemic for Brucellosis were 11 countries.
In all 11 the human epidemiology for Brucellosis was known and in 10 the epizootiology was known.
Of the 11 countries endemic for Brucellosis, policies strategies and programs operate in 9 and in 2 there are no data.
Among the 11 countries endemic with Brucellosis national exchange of information occurs in 10 but regular epidemiologic information occurs only in 6 of countries.
Among the 11 countries endemic with Brucellosis International exchange of information is a common practice in 9 countries.
Detection of increased incidence in humans and prevalence in animals is followed by information exchange in national level in 9 of the 11 countries.
Detection in novel geographic areas is followed by information exchange in national leve in 7 of the 11 countries.
Detection in novel animal species is followed by information exchange in national level in 5 of the 11 countries.

2. Leishmaniasis

Of the 13 countries endemic for leishmaniasis were 10 countries.
In all 10 the human epidemiology for leishmaniasis was known and in 8 the epizootiology was known.
Of the 10 countries endemic for leishmaniasis, policies strategies and programs operate in 7 and in 1 there are no data and in 2 there are no policies strategies and programs.
Among the 10 countries endemic with leishmaniasis national exchange of information occurs in 7 but regular epidemiologic information occurs only in 4 of countries.
Among the 10 countries endemic for Leishmaniasis International exchange of information is a common practice in 9 countries.
Detection of increased incidence in humans and prevalence in animals is followed by information exchange in national level in 8 and 4 respectively of the 10 countries.
Detection in novel geographic areas is followed by information exchange in national level in 6 of the 10 countries.
Detection in novel animal species is followed by information exchange in national level in 3 of the 10 countries.
Detection of the vector in novel area is followed by information exchange in national level in 5 of the 10 countries.

3. Campylobacteriosis

Among 13 countries, 9 countries are endemic and 4 countries lack data.
In all 9 the human epidemiology for campylobacteriosis was known and in 6 the epizootiology was known.
Of the 9 countries endemic for campylobacteriosis, policies strategies and programs operate in 4 and in 5 there are no policies strategies and programs.
Among the 9 countries endemic with campylobacteriosis national exchange of information occurs in 6 but regular epidemiologic information occurs only in 2 of countries.
Among the 9 countries endemic for Campylobacteriosis International exchange of information is a common practice in 7countries.
Detection of increased incidence in humans and prevalence in animals is followed by information exchange in national level in 5 of the 9 countries.

Detection in novel geographic areas is followed by information exchange in national level in 4of the 9 countries.
Detection in novel animal species is followed by information exchange in national level in 3 of the 9 countries.

4. Rabies

Between the 13 countries 5 are endemic for rabies.'
In all 5 the human epidemiology for rabies was known and in 4 the epizootiology was known.
Of the 5 countries endemic for rabies, policies strategies and programs operate in 4.
In all 5 national exchange of information occurs as well as regular epidemiologic information takes place.
Among the 5 countries endemic for Rabies, International exchange of information is a common practice in 5 countries.
Detection of increased incidence in humans and prevalence in animals is followed by information exchange in national level in all 5 countries.
Detection in novel geographic areas is followed by information exchange in national level in 4of the 5 countries
Detection in novel animal species is followed by information exchange in national level in 2 of the 5 countries

5. West Nile Virus infection (WNV)

WNV is endemic in 4 of the 13 countries.
In all 4 human epidemiologic data and epizootiologic data are known.
Policies practices programs operate in all 4.
In all 4 national exchange of information occurs as well as regular epidemiologic information takes place.
Among the 4 countries endemic for WNV, International exchange of information is a common practice in all 4 countries.
Detection of increased incidence in humans and prevalence in animals is followed by information exchange in national level in all 4 countries.
Detection in novel geographic areas is followed by information exchange in national level in all 4 countries.
Detection in novel animal species is followed by information exchange in national level in 4 countries.

6. Criteria for Intersectoral Exchange of Information

Of the 13 countries 9 confirm that all the below mentioned items could be used in the future for intersectoral exchange of information, providing signals of alert (so as to prevent or achieve timely containment of an outbreak).

1 Increase in the human incidence in a country
2 Increase in the carriage rate in animals in a country
3 Distribution of human disease or animal carriage to novel geographic areas of a country
4 Detection of the pathogen in novel animal species
5. Expansion of the vectors (WNV, leishmaniasis) to novel geographic areas

Among 13 countries 4 countries, as in other fields did not provide answer (ND)at this field.

Conclusions

1. A wide spectrum of different national practices among the 13 countries is clear in the analysis above regarding Brucellosis, Leishmaniasis, Campylobacteriosis, and Rabies. West Nile Virus infection triggers similar activities in endemic countries.
2. It is evident that the Human Public Health either lacks collaboration with the Veterinary Public Health in national level, or that the Veterinary Public Health sector has not been mobilized to collect epizootiologic data.
3. Also the identification of geographic range of animal reservoirs and/or vectors are not widely used practices.
4. The National level information exchange between the two sectors occurs, but commonly not on a regular basis.

5. All 9 countries that answered the last question confirm that Increase in the human incidence in a country, Increase in the carriage rate in animals in a country, Distribution of human disease or animal carriage to novel geographic areas of a country, Detection of the pathogen in novel animal species and Expansion of the vectors (WNV, leishmaniasis) to

novel geographic areas are useful indices, providing signals of alerts. They should trigger information exchange between the two sectors both at national and international levels.

	Brucellosis	Leishmaniasis	Campylobacteriosis	Rabies	West Nile Virus
Endemic	11	10	9	5	4
Epidemiology	11	10	9	5	4
Epizootiology	10	8	6	4	4
Policies	9	7	4	4	4
Strategies	9	7	4	4	4
Programs	9	7	4	4	4
Nationalinfoexchange	10	7	6	5	4
Regular nat info exch	6	4	2	5	4
Internationalinfoexch	9	9	7	5	4
Alerthumanincrease	9	8	5	5	4
Alertanimalincrease	9	4	5	5	4
Alertnovelgeogr	7	6	4	4	4
Alertnovelanimalspecies	5	3	3	2	4
Alertexpansionvectors	--------	5	----------	------	4

APPENDIX
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