D3.1

New framework model for communication

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D3.1 "New Framework Model for Communication"

Task: **T3.1**

Leader: **HU** – Other Contributor: **CSSC**

Contents

1. Background

The WP1 and WP2 studies on the more recent pandemics conducted in the context of TELL ME Group, revealed conspicuous gaps between the international organizations' attempts to apply the theory of risk communication in the world of "network society" on the one hand, and unintended outcomes (Cho & Salmon, 2007; Guttman & Salmon, 2004; Salmon & Atkin, 2003), producing results inconsistent with what the organizations intended. The organizations wanted to encourage the public to vaccinate against the H1N1 virus but the outcome in most of the European countries, as we have shown, was reduced levels of uptake of different groups. The gap between the goals and the results of the media campaigns also led to the so-called "boomerang effect", with segments of the public expressing distrust in the world health system, which it saw as mired in conflicts of interest (Cohen & Carter, 2010). This resulted in the public's noncompliance with the vaccination campaign and a crisis of trust between the public and international organizations and governments. Work on this project revealed the deficit of theoretical and applied knowledge in the area of risk communication and public inclusion through social media.

2. Objectives

While pandemic outbreaks in the last decade showcase that public health authorities use the best tools available and the newest technologies to contain outbreaks from a medical point of view, the aspect of outbreak communication does not always reflect the new communication reality. For instance, T2.5 dealt with the context of social media stressing the importance of higher level involvement of formal health organization in the blogosphere that could establish more effective communication channels with the public. Moreover, published review reports, of international health organizations such as WHO and ECDC that deal with the conclusions from the H1N1 outbreak, demonstrate that the hierarchical and linear models being used for outbreak communication still hold outdated assumption that focus on direct effects rather than on mediation of the message and on the dichotomy between sender and addressee instead of two-way communication. The goal of the Framework model is a pioneering effort to break through this barrier and overcome these deficits, formulating the implementation of risk communication beyond the state of the art. Generally, the framework model addresses the main research questions presented by the TELLME project: **(1)** How can the general population be persuaded through public health communication to take effective preventive actions during infectious disease outbreaks? **(2)** What are the most appropriate communication methods to deal with the complexity, uncertainty, misinformation and malicious information? **(3)** What are the best communication strategies to maximize compliance with vaccination, and to assist health professionals and agencies to cope with vaccine-resistant groups?

In order to establish a framework model that aims to answer the general questions, it considers the following challenges:

How can the public be included in decision making effectively during the crisis? What response can be given to public health workers' concerns and fears? How can media professionals be included in risk communication to the public (not only as informers but as partners during the pre-crisis, warning, emergency, resolution and evaluation stages)? What messages/issues should be communicated to different subpopulations during pandemics? How can public sentiment be tracked

during real time pandemics and respond immediately and forcefully, bring about maximum public participation and collaboration?

The main objective is to define and design a new framework model for outbreak communication. Broadly speaking, the model focuses on four crucial elements that shape the distribution of information in outbreak communication:

1. **WHO**: which actors are called for involvement at which stage?
2. **HOW**: which communication channels are best to be used by those actors to achieve objectives?
3. **WHEN**: which time is best to communicate messages, prior, during or after an epidemic?
4. **WHAT**: which risk communication theories and tools ought to be considered in producing messages, for more effective involvement of the public and better level of immunization, also keeping ethics in mind?

3. Validation Process

The model was verified and validated following two complementary routes. First, we conducted a general discussion between members of the TELL ME consortium and external participants attending the 2013 validation workshop in Haifa, Israel (for further information see HU Summery Report of the TELL ME Workshop on New Framework Model for Outbreak Communication). This type of discussion facilitated direct feedback from a diverse range of participants and stressed the controversial aspects of the framework model. This session was recorded so that opinions and comments received from participants were incorporated into the draft report, to generate the final version of the model.

Second, all participants were asked to complete an anonymous questionnaire based on the presentation and the draft version of the framework model (see ANNEX I). The questionnaire was comprised of open ended questions that dealt with the strengths and weakness of the model, by directing attention to the innovative aspects presented. Interestingly, the most common remark dealt with the static nature of the model that contradicted the dynamic nature of outbreak communication. Obviously, this important comment was integrated into the final version of the framework model, in order for it to represent in a more accurate way the dynamic reality of public health crises. A few closed questions helped us estimate the general agreement among participants regarding the model's capacity to serve as a practical tool during outbreaks. The high level of agreement between partners (M = 7.4, SD = 1.87, on a 1 to 10 scale) regarding the framework model's accuracy and practically was very encouraging.

4. Outbreak Communication Models

Of all the various new challenges that outbreak communication faces in the 21st century, the communication revolution has posed new challenges to outbreak communication. The risk-communicational aspect of pandemic outbreaks has developed to such an extent that it almost threatens to overshadow the pure healthcare aspect of virus containment. It is not surprising that almost twenty percent of the results in a Google search for the term “pandemic outbreak” (yielding approximately 6 million entries) deal, in one way or another, with the concept of communication. Furthermore, based on Google’s official report, “Zeitgeist”, the second “hottest online trend” in

Israel in 2013 was queries associated with the 2013 polio outbreak (the first place was the internet meme, the Harlem Shake)[1]. This anecdotal evidence highlights the essential role of risk communication during pandemic outbreaks. The risk communication approach indicates that public engagement and involvement is imperative (Holmes et al., 2009) and stresses the importance of building trust (Cvetkovich & Lofstedt, 1999; Earle & Cvetkovich, 1995; Lofstedt; 2005). Under the unique conditions that prevail during the outbreak of an EID (Covello, 2003; Sandman, 2007), unpredictability and lack of control necessitates communicating uncertainty to the public (Frewer et al,. 2003; Frewer, 2004). The behavior of the public in a crisis is sometimes driven by self-contradictory motives: rationality with emotionality (Slovic et al., 2004), seeking official sources of security while tending to think independently.

The 2009 H1N1 outbreak is a case in point which establishes the complexity of EID communication during an epidemic crisis because of public noncompliance with the vaccination campaign (Maurer, Uscher-Pines & Harris, 2010; Vaux *et al.*, 2010; Galarce *et al.*, 2011; Matsui *et al.*, 2011; Velan *et al.*, 2011, Walter *et al.*, 2012) and because of the crisis of trust between the public and international organizations and governments (Allen Catellier & Yang, 2012; Gray *et al*., 2012). These two outcomes testified to the deficit of theoretical and applied knowledge in the area of risk communication and its implementation on the ground, and emphasized the need for an applied communication framework model with the goal of responding to the following challenges:

- How can we narrow the gap between risk communication theory and its successful implementation during pandemics?
- How can health organizations communicate with the public in real time through social media?
- How can stakeholders (public health workers, media professionals, various subpopulations) be engaged before and during pandemics?
- How can public sentiment be tracked during real time pandemics and responses formulated immediately and forcefully, in order to bring about maximal public participation and cooperation[2]?

There is a substantial body of textbooks and guidelines from the WHO (e.g.. *WHO Handbook*[3]*, Geneva; Best practices for communicating with the public during an outbreak*[4]*; Global Alert and Response*[5]) and CDC (e.g. *Communication Standards and Recommendations*[6]*; Social Media Toolkit*[7]) for EID communication which tend to present a plan of action, but not a comprehensive framework model. There are also guidelines which approach outbreaks from an epidemiological point of view (*e.g. London Infectious Disease Outbreak Management Plan*[8]*; Generic Disease Model*[9]). In such guidelines, when communication is considered, it is a minor element.

[1] http://www.nrg.co.il/online/13/ART2/531/880.html?hp=13&cat=131&loc=10
[2] It is important note that this kind of aggregative level measurement is both practically and ethically much more convenient than the standard data gathering process risk communication uses today,
[3] http://www.who.int/csr/resources/publications/WHO%20MEDIA%20HANDBOOK.pdf
[4] http://www.who.int/csr/resources/publications/WHO_CDS_2005_32web.pdf
[5] http://www.who.int/csr/resources/publications/WHO_CDS_2005_28/en/
[6] http://www.cdc.gov/nceh/tracking/pdfs/Comm_Standards.pdf
[7] http://www.cdc.gov/socialmedia/tools/guidelines/pdf/socialmediatoolkit_bm.pdf
[8] www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1317134263812
[9] http://www.who.int/choice/demography/genericdisease_model/en/index.html

Risk communication models do exist. By model, we mean an effective conceptual representation of reality to help plan and execute complicated projects. However, models to date tend to be characterized by a top to bottom hierarchic nature, in the sense that the message flows from the organizations to the public. his is illustrated by the pyramid of stakeholders; the top end is reserved for international level policymaker-stakeholders (i.e. WHO, CDC, ECDC, PAHO), while the bottom end contains the "general public." Such top-down models convey the notion that information flow is unilateral and similar to the "hypodermic needle," where the public is "injected" with the message (Hartley et al., 1994). Such perceptions should be replaced with discourse that sees the public not as another stakeholder but rather *as a partner*, not to be patronized but engaged. Other guidelines have emphasized the importance of the public, but we give this decisive expression by situating the public sphere at the center of the model. Emerging communication technologies that allow easy, accessible and immediate public participation suggest that concerns and beliefs flow back into the decision-making process of health organizations, changing it completely. A successful public health campaign must take into an account that in the current reality, the "health blogger" or the "concerned mother" are sometimes as important as the healthcare official.

Older models are characterized by their reliance on traditional media to convey basic information about the disease, with scant reference to new media. They are based on a linear information flow, assuming that the message is projected from the sender to the recipient, without any possibility for feedback. This feature reflects an outdated notion of stable and unchanging roles in mass communication. Overcoming these shortcomings by encompassing new communication technologies was one of the goals which guided the proposed model. The advantage of this model is that it integrates many components of communication into a new risk approach. The components we mention are concepts which already exist, but which we incorporate, adapt and apply, thereby formulating a new framework.

The proposed model is not based on a hierarchic, linear structure. It is not an attempt to shape or funnel reality into clear, linear spreadsheets, as some guidelines do (CDC Crisis and emergency risk communication, 2002). For this reason, the diagram of the proposed model does not use arrows. Rather, we constructed it as a response to the reality of outbreak communication. It is complex in order to respond to a complex and constantly-changing reality. It draws inspiration from the rhizome theory proposed by the philosophers Deleuze and Guattari, which suggests an alternative to linear models based on binaries, and emphasizes multiple connections and heterogeneity. Also like the rhizome, this model is *not* based on hierarchic relations, but on relations that proliferate in many directions, and emphasize many possible connections. One principle of the rhizome is the "principle of asignifying rupture" (Deleuze and Guattari, *A Thousand Plateaus*, 1988, 9) which states that ruptures or obstacles don't cause a breakdown, but instead any sort of disruption leads to a new, productive flow of movement. The representation of our model in figure 1 shows that different elements overlap. This reflects that communication does not have clear-cut limits. Formal stakeholders are not at the center of this model; but rather they encompass the public. Our model contains seven key components, starting with the public sphere, arguably its most important feature. The most crucial change our model suggests is a modification of how we conceptualize the public and communication with the public.

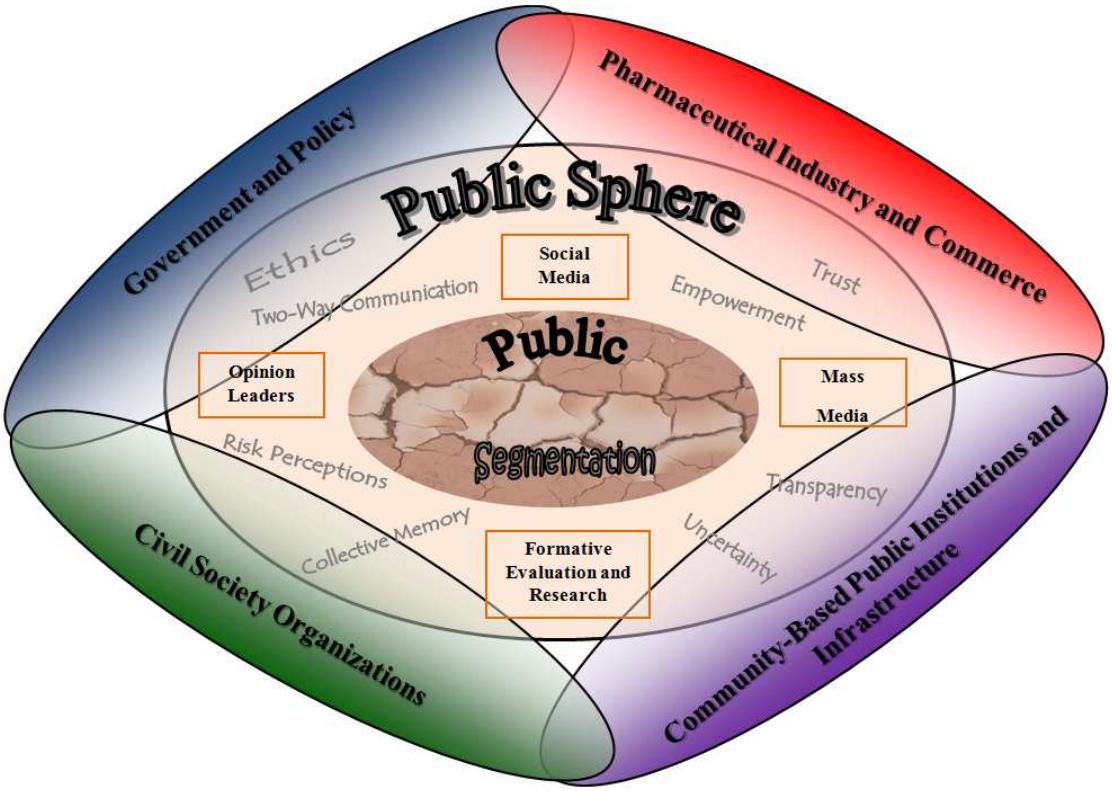

Figure 1-Framework Model

Key components:

- The public sphere
- Segmentation
- Mass media
- Social media
- Opinion leaders
- Research
- Stakeholders

5. The Public Sphere

The heart of the model is the Public Sphere, where communication occurs and where other components including research, opinion leaders, and social and mass media operate. Ultimately, outbreak communication is directed to this sphere. This is where concepts like transparency, risk perception, collective memory, trust and ethics come into play. The public sphere is the realm of society in which public opinion influenced. The concept of the public sphere stems from the coffeehouses of eighteenth century Britain and France's salons. The public sphere is characterized by: disregard of status; domain of common concern; and inclusivity (Habermas, 1962). The public sphere became increasingly concrete and more amorphous as a result of the industrial revolution and the invention of television, etc. It seems that the internet has given a renewed spirit to the concept of the public sphere. The World Wide Web can be seen as an extension of the eighteenth century coffee house: It suggests equality between users and is wide-spread. Importantly, it has

become a domain in which people express shared concern for social issues, and public health is a major part of this discourse. People are often influenced past outbreaks, even those they did not personally experience but which are collectively remembered through the social mechanism of "collective memory". Public health organizations are not always aware of this mechanism which influences people's tendency towards trust or doubt. For example, the following was cited from Twitter: "In the 1976 US swine flu panic, aided by a nervous president eager to win re-election, there were thirty deaths due to adverse vaccine reactions and dozens if not hundreds of cases of the rare Guillain-Barre Syndrome which led to halting of a national vaccination that was being given for a non-existent pandemic" (*Examiner*, August 6, 2009).

Previous EID communication models depicted health professionals as "formal stakeholders'" and as part of the chain of command within public health organizations (Childs et al., 2005). Health professionals are an important risk group in and of themselves, and therefore one innovation suggested by this model is to regard them as part of the public sphere. ECDC documents suggest that health professionals be targeted, "not only to pass along the message, but also to be the "message" and the voice of the organization (ECDC, 2009[10]; 2012[11]). However, this is not always carried out. For example, during the 2009 H1N1 Influenza outbreak, some doctors and experts criticized the vaccine, and some refused to be vaccinated. From research conducted with public health workers regarding the H1N1 vaccination, it was found that barriers of the health workers were similar to the barriers found in the general public. These barriers concerned fear of side effects, concerns about the newness of the vaccine, and uncertainty about its efficacy, and regarding the severity of the influenza virus itself (Poland, 2010, Vaux *et al.*, 2010).Many approaches consider that, during a risk assessment, the scientific community provides technical knowledge while the public provides values, beliefs, and emotions through feedback on the risk communication effort or in the risk management process. The social constructionist approach (Waddell, 1995) holds that in fact inputs come from both sides (16). According to Waddell, the scientific community - which includes health workers - hold opinions and feelings which influence how risks are assessed and communicated, and the public often has technical knowledge that could affect the risk assessment and communication process.

Building on this idea of mutual influence between health care workers and the public, we must consider three factors which affect the process of communication, namely, the organization, the message and the healthcare professional. When an organization promotes a vaccine, and the health care worker trusts the vaccine and the organization, there is a cognitive balance. The opposite is also true: there is cognitive balance if the health care professional opposes the vaccine and the organization opposes the vaccine. If there is a discrepancy between one of the factors in the process, different values clash, creating a state of cognitive dissonance (Festinger, 1962; Elliot & Devine, 1994; Becker, Smith & Ciao, 2006). In this case, the health care worker may continue to advise patients in a state of cognitive dissonance. It seems that the only efficient solution is integrating health professionals into the decision-making process. They can embody "the message" only if they feel they are part of the process. This can be done by involving them in informal workshops in which they can voice their concerns and reservations. Following D2.3 and D2.4, we also suggest the option of an e-learning software that can establishes a two-way channel between the health professionals and

[10] http://www.ecdc.europa.eu/en/aboutus/key%20documents/0911_kd_ecdc_health_communication_strategy_2010_013.pdf
[11] http://www.ecdc.europa.eu/en/publications/publications/ter-immunisation-and-trust.pdf

national and international health organizations. This is a potentially important channel that can serve as a direct line to disseminate important information.

6. Segmentation

The "public" is conceptualized in different ways (Dewey in Vasquez & Taylor, 2001; Hallahan in Jahanzsoozi, 2006; Rawlings & Bowen, 2005), and it is important to stress that it is not a single entity. Transnational public health organizations such as the WHO, emphasize the need to characterize what is meant by 'the public' in order to reach it: as it become evident in Marie-Paule Kieny, WHO director of the initiative for vaccine research, claim-"we need to identify the priority groups because if we need to target health workers or pregnant women or children, these are completely different strategies" (WHO, 2009[12]). On a conceptual level, this can be achieved through segmentation. Segmentation enables communication with each profile, in terms of understanding risk perceptions and responsiveness. In actuality, different countries carry out segmentation with varying degrees of success and attention to detail. In actual cases of risk communication, segmentation has not been a major strategy, perhaps because of the difficulty in carrying out segmentation across a range of countries. Nevertheless, it is crucial to build specific high-resolution profiles that take into account many different variables, including: country, language, age, gender, culture, religion, education, perceptions, etc. Even sophisticated and systematic segmentation based on demography is limited, and therefore we recommend taking into account recently developed strategies which focus on *individual-level data*, matching them to rich statistical profiles which cross-link profiles and build new combinations of groups. This strategy was used to promote Barack Obama during his second reelection campaign

7. Mass Media

Another dominant component is the mass media. The present-day media map is more varied and complex than ever, involving new players which have transformed the traditional role of mass media. We have pinpointed four commonly held conceptions which we argue are actually misconceptions. The first is that risk communication through the mass media happens only during crises, when in fact it occurs continually: before, during and afterwards. Communication between formal organizations and the press should be routine and frequent. When official meetings between health organizations and the press occur mainly in the context of outbreaks, the press becomes fixated by the notion that "conference equals outbreak".

Scheduled and frequent meetings with the press lead to less drama and panic. These can lessen the pressure to use epidemic rhetoric to which is partial. The second is that there is a clear-cut distinction between traditional (broadcast, print) and new (mobile, Internet) media, whereas we argue that the boundaries between them are porous and not always clear. Such a distinction makes the new media seem unknown and scary while the traditional media is perceived as less relevant. Such divisions are not constructive because the so-called traditional media have changed greatly to adjust to new realities, and tend to be much closer to the new media. A third misconception is that policymakers and organizations tend to misuse risk communication by turning it into a public relations opportunity

[12] http://www.who.int/mediacentre/pandemic_h1n1_presstranscript_2009_09_24.pdf

by marketing their performance during a crisis. In this context, we conducted a content analysis of eighty press meetings with the WHO and CDC in 2009 and 2010. These press meetings are representative of the interaction between formal organizations and the media.

In actuality, the media should represent public concerns and the organizations should answer those concerns (Janowitz, 1975). However, our findings suggest that the media's role is not to be the public watchdog. Furthermore, the organizations tend not to respond directly to public concerns, and focus more on sharing epidemiological information. There is a perception that the press is always looking for sensationalism, and must be provided with impressive data and information. They use emotion, intimidation, and apocalyptic predictions. They describe things in black and white terms: "good" and "bad", "true" and "false". For example, at a press conference before the declaration of Phase Five (pandemic), the word "pandemic" is mentioned seventy-four times by WHO experts, and in a similar case, ninety-three times by CDC representatives. And yet, they conclude by saying that "for now, there is no need to panic".

The fourth conception is that transparency ends with a declaration of transparency. This reveals a misunderstanding of what transparency involves, and how it should be implemented. On one hand, official organization**s** stress the importance of transparency and presenting uncertainty as a means to achieve trust. On the other hand, there is often reluctance to provide the media with real data. According to the WHO guidelines in the chapter on transparency, transparency should include information that is "accurate, accessible and timely about an actual or potential health risk" (WHO, 2008, pp. 12-14; O'malley, Rainford & Thompson, 2009). However, there are no operational clarifications on exactly how these objectives should be carried out. We argue that transparency should be a complete disclosure of economic and medical evaluation**s**.

8. Social Media

The next component is the social media, meaning different channels, including Internet forums, social blogs, social networks, weblogs, wikis and podcasts. Each has different features and a unique audience. However, during a crisis we must treat these different channels like one monolithic entity. Moreover, health organizations are often afraid of the social media and they don't know how to respond to it. Instead of fearing it, it needs to be addressed, even harnessed, through data mining.
Social media discourse affects outbreak communication and our ability to reach the public (McNab, 2009; Chew & Eysenbach, 2010).We highlight two prominent conceptions in outbreak communication models, arguing that they are actually *mis*conceptions. The first is that messages are unequivocal, and therefore it is enough to construct a powerful and convincing message. The second is that silence is an option. In other words, there is a possibility to simply not respond. Certainly, the H1N1 2009 outbreak suggests that silence on the part of official organizations sets the stage for misinformation.

These misconceptions are relevant for the present model. Because encoding doesn't equal decoding, and the same words have different meanings in different contexts, messages are not unequivocal, but can be understood differently by different people in different contexts (Hall, 2001). In determining or predicting how a message may be understood, the interaction between the sender and the recipients is affected by several categories that are part of discourse analysis, including genre, rhetoric, narratives, characters, visual representations, language, etc. The anti-polio campaign

currently under way in Israel is a good example. The Ministry of Health announced that they will use a new OPV vaccine. This is the encoding. But the message was decoded (or understood) very differently among pro-vaccine and anti-vaccine groups. The pro-vaccine groups interpreted the word "new" as improved or modified, while the anti-vaccine groups understood "new" as "unknown" and "not yet tested".

An element that characterizes the relationship between formal organizations and the social media is mutual suspicion. In this respect, formal organizations tend to hint that a lot of the information that is posted on the social media is mere speculation.

Two original songs uploaded in the U.S. by private users exemplify how messages can be manipulated using an Edutainment approach, reflecting the dynamics of social media on the Internet, and the power of creativity and unconventional strategies in engaging people. Each one provides an opposing perspective on the topic of vaccination: the first, The Vaccine Song is pro-vaccination[13] and the second, Vaccine Zombie which was uploaded as a response, is against vaccination[14] .

Social media is a powerful tool for spreading new ideas and conceptions. The model of diffusion of innovations pinpoints the process by which innovations are spread (Rogers, 2003). We applied this model because outbreak rumors can be seen as just such an innovation. We identify how an outbreak rumor spreads until transforming into common knowledge. Although people who generate rumors may be a tiny minority, the rumors quickly reach the early adopters. From this point on, the rumor might reach what Rogers calls the early and the late majority (2003). Response time is crucial in the context of social media. Thus, the question is not *whether* to engage in discussion and fight rumors but *how* to do it quickly and effectively. When unfounded information has reached the early majority, it is difficult to contradict.

A positive initiative for combating the spread of rumors is the ECDC guidelines for creating an interactive Facebook page dealing with concerns about outbreaks. These guidelines demonstrated a real understanding of Facebook's potential for responding through social media (ECDC, 2012[15]). The down side of this recommendation is that the health organization is not officially identified with the site, which is managed by a behind-the-scenes manager. This undermines transparency.

9. Opinion Leaders

The next component of outbreak communication is the opinion leaders (Lazarsfeld & Katz, 1955). Opinion leaders are trustworthy members of our social network. They are not necessarily in an official leadership position. While they may be communal or religious leaders, they can also be charismatic laypeople - neighbors, friends or colleagues - whose ability to engage and convince puts them in a position to distill information from the mass media and pass along the condensed version. In the context of new media, this definition can be extended to people with large following, who are considered an authority on specific issues. We can harness the potential inherent in such grass-roots opinion leaders for spreading messages of outbreak communication. The concept of opinion leaders

[13] http://www.youtube.com/watch?v=u1xw0Ob5bqs
[14] http://www.youtube.com/watch?v=qYI-dC9G0us
[15] http://www.ecdc.europa.eu/en/publications/publications/ter-immunisation-and-trust.pdf

explains the dominance of interpersonal relations in the media. According to the two-step-flow theory; opinion leaders have more influence on people's opinions, actions and behaviors than the media does (Nisbet & Kotcher, 2009). It is challenging to identify opinion leaders, but we can learn from Al Gore's Climate Project which is an outstanding example of an awareness campaign that used opinion leaders. Like vaccination, climate change can also be very controversial. Gore's site identified one thousand local-level opinion leaders when they sought information on the climate project site. They were then contacted, sent formal material, and were trained personally by Gore. Each then passed this information on to the public through lectures in public spaces. These campaigns were extremely successful because the messages were mediated through trusted sources (Nisbet & Kotcher, 2009). In the context of the model, it is important to stress that what gives opinion leaders their credibility is their lack of interest, meaning that health professionals should not be targeted as opinion leaders but rather people that have no obvious link to health authorities.

10. Research

Research is another component. Research entails not only evaluating pro-vaccination campaigns but also building public profiles through qualitative and quantitative studies pinpointing different sub-populations and identifying different trends in public discourse, or the public sphere. According to our model, research should initiate and shape discourse, and then help to shape campaigns and policies. Moreover, research should be conducted both on a community level as part of an ethnographical effort to build profiles and also on an aggregative level as a part of discourse surveillance.

This type of research is conducted in a medical context with informal surveillance systems, such as Google Flu Trends (Dukic, Lopes & Polson, 2009; Valdivia et al., 2010), but has not yet been widely implemented on the level of communication systems, as we are suggesting should be done. Specifically, online data mining analyzes the public via social discourse trends, noting correlations between the search words people use online and what is going on around them. In the context of outbreak communication, this simple discourse surveillance tool can enable us to identify people's fears and concerns, in real time, and react accordingly, even focusing on specific zip codes or specific profiles. Data mining is crucial for locating misinformation and disinformation as well as trends in public health concerns regarding the outbreak. Data mining is likewise crucial in developing responses and communication with the public.

11. Stakeholders

Our model redefines the categories of stakeholders by moving the health care workers from this conceptual category, seeing them instead as part of the public sphere. It defines the stakeholders as follows. Each category has its own set of challenges, briefly outlined below. The first group of stakeholders is government and policy. The national subgroup includes: surveillance; institutes; medicine regulatory agency and the Ministry of National Health. The local subgroups includes: the local public health authorities; prefectures; and local political parties. Transnational subgroups include: WHO, UNWTO, WTO, UNICEF, OIE, and the World Bank. European subgroups include the European Commission, the ECDC, the EMA and the EDQM. This group faces key challenges on a communicational level, such as: increased demand for information from multiple sources; lack of

inter-governmental dialogue on an international level, and intersectorial coordination on a national level; and prioritization of actions and allocation of resources.

The second group of stakeholders is the pharmaceutical industry and commerce. The national subgroup includes manufacturers, suppliers, distributors and exporters. The local subgroup includes storage depots and professional representatives of the industry. The transnational subgroup includes manufacturers and wholesalers. The European subgroup includes the EFPIA, GIRP and EuropaBio. Their key challenges are: liability issues; and that they can become the primary target of anti-vaccine groups.

The third groups of stakeholders are community-based public institutions and infrastructure. The local subgroups include primary schools, hospital, hospital, day care centers, clinics and public transport. Their key challenges are: uneven levels of knowledge and experience with infectious disease outbreaks; and that any shift from normal has an immediate impact on the community.

The fourth group consists of civil society organizations. The national subgroup includes NGOs, foundations and charities. The local subgroup includes community-based organizations; faith-based groups and anti-vaccine alliances. Transnational groups include IFRC and NGOs. The European subgroup includes EPHA, the European Forum of Vaccine Vigilance and ANH Europe. Their key challenges are that communication needs are not usually fully explored (at a local level); and that there is heavy reliance on the media as a communication channel for the reception of information and the sending of messages.

12. The Dynamics of EID Communication

Having presented the various components in the framework model, we now turn to consider the dynamic nature of EID communication. Public health crises can be categorized by the stages of its development and the severity of the perceived threat. This is of special interest in the case of a pandemic, when the perceived threat can prove itself extremely severe in several countries but rather mild in other locations. In direct response to lessons learnt from the 2009 H1N1 pandemic, WHO introduced a new approach to influenza threat index[16]. The focus of the new system is constructed through four phases which encourage national and international authorities to react to different risk assessments. The four pandemic phases are interpandemic, alert, pandemic and transition. Similar to past scales, these phases describe the spread of a new influenza subtype. This is of special interest to the framework model since different stages and different levels of severity are translated to different levels of involvement and various communication needs from stakeholders.

The interpandemic phase, the period between influenza pandemics, is the best time to develop and enhance emergency risk capacities. With regard to the model, it is the time for ethnographical research that is aimed at constructing profiles of diverse risk groups, emphasizing their beliefs, their community leaders and ideologies. In a sense, when the level of perceived risk is low there is little

16 http://www.who.int/influenza/preparedness/pandemic/GIP_PandemicInfluenzaRiskManagementInterimGuidance_Jun2013.pdf

chance to educate the public or involve other stakeholders in the pandemic plan hence we do not see real movement on the model (Figure 2).

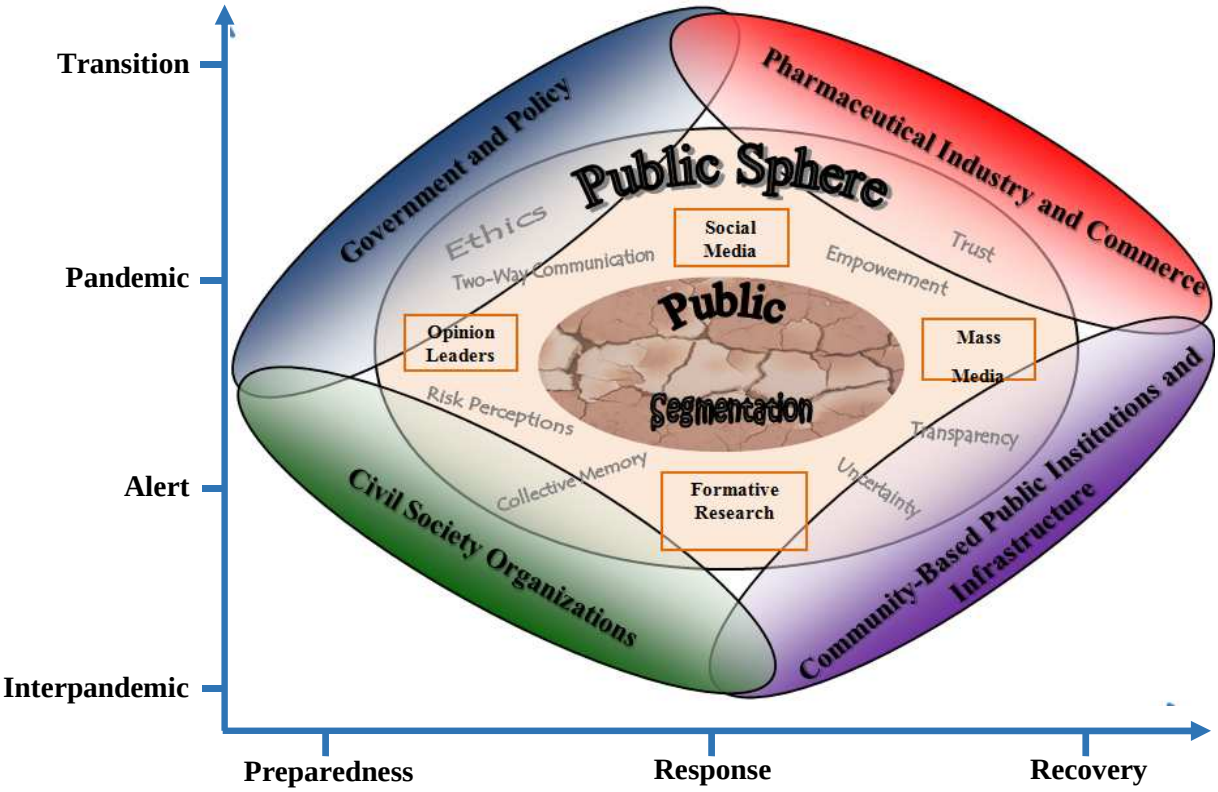

Figure 2- Interpandemic phase (transition phase)

The second period is the alert which is characterized by the identification of a novel influenza subtype in humans. This is the time for careful risk assessment on all levels. Using open channels with Member States, activating networks of information and think tanks to conduct global risk assessment under the revised IHR (2005). In terms of the different components of the model, the mass media, the social media, the opinion leaders and the research becomes crucial. With reference to social media, people actively seek information to allay their concerns and reduce uncertainty. At this stage, both the social media and the mass media serve their integrative function, making people feel as if they are part of a larger community. The opinion leaders' function becomes more pronounced because they serve as an alternative source of information (other than the media) and as a source of interpretation for people seeking clarification. Formative research already conducted will have gathered information on different segments of the public. It now needs to focus on relevant risk groups and on online discourse as important indicators of public risk perceptions. The transnational, European, national and local stakeholders become much more active and involved in the public sphere (Figure 3).

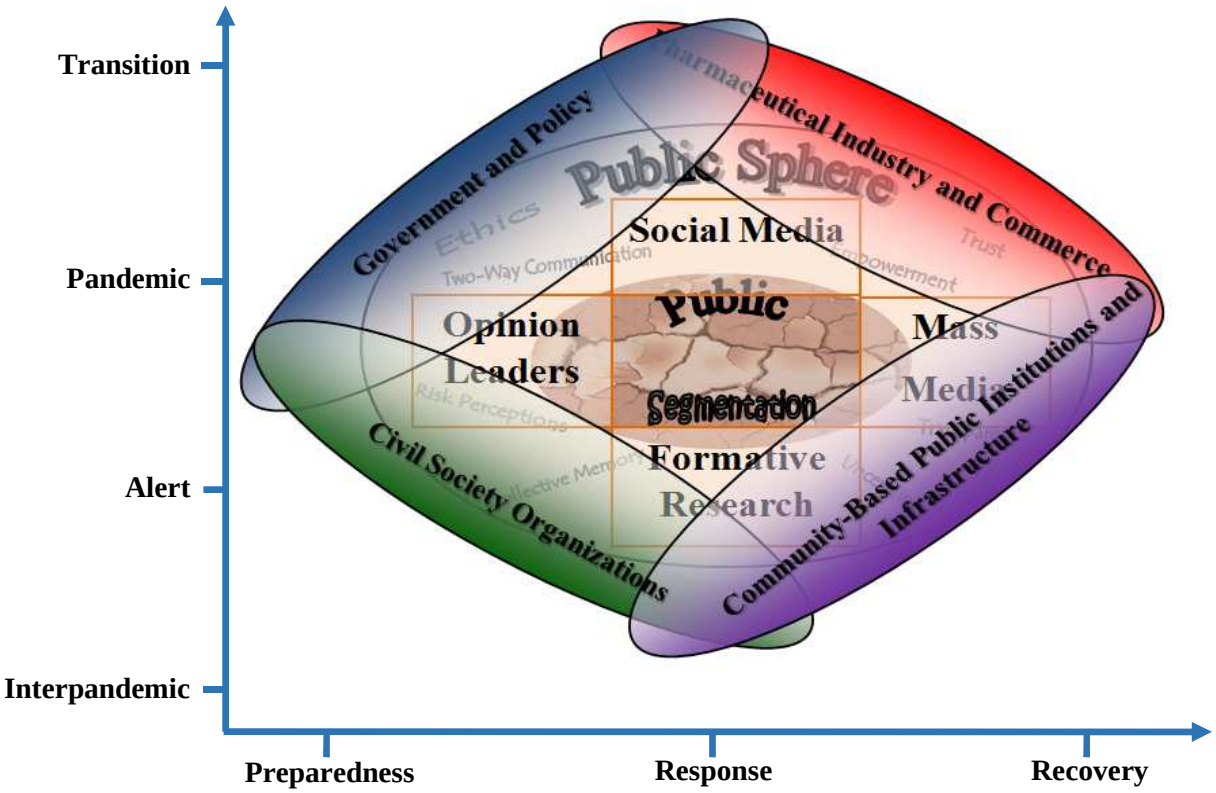

Figure 3- The Alert phase

The pandemic stage is the most severe risk assessment concerning the global potential spread of the subtype virus. The fact that a pandemic was officially declared calls for support and response on all levels. It is the time when different level stakeholders are fully engaged in the effort to mitigate the spread and educate the public. It is the full participation of transnational European, national and local stakeholders in the public sphere. They receive input from research and mold it into specific communication strategies designed to communicate with the public. This is the stage where there is a need to emphasize self-efficacy, uncertainty and transparency as an integral part of communication with the public (Figure 4).

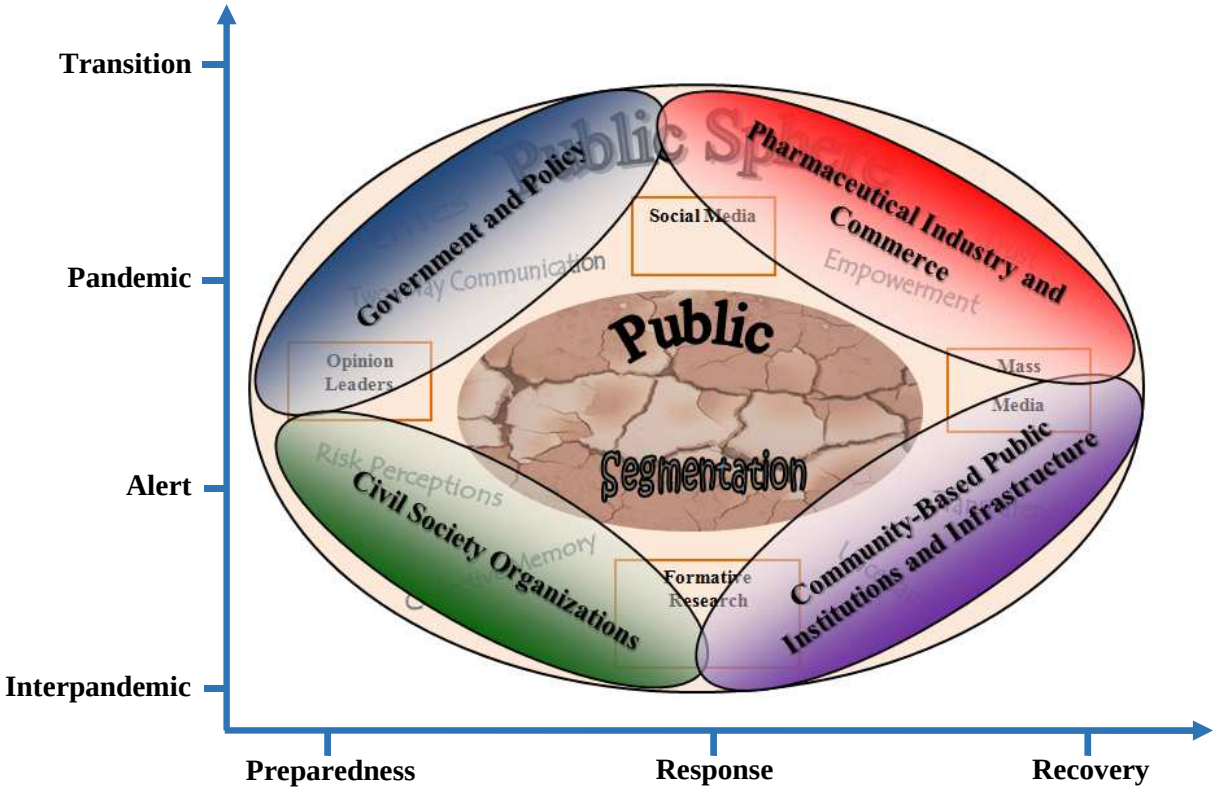

Figure 4- Pandemic phase

After the pandemic stops spreading, the transition phase signifies the return to routine. While from an epidemiological point of view this is the time to minimize response, on the level of outbreak communication it is a crucial time for recovery on all levels. All components should be thinking about lessons learned from the last pandemic and preparing themselves for a possible scenario of a future outbreak. From the point of view of ethics, it is the time to assess, through research, to what extent the experience of the pandemic had stigmatized different subpopulations and what type of public campaign can improve their image (see figure 2).

13. Conclusion

The significance of the proposed risk communication framework model is that it integrates relevant concepts and theories with a practical approach. The contribution of this model is that it can be adapted to many specific risk situations through simulations in which the ideas can be developed into concrete plans. It pinpoints misconceptions, offering a new outlook on the relationship between components involved in risk communication. Its primary goal is to map the major contenders in EID communication and their interrelationship. Although it provided some details on certain aspects, it is not meant to serve as a communication kit per se, but as the foundation for such a kit, and also for further research.

Further research horizons include addressing how formal health organizations and mass media should work together in times of a decentralized communication map and how to combat

misinformation in the context of the model. Other issues include delving into the potential ethical and legal implications of the model, and the specific communication tools that can be used to target different profile groups.

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ANNEX I- Framework Model Validation Questionnaire

Framework Model validation questionnaire

This questionnaire will help us to assess the internal and external validity of the framework model. Namely, it is an additional way to evaluate the extent to which the framework model is able both to reflect the outbreak communication reality as it was presented in the TELLME project and to serve as a practical tool in handling the communication aspects of future public health crises. The questionnaire is comprised of closed and open ended questions that focus on different dimensions of the model. This is an anonymous questionnaire and we are particularly interested in personal input based on your professional experience. Thank you for your effort and time, HU

Please give your assessment on the following matters by circling one the numbers from one to ten where 1 is "strongly disagree" and 10 is "strongly agree".

The framework model is innovative	1	2	3	4	5	6	7	8	9	10
The framework model gives opportunity for Advancement	1	2	3	4	5	6	7	8	9	10
The framework offers practical tools	1	2	3	4	5	6	7	8	9	10
The framework model addresses the relevant issues from WP1 and WP2	1	2	3	4	5	6	7	8	9	10
The framework model corresponds to prominent concepts in the field of outbreak communication	1	2	3	4	5	6	7	8	9	10
The framework model addresses the issue of "preparedness"	1	2	3	4	5	6	7	8	9	10
The framework model addresses the issue of "response"	1	2	3	4	5	6	7	8	9	10
The framework model includes the key stakeholders in the field of outbreak communication	1	2	3	4	5	6	7	8	9	10
The framework model contains some elements that are irrelevant to outbreak communication	1	2	3	4	5	6	7	8	9	10
The framework model is flexible thus it can account for different public health crises	1	2	3	4	5	6	7	8	9	10
The framework model is too general	1	2	3	4	5	6	7	8	9	10
The framework model emphasizes the place of the public in outbreak communication	1	2	3	4	5	6	7	8	9	10
The framework model effectively integrates between theory and practice	1	2	3	4	5	6	7	8	9	10

Describe your general impression of the framework model:

_____

_____

_____

_____

Do you think the model is relevant to countries outside Europe?

_____
_____
_____

Can the model serve as guidance for Health Professionals/ Agencies to engage them with vaccine resistant groups?

_____
_____
_____
_____

What additional element should be entered into the framework model?

_____
_____
_____

What additional technology you think can optimize the model's worth?

_____
_____
_____

Are there any key stakeholders missing from the model?

_____
_____
_____
_____

Do you think that the framework model has achieved its purpose?

_____
_____
_____

Is there anything else that you think needs change or improvement in the model?

_____
_____
_____
_____
_____
_____