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Ebola: is it real? The role of communication, information, regulation and training in managing emergencies

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Keywords

Ebola, crisis management, risk perception, risk communication, information, regulations, education, training.

Parole chiave

Ebola, gestione della crisi, percezione del rischio, comunicazione del rischio, informazione, regolamenti, formazione, addestramento.

1. Risk communication: role and tools

It is known how information and risk communication have a central role in the crisis management cycle: as reported by the WHO "When the public is at risk of a real or potential health threat, treatment options may be limited, direct interventions may take time to organize and resources may be few. Communicating advices and guidance, therefore, often stands as the most important public health tool in managing a risk" [4]. An effective risk communication thus will suggest protective behaviours, arise awareness about the disease and reduce possible misunderstanding limiting the spread of the pandemic and saving lives.

However, it is necessary, both in order to analyse or plan a risk communication campaign, to refer to what really stands at the base of an effective effort, which is not intended as "public relation" but as a scientific method and practices adopted to mitigate the risk in question: that is risk perception

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[5]. In this regard, it is interesting to take into account two distinct situations: some good example of on-site risk communication efforts and the international approaches to the issue with a special focus on the Italian one.

Although Guinea, Liberia and Sierra Leone have been since the beginning of the outbreak the most affected States, the whole West Africa region was facing its first major Ebola emergency. That was the main reason for a misperception of the gravity of the phenomenon as people from the communities of those regions did not have similar examples available for a comparison with the on-going pandemics making a personal risk assessment more difficult [6]. As a matter of fact, one of the higher concerns of those who tried since the beginning to mitigate the risk was that people did not think that Ebola was real, that it kills between 60 to 90% of affected people. Moreover a deep ignorance on the causes of the disease and of useful preventive measures constitute the best driver for the pandemic to spread: under the hashtag #EradicateEbola, one of the several ones opened to inform about the virus such as well as #Ebola and #EbolaFacts, there is an interesting tweet at this regard: @(account)_ "If ebola can be spread directly by bodily fluids, does it mean it can be spread through exchange of currency notes?"[7].

Thus, since the outbreak was declared, conventional and unconventional communication campaigns was set up. Door-to-door activities as well as posters was used to disseminate a surveillance and security culture: the Nigeria Centre for Disease Control and Prevention for example provided a set of posters, in different languages (English, Hausa, Igobo, Pidgin and Yoruba) explicating signs and symptoms of the disease and simple preventive measures such as avoiding eating improperly cooked bush meat, wash hands and avoid contact with infected persons or animals and blood, urine and faeces of animals like bats and monkeys [8].The role of Social Media (SM) during crises is confirmed. As already proved by other major events, people are always more used to turn to them in order to get first-hand, unfiltered and immediate information about what they are looking for. The diffusion of SM such as Facebook and Twitter in Africa has increased recently and according to an analysis of the geographically pinpointed tweets exchanged during the last three months of 2011 Nigeria is the third country after South Africa and Kenya with 1.646.212 tweets [9]. On the other hand, Facebook in January 2012 could count on more than 5 million users in Nigeria and around 79.000 both in Sierra Leone and in Guinea [10]. Both Twitter and Facebook were used to share and disseminate one of the most interesting tools to mitigate Ebola risk: music.

In Liberia, two local groups in collaboration with UNICEF composed pop songs on how to prevent the spread of the virus. The lyrics not only give advices on correct behaviours as in the posters, but also strongly stress the central idea around which every prevention efforts are built: Ebola is

real. In fact, both the refrains use this sentence and in particular, the song produced by Crusaders for Peace says: "Ebola is real, let's protect ourselves and our family. Ebola can kill, it has no cure but it can be prevented. Let's fight it together. Let's protect ourselves, our family and our Nation". This has certainly been an unconventional way of disseminating awareness and useful information but it is in line with the idea of using all the available cultural tools. Music has both a cultural and popular appeal in the affected regions, it is able to "speak" to a larger number of targeted people and its loose links with the promoting Institutions and organizations decrease the dependency between the achievement of the efforts' goals and the level of trust in those who are managing the emergency.

And trust is the perfect issue to link the on-site situation with the international one. It has been said that public trust in policy-makers and emergency institutions is fragile and easy to destroy [11, 12, 13]. Due to failures in managing critical situations, both in terms of disseminating relevant information and taking the right measures to mitigate risks as well as the perception of the "arrogance of expertise" [14], distrust has become a crucial issue for regulatory and emergency bodies. This phenomenon can be traced in the high number of "nasty emails" that the U.S. Center for Disease Control and Prevention (CDCP) received after the decision to bring back to the United State Kent Brantly and Nancy Writebol, both infected by the virus, for special treatments. Dr. Tom Frieden, CDCP director, related people reluctance to repatriate sick aid workers to a sort of "fear of the unfamiliar", which in other words can be that people are not sure that Institutions are able to manage that situation properly.

So the question was: do we have to worry about Ebola? Who can we trust? The World Health Organization said that Ebola was spreading more rapidly than the organization's capabilities of managing it [15] and Medecins Sans Frontieres, through is president Joanne Liu, said that the emergency was being managed in a "disastrous" way because the WHO woke up too late for an already tardive alert [16]. Meanwhile America decided to test all the heads of state convened for the African countries summit held in Washington [15]; the British Airways, as well as other flight companies, suspended all the flights from and to the affected areas till 31st August [17]; in the UK all the universities were alerted with special guidelines for symptoms early detection due to the high number of enrolled Nigerians (about 9.600 in 2012/2013)[18] and the foreign minister Mr. Philip Hammond declared "Ebola is a threat for the UK"[19] although the European Union adopted a more reassuring approach saying that "the risk from Ebola to EU territories is extremely low. This is because relatively few people travelling to the EU are likely to be infected with the virus"[20].

If all over the world the picture on the possibility of the pandemic to spread in other continents was not clear at all, in Italy the situation was not better.

Relating to the need of information, two were the most "hot drivers" for people concerns: transmission by immigration and planned preventive measures. Immigration, which is a phenomenon that heavily interests Italy, is always at the top of the agenda of Italian policy-makers and journalists but during summer, mainly due to good weather conditions, the number of landings that interest the coasts of the south of the peninsula exponentially increase making the issue even more pressing on the newspapers. The fragmentary information if not a sort of "information vacuum" on the possibility that the affluence of immigrants could have been the vector for the virus has left space for political exploitation and more generally for probably unjustified worries, especially after that a case of leprosy was reported in Treviso [21]: a 37 years old Bengali man, in Italy for about 8 years, was diagnosed with a form of that disease. The case, although neither related to Ebola nor to immigration flows, has immediately raised anxiety in the public. Were preventive measures in place? What were they? The Health Minister speech, during which she said that all the necessary measures were taken with a particular attention to harbours and airports, did not completely satisfy the public to the extent that people on social media started asking whether they have to be worried by the fact that aid workers in Lampedusa were wearing face masks [17], although that practice was already in use, well before Ebola.

That reaction was exactly what a proper risk communication should have prevented: a lack of information does not mean no information at all and spaces that are not filled with correct information leave the chance to other "speakers" to use those gaps to make their information credible. As a matter of fact fakes and fakers are common to every crises and, since they can unlikely be completely stopped, there are no other ways to decrease their credibility but to increase trust in scientific/official sources. So, there has to be a reason why the fake news that Ebola "landed" in Lampedusa has been shared via Facebook more than 26 thousand times... [22]

2. Information gathering and management

At the end of September, Ebola was still spreading although it was no more interesting for media as only few weeks before. At that time, the released WHO report counted for 3,341 confirmed cases among Guinea, Liberia, Sierra Leone and Senegal and a total of 1,687 deaths [23]. The web was getting overcrowded with different projections of the virus diffusion based on models that were not always drawing a coherent picture: several variables, such as time, confirmed, probable or suspected cases, official or un-official data were responsible for a variety of estimations and worst-case scenarios. So the situation was: close to 10,000 infections expected in the following days [24], a worst-case scenario elaborated by the U.S. Center for Disease Control

and Prevention estimating that by the end of January there could have been 550,000 or more cases of infection and the WHO forecast of 20,000 cases before the pandemic could have been contained [25].

Undoubtedly, all of those variables are characterized by a huge amount of data, which have to be gathered, analyzed and synthesized in order to make sense of them and thus allow decision makers to have the clearest picture of the broad situation to act accordingly. It is now acknowledged that since a crisis, of whatever kind and origin, whether it is natural or man-made, constitutes a part of people's lives, it is not usually let off the use of social media, which have penetrated every aspect of our experiences.

So normally the available data also massively come from this new way of exchanging communications following two different paths: information seeking and producing. In times of emergency, the public interest and the seeking of information related to the event in question raise exponentially in order to keep our cognitive system in balance: the situation, made dissonant by the crisis itself, is characterized by the individual need to reduce a psychological awkwardness by defining the changed framework through the information seeking process [26]. On the other side, the public, precisely thanks to the use of social media, has become one of the most important (in terms of amount of produced data and their immediacy) source of information production. New technological devices provide people with the immediate possibility to share almost every kind of content: text, photos, videos and links [27]. This operation, which is as just simple as clicking "send" on a smartphone, besides turning the perspective on risk management upside down as people involved in an emergency are not just affected individuals who need care but also first actors directly involved in every part of the crisis management cycle, poses great challenges to the implementation of all the already available information with these new data in order to enhance situational awareness [28].

This kind of analysis have been always more constantly used in relation to natural disasters [29,30,31]. Now, the question is: was it possible to use micro-blogging website, such as Twitter for example, to monitor Ebola or more generally in relation to a pandemic? The answer is just maybe even though it has already been done. Started in 2009, a flu pandemic known as the swine flu, resulted in more than 1,500,000 confirmed cases and 14,000 deaths. A research has been done collecting about 160,000 tweets per day in the UK starting from 22/06/2009 to 06/12/2009 to look into them in order to early detect possible cases through the analysis of symptom-related statements and geolocate them to monitor the pandemic spread [32]. The produced data were in line with the official statistics provided by Health Protection Agency, demonstrating the potentiality of the system.

Thus Tweets mining has proved to be valid also for a pandemic but apparently no similar researches have been done in relation to Ebola. As a matter of fact there have been just two interesting activities that nevertheless did not imply at all or as a decisive source of information micro-blogging [33]. Firstly, Flowminder, a Swedish non profit organization, had the authorization to track cell-phone data so to have a model that could help in predicting people's travel patterns and thus creating a map of places where preventive measures should be focused [34].Secondly, Healthmap, following the enthusiasm raised by crowdmapping services in emergency, was updating a map on which a mixture of OSINT (Open Source INTelligence) and SOCMINT (SOCial Media INTelligence) was used to localize new and ongoing outbreaks and warnings [35].

In the following table [Table 1] results from all the referred sources are listed.

The analysis of online available information has a central role in the realization of the map: news indexed by Google from all over the word were about the 76% of the total number of alerts. On the other side, social media have a second-floor role to the extent that only institutional Twitter and Facebook profiles were considered among sources.

Thus, although the role of Social Media as a tool to disseminate risk communication has been acknowledged as an important and possibly effective way of sharing information about preventive measure to contribute to reduce the virus spreading, the absence of a deep investigation on the use of micro-blogging websites and social networks by the public to provide a sort of early-detection of possible new cases needs to be further examined.

In this regard, there are at least three aspects that deserve to be highlighted and that will be briefly mentioned. In general, there is no doubt that having to deal with tweets or posts poses major problems about information reliability and how to use the gathered information practically. A wrong interpretation of a message could be responsible for the diversion of precious resources or fakers can intentionally and easily use those tools to disseminate false information.

Moreover, the real engagement and the kind of information shared with the social networks can sensibly vary in relation to cultural identities and attitudes, notwithstanding the fact that, although some of the affected regions have the highest number of users in the continent, the distribution of them between cities or suburbs, which is a relevant distinction for any evaluation on the issue in question, is not that clear to allow to have a sense of the use of those tools in the most exposed and potentially interested areas.When it comes to Ebola in particular, there is another factor, already mentioned, that affect all the aspects related to the emergency and thus also the use of Twitter and Facebook for the purpose above referred: the illusion that the virus is not real. The awareness and surveillance over symptoms, in fact, which at least at the beginning are a-typical (fever, vomit, diarrhoea), can be inadequate and they can be easily underestimated or attributed to other illnesses.

Table 1: number of alerts for all diseases for each source

Arabic RSS	0		Ministry of Health Sites Facebook	0	
Chinese RSS News	11		Ministry of Health Sites Facebook Arabic	11	
EuroSurveillance	2		Ministry of Health Sites Facebook Korean	0	Facebook 11
Eyewitness Reports	8		Ministry of Health Sites Facebook Portuguese	0	
Food and Agriculture Org	49		Ministry of Health Sites Facebook Spanish	0	
Francophone News Agencies RSS Feed	0		Ministry of Health Sites Twitter	4	
GeoSentinel	0		Ministry of Health Sites Twitter Arabic	0	
Google Meningitis Italian	0		Ministry of Health Sites Twitter French	0	
Google News	354		Ministry of Health Sites Twitter Japanese	0	Twitter 52
Google News Bahasa	0		Ministry of Health Sites Twitter Korean	0	
Google News Deutsch	14		Ministry of Health Sites Twitter Portuguese	0	
Google News Español	86		Ministry of Health Sites Twitter Russian	0	
Google News Français	19	Google 742	Ministry of Health Sites Twitter Spanish	48	
Google News Japanese	14		Moreover Technologies	0	
Google News Português	40		ProMED Anglophone Africa	3	
Google News Vietnamese	19		ProMED Español	14	
Google News Русский	23		ProMED Français	3	
Google 资讯	173		ProMED Mail	75	
العربية جوجل خبار (Google News AR)	0		ProMED MBDS	2	
HM Community News Reports	10		ProMED Português	10	
HM Community News Reports ZH	0		ProMED South Asia	19	
Local Media Surveillance	0		ReliefWeb	0	
Ministry of Health Sites	0		Baidu 新闻	35	
Ministry of Health Sites Arabic	0		SOSO资讯	0	
Ministry of Health Sites Bahasa	0	Websites 4	Twitter	0	
Ministry of Health Sites Chinese	0		Wildlife Disease Node	0	
Ministry of Health	0		WHO Русский	1	

Sites French			**世界卫生组织 (WHO ZH)**		
Ministry of Health Sites German	**0**		**Org. Mondial de la Santé Animale**	**2**	
Ministry of Health Sites Italian	**0**		**Org. Mundial de Sanidad Animal**	**1**	
Ministry of Health Sites Japanese	**0**		**Organisation mondiale de la Santé**	**1**	
Ministry of Health Sites Korean	**0**		**العالمي الصحة منظمة موقع (WHO AR)**	**0**	
Ministry of Health Sites Portuguese	**0**		**Organización Mundial de la Salud**	**0**	
Ministry of Health Sites Russian	**0**		**World Health Organization**	**4**	
Ministry of Health Sites Spanish	**4**		**World Org. for Animal Health**	**3**	

Source: HealthMap [Assessed at 11.30 AM, 23/09/2014]

However, the strongest brakes to the implementation of the available information thanks to the interpretation of micro-blogging messages are the nature of the emergency itself and its specificity. Pandemic means illness and presumably nobody is willing to raise his/her hand to say "well, you know, today I'm not feeling very good. I think I'm coming down with flu". More probable for a disease that has a mortality rate of 0,02%, as for the swine flu, which is even lower that the one of seasonal flu (0,2%), rather than for an untreatable infection as Ebola, that message could put an indelible stigma on a person, cutting off all his/her social relationships. Who would be willing to risk to be isolated and banned from society, which still have a tight link to the community dimension, for a disease which is not even real?

However, in times of emergency managing the information collected is so highly important as the processes and the techniques put in place to gather it.

In this regard, it is emblematic what happened between 24 and 28 September in Dallas, Texas. A man went to the hospital saying he was not feeling very well. Medical staff, due to the international health alarming situation was trained to fill a pre-assessment checklist in which information about recent travel itineraries had to be reported. The man said to the nurse he had just came back from a journey in West Africa, in particular from Liberia. A tick was placed in the provided box. However, that information was not fully communicated to the doctor who, after a diagnosis of low-grade fever from a viral infection, sent the patient home with antibiotics. After three days the man was hospitalized in the isolation room with a completely different diagnosis: Ebola. The press conference held by the Centre of Disease Control and Prevention Director Dr. Tom Frieden, rightly addressed relevant aspects to contain possible panic of contamination of the USA public: no risk for

those who were flying with Mr. Duncan (the Ebola infected man) as at that time he had not symptoms of the illness and so he could not infect other people; the contacts-track-system is in place to find and monitor all those who have had contact with Mr. Duncan during his staying in the USA since the symptoms appeared and before he has been hospitalized.

Apparently there were no serious reasons for warring about the fact that this infection could have turned into the American hotspot for the pandemic outside Africa, despite the fact that cases in US and UK were estimated to be by the end of September [39].

That said, what needs to be analysed is the inefficiency of the information and communication management in relation to the case. The checklist-approach to collect relevant data is undoubtedly efficient as it contributes to focus the gathering process only on specific domains and to reduce rooms for their free interpretation but, as it has already been proved in other cases particularly within the healthcare system, it cannot be a left alone instrument.

The failure highlights a fundamental aspect of the crisis management: the role of communication. Communication in emergency can be considered as a highly complex and tightly coupled system. Adapting what is known about technical systems [37] to communication, its complexity is given by the limited possibility of isolating failed parts, the numbers of different perspectives from which it can be addressed that do not represent the complexity of the system itself, the sometimes limited awareness of all the actors involved in it about their interdependencies together with possible misinterpretation of its contents. On the other side, communication in emergency follows a sort of invariant sequence of steps, it has limited potential for substitution and in some cases lacks of redundancy. Redundancy is a sort of assurance for crisis managers that other "backup systems" are in place in order to reduce the possibility of malfunctioning of alarming primary resources.

Thus, the use of a checklists alone has to be handled with care since they do not easily provide this possibility. As a matter of fact information on the Texas Health Presbyterian Hospital checklist did not go completely through resulting in a serious failure of the system.

Regulation and trainingsOn October 8th, 2014, the European Health Security Committee had a meeting to discuss about the Ebola emergency, while a Spanish nurse was in the isolation room of the Carlo III-La paz hospital in Madrid together with other eight people under observation.

The woman, 44, took care of the two repatriated Spanish missionaries who contracted the virus in the Africa regions hit by the pandemic. The gravity of this case was at high risk of being underestimated, distorted and exploited for other reasons rather than being evaluated to improve the response to an emergency which was coming nearer to our "backyard".

The European Union required information about how the fact could have happened. And that information was expected to be as soon as possible to avoid alarmism already present on the net [38,39]. Fortunately the EU was not the only one to require it, but it was anticipated by Madrid inhabitants who wanted to understand how that was possible in a country where health facilities and management protocols for similar cases were definitively better than the ones in the western African regions. The answer of the Health Minister Fernando Simon, who guaranteed a deep investigation of the event in order to access possible human or technical errors opened two fronts of analysis.

Firstly, the technical factor. Some Madrid hospital's employees claimed on El Pais that their DPI equipment was not the right one (in particular, their overall would not be in line with the biological security level number 4). Moreover, other complains were directly addressed to the Health Ministry for the management of the repatriation and assistances to the missionaries.

The situation in Italy is the following: a manual titled "Febbri Emorragiche Virali (FEV) Raccomandazioni e indicazioni per il trasporto", published by the Health Ministry and the National Center for Diseases prevention and control in 2006 along with the Decreto interministeriale of November 23rd, 2010 list the procedures to be followed when transporting or assisting suspected or probable Ebola cases. In particular the first document defines in detailes the characteristics of the assisting area, the equipment and the plain dealing of those who are in charge of taking care of similar cases.

The emergency governance apparatus is thus properly displayed and it is built upon these regulations:

1. Circ. Min. Sanità prot. n. 400.2/113/2/74/2808 del 11/05/1995 "Febbri emorragiche virali(Ebola, Marburg, Lassa). Linee guida per la prevenzione ed il controllo"
2. Circ. Min. Sanità prot. n. 100/673/01/4266 del 26/05/1995 "Aggiornamento linee guida per la gestione dei soggetti con sospetta febbre emorragica da virus Ebola"
3. Circ. Min. Salute prot. n. 24349 del 16/10/2006 "Febbri emorragiche virali. Raccomandazioni ed indicazioni per il trasporto."
4. Circolare del Ministero Salute "Misure di profilassi per esigenze di sanità pubblica (1998)
5. Decreto interministeriale 23.11.2010 Procedura nazionale relativa al trasporto di paziente in alto Biocontenimento

Secondly, the human error. The Spanish case could reveal itself as a case study for manual: Professor Peter Piot, Ebola expert and adviser for the World Health Organization for the ongoing emergency, underlined how even the simplest gesture of rubbing eyes by personnel in contact with Ebola infected patients can be risky. Moreover, he took as a potential dangerous situation

the moment when, coming out from the isolation unit, nurses and doctors leave their protective gloves [40]. Even the slightest error, distraction or uncontrolled automatism can be potentially fatal. Thus, personnel awareness and training has a central role. In this regards, an interesting information came out later: back in August an anonymous nurse posted a comment on the "Madrid Association of Independent Nursing" blog about the insufficient training they received on operational protocols in case they would be asked to intervene on an Ebola case. In Italy some interesting training sections was done as the "Operazione Matilde" (September 13th, 2012) and the one organized by the Civil Protection in Pistoia on the May 10th, 2012, about the high biocontainment transportation of a patient. More recently simulation have been organized as well to test procedures about the transfer to specific equipped hospitals [41]. The training and the general awareness about all the aspects involved, resulted in the successful management of the repatriation of an Italian doctor, who contracted Ebola in Sierra Leone, just a couple of weeks after later [42]

Nevertheless, these trainings were done a couple of years ago. What is Italy now doing?

The reply given by the Italian Health Minister Lorenzin was definitively "out of tune": she claimed that due to national health service budget cut "security controls" were at risk and that for the pandemic management an action for improving the capability to "evacuate the infected cooperators" was indeed needed as only few equipped airplanes are available in Europe. However, these are the facts: Spain has been able to bring back its missionaries; what it could not do was to avoid that errors, probably human, could compromise the virus isolation.

3. A lesson that has to be learnt: the Nigeria case

On October 20th, 2014, the World Health Organization declared Nigeria free from the Ebola virus, after a period of 42 days during which no new cases of infection was detected.

The first case occurred on July 20th, 2014 when a libian-american diplomat started feeling sick at the Lago airport. Due to the weak or inexistent emergency procedures the "zero" patient (at least for Nigeria) was able to infect several people, particularly among the personnel who took care of him at the hospital where he was assisted.

This was the result: 20 cases, 8 deaths, 898 tracked contacts (351 first or second degree and 547 third degree) [43] for verification and pandemic control and containment procedures.

Investigating on what allowed this result, the answer is quite simple to find if we look at the following figure that represent the organizational structure of the RIMC (Response Incident Management Center), which is responsible for the management of the pandemic in Nigeria since July [44].

There are three fundamental aspects: information, communication and training.

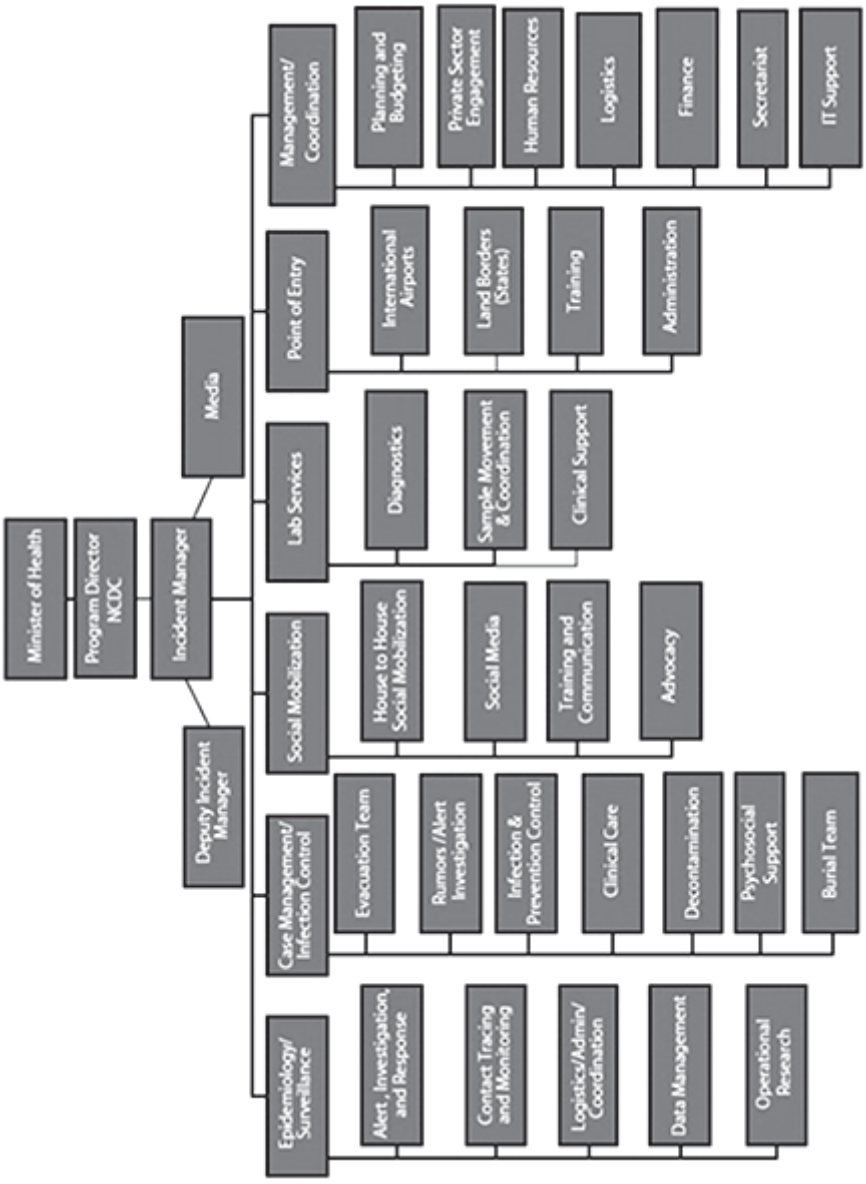
From left to right these are the decisive factors for the model functioning: the gathering of data about the pandemic thanks to contacts tracking and detected cases monitoring, together with their correct management allowed a more quickly activation and direction of the efforts implemented to contain the spread of the contagion and an efficient cases management that comprehended all the necessary but risky phases such as the medical assistance itself, the decontamination and burial procedures.

The trait d'union between information and communication is played by the role of media. Throughout all the emergency they have been thought as a medium to inform and communication and they have been used in a centralized manner both as support and as primary actors for the management of the emergency. For what concerns directly the communication process, the most effective results have been achieved thank to public campaigns about the real dangerousness of the pandemic, transmission ways and preventive measures disseminated through different media, from social media to the more common but essential radio.

However, training and lessons learnt might have been the ace in the hole for Nigeria in order to win its own match. The African State now freed from the virus has surely took advantages in terms of reactivity in the Ebola management from its past cases of lead poisoning in 2010 and the more recent effort to eradicate polio in 2012.

Even though Ebola has not been completely eradicated yet, Nigeria victory calls attention to above mentioned aspects, which are at the same time objectives, and on the need that they are seriously implemented and pursued on an international scale. On one side, informing reduces the vacuum that the uncertainty caused by emergencies brings within itself; on the other the communication process cannot be based only on "institutional messages". The public to which communication is addressed is a challenging public, which asks and wonders about what is available to assess its own risk level. In this regard, the fact that web-users desperately started to look for confirmations about the news that seventeen children were infected in a kindergarten in Texas by their classmate, a Liberian girl in America as a foreign exchange student [45], does not surprise at all. What is astonishing is the fact that none of the institutional bodies have not immediately denied that information which was tagged as "satire" from some TexAgs.com and other blog's users instead.

Figure 1: organizational structure
of the Ebola Response Incident Management Center



Source: MMWR Morb Mortal Weekly Report [Assessed 03/10/2014]

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