Stockpiling oral cholera vaccine

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Cholera is re-emerging as a threat on the global public health stage. The number of reported cases worldwide is back at the peak level observed two decades ago,[1] new *Vibrio cholerae* strains have appeared and antimicrobial resistance has increased. Weak surveillance systems and the possibility of travel and trade sanctions contribute to widespread underreporting of cholera cases, which results in great uncertainty surrounding global disease burden estimates. Such estimates suggest that about 1.4 billion people are at risk of cholera and that the risk is highest among children under five years of age. Annually 2.8 million cases and 91 000 deaths from cholera occur in endemic countries; non-endemic countries contribute another 87 000 cases and 2500 deaths.[2] Although effective preventive and therapeutic regimens are well established, clearly cholera remains poorly controlled in both outbreak and endemic contexts.

Cholera-related morbidity and mortality are particularly high during humanitarian crises. Large cholera epidemics in Zimbabwe (2008–2009), Haiti (2011) and now Sierra Leone (2012) have made the international community aware of the need to not merely control endemic disease, but also to strengthen epidemic preparedness and response capacity. In 2011, the Sixty-fourth World Health Assembly issued a resolution calling for a reinvigorated focus on cholera and defined a range of actions required of the World Health Organization (WHO) and its Member States towards creating an integrated, comprehensive strategy for cholera prevention and control.[3] As part of this strategy, WHO is facilitating a multi-partner initiative aimed at establishing a stockpile of oral cholera vaccine (OCV) for use in outbreak response as an adjunct to established prevention and control measures. This approach was endorsed in September 2011 by global cholera experts, who affirmed that such a stockpile is both necessary and feasible.[4] There are currently two stockpile candidate oral cholera vaccines, both prequalified by WHO.

A WHO technical working group convened in April 2012 and defined the required characteristics of a stockpiled vaccine, the epidemiological and operational considerations for deployment, and the mechanisms for stockpile governance, replenishment and appraisal.[5] This working group agreed on an initial OCV stockpile of 2 million annual doses to be available for epidemic response in low-income countries. The International Coordinating Group (ICG) has a decade of experience as a decision-making partnership that oversees the meningococcal and yellow fever vaccine stockpiles and their deployment. The ICG is composed of experts from four organizations: Médecins sans Frontières, the International Federation of the Red Cross and Red Crescent Societies, the United Nations Children's Fund and WHO, which is both a decision-making partner and the ICG's secretariat. All members of the ICG, including WHO, will oversee the proposed OCV stockpile.

The WHO technical working group emphasized that deployment of the stockpiled vaccine must be guided by epidemiological, technical and operational evidence, some of which remains incomplete and must be consolidated as experience is gained. While acknowledging the difficulties in predicting outbreaks and the need for more detailed empirical data, the working group created an advisory framework for assessing outbreak severity based on three criteria: the biological susceptibility of the population, the social vulnerability of the population and the risk of spatial extension. For each of these criteria, the working group defined epidemiological and demographic indicators, thresholds for deciding when to deploy the vaccine and indicators for determining the anticipated impact of a vaccination campaign. The framework proposed by the working group is intended only to inform decision-making; actual deployment of the OCV from the stockpile would follow not only an analysis of these indicators, but also an assessment of programmatic factors, such as local capacity to organize a mass vaccination campaign and prevailing security conditions.

Progress is being made on the working group's action plans for 2012. The work streams are focused on advocacy for funding, negotiations with vaccine producers and preparedness planning for countries and regions. A stockpile evaluation group has been established to define and implement the detailed monitoring required. As experience and data accrue, the results of this evaluation should enable continuous improvement in the structure and functioning of the stockpile. Successful assessment of a stockpile vaccination campaign will require reinforcement of surveillance systems in most locations where an epidemic is likely to arise.

Public health interventions, such as case management, enhanced environmental control, improved hygiene and sanitation and social mobilization, should form the backbone of all cholera control programmes. In turn, these interventions depend on effective surveillance and strong health-care systems. This initial, necessarily small, OCV stockpile will not constitute sufficient preparedness for a large or sustained epidemic, its use should complement existing measures as part of a reinvigorated and comprehensive approach to meeting the new challenges involved in global cholera control and prevention. ■

References

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