Resurgence of measles outbreaks:

The need for appropriate and timely response

The resurgence of measles outbreaks in Africa these last few years has caused much suffering and many deaths. More than 200,000 cases and 1,400 deaths were officially reported for 2010[1]. Taking into account generalised underreporting, real numbers could be 10 or even 20 times higher.

Although measles vaccination coverage has significantly increased in the past few years, outbreaks remain a threat as long as coverage does not reach at least 95 per cent. Therefore, even in countries where vaccination coverage has considerably improved, measles outbreaks can still occur.

According to WHO/UNICEF[2], the resurgence of measles outbreaks is mainly due to insufficient routine vaccination of children, and the reduction in cases of the disease over recent years, which means people who had not been vaccinated have not developed any immunity. In addition, some countries have lacked the political commitment to ensuring that some of the activities that are necessary to protect the population are implemented.

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A deadly disease

Measles is a serious, highly contagious disease. Complications are relatively common, and include severe respiratory infections (pneumonia), severe diarrhoea and dehydration, and encephalitis (inflammation of the brain). Measles can also cause blindness and ear infections. Children, especially undernourished children, are most vulnerable to measles, as are individuals with weakened immunity (such as people living with HIV/AIDS). As many as 10 per cent of people with measles will die if they do not receive adequate medical attention.

To avoid complications, people with measles need adequate nutrition and sufficient fluids. Antibiotics are required to treat secondary infections, but systematic administration for all patients is highly recommended in population that have difficult access to health care. Children should also receive vitamin A in order to reduce the risk of secondary blindness or death.

Measles is easily and rapidly transmitted from one person to another through coughing, sneezing and close personal contact. As soon as a case has been identified, adequate measures must be taken to treat and avoid the further spread of the disease.

Vaccination can prevent measles. Measles vaccination is considered a highly cost-effective measure as the vaccine is cheap and effective, poses no risks, and is well known by health staff and the general public. Two doses of the vaccine are recommended, as up to 15 per cent of children will not develop immunity after only one dose.

Challenges in controlling measles

As recognised by the WHO position paper on measles (2009) and by the document on measles elimination adopted by the African Regional Committee in September 2011[3], control of measles would require more than 95 per cent of the population to be immunised, essentially through the vaccination of all children with two doses of vaccine. In most developing countries, this represents an enormous challenge. There are obstacles to putting effective vaccination services in place, and it is difficult to reach sufficient levels of immunity:

Ensuring effective delivery of vaccination services

- It may be difficult for the population to access health services because of distance or other geographic constraints, indirect costs (transport, having to take time off work) and, in places of conflict or violence, insecurity.
- Most national measles vaccination calendars recommend that a child receives a first dose of measles vaccine between the ages of 9 and 11 months. But in many countries, health services lack staff, vaccines and/or materials. Even if a child is brought to a clinic, he or she may not receive the vaccine. Children older than 11 months are not considered for vaccination, although they may not be immune (this is generally referred to as a 'missed opportunity').
- Measles vaccines need to be kept out of the light, at temperatures of between 2°C and 8°C, in order to remain effective. Organising and maintaining an efficient cold chain for vaccine conservation right up to the moment it will be injected often presents real difficulties. If a vaccine is exposed to too high a temperature at any moment, vaccination may not work.
- The measles vaccine is delivered in a vial containing 10 doses. Once prepared (diluted), the vaccine can only be kept for six hours (in a cold, dark place). In order to avoid waste, some health staff may be reluctant to open a vial for just a few children and decide not to vaccinate them at that moment (another 'missed opportunity').
- Supplementary activities such as specific vaccination days and/or large-scale vaccination campaigns to catch those children who have not received a first dose, or a second dose, may be confronted with the same challenges: maintaining an effective cold chain up to the moment of vaccination, geographical barriers, limited resources.

Reaching sufficient levels of immunity

- Even if many children receive one dose of the measles vaccine, up to 15 per cent will not develop immunity, and this means total immunity will not be sufficient to prevent measles outbreaks.
- When vaccination campaigns are organised, 95 per cent coverage is often not reached. Some groups of people, living in hard-to-reach places, may not be vaccinated. Also, if too many years pass by between campaigns, some children will not be vaccinated and will not be immunised.

- National or regional indicators of measles coverage are an average, and do not always reflect rates in particular areas. Some places may have reached high levels of vaccination, but people living elsewhere may not have benefited in the same way, and may still be vulnerable to the disease. In addition, these indicators are most often expressed as 'administrative coverage'. They are based on available population numbers, rather than on a specific investigation in the population targeted. This means that, as population figures are often outdated or approximate, administrative coverage is a highly unreliable figure.
- No active cases of measles does not mean that people have developed immunity. As soon as the virus is circulating, non-immune people get sick. Recent incidents in the United States and Europe, and in Burundi and Malawi, illustrate that, even in regions where measles seems to be controlled and the vast majority of the population is expected to be immune, outbreaks can still occur.

Reaching the objective of 95 per cent of the population receiving two doses of measles vaccine is very difficult and for as long as this objective is not achieved, outbreaks can and will occur. National authorities, their partners, and health service providers all need to be prepared for a potential measles outbreak in all settings – including those where there seems to be high vaccination coverage– and ready to respond.

In order to limit the risks of an outbreak, the aim should be to increase coverage through routine vaccination. The vaccination strategy must be adapted to the specific context. For example, the age for receiving vaccination should not be limited to 11 months: any child under five years who has received only one dose of vaccine or none at all should be vaccinated. Also, vaccination should be provided in all types of health facilities. For populations in hard-to-reach places, specific approaches such as setting up mobile and outreach teams should be developed. Alternative cold chain strategies need to be developed. In addition, specific awareness and health education programmes for populations not convinced about the benefits of measles vaccination have to be designed.

Response to measles outbreaks

Governments, at the national, regional and international level, through their commitments to the Millennium Development Goals (MDG4, reducing child mortality), and through their declarations on eliminating measles (in Africa by 2020) have committed to develop national plans and strategies to improve measles control, including the response to outbreaks[4].

Surveillance systems should ensure that detected cases are speedily reported and controlled. The confirmation of new cases is an alarm bell and should mobilise the implementation of a strategy for response to a potential wider outbreak. This strategy must include reinforced surveillance in order to determine the trend of the outbreak and identify the age category of people affected, as this will influence the vaccination strategy. Vaccination activities in the area where cases have been recorded need to be reinforced, and checks performed to ensure health facilities have the medicines, cold chain equipment and supplies needed to respond to an outbreak. In addition, training of health staff may be necessary in areas where measles have not occurred recently.

Key elements of the response

As soon as an alarming number of measles cases are confirmed (three or more confirmed cases in one month per 100.000 population in a geographical area[5]), an outbreak response must be implemented:

- The population must be informed about measles, and the need for appropriate treatment and vaccination.
- Potential barriers to accessing healthcare must be lifted, in order to encourage people to come to health facilities for vaccination and treatment. This may include ensuring that treatment is free for measles patients. Besides facilitating access to adequate treatment, easing access to health facilities will allow a more precise estimation of the number of people being infected (when health services have to be paid for, many sick people remain at home because they can not afford care, and are therefore not included in the numbers of reported cases).
- Adequate supplies must be ensured at all health facilities so that patients receive the treatment they need.

- According to the epidemiology, a reactive vaccination campaign must be organised, targeting all persons in the age category affected living in and around the area of the outbreak. The age category vaccinated will be based on the analysis of the cases reported: when a significant proportion of people infected are older than five years, this age category will need to be vaccinated as well. This is often the case in areas where no measles outbreaks have occurred for several years, and where the non-vaccinated have not developed natural immunity.
- Specific strategies must be implemented to reach people not usually covered by immunisation activities (be that for geographic, social or cultural reasons).

The latest WHO guidelines[6] specify that reactive vaccination activities have a positive influence on reducing the spread of the disease and avoiding deaths. This is particularly the case when started early. But even later in an outbreak, reactive vaccination can influence the evolution of the disease and avoid more people falling ill.

In many developing countries, official health data such as the number of people infected and the number of deaths from measles may only be estimated figures. In such cases, the outbreak response should not be solely based on the official figures available, but take general access to health care and availability of effective health services into consideration. An overall analysis of the general health context may often conclude a need for moving quickly to implementation of an outbreak response.

Limiting the impact of measles is possible: it requires the definition and implementation of adapted strategies

Governments of developing countries, international organisations and public health experts all agree that the elimination of measles is a feasible objective. That may be so, however the challenges are enormous: in many developing countries, the health system is still struggling to reach the pre-elimination targets for measles immunisation which were set several years ago. Specific strategies to reach more children with routine vaccination need to be implemented [7], and health staff need support to improve the delivery of what is an indisputably cost-effective activity. In the meantime, more outbreaks can be expected, and they will need an effective response: people infected with measles need treatment, health facilities need to be able to increase routine immunisations, and reactive vaccination must be organised. Implementing an effective response as soon as an outbreak is identified will avoid much human suffering.

Médecins Sans Frontières (MSF) has participated in the response to measles outbreaks in many countries over recent years. In 2010, we vaccinated more than 4.6 million people through outbreak immunisation activities, and did the same in 2011.

MSF is committed to responding to measles outbreaks, either in support of or in addition to the activities implemented by national authorities and their partners. Our measles response aims to increase people's access to adequate treatment and vaccinate the population affected by the outbreak.

1 WHO/UNICEF Joint Annual Measles Report 2010: Strengthening Immunization Services through Measles Control, http://www.measlesinitiative.org/mi-files/Reports/Measles%20Initiative/Annual%20Reports/MI%20Annual%20report%202010_20%20Apr%202011.pdf
2 Ibid.
3 Measles Elimination by 2020 – A Strategy for the African Region, WHO Regional Committtee for Africa, resolution AFR/RC61/R1, 1 September 2011, http://www.afro.who.int/en/sixty-first-session.html
4 Ibid.
5 See WHO, Response to Measles Outbreaks in Measles Mortality Reduction Settings, March 2009, http://whqlibdoc.who.int/hq/2009/WHO_IVB_09.03_eng.pdf
6 Ibid.
7 See WHO Regional Committee for Africa resolution, note 3.

Médecins Sans Frontières
Dupré Street 94 - 1090 Brussels - Belgium
www.msf.org