

Mass Vaccination Programme: Public Health Success and Ethical Issues – Bangladesh Perspective

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Abstract: Vaccines are responsible for many global public health successes, such as the eradication of smallpox and significant reductions in other serious infections like diphtheria, pertussis, tetanus, polio and measles. However, mass vaccination has also been the subject of various ethical controversies for decades. Several factors need to be considered before any vaccine is deployed at national programme like the potential burden of disease in the country or region, the duration of the protection conferred, herd immunity in addition to individual protection, vaccine-related risks, financing and the logistical feasibility of the large-scale vaccination. Moreover, several ethical dilemmas revolve around authority and mandates for vaccination, informed consent, benefits vs. risks, and disparities in access to vaccination. This review paper aims to elaborate the ethical issues involved in mass vaccination programme and present some additional challenges in the context of a resource-poor settings of public health in Bangladesh.

Keywords: Ethical issues, vaccine, mass vaccination, immunization, EPI, public health, Bangladesh.

Introduction: The invention of the vaccine is unarguably one of the greatest medical achievements in the past century. Vaccines have saved millions of lives, prevented significant morbidity and suffering, and even eradicated smallpox and significantly reduced other serious infections like diphtheria, pertussis, tetanus, polio and measles around the globe¹. For an example, measles deaths decreased by 60% worldwide

between 1999 and 2005, and polio, although missing the goal of eradication by 2005, has decreased significantly as there were fewer than 2,000 cases in 2006². Vaccines have become readily available in most parts of the world, yet debates continue as to the appropriateness of requirements for mass vaccinations, including legal mandates of vaccinations in public health practice and public health emergencies and more routinely

for school entry³. Vaccine ethics can be conceptualized as a set of issues at the intersection of public health policy, clinical ethics, and professional ethics^{4,5}. Several factors need to be considered before any vaccine is deployed at national programme like the potential burden of disease, the duration of the protection conferred, herd immunity in addition to individual protection, vaccine-related risks, cost, and the logistical feasibility of the large-scale vaccination⁵. Moreover, several ethical and value-based debates revolve around authority and mandates for vaccination, informed consent, benefits vs. risks, and disparities in access to vaccination⁴. This review paper aims to elaborate those ethical issues involved in mass vaccination programme and present some of the additional challenges in the context of a resource-poor settings of public health sector in Bangladesh.

Expanded Programme on Immunization (EPI) in Bangladesh:

The World Health Organization (WHO) initiated the Expanded Programme on Immunization (EPI) in May 1974 with the objective to vaccinate children throughout the world. Ten years later, in 1984, the WHO established a standardized vaccination schedule for the original EPI vaccines for six serious infectious and fatal diseases: Bacillus Calmette-Guérin (BCG) for tuberculosis, DPT for diphtheria, pertussis and tetanus, oral polio vaccine (OPV) for polio myelitis, and measles for measles⁶. Since EPI was launched in Bangladesh on 7th April of 1979, in 1999, the Global Alliance for Vaccines and Immunization (GAVI) was created with the

sole purpose of improving child health in the poorest countries by extending the reach of the EPI. The GAVI brought together a grand coalition, including the UN agencies and institutions (WHO, UNICEF, the World Bank), public health institutes, donors and implementing countries, the Bill and Melinda Gates Foundation and The Rockefeller Foundation, the vaccine industry, non-governmental organizations (NGOs) to accomplish the mission⁷. The creation of the GAVI has helped to renew interest and maintain the importance of immunizations in battling the world's large burden of infectious diseases⁷.

Some important update on EPI⁸: i) TT5 dose for WCBA started in 1993, ii) HepB vaccine introduced in 2003, iii) AD syringes introduced in 2004, iv) Pentavalent vaccine introduced in 2009, v) MR vaccine and measles vaccine second dose introduced in 2012, vi) PCV introduced in 2015, vii) tOPV to bOPV switched on 23 April 2016 and IPV to fIPV switched on November 2017, viii) HPV demonstration projects launched on 16 April 2016 in 4 upazillas and 1 zone under Gazipur district which is being completed in 2017, ix) TT switched to Td on March 2019. As a result of outstanding performance in improving the child immunization status, Bangladesh achieved GAVI Alliance Award in 2009 and 2012, which is given as a recognition to achieving the Millennium Development Goals (MDG), particularly in reducing child mortality⁹.

Other mass vaccination programmes:

There are several special mass vaccination programme launched and done through EPI

authority. Recently, the Human Papilloma Virus (HPV) vaccine has been introduced for the first time in Bangladesh in 2016 by the Ministry of Health and Family Welfare (MOHFW), with support from the GAVI¹⁰. This programme has run in a pilot basis for two years in Gazipur district and as it has become successful. Then the GAVI has become interested to provide support for national introduction of HPV vaccine soon¹⁰. Moreover, several mass vaccination programmes are arranged yearly, e.g. special measles campaign, mass vaccination in disaster and during humanitarian crisis, e.g. in Rohingya refugee camps, etc.⁸, as per decision of the Ministry of Health and Family Welfare, Government of the people's Republic of Bangladesh.

Ethical issues in mass vaccination:

In spite of demonstration of individual and collective benefit and cost effectiveness of vaccination, one of the contemporary challenges in providing medical care for children is the increasing proportion of vaccination refusal, especially in the Western world¹¹; however, vaccination rates in developing countries like Bangladesh are very impressive⁹. It is not a surprise that parents' refusal to vaccinate their children can cause collective harm by raising unprotected, susceptible individuals in the community. Besides, with herd immunity compromised, devastating disease outbreaks may occur. In these settings, individuals are morally obligated to accept vaccination to prevent harm to others¹². Apart from this, in a specific humanitarian crisis or in disaster, failure to provide a vaccine violates the

principle of non-maleficence⁵. Moreover, only vaccines having proven effectivity and safety are to be considered for mass administration⁵. Such vaccines confer additional benefit through herd immunity apart from protecting people against specific diseases when administered on a large scale^{5,11}. Looking at a long term investment in health care, the statistics illustrate the benefits and economics of vaccines and disease eradication. For an example, smallpox eradication has saved millions of lives over the decades, and millions of dollars in terms of quarantine and treatment¹³. From a human rights perspective, vaccination equitably promotes and protects public health which satisfy the notion of the Article 25 of the Universal Declaration of Human Rights as stated: "Everyone has the right to a standard of living adequate for the health and well-being of himself and his family by progressive measures, national and international, to secure [its] universal and effective recognition."⁵ However, access to vaccination is still not achievable universally. Racial or ethnic disparities in immunization programme is an ethical concern^{4,5,13}. For example, in the United States, Blacks and Hispanics were significantly less likely to report receipt of nearly all preventive services like vaccination^{12,13}. Even a few years back, immunization coverage in the hilly regions and some areas of our country (hard to reach areas) was below national average⁸. However, we could overcome the situation in a very short time. A new round of polarizing debates started up with the steps taken to make the HPV vaccine mandatory. Some religious conservatives were worried with the programme and they thought that the

availability of a vaccine against a sexually transmitted disease would threaten abstinence-based prevention messages before the vaccine was licensed, this concern created argument for the vaccine^{10,14}. Abstinence is one of the approaches to HIV prevention taken by the Physicians' organizations. Preventive measures include abstinence-based prevention messages like counseling adolescents and their families for being more responsible on sexual decision making including abstinence^{13,15}. Some religious conservatives thought that the availability of the vaccine could affect the promotion of these messages^{10,13}. Some advocacy groups agreed availability of the vaccines in public health systems; however, they did not agree on making the vaccine mandatory^{4,10,12,13}. Their perspective was this decision of the state may lead to force a child to undergo an intervention that may be incompatible with her family's religious values and beliefs¹⁵. The huge expense of vaccines starting from research to introduce a successful product in the market along with maintenance of its safety and efficacy is a debatable concern in public health in terms cost – as most of the developing countries have some other priorities like pure water supply or sanitation¹³. Moreover, just as a vaccine that works in one population might not be as effective in another population, so might adverse effects of a vaccine be specific to one population¹³. This raises another concern about hidden exploitation by the vaccine manufacturers. Once again, parental attitudes and concerns, as most parents expressed the desire for more information about the vaccine before they agree to vaccinate their children, is an essential topic to address¹⁶. Physicians

and health authority should discuss openly and transparently about necessity of vaccination with parents – as the ultimate decision should be taken by their parents to ensure parental autonomy^{17,18}. However, where the threat of widespread, serious infectious disease is imminent, individual liberties may be justifiably curtailed^{5,19}. In such situation, national health authorities are morally obligated to do all that they reasonably can to implement evidence-based guidelines to avert preventable harm^{13,15}.

Conclusion:

The benefits of vaccination extend beyond prevention of specific diseases in individuals. Vaccination makes good economic sense, as well as meets the need to care for the weakest members of societies. There may be situations where there is an ethically valid public health justification for restricting individual rights – both in circumstances where such actions benefit the community and in situations where the actions only benefit the individual. However, restrictions should only be placed after meeting certain conditions to ensure judicious use of this power. We conclude that a comprehensive vaccination programme is a cornerstone of good public health and will reduce inequities and poverty especially in a developing country like Bangladesh.

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