ASSET

share and move to face nasty bugs

Pandemic Preparedness and Response Bulletin

Issue 5, February 2017

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Action plan on Science in Society related issues in Epidemics and Total pandemics

Highlighting strategic priorities and policy-related initiatives on Pandemic Preparedness and Response, the "Share and Move" ASSET Bulletin intends to be essential to a wide-ranged target: competent institutional actors and public health authorities, decision-makers, even on social networks.

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Editorial

TRADITION AND INNOVATION IN THE FIFTH ASSET PANDEMIC PREPAREDNESS AND RESPONSE BULLETIN

What about the crisis participatory governance

Combining multidisciplinary expertise, the European cooperative program ASSET aims to address effectively both scientific and societal challenges raised by public health emergencies of international concern, like pandemics. To foster public engagement and a sustained two-way dialogue between science and civil society, in 2001 the European Commission defined the appropriate framework sustained by six Science in Society (SiS) pillars: engagement, gender equity, science education, open access, ethics and governance.

The editorial line of the ASSET Pandemic Preparedness and Response Bulletin, *Share and move*, has been set accordingly, focusing each issue on one of the six ASSET-specific topics: governance of pandemics and epidemics; unsolved scientific questions; intentionally caused outbreaks; crisis participatory governance; ethical, legal, and societal implications; gender pattern - vulnerability and intentionally caused outbreaks.

After the second '*Share and move*' focused on governance of pandemics and epidemics, the third Bulletin concentrated on unsolved scientific questions and the fourth issue associated to intentionally caused outbreaks, the present number deals with crisis participatory governance.

Participatory governance consists of state-sanctioned institutional processes that allow citizens to exercise voice and vote, which then results in the implementation of public policies that produce some sort of changes in citizens' lives. In the ASSET frame, this concept has been exploited throughout different steps: firstly, models and experiences of participatory governance in crisis management were collected and analysed at various levels, from local and national to international; then, a great work of Citizen consultation has been carried out in eight different countries. The conclusions and discussion of results will be presented in the forthcoming Policy Report and associated Policy Seminar that will be held at the European Parliament in April 2016. Thus, the fifth '*Share and move*' issue highlights participatory governance pattern in the field of preparedness and response, as well as how relevant information is shared on the web and by the most used social media.

Furthermore, beside the participatory governance that in the ASSET Strategic Plan is associated to science education, other concepts are here included such as 'Internet of things', 'big data' and 'digital epidemiology'. These terms, in fact, are strictly linked to the mechanism of data availability according a free sharing by people on the web. Then, a logical connection that follows is about public participation in light of a perspective leading to the 'continuously learning health system', as Harlan Krumholz theorised in his contribution on JAMA 2016.

In this way, we hope readers would appreciate the thematic links among different strategic lines which have been adopted in the ASSET project overall, as well as in its plan and in the issues of the Pandemic Preparedness and Response Bulletin, *Share and move* which have been either published or planned. The fifth edition introduces even a more interesting aspect: beside exploiting a specific matter, as it has been done since the second issue, the present Bulletin acts as a bridge between the 'unsolved scientific questions and open access to scientific outcome' which were covered in the third publishing and ethical reflection that is programmed to be dealt in the next *Share and move.*

Lastly, as a '*bridge on the bridge*', we start with a special column, that has been not run before: a section including either pandemic or emergency (even called 'panepidemic') preparedness and response.

'Bridge' column in this issue: Pandemic & Emergency Preparedness and Response

As stated in the last sentence of the Editorial, we propose here a bridge column including either pandemic or emergency preparedness and response. The two contributions are recently appeared: the first is a perspective by 'The Lancet' on pandemics and the second comment comes from 'The Economist' dealing with the anticipation of epidemics.

The Editorial in the ***Volume 388, Issue 10063***, 17 December 2016–6 January 2017, of ***The Lancet*** is entitled '***Predicting pandemics***'. It takes off by the conclusion of an ***investigation into WHO's response to the 2009 H1N1 pandemic*** that is: 'the world is ill prepared to respond to a severe influenza pandemic or to any similarly global, sustained and threatening public-health emergency'. Then, the Ebola and the Zika virus epidemics highlighted such this unpreparedness showing that, unfortunately, lessons still need to be learned. The article explains that most new epidemic infections are zoonotic, but not all are transmissible between humans and reports results coming out from a ***study*** published in *Emerging Infectious Diseases* on Dec 7.

'Mark Woolhouse and colleagues used virus genome sequencing and mathematical modelling to identify 37 viruses that have already shown some ability to spread between people but have not yet been the cause of an epidemic. Of greatest concern, the researchers suggest, are Middle East respiratory syndrome coronavirus (MERS-CoV), Bundibugyo Ebola and Sudan Ebola viruses, and several mosquito-borne viruses. Woolhouse and colleagues' shortlist of viruses to watch has also included chikungunya, Zika, and Ebola in recent years, showing the potential of this approach. Although identification of viruses with human transmissibility adds to knowledge of which types of viruses and which circumstances are most likely to cause a pandemic, several emerging pathogens had not previously been seen in humans at all—severe acute respiratory syndrome, for example.

More can be done to predict the next pandemic threat, but when new outbreaks do occur, there remains a need for a better international response. Promisingly, WHO has launched the R&D Blueprint, which aims for rapid activation of research and development activities during epidemics. To be maximally effective, this strategy will need to work within low resource settings, which will require substantial investment and an understanding of the culture of the setting in which it will be implemented. […] **the first line of defence against emerging viruses is effective surveillance**. But the international community must be prepared to take rapid and effective action if surveillance is to have value—the question remains, have the recent lessons of the Ebola and Zika viruses been learned?'

'A yellow fever epidemic: a new global health emergency?' This is the main concern expressed in the viewpoint published on JAMA in June 2016. It ends with the conclusion that 'the UN's high-level panel on the global health crises called Ebola a preventable tragedy, and if the ongoing *panepidemics* of Zika-caused neurological syndromes or yellow fever eventually lead to catastrophic consequences', then where the 'WHO does not successfully reform, the next major pandemic will cause thousands of otherwise preventable deaths. This may be the last opportunity to ensure that the WHO is empowered to build an effective emergency preparedness and response capacity with the necessary political leadership. Another failure to perform may necessitate consideration of alternate UN institutional response mechanisms'.

Putting shots in the locker, How to anticipate epidemics is an article appeared in the Science and technology section of The Economist print edition in September 2016. It does start with an admonishment and then a question: '***FOREWARNED, the proverb has it, is forearmed. But***

what happens when there is no warning?'

The outstanding case is the outbreak of Ebola haemorrhagic fever that began in Guinea in December 2013 and, spreading rapidly to Liberia and Sierra Leone, raged on for over a year, ending with around 29,000 people infected and more than 11,000 of them dead. Even if the world

responded to that crisis, it missed the thing that would most quickly have stopped the epidemic: a vaccine. Such a vaccine was created eventually, but by the time it was ready, the outbreak was all but over. Had it been available from the beginning, things could have been different.

Next time, though, they might be, for on August 31st a new organisation came into being: **CEPI, the Coalition for Epidemic Preparedness Innovations**, was founded in London with the purpose to forearm the world against future outbreaks of disease, without foreknowledge of what those outbreaks will be. Part of the inspiration for CEPI's creation was how close the project to deliver an Ebola vaccine in time came to success.

CEPI's plan is to build up a bank of candidate vaccines for as many as possible of the viral diseases that lurk menacingly on the edges of human society, but in which there is insufficient commercial interest for pharmaceutical firms to do the development work. These include Lassa fever, Marburg fever, MERS, SARS, Nipah and Rift Valley fever, but not dengue or influenza. Those two are already well served by drug-company researchers—as is Zika virus, for which a vaccine may be ready for testing in the field next year.

The aim is 'not to guess exactly which illness will become epidemic next, as this is a difficult thing to do, but CEPI will work through the list in a systematic way'. Scientifically, this means identifying several possible vaccines for each disease, putting these through animal trials, and then carrying out small safety trials on human beings. Those candidates deemed safe will be stored for a future outbreak. This approach maximises the saving of time while minimising cost. If a disease for which there are candidate vaccines does become threatening, larger and more expensive human-efficacy trials can be organised quickly in response. If not, no money is wasted doing so.

The main idea is about organising efficacy trials quickly though so that CEPI may even invest in its own surge capacity for the manufacturing of vaccines, rather than forcing drug companies to divert resources from existing vaccine production (with potential consequences for public health). That is full of thorny issues, not least legal risks because of an amount of mistakes and thus law suits.

In CEPI it is argued that 'paying to prepare for future epidemics is like buying a form of global health insurance' but, differently, it is not a premium to be paid for ever. The list of targets will grow as time goes by but it is not infinite. Should the world wish to address the top 20 threats over the course of the next decade the total cost would be estimated $1 billion-2 billion. The next stage is to start raising that money and the organisation is striving to succeed, that is making the threat from epidemic viruses diminish year by year thereafter.

PANDEMIC PREPAREDNESS AND RESPONSE

How do participatory governance experiences characterize in crisis management?

From the ASSET Strategic Plan: Participatory Governance and Science Education In epidemics and pandemics rumours and parallel informal

information systems are challenging effective risk communication by health workers and authorities, as it happened in the latest Ebola epidemic in West Africa and 2015 H1N1 outbreak in India. Research studies have shown that rumours perpetually surface in situations that entail power asymmetries. Such situations often arise when knowledge is contested or is left to a small group of highly technical experts to unravel. Individuals or groups left outside such confined knowledge-hubs often produce their own version of the reality, in effect creating 'rumours'.

In the case of the recent Ebola epidemic, many rumours have flourished. Among the most 'popular' is that Western health workers spread the disease, based on American imperialistic visions. This problem has manifested itself as locals hiding sick or dead people. Such rumours constitute parallel information systems which are linked to the application of top-down communication systems and absence of genuine two-way dialogue. The loss of confidence in international and national health authorities has had a strong impact on vaccination too, affecting not only flu, but also other infectious diseases. Since 2009 rumours and false myths about risks of vaccines have changed attitudes of many families, contributing to reduced immunization rate in some areas, leaving clusters of children unprotected, i.e. against polio, and preventing the achievement of important goals, such as measles eradication from Europe. Rumours form rapidly during the outbreak of a crisis. Despite efforts by the authorities to deliver correct information, a social reality has arguably already been formed, which rational information is unable to alter. However, whereas rumours are an answer to a call for information from citizens, Crisis Participatory Governance practices might answer this call with better information and alter the spread of rumours.

Broadly speaking, reasons identified in the ASSET literature review to explain that distrust situation are: • overall lack of public (citizens and stakeholders) involvement in pandemic preparedness and response-planning and in risk communication; • top-down communication systems by experts and specialists and absence of two-way communication systems; • not taking into account the impact of social media and cellular phones on the spread of rumours and parallel information systems; • applying best-practice instead of incorporating local conditions in pandemic planning and response; • lack of flexibility in pandemic planning and response; • underestimation of citizens need and capacity to see and choose for themselves.

The strategy that is outlined works for developing capacity and increasing health-care workers influenza pandemic awareness and conducting information campaigns in the population, especially among high-risk groups.

The ASSET study of the Crisis Participatory Governance Nowadays one of the major challenges confronting policy-makers and health practitioners' in confronting with epidemic and pandemics threats calls for more inclusion of citizens and civil society in risk communication and organized response, in such a way that rumour will not be the main information channel.

Pioneering such citizen engagement is then identified as 'Crisis Participatory Governance.' It starts with effective risk communication that is entirely contingent on successfully identifying the cultural dimensions and priorities of targeted groups. In doing so, it is critical that the identification is a result of an upstream and downstream, two-way communication process.

Literature shows research in participatory governance at local, national and international levels

for crisis in general, and also relating to epidemics and pandemics. The study focused on examining aspects of governance at the local, national and international levels for crisis in general, and relates it to infectious disease crisis such as epidemics and pandemics. Crisis participatory governance is discussed in different contexts such as the South Sudan Secession Crisis, the recent Ebola epidemic, the 2009 H1N1 pandemic, and 2015 H1N1 outbreak in India.

The Crisis Participatory Governance concept has been dissected into four overlapping phases of Resilience and Sustainability, Pre-Crisis, Crisis, and Post-Crisis. For each phase, both different crisis participatory governance challenges and associated tools and models and experiences in the context of recent epidemics and pandemics have been addressed as well.

Findings reveal the importance of flexibility in adapting participatory governance activities to different epidemics and to the targeted community. For example during the 2009 H1N1 pandemic, standardized public communications, while factual and useful in some contexts, failed to adequately create understanding of lethality and spread in some areas. A lack of trust in authorities led to rumours, hindering vaccination programs and other health care initiatives.

A good tool to use is definitively the model that can guide Crisis Participatory Governance within the four phases of epidemics and pandemics. However, it is shown how the crucial factor to be put in action is the adaptation of plans to local conditions through continuous feedback, engaging the public on a day-to-day basis.

About people engagement This may seem like a world of huge organisations and institutions in

which individual people have no part to play. But in fact, individuals play many important roles. For one thing, the first two groups to be involved in an outbreak are actually the victims themselves and the medical personnel who treat them.

How victims are connected to each other in social networks. Who they contact and who well they are contagious. And whether they seek medical treatment, all affect how a disease has the opportunity to spread. Then, whether medical personal recognize the nature of the disease, what treatments they provide, whether they take precautions like wearing gloves or masks. And whether they report the disease to public health authorities. All these things matter as well.

In addition, individuals and the grassroots organisations they create have had fundamental impacts on our long-term strategies for combating infectious diseases. As example in the field, it is noteworthy that in the 1980s and 1990s, the organisation Act Up reshaped the US government's approach to HIV funding, research, drug approval, and treatment through political protest. And these changes have resonated permanently through the system as a whole.

Specifically on pandemic occurrence, Savoia et al. reported a study on BMC Public Health in 2012 that explained how the strength of a society's response to a public health emergency depends partly on meeting the needs of all segments of the population, especially those who are most vulnerable and subject to greatest adversity. Then, recognizing the public communication on H1N1 as a challenge, knowledge gaps in the general population were studied, also in association with relevant social determinants. Level of education and home ownership, reliable indicators of socioeconomic position (SEP), were definitively associated with knowledge of H1N1. Policymakers and public health practitioners should take these specific factors into consideration when implementing educational and preventive interventions promoting the health and preparedness of the population, and when designing communication campaigns during a public health emergency.

A step beyond Good governance is the backbone for equitable and sustained development in our global community. Effective participation by all people has come to be viewed as a necessary requirement for promoting good governance. Participatory governance means including citizens in decision making that has implications for their wellbeing, and transparency in the decision making and implementation processes. This is particularly important during the time of crisis, as people become the centre of both providing aid and receiving it.

EMERGENCY PREPAREDNESS AND RESPONSE

Examples of participatory governance experiences in crisis management

In the present column four case studies are reported in matter of participatory governance associated to relevant public health emergencies and their related management.

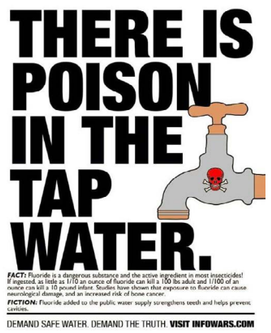
Manfredonia, Italy; 1976 An Italian **study** 'Environmental epidemiology and population engagement: the Manfredonia environment and health project' reports an outstanding case of epidemiological research associated to public engagement. On the 26th of September 1976 an accident in a petrochemical plant in Manfredonia (Province of Foggia, Apulia Region, Southern Italy) resulted in a release of several tons of arsenic compounds. A population of about 57,000 inhabitants was exposed. The accident followed by two months that of Seveso and both contributed to the European Directive on major accident hazards. Several other accidents occurred since that date and the plant was closed in 1994.

The quoted paper describes the scientific approach used to design an epidemiological investigation in the face of lack of trust and outrage by the exposed population. An innovative approach was followed, grounded in the insights of Post-normal Science. A formal infrastructure was built to allow population engagement: the epidemiological questions, the data gathering and the methodology were openly discussed with all interested parties. So were the potential scenarios resulting for the study and their implications in terms of public health actions. All phases were documented in the official journal of the Italian Epidemiological Association (i.e. 'Epidemiology and Prevention'). Seven public events took place in the first year of the study. Public engagement grew and a local Citizen Committee were in charge. The conflicts were not resolved but they were at least more clearly stated. After initial scepticism, the epidemiological investigation received a broad consensus.

Epidemiology is not neutral and many dynamics underwent engagements' efforts in the Manfredonia project. The choice of adopting a participatory approach is both innovative and challenging. All participants accepted to be part of an "extended peer community" where outcomes, methods, procedures, inputs, data, and results have been collectively discussed. The process run can be defined permanently "under construction", resulting in a continuous learning.

Haiti, Nepal; 2010 After the earthquake that struck down Nepal in October 2010, cholera appeared in Haiti for the first time in recorded history. Within the **article** 'Nepalese origin of cholera epidemic in Haiti', it is reported that the causative agent was quickly identified by the Haitian National Public Health Laboratory and the United States Centers for Disease Control and Prevention as Vibrio cholerae serogroup O1, serotype Ogawa, biotype El Tor. Since then, >500 000 government-acknowledged cholera cases and >7000 deaths have occurred, the largest cholera epidemic in the world, with the real death toll probably much higher.

Questions of origin have been widely debated with some attributing the onset of the epidemic to climatic factors and others to human transmission. None of the evidence on origin supports climatic factors. Instead, recent epidemiological and molecular-genetic evidence point to the United Nations peacekeeping troops from Nepal as the source of cholera to Haiti, following their troop rotation in early October 2010. Such findings have important policy implications for shaping future international relief efforts.



Charleston, West Virginia; 2014 In the **paper** 'Public response to the 2014 chemical spill in West Virginia: knowledge, opinions and behaviours' Savoia et al. explored relationship between social determinants and some factors characterizing residents' knowledge about the contamination that occurred on January 9th 2014, when a faulty storage tank leaked 10,000 gal of an industrial coal processing liquid into the Elk River in West Virginia (WV), polluting the drinking water of the nine counties collectively known as the Kanawha Valley.

findings from this study show that, during the 2014 West Virginia water crisis, information about water contamination spread quickly, as 73% of survey respondents across the state and 89% within the affected counties reported they heard about the incident the same day it occurred. Prompt information was released mostly, people understood both what happened and how to behave in order to prevent exposure to the contaminant. Most people received the information from local television news (73%); social media users had 120% increase odds of knowing about the recommended behaviours. The majority of respondents living in affected counties (70%) followed the recommended behaviours and it was shown that people who had a favourable opinion of the source of information demonstrated better knowledge of recommended behaviours.

Data from this study highlight the association between a higher perception of risk and timely receipt of information with compliance with recommended behaviours, underlying the importance of releasing information to the public as quickly as possible during a crisis. This study also outlines the importance of coordinating risk communication activities beyond the area of the incident to assure public understanding of what measures are recommended, which are not and where. Additionally, the use of local television news during a crisis revealed to be important for timely dissemination of information and information exposure across segments of the population differed according to population's background characteristics.

Flint, Michigan; 2016 In response to the water contamination crisis in Flint, CDC recommended that all children aged less than six year got their lead levels checked by April 1, 2016. Early detection in children is usually critical, but getting these many children tested in such a short time represented a huge challenge.

To help get people tested quickly, the Genesee County Health Department has set up several sites throughout the city where people could go to get their blood lead levels checked.

During spring 2016, while appointees from the Genesee County Health Department toured the site at Carriage Town Ministries and blood testing was constantly supported, a broad engagement of public health concern was observed going on the social networks through #**FlintWaterCrisis.**

Resilience: a key-word for participatory governance

Resilience is one of the foundational elements essential to a comprehensive approach to homeland security that is important to include in policy directives on national preparedness, given the complex nature of the matter and sharing with diverse stakeholders. The core of building national resilience is about enabling and mobilizing communities. A conceptual framework for describing the relationships between resilience, preparedness, and risk reduction is shown in Figure 1. Starting from the interconnections presented in the figure, three types of recommendations can be identified.

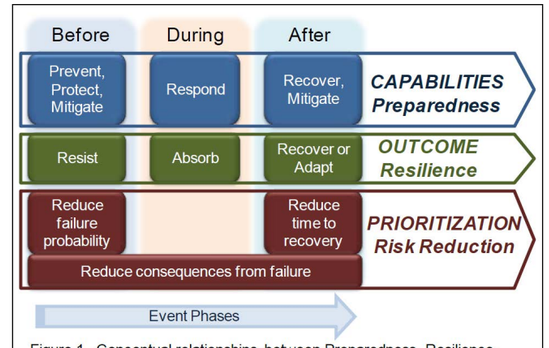
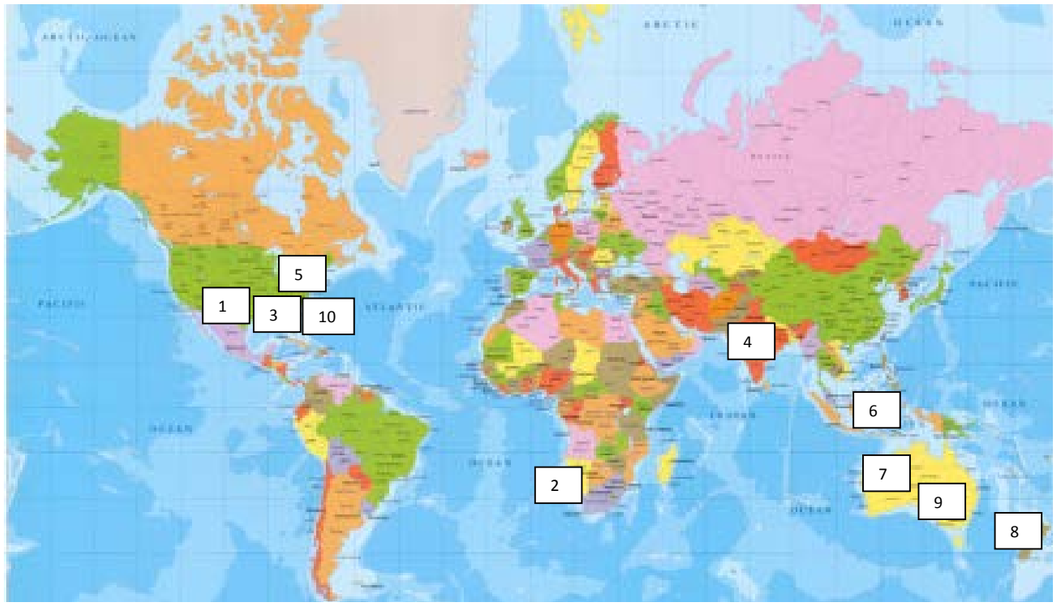


Figure 1. Conceptual relationships between Preparedness, Resilience, and Risk Reduction.

Recommendations...	applying across community resilience activities overall	✓ shape a shared understanding of the shared responsibility: it is necessary to work with key stakeholder groups to develop and share models for resilience—illustrations of resilience in operational settings—within the context of each group. The purpose is to motivate stakeholders to learn from each other (as action of mutual learning) and to do what they can to enhance resilience without waiting for external intervention; ✓ organize a coherent and synergistic campaign to strengthen and sustain national resilience: policies, programs, and investments should be aligned in order to motivate and operationalize resilience as well as to stimulate similar actions at national level; ✓ arrange for effective execution; ✓ structure the knowledge and talent base for resilience: a research program should be built with the aim of perform the intellectual underpinnings for resilience training and education programs to be delivered throughout the country level.
	to enhance individual and societal resilience	✓ periodic update of information should be linked explicitly to resilience outcomes; ✓ develop public awareness: a comprehensive and coherent suite of communications strategies should be implemented in support of a national campaign to increase public awareness and to build societal resilience; ✓ motivate and enable action: proven incentive and award programs should be adapted to facilitate individual and community engagement for action.
	targeting infrastructure and environment planning	✓ resilient community initiatives should be developed to enable community resilience by leveraging existing assets and programs; ✓ all national programs related to infrastructure or capacity building should be reviewed and aligned to make resilience initiatives succeed as well as developing synchronized strategic plans for improvement of operational resilience should be supported; ✓ a community-based resilient critical infrastructure and assessment methodology and toolkit have to be activated.

Ten experiences of resilience around the world

In dealing with 'crisis participatory governance' resilience has been highlighted to be the crucial element. Thus, we propose here a global shot of ten practices on resilience all over the world: it is about scientific papers, operational reports, guidelines or helpful materials (they have been ed paring down complex concepts and theories into simple rules that are continually introduced and reinforced to the company's leadership. After years of effort, employees from the well head to the corporate boardroom are aligned and aware of everyone's roles when an incident occurs. In short, because each person can count on the others, the company quickly adapts and overcomes



numerated in the map since the more recent initiatives).

1. Designing and implementing an interdependent resilience culture Once an emergency occurs, companies find themselves competing for diminishing resources. Companies mired in confusion and debate often fails to obtain the resources necessary for a speedy recovery and fail to meet the expectations of their various interested parties. Unfortunately, it is during these emergencies that the firm is judged. Unfavourable evaluations of a company by customers, the government and/or the general public result in lost future revenue through contracts that are either not renewed or cancelled, as well as disqualification from tenders and lost bids. This paper discusses how an oil field services company implemented an interdependent resilience culture. Development of this culture included significant issues, adding to its competitiveness. As a reader, you will understand that the results of implementing this new culture come down to a single metric: speed. Responses become faster, decisions faster, communication and the transfer of knowledge faster. Emergencies are dynamic and ever-changing. Information quickly becomes stale and outdated. Installing this culture creates a more nimble company which reacts in a manner that allows for extra time, so all the unplanned delays, pitfalls and breakdowns can occur with little to no meaningful impact.
2. African Drought Conference 2016 Drought Risk Management and Enhancing Resilience in Africa Country Club and Resort, Windhoek, Namibia August, 15-19 2016
3. 2016 National Hurricane Conference Orlando March 21-24, 2016 & Inaugural Security Summit March 25, 2016
4. 6th Annual Conference of the International Society for Integrated Disaster Risk Management, TIFAC-IDRiM 2015; New Delhi, October 28-30, 2015 Technology Information, Forecasting and Assessment Council (TIFAC) is an autonomous organisation set up in 1988 under the Department of Science & Technology, Government of India to look ahead in technologies, assess the technology trajectories, and support technology innovation by network actions in select technology areas of national importance. TIFAC has worked on Technology Vision 2035, a nationwide exercise that identifies a range of technologies to address the prerogatives that an Indian must enjoy as citizens of a developed economy by 2035. It also identifies 10 grand challenges the country must confront to develop technological muscles and move up in all socio-economical indices. The vision would be presented as a document backed-up by 12 technological roadmaps.
5. ASPR Strategic Plan 2014 The Department of Health and Human Services (HHS) Office of the Assistant Secretary for Preparedness and Response (ASPR) is a leader in preparing the nation and its communities to respond to and recover from public health and medical disasters and emergencies. The 2006 Pandemic and All-Hazards Preparedness Act (PAHPA), reaffirmed by the 2013 Pandemic and All-Hazards Preparedness Reauthorization Act (PAHPRA), established the ASPR as the principal adviser to the HHS Secretary responsible for providing integrated policy coordination and strategic direction with respect to all matters related to public health, medical preparedness, and deployment of the federal response for public health emergencies and incidents.
6. EPWG Strategic Plan 2013~2016 The 5th APEC Emergency Preparedness Working Group Meeting EPWG was held in Medan, Indonesia, on 2-3 July, 2013. Co-Chairs were Ph.D. Li, Wei-Sen (Chinese Taipei) and Dr. Nguyen Huu Phuc (Viet Nam). The two days meeting was attended by 15 of the 21 APEC member economies. Members welcomed invited participants from: Ministry of Health Indonesia; APEC-TATF team; APEC-TATF Consultant; representative of Scanex Russia; APEC Climate Center (APCC), and from World Bank –Indonesia. The 5th EPWG Meeting followed the 'APEC Workshop on Applying Geospatial Hazard and Risk Information' led by the United States on 30 June 1 July, in Medan, Indonesia.
7. Australian Strategy for Disaster Resilience: building nation's resilience to disasters and implementation review The starting consideration is that each year, Australian communities face devastating losses caused by disasters. Bushfires, floods, storms, other hazards and their associated consequences have significant impacts on communities, the economy, infrastructure and the environment. Then, over the past decade, governments have collaborated on reforming and further strengthening disaster management approaches.
8. Wellington Region Emergency Management and its second edition. The basic concept is as follows: 'resilient communities are well prepared and have high levels of social capital to address the challenges of an emergency event'. The purpose of this Community Resilience Strategy is to define the philosophy and framework for community engagement; to develop a strategic set of objectives to enhance resilience (build capacity, increase connectedness and foster cooperation); and outline the guiding principles and tools that enable to operationalise the abstract concept of resilience.
9. Australian community engagement framework The declared aim is to 'facilitate the development of approaches that foster community involvement and participation in achieving the goal of community safety'. Additionally, their vision is for 'resilient Western Australian communities that work together to build capacity and capability to prevent, prepare for, respond to and recover from emergencies'.
10. Collaborative emergency management: better community organising, better public preparedness and response Community coordination requires communication and planning of precautions to take when faced with a

severe threat of disaster. The unique case of the four Florida hurricanes of 2004—Charley, Frances, Ivan, and Jeanne—is used here to assess community responses to repeated threats of hurricanes. The paper examines how effectiveness in coordinating community disaster response efforts affects future public preparedness. The findings suggest that pre-season planning, open communication between emergency managers and elected officials, and the use of technology all had a significant impact on community responses. The repeated threat scenario indicates that emergency managers must work vigilantly to keep residents informed of the seriousness of a situation. The study describes how emergency managers in Florida countered public complacency during four hurricanes in six weeks. The strategies identified as useful by public managers in the context of hurricanes are applicable to other natural and man-made disasters.

PUBLIC HEALTH INITIATIVES

A step forward on vaccination policy in Italy

On 19 January 2017, the Italian State-Regions Conference approved also the new National Vaccination Prevention Plan 2017-2019 (PNPV), that is encompassed among the Essential Healthcare Levels. The newly offered vaccination supply represents a valid policy instrument in order to reduce iniquity in the country and to improve health status of the population.

The key aspect of this National Plan is a reference calendar that has been shared with Regions both from the technical and the political point of view and aims at providing all citizens with vaccination benefits, guaranteeing equal access to high quality vaccines which are available over the time.

CMS Emergency Preparedness Rule: Resources at Your Fingertips

The US Centers for Medicare & Medicaid Services (CMS) issued the Emergency Preparedness Requirements for Medicare and Medicaid Participating Providers and Suppliers Final Rule to establish consistent emergency preparedness requirements for healthcare providers participating in Medicare and Medicaid, increase patient safety during emergencies, and establish a more coordinated response to natural and human-caused disasters. The US Department of Health and Human Services Office of the Assistant Secretary for Preparedness and Response (ASPR) worked closely with CMS in the development of the rule that was published on 16th of September 2016 and is effective from the 15th of November 2016.

This rule applies to 17 provider and supplier types as a condition of participation for CMS. The providers/suppliers are required to meet four core elements (with specific requirements adjusted based on the individual characteristics of each provider and supplier):

1. **Emergency plan**—Develop an emergency plan based on a risk assessment and using an "all-hazards" approach, which will provide an integrated system for emergency planning that focuses on capacities and capabilities.
2. **Policies and procedures**—Develop and implement policies and procedures based on the emergency plan and risk assessment that are reviewed and updated at least annually. For hospitals, Critical Access Hospitals (CAHs), and Long-Term Care (LTC) facilities, the policies and procedures must address the provision of subsistence needs, such as food, water and medical supplies, for staff and residents, whether they evacuate or shelter in place.
3. **Communication plan**—Develop and maintain an emergency preparedness communication plan that complies with federal, state and local laws. Patient care must be coordinated within the facility, across healthcare providers, and with state and local public health departments and emergency management systems to protect patient health and safety in the event of a disaster.
4. **Training and testing program**—Develop and maintain training and testing programs, including initial training in policies and procedures. Facility staff will have to demonstrate knowledge of emergency procedures and provide training at least annually. Facilities must conduct drills and exercises to test the emergency plan or participate in an actual incident that tests the plan.

SOCIAL NETWORKS

A relevant article anticipated on Health and Social Media: Perfect Storm of Information

The use of Internet in the health domain is becoming a major worldwide trend. Millions of citizens are searching online health information and publish content about their health status. Patients

are engaging with other patients in online communities using different types of social media. The integration of technologies is making boundaries blurrier between mobile health, social media, wearable, games, and big data. This paper provides an overview of the major research challenges with the area of health social media which are demonstrated to have a powerful influence on health decisions. However, complex multidisciplinary research is needed to understand how to better address the use, and above all the analysis, of information circulating on social networks in favour of public health. The prominent conclusion is that: '*a bigger understanding of social media will give health professionals and authorities new tools to help decision-making at global, national, local, and corporate level*'.

A systematic review by Lauren Sinnenberg in January 2017: Twitter as a Tool for Health Research

A literature search was run in PubMed, Embase, Web of Science, Google Scholar, and CINAHL through September 2015 searching for peer-reviewed original research studies that primarily used Twitter for health research. Of 1110 unique health-related articles mentioning Twitter, 137 met eligibility criteria. The primary approaches for using Twitter in health research that constitute a new taxonomy were content analysis (56%; n = 77), surveillance (26%; n = 36), engagement (14%; n = 19), recruitment (7%; n = 9), intervention (7%; n = 9), and network analysis (4%; n = 5). These studies collectively analysed more than 5 billion tweets primarily by using the Twitter application program interface. Most studies were published recently (33% in 2015). A new taxonomy was identified to describe Twitter use in health research with 6 categories. *Given that Twitter-based health research is a growing field funded by several organisations, public health (23%; n = 31) and infectious disease (20%; n = 28) were the research fields most commonly represented in the included studies*. Then, 'future work should develop standardized reporting guidelines for health researchers who use Twitter and policies that address privacy and ethical concerns in social media research'.

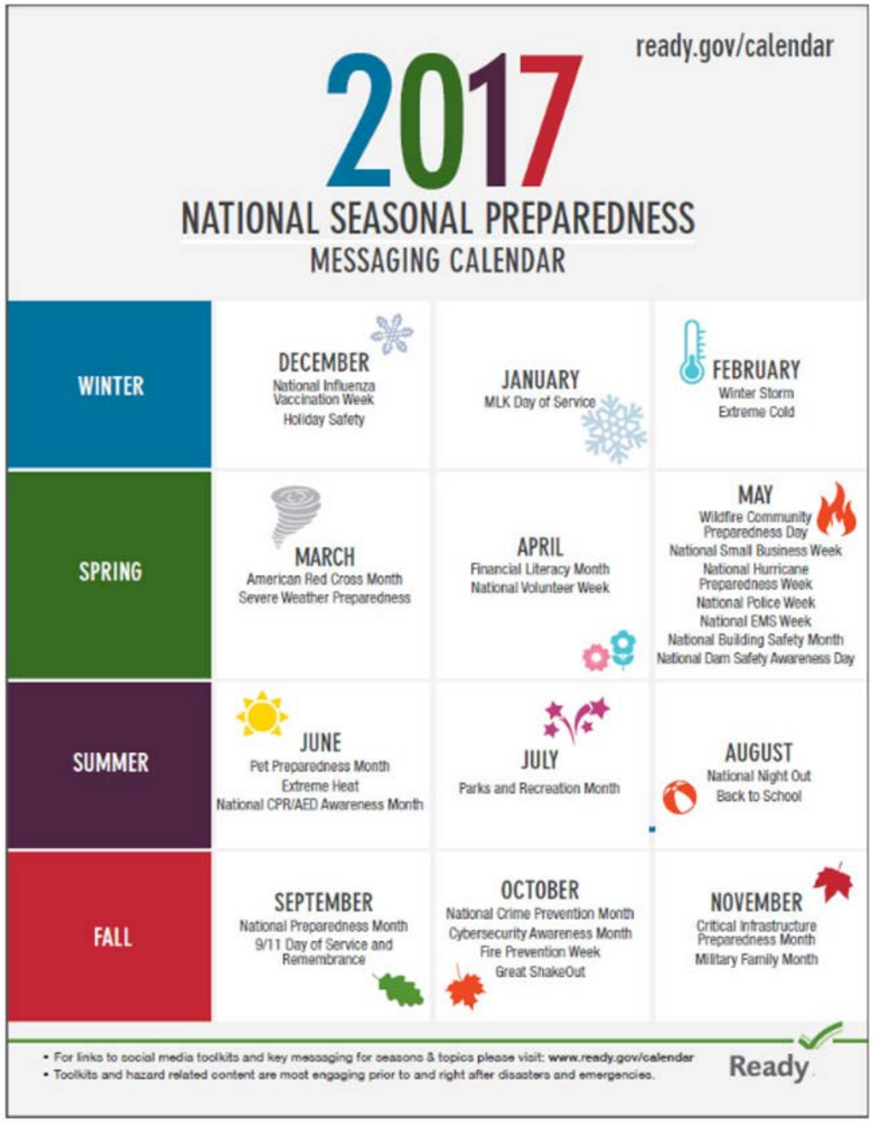
The Facebook page of Public health emergency (PHE.gov) updates on Zika spreading

Public Health Emergency.gov is a web portal held by the US Department of Health and Human Services and its cross-governmental partners to serve as a single point of entry for access to public health risk, and situational awareness information. Declared disasters and emergencies are some of the contents populating the US Public Health Emergency website. Beside the pages dedicated to disaster response and to agents, diseases, and

other threats, involving the public is a key feature of the portal, either by social media profiles or by constant information and news updating. An outstanding example is about the fervid activity delivered by the Public Health Emergency.gov in updating its Facebook page with posts, maps, infographics of Zika spreading.

ON THE WEB

The 2017 National Seasonal Preparedness Messaging Calendar provides US readers (who are citizens, lay publics or whoever) with key messages to promote preparedness all over the year.



In terms of general preparedness…

- Make a family emergency communication plan and include your pets.
- Identify an out of town emergency contact to coordinate information with family/friends.
- Check on neighbours.
- Keep an emergency kit wherever you spend time: home, car, work etc.
- Download the FEMA App and set up local alerts
- Listen to local officials by radio, TV, or social media and take action.
- Practice your preparedness plans with a drill or exercise.
- Take a first aid class so you can help until first responders arrive.

In terms of preparedness per single season…

Winter

Winter Storm and Extreme Cold
- ✓ Stay off the road during/after a storm.
- ✓ Extreme cold can be deadly. Stay inside where it is warm and bring pets indoors
- ✓ Wear warm clothes in layers and change activities to stay safe.
- ✓ Use safe heating devices.
- ✓ Ensure you have a working carbon monoxide detector.
- ✓ Winter Weather Safety Social Media Toolkit
- ✓ Weather Ready Nation NOAA Winter Safety Resources

Holiday Safety
- ✓ Prepare for unpredictable weather before traveling.
- ✓ Water tree and turn off holiday lights overnight and when away to reduce risk of a fire.
- ✓ Keep candles away from flammable items.
- ✓ Shop securely online over the holidays.
- ✓ Holiday Safety Social Media Toolkit

December
- ✓ National Influenza Vaccination Week (December 4-10)

January
- ✓ Martin Luther King Jr. Day of Service (January 16)

February
- ✓ Winter Weather Safety Social Media Toolkit

Spring

Severe Weather
- ✓ If ordered to evacuate, take action immediately. Know the route and plan where to go.
- ✓ Identify a safe location, in case of tornado.
- ✓ Severe Weather Safety Social Media Toolkit

Flood
- ✓ Never drive or walk through flooded streets; Turn Around, Don't Drown.
- ✓ Check your insurance policies to ensure you have enough coverage.
- ✓ Weather Ready Nation NOAA Spring Safety Resources

March
- ✓ American Red Cross Month

April
- ✓ Financial Literacy Month
- ✓ National Volunteer Week (April 10-16)

May
- ✓ Wildfire Community Preparedness Day (May 7)
  - o Wildfire Safety Social Media Toolkit
- ✓ National Small Business Week (April 30-May 6)
- ✓ National Hurricane Preparedness Week (May 15-21)
- ✓ National Police Week (May 7-20)
- ✓ National EMS Week (May 15 – 21)
- ✓ Public Service Recognition Week
- ✓ Older Americans Month
- ✓ Military Appreciation Month
- ✓ National Building Safety Month
- ✓ National Dam Safety Awareness Day (May 31)

Summer

Extreme Heat
- ✓ Extreme heat can be deadly. Stay inside where it is cool.
- ✓ Wear cool clothes and change activities to stay safe.
- ✓ Never leave children or pets in a car.
- ✓ Extreme Heat Safety Social Media Toolkit
- ✓ Pet Preparedness Social Media Toolkit

Wildfire Safety
- ✓ If you see a wildfire, report it: you may be the first to see it.
- ✓ Wildfires can kill. If ordered to evacuate, know the route and plan where to go.
- ✓ Wildfire Safety Social Media Toolkit

Children & Youth + Back to School
- ✓ Ensure children are included in preparedness conversations.
- ✓ Know emergency plan of your child's school and care facility.
- ✓ Practice evacuation plans and other emergency procedures with children on a regular basis.
- ✓ Make sure children have emergency contacts memorized or available in a secure place.
- ✓ Children and Youth Preparedness Social Media Toolkit

June
- ✓ Pet Preparedness Month
- ✓ CPR and AED Awareness Week (June 1-7)

July
- ✓ Parks and Recreation Month

August
- ✓ National Night Out (August 1)

Fall

Hurricane
- ✓ If ordered to evacuate, know the route and plan where to go.
- ✓ Never drive or walk through flooded streets; Turn Around, Don't Drown.
- ✓ Hurricane Preparedness Social Media Toolkit
- ✓ Weather Ready Nation NOAA Fall Safety Resources

Fire Safety
- ✓ Identify a meeting place for your family or anyone you live with.
- ✓ Don't Wait, Check the Date – Replace Smoke Alarms Every 10 Years.
- ✓ United States Fire Administration Outreach Materials

Earthquake
- ✓ Practice "Drop, Cover and Hold On."
- ✓ Anchor loose items to a secure wall in your home.
- ✓ Text, don't call.
- ✓ Great Shakeout resources

September
- ✓ National Preparedness Month
- ✓ 9/11 Day of Service and Remembrance

October
- ✓ National Crime Prevention Month
- ✓ Cybersecurity Awareness Month
- ✓ Fire Prevention Week
- ✓ Great ShakeOut

FROM THE ASSET WORLD

Within the work on Citizen consultation, a long propaedeutic work has been run in ASSET since the fall 2015. The real action of public consultation was carried out on September 2016, 24th. More than 500 citizens living in eight countries were consulted on relevant issues related to global public health emergencies. Results coming from this exercise will be also considered in delivering local initiatives in 12 cities, that are encompassed within the work on mobilization and mutual learning.

In terms of Policy watch, after a feedback on the ASSET public consultations that will be given at the European Parliament in Brussels on 26th April 2017, participatory governance will be one of the 'hot topics' to be dealt at the third physical meeting of the ASSET High Level Policy Forum that will be held in Brussels on April 2017, 28th. The issue on participatory governance is put down in the key question '*Can citizens be included in epidemic preparedness and response?*' The answer is yes, furthermore they demand to participate actively.

More than 400 citizens were consulted on epidemic preparedness and response in late September across Europe. The citizens expressed a demand for more transparency and dialogue in both epidemic response and planning, while at the same time they provided policy-makers with thought-provoking insights with the other as; the Internet being the least trustworthy source of information yet the first source citizens consult.

Some of the thought-provoking results from the pan-European citizen consultation included vaccination and information channels. While half of the citizens found mandatory vaccination as an appropriate tool for public health authorities during epidemic threats, more than eight-of-ten answered that it should be mandatory for health care workers. This discrepancy is very interesting, and we will in the upcoming policy-workshop go more into detail. As mentioned in the lead paragraph, an insight that policy-makers cannot overlook is that the citizen deems the internet as the least trusted information channel, and yet it is the one they consult first. Research has showed that even if this insight, information read online has a subconscious effect on decision-making.

Source: ASSET Webtool

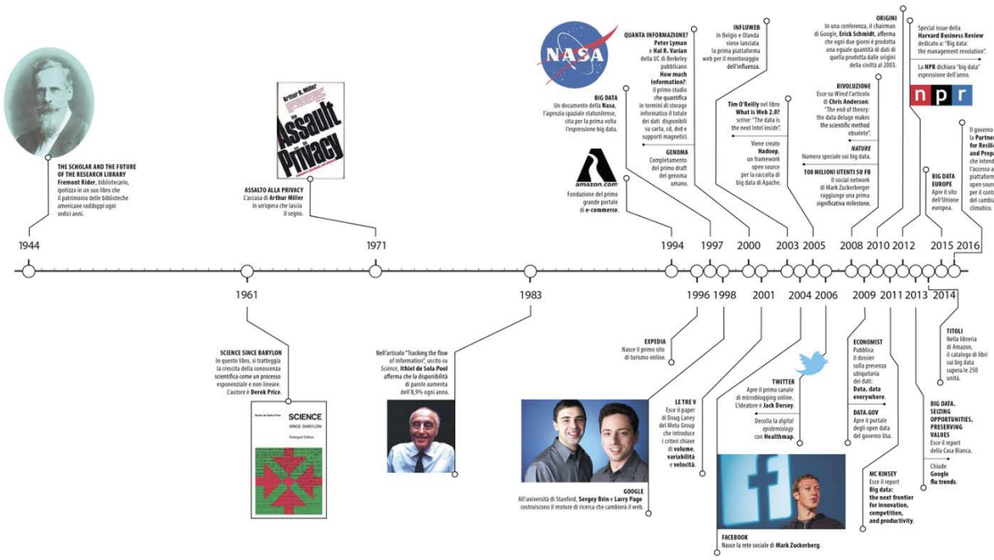
QUESTIONS FOR THE ASSET HIGH LEVEL POLICY FORUM:

1. Where will a similar process be relevant in European public health politics?
2. What is the most relevant input from citizens to policy-makers?
3. What is the most interesting finding?

Method

The Danish Board of Technology (DBT) was asked to develop and test a participatory and inclusive method for engaging citizens. The method should convince the EU that citizen participation can be done within a field normally dominated by technical experts. In fact, epidemic response and planning has clear normative components, involving obvious conflicts and dilemmas, combined with a well-documented scientific knowledge base, and a need for political action in the crisis situation and fulfilling all conditions for citizen participation. It was decided to develop a multi-site method, where the citizens received the same information prior and during the consultations at the same time across Europe. Their votes were reported in-real-time into a web tool, were all the results can be seen and analysed.

IN A SNAPSHOT!



The commentary entitled "*Epidemiology in the era of big data*" by Mooney SJ, Westreich DJ, El-Sayed AM., published on *Epidemiology* 2015;26:390-4, identifies Graunt the work on big data public health-driven. On the contrary, according other recent sources John Snow is given this role. It is important to recognize in fact attributions to scientists who elaborated associations, moving from correlations to hypothesis and causes identification.

Big data (this term showed up in 1997 but was globally recognised since 2010) are originally characterized with three Vs: volume, variety and velocity; to these features other two Vs are being added, such as veracity and value. However, the most characterizing element is to deal with data which are spontaneously generated. That is the "data deluge" described on the Economist dossier in 2009, where so huge information deeply modify the typical scientific observation, because not being actively gathered but to be analysed by complex algorithms. In this perspective, the first Google trends' objective is "to organize global information and make it universally accessible and useful".

Talking about '*internet of things*', big data refer to "something that can be done at large scale, suggesting new perspectives or creating new forms of value, changing markets, organisations, relations between and governments". As stated in *The new digital age* by Schmidt E and Cohen J, we have to be aware of the biggest evidence available at the moment: 'cyberspace is the world's largest ungoverned space and the Internet is the world's largest experiment in anarchy'.

Anyway, in a note entitled 'Big data meets public health', published on the column 'Insights' of *Science* by Muin J. Khoury and John PA Ioannidis, the two US authors advise 'big error can plague big data' relating to the promising capacity to find associations among events, but not to understand whether they are relevant or not. A step beyond is taken by the Institute for health metrics and evaluation that published the Global burden of diseases, injuries, and risk factors study 2015 on The Lancet. As stated in the editorial (GBD: from big data to meaningful change), 'this is the science of making data meaningful'.

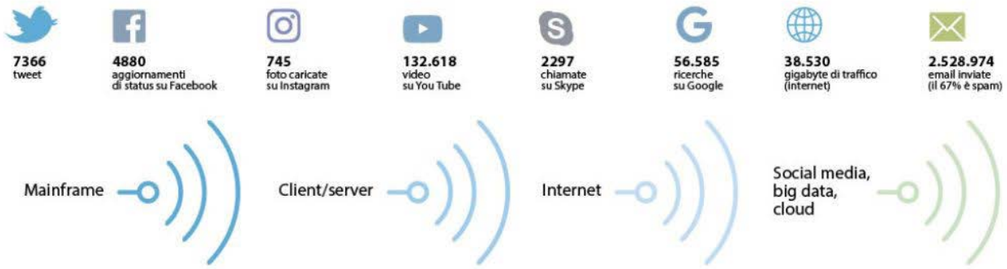
In their book titled 'Risk Communication and Infectious Diseases in an Age of Digital Media', Anat Gesser-Edelsburg and Yaffa Shir-Raz asks how, in a digital world where the public's voice is growing

increasingly strong, can health experts best exert influence to contain the global spread of infectious diseases? They confirm that digital media sites provide an important source of health information, but also highlight how powerful these platforms are for the public to air personal experiences and concerns. The two authors then explores the different organisational strategies for effectively communicating public health information in light of a common understanding, basing on an assessment of the complex dynamics at play in managing risk and informing decision-making processes.

As another example in an article entitled 'Social media for tracking disease outbreaks – fad or way of the future?' that has been published in October 2016, the main conclusion by the author, C Raina MacIntyre, is that timeliness becomes the most important factor for detecting epidemics.

At this stage, it is noteworthy that it is not just a shift in the scientific *modus operandi* paradigm (from deductive to inductive) but, quoting an interview released by Harlan Krumholz to the New England Journal of Medicine, the real greatness stays in the participation of people who generate such these data and the mutual sharing of them to foster the best benefit to the whole community. According to this idea, everyone should see, understand and use data. A better accessibility is also retrievable in the US Health It Strategic Plan 2015-2020, but the issue opens a lot of ethical questions. They will be mainly developed in the sixth ASSET Pandemic Preparedness and Response Bulletin, *Share and move.*

Every second on the net…



Disclaimer

The ASSET project was designed to accomplish a European Commission Call (DG Research and Innovation - HEALTH), for developing a Mobilization and Mutual Learning Action Plan in response to epidemics and pandemics with regard to Science in Society related issues.

The European grant agreement ensures scientific and editorial freedom to the ASSET consortium partners.

The views expressed in the ASSET Pandemic Preparedness and Response Bulletin "Share and move" are those of the authors and may not necessarily comply with European policy.

Statements in the Bulletin are the responsibility of their authors and not authors' institutions.

In case of conflict of interests, it is declared.

Readers are advised to verify any information they choose to rely on.

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