# Talking about prevention in case of pandemics: information and strategies for healthcare professionals

WP3 Prototype Online Course for Primary Care Staff
DOSSIER 2

Responsible Partner: ZADIG
Contributing partners:

Dissemination level: PU

**Document Management**

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|---|---|
| PROJECT FULL TITLE | Transparent communication in Epidemics: Learning Lessons from experience, delivering effective Messages, providing Evidence. |
| PROJECT ACRONYM | TELL ME |
| | Collaborative Project funded under Theme HEALTH.2011.2.3.3-3 "Development of an evidence-based behavioural and communication package to respond to major epidemics outbreaks" |
| GRANT AGREEMENT | 278723 |
| STARTING DATE | 01/02/2012 |
| DURATION | 36 months |

| |
|---|
| Talking about prevention in case of pandemics: information and strategies for healthcare professionals<br><br><br>Task: 3.3<br><br><br>Leader: ZADIG – Other contributors: none |

History of changes:

| Vn | Status | Date | Organisation / Person responsible | Reason for Change |
|---|---|---|---|---|
| V1 | Draft | 30/1/2014 | ZADIG | First draft |
| V2 | Draft | 14/5/2014 | ZADIG | Second draft |
| Vf | Final | 22/5/2014 | ZADIG | Final draft |

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## INTRODUCTION

Prevention is essential in order to contain infectious outbreaks and, amongst preventive strategies, communication constitutes one of the key elements: it allows educating and informing citizens about healthy practices, raising awareness about diseases, involving patients and avoiding the diffusion of misinformation.

Healthcare workers constitute the interface between institutions and citizens, and this implies that they have a crucial role in preventive activities. They possess high accessibility by the population and have high credibility in the public's view. Patients often put greater trust in their general practitioners (GPs) than in governmental communication, meaning that they serve as example in attitude to health prevention and that they could perform further personalized communications. Knowing how to properly talk about prevention is thus crucial for healthcare professionals. This dossier will focus on the communication approaches that they should adopt in order to properly promote preventive measures in case of pandemics.

The chapter 1 of this dossier will summarize **some communication clues** to be kept in mind when talking with people regarding infectious risk and preventive measures, in order to avoid a top-down communication that could be either useless or counterproductive.

The chapter 2 will tackle the **main preventive measures** and describe the main issues associated to them. Particular attention will be given to anti-vaccine movements, in order to provide an effective framework of this reality and to identify key elements that could be useful to improve healthcare workers communication efforts.

The chapter 3 will go further into the concept of **urban myth** and analyse the most diffuse myths regarding preventive measures. Knowing in advance the rhetoric elements behind such modern legends may help health professionals to better hinder them.

The chapter 4 will present the **factors that mainly influence people's decision about vaccines**, dividing them into the most relevant subgroups that have been recognized. Identifying the characteristics of an interlocutor and targeting a message based on them is a key point in risk communication, especially for healthcare workers, who daily interact with citizens.

## 1. Talking to the public

Healthcare workers need to be informed and updated about existing preventive measures and their efficacy, depending on the context. They should therefore be able to explain, in a simple and rigorous way, what people should do to protect themselves from potential exposure to infectious agents. Explanations and advices should not be perceived as "just another reassurance" and they work better when they involve practical instructions.

The communication flow should not be one-directional: as suggested by TELL ME project framework model for public health communication, citizens do not constitute a passive public but public sphere is in the centre of the model. It is important, then, for health professionals, to be listening to them, since they may express concerns and beliefs that need to be considered.

## 1.1 Perception of risk

According to Peter Sandman's theory, perception of risk by people does not depend only on the effective hazard, but also, and even more, by the outrage linked to it (Sandman, 1999). This depends on the danger being domestic or exotic, coerced or voluntary, chronic or acute, and so on. The studies on factors influencing risk perception highlight that this is basically related to emotional factors to such an extent that a series of components corresponding to the "perceived offence" (outrage), more than the real hazard that is the cause of the hazard itself, contribute to determine the perceived risk.

Healthcare professional, as well as institutions, must receive and "actively listen" people worries and be aware of offence "determinants" characterizing the perceived risk, so as to have greater opportunities to understand the origin of perception and be able to deal with it (Sjoberg, 1999).

They need to understand the main worries of the population involved, especially as far as the weakest categories are concerned, such as, for example, children and pregnant women. People, in fact, tend to base their risk assessment not on the count of possible number of dead, injured people or socio-economic damage, but on the perceived presence of specific characteristics of risk situations and on some perceived properties of risk source, such as, for example, the familiarity with risk, individual control, comprehension, effects on children, effects on future generations, personal engagement, uncertainty of scientific data, voluntary exposure, trust in Institutions (Lambert, 2003).

Communication must therefore follow the participatory model based on the interactive exchange assessment among all the parties (Leiss, 1987), concerning the attention to the emotional component of individual and collective perception (Slovic, 1987), as well as the understanding of social and personal issues, that is crucial to make scientific data a useful knowledge for citizen.

## 1.2 Listening is the first condition

Listening, along with empathy, skills and experience, honesty and frankness, dedication and engagement, represents one of the key factors on which reliability and trust rely on (Covello, 1992).

More than 50% of communication reliability depends on the way in which people perceive the person who is in charge of communication. If people perceive empathy, listening and attention for their worries, their way of living and feeling the risk, they will be more willing to listen and trust. If, on the contrary, the person in charge of communication is not reliable because he/she is "distant" from people and exclusively focused on his/her own information objectives, the trust level will be reduced and at the same time the emotional components of perception prevail on the cognitive one. Therefore the communication content, even if adequate and scientifically sound, will not be perceived by people because passed through a relational process without empathy, not so focused on the identification of real informative needs of target, on its sensitivity and perception.

In those cases there is often the transformation of the communicative process in a conflict among contrasting positions where emotional reactions, sometimes even in a disordered way, prevail and the "focal issue", the topic, the situation object of the communicative exchange may be missed.

Listening and empathy are communicative competences. This means that they are skills that can be learned by specific training so that the operator can use them in his professional relationship in order to enhance communication effectiveness.

Listening represents the first step in the professional relationship; it is based on empathy and on the other's point of view acceptance, on the creation of a positive relationship and of a non-judging mood. It is needed to show interest and attention to speaker's needs, to create a relationship of trust and cooperation, premise for a future coalition.

It is possible to listen by putting oneself in the other's shoes, thus entering his reference scheme and trying to see the "world" with the other's eyes so as to understand the information from a rational and emotional point of view (thoughts, experience, emotions, significance) to understand his requests and needs. To listen through empathy means, therefore, to open up to the other person, follow and deeply understand his worries and emotions, assuming the same point of view. This means to live for some time "as if" you were the other, but without forgetting that it is just "as if". If there is no "as if" condition, then it is no more possible to talk of empathy but of identification.

Being empathetic does not mean confusing the two points of view, even because often these two do not agree. This rather means to recognize what belongs to oneself (what I would do, think, decide, feel in the same situation) and being able, at the same time, to suffocate his/her own point of view to "see the world with the eyes of the other person" so as to recognize and accept, without judgments and interpretations, what the other perceives, thinks, feels or decides and does in the same situation. Empathy is supported by distinction not confusion.

In the professional relationship between healthcare workers and public, empathy contributes to maintain the roles separated. In fact, only through this distinction it is possible to recognize one's own sensitivity and face emotional reactions of public, thus avoiding defensive behaviors that are often the reason for conflicts and symmetrical escalations. Just through distinction, it is possible to keep, in a transparent way, the appropriate distance from the public, to take part emotionally but without burning oneself. If one perceives transparency, that is a correlation among emotions showed and those really felt, he opens up himself, otherwise he will not.

Therefore, to communicate in an empathic way means being congruent with what one thinks and feels and what is expressed through oral and non-oral communication. This means to be able not to judge, leaving for some time one's own values and perceptions for embracing the one of the other person "as if" were one's own world. It means avoiding directedness, suggestions, interpretation. But this is not enough, because to listen in an empathic way also means being able to give back this recognition and comprehension.

## 1.3 The empathic listening

Listening can be activated through the development of bidirectional communicative channels able to facilitate information flows and useful exchange so as to understand the patient's informative needs, his/her worries and for supporting the choices that justify the use of either some interventions or the others.

Interpersonal relationship generally represents the most effective way to implement the bidirectional exchange, so as to listen and deepen risk perception level, personal experience, information acquired, poor areas and to create the basis for a relationship of trust and cooperation.

Within the interpersonal context, it is possible to use a specific method called empathic mirroring which, through adequate communicative techniques, can ease the listening, thus favoring the focusing on the point of view of the other and on risk perception (Giampaoli S, 2005). Crucial techniques of empathic mirroring are

as follows: reformulation, clarification, ability in questions, use of first person messages ("I think that", "According to me").

"Reformulation" is a technique consisting in repeating what the other has just said, using the same words or rephrasing in a more concise way using other terms, without adding other concepts to the content. In this way, the operator may obtain a positive result from the other person, who knows of having been listened. One can wait the moment in which the other person has finished a sentence for intervening and resuming what has just been said: "You're telling me that…", "You mean that…", "In other words…", "Therefore, according to you…", "You think that…".

The person recognizing himself in the reformulation is sure of having been listened and understood, and is therefore confident to further express himself and cooperate. He is also facilitated to stay focused on the issue and on how he faces it.

"Clarification" facilitates the self-understanding underlying, through oral communication, the emotions associated to content. This is clear both at oral and non-oral communication. "I can see in your eyes that you're worried"; "From your words I can feel you're uncertain about what I'm saying".

The "survey capability" is the ability in how to make questions, choosing the most adequate type based on interviews stages. "Open ended questions" have to be preferred in the initial stage of the interview; they allow for a wider chance of answer, tend to extend and deepen the relationship, encourage opinions and thoughts exposition (how, what he would like, could, may deepen, what he thinks).

"Closed ended questions" are defined, they force to a sole specific answer, often stress an answer, limit the communication and make it more focused, demand only objectives facts and sometimes may seem restrictive and obstructing (when?, where?, who?). Questions starting with "why" can be perceived by the person as accusingly, and should be avoided.

The use of first-person messages ("I think that", "According to me") make it easy to distinguish between what concerns the expert operator and what concerns the person, thus allowing to avoid conflicts and favoring a non-judging mood and an autonomous decision-making process.

## 1.4 Listening to communicate uncertainty

The empathic listening may favor the "uncertainty communication", key process especially when, such as in an emerging outbreak, a crisis occurs while information are often incomplete and sometimes contrasting.

"Uncertainty communication" corresponds to processes communication and not to the outcomes, that is to the supported description of choices made or that will be made and the explanation underlying some decisions more than others. Declaring and supporting the uncertainty, it is possible to shorten the distance between a risk scientific-probabilistic assessment and a subjective personal assessment determined by the perception of risk, which increases when the emotional level increases.

The communication on uncertainty comes from the need of Institutions to communicate. Therefore, it demands a strategy and planning of communicative process, favored by the integrated participation and collaboration of institutions and systems involved at regional and national level. In fact, due to the fact that communication of uncertainty entails the choice of arguments and hypothesis that may explain, in a transparent way, to citizens, the reason for certain decisions more than others, it is crucial that the choice is

shared among figures and organizations involved in the communication process. Sharing creates the conditions for the formulation of homogeneous, understandable messages, able to make people understanding the reason behind certain choices, the consequences that they could entail, the reasons for which, at the moment, it is preferred to follow certain paths more than others. It is important that people understand and are informed even in an uncertain way, declaring "what is known and what is unknown". The same is true at an individual level.

When people receive detailed explanations on hypothesis and/or paths chosen because considered, at the current level of knowledge, most likely or adequate, they have the chance to assess the situation with a greater serenity and "competence" and to arrange the choices within their life context. At the time of the emergency, they will be more likely to be collaborative, willing to face difficult situations.

Moreover, when people understand and take part in the choices, they feel respected and trust Institutions and professionals that listen and understand worries of individuals and community and are responsible for a comprehensible information. If, on the other hand, they feel "manipulated", mislead, they lose trust and it is more likely that they will respond with denial and panic or ignore the provisions in a situation of maximum emergency.

Sometimes Institutions and experts avoid to explain complex issues and tend to reassure "Don't worry, be calm, everything is under control"; they prefer "not to say", but "it is not possible to communicate" because even the silence is a communication form. An information must always be given, reporting what has been done, what has been doing, what it is intended to do; transparency is basically the best choice.

## 1.5 Dealing with new media

Since many people use to look for information on the Internet, healthcare workers should pay attention to such a reality for two reasons: on the one hand, knowing the kind of information that flows through the net could be useful to forestall some possible criticism. On the other hand, social media and Facebook groups may constitute extremely valuable tools to keep patients up to date with advices and to promptly hinder false or ambiguous knowledge they could have found on the web.

Internet or social media use is not a remit of younger generations. According to some reports up to 476 million Europeans, of all age ranges, use the web. This accounts for approximately 65 per cent of the population, and the number continues to rise (IAB Europe, 2012). Estimates for the time an average European Internet user spends online is 27.6 hours per month, which exceeds the global mean of 24.5 hours. (comScore, 2012).

Kata (2012) highlights the fact that people nowadays are likely to search online for health information, and the anti-vaccination movement has taken advantage of this milieu to disseminate its messages.

"In the past when someone became ill, he or she would immediately go see a doctor. Nowadays people often turn first to the Internet and use the gathered information to formulate their thoughts. According to a health survey, a growing number of patients currently make their own judgements about what treatment and medicine they would like to have prescribed by a doctor. A literature review on health information-seeking behaviour on the web shows that, according to different articles and studies reviewed, interest in the Internet as a communication tool for health-related information is growing rapidly. This review also cites a WHO eHealth cross-country survey of seven countries which showed that 71% of Internet users surveyed had used the Internet for health purposes. The Internet, forums and social networking tools have allowed anti-

vaccination advocacy groups to have a broader reach than ever before. While years ago, vaccine-related rumours would have been restricted to certain countries, online tools allow these to spread more quickly and to different countries, as experts highlight" (ECDC, 2012).

As defined by Betsch (2010), Web 2.0 or social media is "Internet applications that enable users to create and upload new content, comment on existing content and share content with other users, eg. discussion boards, web blogs and social media websites such as Facebook, Twitter, Wikipedia, LinkedIn and YouTube. That is, while 'Web 1.0' Internet websites typically allowed for one-way communication from the creator of the site to the user (eg static health portals), Web 2.0 enables two-way and multi-way communication."

Broadly speaking, social media is then a multi-way information sharing and communications tool, where users can converse and interact with each other irrespective of differences in geographical location or social background. The difference between social media (or Web 2.0 as it is sometimes known) and previous Internet platforms is that it is characterised by user-generated content. Within social media, users are more than just consumers of information, as the design of such platforms encourages them to share and contribute information to the network. McNab suggests that: "Until recently the predominant communication model was "one" authority to "many" – i.e. a health institution, the ministry of health or a journalist communicating to the public. Social media has changed the monologue to a dialogue, where anyone with ICT access can be a content creator and communicator." (McNab, 2009)

In recent years, there has been a shift towards social media being used not just as a platform to connect with friends and family but as the first place where users find out about breaking news stories. (Ofcom, 2011)

51 per cent of 18-24 year olds with a social networking profile agreed with the statement that they often find out about breaking news stories via social networking sites. 43 per cent of UK women agreed with this statement, whilst 27 per cent of men agreed. (Ofcom, 2011) Despite the overriding popularity of profile-based social networks such as Facebook, 'microblogging' sites such as Twitter (reaches one in ten Internet users worldwide) and Sina Weibo (337m users in China) uniquely encourage users to interact without being limited to interpersonal relations among friends. This form of concise, informal, rapid and open communication has led to microblogging sites to become fora where members discuss major world events and issues in real time. (comScore, 2011) According to a study by the Oxford Internet Institute, the average U.K. user now considers the Internet as their most important source for information. (2011) Notably, the study also found that *confidence* in the reliability of information found on the Internet has also increased, as users tend to trust the Internet as much as other forms of media. (2011) This may be explained by users' growing confidence in their ability to sift through and validate information on the Internet. Information from other media sources cannot be validated so immediately—for comparison, a second newspaper must be bought, or a different radio or TV programme must be waited for, yet with social media news or opinion can be cross referenced rapidly by drawing upon information posted by fellow users.

## 1.5.1. Benefit of Social Media

In contrast to traditional Web sites, which only allow communication of information to the public, social media allow not only the ability to provide information to the public, but also for the public to share information with the source. Users can create and disseminate information themselves, thus becoming more involved. An example of this interaction is demonstrated by a statement shared by the Centers for Disease Control and Prevention (CDC) on their Facebook page regarding vaccination on July 5, 2012: *"When was your*

*last tetanus shot? Tetanus vaccines can prevent this disease in children, teens and adults. Without the vaccine, you can get tetanus ("lockjaw") just by getting cuts, especially puncture wounds, that become infected with the bacteria."* This statement received 100 "likes" and elicited both supportive statements such as "Mine was only a couple years ago, but it's good to know what it helps prevent. I've had this done twice already" as well as dissenting statements with links to other information. Social media also allows individuals to provide public support for organizations, individuals, and causes by "liking" on Facebook or "following" on Twitter.

It also enables the sharing of information with a large audience. A link shared by an organization, individual, or cause, can be "shared" or "retweeted" to an individual's friends or followers, which can, in turn, lead to even greater shares or retweets. In this day and age, "going viral" is one of the fastest ways to facilitate the spread of information.

One major advantage of social media is that it can share "real-time" information regarding a public health crisis or other emergency scenario. For example, not only could a user receive information from an organization (eg, CDC), a public figure, but also their friends and associates. Because the individual self-selects the source of their own information, they are able to determine the sources that they most trust (CDC vs. NVIC), or alternatively like or know (eg, friend or celebrity). Such sources are likely to shape beliefs, attitudes, and behaviors. While this is great for sharing information, it can also be challenging, since people will be getting their information from the same types of places, which may not be reputable. They may also receive conflicting information, which can lead to mistrust and confusion. From this point of view, the "health blogger" or the "concerned mother" are sometimes as important as a GP in spreading good or bad information. Furthermore, individuals can easily receive information from "friends" or "followers." Simply sharing or tweeting "Should I vaccinate my child?" could provide an array of responses – both positive and negative – which could potentially influence an individual's decision making process.

## 1.5.2. Challenges of social media

It is relatively easy for messages to get distorted or used out of context. For example, for each "retweet" or "share," the original message can potentially be modified or added to by the user. While the initial source of information (eg, website) will remain the same, the commentary/interpretation on such initial source of information can be altered drastically. Because of this, misinformation can rapidly spread amongst social media sources, leading to such sources as Snopes (www.snopes.com), a well-known resource for validating and debunking "social media legends." Frighteningly, social media users can "share" or "retweet" misinformation just as quickly and easily as accurate information. Two-way communication, while listed as a strength of social media, can also be used negatively to further perpetuate misinformation.

While social media avenues are great for getting information out quickly, they are not always well-suited to sharing complex or substantial amounts of information. Most social media outlets only allow limited lengths of communication. For example, "tweets" are limited to less than 140 characters, which often precludes sufficient evidence or explanation being provided.

While we are still trying to tackle with web 2.0, the experts say that web 3.0 is coming: more powerful software and machines are supposed to make the leap to a new "semantic" web, able to gice a meaning to the information gathered online, making the Internet less of a catalog and more of a guide — and even provide the foundation for systems that can reason in a human fashion (Markoff J, 2006).

## 2. Preventive measures

### 2.1. Non pharmacological measures

Most healthcare-associated infections are preventable through a number of personal measures that people may take to reduce their risk of being infected (Cowling et al., 2008; Jefferson et al., 2008). Amongst the most basic of these measures, there is a good hand hygiene, which means cleaning hands at the right times and in the right way. This should be do frequently, not too quickly – at least 20 seconds each time – and thoroughly with soap and water, especially after coughing or sneezing.

Another important practice is the so-called "social distancing", which means to avoid close contact with sick people. This can be done maintaining a distance of at least one metre from someone with symptoms of a disease and avoiding unnecessarily visit to people who are sick. When distance cannot be maintained, for instance in crowded situations, it is recommended to reduce the time of close contact with people who might be ill and the time in these situations to the extent possible.

Another simple rule to be followed is to avoid touching eyes, nose and mouth after a contact with surface that could be contaminated, while there is no evidence that wearing facemasks outside of healthcare settings during a pandemic offers effective protection or reduces transmission. This is why ECDC does not recommend their routine use.

Healthcare workers must remind the importance of these measures within a family or a group where one person has been infected. This means that patients should be encouraged to prevent other people from being exposed to their own potentially infectious nasal and oral discharge. They should cover their mouth and nose using tissues when coughing or sneezing; or cough or sneeze into an arm rather than their hands. In addition, tissues should be thrown in the bin after use. Since the importance of such a simple gesture may be sometimes underestimated, doctors should always stress its crucial role for prevention of infectious diseases. This is particularly true in healthcare facilities, since these places are the most exposed to pathogens.

### 2.2. Vaccination

### 2.2.1 Vaccination against flu

Vaccination is the most effective form of prevention from influenza, even if it cannot give a 100% protection from the disease. "Cross-immunity following infection by one strain or vaccination with a specific type or subtype often does not protect completely against subsequent variants of the same type or subtype. The extent to which influenza A(H3N2), A(H1N1), and B viruses circulate may vary by season. In addition, as the antigenic properties of these viruses might change due to continuous evolution of these viruses under immune pressure (antigenic drift), the virus strains of A(H3N2), A(H1N1) and B included in the vaccine have to be reviewed by the WHO annually and possibly changed. Also new vaccines may have to be made when variants of the virus emerge through a major change called an antigenic shift.

Most of the acquired protection against influenza comes from antibodies in the blood. Some additional protection comes from cell-based immunity and IgA antibodies produced on mucous membranes, like those of the respiratory tract. After the first (primary) infection, or vaccination, virus-neutralising antibodies to the haemagglutinin and neuraminidase appear in the blood in about one to two weeks and rise to a peak in about four weeks. Antibodies inhibit haemagglutination, agglutination of red blood cells due to multiple red blood cells bound by one virus, and so this is referred as haemagglutination inhibition (HAI). HAI correlates fairly well with virus neutralisation. Hence often the levels of these specific antibodies are used as a proxy for the presumed level of protection, with higher titres of more than 1:40 or 1:80 (in the older person) taken to indicate immunity.

After a second or further infection, or repeat vaccination, the antibodies appear and rise more quickly. The antibodies usually persist for months or years, although in people with weaker immune systems, like the elderly and those with chronic illness, they decline more quickly and vaccination is less effective. Another problem with influenza vaccination is that antibodies to one type or subtype of influenza do not necessarily give protection to other influenza virus types or subtypes (so called cross protection). Equally, they do not give full protection against subsequent drift variants of the same type or subtype. That is why seasonal influenza vaccines contain a mix of influenza virus types and subtypes and the composition has to be reviewed each year by the WHO" (ECDC official website, Factsheet for health professional).

### 2.2.1.1. Influenza vaccines

In Europe, three main types of vaccines are currently available. They are all inactivated, with some of them adjuvanted:

- split virus vaccines consisting of disrupted virus particles

- subunit vaccines consisting only of the two main antigens, haemagglutinin and neuraminidase

- whole inactivated virus vaccines

In 2011, a live attenuated influenza vaccine that has been used in USA since 2002 was approved in Europe too for children (2-17 years of age).

### 2.2.1.2. Vaccination strategies

In Europe, vaccination is usually recommended to reduce the risk of people at greater risk of complications from becoming infected (selective vaccination), more than to stop the spread of the disease, as in other countries is done, targeting schoolchildren. VENICE surveys of the EU/EEA countries sponsored by ECDC found that all reporting countries were recommending annual vaccination to the two largest groups which are highlighted by the European Union Health Council (Council of the EU 2009) and WHO (WHO 2002):

1. older people above a nationally defined age (usually 65 years and older);

2. all people over six months of age with chronic medical conditions: notably chronic heart or lung diseases, metabolic or renal disease, or immunodeficiencies.

Many countries emphasise the importance of annual vaccination of people in residential care for the elderly and disabled and there is excellent evidence that supports immunising those that care for them. Few EU countries recommend vaccination of children or offering vaccines to pregnant women, in this following a different strategy from policy in the United States (CDC 2010).

"In addition to the risk groups there are also other groups for who immunisation is often recommended – these are referred to as target groups. The most important of these are healthcare staff who are expected to prevent their infecting their patients with influenza-by-influenza vaccination as well as the other non-pharmaceutical measures. The vaccination will also protect the staff but its prime purpose is to prevent iatrogenic spread. Hence, all countries in Europe recommend that all healthcare staff should be immunized against influenza. This is especially important for patients at higher risk of infection and disease, where immunization is less likely to be effective. There is strong evidence that this protection works" (ECDC official website, Factsheet for health professional).

Influenza vaccines are licensed not only for those in the risk group. They can protect also well children, adolescents and younger adults. Almost all can choose to get vaccinated or to vaccinate their children so to protect weaker relatives, reduce the impact of the disease on daily life and limit its socio-economic consequences.

## 2.2.1.3. Vaccine efficacy and effectiveness

"Estimates of vaccine efficacy and effectiveness – or the extent to which vaccines protect in optimal circumstances (efficacy) and in practice (effectiveness) – vary according to the match between vaccine and the circulating viral strain and by age group and clinical category. Generally, the vaccines work less well in the elderly and those with chronic ill health. In trials, inactivated influenza vaccines have consistently been shown to prevent laboratory-confirmed illness in between 70% and 90% of healthy adults. The results are somewhat less in field effectiveness studies. The reduction in hospitalisations and deaths is less dramatic but still significant. Trial data cannot help here as hospitalisations, pneumonia and deaths are too uncommon to be revealed by trial data that also usually exclude those most at risk. Instead, observational data have to be used. These data are more subject to bias. However, modern epidemiological studies can compensate for these biases and when this is done, positive effects are consistently observed, although there are minority opinions that disagree" (ECDC official website, Factsheet for health professional).

## 2.2.1.4. Contraindications to vaccination

 "As most viruses used for influenza vaccines are grown in eggs, egg-based vaccines should not be used for individuals with a definite history of serious allergic reactions to egg products" (ECDC official website, Factsheet for health professional). Live virus vaccines, not used in Europe, are contraindicated for pregnant women and immunocompromised patients.

### 2.2.1.5. Giving vaccines

"Most inactivated influenza vaccines are injected into the muscle in the outer upper arm. A single injection annually is sufficient except for previously unvaccinated preschool children with medical conditions for whom WHO recommends two doses at least one month apart" (ECDC official website, Factsheet for health professional).

### 2.2.1.6. Reactions to vaccines

"The three groups of inactivated influenza vaccine show minor differences in the mild reactions that sometimes follow vaccination. In trials, when whole virus vaccines are used, between one in five and one in six of those vaccinated experience local reactions in the arm, lasting for one or two days. Short-term reactions such as mild fever, malaise and muscle pains are reported in a much smaller proportion in the first few hours following vaccination. In contrast, trials of the split and subunit vaccines show even fewer reduced systemic reactions. There have been no strong temporal associations of the current vaccines with more severe reactions. Anaphylaxis is very rare but does occur as with all vaccines. More severe adverse events have been reported but they are extremely rare. One that has been reported historically with a particular vaccine in the 1970s is Guillain-Barré syndrome. With the modern influenza vaccines the seeming causative risk is either found to be very rare (0.8 per million doses) or there is no link found at all and more association is found with influenza infection than vaccination (Centers for Disease Prevention and Control 2010)" (ECDC official website, Factsheet for health professional).

### 2.2.1.7. Controversies about vaccines

Vaccines represent one of the best tools against infectious diseases but, at the same time, they are also one of the most controversial. The role played by healthcare professionals in supporting vaccine uptake is crucial for many reasons and is recognized by a huge literature. Recommendation from a healthcare professional is one of the strongest influence on vaccine acceptance.

In terms of communication, a healthcare professional that promotes vaccine uptake but does not undergo vaccination send a contradictory message to patients, which may lead to concerns and distrust towards vaccination. In fact, one of the main general strategies to increase the uptake of a vaccine in a population consists in health professionals becoming more actively involved in this issue of vaccination acceptance. They should not only to pass along the message, but also "to be" such message. But this does not substitute correct information and empowerment of the patient.

Before going into details, a distinction between mandatory and compulsory vaccination must be made. Compulsory vaccination allows the enforcement of a legal requirement to vaccinate; it has been often used in the past, especially with smallpox, and it was also one of the main reasons behind the rise of the first anti-vaccine movement.

A vaccination is mandatory when an individual can refuse it but such a choice entails a penalty, usually the denial of a social activity such as attending school or working in a hospital. Vaccine

mandates have tended to elicit strong negative reactions from subsets of the population, and, over time, the concerns of these groups have led to the allowance of medical, religious and philosophical exemptions to vaccine mandates, eroding their effectiveness. However, mandatory vaccination programme also allowed to improve vaccine uptake in many instances, conferring significant benefit to the public, or population good.

An important issue is the dilemma of mandating influenza vaccination for healthcare workers, which starts to be adopted somewhere, if one wants to keep on working on a premise. On the one hand, the ethical physician imperatives of non-maleficence (do no harm) and beneficence (act in the patient's best interest) certainly support mandated vaccination for healthcare workers; being vaccinated allows them avoiding the spread of a disease amongst patients and being ready to intervene in case of emergencies. On the other hand, the ethical principles of respect for an individual's rights and autonomy constitute a compelling counter-argument.

While philosophically and politically based vaccine opposition can be difficult to change, vaccine resistance based on personal and societal health decisions and risk analysis is believed to be less rigid and more open to influence. Within this second group of vaccine-resistant citizens, trusted health professionals can improve vaccine acceptance:

- through personal example;

- by unequivocal vaccination recommendations based on scientific evidence;

- by accurate and clearly explained information with a preparedness to counter common misconceptions and cognitive errors;

- using effective timing strategies to take advantage of heightened vaccine acceptance in various settings and emotional states.

An American study identified three main groups with regard to vaccine uptake (Nowak, 2005):

1) individuals who routinely receive the influenza vaccine – this group is more accepting of vaccines and includes a majority of over 65 elderly;

2) individuals who sometimes receive an annual immunization – these individuals, who comprise the largest population segment, make an active decision based on various inputs such as perceived risk of disease versus risk of exposure and perceived severity of disease;

3) those who do not get and do not intend to get the influenza vaccine – this group tends to feel that the vaccine is ineffective, unwarranted, or even dangerous.

This classification may be helpful for health professionals, since it would help to better target their communication based on the "kind" of patient they are facing. Since they are directed to healthy people, vaccines must be, and are tested to be, even safer than any other drug. Anyway, like for any other drug, the possibility of side effects cannot be completely excluded, but it is always estimated to be very lower than the disease they are intended to prevent. Unfortunately, on the media

occasional side effects are always emphasized, while benefits of vaccination tend to be undervalued, so it is sometimes hard to discriminate between serious results and misinformation, particularly for citizens, who thus need the help of professionals to filter all the information they receive.

A good example is represented by the concerns raised by 2009 pandemic influenza vaccines, feared to provoke Guillain-Barré syndrome (GBS), an acute polyneuropathy affecting the peripheral nervous system. The association between influenza vaccines – precisely a swine flu based human influenza vaccine – and GBS traced back to an outbreak in 1976 in USA when mass vaccination was performed and several cases of this kind of transient paralysis were recorded. Following the 2009 influenza pandemic vaccination campaigns, no evidence has been found of an association between GBS and flu vaccines (Dieleman et al., 2011).

On the other hand, in September 2010, Sweden and Finland noted that a number of children had developed narcolepsy, seemingly in association with having received the AS03-adjuvanted influenza pandemic vaccine used in those countries (Pandemrix). An increased risk of narcolepsy in children and adolescents after vaccination with Pandemrix was demonstrated by monitoring systems (VAESCO and ECDC, 2012; Miller et al., 2013). Monitoring systems and transparency about their results are of paramount importance to rebuild the trust in health authorities somehow hindered by 2009-2010 pandemic.

## 2.2.2. Anti-vaccination movement

Skepticism and myths regarding vaccines are quite widespread and constitute a serious issue for public health. For instance, the controversy about the combined measles, mumps and rubella (MMR) vaccine – which was reported by a fraudulent research paper (Wakefield et al., 1998) to provoke autism in children – led to a drop in vaccination compliance in UK, which in turns caused a rise of mumps and measles cases. In 2008, for the first time in 14 years, measles was declared endemic in the UK (Asaria and MacMahon, 2006). It is thus crucial, for GPs, to know motivations and dynamics of these movements, and the reasons that may push people to distrust vaccines or even consider them dangerous.

### 2.2.2.1. Origins and history

Opposition to vaccination exists since the first vaccines were tested, in the mid-1700s. The first kind of objection to vaccination was based on religious belief; for instance, some people believed that, since diseases were sent by God, protection from them meant to challenge the divine will. When, at the beginning of the XIX century, vaccination became widespread in the United Kingdom through the work of Edward Jenner, political arguments were raised in addition to religious ones. In fact, the introduction of Vaccination Acts, which made vaccination mandatory even for infants, was considered a limitation to the right to autonomy and personal freedom.

Meanwhile, the American President Thomas Jefferson became interested in vaccines and promoted their use and distribution throughout the States of the Union. The resistance to vaccination in the US grew and, in 1879, William Tebb, a British anti-vaccine activist, founded the Anti-Vaccination Society of America, followed

by the New England Anti-Compulsory Vaccination League in 1882 and by the Anti-Vaccination League of New York City in 1885. Such an opposition spread, obtaining the attention of both wealthy and political supporters.

During the course of the last century, poorly explained public health campaigns – like the one carried out in Brazil at the beginning of 1900, which led to the Vaccine Revolt – and some incidents – like the one occurred in 1955, when more than 100,000 doses of polio vaccine were prepared with a live polio virus instead of the inactive one – fuelled the anti-vaccination movements across the world.

More recently, new and stronger forms of opposition emerged. Some have political basis, like the theory of the "Western plot", which circulated in China during the SARS outbreak in 2003, and led to growing suspicion and mistrust for vaccines in many other South-East Asian countries. Or the campaign against Western health professional vaccinating in countries like Afghanistan.

Some other are of cultural origin. Nowadays, the increasing "medicalization" of Western societies and the spread of pseudoscientific claims allowed those who refused vaccination to find more reasons to resist vaccination, aside from religious, moral or philosophical objections. Some believe that vaccine-preventable diseases do not constitute a serious health risk, that diseases like polio were defeated only by sanitation whilst others fear that vaccines are only promoted for profit of Big Pharma companies.

## 2.2.2.2. Strategies

More than 200 years of history allowed the anti-vaccination movements to develop effective strategies, and to generate and diffuse rumours, conspiracy theories and myths concerning the related vaccine, which proved to be stubbornly resistant in time. Mainstream media, as well as the Internet, played a central role in the diffusion of these myths, especially since people have started becoming more skeptical and actively engaged in search of what they think are reliable sources of information to support their decision for choosing to vaccinate or not. There are four main rhetoric strategies used by anti-vaccination, which healthcare professionals should be aware of (Kata, 2012):

- skewing the science, which consist in the denigration and rejection of scientific studies that do not support anti-vaccine positions, usually claiming that they have been paid by pharmaceutical industries, and in the endorsement of poorly-conducted studies that promote anti-vaccine agendas;

- shifting hypotheses, based on the continual proposition of new theories about the harm caused by vaccines and on moving targets when evidence fails to support such ideas;

- censoring, i.e. suppressing critics and dissenting opinions;

- attacking the opposition, both with personal insults and filing legal actions.

## 2.2.2.3. Countering false arguments

Strategies used by anti-vaccination activists may also be applied by people who got in contact with activists' messages and have been influenced by them. All these approaches are usually based on a strong polarization of the issue ("right versus wrong") and it is thus very important to not being perceived as an "enemy", meaning someone that could be paid by pharmaceutical companies or trust their claims. GPs need to be

perceived as trustworthy, in order to break this kind of opposition. Personal relationships, credibility, high level of trust are key elements to face anti-vaccination claims.

Trust is not something that can be built at the moment but needs to be pursued way before the appearance of a medical issue. For instance, resistance to vaccination is not a problem to be faced only at the beginning of the flu season, but need to be addressed in advance, by building empathetic relationships, knowing people's experiences, values and beliefs, and sharing their preoccupations.

Health care providers should work with vaccine resistant caregivers, avoiding strategies that will alienate them. It is better to aim for incremental success if full vaccination cannot be persuaded and it is also recommended to acknowledge concerns and be prepared to address them using accurate information. Most of all, vaccine resistant patients must not be abandoned; it is important to continue to provide care, and take advantage of every opportunity to further educate about the benefits of vaccination. It is also useful to utilize the same communication outlets as vaccine opponents and try to avoid the use of difficult-to-interpret statistics such as relative risks and probabilities that involve very large or small numbers. Monitoring common Internet search engine results for key terms is a good practice to remain updated on the kind of information circulating on the web.

## 2.3. Prophylaxis with antiviral drugs in flu

As a general rule, WHO does not recommend the use of antiviral drugs for prophylactic purposes in flu. For people who have had exposure to an infected person and are at a higher risk of developing severe or complicated illness, an alternative option is close monitoring for symptoms, followed by prompt early antiviral treatment should symptoms develop.

According to the last Cochrane review, in fact (Jefferson et al, 2014), oseltamivir and zanamivir reduced the risk of symptomatic influenza but oseltamivir increased the risk of psychiatric adverse events in the combined on- and off-treatment periods and of headaches, nausea, vomiting and renal events during the treatment. The balance between benefits and harms should accordingly be considered when prescribing these drugs after a household member or other close contact has developed influenza, and it is rarely advantageous for healthy people.

Candidates for prophylaxis with antiviral drugs are rather family or other close contacts of a person with a suspected or confirmed case who are at higher risk for influenza serious complications but have not been vaccinated against the influenza virus strains circulating at the time of exposure (Harper et al., 2009; CDC, 2009).

Healthcare professionals should always keep in mind that cases of resistance to antiviral drugs have been reported (Inoue et al., 2009), and that persons who receive an antiviral medication for chemoprophylaxis might still get infected and be potentially able to transmit influenza virus, even if clinical illness is prevented (Lee et al., 2009; Khazeni et al., 2009).

## 3. Urban myths about preventive measures

Apocryphal and second-hand stories that emerge spontaneously in the community and can rarely be traced to a single point of origin, may give rise to what are called urban myths (or contemporary legends). These manifestations of modern folklore, or folk narratives, exist in various other forms such as rumours, riddles, gossip, children's rhymes and life-cycle rituals, and may concern any aspect of life.

In the context of epidemiology and medicine, there are several modern myths that can evoke feelings of uncertainty, anxiety, panic and fear among the general public, occasionally giving rise to conspiracy theories. GPs must be aware not only of the existence of such myths, but also of the rhetoric and narrative ways by which they break forth, in order to counter their negative effects on the citizens.

### 3.1. General features of urban myths

Urban legends are often attributed to a friend of a friend or presented claiming some kind of "insider knowledge" that people are inclined to accept as true. However, one of their main characteristic, especially with reference to infectious diseases and vaccination, is the absence of verification (or scientific support). They usually emerge spontaneously, most commonly transmitted by word of mouth (verbal) and chain letters or emails (written), the print media, new social media and other online sources, as well as more indirectly through visual arts, such as theatre, films, photography and painting. Also, they tend to be disseminated very quickly, especially through the Internet, whose great penetration allows them to reach a wide audience on a global scale.

Urban legends can be perceived as the product of a shared feeling, a set of emotions or stereotypes. It is widely accepted that, during times of crisis, people are prompted to search for meanings or points of reference to connect with past experiences. This is fertile ground for urban myths and legends to be born and spread among the members of a community. It is important to note that the content of such narratives carries substantial significance for the people, and this is what motivates communities to preserve and propagate these stories.

In general, urban myths and legends usually refer to:

- concerns or worries of people that need to be communicated and shared with the community for protection;

- the need to give meaning and explain some dramatic event in order to be better prepared against potential new threats;

- the need to provide an insightful social commentary on the cultural or economic context of society;

- the support to the social mechanism of building trust towards the other, by sharing everyday stories.

### 3.2. Myths about vaccines and preventive measures
- A disease can be transmitted from the vaccine.

- The vaccines are dangerous / more dangerous than the virus.

- Squalene, ingredient of the flu vaccine used as a booster, caused the Gulf War Syndrome.

- A mercury metabolite of thimerosal, ingredient of the flu vaccine used as a preservative, is a poisonous substance responsible for autism and other developmental disorders.

- Flu vaccines cause the Guillain-Barré Syndrome.

- Vaccines actually weaken the immune system, making people less able to withstand viruses on their own.

- The main pharmaceutical companies (generally referred to as "Big Pharma") promote vaccines only to increase their own profit.

- The governments secretly use vaccines for several infamous purposes, such as tracking citizens, experimental warfare and even mind-control techniques.

- If someone is vaccinated against seasonal flu each year, there is no need then to be vaccinated for other kind of flu, like the swine one.

## 3.3. Examples of myths about alternatives to vaccines

- To protect themselves from flu it is enough that someone just eats organic food, takes vitamins, washes hands and drinks plenty of liquids.

- Facemasks alone can protect from the pandemics.

- Bringing a child in contact with patients affected by the flu is the better option for building a natural immunity to the virus.

- There is no treatment for the flu.

- Antibiotics can effectively fight the flu.

## 4. Compliance with vaccination

Compliance with vaccination depends on many positive or negative factors: desire for self-protection, desire to avoid infecting patients, desire to avoid infecting family members, perceived safety of the vaccine, perceived efficacy of the vaccine, perceived seriousness of the disease, perceived risk of the disease, perceived seriousness of complications from the disease, access to the vaccine, cost of the vaccine, fear that the vaccine could cause disease.

Different persons may be influenced by these factors in different ways; it is thus important to stress that "public" is not a single entity. Different people require different kinds of communication, based on their individual concerns and beliefs, as well as health, familiar and/or socio-cultural conditions. These sub-groups of population display differences in terms of compliance to vaccination that may be extremely variable. The next chapter will focus on each of these categories, highlighting factors that most influence their compliance

(or refusal) of vaccination. Such knowledge should be used by healthcare professionals to properly target their communication, "tailoring" it based on the person they are facing each time.

## 4.1. Opinion leaders

Opinion leaders do not constitute a real sub-group and may be found in any of them. However, they are a relevant component of risk communication (Katz and Lazarsfield, 1955). They are trustworthy members of a given social network and this can be true for a community but also for a family, where one person could be more in charge of medical decision, including vaccination, or has the ability to engage and convince other members of the group. Also, they serve as an alternative source of information (other than the media) and as a source of interpretation for people seeking clarification. It is thus crucial to identify opinion leaders within groups or families, in order to mediate preventive messages through them. Each GP who knows his own community could identify the most prominent opinion leaders in it, going from families to social, political and religious leaders.

## 4.2. Elderlies

The main factors affecting compliance rates with influenza vaccines among the elderly in both Europe and the U.S. is the number of visits the person pays to a physician during the year. One reason for the major effect of this factor on compliance is the advice given to the elderly by their physicians. Clearly, this information is of great importance for healthcare workers, since it highlights the relevance of their role and how much they are trusted by this sub-group. It is thus crucial, for them, to maintain such trust, always keeping in mind that major reasons for non-compliance with influenza vaccination among the elderly include disbelief of this group in the efficiency and safety of the vaccine and fear of side-effect or influenza resulting from the vaccine.

## 4.3. Chronically ill

Compliance rates of the chronically ill with influenza vaccine in the U.S. are greater than those of healthy people and have been increasing over the years. In contrast, compliance rates among the chronically ill in Europe are relatively low. It is also important to note that there is a wide difference in the compliance rates of groups of people with different chronic diseases and in each group there are differences in the compliance rates in different age groups.

For this category, as it happens with the elderlies, the main factors affecting compliance are the number of physician visits and the acceptance of their advice as positive factors, and the fear of side effects and disbelief in the vaccine effectiveness as negative factors.

## 4.4. Pregnant women

By most experts, pregnant women are considered at increased risk for complications of flu. However, few pregnant women are actually vaccinated in Europe, mainly because of a lack of knowledge of the importance of the vaccine, and especially because of concerns for effects of the vaccine on foetal and maternal health,

despite several studies showing the opposite (for instance, Legge et al., 2014). Again, as for previous categories, another factor found to influence vaccine uptake by pregnant women is their healthcare provider recommendation.

## 4.5. Children

Young children are often the targets of vaccination campaigns because preventing diffusion of a virus in this age group is one of the best ways to contain the spread of a disease.

Studies carried out in the US by the CDC revealed that the compliance of chronically ill children with the vaccine is greater than that of healthy children and that the percentage of children getting one dose of the vaccine is greater than the percentage of fully vaccinated children. In Europe, things are different. The rates of children's influenza vaccination should always be related to their parents' health behaviour.

Amongst the factors that were found to have a positive effect on vaccination rates of children there are the child's influenza vaccination in the previous year, the child's uninterrupted health insurance coverage, and even the mother's unmarried status. On the contrary, factors that were found to have a negative effect on vaccination rates of children include using a family doctor rather than a paediatrician for well-child visits, parents belief that the vaccine was unneeded or that their child was getting too many shots, and parents having a hard time obtaining the vaccine (CDC, 2004a, 2004b, 2011). There is also evidence that a proportion of parents of under-vaccinated children (children who have some but not all of the recommended vaccines) are not resistant to vaccination; rather, they often have issues with vaccine accessibility related to economic, social, and in some regions, geographical barriers.

## 4.6. Healthcare workers

Among the target groups, those of GPs is the one with more positive factors associated with compliance for vaccination: self-protection, the desire to avoid infecting patients, the desire to protect family members, the perceived efficacy and safety of the vaccine, as well as the perceived seriousness and risk of diseases, including the complications they may lead to. Access to vaccine and their cost are also included within the positive factors.

However, the fear of side effects of that vaccine could cause disease can be found even amongst healthcare workers, together with a feeling of invulnerability, and being too young and in good health to risk. All these factors have a negative effect on compliance towards vaccines.

Taken together, these observations reveal that health professionals, when compared to the other sub-groups, tend to have more altruistic reasons for being vaccinated but also tend to underestimate the importance of getting a vaccine, especially when young and healthy. Such behaviour should be avoided, since it could represent a bad example for their patients and, being them more likely to be exposed to pathogens, might also facilitate the spread of an infectious disease.

## 4.7. Socio-cultural differences

Obstacles for the acceptance of vaccines may also be caused by socio-cultural differences. For instance, highly qualified people had lower trust in vaccines (as reported mainly in Hungary). In the UK, African and Asians patients were found to be difficult groups to persuade, whilst Romanian and Hungarian general practitioners thought the same in the case of the Roma minority, even if Hungarian ones perceived two extremities regarding Roma minority: low trust in administration and in doctors, but a tendency towards getting scared easily and thus coming to doctor for help.

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