D2.2

Report on Stakeholder Communication Requirements

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D2.2 "Report on Stakeholder Communication Requirements"

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Introduction

Similar to the fact that effectiveness of any kind of health intervention depends on a structured set of external factors and criteria, which can vary according to the type of disease, perceived risk on community level, and attitudes towards the intervention, the effectiveness in outbreak communications mostly relies on meeting the information needs or demands of various key stakeholders in the process. Communications in public health emergencies have multiple layers, and the landscape becomes even more complex in the case of infectious disease outbreaks, which have the potential of turning into a pandemic.

The report starts by providing the framework of communications in the international context, as a function of the International Health Regulations (IHR 2005), which set out clearly duties and responsibilities of Member States in relation to setting up national surveillance systems and networks to effectively respond in public health emergencies. The information sharing principles found in the IHR (2005) are analysed in this context, together with WHO established guidelines and principles in outbreak communication, in an effort to identify explicit links with other key stakeholders that operate on national and international level. The coordination of communications in European level are also examined, and more specifically the ECDC role in the outbreak communication process, and based on existing evidence to identify what the information needs are for the agency. At next level, the report presents the responsibilities and roles of national public health authorities in outbreak communication, this time oriented towards the community level and the different types of national or local stakeholders that become involved in the process, either under the capacity of communicating messages to the public or implementing intervention strategies in response to an outbreak. The aim was to identify any implicit or explicit information needs for key stakeholders at this level, and better understand their dynamics in communication level with the national public health authorities. Finally, a literature review was carried out to bring forward research studies that have focussed on the information needs of the general public and other local-based stakeholders, taking into account the various communication means and information sources that become available during an infectious disease outbreak.

For the second part of this report, the aim had been to explore by means of primary research the stakeholder communication requirements during an infectious disease outbreak, to collect diverse views on the different types of information that becomes available to various stakeholder groups, how this information corresponds to their needs and what more needs to be done by health authorities at national level to ensure more transparency and better communication procedures in the future.

Methods

A total of 51 respondents took part in this research study, based on a questionnaire that was made available online from the TELL ME website. The respondents to this questionnaire were contacted from the list of stakeholders included in the directory of deliverable D2.1 ‘Stakeholder Directory and Map’. The questionnaire comprised a wide array of questions to explore different themes, such as information needs and priority actions in outbreak communication, quality of information across the diverse means of communication, information sharing and communication gaps.

The stakeholders that were represented in the survey included national public health authorities, international organisations and agencies, the academia and non-governmental organisations. For

comparability purposes the sample was divided into two main categories – institutional (international and national organisations) and non-institutional actors (academia and private organisations), to identify any differences in the communication requirements on such level. Although intervention and response strategies to an infectious disease outbreak might be primarily an institutional process, the communications are largely influenced by direct or indirect interventions non-institutional actors, whose involvement could prove to be critical in shaping public perceptions and behaviour toward the disease.

Results

The results from the survey provided some clear indications about the communication requirements during infectious disease outbreaks, and allowed to deepen understanding as per the type and format of information that is relevant for stakeholders to optimise communications with public health authorities and the general public, to ensure that messages are better focussed and targeted to meet the information needs of different populations. The findings were indicative of the complexity in the outbreak communications environment, also considering the growth of new social media in relation to diffusion of messages, which creates both opportunities and challenges for public health authorities and certain populations in the community.

Conclusions

Overall, the communication requirements at the level of collaboration between international organisations and national public health authorities are clearly framed through regulatory policies and mandates as described in the International Health Regulations (IHR 2005). Moving to the level of collaboration between national public health authorities and other national or local stakeholder groups, the requirements governing communications during an infectious disease outbreak become more blurred, since the sources for information multiply as one moves from regional, to local and finally, the general public. There were no great differences between the institutional and non-institutional actors in their views and perceptions about the type and value of information that is made available to the public, however a series of recommendations is made for meeting challenges in outbreak communication, taking under consideration the critical role that new social media are expected to play in the future.

1. INTRODUCTION

Modern societies around the world evolve and move towards a state of absolute interconnectivity as a result of wider deployment of Information and Communication Technologies (ICT), with ceaseless flow and exchange of information placed at the heart of the process. The ever-increasing need for accumulation of different kind of information is characteristic of the present culture, with entire institutional and governmental mechanisms built around the 'knowledge is power' principle, relying upon constant exchange of information in multiple levels to achieve their goals and objectives. On individual basis, to obtain information is imperative for people who seek refuge in knowledge, a psychological process associated with heightened levels of safety and a sense of control, especially under periods of stress and insecurity. From a certain perspective, this same process is also evident in local and international governance, where specific other elements become also relevant, such as the way information is used (or not used) to convert knowledge – at first level – into a tool, to consequently influence behaviour and public perceptions.

The overall impact and value of information exchange in highly-complex communication environments is particularly evident in the field of public health emergencies, where the dynamics between various stakeholders[1] and/or entire populations are formed on the basis of meeting specific needs and requirements for each group separately. As a rule, to ensure on national level that information needs for stakeholders are met at different stages during a public health crisis, these needs are crystallised and framed under a multi-layered communication strategy, which is only part of a wider emergency preparedness and response plan. While the main focus of public health communication is generally to develop effective messages for influencing the knowledge base or social norms underpinning behaviours for the public (Hornik, 2002), the sheer nature of an infectious disease outbreak extends further, to activate established mechanisms with specified roles and responsibilities for relevant actors (e.g. public health authorities, health professionals, mass media etc.) that not only communicate messages to the public, but also communicate information to each other for the duration of a public health emergency.

In the event of an infectious disease outbreak, specific needs emerge as relevant for public health authorities concerning the act of communication. It is common for national preparedness plans to make reference to the need for transparency, timeliness, accuracy, accountability and central administration of information to avoid conflicting messages. As regards communication among competent health authorities on international level, the European Commission put in the past more emphasis on timeliness, suggesting that "*fast exchange of information and prompt notification during the first stages of a pandemic influenza are essential in enabling Member States, the Commission, the ECDC, WHO and other bodies to respond with common positions in public communications, and alert properly their structures, so that measures can be implemented in a timely manner*" (p.14)[2]. In the aftermath of the influenza A(H1N1) pandemic, the Council of Europe went on to highlight the need for more transparency by international organisations and national institutions, as well as a highest level of democratic accountability regarding public health decisions[3].

[1] TELL ME Deliverable D2.1 (Stakeholder Directory and Map) presented a definition for 'stakeholders' in outbreak communication, to describe *"any person or group of persons, national or international organisation, institution or any other internal or external entity which is directly or indirectly affected and/or is actively involved in any stage or operational process prior and during the outbreak of an infectious disease (including the chain process for immunisation), vis-à-vis outbreak communication tactics and public behavioural responses towards the disease pandemic."*

[2] COM(2005) 607 final (28.11.2005) – Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions on Pandemic Influenza Preparedness and Response Planning in the European Community, available from <http://eur-lex.europa.eu/LexUriServ/site/en/com/2005/com2005_0607en01.pdf>

[3] Council of Europe (2010). The handling of the H1N1 pandemic: More transparency needed (Provisional version), available from <http://assembly.coe.int/CommitteeDocs/2010/20100604_H1n1pandemic_E.pdf>

The more recent developments in ICT have revolutionised the coordination of information exchange and the way messages get across to various stakeholders, particularly important for national public health authorities which require an active engagement with agencies and organisations on international level, as well as with different groups of stakeholders for putting forward strategic campaigns to inform the public about the disease, protective measures and relevant actions. As expected, in the event of a pandemic or major infectious disease outbreaks, national public health authorities are in the epicentre of attention and more precisely the operational centre for crisis management, which is in essence an information hub where the national surveillance institute, regulatory agencies and other public health institutions continuously feed this centre with information, which are processed and disseminated on international level to organisations (e.g. WHO, ECDC) and surveillance systems (e.g. EWRS, TESSy), and on national level to political parties, the mass media and the general public.

The information that becomes available during infectious disease outbreaks, serves multiple purposes with general objective to meet the communication requirements for different groups of stakeholders. For instance, an interdisciplinary team of health professionals is assigned from the onset of an outbreak to collect any information that is available and make an assessment of the seriousness of the disease. On a second level is discussed and decided the response to the virus, where many other stakeholder groups become active in the process, which requires a delicate approach considering the continuous pressure placed upon public health authorities by the mass media and the general public for more information.

In the most recent example of the influenza A(H1N1) pandemic of 2009, a series of weaknesses were unveiled on global scale, as per the communication gaps between stakeholders and challenges in the coordination of efforts toward responding effectively (and convincingly) to restrain the spread of the virus. In most of the A(H1N1) post-pandemic assessments carried out by various European agencies and institutions was pointed out that critical failures in communication on national and international level had direct implications for population vaccine coverage and adherence to recommended non-pharmacological protective measures.

The complex nature of communication and information needs is mirrored also in this report, which applies as common denominator the fact that during infectious disease outbreaks the ‘information’ has no real ownership; more than commodity, it is a necessity for the effective implementation of any a strategy that requires involvement by various stakeholders that operate in every layer of society. To decode the information needs and communication requirements for stakeholders, we need to examine closely their interconnections and the already established mechanisms for information exchange, on international, national and local level.

1.1 General aims

There are two general aims for this report: a) carry out desk-based research to present evidence from the literature and technical reports about stakeholder communication requirements, point to specific information needs for international and national stakeholder, b) explore by means of primary research the stakeholder communication requirements during an infectious disease outbreak, to collect diverse views on the different types of information that becomes available to various stakeholder groups, how this information corresponds to their needs and what more needs to be done by health authorities at national level to ensure more transparency and better communication procedures in the future.

1.2 The revised IHR (2005): Framework of communications in the international context

The point of departure to unravel the tangled thread of communication requirements and information for different groups of stakeholders in the multilayered environment of public health emergencies could be no other but the revised International Health Regulations or IHR (2005) (WHO, 2008). The 58th World Health Assembly adopted the IHR (2005) as a legally-binding international instrument, setting out clearly the powers, functions and responsibilities of the World Health Organization (WHO), as well as the rights and obligations of its 194 Member States, in the wider context of identifying, sharing information about, and responding to major public health risks and emergencies that could have a global impact.

The US Department of Health and Human Sciences[4] points out that the IHR (2005) also gives WHO clearer authority to recommend to its Member States measures that will help contain the international spread of disease, including public health actions to be take at maritime ports, airports, land borders, as well as on means of international transport. The enforcement of the IHR (2005) for Member States across the world is based on the subtle idea of 'herd immunity', with national preparedness plans – conceptually – having the same effect as that of vaccination for members of a community. In this respect, national public health authorities are required to develop *core capacities* to detect, assess, report and respond to public health emergencies so as to protect (other countries or regions) from the international spread of disease. According to Article 2 of the IHR (2005), the purpose and scope of the Regulations are "*to prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade*." (WHO, 2008:10). It is of particular interest this explicit connection made between infectious disease outbreaks and the potential consequences of such an event for the sectors of trade and travel. This suggests that one of the primary fields of communications exist on intergovernmental level, between WHO and international organisations which operate as a function of the globalisation process, such as the World Trade Organization (WTO) and the UN World Tourism Organisation (UNWTO).

In fact, this is foreseen by Article 14 of the IHR (2005), which points to the need for WHO to create partnerships and coordinate its activities on intersectoral level for responding to public health threats, with other competent **intergovernmental organisations** and **international bodies** (WHO, 2008:3), such as:

- United Nations (UN)
- International Labour Organization (ILO)
- Food and Agriculture Organization (FAO)
- International Atomic Energy Agency (IAEA)
- International Civil Aviation Organization (ICAO)
- International Maritime Organization (IMO)
- International Committee of the Red Cross (ICRC)
- International Federation of Red Cross and Red Crescent Societies (IFRC)
- International Air Transport Association (IATA)
- International Shipping Federation (ISF)
- International Office of Epizootics (OIE)

The IHR (2005) [Article 14.2] clearly identify WHO as the key international player in events where immediate measures must be taken for the protection of public health. Moreover, it is made explicit that

[4] Public Health Emergency – International Health Regulations, available from <http://www.phe.gov/preparedness/international/ihr/pages/default.aspx>

WHO coordinates all activities, even in the case where any of the abovementioned intergovernmental organisations and international bodies are actively involved or concerned. It is understood however that each international organisation abides to specific rules and principles, with already established response mechanisms to deal with large-scale disasters or crises. In this aspect, the IHR (2005) specifically set for WHO (in relation to other competent intergovernmental organisations and bodies) the 'roles and responsibilities' boundaries in the frame of public health response to a crisis, while at the same time make an appeal to strengthen collaboration across multiple levels.

In TELL ME Deliverable D2.1 (Stakeholder Directory and Map), the intergovernmental organisations and international bodies had been identified as one of the key stakeholder groups with regard to their involvement and general role in outbreak communication. Another key stakeholder group identified – not only in outbreak communication but in the wider context of public health response – had been the national public health authorities, which have an overarching role in all facets of an emergency, from outbreak communication to effective policy implementation and enforcement. It could be argued that national competent authorities (Ministry of Health, Influenza Surveillance Centre, Medicines Regulatory Agency) play the role of an information hub, where information is received continuously by multiple sources, namely regional and local stakeholders, while in turn information is transmitted by national competent authorities to international organisations and agencies, such as WHO and the European Centre for Disease Prevention and Control (ECDC), which collect and analyse data retrieved from their surveillance and warning systems. In this context, the IHR (2005) specify the communication requirements for WHO and provide guidance to Member States (i.e. national competent authorities) concerning the type of information necessary to feed into the global surveillance systems for an effective response to the outbreak.

1.2.1 The information-sharing landscape according to the IHR (2005)

Before we take a closer look to the communication requirements and information-sharing principles for WHO Member States as specified by the IHR (2005), it is important to highlight that under Article 4 "*each State Party shall designate or establish a National IHR Focal Point*[5]*and the authorities within its respective jurisdiction for the implementation of health measures under these Regulations*" (WHO, 2008:11). In other words, the IHR (2005) endeavour to ensure ***timeliness***, ***accuracy*** and ***sufficiency*** in the type of information transmitted by national public health authorities through a direct communication framework, which allows the consolidation of input from relevant other sectors or stakeholders that operate on national level.

More specifically, Article 6.2 explains that a Member State "[…] *shall continue to communicate to WHO* ***timely***, ***accurate*** *and* ***sufficiently*** *detailed public health information available to it on the notified event, where possible including* ***case definitions***, ***laboratory results***, ***source and type of the risk***, ***number of cases and deaths***, ***conditions affecting the spread of the disease*** *and the* ***health measures employed****; and report, when necessary, the* ***difficulties faced and support needed*** *in responding to the potential public health emergency of international concern."* (WHO, 2008:12). This article makes sufficiently explains the type and format of information that competent national authorities need to provide the World Health Organization with to ensure the more effective response.

[5] A key provision for National IHR Focal Points under Article 1.1 of the IHR – relevant to another component in outbreak communication, that of 'availability' – is the requirement for these Focal Points to be accessible at all times for communications with WHO. More specifically, the **IHR guidance for national policy-makers and partners** (WHO, 2008) states that National IHR Focal Points must: a) be accessible at all times, 24 hours a day, b) communicate with WHO concerning consultations, notification, verification and assessments of public health events, c) ensure coordination with other ministries/sectors within the country, and d) notify WHO of all events that may constitute a public health emergency of international concern, within 24 hours of assessment by using a decision instrument.

In addition to the above, Article 10 of the IHR (2005) asks from competent national authorities to verify reports from sources other than notifications or consultations of events which may constitute a public health emergency, and provide within 24 hours any available information regarding the status of events following initial request made by WHO (WHO, 2008:13). This would be another component of communication requirements between WHO and competent national authorities, relevant to the importance of timeliness of response.

The IHR (2005) acknowledge the fact that information flow must be a two-way process, with WHO having specific duties toward Member States with reference to the type and format of information that is made available during public health emergencies. In essence, according to Article 5.4 the role of WHO includes "[…] *the collection of information regarding events through its surveillance activities and assessment of the potential to cause international disease spread and possible interference with international traffic*" (WHO, 2008:11). As a next step, it is in the scope of WHO responsibilities to communicate immediately any critical and verified information to Member States regarding a public health risk that could take global dimensions. Article 11 of the IHR (2005) also underlines those conditions where WHO shall not make information generally available to Member States, for various reasons that could be associated with other components in outbreak communication, such as ***credibility*** and ***accuracy*** of information – however, this raises the issue of withholding or concealing information with direct implications for building trust among stakeholders. A range of factors have been described in the literature as components of trust[6]. It is noteworthy to mention that under the same article is mentioned that certain information could also become publicly available by WHO where there is a need for dissemination of authoritative and independent information, which strategy moves in the direction of ***transparency*** (WHO, 2008:14). Specific to the transparency principle and promotion of public trust, O'Malley et al. (2009) argue that is equally important for health authorities to provide information on what *is* known, as on what is *not* known, all in the context of open and two-way communication. Moreover, when sharing information with the general public is crucial to consider the two inter-related aspects of transparency, which refer to quality (or value) of information needed by people and communities, and trust by providing evidence to support actions taken by authorities on international and national level (O'Malley et al., 2009).

1.2.2 Key information-sharing principles according to the IHR (2005) at local and national level

It was envisaged that all Member States would have developed and implemented plans of actions by June 2012, to ensure the core capacities required by the IHR (2005) are present and functioning throughout their territories. A recently published report by WHO (2012a), summarises specific obligations on three levels (local, intermediate, national) with regards to public health response for each Member State, in accordance with Annex 1A of the IHR (2005). For the purposes of this report, are presented the obligations or principles relevant to communications and sharing of information from local to international level.

At local level, there are direct links to Article 6.2 of the IHR (2005) – as previously discussed for national competent authorities – since is highlighted that all available essential information is reported immediately to the appropriate level of healthcare response, including clinical descriptions, laboratory results, sources and type of risk, numbers of human cases and deaths, conditions affecting the spread of the disease and the health measures employed (WHO, 2012a:13). From this description is made clear that a great volume of information is expected from local groups of stakeholders, so accuracy and timeliness in information

[6] Renn and Levine (1991) proposed competence, objectivity, fairness, consistency, and good-will as making up trust. Peters, Covello and McCallum (1997) proposed knowledge and expertise, openess and honesty, and concern and care as the constituents of trust.

reporting comprise key elements in communication requirements from local community level toward regional or national competent authorities.

At the intermediate level, once again immediacy (or timeliness) in assessing and reporting crucial events to national competent authorities is highlighted as crucial towards making decisions about the implementation of additional control measures, in the case where a serious public health impact is expected. It is quite important to note that in cases of infectious disease outbreaks, some of the information received at this intermediate level could not be considered as concrete, and what is reported is representative of a time-fragment. This is particularly true for reporting the number of human cases and risk sources, which brings forward once again the importance of accuracy in sharing information, especially where efforts are made at national or international level to identify any patterns in the spread of the disease.

At national level, the IHR (2005) specify all the requirements and necessary conditions to be met by the authorities in response to an emergency event, such as infectious disease outbreak, which entails the immediate notification of WHO through the established National IHR Focal Point. Below are summarised and listed the national response measures foreseen to be provided on a 24-hour basis (WHO, 2012:13), with emphasis on the links between national authorities and various other groups of stakeholders to meet the information needs at this level:

- *to determine rapidly the control measures required to prevent domestic and international spread;*
- *to provide support through specialized staff, laboratory analysis of samples (domestically or through collaborating centres) and logistical assistance (e.g. equipment, supplies and transport);*
- *to provide on-site assistance as required to supplement local investigations;*
- ***to provide a direct operational link with senior health and other officials** to approve rapidly and implement containment and control measures;*
- ***to provide direct liaison with other relevant government ministries**;*
- ***to provide, by the most efficient means of communication available, links with hospitals, clinics, airports, ports, ground crossings, laboratories and other key operational areas for the dissemination of information and recommendations received from WHO regarding events in the State Party's own territory and in the territories of other States Parties**; and*
- *to establish, operate and maintain a national public health emergency response plan, including the **creation of multidisciplinary /multisectoral teams** to respond to events that may constitute a public health emergency of international concern*

From the above points is clear that in terms of information exchange and communication requirements, the International Health Regulations aim to establish efficient and open communication channels between WHO and different stakeholder groups operating on national and regional level, with specifications on the type of information expected to become available from Member States. For this purpose, the IHR (2005) also established the WHO Monitoring Framework which includes a set of (online) tools for collection of information and data on a standardised format, mostly through collaboration with the National IHR Focal Points.

1.3 WHO outbreak communication and global surveillance networks

With reference to coordination of communications in response to an infectious disease outbreak, the World Health Organization (WHO) is reasonably considered as one of the key international stakeholders in the field. Even though the IHR (2005) provide WHO with a clear operational framework, setting out the

roles and responsibilities in exchange of information with other national and international stakeholders, a series of other documents were published by WHO on guidelines and principles of outbreak communication, during the time of the Avian Influenza A(H5N1) pandemic and the publication of the IHR in 2005. In particular, WHO published early in 2005 the *WHO Outbreak Communication Guidelines* (WHO, 2005a), and a report on *Best Practices for Communicating with the Public during an Outbreak* (WHO, 2005b), following an expert consultation on outbreak communication held in Singapore during September 2004. Finally, WHO published a handbook to address issues relevant to the media, entitled *Effective Media Communication during Public Health Emergencies* (WHO, 2005c). These reports and guidelines were produced in the context of WHO taking a more structured approach for effective communications with policy-makers, the international community including trading partners, local populations, and other competent public health authorities.

In comparison to the IHR (2005), the abovementioned reports do not focus as much on information needs for WHO, but make explicit reference to the significance of core elements and principles in outbreak communication, and the value of sharing various types of information during emergencies with different groups of stakeholders, most prominent being the general public and the media. The communication requirements and information needs of those groups are projected through a set of outbreak communication strategies, applied by WHO, national public health authorities and other competent agencies or institutions. The horizontal objective in the guidelines and best practices presented by WHO is to highlight specific elements in outbreak communication between stakeholders, having as an underlying concept to build, maintain and restore trust during all phases of an infectious disease outbreak.

According to Glik (2007), outbreak communication needs to contain elements of *trust*, *credibility*, *accountability*, *transparency* and *honesty*. This is one part of communication of course, with the content of messages transmitted to the general public also playing a key role in outbreak response. It is evident that trust, transparency and credibility are integral elements of any communication strategy in large-scale emergency or crisis, since these were also mentioned in the IHR (2005). In WHO guidelines for communicating with the public, there are descriptions of additional elements, or rather principles for an effective communication, that require trust and transparency to have already been established between stakeholders. Those principles include *early announcement* (timeliness), *understanding public concerns*, and *communication planning* (WHO, 2005a). Although these communication strategies and principles do not contribute toward better understanding which the type of information that is most valuable for WHO or other public health authorities, some standards are set from the onset as regards the qualitative elements to facilitate the information flow process.

Within the context of developing more effective communication strategies and interventions, WHO recommends an overall stakeholder mobilisation on different levels, suggesting that more "[…] ***networks should be created***. ***International organizations*** *should offer* ***outbreak communication support*** *to Member States. A virtual network of* ***senior risk communicators*** *should be developed to* ***provide guidance*** *for problems in specific Member States.* ***Links*** *with the* ***private sector*** *and* ***other stakeholders*** *should be strengthened.* ***Several funding sources*** *were identified to help meet these needs. They included the* ***World Bank*** *and the* ***regional development banks***. *WHO was urged to invest more in outbreak communication.* ***National public health authorities*** *and* ***international partners*** *can be mobilized to* ***advocate for outbreak communication needs***." (WHO, 2005b:47). This highly complex and intertwined landscape of communications between different groups of stakeholders, is representative in emergencies such as infectious disease outbreaks where communication and information needs for the public emerge faster than any virus could spread.

1.3.1 The role and communication requirements in the sphere of mass media

Further to the IHR (2005) specifications on the communication requirements for WHO in relation to national public health authorities or other international agencies, a lot of emphasis is put on the central role of these authorities in providing WHO with accurate, sufficient and timely information through the already established surveillance systems and networks. Nonetheless, there is yet another key stakeholder group recognised to have great impact and influence in outbreak communication, which is no other but the mass media. It is reported by WHO that in many occasions government officials receive their first information about an outbreak from the media, rather than official reporting systems (WHO, 2005b). Overall, WHO acknowledges mass media as a powerful tool for communications and the vehicle to deliver messages to the general public (WHO, 2005b), although at many occasions is seen as a double-edged sword with a positive (e.g. create an informed public, reach rural populations etc.) and negative side (e.g. fuel public anxiety, spread rumours, put pressure on officials etc.).

The critical impact of mass media – especially news media – is more visible during events of public health emergencies, where a series of other mechanisms are also triggered by journalists in the wider context of competition to reporting first any developments on the event. This is particularly important in the sense that different elements and principles in outbreak communication are no longer valued as having the same gravity – as they should – but are placed on a 'priority scale', to accommodate and meet the (perceived) information needs of the public. The general perception is that media are more interested in a sensational story than accurate reporting of facts (WHO, 2005b), which would suggest that *accuracy* becomes a negotiable principle in outbreak communication, same as *accountability* when it comes to reproduction of news coming from unofficial or doubtful sources.

The emergence of new social media and wider availability of online information sources have contributed towards creating people conditioned to collect more and more information from various sources on a daily basis, irrespective of the content value. However, more specific to infectious disease outbreaks, there is considerable lack of scientific evidence about the way people use social media in order to fulfil their information needs (van Velsen et al., 2012). It would be crucial to get a better grasp of the type of information people choose to access (or have access to) online, as the information overflow has a direct impact in the decision-making process, when people need to identify and select the information that is more valuable or useful in terms for responding to an outbreak in accordance with advice received by public health authorities and professionals. It could be argued that as the number of communication sources continue to grow and information-exchange becomes more of a two-way (interactive) process even at the level between general public and health authorities, it will be a more challenging task to secure the position of other core principles of outbreak communication such as transparency, credibility and honesty, in relation to the growing demand for immediate and continuous information flow.

The handbook published by WHO on *Effective Media Communication during Public Health Emergencies* (WHO, 2005c) specifies that is aimed towards WHO office and other public health officials, to provide key information and over-arching advice about how to communicating effectively *through* the media, and more specifically the news media. Nonetheless, this report helps building a better understanding of the mass media communication requirements and information needs during infectious disease outbreaks, through the lens of an international and intergovernmental organisation such as WHO.

In particular, the report begins with an assessment of the news media needs and certain constraints during public health emergencies. In an effort to better understand the needs of news media, a series of questions are posed, whose main objective is to explore the wider impact of media involvement during emergencies,

assist in contextualising the needs from both the producers' and the general public perspective, and more importantly, indicate which are those conditions that need to be met as standard procedure for news reporting in emergencies. The questions that appear in this report are as follows (WHO, 2005c:1):

1. What do the news media typically do?
2. How can the news media help during an emergency?
3. What are news editors and producers typically looking for in a story?
4. What types of stories typically attract the largest audiences and gain the highest ratings?
5. **What do news editors and producers typically want from news sources?**

It is the last of the five questions directly relevant to the aims of the present report, and therefore is presented on a list as follows (WHO, 2005c:4):

- accurate and truthful information;
- evidence-based information;
- regular updates;
- early disclosure of information;
- brief, concise and succinct information;
- transparency;
- passion;
- first-hand information (for example, what did you see?);
- information with a different slant than information reported by other media outlets;
- graphics and visual information (for example, photographs, pictures, charts, timelines, diagrams, flowcharts, maps, drawings, videos and animations) in formats the media can easily use;
- simple statistics – with explanations if possible;
- flowcharts, figures or outlines for complicated issues, especially anything complex involving numbers;
- context (part of a wider picture) comments or explanation from the highest authority possible;
- information on economic costs;
- controversy;
- expertise;
- balanced information;
- human interest;
- timely cooperation and access to people, places and information;
- an engaging, dynamic or unusual personality;
- celebrity status; and
- respect for media deadlines.

It is evident once again that information needs and certain communication principles during infectious disease outbreaks are common for different stakeholder groups, including elements such as accuracy, timeliness, honesty, and transparency. The abovementioned points allow a preliminary mapping of communication needs and requirements for news editors and producers, toward improvement of quality of information that becomes available to the general public by the media.

It should be noted that communication strategies and mechanisms established by WHO to send/receive information from the onset of an outbreak focus mostly on: a) the national public health authorities, and b) the general public. In the latter case, it is the mass media (print media, broadcast media and Internet) that

WHO relies upon to widely inform the general public about any event that could raise concerns for the public health; it is within this context that WHO decided to publish different guidelines for officials to improve the level of collaboration with the media, taking care to identify and list in the most explicit way the information needs for each group in relation to the other. In the case of national public health authorities (or rather the National IHR Focal Points) and WHO, communication requirements are far more technical in nature, while the information flow is continuous with surveillance data constantly becoming updated. It has been underlined in many occasions the need for transparency in the decision-making level, the negative effects of concealing information in the effort to build trust with other stakeholders and the general public, and the importance for any incident to be announced early by official governmental sources, to avoid the emergence of rumours and misconceptions about the nature of the outbreak. In order to fulfil those requirements a number of sophisticated surveillance and warning systems were developed to support the communication requirements for national and international stakeholders on decision-making level. These interconnections are summarised and graphically represented in Figure 1.

Figure 1: The outbreak communications landscape of interconnections for WHO.

1.3.2 Global networks and surveillance systems to support communication requirements

Thus far, the role and responsibilities of WHO have been presented, along with the communication framework and specific communication requirements for coordination of actions on international level, in close collaboration with key other stakeholders (i.e. national public health authorities, the media etc.), in response to an infectious disease outbreak. This section presents briefly international networks as well as surveillance and warning systems established by WHO to support communication requirements and information needs for national public health authorities and international health organisations or agencies.

Within the frame of the Global Alert and Response (GAR) programme developed by WHO, was established early in 2000 the Global Outbreak Alert and Response Network (GOARN), which provides an operational framework to link the expertise and skills from various stakeholders in the field of infectious disease outbreaks, for keeping the international community constantly alert to the threat of outbreaks[7]. This Network is quite important on the level of strengthening collaboration between WHO, international governmental and non-governmental organisations, and national scientific institutions, providing opportunities to exchange knowledge and expertise on epidemic intelligence and response to outbreaks. In general, the Network is another formal platform with a potential to fill certain communication and information gaps for WHO and other international organisations, depending on the level of accessibility and availability of information to each member, as well as the general capacities.

Another system which is directly associated with the International Health Regulations (IHR) is the Early Warning Alert and Response Network (EWARN), which in essence constitutes a communication platform to link WHO with national public health surveillance systems (operated by respective Ministries of Health) in

[7] WHO - Global Outbreak Alert and Response Network, available from <http://www.who.int/csr/outbreaknetwork/en/>

order to detect rapidly and control disease outbreaks (WHO, 2012b). The EWARN is described as an 'adjunct' to the national disease surveillance system; nevertheless, WHO highlights the effectiveness of this system in adequately meeting surveillance information needs, when data timeliness and accuracy of information are crucial components, particularly in the acute phase of an emergency (WHO, 2012b). Without going into further analysis of the EWARN technical characteristics, what is important to keep from this system and generally other global surveillance and warning systems, is the potential that new information and communication technologies have offered in meeting key stakeholders' information needs as a function of timely responses and exchange of knowledge on multiple levels in outbreak communications.

In conclusion, communication requirements of WHO in relation to other groups of stakeholders are specified and made explicit through the clauses of the IHR (2005), while the information needs involve at core the collection of various types of data from national health authorities and international organisations, through the already established surveillance networks and platforms. It could be argued that at such level of decision-making and coordination of preparedness and response actions, the communication requirements are quite clear from the onset of an infectious disease outbreak with regard to national competent authorities, however the overall impact and influence of new social media in communications between WHO and the public still remains to be explored.

1.4 Coordination of communications at European level

After having investigated the outbreak communication requirements and strategies followed by WHO to obtain necessary information for effectively responding to an infectious disease outbreak, the next level to examine the communication requirements for another international organisation that operates at European level, namely the European Centre for Disease Prevention and Control (ECDC). The ECDC collaborates closely with WHO across many different areas, however for the purposes of this report will be examined the information needs and communication links from the perspective of ECDC, toward EU Member States and other key stakeholder groups that operate on national or local level.

The ECDC was established in 2004 by the European Commission as an independent European agency for disease prevention and control[8]. With reference to communication requirements and links with the European Community, Article 8.1 of Regulation (EC) No 851/2004 specifies that the ECDC "[…]*shall support and assist the Commission by operating the early warning and response system and by ensuring with the Member States the capacity to respond in a coordinated manner.*", while Article 8.2 of the same Regulation indicates other obligations for the ECDC with reference to providing information and analyzing the content of messages received via the early warning and response system. It is under Article 12 of Regulation (EC) No 851/2004 where more specifics are provided concerning communications with other key stakeholders, such as the European Commission and Member States, while all interested parties are guaranteed to have access to objective and reliable information, directly from the ECDC website.

1.4.1 ECDC Health Communication Strategy 2010-2013

Communication requirements for ECDC as a key coordinator of public health emergencies in the European context are in proportion as challenging, demanding and complex as for WHO on global scale. The ECDC published in 2009 the Health Communication Strategy (HCS) 2010-2013 (ECDC, 2009), identifying a number of major communication challenges that could affect directly the quality of preparedness plans and response during an infectious disease outbreak. The HCS highlighted the diversity in communication

[8] Regulation (EC) No 851/2004 of the European Parliament and of the Council of 21 April 2004 establishing a European centre for disease prevention and control.

capacities and resources across the European countries, as well as the fact that only in Europe 25 languages are spoken, having direct implications in choosing the appropriate format to communicate crucial information simultaneously to all regions. Specific to the *type* and *format* of information that becomes available to target audiences, it was suggested that meeting those needs is an ongoing challenge due to the aforementioned differences in communication capacities and resources. In addition to the above, the HCS puts an emphasis "[…] *on the need to develop skills, competencies and long-term structures dedicated to crisis communication in the public health arena.*" (ECDC, 2009:2). In this same context, the ECDC highlights the responsibilities of key stakeholders such as public health authorities and professionals, as well as the media, with reference to their involvement and response to a wide range of communication demands. This part of future strategic health communication challenges ends with a special reference to *new media and new information-seeking behaviours*, which has been already discussed in previous section within the context of WHO outbreak communication strategies. It is suggested that "*the use of new media in public health may enable trusted sources to reach people more efficiently and with more tailored content, which diversifies possible modes of campaign engagement. The importance of new media for public health requires new approaches to future health communication initiatives. It will be necessary to explore the potentials of new media in order to increase health communication effectiveness and to best adapt to new information-seeking behaviours."* (ECDC, 2009:2). This is a crucial consideration in discussions of how to better meet the information needs for stakeholders at decision-making level, where at minimum such agencies and organizations need to utilize modern and always up-to-date communication strategies for conveying messages to the public, but also receiving real-time and honest feedback.

In the context of discussing the information needs of the ECDC during events of infectious disease outbreaks, and considering that information flow is more of a dynamic process, it would be reasonable to look into the key stakeholder groups (target audiences) that ECDC collaborates more closely, as these are presented in the HCR (ECDC, 2009):

- Public health professionals
- Public health communicators
- Policy makers
- Media
- EU citizens
- Academia
- Non-governmental organizations
- WHO and international public health agencies (e.g. CDC, PHAC)

There are two common denominators for the above stakeholder groups: a) communication, b) information-sharing. Once again, it becomes evident the complex nature of communication requirements and information needs for international health agencies and organisations who receive input and collect data from various sources, while at the same time they are required to communicate clear messages to interested parties.

Following the A(H1N1) influenza outbreak of 2009, a collaborative work between professionals from ECDC, WHO and DG SANCO pointed to some of the communication weaknesses, which had a negative impact in response to preventive measures taken by the public (Nicol et al., 2012). Those communication weaknesses were[9]:

[9] Note: All the communication weaknesses presented were followed by specific strategies or ways for improvement.

- Poor relationship with the media at times;
- Inexperience of some official communicators;
- Failure to monitor the beliefs and attitudes of the public and specifically health-care workers;
- Failure to detect the early loss of confidence in countermeasures and the authorities;
- Occasional lack of targeted messages for different risk and vulnerable groups;
- Difficulties in disseminating early reports on vaccine and antiviral safety and effectiveness, and in dealing with questions over whether those providing information and advice were independent of commercial influences;
- Difficulty working with the new social media;
- Poor coordination of the timing and content of some health messages.

These findings point to the complex and demanding nature of outbreak communication for international health organisations such as ECDC or WHO, and highlight the need for improvements and incorporation of new elements for communication strategies, in the event of future pandemics.

1.4.2 The ECDC actions toward meeting stakeholders' communication requirements

The Health Communication Strategy (HCS) 2010-2013 describes a number of communication activities for the ECDC, for raising awareness on different issues related to infectious diseases among specific target groups in Europe. These activities make no explicit reference to situations of public health emergencies, but give an indication of the position adopted by the ECDC with regards to communication and information exchange with other key stakeholders from the field. Several interesting points are made in the communication activities listed in the HCS, which in essence create an operational framework and provide guidance for better understanding the communication requirements and information needs between the various groups of stakeholders.

As regards the interactions with the scientific community, the ECDC states the following: "*ECDC is committed to transforming the scientific information into clear messages, while acknowledging the range of needs of different audiences within the group of scientific and public health experts. ECDC provides clearly labelled and recognisable scientific documents that meet the needs of the targeted audience and allow the various stakeholder groups to identify information of specific interest to them. Different channels such as web-based publications, print material, presentations and emails are used for communication to the expert audience."* (ECDC, 2009:5). This statement has particular value in the context of the present report as it gives an indication of the chosen formats that are used by the ECDC to communicate information to health professionals and experts. In addition, the HCS notify that the *Eurosurveillance* journal is yet another source to satisfy the information needs of epidemiologists and the scientific community in general. Thus, to a certain extent, the information needs for the scientific community has already been framed by the ECDC, based on the different type and format of information that becomes available.

It is quite interesting also to present the ECDC communication strategies to reach and inform the general public about health-related issues. Once again, is made explicit that the ECDC aims at "*taking into account the information needs of specific audiences and employing effective audience targeting* […]" , while the methods to be used for bringing messages across to European citizens are based "[…] *on a variety of well demonstrated approaches to strategic segmentation for health communication, including socio-demographic and psychographic variables, levels of health literacy, health information needs, health information-seeking habits, past experience of communicable diseases."* (ECDC, 2009:5). With respect to communications with the general public then, it has been determined by the ECDC that information needs not only vary across different populations, but also need to be determined across different variables. With

regard to the communication channels and format of information that becomes available to the general public (and key other stakeholders), the ECDC puts emphasis on the qualities of its web portal and the principles of using two-way communication channels, to keep the public constantly informed with updates.

It has been already discussed the impact of news media in outbreak communication, and this stakeholder group also receives the attention of the ECDC. In particular, the HCS describe the way for ECDC to effectively liaise and engage with the media for communicating messages to the public. Once again becomes relevant the need for an international organization such as ECDC to ensure "[…] *that media and public communications are timely, proactive and significant and that the most appropriate media channel is used for the target audiences.*" (ECDC, 2009:6). In this sense, it is crucial for the ECDC to establish an open and reliable communication channel is with news media, including new social media, so that any information transmitted by the Centre could be immediately and accurately made available to the general public. In fact, the value of obtaining information on local outbreaks directly from the public through informal sources has been underlined already, with ECDC taking some action in this direction as according to Thomas Mollet (Surveillance Response Unit of ECDC) the ECDC "[…] *will use social media on a daily basis. Facebook and Twitter are not able to confirm or rule out an outbreak, but they contribute to an investigation*" (St Louis and Zorlu, 2012).

1.4.3 The European Influenza Surveillance Network

Notwithstanding the ECDC communication strategies to satisfy the information needs of key local and national stakeholders, the Centre also has taken action to establish a partnership with EU Member States, in response to their needs for timely and accurate information as regards infectious disease outbreaks around Europe, with particular focus on influenza surveillance. In this context, the European Influenza Surveillance Network (EISN) was established to ensure – among other things – that the type and format of information received by the Member States corresponds to the information needs and surveillance activities of the ECDC.

The tool that is used for collection, validation and analysis of the epidemiological and virological surveillance data on influenza is the European Surveillance System (TESSy). It is through this system that ECDC receives relevant information from national public health authorities (contact points for influenza surveillance) around Europe, as regards the influenza activity, and then communicates openly results to interested parties on a weekly basis – by means of the ECDC Surveillance Reports – with updated information about influenza activity in Europe.

The European Influenza Surveillance Network (EISN), together with the Early Warning and Response System (EWRS) created by the European Commission, and similarly to WHO networks for early warning and surveillance (i.e. GOARN, EWARN), provide a clear framework of communications for the ECDC to coordinate actions in response to a public health emergency. These systems are developed in such a way to secure that ECDC (or any other international public health agency) receives all critical information by multiple sources accurately and in a timely manner, while the type of information received appears in a standardized format. At such level of international organizations and agencies, what becomes more relevant is responsiveness to requests made for feedback, sufficiency in the information provided and eventually, the value of information received from stakeholders other than national public health authorities. The communication requirements at this level are not expected to remain the same as the present report continues to explore the communication requirements of stakeholders on national and local level.

1.5 National level – Public health authorities and disease surveillance centres

During the event of an infectious disease outbreak, the majority of stakeholders involved in the risk communication process have already specified roles and responsibilities, as these are laid down by respective codes of conduct. As it has been discussed earlier, the complexities of the role for an international public health organisation are more relevant to the coordination of actions on decision-making level, based on the processing, analysis and exploitation of various types of information transmitted from various sources, through the use of early warning and response system networks. It could be argued that the duties of national public health authorities in emergency preparedness and response extend to another level considering the high pressures and demands expressed by international organisations and the general public alike, for supplying adequate and timely information.

The national public health authorities stand on the crossroads of communications and information exchange between various groups of stakeholders, and particularly in major outbreak the competent authorities have a multifaceted role, from monitoring and evaluation of intervention programmes, to delivering effective messages and responding to the information needs of the general public. In addition, under the International Health Regulations (IHR), all Members States have the legal obligation to notify the Early Warning and Response System (EWRS), and send out updated information to other global or European networks. It easily becomes understood that national public health authorities have diverse and wide-ranging information needs from multiple levels of stakeholders, so that pandemic preparedness plans are driven successfully into implementation and an overall effective response. All the principles and components in outbreak communications as described by WHO (e.g. accuracy, credibility, transparency, trust, timeliness etc.) find direct application at national level, where linguistic and culture-specific barriers are diminished.

The principal intention for this section is to present some characteristic and concrete examples from national preparedness plans against influenza pandemic, in order to conceptualise better what the information needs are for this group of stakeholders, the type and format that information need to become available from other stakeholders to ensure an effective response. It should be considered that first and foremost the national public health authorities adhere to those specified International Health Regulations, so it would make sense to start from presenting the findings of the WHO Review Committee on the functioning of the IHR (2005) in relation to pandemic (H1N1) 2009[10], and with respect to communication strategies to be followed by WHO and national public health authorities in the future.

To begin with, it is suggested in Article 43 that WHO "[…] *should develop an organization-wide communications policy and a strategic approach to improve routine and emergency communications. A strategic approach entails matching the content, form and style of communication with the media, timing and frequency that will reach the intended audience and serve the intended purpose*." (p. 19). Another critical observation made with implications for national authorities is relevant to "[…] *the capacity to information quickly a and clearly on different media platforms (television, radio, print, web), across cultures and in many languages is essential to the effective management of public-health emergency.*" (p. 116), while special reference is made on the role and impact of social media (i.e. Facebook, Twitter, YouTube etc.), highlighting that "[…] *the use of new information technologies, including social networks, should be an essential part of WHO's strategic communications planning. Research, training and guidelines for Member States in this area would also be beneficial for response at a regional and national level.*" (p.120).

[10] Report of the Review Committee on the Functioning of the International Health Regulations (2005) in relation to Pandemic (H1N1) 2009 (5 May 2011), available from <http://apps.who.int/gb/ebwha/pdf_files/WHA64/A64_10-en.pdf>

More specific to national public health authorities in terms of communication requirements was Article 292, which states that "*Member States should consider developing strategies for engaging with the media and public through planned communication on complex public-health issues. The pandemic highlighted the* ***difficulty in communicating complex scientific principles****, conveying severity, uncertainty and risk.* ***New approaches that go beyond pure information dissemination need to be considered****.* ***Improving the content and reach of information products*** *(referred to by some countries as information, education and communication materials), especially in local languages, has been noted by many Member States as a critical element to increasing awareness.* ***Materials need to be audience-specific, disseminated in the most appropriate method for the target group****, be it written (guidelines, leaflets), audio (television and/or radio spots) or interactive workshops.*" (p. 121). This information encapsulates the demanding nature of engaging and communicating with stakeholders at multiple levels during a public health emergency, and points for the need to create new communication strategies in outbreak communication for extending the reach to more target populations.

To get a better insight on the communication requirements at the level of national public health authorities, the influenza pandemic preparedness plans from different EU countries were researched through the dedicated portal in the ECDC website[11]. It is interesting to note that last updated official reports on preparedness plans and strategies for many European countries date back to 2006 and 2007, a time when new social media were only beginning to emerge, which later proved to be a key instrument for communications during the pandemic (H1N1) 2009, while the internet still was considered as an one-way communication tool and could not be appreciated yet for its capacity to erase formal distinctions between the communicator and the audience (Abraham, 2011). In the table that follows are presented different aspects of stakeholders' communication requirements and role during an outbreak, good practices in communication as well as core elements and principles in influenza pandemic national plans and preparedness strategies in communications with the various groups of stakeholders.

Table 1: Key extracts from most recent national preparedness and response plans (post-pandemic [H1N1] 2009) relevant to stakeholders' communication requirements.

Country	Year	Title	Key extracts relevant to stakeholders' communication requirements
United Kingdom	2011	UK Influenza Pandemic Preparedness Strategy[12]	*- Government is responsible for providing* ***accurate and timely information*** *throughout the course of the pandemic to* ***the public, staff and stakeholders****.* *-* ***Consistent, clear public messaging****, aligned at* ***national and local level****, is critical to a successful and collaborative UK-wide response to a pandemic.* *- As well as consistency of public messaging, it is vital that communications within and between* ***national and local health and resilience organisations*** *are also clear and consistent. Pandemics require the whole of society to respond, and this* ***response will be improved if everyone has access to the information they need****, in a form which works for them.* *-* ***Openness and transparency*** *is central to an effective pandemic response. People are likely to respond better and are more likely to take effective and appropriate action if they* ***trust both the advice given and the person or organisation offering it****.* *- During an influenza pandemic the Government will* ***track public awareness*** *and attitudes through market research to find out how effectively messages are working and to measure engagement.* *-* ***Healthcare professionals*** *also play an important role in* ***explaining and reassuring patients about the pandemic and need to have timely and relevant information.***

[11] European Centre for Disease Prevention and Control (ECDC) – Table listing influenza pandemic preparedness plans for EU countries, available from <http://www.ecdc.europa.eu/en/healthtopics/pandemic_preparedness/national_pandemic_preparedness_plans/pages/influenza_pandemic_preparedness_plans.aspx>

[12] UK Influenza Pandemic Preparedness Strategy, available from <http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_131040.pdf>

France	2011	Influenza Pandemic National Plan[13]	*- Fundamental elements of communication strategy:* o ***Maintaining the trust of the public*** o *Favouring following of the measures taken* o *Allowing* ***citizens to be actors*** *- Variable elements to be taken into account as a function of the context:* o *International context* o *Territorial context* o *State of the resources* o *Risk level* o *State of the opinion* o *Political context* *- Development of* ***a specific strategy for the use of the internet is essential*** *for dealing with several situations:* o ***Dealing with rumours and misinformation*** o ***Adapting the dissemination of information to smart phones*** o ***Responding to expression of specific needs of different populations*** *- Draw on the contacts and networks* *-* ***Initiate dialogue*** *on all levels, particularly health care professionals and the public* *- Encourage all citizens to become actors and responsible in the face of risk* *-* ***Respond without delay to expectations and questions*** *of public opinion –* ***Be present on the internet*** *and use it to provide the necessary explanations* *- Provide information on the situation and the measures taken, using* ***transparent and motivating information****.* ***Inform each category of the population*** *about the* ***protection measures that involve them*** *-* ***Explain why decisions were made*** *in order* ***to maintain the trust of the population and the credibility of public authorities*** *-* ***Provide reminders*** *of the* ***importance of vaccination***
Czech Republic	2011	Pandemic Plan of the Czech Republic[14]	*- The* ***government coordinates****; takes decisions regarding human, economic and material resources for optimal pandemic preparedness and the improvement of capacities; and sets out measures across all sectors* *- The* ***healthcare sector*** *(including medical services providers, health insurance companies and public health bodies) provides essential epidemiological, clinical and virological information and information regarding the risk, severity and course of the pandemic that influences the measures for reducing pandemic virus spread and the associated morbidity and mortality. It informs about the effectiveness of interventions used in the pandemic.* *- The* ***sector of essential public services*** *must provide essential activities and services during the pandemic in order to minimize the impact on the population's health, and social and economic consequences.* *- The* ***media*** *play an important role in communicating not only with the lay public but also with experts. The regular presentation of news regarding the pandemic, the risks of pandemic influenza, the current epidemiological situation, the national and international measures and other news are crucial for how the lay and expert public will approach the given situation and subsequently behave.* *-* ***Civilian organizations and associations with close relations to communities*** *may often increase awareness about the given issue, transmit the necessary information, rebut false and untrue information, provide necessary services and cooperate with the government during the crisis. Such groups should assess their strength and potential and plan their roles during the pandemic in collaboration with local authorities or other organizations.*
Italy	2010	National Plan for Preparedness and Response	*- A communications plan must therefore envisage:* o *the preparation of national, regional and local organisational structures to* ***establish cooperation between the institutions*** *and to guarantee circulation of information between workers in the field (internal communications) and among all the social parties involved, having different roles, skills, interests and ideas.*

[13] Influenza Pandemic National Plan, available from <http://www.sante.gouv.fr/IMG/pdf/PlanPandemieGrippale-Version_Anglais.pdf>

[14] Pandemic Plan of the Czech Republic, available from <http://www.mzcr.cz/Verejne/obsah/pandemicky-plan-cr_1093_5.html>

		to an Influenza Pandemic[15]	o *the **choice of a spokesperson at national and local levels*** o *the construction of a **continuous communicative process** on risk, **bidirectional, interactive, for the exchange and sharing of information and opinions to guarantee clarity, transparency, timeliness, homogeneity and reliability of information, and to strengthen the credibility of institutions** (external communications)* o *the **creation of partnerships** with other authorities and institutions present on national territory and at the international level, and with civil society* o *planning of a communications strategy to anticipate the integrated use of communication methods selected from time to time on the basis of targets, objectives, resources, keeping pace with the **aim to encourage not only a unidirectional flow of information** (media, websites, information pamphlets, documentation, articles) **but also a bidirectional exchange** (face-to-face interviews, telephone interviews, free numbers)* o *development of **collaboration with the media through the constant and clear communication of information available, even if uncertain** (communicating uncertainties)* *- Specifically, with regard to communications with the general population, the following measures are foreseen:* o *define **clear and consistent messages**, shared at national and local levels, developed **on the basis of a collective perception of risk*** o ***strengthen relationships with mass communication means** at all levels* o *prepare **ad hoc information material** destined for use by different parties, communicators, organisational spokespersons, preparation of communications for the use of the media* o *set up **communication channels with the public by way of unidirectional means of communication** (website, E-mail) **and bi-directional means** (subject-specific telephone lines, and communications such as between citizens and workers in different spaces and at different times)* o *prepare **audio and/or video conferences with key structures at central and local levels**.*

Table 1 draws information from the most recent national influenza pandemic preparedness and response plans, to highlight that communication requirements for national public health authorities are more oriented toward formulation of transparent and clear messages, and appropriate exploitation of mass communication means to convey those messages to the public. As public health authorities are empowered to take decisions on national level, the information needs are closer to the sphere of selecting the most appropriate type and format of communicating messages across a wide range of local and regional stakeholders, also having different communication requirements and information needs. As van Velsen et al. (2012) point out, a crucial aspect of outbreak communication is selecting the appropriate communication channels that will have the highest degree of coverage and impact among the target populations and to tailor messages towards their context. Along those lines, Heinrich (2011) suggests that public health communications "*needs to continue to find ways to integrate new technologies into communication strategies*". Nevertheless, according to Graham (1996) this would require deepening knowledge and understanding of target groups' needs, in order to keep them informed with accurate, timely, and user-friendly information from the onset of the outbreak. What emerges clearly from the content in national preparedness and response is the endorsement of WHO principles in outbreak communication, with many references made to the importance of openness/transparency, trust, accuracy, timeliness etc.

[15] National Plan for Preparedness and Response to an Influenza Pandemic, available from <http://www.salute.gov.it/imgs/C_17_pubblicazioni_511_allegato.pdf>

1.6 Research studies on local stakeholders information needs during pandemics

As part of this report, we set out to explore so far the communication requirements for various stakeholders on international and national level, searching through official reports and documents for any patterns in the operational framework in response to public health emergencies, within which some more explicit information needs for the general public could be identified in the wider context of communications between various groups of stakeholders.

1.6.1 Information needs and the general public

There is a considerable amount of studies that focus on the communication process and information needs of the general public during infectious disease outbreaks. With reference to the more recent A(H1N1) influenza outbreak in 2009, a number of studies revealed that communication needs for people changed over time as the pandemic unfolded and was going through different phases. For instance, at first level the perceived information needs by the government, and focus of communication messages to the public was relevant to reducing transmission of the virus, health precautions, advice on treatment, measures deployed by the government for surveillance, and policies in place to prevent the outbreak or control the disease (Abraham, 2011; Velsen et al., 2012; Wong and Sam, 2010). At second level, when the pandemic had progressed to become a reality for some communities, the information needs for the general public changed to communications about identifying disease patterns, and addressing more complex questions, such as the necessity for vaccination or vaccine safety, quality of public health response and accountability issues (Abraham, 2011).

Heinrich (2011) studied communication methods employed by agencies, aiming to respond to the information needs of the public toward a successful public health campaign, with an interesting point made about public health campaigns being mostly ineffective because key information and messages are based on what health officials believe are the information that the public wants or should know about. Instead, it is suggested that first should be considered how messages could be framed better to fit already established ideas and beliefs of people toward commonly appearing infectious diseases or viruses. From another perspective, but along the principle of taking under consideration public perceptions toward a disease, it also becomes pertinent the issue of health literacy, which according to the Centers for Disease Control and Prevention (CDC) is defined as "*the degree to which individuals have the capacity to obtain, process, and understand basic health information*" (CDC, 2010). If health literacy is relatively low, and complex messages are formulated, then these messages can easily be misinterpreted or misjudged as per their value, and any type of communication that originally would appear as sufficient and tailored to meet the information needs of the public, it could have the result of evoking fear and feelings of uncertainty about the disease. This does not mean of course that messages need always to be simplified in content, but through coordinated efforts, public health authorities could introduce progressively more advanced messages for the general public, as it has been shown that in fact audiences learn over time and can handle more difficult material as they become familiar with epidemiological language and topics (Lagassé et al., 2011).

Some interesting findings on communication requirements, have also been reported from studies that focussed on travellers or people who work in airport terminals and are among the first to come into contact with people arriving from different countries around the world. The study by Dickmann et al. (2011) revealed that a desire for more information was associated with higher concern expressed by passengers travelling to/from a country where cases had been recorded, with the most concerned ones expressing greater need for information. Airport staff expressed also high levels of fear or concern for passengers travelling from countries which had been in the epicentre of the outbreak, and requested to be adequately and regularly briefed by employers (Dickmann et al., 2011). With reference to the type and format of

information becoming available in this case by airport authorities, it has been demonstrated that more advice on symptoms and protective measures was needed by passengers (Schlaich, Sevenich, and Gau, 2012), as well as more information on possible future reactions (Dickmann et al., 2011). The information needs also varied according to whether travellers were inbound or outbound passengers, with the former group requesting more information about the management of the disease, while the latter group was more concerned about protective measures and how the outbreak evolved with time. Airport staff needed more information about the infectivity of the disease and appropriate protective behaviour in their work place (Dickmann et al., 2011).

1.6.2 Communication means and information sources

Many research studies that look into the information needs for specific populations in major outbreaks, also put focus on the format (communication means) this information becomes available, as well as the value of information as a function of the source disseminating the message.

Once again, the effectiveness of various communication means depends on the wider socio-cultural context and the characteristic needs of stakeholders targeted to receive this information. For instance, in the case of passengers travelling through large international airports, the most appropriate communication strategy would include the distribution of leaflets or other reading material which could be repeatedly consulted (Dickmann et al., 2011). The strategy of using leaflets for communicating messages classifies among the more traditional means of communication (e.g. newspapers, leaflets, television, radio etc.) employed by competent authorities during major outbreaks, and have received much attention by researchers in the past. In the more recent case of the A(H1N1) influenza pandemic, the international and public health authorities response spurred discussions and put focus on the ways that new information communication technologies (e.g. social networking sites, text messaging etc.) could be exploited more effectively in order to meet the increasing needs for information by the public.

The research studies conducted so far, having as topic of investigation the impact and effectiveness of new social media, do not allow drawing any safe conclusions about the usefulness of this communication platform, whether this would be the most appropriate in different phases of a pandemic, or different groups of stakeholders, even though social media are widely considered as the better tool for instant and direct communication with the public, bypassing the traditional media filter (McNab, 2009). In a cross-cultural study carried out by van Velsen et al. (2012) in Germany and the Netherlands, it was shown that social media (i.e. Facebook and Twitter) were not perceived to be suitable or reliable sources for communicating information during an infectious disease outbreak, while the Internet, television and radio were much more trusted in this sense. Preference for these means of communication was also demonstrated in a study conducted in Malaysia, with citizens also adding family members as a main source of information, during the A(H1N1) influenza pandemic in 2009 (Wong and Sam, 2010).

In the end, what needs to be considered by local stakeholders including competent authorities, health care professionals and the media, is the fact that general public needs the information (and to satisfy those information needs) in order to effectively take preventive measures and make informed decisions about vaccination (Heinrich and Holmes, 2011), in response to an infectious disease outbreak. The abundance and timeliness of information that becomes available enables the public to assess the risks entailed in any action taken on individual (and collective) basis, and that is the reason why is necessary to address and assess more in-depth the information needs for different stakeholders in outbreak communication.

2. METHODS

The previous section aimed at providing the frame of communication requirements during infectious disease outbreaks between stakeholders that operate on international, national and local level, in an effort to identify more accurately the inter-connections, roles and responsibilities of the various stakeholder groups, as these are mirrored – explicitly and implicitly – in the form of official guidelines, formal reports and national preparedness plans.

From this preliminary research it could be argued that international stakeholders operate within a context where communication requirements and information needs have already been clearly established by means of legally binding Regulations that national competent authorities need to adhere. In such level, the 'safety nets' that exist, in terms of availability of information, are abundant. Moving on to the national level, communication requirements for public health authorities become yet more complex in nature, having the responsibility to coordinate the information flow, and update both international agencies and the general public with different type of information, while at the same time need to make sure that all outbreak communication principles are respected. The information needs for national public health authorities are not always met with success, as the quality, accuracy and timeliness of information made available by local stakeholders can be problematic. On the level of general public and local stakeholders the outbreak communication landscape becomes slightly hazier, as the diverse nature of stakeholder needs and perceptions about a pandemic poses certain risks and challenges that authorities need to tackle toward successfully implementing a response strategy.

This section describes the methodological process that was followed to carry out the research and obtain responses from various groups of stakeholders, in order to address various issues and challenges surrounding the information needs and communication requirements during infectious disease outbreaks.

2.1 Research objectives

The research objectives were to explore the information needs and communication requirements for stakeholders in the field of infectious disease outbreak communication, and compare responses of various groups of stakeholders to highlight any differences in the communication requirements and wider perceptions and views towards the type and format that information becomes available. In particular, the objectives were:

1. To explore information needs and requirements during infectious disease outbreaks (priority of actions for new type of communication strategies for public health authorities, priorities in the type of information becoming available for the general public, groups of stakeholders that need to take a more active role in the future and receive more information by public health authorities in the outbreak of an infectious disease)
2. To explore communication gaps and the value of information for the various stakeholder groups (emergence of contradictory messages that break down people trust, restraining speculations and controlling the spread of rumours by traditional and new social media, communication obstacles that can threaten transparency, perceived information quality for different stakeholders)
3. To explore stakeholders' perceptions on the type of information needed to ensure improved transparency and trust between the general public and health authorities.
4. To compare views regarding different sources of information (i.e. print media, broadcast media and social media) for communication of messages, as per their effectiveness, credibility and influence on the perceptions of the general public.

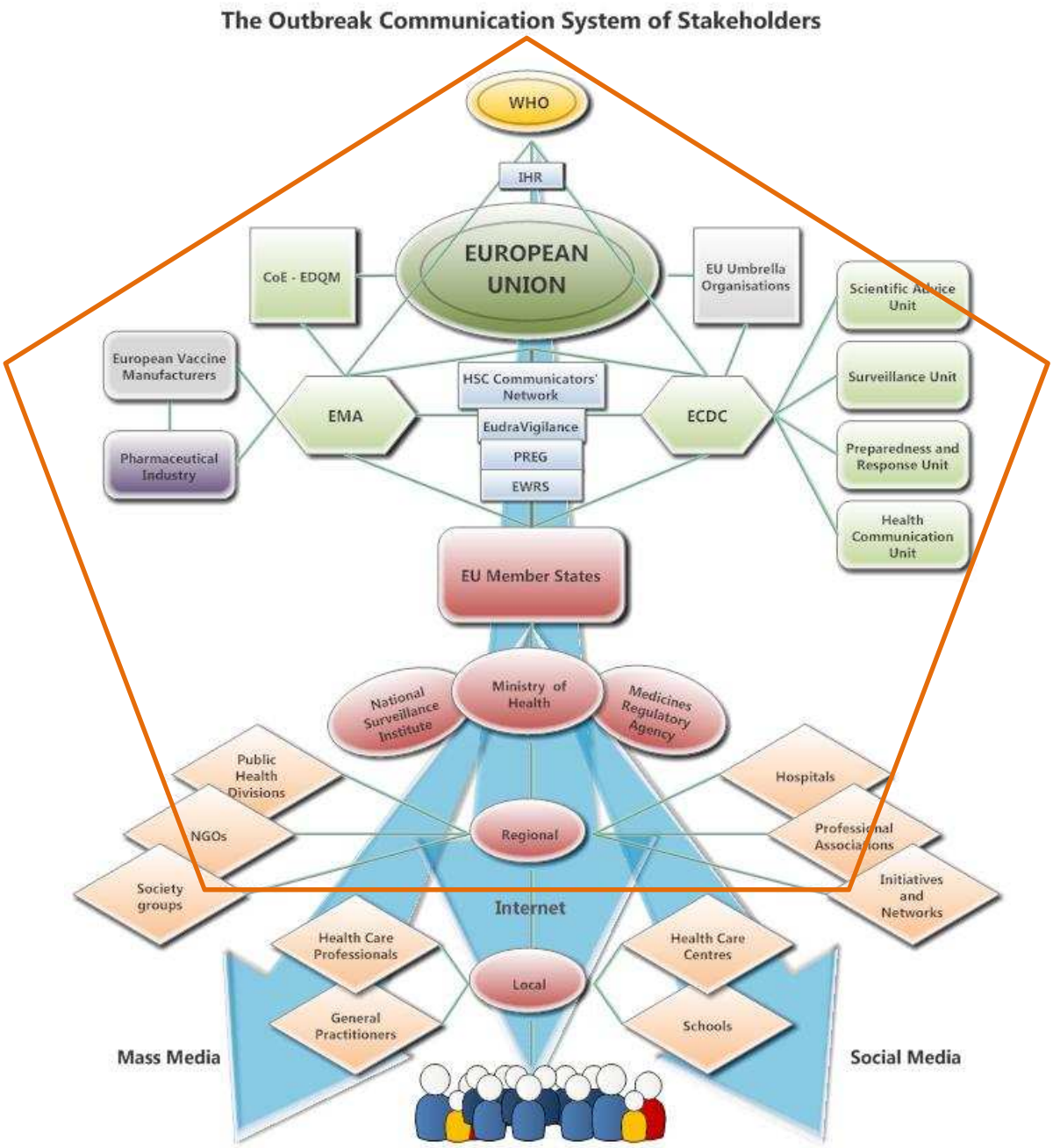
5. To compare views regarding most valuable sources of information for particular groups from society considered to be at higher risk for spreading the flu virus, or developing complications.

2.2 Survey design

This study was based on primary research, as the data collection technique employed was that of a cross-sectional questionnaire survey. For the purposes of this research, an exploratory research design was adopted, with the questionnaire involving both quantitative (close-ended questions / rating scales) and qualitative (open-ended questions) elements, in an effort to explore more in-depth some stakeholders' views concerning communication requirements (Annex I).

2.3 Selection of participants (Stakeholders)

The stakeholders selected to participate in this survey were representatives of various stakeholder groups relevant to the field of infectious disease outbreaks. In effect, stakeholders in outbreak communication include those groups which: 1) are directly involved in the decision-making process concerning an epidemic outbreak; 2) may influence knowledge and attitudes towards vaccination; 3) can bring some sort of resource to bear in support of public health communication. The groups of stakeholders this survey placed more emphasis on were those involved more in decision-making processes, as well as those stakeholders with considerable influence to particular groups of society. The communication requirements for health care professionals and general practitioners will be explored on a separate TELL ME research study. The schematic representation of the 'outbreak communication system of stakeholders' that was developed in the context of deliverable D2.1, gives a clear indication of the stakeholder groups that were considered for this survey.



For the survey on stakeholder communication requirements, a total of 248 of stakeholders included in the TELL ME Stakeholder Directory were invited to take part, including representatives from the following groups:

- International organisations (e.g. WHO, IFRC, OIE)
- European agencies (e.g. ECDC, EMA)
- European associations (e.g. EPHA, CPME, UEMO)
- National public health authorities
- Academia
- Media

An additional 165 stakeholders-representatives from national public health authorities and institutions were asked to fill out the questionnaire, reaching a total of 413 stakeholders that were contacted directly to take part in the survey. Finally, in an effort to increase the response rates, the snowballing technique was employed with TELL ME partners also forwarding the questionnaire to potential other stakeholders operating in their field.

It should be noted that as the survey was anonymous, participating stakeholders were only requested to answer (and were identified by) the following two questions, used for classification purposes only: a) *What is your primary field expertise?* b) *Which is the sector, area of work, or type of organization you operate?* These were the two characteristics to be considered for the analysis, allowing to organize the responses into clusters by profession or organization.

In the end, a total of 51 stakeholders participated in the survey, representatives of nine different areas relevant to outbreak communication (Figure 2). The stakeholders that were mostly represented in this survey came from **national public health authorities** (37%) and the **academia** (25%), followed by **international organisations** (8%), **European agencies** (8%) and **non-governmental organisations** (8%).

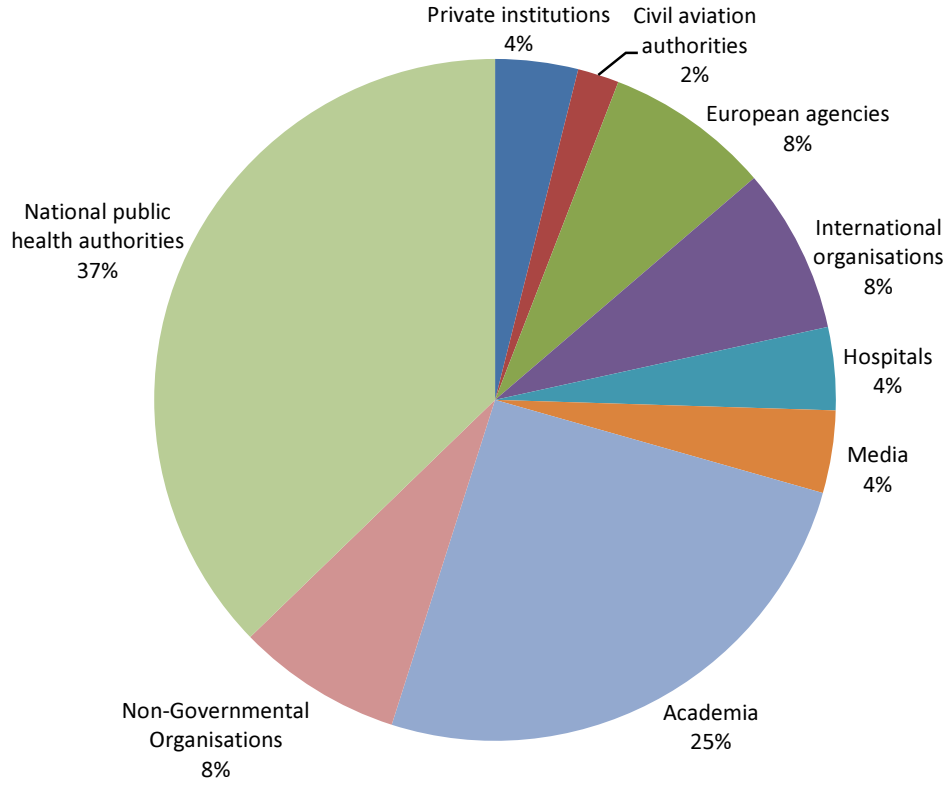


Figure 2: Representation (in %) of the various stakeholder groups that took part in the survey.

2.4 Clustering of stakeholders

Despite the fact that respondents to the questionnaire included representative stakeholders from various areas relevant to outbreak communication, a comparison between different groups could prove to be problematic at times where quantitative data would be processed, since response rates were varied. In order to allow for some valid comparisons on issues relevant to stakeholder information needs, the

respondents were clustered in two additional layers by creating sets of other variables, namely based on the *expertise* and *sector*.

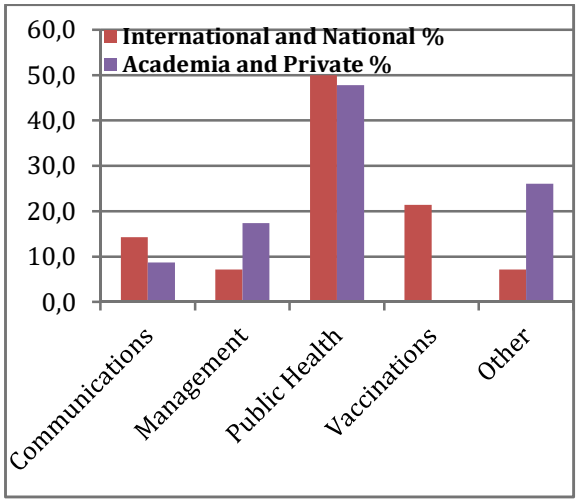
From the clustering of stakeholders by 'sector', four new categories emerged: a) International organisations, b) National organisations, c) Private organisations, and d) Academia. This categorization of stakeholders is a key process for better conceptualising the level of cooperation and partnerships that can emerge toward effectively assessing stakeholder needs and requirements. According to Birnbaum and Homeier (2013), "*the cooperation among the private sector; academic and research institutions; and state, local and regional government officials, and between different agencies is essential to fulfilling both national security and public health responsibilities*". In fact, these four categories form pieces of the same puzzle when is discussed outbreak communication and response to a public emergency. To ensure the valid comparisons between these groups, and after taking under consideration the sample size of respondents, two new categories emerged from those actors, based on a distinction between *institutional* and *non-institutional* actors. The former group included stakeholders from international and national organisations (Group 1), while the latter groups stakeholder from private organizations and the academia (Group 2). The main division between the two is made on the basis of legal responsibility/public accountability, capacity to draft policies and take decisions that could affect the wider community. The non-institutional actors have a much different role in society as decision making is not in their sphere of interest, but most definitely in their sphere of influence (Cahn, 1995).

Table 2 demonstrates the balanced sample between these two groups of stakeholders, following the clustering process.

Stakeholders who took part in the survey also were clustered by 'field of expertise', in which case five main categories emerged: a) Communications, b) Management, c) Public health, d) Vaccinations, and e) Other. As expected, about half of the respondents sample was linked to the 'Public health category, while the other three categories were found to be equally represented by experts in respective fields.

Table 2: Survey respondents arranged by primary field of expertise and sector.

	International and National organisations		Academia and Private organisations		TOTAL	
	N.	**%**	**N.**	**%**	**N.**	**%**
Communications	4	14,3	2	8,7	6	11,8
Management	2	7,1	4	17,4	6	11,8
Public Health	14	50,0	11	47,8	25	49,0
Vaccinations	6	21,4	0	0,0	6	11,8
Other	2	7,1	6	26,1	8	15,7
TOTAL	28	100,0	23	100,0	51	100,0



2.5 Survey instrument (Online questionnaire)

The research instrument that was used for the data collection has been a questionnaire that included both close- and open-ended questions for participants to respond (see Annex I). The driving principle behind the questions has been to seek for answers in the frame of the task (i.e. determine the information needs for

stakeholders in outbreak communication), as well as to provide empirical data that would be valuable in identifying new challenges and new methods for outbreak communication in the wider context of Work Package 2.

2.5.1 The wider concept behind the questionnaire

The development of the questionnaire was guided by review of technical reports and documents published by national authorities and international organisations, making reference to stakeholders' communication requirements and information needs with reference to the outbreak of an infectious disease at global scale. For instance, in a corporate report published by ECDC which reviews the Centre's response to the influenza A(H1N1) pandemic of 2009, a point is made about the "need for a more comprehensive communication strategy for dealing with public health emergencies/pandemics including objectives, target groups, message, and the appropriate communication tools, channels etc." (Greco, Stern and Marks, 2011:34). This same report underlines persistent ambiguity regarding 'target' groups for communication needs to be better clarified. As regards the collaboration with national public health authorities, ECDC highlights as problem the existing distance between European-level advice and national policy decisions (Greco, Stern and Marks, 2011).

Another report published by the European Medicines Agency (EMA) in the aftermath of the influenza A(H1N1) pandemic states clearly that it [EMA] "*should work closely with its working group of healthcare professionals to explore particular needs and concerns of healthcare professionals and to address those in designing future communication programmes*" (European Medicines Agency, 2011:11). This report closes by stating the need for an update of the Agency's pandemic communication plan to better define the roles and responsibilities in terms of communication in the context of a pandemic alongside its partners and stakeholders.

An assessment carried out by the UK Health Protection Agency also was revealing as per the variety of methods used by Member States for communicating messages to the general public and health professionals. For communications with the public, Members States made extensive use of the internet (official government websites) and leaflets, as well as broadcast (TV, radio) and print (newspapers) media. It is very interesting the observation made in this report, that almost 1 in 2 Member States did not have a system for assessing whether the public had read and understood the messages being distributed about influenza (Health Protection Agency, 2010). It is noteworthy that among the methods that were used by Member States to distribute messages to the general public, social networking sites has been considered by less than 40% of the Member States. Previous reports (European Medicines Agency, 2011; Greco, Stern and Marks, 2011) stressed the importance and potential role of new social media, which at that time were used as another tool for communication of messages *to* the public, instead of being used by national and local authorities as a medium of communication *with* the public[16].

The UK Health Protection Agency assessment report also shed light to the different methods used by Member States to communicate with health professionals. The type and format of information at this case was different, as apart from websites used as information channels, other methods included internal health bulletins and professionals publications, such as journals. Broadcast media ranked low in preference as method to communicate with health professionals. Another interesting point made in this report comes

[16] Council of the European Union – Council conclusions on lessons learned from the A/H1N1 pandemic : Health security in the European Union, 3032nd General Affairs Council Meeting, Brussels, 13 September 2010. Available from <http://ec.europa.eu/health/preparedness_response/docs/council_lessonsh1n1_en.pdf>

from ECDC, reporting difficulties in communications with clinical personnel and doctors as there are different prescribing guidelines between Member States (Health Protection Agency, 2010:54).

It is clear that the latest influenza A(H1N1) pandemic revealed many weaknesses in terms of communication for different groups of stakeholders, at all levels. More importantly, the identified communication gaps have been both the cause and consequence for various stakeholders to consider that much of their information needs were not met to the desired level. Thus, it is crucial to scratch beneath the surface in trying to understand better where are the inconsistencies between the information type and value becoming available to/from and for specific type of stakeholders, and how these become relevant in putting forward new strategies for outbreak communication.

2.5.2 Questionnaire topics and format

The questionnaire was developed to explore the broader spectrum of communication requirements for stakeholders during infectious disease outbreaks, taking into account the fact that information needs and the attributed value of this information are closely interwoven to the source where the information becomes available from. Meeting the information needs and communication requirements for stakeholders means that those groups are not only conscious of 'what' type of information is needed, but also 'how' this information could better become available, so that information does not become obsolete or take the form of 'misinformation', especially from the onset of an infectious disease outbreak, when the events unfold rapidly and continuous flow of information is as much a necessity as it is an inescapable reality.

The architecture of the questionnaire follows the research objectives provided in the beginning of this section, with particular topics to be explored such as information needs and communication flow; key priorities and views on the type of information becoming available by public health authorities; identification of communication gaps and information value for stakeholders; role and impact of the various sources of communication for the general public; barriers to transparency and building trust as a result of existing communication mechanisms.

A total of 21 thematic questions were drafted for the purposes of the questionnaire, but following an internal review these were reduced to 16, in order to align better with the research objectives in this task. Questions Q3 and Q4 included a follow-up question, while Q5 was split in two items to evaluate separately the use of traditional media and new social media.

The questionnaire comprised both open-ended questions and closed items, such as rating scales and multiple-choice responses. In the former case, the intention was to deepen understanding on issues related to communication requirements during infectious disease outbreaks, by exploiting the multiple perspectives of different stakeholders participating in the survey. In the latter case, the intention was to get a better grasp of communication requirements for different stakeholder groups, and how these groups perceive information needs and role of other stakeholders in the event of a pandemic. Depending on the representation of stakeholder groups, this approach could allow some comparisons to be made between different groups of stakeholders.

For reasons of better accessibility and convenience for the respondents, the survey was conducted through the platform of the TELL ME website, with the questionnaire converted into an online format (see Figure 3). It was hoped that such level of anonymity would encourage more respondents to disclose their views without any bias. The automation of this process ensured that all data was collected in a central database, managed by project partner Zadig – the administrator of the TELL ME website.

2.6 Procedure

Once the questionnaire had become available online, the stakeholders / potential respondents were sent invitations to take part in the survey by email, following the procedure described in the 'Selection of participants (Stakeholders)' in Section 2.3. The invitation also provided for the attention of respondents a link to the 'General Terms and Conditions' which specified the objectives of this survey and described their rights as participants, drawing attention to the fact that participation is completely on a voluntary basis, and all participants have the right to withdraw at any time, without providing a reason or having further repercussions. The 'General Terms and Conditions' also made clear that responses would be anonymous and confidential, and collected data would be stored in a protected electronic format.

Figure 3: TELLME webpage screenshot showing the link to the online questionnaire, and sample of questionnaire.

3. DATA ANALYSIS AND FINDINGS

This section presents the analysis of results from the stakeholder survey that was carried out in the context of task T2.2 – Stakeholder communication requirements. The key findings from this survey were distilled into a number of statements, which were then submitted for validation to a diverse group of stakeholders working in the field of public health.

3.1 Analysis of results based on the questionnaire

The results are presented and analysed by question, as these appeared on the online questionnaire. As discussed earlier, any comparisons made between stakeholder communication requirements were based on the distinction made between institutional actors (i.e. international and national organisations) and non-institutional actors (i.e. academia and private organisations).

Q1: Among the various challenges for public health communication in the event of an infectious disease outbreak, to which extent would you consider the following to be a priority or more urgent for public health authorities and organisations to focus?

This question aimed to present stakeholders with a list of emerging challenges in outbreak communication, and attempt to understand better if there are any significant differences between stakeholders, with regards to salience and/or prioritisation of actions for meeting those challenges in the near future. Stakeholders were originally presented with a 5-point ranking scale (1-Not a priority to 5-Essential priority), however responses were merged to create two main categories: High priority and Low priority.

According to the results, there was an overall agreement between Group 1 and Group 2, with consistent high priority on the necessity to develop new communication strategies with the following three objectives or focal points: a) facilitate multiple stakeholder involvement in the process, b) enhance message consistency as a function of the previous point a), and c) meet public expectations. Interestingly, there was some consistency in results between the two stakeholder groups, with respect to the necessity of developing communication strategies to reach marginalised groups in society. About 40% of stakeholders from both groups considered this should be a low priority for development of new communication strategies.

Concerning the communications about benefits and risks of vaccination against influenza, this was perceived to be a low priority for almost one in three respondents from international/national organisations (29%), and two in five respondents from academia/private organisations (44%). Some significant differences were found between the groups as regards the prioritisation of actions toward developing new systems for surveillance, with Group 2 considering this as relatively high priority (71%), while Group 1 not as much (46%). This finding could be relevant to the fact that international and national organisations have already in place formal surveillance systems, and their information needs are satisfied to a great extent from already established networks.

Finally, it is noteworthy the fact that Group 2 strongly prioritises actions toward developing new methods for engaging with the media to overcome biases in news reporting, and new methods for obtaining more accurate and real-time information from the general public. Group 1 also recognises these actions as important for the future, although not to the same extent as Group 2.

Table 3: Perceived priority of actions and strategies for future infectious disease outbreaks by stakeholder group (International/National organisations – Academic/Private organisations).

Group 1: International/National **Group 2:** Academia/Private	**High priority**				**Low priority**			
	Group 1		Group 2		Group 1		Group 2	
	N.	**%**	**N.**	**%**	**N.**	**%**	**N.**	**%**
1. Develop new communication strategies to facilitate multiple stakeholder involvement in the process	25	89,3	23	100,0	3	10,7	0	0,0
2. Develop new communication strategies for local authorities, national authorities and international organizations, to enhance message consistency - limit contradictory statements	26	92,9	23	100,0	2	7,1	0	0,0
3. Develop new communication strategies to meet public expectations and growing demand for more information	23	82,1	19	82,6	5	17,9	4	17,4
4. Develop new communication strategies to reach more effectively marginalized groups in society	16	57,1	14	60,9	12	42,9	9	39,1
5. Develop new communication strategies to inform the public about benefits and risks of vaccination against influenza	20	71,4	13	56,5	8	28,6	10	43,5
6. Develop new methods and systems for surveillance of infectious disease outbreaks worldwide	13	46,4	18	78,3	15	53,6	5	21,7
7. Develop new methods for engagement with the mass media to overcome biases in news reporting	22	78,6	23	100,0	6	21,4	0	0,0
8. Develop new methods for obtaining accurate and real-time information about general public perceptions and opinions	23	82,1	23	100,0	5	17,9	0	0,0
9. Develop new methods for advanced understanding of future global trends in travelling and communication	17	60,7	20	87,0	11	39,3	3	13,0

The results from this table are summarised and graphically represented in Figure 4, split between the two groups: International and National organisations (Group 1) and Private organisations and Academia (Group 2).

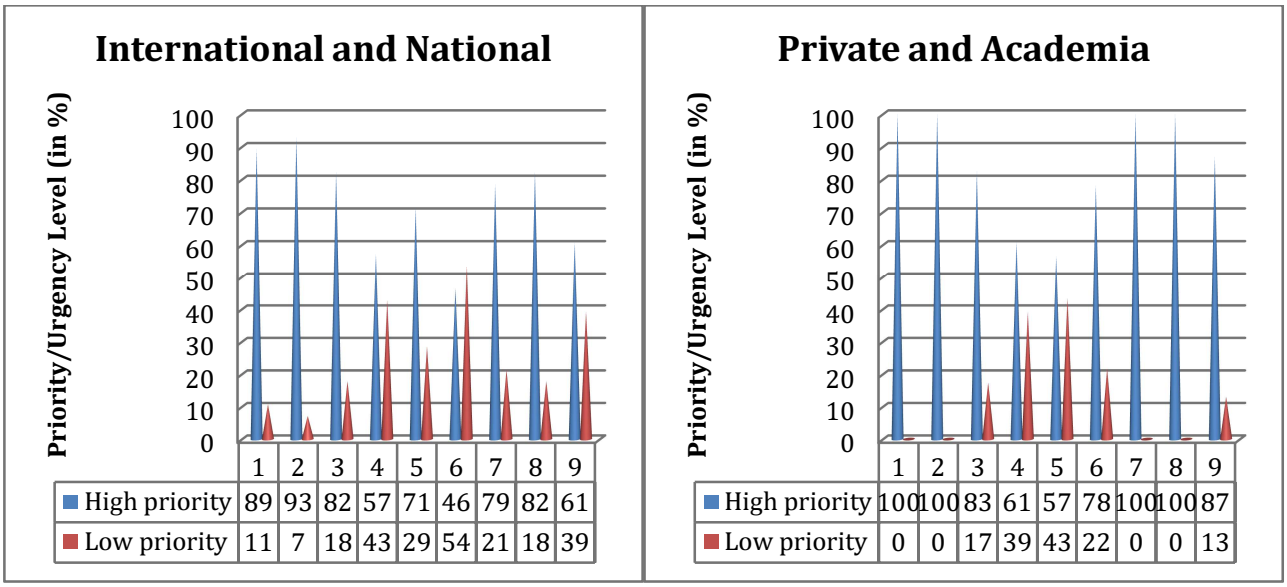


Figure 4: Perceived priority of actions and strategies for future infectious disease outbreaks.

Q2: In your opinion, what type of information is essential for the general public from the onset of a public health crisis, for bridging the knowledge gap with the experts and thus create effective messages?

This question aimed to explore the type of information that is perceived to be essential for stakeholders to assist in the formulation of effective messages from the onset of an outbreak. Respondents were provided with a selection of five different types of information that can become available during an outbreak.

The results in this question suggest that it is 'risk assessments' the most useful type of information that could become available to stakeholders (Group 1 30% - Group 2 36%), and this is a particularly interesting as in relation to other options provided (e.g. preparedness and response action plans, citizen rights with regard to vaccination etc.), risk assessments are not concrete information but vary according to how the outbreak develops. At the same time however, this is the strength of risk assessments, taking into account various elements specific to an outbreak, thus allowing the formulation of not only effective, but also *tailored* messages, according to the circumstances and developments of the outbreak.

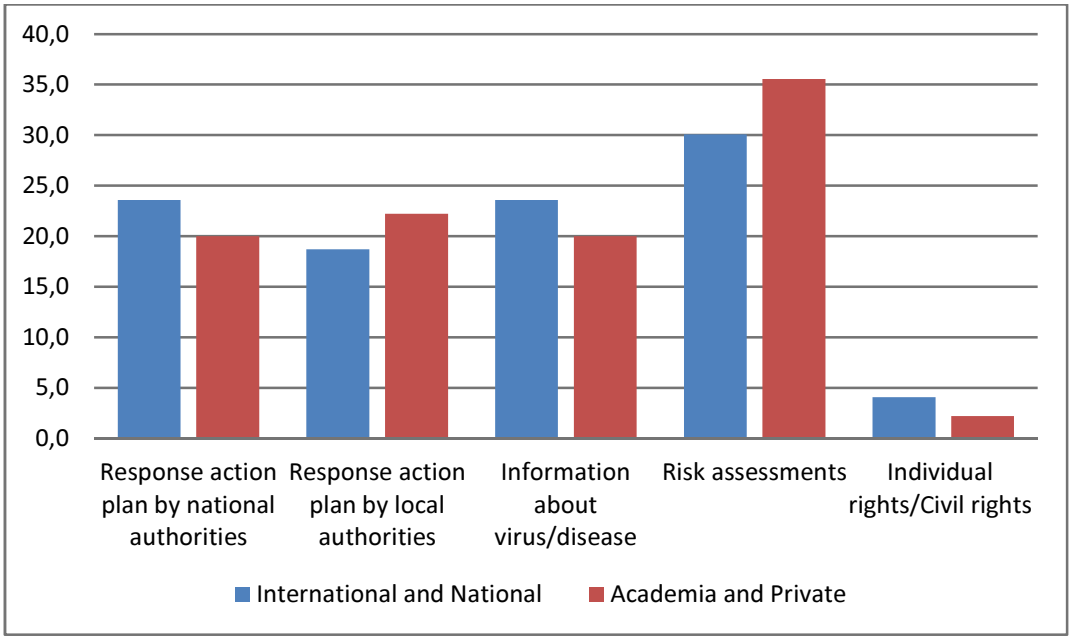


Figure 5: Essential information to be made available by health authorities for the general public.

The response action plans by national and local public health authorities were also perceived by stakeholders to be relatively important as sources of information (44% and 41% respectively), and similar was the case on the importance of receiving messages on specifics about the virus (44%). It is indicative that a very low proportion of respondents from both stakeholder groups (Group 1 4% - Group 2 2%) considered that information on individual and civil rights with regard to vaccination or other preventive measures, are important to bring forward for bridging communication gaps or consider in the process of formulating messages for the public.

Q3: In your opinion, which of the following national and local stakeholder groups need to be more actively engaged in future infectious disease outbreaks to improve information flow?

In this question, the focus shifted towards identification of those stakeholder groups that need to be engaged more actively in future health emergency events, to better facilitate communications and improve

the information flow at national and local level. Overall, the results were quite similar (in proportion) between the two sector groups. As expected, priority was given to key stakeholder groups in outbreak communication such as public health experts (Group 1 20% / Group 2 16%), public health professionals (Group 1 12% / Group 2 19%), local media (Group 1 14% - Group 2 14%), hospitals – clinics (Group 1 12% - Group 2 4%). On the other hand, less consideration was given to key religious (8%) and minority (8%) groups, together with primary schools (7%) and independent medical laboratories (4%), perceived as groups that have little to offer in the outbreak communication processes.

With respect to minority groups and the intention to be engaged more actively in communication processes, the present results are consistent with the findings in Question 1 where development of new strategies to reach more effectively marginalised groups of society, is not seen as priority action by a significant number of respondents. It becomes apparent already that minority groups are not perceived by other stakeholders as having an important role to play in the event of an infectious disease outbreak, however this would also mean that information needs for this group might still be based on assumptions rather than concrete feedback.

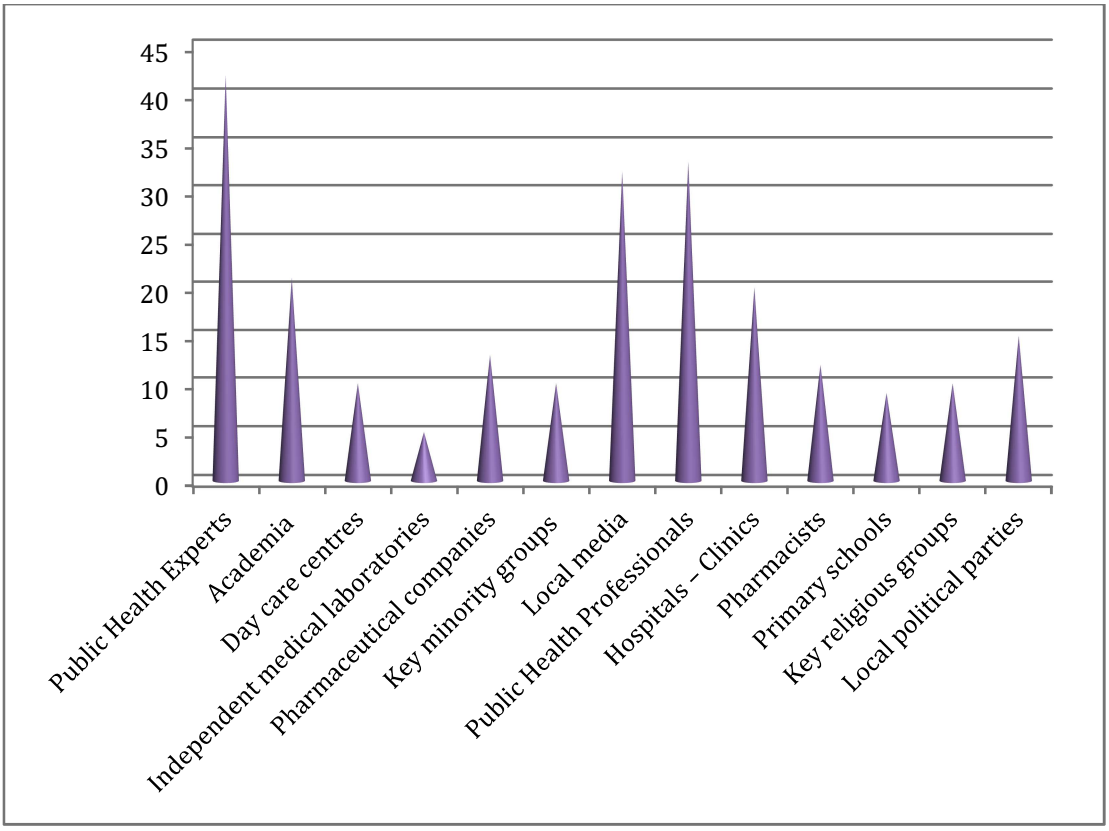


Figure 6: Stakeholder groups that need to be engaged more in future pandemics to improve information flow.

Q3a: Through which mediums, processes or communication platforms would that be possible?

A supplementary question followed Question 3, which requested from respondents to freely indicate which would be the most appropriate mean of communication for better improving the communication flow for various stakeholders on national and local level, to ensure that information needs are adequately met. The findings from this question suggest that traditional broadcast media (i.e. television and radio) are still considered as the most appropriate communication channel where information could flow, receiving a

total of 22% in responses. The internet (19%) and new social media (14%) were other means of communication identified as important to ensure better engagement of various groups in the outbreak communication process. This is an interesting result, as the potential of two-way communication provided on the internet, particularly through the social media, could be explored further as a way to engage more effectively with different stakeholder groups on local and national level, and gain access to information that otherwise would be difficult to obtain from those groups, by use of the traditional surveillance mechanisms.

The abundance in the communication means nowadays should make possible to engage any group of stakeholders, thus improving the information flow at multiple layers. It is important to consider that more active engagement of local stakeholder groups in the communication process could create a broader sense of responsibility towards the wider community, and accordingly influence positively behaviours in response to a public health emergency.

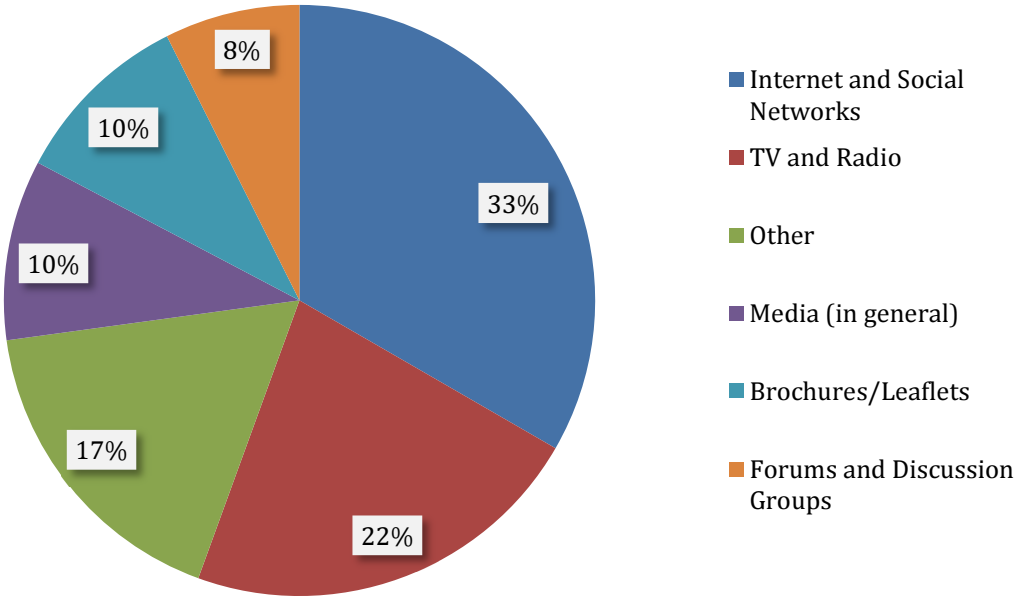


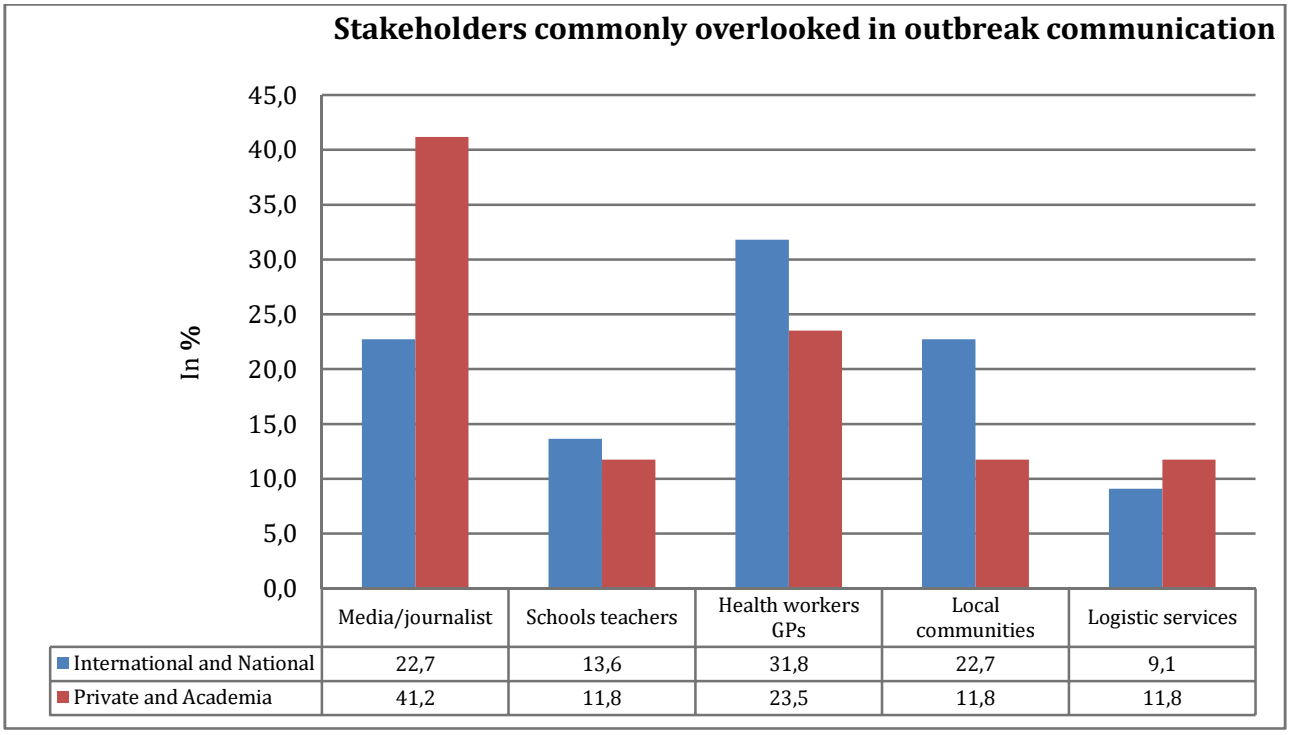
Figure 7: Communication means seen more suitable to effectively engage local stakeholders.

Q4: In your opinion, are there any stakeholder or community groups usually overlooked by public health authorities in the preparation and response phases of an infectious disease outbreak?

This question aimed to explore whether respondents believe that some specific groups of stakeholders are usually overlooked by public health authorities in their response and preparedness plans. As it has been shown earlier in this report, the communication strategies in national preparedness and response plans usually involve public health experts and various public health institutions or non-governmental organisations, and the media as a vehicle to communicate messages to the public.

No significant differences were found between stakeholders, with more than two thirds of respondents from Group 1 (71%) and Group 2 (70%) stated that there are no specific stakeholder groups that are usually overlooked by public health authorities in the preparation and response phases of public health emergencies.

For those respondents who stated that there are specific groups of stakeholders usually overlooked by public health authorities in communication processes, it was requested from them to indicate which would be those groups. Five different groups of stakeholders were identified by respondents, which appear in Figure 8. The majority of respondents from international and national organisations thought it is the group of healthcare workers (32%) that needs to receive more attention by public health authorities, followed by journalists/media (23%) and local communities (23%). As regards the respondents from the academic and private organisation, the majority agreed that journalists/media (41%) need to receive most attention during the preparation and response phase, followed by healthcare workers (24%).



	Media/journalist	Schools teachers	Health workers GPs	Local communities	Logistic services
International and National	22,7	13,6	31,8	22,7	9,1
Private and Academia	41,2	11,8	23,5	11,8	11,8

Figure 8: Groups of stakeholders commonly overlooked by public health authorities in the outbreak communication process.

Q5a: In your opinion, what would be a wise tactic for public health authorities to limit speculations and control the spread of rumours in the traditional media?

This question explored what respondents think would be the best strategies for public health authorities to follow in order to ensure no communication gaps or information vacuums are created, which in turn present produces rumours and speculations with all negative implications these have to response plans being implemented.

The majority of respondents pointed out that transparency/openness (27%) and proactiveness (23%) from the side of public health authorities, are crucial components in communication strategies to avoid spread of rumours in the traditional media (e.g. television, radio, newspapers etc.). Also, respondents highlighted the need for better training of journalists (11%) when reporting in public health emergencies, and establish direct contact with news media (10%), so that editors or producers are kept regularly updated.

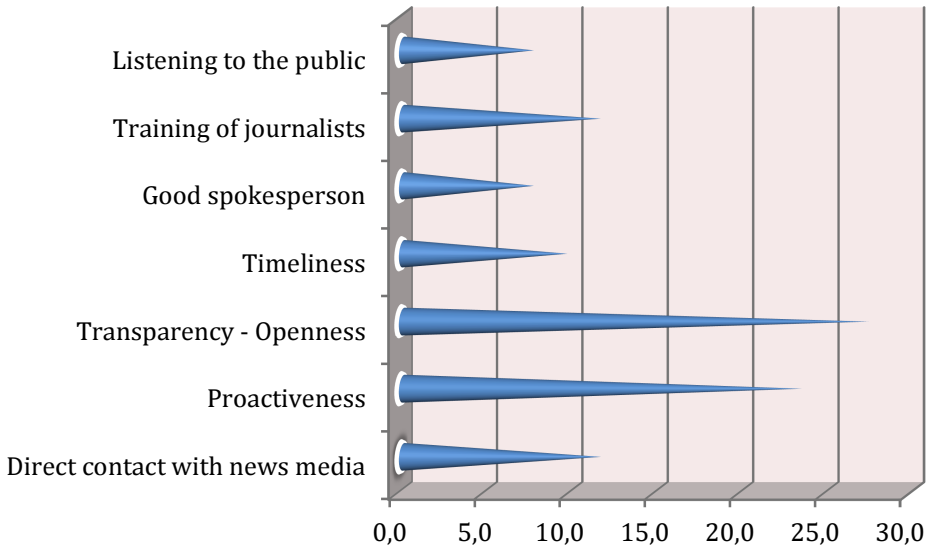


Figure 9: Proposed strategies and conditions for limiting speculations in traditional media.

This question was an open-ended one, so below are presented some random but characteristic responses from the survey:

"Rumours circulate when there is an information vacuum. Public health authorities must be prepared to make public statements early - what they know, what they don't know, what they are doing to find out more. Provide schedule of regular updates. In the past the tactics seem to have been to wait for certainty before making a statement - but it is very difficult to catch up once rumours start. Consistency between agencies is very important, so local/national/international coordination must be established as soon as possible."

"Be transparent and communicate rapidly all the information that is necessary. Do not deny any risk. Gain the trust of the citizens. Open communication contacts for questions from citizens."

"To be proactive and fair in communication. Adapt strategy to the target group."

"Building trust in "peace time", full transparency on facts and agendas, communication of uncertainties, timely and proactive communication."

"Distribution of correct formation through official websites and traditional printing materials."

"Close information voids, understand cultural truths as important as health truths. Change the misinformation model to one of cultural understanding."

"Use a good spokesperson with no ties to political parties (e.g. a professor)."

"To give clear-cut opinions by experts and to co-ordinate the sharing of opinion through independent organisations like the Science Media Centre in UK."

Q5b: In your opinion, what would be a wise tactic for public health authorities to limit speculations and control the spread of rumours in the new social media?

Similar to the previous question, respondents were asked to give their opinion on which would be the best way for public health authorities to limit speculations and rumours circulating in the new social media, which as compared to traditional media, are significantly more powerful in reaching a wider audience much faster, with this having serious implications in case it entails the reproduction of some rumour around the disease or preventive measures that are used.

According to the respondents, it would be a wise tactic for public health authorities to monitor closely social media (29%), which would be something along the lines of being proactive as shown in the previous question. In addition, more than one in four respondents suggested that competent authorities should be more actively present (22%) in the sense of also incorporating the new social media as part of their communication strategies for disseminating messages to the public. Other key elements suggested for limiting speculation that emerges in new social media, is relevant to two major components in outbreak communication, that is transparency (19%) and timeliness (16%) in the information released by the authorities.

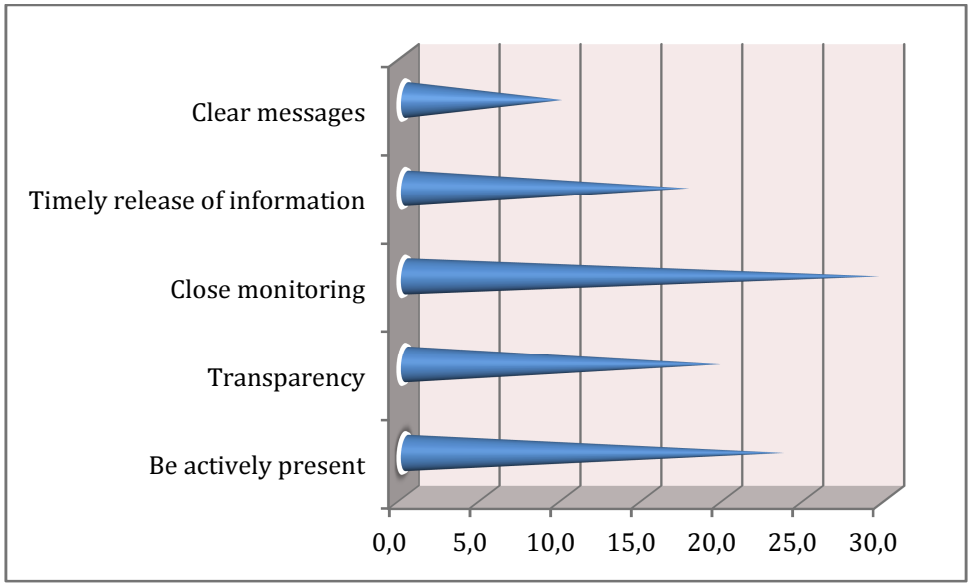


Figure 10: Proposed strategies and conditions for limiting speculations in new social media.

Below are presented few random and characteristic responses from the survey:

> *"Monitoring social media can also be an invaluable tool for getting feedback on how your message is being received, what public concerns are not being addressed, identifying rumours at an early stage."*

> *"Monitor media and social media. Engage in rumours early on to dispell them. Use websites and media conferences to address any rumours as soon as they arise. Be bold!"*

> *"Be present, follow the discussions, intervene if / when necessary."*

> *"Interact with social media to analyse what is said and use them as a tool for delivering messages."*

Q6: In your opinion, which are those stakeholder groups that most frequently produce contradictory messages in the event of an infectious disease outbreak, negatively influencing or 'breaking down' people trust for public health authorities?

The element of trust is one of the key components in outbreak communication and usually takes great efforts for public health authorities, not only to build, but also maintain the trust during public health emergencies, by following certain communication strategies in line with the expectations of the general public. Building trust with citizens is a really fragile process, which relies to a great extent on the consistency between messages and the type of information that is made available concerning the disease or the extent of the outbreak.

In this question, respondents were asked to identify those stakeholders which are more likely to influence negatively any attempts from the authorities to build trust with citizens. This could either be an intentional or involuntary procedure, depending on the position stakeholders take in relation to the response plan followed by national public health authorities, mostly with reference to vaccinations. With reference to Group 1, it appears that institutional actors are more convinced that medical experts (42%) is the group to produce (involuntary?) conflicting messages, followed by the news media (23%) and the anti-vaccine (15%) movement. It is of interest the fact that also the pharmaceutical industry (8%) has been considered as a stakeholder group that could influence trust between health authorities and the general public.

The findings for Group 2 were not so much different from Group 1, although responses have been distributed more evenly. One in four respondents believe that news media and journalists (26%) have the power to break down the public trust as a result of their investigative nature (e.g. revealing scandals in vaccine supply). The same percentage was noted also for medical experts (26%), who were closely followed by the anti-vaccine movement (22%) and politicians (17%). The anti-vaccine movement is a particularly interesting case, as it produces intentionally – in many occasions – contradictory messages which are quite strong in content and narrative structure, opposing directly policies and vaccination campaigns put forward by the state.

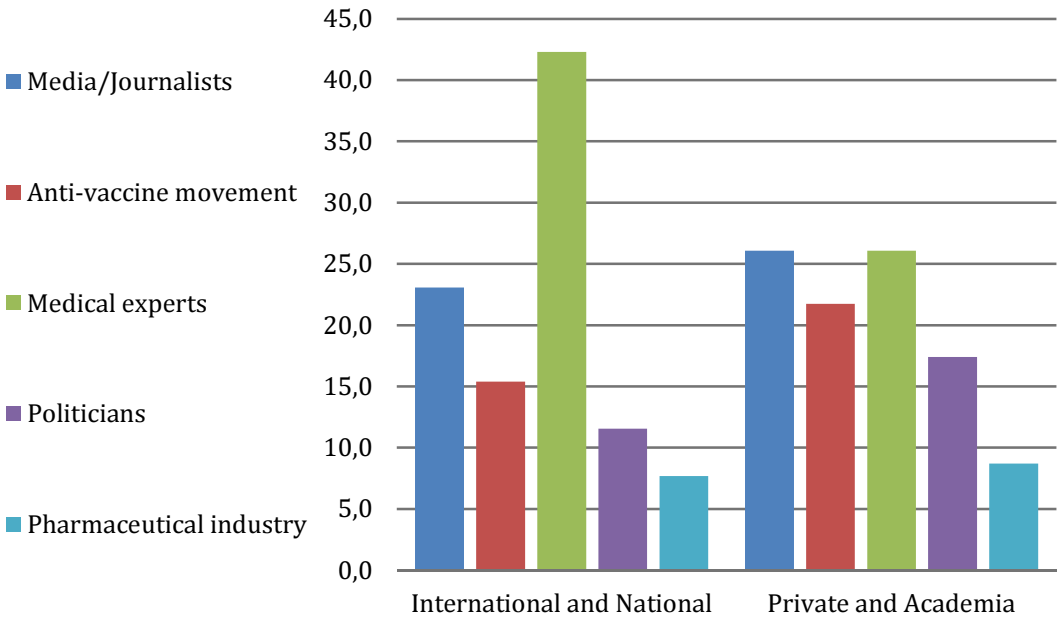


Figure 11: Stakeholder groups that produce most contradictory messages, breaking down people trust for public health authorities.

Q7: In your opinion, which are the most critical aspects of outbreak communication that can undermine or threaten transparency?

While trust to the authorities can be a considered as necessary pre-requisite for a successful response to an infectious disease outbreak, it is transparency that needs to be ensured across every procedure, so that people make truly informed and responsible decisions in response to the outbreak. Meeting the information needs and communication requirements for various stakeholders can prove to be an overwhelming task for public health authorities. Ambiguities and confusion can emerge when public health authorities choose to act rapidly, without taking into account the various concerns and real information needs of stakeholders.

The findings in this question were quite similar for both Group 1 and Group 2, although respondents from private organisations and the academia put clear emphasis on information concealment (41%) and inconsistencies/contradictions (23%) as critical aspects that can undermine transparency in communications. One in three of institutional actors in Group 1 also considered the information concealment (33%) to be one of the most serious mistakes for public health authorities as regards transparency. The use of technical language and delayed announcements were also perceived by both groups of stakeholders to be important parameters for transparency issues.

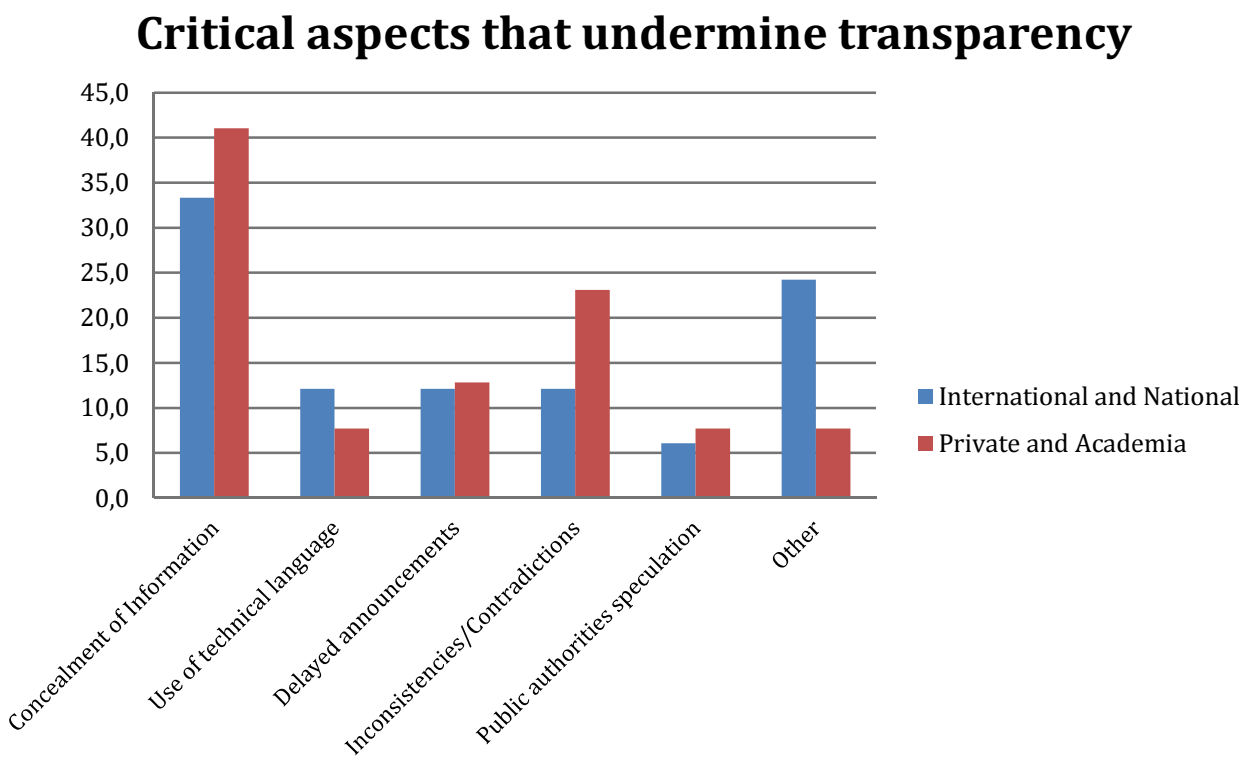


Figure 12: Stakeholders views on most critical aspects of outbreak communication that can undermine or threaten transparency.

Some of the responses on this question are presented below:

> *"Communication has to be early, and the information must be seen as (therefore must be) open, honest, based on what is known, i.e. avoid speculation, acknowledge areas of uncertainty*

- and say what is being done to address this - and address known or forseeable concerns. Language used in communication must be appropriate to the target audience and the media to be used. Inconsistency, or perceived inconsistency, is likely to undermine the intended message and trust in future communications."

"Incomplete information / contradictory information by government or public health authorities, which are then 'discovered' and exposed in the media. Often there is a logical explanation for this, but then the government officials are unable to alter the perception."

"Speculation by the media, uninformed or biased scientists promoting their own agenda; defensive replies from Government scientists and public health officials. I do not think that much technical language is used by most trying to communicate with the public."

"Conflicting messages, answers that are not straight forward - "I cannot comment", "this is classified information", "it is too complex / technical" etc."

Q8: How would you evaluate the quality of information that becomes available to each group (based on their information needs) from official sources, in the event of an infectious disease outbreak?

This question considered a wide range of stakeholder groups from national and local level, for assessing the abundance and quality of information received or made available to these groups in the event of an outbreak. The different roles and experiences between stakeholders in Group 1 (International and National organisations) and Group 2 (Academia were considered in relation to the various groups involved in outbreak communication, thus it was decided to benefit from different perspectives on the issue and present results separately for each group toward identifying any differences or similarities in responses (Figures 13 and 14).

With reference to **Ministries of Health** (MoH) as a key stakeholder group in communications, the overall feeling for more than half of respondents was that quality of information received is of good standards (Group 1: 57% - Group 2: 56%), however almost one in three respondents (Group 1: 32% - Group 2: 35%) seemed to believe that information received are poor. These findings would require further investigation, considering that MoH not only requires receiving information from various sources, but also needs to ensure that standard processes are in place to optimise the quality of information that arrives for evaluation.

The **national surveillance institute** is also among the key stakeholder groups in outbreak communication, considering its multifaceted responsibility to inform and regularly update international organisations such as WHO and the ECDC on the one hand, and communicating messages to national and local authorities on the other. The majority of respondents from both groups believe that national surveillance institute mostly receives good or excellent quality of information (respectively, Group 1: 64% and 18% - Group 2: 40% and 35%). Still, there was a significant amount of respondents who thought that information received by national surveillance institutes is rather poor (Group 1: 18% – Group 2: 26%).

Moving on to the **regional** and **local public health authorities** and the quality of information these institutional actors receive, there was considerable consistency in the results between the two respondent groups. In particular, the majority of respondents from Group 1 thought that on regional (57%) and local

(54%) level, the quality of information received from authorities by official sources (in this case, MoH and national surveillance institute) is quite good, while almost one third of respondents from Group 1 through that quality of information was poor (29% and 36% respectively). From responses in Group 2, the general belief is that quality of information for regional and local health authorities is of poor standards, with 43% and 52% respectively.

More interesting have been the cases where respondents had to evaluate the quality of information made available to the **mass media** and the **pharmaceutical industry**. It is important to note that in this survey the representation of stakeholders from these two fields was considerably low, so the following results are based on the perceptions of external actors. More specifically, half of the respondents (50%) from international and national organisations (Group 1) thought that media receive poor quality of information, while almost three quarters of the respondents (74%) expressed the same view. This is indicative of the already identified communication gaps that exist between mass media and public health authorities. Similar were the findings for the pharmaceutical industry as per the poor quality of information that is made available by official sources. In particular, a total of 68% and 35% from respondents in Group 1 and Group 2 viewed the pharmaceutical industry as a stakeholder group that needs to be kept better informed by public health authorities on national and international level.

The more revealing findings had been for **ethnic and minority groups**, where the vast majority of respondents from both groups (Group 1: 86% - Group 2: 91%) agreed that public health authorities systematically neglect information needs of these people in their communication strategies, only making available a limited amount of information. At this point, it should be considered whether some explicit connection exists between quality of information and the format this information becomes available; particularly with reference to information and communication technologies (ICT). If indeed this is the case, then one could imagine that since ethnic and minority groups are not as likely to have access to modern technologies as other groups of society, this could justify respondents' perceptions about quality of information made available for those groups. Nonetheless, these findings also reveal some inconsistencies with previous findings, where for instance in Question 1 a considerable proportion of respondents ranked as low priority the development of strategies to reach out more effectively for including marginalised groups in outbreak communication.

Also notable have been the findings for the **transportation industry**, where again respondents from Group 1 and Group 2 agreed (68% and 65% respectively) that quality of information received by this stakeholder groups is quite poor, so more efforts would be necessary from national public health authorities and international organisations, not only limited to WHO but perhaps extending to other organisations, such as the International Civil Aviation Organization (ICAO), the International Maritime Organization (IMO), the International Air Transport Association (IATA) and the World Tourism Organisation (UNWTO).

Finally, the **healthcare professionals** and **hospitals** were perceived as stakeholder groups that receive overall good quality of information, by 68% and 64% of respondents in Group 1 and 44% and 53% by respondents in Group 2, however is important to consider that this evaluation is based largely on stakeholders from national public health authorities (in the case of Group 1), so respondents in this case would be self-referenced as per the information they indeed had provided (as responsible authorities) to healthcare professionals and hospitals during the more recent outbreaks.

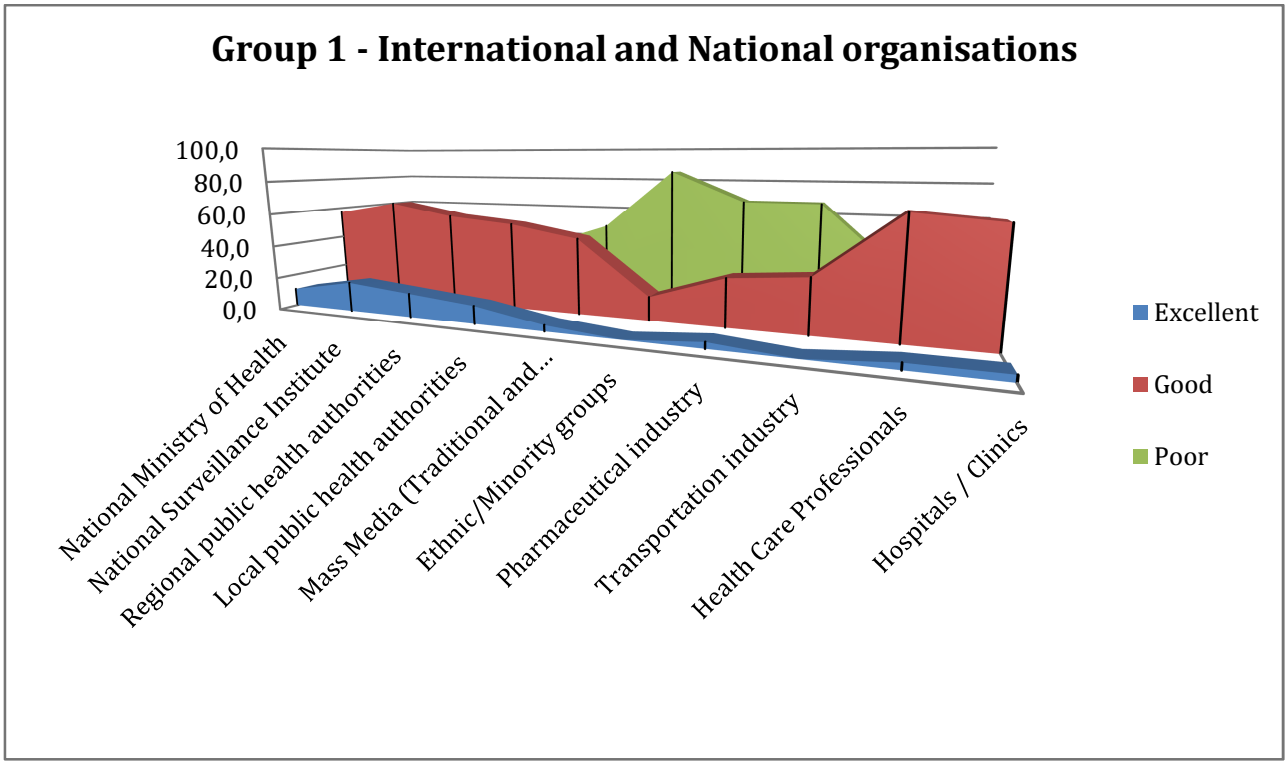


Figure 13: Evaluation of 'Group 1' stakeholders on the quality of formal/official communications for the various stakeholder groups.

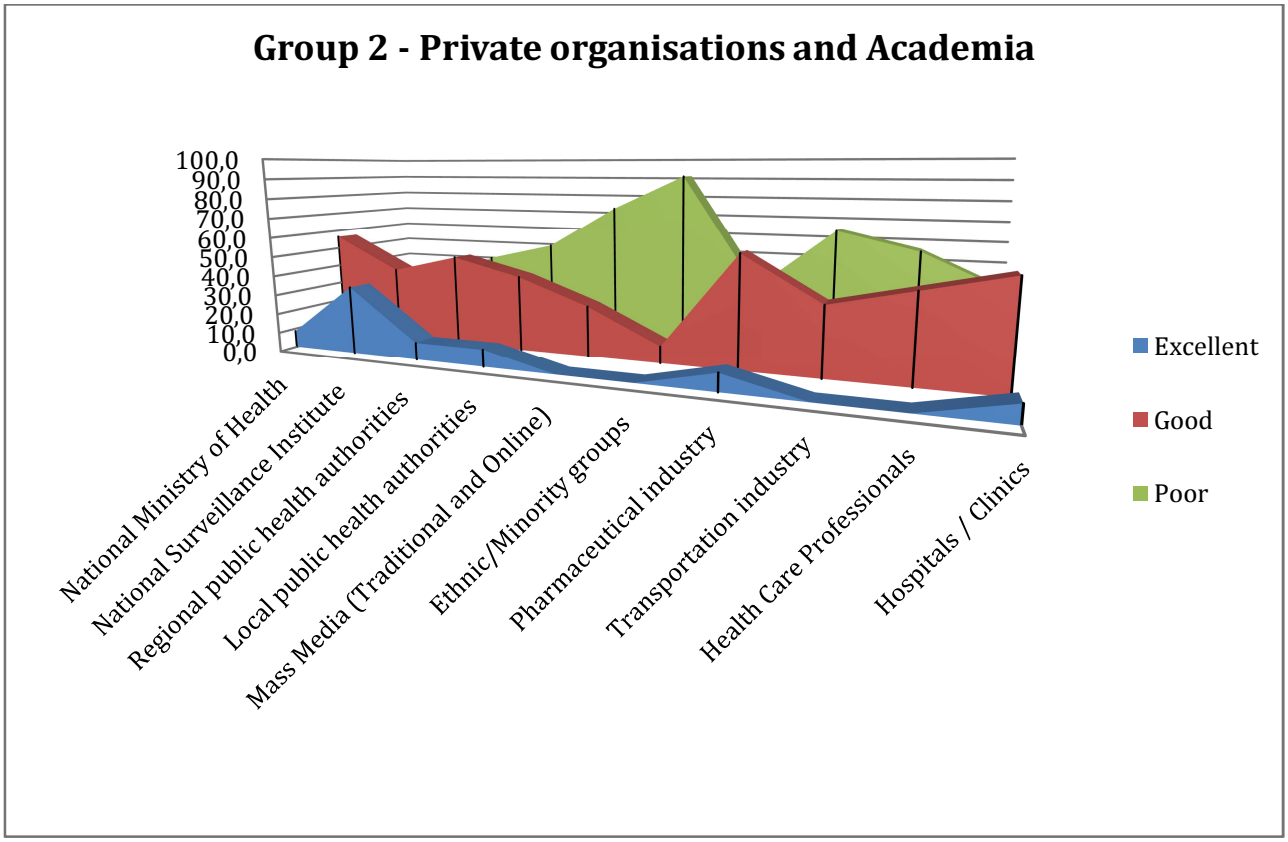


Figure 14: Evaluation of 'Group 1' stakeholders on the quality of formal/official communications for the various stakeholder groups.

Q9: In your opinion, which are those conditions that need to be satisfied towards improving trust between public health authorities and the general public?

This was an open-ended question which aimed at collecting respondents' diverse views on the issue of improving trust between public health authorities and the general public. As the answers provided by respondents were in a descriptive format, these were summarised by theme (principal idea) into key points and are presented in Figure 15.

Almost one in three of the respondents (29%) associated the improvement in trust with openness and transparency by the authorities. Along the same principles, sharing information with the public (16%) was also perceived to be one of the key components, together with good professional communication (17%) in response to an outbreak. Although the component of resolving conflicts of interest (12%) between stakeholders was not indicated by many, it is an important consideration that would require further elaboration in future studies in outbreak communication.

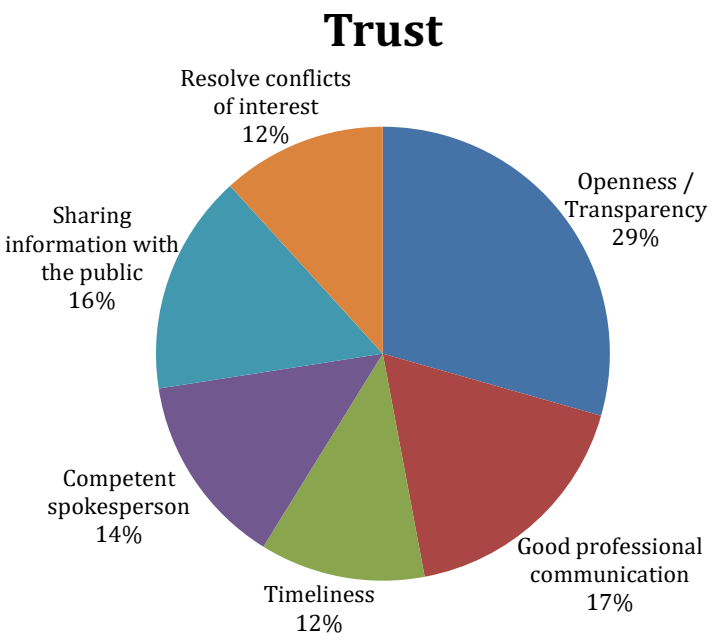


Figure 15: Conditions that need to be satisfied to improve trust between health authorities and the public.

Some of the most indicative and interesting responses to this question include:

> *"The persons of contact should also be known outside the period of crisis. No conflict of interest of the persons in charge of public communication. Not giving the feeling that decision and control measures are taken in emergency (e.g. vaccination with new vaccine - not tested). Factual communication."*

> *"It's not so easy. Very many depends on general situation in the country (economic, political)."*

> *"It is sufficient to share information as soon as they become available. Direct involvement of the public may make a difference."*

"Involvement of independent medical experts for consultations and for an explanation of the epidemic situation."

"Public health authorities need to provide relevant, to the point, timely information that can be understood by the man in the street. Information needs to be ongoing. People want to know how to prevent getting ill and if they are ill how to get well again. They need to know that the authorities are doing all that they can do in the circumstances and are providing the information and not hiding information from them that is relevant to them."

Q10: In your opinion, which are those conditions that need to be satisfied towards improving transparency between public health authorities and the general public?

As in the previous question (Q9), the same approach was also used also for collecting the views of various stakeholders of certain conditions that must be in place to improve transparency between health authorities and the public.

Similarly to the suggestions made for improving trust, in the case of transparency openness receives most attention by respondents (25%), followed by good professional communication (16%) and telling the truth (16%) principles. Timeliness (12%) and competent spokesperson (8%) complete the picture, which is in accordance with the national and international guidelines provided by competent authorities.

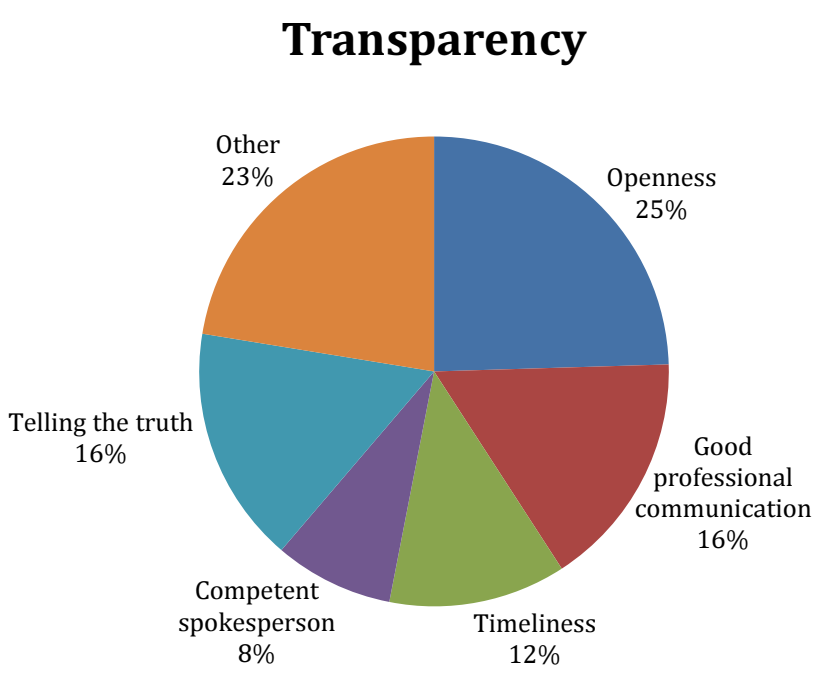


Figure 16: Conditions that need to be satisfied to improve transparency between health authorities and public.

Some of the most indicative and interesting responses to this question include:

"Making the information understandable without too much simplification. We should better consider that the public can understand complex situation (= the public is not stupid)."

"The public health authorities should actively inform the public with relevant information. It is not good to wait to be interviewed and then say empty phrases."

"Rapid sharing with the public and the media matters of public health interest. This needs to be also easily accessible."

"A paradigm change from top-down to participative communication."

"Open lines of communications, prompt replies, authorities admitting not having answers / solutions. Consistency of messages with the 'national authorities'".

"Information should be carefully explained to the public and questions and doubts posed should be addressed."

Q11: Given the increasing use and potential of new social media for rapid information sharing, would you have any suggestions about how these media could be exploited to inform and target more accurately the information needs for the public?

Based on respondents' views, this question was more specific to identifying the qualitative elements that new social media could bring into outbreak communication for addressing more accurately the information needs for the public. Once again, the answers provided by respondents were in a descriptive format, so these were summarised by theme (principal idea) into key points and are presented in Figure 17.

According to the analysis of the results, almost one in three respondents (31%) think that public health authorities should take up the potential provided by two-way communication with the public, also considering that it has become easier than ever to reach a large proportion of the general population. Another key feature of new social media that makes their use integral for outbreak communication strategies, is the capacity to provide timely and reliable information (25%) when those are handled by professionals and experts of competent public health authorities. Also interesting was the point made by some of the respondents, about the potential that new social media could be used for monitoring purposes by the authorities (12%), tracking for rumours that spread on the web about the disease or vaccination.

Some of the most indicative and interesting responses to this question include:

"Involvement of independent medical experts for consultations and for an explanation of the epidemic situation."

"Re-enforce main media and web messages with social media for consistency. Use media monitoring to review messages and address rumours and concerns directly. Get your partners to re-tweet, re-post your social media work. Join hands with partners."

"Social media is a reality. Public health community is too often stuck in an old communication paradigm. Including social media in the risk communication strategies is essential."

"The most important aspect of new social media is a two ways communication. The most important aspect is being able to reply promptly, in an understood language to communications over social media."

"Monitoring the web sentiment for specific topics may help to provide relevant and timely information."

"Public health authorities need assistance from communications experts to present the message in a way that is appropriate to the media and will encourage 're-tweets', 'likes' etc. Early and frequent use of social media to establish the authority as a good source of information and updates. Responsive to feedback and questions - social media users don't keep to office hours and will quickly seek other sources if the response isn't rapid. Monitoring what is happening on social media sites will give intelligence on concerns, misinterpretation/misunderstanding of messages and rumours."

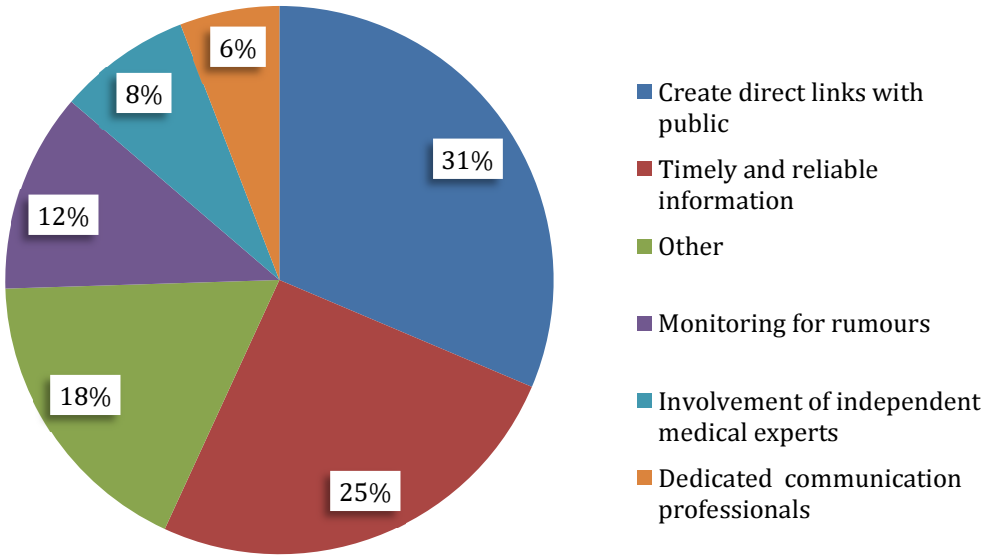


Figure 17: Use of the new social media in future outbreak communications to fulfill the information needs of the public.

Q12: Please indicate the source(s) from which you draw information about an infectious disease outbreak.

This question aimed at identifying which is the most popular mean of communication for people in situations of infectious disease outbreaks, and check for any particular preferences as regards the format where information is presented.

The findings suggest there is strong preference from respondents to receive news from public health authorities websites and other official online sources (37%), followed by broadcast media (i.e. television and radio) (23%) and print media (i.e. newspapers and magazines) (23%). It is also demonstrated in the findings that social networking sites and blogs (13%) cannot be considered as particularly popular sources for drawing information from, and this could be partly explained by the fact that national public health authorities have not been greatly involved yet in using this type of media for outbreak communication, so

more probably social media are still on a stage where of use for informal exchange of information and news, as would be the case in real communities.

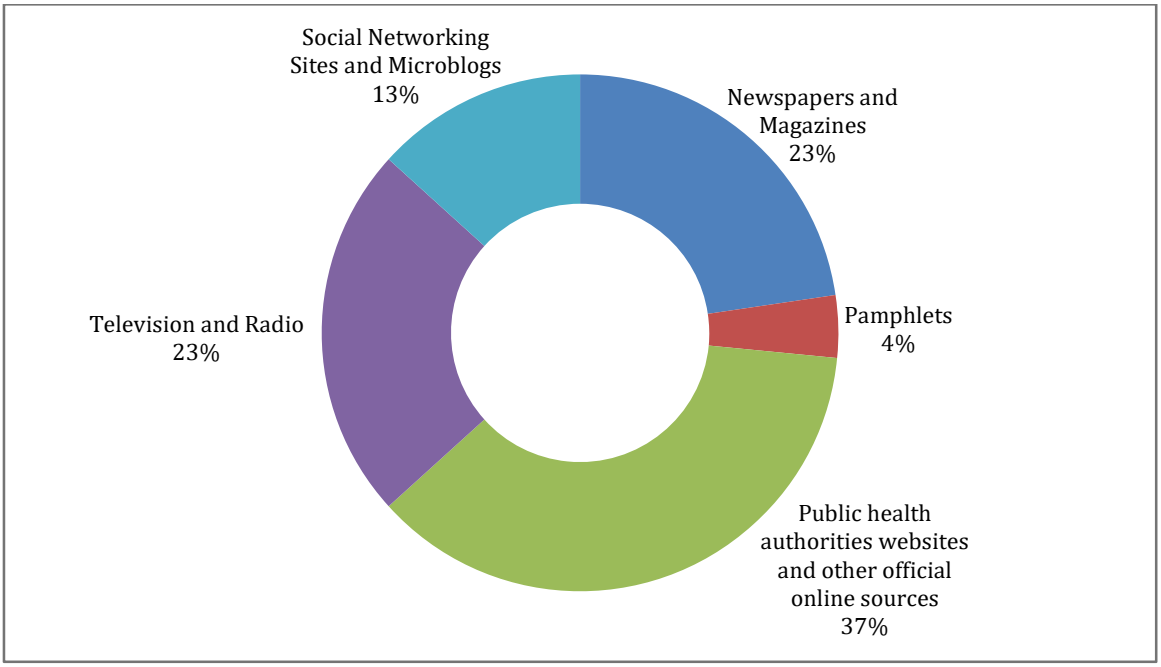


Figure 18: Most popular sources from which respondents choose to draw information from during an infectious disease outbreak.

Q13 – Q15: From the specified types of media, how would you evaluate their EFFECTIVENESS, CREDIBILITY and INFLUENCE for communicating messages to the public during an infectious disease outbreak?

In this case, the respondents were asked to evaluate the different means of communication used during infectious disease outbreaks to communicate messages to the general public – clustered in three different categories: a) Print and digital media (i.e. Newspapers and Magazines, Pamphlets, Websites), b) Broadcast media (i.e. Television and Radio), c) Participatory or social media (i.e. Social networking sites, Microblogs, Blogs and Wordpress) – in terms of their *effectiveness*, *credibility* and *influence*. The aforementioned means of communication could be further classified into two broader categories, as traditional media (print and broadcast) and new media (website and social media).

As regards the *effectiveness* variable, the means of communication that were perceived to be the most effective ones were the broadcast media, i.e. television (73%) and radio (45%), which share an important characteristic; that of having people as passive recipients to the information communicated, as compared to print media and online media where a person needs to actively seek and extrapolate information from. Also, the official websites were considered as a moderately effective medium of communication of messages (57%), followed by social networking sites (45%) and newspapers/magazines (41%). Among the least effective means of communication – slightly or not at all effective – were perceived to be distribution of pamphlets (45%), blogs/wordpress (24%) and microblogs (18%).

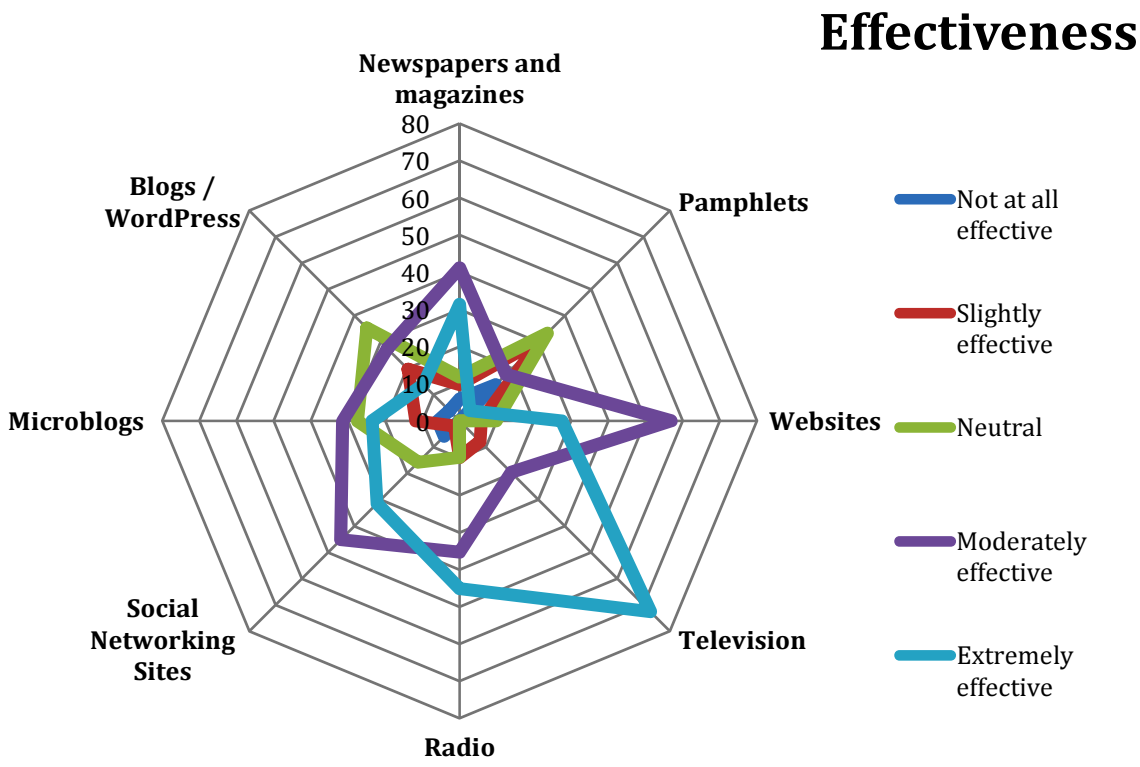


Figure 19: Stakeholders' evaluation about the level of effectiveness of various types of media for communication of health messages.

The next variable, *credibility*, produced a series of different results as compared to the *effectiveness* variable. Perhaps most characteristic is the drop of percentages for television and radio, as extremely credible sources for communication of messages to the public (12% and 8% respectively). This would be an indication that credibility should not be seen as going hand-in-hand with perceived effectiveness of a medium for communications.

According to the respondents' views, the most credible means of communication are official websites (22%) and pamphlets (22%), which very often have the same source for developing messages. Television and radio were still perceived to be moderately credible (49% and 53% respectively), however this has also been the case for newspapers/magazines (53%), pamphlets (46%) and official websites (41%). It is remarkable that participatory and social media scored the lowest in terms of credibility – slightly or not at all credible – as regards messages during an outbreak, with microblogs (e.g. Twitter) seen by almost one in two respondents as the least credible (49%), followed by social networking sites (45%) and blogs/wordpress (39%).

Also important to note is the fact that one average, one in three respondents were neutral about the level of credibility as regards participatory and social media, which possibly is relevant to the fact that there have not been many opportunities for such media to be assessed properly in large scale health emergencies.

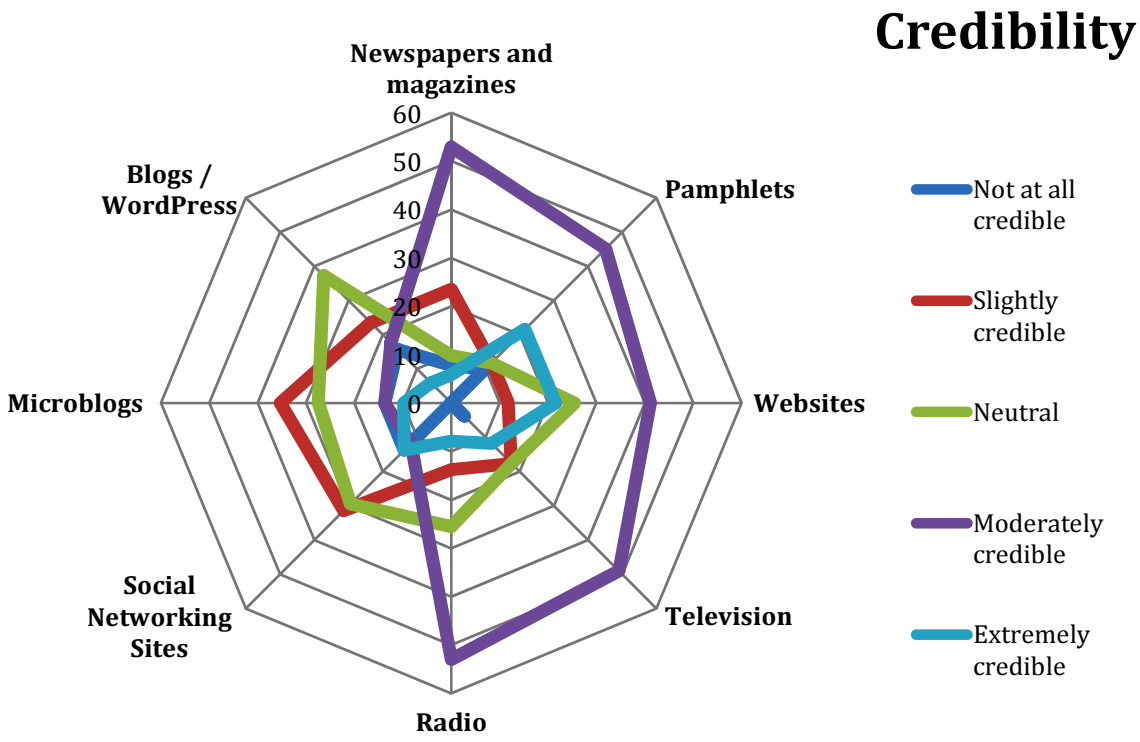


Figure 20: Stakeholders' evaluation about the level of credibility of various types of media for communication of health messages.

The third variable that was used, *influence*, was critical to understand better which of the following means of communication, is more likely to have the greatest impact on general public perceptions and behaviour, in the context of responding to the respective messages produced. The vast majority of respondents believed that television and radio have the greatest influence – extremely and moderately influential – on public perceptions and behaviour (96% and 90% respectively), which means that there is a heightened responsibility for these mediums as regards the information and messages communicated, raising at the same time issues of accountability in future events. Together with newspapers and magazines, these have been the most traditional means of communications used by national public health authorities to the public, however in view of the emergence of new types of timely communication with the public, especially the local media should perhaps redefine their role in this chain of outbreak communication, as a valuable tool for communication of official messages to the more marginalized groups of society.

Other means of communication considered to be highly influential are newspapers and magazines (86%), official websites (85%), social networking sites (70%) and microblogs (62%). Once again, there were a relatively high proportion of the respondents that expressed a neutral position as per the level of influence of participatory and social media. Interestingly, the pamphlets received the lowest rates as an influential medium of communication (41%), however this would be very much depending on the context as it is a fact that as society progressively immerses in the 'digital era', the more information are made available in electronic format. Nonetheless, as it was also indicated in previous questions from this survey, the wider context always needs to be considered and certain places like transportation hubs (e.g. airports, train stations) and hospitals or schools could still benefit from printed material that contain concise but clear messages in response to an infectious disease outbreak.

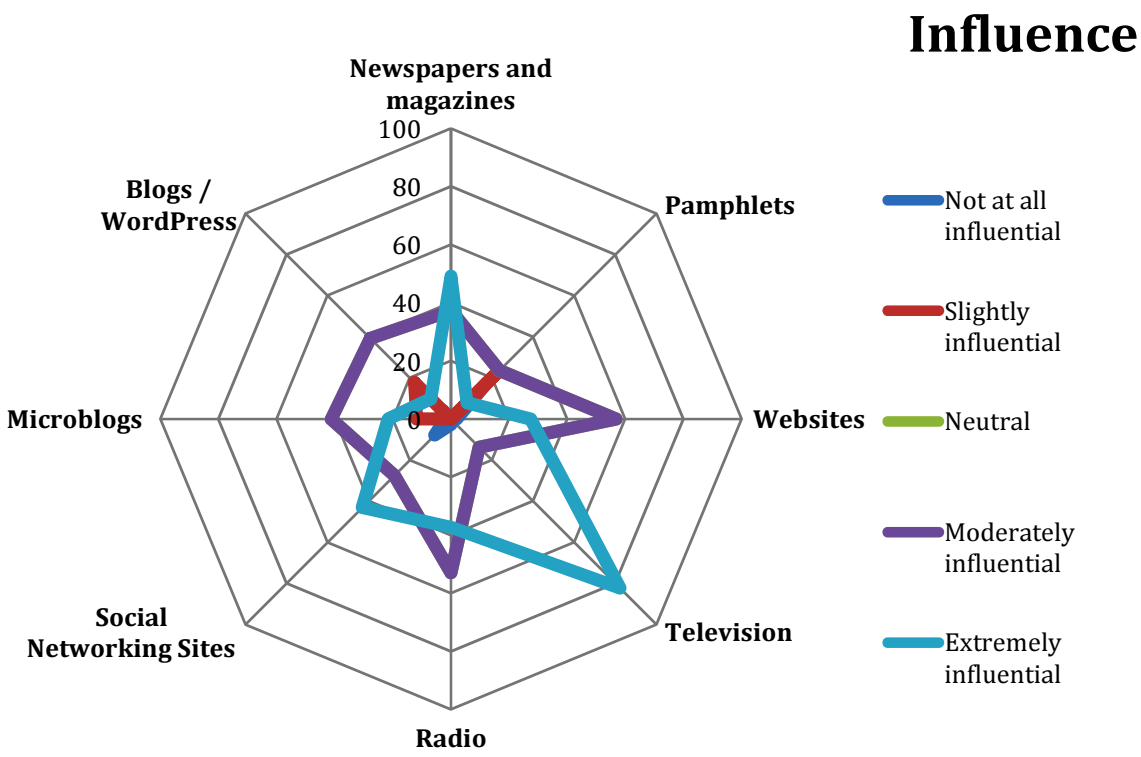


Figure 21: Stakeholders' evaluation about the level of influence of various types of media for communication of health messages.

Q16: Please indicate for the following participant groups at higher risk for spreading flu or developing flu complications, which would be the most appropriate and reliable key actors / sources to inform these groups about benefits and risks of immunisation/vaccination.

In the highly complex landscape of outbreak communication from key stakeholders and professionals in public health, and delivery of messages to various target groups and populations, it would be necessary to advance understanding on which would be the most appropriate and reliable actors or sources to meet their communication requirements for the most sensitive groups of society, and directly inform them about measures that need to be taken for better protecting against an infectious disease.

A number of vulnerable groups were considered as having particular information needs, based on health-related variables or certain capacity under which they function. The responses for each group were examined separately, and were evaluated in two levels. In the first level, there was an effort to identify all possible communication sources that could be relevant for meeting specific information needs, setting as minimum to have received a five per cent (5%) as an overall response. At the second level, the aim was to create a hierarchy of important as per the most appropriate sources of communication, based on the frequency of votes they received. Table 4 presents the results from this exercise, in order of frequency of votes received, with the most popular (and thus, relevant) stakeholder groups underlined.

Table 4: Key actors to be considered for communication with specific groups of stakeholders in need for specific and targeted information (Note: The most popular selections for each group appear as underlined).

Children <5 (=> Parents)	**Adults >65**	**Women in pregnancy**	**People with medical conditions**
- Family doctor	- GP / HCP	- GP / HCP	- GP / HCP
- School/Teachers	- Mass media	- Obstetrician	- Specialist doctor
- Paediatrician	- Nurses	- Gynaecologist	- Mass media
- Nurses	- Family members/friends	- Special magazines	- Other HCP
- Mass media	- Internet	- Family members	- Hospital
- Internet	- Pharmacists	- Other women	- Patient organisations
- Parents	- NGO	- Hospitals	- Internet
- National public health authorities	- Social media	- Maternity clinics	- Friends
Frequent travellers	**Healthcare professionals**	**Healthcare workers**	**Child-care providers**
- Travel agencies	- National public health authorities	- Local public health authorities	- Paediatrician
- Airports (leaflets, posters, flight crew)	- Medical associations	- Hospitals / Clinics	- Local public health authorities
- Airline websites / Travel blogs	- Umbrella organisations	- Ministry of Health	- Parents
- GP / HCP	- Official websites	- Colleagues	- Childcare regulators
- Travel clinics	- Emails and mailing lists	- Conferences and professional networks	- Schools or nurseries
- Mass media	- Specialists on infectious diseases	- Mass media	
- Social media	- Local public health authorities		

Q17: State how you see the future in outbreak communication with the opportunities and challenges that emerge in the light of globalisation.

This was the final part on the questionnaire, aiming to provide the respondents with an opportunity to reflect back using their experience, on the greater challenges and opportunities that they see emerging in the future with reference to outbreak communications. A selection from the respondents' views is presented as quotes below:

> *"Decision makers and politicians want to control communication which is therefore not compatible with a proactive, informative and transparent communication."*

"Need of a strong communication. In my opinion, ECDC or other European is not enough known to the general public to play a real role in communication. The role of local and national actors is still primordial, but they will have to play with "contamination" of their communication coming from abroad."

"The health market is an ever growing market. Like in other markets emotions are used to sell products. Therefore, the industry and health professionals with conflicts of interest will always try to keep emotions up - by exaggerating risk, by inventing new diseases, by biased reporting to the media and politicians, by influencing guidelines, by influencing research,etc.".

"Need to control the too rapid and uncontrolled spread of news on the outbreak; have a source of communication which can be trusted by everybody and with no shadow of mixed interest with pharmaceutical industry."

"The future will be more complex and risk communications will be very difficult to control. Most work must be done before an emergency, extended networks and use of social media."

"There is a growing mistrust of public health authorities. The general belief is that public health officials are willing to sacrifice one's single person heath in order to achieve the "greater good" without duly informing the individuals. This notion is no longer acceptable."

"Opportunities arise from the multiple channels available which allow information to be quickly and widely disseminated. In order to seize the opportunities and meet the challenges, public health authorities need to be continually monitoring and responding to emerging and changing situations. This will require a greater level of availability, devolved responsibility and willingness to act on incomplete information than in the past. Public health authorities will need to work closely with communications specialists to ensure that their messages are conveyed in language appropriate to the target audience and media format. They will also need tools to provide intelligence/feedback on emerging social media and other communication trends and issues, in order to refine and update their information and communication strategy."

The responses highlight a number of issue relevant to outbreak communication, but most of all the fragile nature of meeting the communication needs at the level of decision-makers, and the struggle to simultaneously balance with two feet on two boats; that is *information control* and higher level of *public transparency*. In the effort to build trust with vulnerable populations or the general public as a whole, the control of information content and flow need to be studied more carefully, as modern technological advancements have formed a new paradigm where *information ownership* is no longer a tenable concept, even at the level of national and international public health authorities.

The *growing mistrust* described by one of the respondents is not independent of a reality where the also growing information needs of different stakeholders is in proportion with the abundance of information that is made available in various formats and from various sources. The new social media cannot be seen only as a vehicle which ensures timely and accurate delivery of messages by public health authorities, but also as a pliable tool that could be tailored to deliver messages according to the information needs of different stakeholder groups. Again, it would be a priority of setting up a trustworthy framework to better integrate outbreak communication principles where every group in society responds to the outbreak or makes decisions about preventive measures on the basis of clear and unbiased information received.

3.2 Validation of key research findings

Following the analysis of data collected from the online survey, a number of key findings where extracted as conclusions, which were then distilled into statements that appear at the end of this report (Section 5 - Recommendations). A total of eight statements were produced following this process, with each of these statements accompanied by an explanatory comment, which linked with the outcomes of the research.

The purpose of validation of these statements was to ensure the integrity and soundness of the key research findings distilled from the process, as well as to establish confidence about the quality of our results based on the level of acceptance from a varied selection of stakeholders, comprising both institutional and non-institutional actors with expertise in the field of epidemiology and surveillance, risk and crisis communication, and management of public health emergencies (Table 5).

Table 5: Stakeholder validation panel.

Stakeholder Validation Panel			
Name	**Position**	**Organisation / Institution**	**Country**
Toby **MERLIN**	Director *Division of Preparedness and Emerging Infections*	Centers for Disease Control and Prevention (CDC)	USA
Chaim **RAFALOWSKI**	Director *Emergency Management Department*	Magen David Adom (MDA)	IL
Marianne **VAN DER SANDE**	Head of Unit *Epidemiology and Surveillance Unit*	National Institute for Public Health and the Environment	NL
Stepan **VYMETAL**	Psychologist and Trainer *Security Threats and Crisis Management Unit*	Ministry of the Interior	CZ
Ralf **REINTJES**	Professor of Epidemiology and Surveillance *Faculty of Life Sciences*	Hamburg University of Applied Sciences (HAW)	DE
Charmaine **GAUCI**	Director *Health Promotion and Disease Prevention Directorate*	Ministry for Health	MT
Lidia **MLADENOVA -GEORGIEVA**	Associate Professor *Social Medicine and Healthcare Management Department*	Medical University of Sofia	BG
Nigel **DOWDALL**	Head of Unit *Aviation Health Unit*	Civil Aviation Authority	UK
Pierre-Alain **FONTEYNE**	Senior Research Associate *Center for Applied Molecular Technologies*	Université Catholique de Louvain (UCL)	BE

The stakeholder validation panel received a document which included the key findings from the research and was presented with specific instructions for validation of the statements. In particular, the selected stakeholders were required to indicate their level of agreement with each statement presented, on a 7-

point rating scale ranging from *strongly disagree* (1) to *strongly agree* (7). Any statements to receive an average rating of 4.50 (out of 7.00) or above would be accepted as most responses would be in the range between *strongly agree* to *somewhat agree*, while any statements to receive an average rating between 1.00 and 4.49 would be rejected as unsatisfactory for making claims of general agreement between stakeholders.

The analysis of the results from the validation process revealed that all statements were received positively by stakeholders from the validation panel, with varied levels of agreement and most of responses ranging between *somewhat agree* and *strongly agree*. In particular, the statements for which validators expressed the strongest level of agreement include the following:

> **#1.** Public health authorities should broaden the stakeholder base in outbreak communications to actively engage in the process healthcare providers, academics and local media. ***(Average rating 6.56, Strongly Agree 55.6%)***
>
> **#3.** Risk assessments are particularly important in public health emergencies and should comprise a basic tool for communications with the general public. ***(Average rating 6.11, Strongly Agree 44.4%)***
>
> **#7.** Effectiveness in outbreak communication could increase through development of a communication model that integrates key elements from existing one-way and two-way means of communication (i.e. highly credible and influential). ***(Average rating 5.89, Agree 44.4%)***
>
> **#8.** General practitioners (GPs) and healthcare professionals (HCP) are seen as the more appropriate and reliable actors to inform the more vulnerable groups of society about preventive measures in response to an infectious disease outbreak (e.g. vaccination). ***(Average rating 6.00, Agree 55.6%)***

Two of the statements received more diverse ratings with one in five stakeholders expressing also some minor disagreement. This has been the case for statements on ethnic minority groups and the transportation sector where some contradictions were also observed in the main findings between institutional and non-institutional actors. Nonetheless, the majority of stakeholders from the validation panel expressed their agreement with those statements (see below), and therefore were accepted as valid considering that the average rating passed the set threshold of 4.50.

> **#5.** Ethnic minority groups receive poor quality information and a lesser amount of attention by public health authorities in the event of infectious disease outbreaks. ***(Average rating 5.00, Agree 44.4%)***
>
> **#6.** The transportation sector – airport, railway and ports authorities – receives poor quality of information by public health authorities on global disease activity and corresponding preventive measures, in relation to the actual information needs of this group. ***(Average rating 4.56, Somewhat agree 44.4%)***

Overall, the results from the validation process inspire confidence about the consistency and potential value of our findings, as these have been positively received and widely accepted by a diverse group of stakeholders.

4. CONCLUDING REMARKS

This exploratory research study on stakeholder communication requirements aimed at taking a closer look into fundamental principles and various mechanisms underlying multi-layered outbreak communications between institutional actors on national and international level, and non-institutional actors or stakeholder groups operate on local, regional or national level. The first part of this report was based on scrutinising regulatory policies and mandates, technical reports and research studies, to form a comprehensive understanding of the stakeholder interconnections and the means used for the exchange of information at institutional level, in the event of an infectious disease outbreak. This exercise had been the platform where the research study was based on, with the overall objective to deepen understanding on the information needs and requirements for different types of stakeholders, the present risks and future challenges in outbreak communication, and general views on the different sources for communication of messages to the general public or specific stakeholder groups.

The analysis of the International Health Regulations (IHR) 2005, as per the mandated standards in communications between WHO and Member States, was indicative of the fact that on international level sophisticated mechanisms are already in place for the exchange and flow of information, while communication requirements are clearly established between institutions. At this level, structured communications also extend by WHO toward other international or intergovernmental organisations, as T. Abraham correctly points out that "*pandemics and other serious disease events are political, social and economic events, in addition to being public health event*" (Abraham, 2009:604). Together with European international agencies such as ECDC and EMA, the national public health authorities form part of a network coordinated by WHO, where is made explicit the type of information required by them and guidance on what type of feedback these authorities should expect in order to coordinate better the response actions on national, regional and local level, to contain the spread of an infectious disease.

Nonetheless, it should not be ignored the fact that although information needs can be determined and fulfilled to a satisfactory level for national public health authorities for responding decisively to public health emergencies by following the national preparedness and response plan, always in conjunction with the requirements set out at the IHR (2005), the communication challenges are considerably more when national competent authorities need to take decisions for the general public and vulnerable populations under the (external) pressure and/or influence of the way an epidemic unfolds in other geographical regions and response measures taken in those cases. The clear-cut relationships and links that form part of international cooperation and partnerships are difficult to sustain on national level, as the stakeholder groups involved in the outbreak communication process are significantly more, with diverse communication requirements and information needs. National public health authorities need to convincingly demonstrate qualities such as credibility, timeliness, independence and accuracy in their responses to fill communication gaps and information vacuums created either by some conflict of interest (involuntary or deliberate) between various stakeholders or more importantly, lack of understanding about general public perceptions towards the disease or vaccination.

In the national context, another key stakeholder group that plays a significant role is in the outbreak communication is considered to be the mass media. The emergence of new social media have not only changed the way people communicate with each other, but also produced a significant change in terms of people conceptualisation of information, as some kind of commodity that no one could possess, so is destined to be shared. This comes into direct conflict with the core nature of national authorities, which are programmed by default to control the information flow and content during public health emergencies in order to operate at their best capacity, however this could pose a serious challenge in the efforts to create

more transparency and build trust with the public. It has been suggested by Pellegrino et al. (2012) that a greater degree of collaboration between the media and the authorities is needed to achieve a clearer, simpler and less misleading communication in the field of public health, helping recipients to act properly. In fact, the public health authorities have to concentrate at two different types of media (tradition and social media) to form stronger collaborations and capitalise on their potential to reach the public more effectively.

For the purposes of the present research study, the main communication means were systematically examined as per their value for stakeholders in public health and their potential impact in future outbreaks. It was clear from the results in this study that traditional media, especially television and radio, are still perceived to have the greatest influence and impact in the communication of messages, although not seen as the most credible sources. The public health authorities should take steps to work closer with traditional media and perhaps formulate a set of principles (in the form of best practices) about the type and format of information presented to the public. Early involvement of the media in this process (from the preparedness phase) would also contribute to increase the sense of responsibility as per their role, and clearly point to issues of accountability as regards making false or inaccurate statements. With regards to new social media, it was highlighted also in this study the need for public health authorities to capitalise on the presence of social media in people's daily activities, to better fulfil the principle of timeliness in the exchange of information, and further explore of how these media could better be used for monitoring purposes in order to control the spread of rumours and misinformation that emerges on the Web.

The evidence suggest that social media are not yet considered by competent authorities and health professionals as the primary source for data collection, although any type of information that arrives directly from the community level is essential – same as the use of informal surveillance systems by the health authorities, such as the Google Flu Trends. Focus should be shifted on what could be done extra from decision-makers at top level, for better systematising the information received from multiple sources at local level, so that they could tailor public health messages for different populations and target groups, which would require from the national public health authorities to view the outbreak not only in its global dimension, but at its local dimension too.

With reference to differences in communication requirements between institutional and non-institutional actors, only few significant differences were observed in the views expressed by the two groups. In the case of prioritisation of actions toward development of new systems for surveillance, it is noteworthy that the majority of non-institutional actors supporting this view, while institutional actors did not consider this to be a main priority. This would suggest that existing surveillance or monitoring systems satisfy to a great extent the information needs for institutional actors, which is consistent with the fact that a plethora of surveillance networks exist already at this level. It is the non-institutional actors that express in this way a need to be informed better through automated processes about how a disease develops and associated risks. Following this, there was general agreement between stakeholders that most essential information to be made available from the onset of an outbreak is that of risk assessments, which will be specific to the disease rather than a generic plan of response.

As regards stakeholders' perceptions about stakeholder groups that need to be considered in the outbreak communication process, institutional actors focused on the need to engage more actively with the group of healthcare workers, while the non-institutional actors perceived the journalists and media in general to be the priority. These findings are consistent with the results in another question where institutional actors saw health experts as the main source of producing contradictory messages with a consequence of

breaking down public trust toward the government, thus it would be a reasonable step for public health authorities to try and bridge this gap with healthcare workers and professionals.

Despite the aforementioned differences in responses provided by institutional and non-institutional actors, as well as the clearly established communication requirements in cooperation and partnership between international organisations and national authorities, the information needs for the various groups of national and local stakeholders are part of a wider mechanism built in the form of a densely interwoven communications web, where information flows at many occasions without specified recipients. In this case, the challenge for different groups of stakeholders is more relevant to identifying and selecting which type of information accommodates better their needs, being aware at the same time that any action taken by them will have direct or indirect consequences for the local or global community, depending on the type of stakeholder.

What becomes increasingly more critical in outbreak communication is the risk of exclusion of specific groups of society from the process, either as a direct consequence of the digital divide (in the case more information are made available through electronic means, e.g. the internet, social media etc.) or as an indirect consequence of failing to understand the actual information needs of marginalised or disadvantaged groups in society that have limited capacity to voice their concerns. The stakeholders that responded in the survey did not consider this to be a priority for the development of new methods in outbreak communication, however, is paramount to always consider the link between poor quality of information received with exclusion of certain groups from outbreak communication strategies. How could the outbreak communication be optimised, when certain local stakeholder groups and their information needs do not become priority?

5. RECOMMENDATIONS

Statement #1	**Public health authorities should broaden the stakeholder base in outbreak communications to actively engage in the process healthcare providers, academics and local media.**
Comment	Institutional and non-institutional actors unanimously agree that additional stakeholder groups should be considered in preparations of strategic communications plans during an outbreak, to limit contradictory statements and ensure consistency of messages for the general public. In particular, the stakeholder groups that should engage more actively in outbreak communications include public health experts, healthcare providers, local media and academic/research institutions.
Statement #2	**Epidemiological information from international surveillance and early warning systems should be made available to non-institutional actors, and especially the wider scientific community.**
Comment	The survey revealed that non-institutional actors consider the development of new international systems for surveillance to be relatively high priority, as compared to institutional actors who perceived this to be the lowest of priorities. Considering their practical experience from infectious disease surveillance systems, institutional actors significantly value the information received from these systems and networks. On the contrary, non-institutional actors (e.g. universities, private institutions etc.) feel they receive too little information from these networks.
Statement #3	**Risk assessments are particularly important in public health emergencies and should comprise a basic tool for communications with the general public.**
Comment	Both institutional and non-institutional actors positioned risk assessments as the most useful and critical information to be made available for the general public. Updated pandemic risk assessments in the form of technical reports are particularly important as these are made available by highly credible sources (international health organisations or national competent authorities), generated in a timely manner. Drawing from experience of the H1N1 (2009) pandemic, the risk assessments produced by ECDC during this period contained a comprehensive amount of information and were written in a format and language that could easily be understood by a broader audience.
Statement #4	**The information needs of journalists and healthcare workers are commonly overlooked during public health emergencies, and would merit more attention by public health authorities.**
Comment	From the findings of the survey it was evident that non-institutional actors perceive journalists to be a stakeholder group frequently disregarded in outbreak communication planning and response. Institutional actors instead, perceive the healthcare workers to be a group that merits more attention by public health authorities toward effective communication of messages. It is a characteristic for both journalists and healthcare workers their immediacy and direct connection with the public, as well as their tendency to produce conflicting messages, so it is suggested that public health authorities put greater efforts to link more efficiently with these two groups in outbreak communication planning and response.
Statement #5	**Ethnic minority groups receive poor quality information and a lesser amount of attention by public health authorities in the event of infectious disease outbreaks.**
Comment	Both institutional and non-institutional actors strongly identified ethnic minorities as a

	stakeholder group that receives poor quality of information by public health authorities, in relation to their actual information needs. It appears that is critical for competent authorities to re-examine the type and format of information that is made available to ethnic minority groups, considering also the views expressed by institutional actors in this survey where lowest priority was given for development of new communication strategies toward reaching more effectively marginalised groups from the community. It should also be explored more in-depth what constitutes the primary sources of information for these groups and how effective these are in conveying messages.
Statement #6	**The transportation sector – airport, railway and ports authorities – receives poor quality of information by public health authorities on global disease activity and corresponding preventive measures, in relation to the actual information needs of this group.**
Comment	The transportation sector is another stakeholder group identified as particularly in need to receive better quality of information during infectious disease outbreaks, with both institutional and non-institutional actors sharing this view. During the most recent influenza pandemics, public health authorities and the media made direct links to the speed of transmission and spread of a virus with the increasing density of international movement of people, mostly through airports. While this international movement continues to grow, the same can be expected for the information needs of transport authorities which need to link more effectively with international and national public health authorities, for providing passengers with timely and accurate information on preventive or other measures.
Statement #7	**Effectiveness in outbreak communication could increase through development of a communication model that integrates key elements from existing one-way and two-way means of communication (i.e. highly credible and influential).**
Comment	The results from this survey highlighted that most credible sources in outbreak communication are considered to be public health official websites and other official sources, while the most influential means of communication for delivery of messages are considered to be the broadcasting media, such as television and radio. More research is needed to explore any shifts in population behaviour from passively receiving to actively seeking for information during infectious disease outbreaks, so that public health authorities as centralised source for information could develop a cross-platform communication strategy, making extensive use of broadcasting methods and new social media, toward an effective participatory communication model to satisfy the information needs of various stakeholders.
Statement #8	**General practitioners (GPs) and healthcare professionals (HCP) are seen as the more appropriate and reliable actors to inform the more vulnerable groups of society about preventive measures in response to an infectious disease outbreak (e.g. vaccination).**
Comment	The findings suggest that healthcare providers are in the better position to provide information and advice to vulnerable groups of society (e.g. children, older people, and women in pregnancy) as regards prevention and response to an infectious disease outbreak. This would be relevant to the context of combining both professional competence and local knowledge – as members of the community – which allows a deeper understanding of the social and cultural factors that shape people's concerns about the outbreak. Their central role at local level could better be established and/or reinforced through use of new social media where national public health authorities could be notified promptly of any concerns at local level, while the general public could be informed more accurately, openly and responsibly about latest developments of the outbreak.

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ANNEX I

QUESTIONNAIRE

In the context of TELL ME project (www.tellmeproject.eu), we carry out this survey to assess the communication requirements during infectious disease outbreaks. More specifically, this research study makes an effort to determine the information needs and communication requirements for stakeholders, in the event of an infectious disease outbreak. The present questionnaire aims at collecting data from an array of different stakeholders in the field, to gain better insight and diverse perspectives on communication requirements. Note that you are requested to respond only on your own individual capacity, expressing personal views and opinions, and your responses will not commit in any manner your organisation.

The present questionnaire makes a multi-scale assessment of certain characteristics and features of outbreak communication, concerning the type of information made available to the general public, issues of trust and transparency, the role of the media and ways in which a more effective communication could be achieved as an outcome of appropriately tailored messages for specific groups of stakeholders.

Your participation in this survey is completely voluntary and you have the right to withdraw at any time, without providing a reason or having further repercussions. Your responses in this questionnaires will be confidential, and collected data will be stored in a password protected electronic format by the project coordinator, and will be erased upon completion of the TELL ME project. The results of this survey will be used for scholarly purposes only and will be shared in aggregated format within the TELL ME consortium and the EC services.

Responding participants will receive a draft version of the report, including the survey findings for final validation, and any feedback received will be further integrated before this report is officially submitted to the European Commission.

Please save this questionnaire on your desktop and fill it in. Once you have filled it in, please do send it back in attachment to Dimitris Dimitriou (E: dimitris.dimitriou@cssc.eu) – Assistant Coordinator of the TELL ME project.

GENERAL INFORMATION

The following questions are for classification purposes only. They will not be used to identify any individual.

What is your primary field of expertise?

Please indicate the sector, area of work, or type of organisation in which you operate (tick as appropriate):

☐ International Organisation (e.g. WHO, WTO, OIE etc.)

☐ European Agency (e.g. ECDC, EMA etc.)

☐ National Public Health Authority

☐ Regional/Local Public Health Authority

☐ European Association for Health Professionals

☐ Non-Governmental Organisation (NGO)

☐ Pharmaceutical Industry

☐ Media

☐ Other (Please specify):

Q1: Among the various challenges for public health communication in the event of an infectious disease outbreak, to which extent would you consider the following to be a priority or more urgent for public health authorities and organisations to focus?	Not a priority	Low priority	Neutral	High priority	Essential priority
1. Develop new communication strategies to facilitate multiple stakeholder involvement in the process	1	2	3	4	5
2. Develop new communication strategies for local authorities, national authorities and international organizations, to enhance message consistency - limit contradictory statements	1	2	3	4	5
3. Develop new communication strategies to meet public expectations and growing demand for more information	1	2	3	4	5
4. Develop new communication strategies to reach more effectively marginalized groups in society	1	2	3	4	5
5. Develop new communication strategies to inform the public about benefits and risks of vaccination against influenza	1	2	3	4	5
6. Develop new methods and systems for surveillance of infectious disease outbreaks worldwide	1	2	3	4	5
7. Develop new methods for engagement with the mass media to overcome biases in news reporting	1	2	3	4	5
8. Develop new methods for obtaining accurate and real-time information about general public perceptions and opinions	1	2	3	4	5
9. Develop new methods for advanced understanding of future global trends in travelling and communication	1	2	3	4	5

Q2: In your opinion, **what type of information is essential** for the general public from the onset of a public health crisis, for bridging the knowledge gap with the experts and thus create effective messages? *[**Note**: You can select/tick more than one boxes]*

☐ Response action plan by national authorities	☐ Response action plan by local authorities
☐ Risk assessments	☐ Suggested control measures
☐ Communicable disease/virus specifics (e.g. nature, degree of contagiousness etc.)	☐ Individual rights/Civil rights with regard to vaccination or other preventive measures
☐ Other, please specify:	

Q3: In your opinion, which of the following national and local stakeholder groups need to be more **actively engaged in future** infectious disease outbreaks (through public participation processes) to improve information flow? *[**Note**: You can select/tick more than one boxes]*	
☐ Public Health Experts	☐ Public Health Professionals
☐ Academia – Schools of Public Health	☐ Hospitals – Clinics
☐ Day care centres	☐ Pharmacists
☐ Independent medical laboratories	☐ Non-Governmental Organisations
☐ Pharmaceutical companies	☐ Vaccine suppliers/wholesalers
☐ Charities	☐ Primary schools
☐ Key minority groups	☐ Key religious groups
☐ Local media	☐ Local political parties
☐ Other, please specify:	

Q3a: Through which mediums, processes or communication platforms would that be possible?

Q4: In your opinion, are there any stakeholder or community groups usually overlooked by public health authorities in the preparation and response phases of an infectious disease outbreak?	
YES	☐
NO	☐

Q4a: If yes in Q4, please indicate which groups these would be and a key strategy that needs to be implemented for better inclusion of this/these group(s).

MESSAGES AND COMMUNICATION GAPS

Q5a: In your opinion, what would be a wise tactic for public health authorities to limit speculations and control the spread of rumours in the **traditional media**?

Q5b: In your opinion, what would be a wise tactic for public health authorities to limit speculations and control the spread of rumours in the **new social media**?

Q6: In your opinion, which are those stakeholder groups that most frequently produce **contradictory messages** in the event of an infectious disease outbreak, negatively influencing or 'breaking down' people trust for public health authorities?

Q7: In your opinion, which are the most critical aspects of outbreak communication that can undermine or threaten transparency? *(e.g. conceal information, public authorities speculation, use of technical language, delayed announcements, unsubstantiated claims etc.)*

Q8: How would you evaluate the **quality of information** that becomes available to each group (based on their information needs) from official sources, in the event of an infectious disease outbreak?		Poor	Fair	Good	Very Good	Excellent
a.	National Ministry of Health	1	2	3	4	5
b.	National Surveillance Institute for Public Health	1	2	3	4	5
c.	Regional public health authorities	1	2	3	4	5
d.	Local public health authorities	1	2	3	4	5
e.	Mass Media (Traditional and Online)	1	2	3	4	5
f.	Ethnic/Minority groups	1	2	3	4	5
g.	Pharmaceutical industry	1	2	3	4	5
h.	Maritime, land and air transportation industry	1	2	3	4	5
i.	Health Care Professionals	1	2	3	4	5
j.	Hospitals / Clinics	1	2	3	4	5

COMMUNICATION AND INFORMATION SHARING

Q9: In your opinion, which are those conditions that need to be satisfied towards improving **trust** between public health authorities and the general public?

Q10: In your opinion, which are those conditions that need to be satisfied towards improving **transparency** between public health authorities and the general public?

Q11: Given the increasing use and potential of new social media for rapid information sharing, would you have any suggestions about how these media could be exploited to inform and target more accurately the information needs for the public?

MEANS OF COMMUNICATION AND INFORMATION VALUE

Q12: Please indicate the source(s) from which you draw information about an infectious disease outbreak. *[**Note**: You can select/tick more than one boxes]*

Print Media / Digital Media

- ☐ Newspapers and magazines
- ☐ Pamphlets
- ☐ Public Health Authorities Websites
- ☐ Other Official Web sources, please specify:

Broadcast Media

- ☐ Television
- ☐ Radio
- ☐ YouTube

Participatory or Social Media

- ☐ Social Networking Sites (e.g. Facebook)
- ☐ Microblogs (e.g. Twitter)
- ☐ Blogs / WordPress

Q13: From the specified types of media, how would you evaluate their **EFFECTIVENESS** for communicating messages to the public during an infectious disease outbreak?		Not at all effective	Slightly effective	Neutral	Moderately effective	Extremely effective
Print Media / Digital Media						
a.	Newspapers and magazines	1	2	3	4	5
b.	Pamphlets	1	2	3	4	5
c.	Websites	1	2	3	4	5
Broadcast Media						
d.	Television	1	2	3	4	5
e.	Radio	1	2	3	4	5
Participatory or Social Media						
f.	Social Networking Sites (e.g. Facebook)	1	2	3	4	5
g.	Microblogs (e.g. Twitter)	1	2	3	4	5
h.	Blogs / WordPress	1	2	3	4	5

Q14: From the specified types of media, how would you evaluate their **CREDIBILITY** when communicating messages to the public during an infectious disease outbreak?		Not at all credible	Slightly credible	Neutral	Moderately credible	Extremely credible
Print Media / Digital Media						
a.	Newspapers and magazines	1	2	3	4	5
b.	Pamphlets	1	2	3	4	5
c.	Websites	1	2	3	4	5
Broadcast Media						
d.	Television	1	2	3	4	5
e.	Radio	1	2	3	4	5
Participatory or Social Media						
f.	Social Networking Sites (e.g. Facebook)	1	2	3	4	5
g.	Microblogs (e.g. Twitter)	1	2	3	4	5
h.	Blogs / WordPress	1	2	3	4	5

Q15: From the specified types of media, how would you evaluate their **INFLUENCE** in alleviating or aggravating concerns for the public in the outbreak of an infectious disease?		Not at all influential	Slightly influential	Neutral	Moderately influential	Extremely influential
Print Media / Digital Media						
a.	Newspapers and magazines	1	2	3	4	5
b.	Pamphlets	1	2	3	4	5
c.	Websites	1	2	3	4	5
Broadcast Media						
d.	Television	1	2	3	4	5
e.	Radio	1	2	3	4	5
Participatory or Social Media						
f.	Social Networking Sites (e.g. Facebook)	1	2	3	4	5
g.	Microblogs (e.g. Twitter)	1	2	3	4	5
h.	Blogs / WordPress	1	2	3	4	5

Q16: Please indicate for the following participant groups at higher risk for spreading flu or developing flu complications, which would be the most appropriate and reliable key actors / sources to inform these groups about benefits and risks of immunisation/vaccination.			
	Source #1	Source #2	Source #3
Children <5 (=> Parents)			
Adults >65			
Pregnant women			
People with medical conditions			
Frequent travellers			
Healthcare professionals – GPs			
Healthcare workers			
Childcare providers			

Please use the space below for making a statement on how you see the future in outbreak communication with the opportunities and challenges that emerge in the light of globalisation.

Thank You for Your Participation!