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Commentary

A network strategy to advance public health in Europe

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Introduction

 $\mathsf{E}^{\mathrm{urope}}_{\mathrm{prolonging}}$ has a long tradition of preventing disease and interventions. Nevertheless, considerable challenges remain in a European Union that permits free movement of goods, services, money and people. While pathogens travel freely across borders, national control measures do so to a lesser extent. Thus, public health is hampered by societal, economic, financial and cultural differences and suboptimal collaboration between responsible agencies. These challenges became initially apparent during the SARS emergency and subsequently during the avian influenza threat that drew a lot of media attention. With the foresight to enhance preparedness and response to communicable disease threats the European Union created a specialized agency in Stockholm, Sweden. This new EU agency, the European Centre for Disease Prevention and Control (ECDC), has the mandate to control communicable diseases in Europe. Since the existing measures were inadequate to deal with multi-country outbreaks, ECDC strives to assess the risk to Member States. This effort can be enhanced through collaboration and networking between European public health practitioners.

ECDC has been operational since May 2005 and although still relatively small (151 staff members as of February 2008), the organization is rapidly growing. ECDC, according to its mission¹ and under the guidance of its Management Board and Advisory Forum, has focused on developing an integrated surveillance system for the EU, setting up a system for rapid response to outbreaks and epidemics, establishing a unit for health communications and scientific advice (figure 1). The latter provides independent scientific opinions, expert advice, data and information on pertinent public health issues in Europe and leads an initiative on climate change and migrant health. The Health Communication Unit is responsible for communicating the scientific and technical outputs of the Centre to European health professionals and to the general European public, as well as supporting the Member States on communications activities. The Preparedness and Response Unit monitors emerging threats in Europe, and supports EU Member States in assessing, investigating and responding to them. The Unit relies on a set of advanced information technology tools to detect potential threats, with special attention The timeliness of a coordinated effort in communicable disease control in Europe is undisputed, and the recent outbreak of avian influenza illustrated the ability of the ECDC to rapidly respond to emerging communicable disease threats: the Centre responded (and is trying to continuously respond) to the needs of the EU Member States with regards to daily situation updates, risk assessments and suggested coordinated actions. Such efforts are not only needed for influenza preparedness but also other communicable diseases and health issues such as HIV, vaccine-preventable diseases, anti-microbial resistance, etc. These disease-specific programmes lie horizontal in the organizational matrix of ECDC (figure 1).

A coordinated approach to communicable diseases clearly adds value to public health in Europe. While communicable disease mortality has been dramatically pushed back over the last century, communicable diseases remain a health threat especially in certain regions, subpopulations or during certain seasons. Emerging communicable diseases are of particular concern such as SARS, new influenza strains, Chikungunya, etc.² Tuberculosis, particularly the multiple and extensively drug resistant forms, is a growing problem across the region. Trans-national coordination of vaccine schedule integration is another task that can only be addressed through a collaborative, international approach. National vaccine schedules do not lend themselves to be moved across borders, while their recipients can.³ Furthermore, evidence-based decision making is the cornerstone for effective public health policy but relies on prudent evaluation of large-scale interventions. 4 Guideline development and adaptation is best done collaboratively, taking into account different settings and circumstances. This short list of public health predicaments are amenable to improvement through European collaboration and networking.

Since the mandate of the ECDC is to protect human health from communicable diseases through the prevention and control of human disease and to ensure comprehensiveness, coherence and complementarity of action a strategy is proposed here. We present a long-term framework to advance public health in Europe through networking and cooperation between associations, federations, societies and organizations. Such an effort will ensure comprehensiveness, coherence and complementarity of public health action in Europe. This initiative goes beyond the current governance structure of ECDC, since this network will not rely on representatives from national agencies or individual Member States but rather from Europe-wide health organizations. Thus, this initiative will complement current initiatives and strengthen European public health at large.

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to events threatening more than one EU Member State. One of the main tasks of the Surveillance Unit is to integrate the operations of the 17 EU-wide surveillance networks (e.g. Enter-net, EuroHIV, EuroTB, etc) into ECDC. These networks are called 'dedicated surveillance networks', DSNs, with the aim to provide easy access to descriptive data on communicable diseases and to facilitate monitoring and comparison of incidence trends in the EU Member States.

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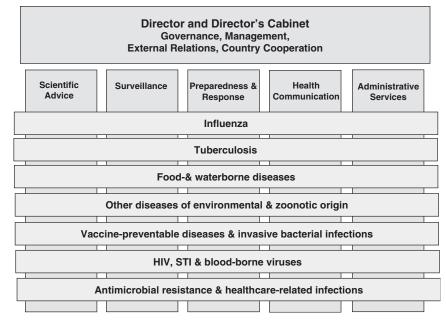


Figure 1 European Centre for Disease Prevention and Control (ECDC) Organogram

Methods

Pan-European public health associations, federations, societies and organizations were identified through systematic web searches, outreach to researchers, scientists, public health practitioners and ECDC staff. However, important associations, federations, societies and organizations might have been missed despite this extensive search. A pre-meeting questionnaire with 15 questions pertaining to public health priorities and activities was mailed to the scientific organizations and subjected to content analysis. The questionnaire addressed the following questions: What is your main area of work? What do you consider the most important public health issues in your particular field of interest? What are your top 4 action priorities? Please list the main meetings or projects your organization is involved with. What further support or capacity would your organization need to address these issues? With what other organizations are you currently collaborating? Please name key European experts/spokespeople in your field. Please identify potential areas of collaboration between your organization and ECDC. How many organizations belong to your association? In which EU Member States and beyond is your organization operational? What is your annual budget (in Euros)? Do you have your own website? Do you publish a regular newsletter? How many press releases were issued by your organization last year? What health/environment information or news websites do you access regularly?

A workshop was convened at ECDC on 27–28 February 2007 in Stockholm with the task to identify public health gaps and potential solutions to these deficiencies. ECDC and workshop participants presented their work and highlighted the public health priorities in their respective fields. This analysis is based on the result of the questionnaire survey and group discussions held at the workshop.

Results

Twenty-one scientific organizations were identified and contacted (table 1). A questionnaire was sent to all 21 scientific organizations and 19 responses were obtained (participation rate 91%). They represented a wide range of specializations, including virology, respiratory diseases, microbiology, genomics and health management. The organizations were very

diverse in terms of their size, structure, membership and capacity. Some smaller organizations consisted of individuals only with no central office, relying on volunteer input and focusing on exchange of information and data. Other societies were extensive networks of national organizations (range 1-390 organizations) and belonged to global bodies. A few well established societies had annual budgets >1 million Euros (range 50 000 to >1 million Euros), large staff teams and conferences that brought together tens of thousands of delegates. Some of these societies were leaders in improving the quality standards of their profession, worked closely with regulators, published reputable journals and undertook cutting edge research. While the organizations varied in many ways, they all had a broad European-wide mandate and membership and shared many public health action priorities, particularly in the area of communicable disease surveillance and control (table 1).

These 21 organizations were convened to form a Scientific Consultation Group (SCG) with the goal to strengthen ECDC's sources of public health intelligence and expertise in Europe as well as to explore the potential for cooperative activities between ECDC and these organizations and between the organizations themselves. The SCG is conceived as one key strategic way of helping ECDC address its mandate to foster comprehensiveness, coherence and complementarity of action on communicable diseases in Europe. Many shared common challenges and ways to overcome them were identified; including, advancing cross-border integration, promoting evidenced-based practice and addressing key public health challenges.

Addressing public health concerns

The scientific organizations identified a broad range of public health concerns and priorities for action, including human resources, public information, laboratory competence, antimicrobial resistance, vaccine availability, patient safety, surveillance and response to communicable diseases that are listed in table 1. The most important public health issues identified by individual organizations is naturally linked to their specific field of interest, but some cross cutting topics became apparent such as anti-microbial resistance. Action points on how to respond to these health concerns is also grouped by association and is listed in table 1.

Table 1 Pan-European organizations and their public health priorities, 2007

Organization	Main area of work	Most important public health issues in field of interest	Top 4 action priorities
European Academies Science Advisory Council (EASAC)	EASAC covers all scientific and technical disciplines, enabling science academies to collaborate to provide advice to policy-makers.	Vaccine innovation and vaccination strategies Tackling AMR Zoonoses—public health issues and R&D gaps	Migration and IDs
European Biosafety Association (EBSA)	Biosafety and biosecurity	Adequate biorisk management Competence of those responsible for biosafety	CEN laboratory standard initiative Funding for CEN standard initiative on biosafety officer competence
European Federation for Medical Informatics (EFMI)	Health data, knowledge and infor- mation, health information systems, web portal, two annual conferences, standardization of data and knowl- edge, security, privacy	Good quality data and knowedge Deriving data from routine data, e.g. hospital information systems Defining standards for public health information systems	Data and knowledge acquisition Information and training Standardization of data
European Federation of Parasitologists	Promotion of scientific research and training in parasitology in Europe through the organization of meetings and diffusion of information about research grants in this field.	 Malaria and Schistosomiasis Leishmaniasis, Trypanosomiases, Filariases, Onchocerciasis All other important human parasitic diseases 	Parasitology societies in European countries Organization of international scientific events Diffusion of information about news in parasitology Supranational agencies related to parasitology and parasitic diseases
European Health Management Association (EHMA)	Our work focuses on health management and those issues that touch upon the health of European citizens and the delivery of health services throughout Europe.	Improving quality and safety in healthcare Reducing health inequalities Improving efficiency and effectiveness of healthcare delivery	
European Public Health Association (EUPHA)	To be the pro-active platform for information exchange between public health research, practice and policy on a European level.	Information exchange between countries Information exchange between different disciplines Information exchange between research, policy and practice	Health inequalities in European countries Health inequalities between countries in Europe Obesity epidemic Public health capacity building
European Respiratory Society (ERS)	The ERS covers all aspects of respiratory diseases, both in children and adults, including asthma, COPD, respiratory infections, interstitial lung diseases, cystic fibrosis, lung cancer and lung transplants, etc.	COPD Asthma Respiratory infections	 COPD Asthma Respiratory infections Lung cancer
European Science Foundation (ESF) – European Medical Research Councils (EMRC)	EMRC is the membership organization of the Medical Research Councils in Europe and promotes innovative medical research and its clinical applications towards improved human health.	 Basic science, translational and clinical research Population surveys and biobank- ing—for understanding etiology, patho-physiology, clinical and preventive aspects of ID, emerging diseases and life-style-related diseases 	 Foresight Science policy briefings studies Research conferences Young investigators awards
European Society for Clinical Investigation (ESCI)	ESCI organizes annual scientific conferences and workshops, and publishes the <i>European Journal of Clinical Investigation</i> , a journal of molecular and clinical pathophysiology.	Cardiovascular, gastroenterological and liver diseases Infections and disorders of immunity Metabolic and endocrine disorders	Organizing high-quality, multi-disciplinary medical meetings Publishing a multi-disciplinary journal of mechanisms of disease Providing the annual ESCI Award for Excellence in Clinical Science
European Society of Clinical Microbiology and Infectious Diseases (ESCMID)	Promote and support research, education and training in the infection disciplines by scientific exchange, educational programmes, grants and awards, certification and consultation with professional and government agencies.	1. Overcome AMR 2. Reduce healthcare-associated infection 3. Develop vaccines against the main 'scourges of mankind' (malaria, HIV, etc)	 Disseminate knowledge (journal, meetings) Provide post-graduate training and education Convene study groups on specific issues Foster dialogue between professional organizations

(continued)

Discussion

Advancing cross-border integration

All participating organizations operated on a European level, some of them exclusively some not, and faced the challenge of overcoming national barriers with their cultural, economic and

health system diversity. These intricacies seem to be more apparent along the east-west and north-south gradient of Europe. Networking and promoting cooperation among their member organizations were seen as a way of overcoming national particularities. For example, European vaccination schedules lack concordance, and because they are not easily

Table 1 Continued

Organization	Main area of work	Most important public health issues in field of interest	Top 4 action priorities
ESCMID Study Groups – ESGNI, ESGEM, ESGAP	Healthcare-associated infections (HAI) – surveillance, audit, review and design of policies. Increasing evidence for interventions. Several workshops.	1. Consensus on clinical governance framework and HAI prevention and control. 2. Educational activities (extend to all HCWs), ESCMID 3. Improve evidence base for effectiveness of HCAI and AMRIX interventions. 4. IT systems and HCAI	IPSE WP2—(HPA lead) national priorities IPSE WP1—Syllabus re curriculum competencies ARPAC FP6—improve evidence base Fill gaps in surveillance
European Society for Clinical Virology (ESCV)	To bring together scientists and clinicians throughout Europe and to promote Public Health and advance education, particularly medical education, in Clinical and Basic Virology	 Appropriate viral laboratory diagnostics including quality control Appropriate clinical interpretation of viral diagnostics Appropriate treatment and prevention of viral diseases 	Educational meetings in clinical virology Participation in European QC activities Promotion of research in the field Grants and awards to stimulate students
European Society for Paediatric Gastro-enterol- ogy, Hepatology & Nutrition (ESPGHAN)	Paediatric gastroenterology, hepatology and nutrition, both clinical and research-Driven activities. Promoting knowledge of paediatric gastroenterology, hepatology and clinical nutrition, stimulating research in these fields and disseminating such knowledge.	 Undernutrition and obesity in children Policies for infant nutrition Vaccination for gut and liver infections 	 Preparation of guidelines for infant nutrition Education programmes for pae- diatric gastroenterology, hepatol- ogy and nutrition in Europe Promoting research in paediatric gastroenterology, hepatology and nutrition
European Sociological Association	Raising the level of awareness of sociology of health in European contexts.	 Imparting sociological knowledge and awareness of PH Working with PH officials on various key health issues in Europe Making an impact on medical education with regards to sociology 	 Education of professionals Imparting knowledge Networking with others in the health field Raising sociological awareness in PH
Federation of European Microbio-logical Societies (FEMS)	FEMS main mission is to advance and unify microbiology knowledge. FEMS brings together 46 member societies from 36 European countries, cover- ing over 30 000 microbiologists.	FEMS considers all aspects of microbiology, including health issues Infectious diseases Food-related infectious diseases	Publishing five journals Financial support to young scientists Financial support for meetings European congress organization
Federation of European Societies for Chemotherapy and for Infections (FESCI)	Anti-microbial chemotherapy, Infectious diseases	Antibiotic resistance Antibiotic misuse Infection control	
Federation of European Societies for Tropical Medicine & International Health	Tropical medicine and international health	Human resource crisis Access to health care, inequity Research (HSR)	Platform and advocacy Scientific improvement Education
International Society of Chemotherapy	Clinical microbiology, infectious diseases, AMR	Antibiotic resistance Antibiotic misuse Infection control	
Public Health Genomics European Network(PHGEN), run by Institute of Public Health NRW (lögd)	Working towards the responsible and effective translation of genome-based knowledge and technologies into public policy and into health services for the benefit of population health.	Informing public policy with regards to Genomics and PH Health Service Development and Evaluation Training the workforce and educating the public	1. Advising the EC 2. Initializing National Task Forces of PH Genomics in all 31 PHGEN member states 3. Identification of legal diversities and barriers in Europe (with regard to cross-border market, e.g.) 4. Conducting networking exercise in this field

transferable to a different country they might collide with best practices. EUVAC-NET (http://www.ssi.dk/euvac/vaccination/vaccination.html) data on childhood immunization schedules reveal that the number of dose for both anti-tetanus and diphtheria vaccine can range from 4 to 8 doses, based on country of residence; similarly, 12 European countries use acellular pertussis vaccines, while 9 countries use cellular vaccines and 9 use both (Dr P. L. Lopalco, personal communication). Thus, a collaborative approach to gather and deliver scientific opinions on the integration of vaccination schedules was recognized as a useful goal. A solution could range from

a minimal approach of advising families on how to switch between immunization schedules if they are moving around within the EU to a comprehensive proposal for integration of vaccination schedules.

Another cross border problem is the recent outbreaks of Chikungunya fever. Chikungunya fever is a mosquito-borne viral disease with symptoms such as fever, joint pain, muscle pain, headache and nose and gum bleeding. Chikungunya is endemic in parts of Africa, Southeast Asia and on the Indian subcontinent. Very large outbreaks have been reported from La Réunion, Mauritius, Mayotte and several Indian states

and imported cases among tourists have been identified in several European countries. ECDC convened a group of scientific experts from a number of organizations and generated a rapid risk assessment tool that Member States could use for their own planning. More recently, indigenous transmission of Chikungunya was reported in North-East Italy where *Aedes* mosquitoes are established, which poses threats to other regions of Europe where the vector is present. Transmission and dispersion in temperate countries of Europe of this and other tropical diseases (e.g. Dengue) in the coming years must be considered. A collaborative approach by these organizations can not only help in developing and disseminating guidelines like the Chikungunya rapid risk assessment tool but also in assisting implementation of recommended actions through their membership across the region.

Advancing evidence-based public health in Europe

One challenge reported by most of the organizations is to find ways to integrate clinical and public health practices with evidence-based guidelines and data sets; examples include:

- Authoritative endorsement/complementary dissemination of guidelines produced by expert groups.
- Data standardization and integration.
- Medical guideline reviews.
- Expert advice on guidelines, surveillance, interventions.
- Develop extensive networks for consultation and peer review.
- Deliver a range of documents adapted to different readerships.
- Monitoring the implementation of guidelines.
- Informing ECDC 'Standard Operating Procedures'.
- Working towards interventions/standardization of professional interventions.

As these fall outside EU competence, working through national scientific bodies allows for a potential independent Pan-European Scientific community source of integration. Most organizations issue some sort of scientific, research, public and/or clinical guidance. Some extend their opinions to social marketing and policy advocacy work.

These organizations support progress in medical treatment through rigorous evaluation and application of existing medical evidence; in fact, prudent use of systematic reviews of research findings from randomized, blinded trials is the cornerstone of 'do no harm'. While integration of research findings within public health practice yields the best possible population health, scientific evidence can collide with political, social, business, advocacy, religious or ideological groups. Networking among these scientific organizations was identified as one way of overcoming these hurdles and promoting evidence-based practice.

The need for the development and dissemination of guidance on issuing guidance was also identified as a need. A potential role for ECDC in authoritative endorsement of guidelines was noted. This was felt to be particularly important for smaller Member States as they look to ECDC for guidelines while larger countries might already have developed their own policies.

Networking for public health problem solving

The foundations of successful networking that were identified during the ECDC workshop included mutual benefit, trust and respect. All partners need to work towards the achievement of shared goals. The participants emphasized that networks are essentially relationships that need champions and are often based on personal connections. But sustainable partnerships move beyond individuals. Relationships should be built on clear rules, such as a Memorandum of Understanding or

standard operating procedures and be subject to regular review.

Making the case for such partnerships through evidence is important: for example, it was recognized that it is easier to achieve goals through collaboration. Capacity building and mentoring are core elements in networking. Networks can provide visibility but the benefits have to overcome the barriers. ¹⁴ Twinning can be a good example, through mutual interest in a specific topic and investment in the relationship by lots of visits, interactions. Networking needs to deliver useful outputs and continue to deliver.

A minimum pre-condition is a shared vision, and this may be created by complementary or similar organizations. Partnerships may be goal- or objective-driven. Organizations often look to partners to provide 'missing' skills or expertise that they need in order to attain their goals.

Limitations and obstacles to inter-association cooperation

A considerable challenge is the inherent difference between partner organizations but also between Member States. These differences can be significant, particularly when it comes to the nature of public health practice. Reasons for this discrepancy may be historic or cultural but could also be due to disparities in capacity or resources. Financing is both an opportunity for partnership and a threat that can unbalance partnerships. Power struggles can emerge, and it is important to respect different realities. Other obstacles include competing interests, competition between partners, limited resources, aspiration for influence, autonomy and incompatibility of political or ethical issues, e.g. regarding genomics. These obstacles have to be recognized and dealt with proactively.

Next steps

Based upon the findings of the survey and workshop, ECDC has established the SCG. It is now exploring not only ways to best utilize its input to address its own mandate but also ways to facilitate the capacity of the network to assist the organizations and public health more broadly. To this end a fractal organogramm was conceived for the SCG, with a core group of members representing individual organizations, which in turn represent other national organizations and their members (figure 2). Fundamental and indispensable public health functions, necessary to meet public health goals have been previously described. ^{15,16} These activities address health determinants ¹⁷, protect population health and treat disease and should be adjusted to meet European public health goals. They include:

- Monitoring of health indicators through surveillance.
- Problem identification through assessment, investigation and prediction.
- Inform, educate, empower through health education and health promotion.
- Mobilize community partnerships and stakeholders.
- Develop health policies.
- Enforce laws and regulations.
- Access to health care.
- Assure a competent public health workforce.
- Evaluate effectiveness, accessibility and quality of public health services.
- Public health research.

As part of the network strategy to advance public health in Europe the SCG is placed at the centre of these public health functions (figure 3), since it represents the numerous and varied international partners involved in one or multiple of these activities. The importance of building partnerships in public health to overcome health challenges in Europe is also recognized by the European Public Health Association

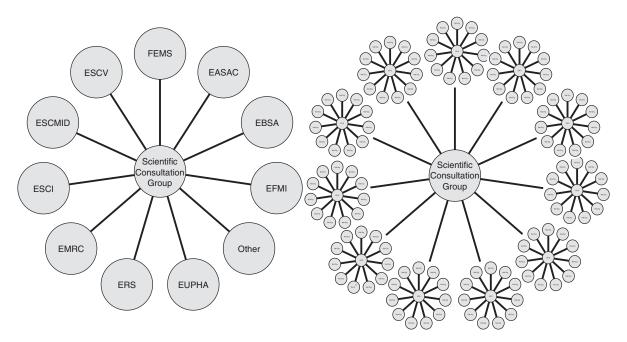


Figure 2 Fractal organogramm of the SCG convened by ECDC, 2007. Representatives from pan-European public health organisations are represented in the SCG, while these organizations in turn represent national organizations and other stakeholders

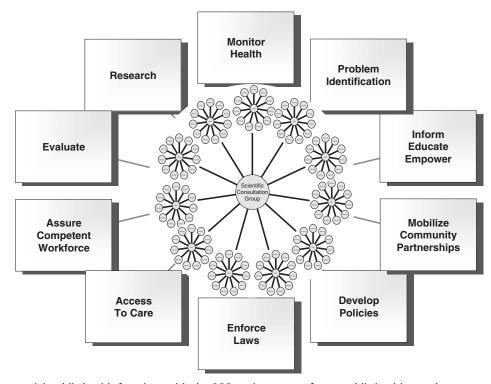


Figure 3 Ten essential public health functions with the SCG at the centre of core public health practice

(EUPHA). The fist action item of their 10 statements on the future of public health in Europe calls for building essential bridges between policy, practice and research and especially between different disciplines. Hence, the SCG will be convened again by ECDC to explore this approach.

Conclusion

This article underscores the importance of networking among scientific and advocacy organizations in order to meet the increasing public health challenges of a unified Europe. This analysis is based on a detailed survey of a large number of Pan-European organizations and workshop discussion with representatives from these organizations. It was concluded that a range of practical ideas should be pursued for future consideration. These included:

- cooperation in the development of standards and guidelines.
- mutual assistance in professional and public educational initiatives.
- working groups, conferences, publications and other communications.

- coordinated support for public, professional and political advocacy of agreed public health issues.
- identification of research needs and priorities.
- active engagement in cooperative public health activities:
 e.g. disease surveillance, public perception intelligence gathering, programme evaluation and monitoring.

We believe that strengthening the SCG will not only improve communicable disease control in Europe but also public health in general.

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Key points

- Networking for public health among these organizations can advance many shared interests and common mandates
- The SCG as a whole is not vested in special or national interests and can thus bring an additional voice to the policy discourse.
- The SCG should aspire to strengthen essential public health competencies in Europe.

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