Mini-Review

Measles Elimination Successful and Its Relevant Challenges in Iran

Abstract

Measles is an infectious childhood disease with some death annually. The expansion of the coverage of vaccination plan has significantly reduced the mortality rate of this disease. Given that the endemic measles virus is not transmitted in the country and based on Regional Verification Commission (RVC) for Measles and Rubella Elimination has declared that measles and rubella have been eliminated in three countries of Eastern Mediterranean Region including Islamic Republic of Iran, Bahrain, and Oman. Therefore, to continue and preventing from reemerging of measles in Iran, it is essential to maintaining the immunization programs, diagnose, and investigate all suspicious cases and outbreaks. This article investigates the challenges facing to measles after elimination declaration in Iran. However, the elimination of these diseases to be sustainable needs a vigorous case identification protocol and contact follow up.

Keywords: *Elimination, measles, outbreak, syndromic surveillance system, vaccination*

Seyed Abbas Hosseinalipour, Abolfazl Mohammadbeigi[1], Siamak Mohebi, Abedin Saghafipour[2], Amin Arabshahi[3], Farzaneh Mahdianpour[4]

Department of Health Education and Health Promotion, Faculty of Health, Qom University of Medical Sciences, [1]Research Center for Air Pollutants, Professor of Epidemiology, Department of Epidemiology and Biostatistics, Faculty of Health, Qom University of Medical Sciences, [2]Department of Public Health, Faculty of Health, Qom University of Medical Sciences, [3]Student Research Committee, Qom University of Medical Sciences, Qom, [4]National Medical Emergency Organization, Ministry of Health & Medical Education, Tehran, Iran

Address for correspondence:
Dr. Abolfazl Mohammadbeigi, Department of Epidemiology and Biostatistics, Faculty of Health, Qom University of Medical Sciences, Qom, Iran.
E-mail: beigi60@gmail.com

Access this article online

Website: www.ijpvmjournal.net/www.ijpm.ir

DOI: 10.4103/ijpvm.IJPVM_334_20

Quick Response Code:

Introduction

Measles is one of the deadliest diseases in developing countries with a mortality rate estimated to range from 1 to 5% up to 10-30%.[1] For instance, this rate is being estimated as high as 9.7% in children of some African countries.[2,3] The improvement of the coverage of vaccination plan has considerably reduced the incidence and mortality rate of the disease.[4] It should be noted that every single case of measles can bring up an outbreak in the whole population, especially in unvaccinated people or vulnerable groups of society.[5] Thus, early diagnosis of the disease and looking after the measles patients can suppress the spread of the disease.[1] The Islamic Republic of Iran, Bahrain, and Oman have been received the measles elimination certificate in the EMRO region based the Regional Verification Commission (RVC) for Measles and Rubella Elimination in the Eastern Mediterranean Region on the 28 May 2019.[6] Hence, it is of crucial importance to keep the immunity of the society against this disease and to diagnose any possible suspicious cases as early as possible. Moreover, because of inappropriate vaccination coverage in the neighboring countries and their citizens' commute to Iranian cities, it is important for medical and health care officials and policymakers to pay rapt attention to the following issues.

Improvement of immunization coverage among foreign children

According to the findings of recent research, inappropriate immunization among foreign children in neighboring countries is six times higher than the amount among Iranian children. Therefore, since the Iranian immunization coverage plan is well-developed and standard, it is expected that the Iranian health system investigates such inappropriate immunizations in the foreigners as a highly risky group and takes required measures to tackle the issue.[7] In another study, it was observed that the majority of measles outbreak incidents happened among unvaccinated Iranian and Afghani children or those who were under the age of vaccination.[8]

Attention to delays in vaccination services

In line with vaccination coverage, the timely vaccination of children is also very important. It has been reported that substantial delays in children's vaccination occur in the suburbs in a way that the lengthiest delay (a delay more than one week) was related to the MMR2 vaccine (a booster dose). Besides, the

How to cite this article: Hosseinalipour SA, Mohammadbeigi A, Mohebi S, Saghafipour A, Arabshahi A, Mahdianpour F. Measles elimination successful and its relevant challenges in Iran. Int J Prev Med 2022;13:52.

delay rate was more in foreign citizens than in the Iranian counterparts because the majority of Afghani citizens in Iran live in the suburbs.[9]

Timely diagnosis of measles outbreak and appropriate measures to stop the secondary transmission of the disease

Because the success rate of measles vaccination is 90–95%, some people are unwilling to receive measles vaccination, especially those who belong to the vulnerable groups of society.[10] If appropriate preventive interventions are not conducted, outbreaks may happen in the future. In a study investigating the risk of measles outbreaks in Iran, it was suggested that drastic measures should be taken to improve relevant health care indexes in Iran. These indexes refer to the capability of each region to diagnose and confirm measles cases.[11]

Implementation of the syndromic surveillance system to improve case reporting

The implementation of the syndromic surveillance system improves measles reporting, especially from the private sector because physicians need to report new cases of the disease irrespective of their tentative doubts in diagnosis.[12] In the end, this surveillance system can facilitate the process of the identification of infected and exposed cases so that the spread of the disease is halted.

Meticulous attention to border provinces

A study conducted in 2010–2012 demonstrated that 69.4% of measles cases in Iran occurred in southeastern provinces bordering Afghanistan and Pakistan. The incidence of the measles virus is high in some neighboring countries of Iran such as Pakistan, Afghanistan, and Iraq. Thus, long borders with these countries have increased the risk of the measles virus entering Iranian cities. Hence, if the vulnerable groups increases, the chance of an outbreak is maximized.[13] Another study has reported that risky and extremely risky areas of the disease are located in a vast area covering the northwestern regions down to southeastern ones, and reduction in the number of the measles cases has been the most important factor in improving health care quality in these regions.[14]

Dealing with mistrust in vaccination

The spread of false news and misinformation via social media is the main reason behind people's hesitation to receive vaccinations, which is one of the main threats to public health across the world according to the WHO reports.[15] Likewise, delay in timely vaccination or unwillingness to have vaccination are affected by factors such as vaccination complacency (underestimating the risk because of lower infected cases), convenience (devoting no time to visit health centers for vaccination) and lack of confidence in the effectiveness of vaccination.[16] Therefore, it is of crucial importance for health policymakers to pay due attention to such issues.

More attention and monitoring of vulnerable groups

The vulnerable groups should be more attended and monitored regarding to the all-mentioned challenged above.[17] These groups including, (I) migrant population, internally displaced population, slums, or tribal communities. (II) Societies that have resistant to vaccination due to religious, cultural, philosophical causes. People in high frequently calamities and disasters area. People with low and weak health care access. Societies with high-traffic transportation hubs due to within countries roads and places and time that become high crowded[17] due to some reasons such as Haj and Arbaeen.

Conclusions

Only three countries, Iran, Bahrain, and Oman in the Eastern Mediterranean (EMRO) region have received confirmation of disease elimination. Comparing population size in Iran with Bahrain and Oman countries regarding long land borders with Afghanistan, Pakistan, and Iraq shows the double importance of this success. Our country is superior to the other two countries. However, use of the high coverage immunization and consideration of mentioned challenges in Iran could maintain from reemerging of measles. In addition, the elimination of these diseases to be sustainable needs a vigorous case identification protocol and contact follow up to overcome the mentioned challenges.

Highlights

- Three countries, Iran, Bahrain, and Oman in the Eastern Mediterranean (EMRO) region have received confirmation of disease elimination.
- Comparing population size in Iran with Bahrain and Oman countries regarding long land borders with Afghanistan, Pakistan, and Iraq shows the double importance of this success.
- Iran is more successful in encounter to the mentioned challenges than other two countries.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

Received: 07 Jul 20 **Accepted:** 17 Mar 21
Published: 05 Apr 22

References

1. Zahraei M, Dadras MN, Sabori A. National Guideline for Measles Surveillance (elimination phase). 2nd ed. Tehran, Iran: Andishmand Publications; 2010. [In Persian].
2. Perry RT, Halsey NA. The clinical significance of measles: A review. J Infect Dis 2004;189:S4-16.

3. Nandy R, Handzel T, Zaneidou M, Biey J, Coddy RZ, Perry R, *et al*. Case-fatality rate during a measles outbreak in eastern Niger in 2003. Clin Infect Dis 2006;42:322-8.
4. WHO, Unicef. Joint statement: Global plan for reducing measles mortality 2006-2010. WHO/IVB/0.5.11, January 2006. Available from: www.who.int/immunization_delivery/adc/measles/measles/en/index3.html. [Last accessed on 2021 Mar 04].
5. Sanyaolu A, Okorie C, Marinkovic A, Ayodele O, Abbasi AF, Prakash S, *et al*. Measles outbreak in unvaccinated and partially vaccinated children and adults in the United States and Canada (2018-2019): A narrative review of cases. Inquiry 2019;56:46958019894098. doi: 10.1177/0046958019894098.
6. WHO. WHO declares countries measles and rubella free. Available from: http://www.emro.who.int/media/news/rvc-declared-bahrain-oman-iran-rubella-measles-free.html. [Last accessed on 2019 Dec 18].
7. Zahraei SM, Eshrati B, Gouya MM, Mohammadbeigi A, Kamran A. Is there still an immunity gap in high-level national immunization coverage, Iran? Arch Iran Med 2014;17:698-701.
8. Karami M, Zahraei SM, Sabouri A, Soltanshahi R, Biderafsh A, Piri N, *et al*. Documentation of measles elimination in Iran: Evidences from 2012 to 2014. J Res Health Sci 2017;17:e00387.
9. Rejali M, Mohammadbeigi A, Mokhtari M, Zahraei SM, Eshrati B. Timing and delay in children vaccination; evaluation of expanded program of immunization in outskirt of Iranian cities. J Res Health Sci 2015;15:54-8.
10. Siavashi MR, Mostafavi E, Noori A. Guideline for Investigation and Response to Communicable Disease Outbreaks. 1st ed. Tehran, Iran: Andishmand Publications; 2010. [In Persian].
11. Mohammadbeigi A, Zahraei SM, Asgarian A, Afrashteh S, Mohammadsalehi N, Khazaei S, *et al*. Estimation of measles risk using the World Health Organization Measles Programmatic Risk Assessment Tool, Iran. Heliyon 2018;4:e00886.
12. Moradi G, Asadi H, Gouya MM, Nabavi M, Norouzinejad A, Karimi M, *et al*. The communicable diseases surveillance system in Iran: Challenges and opportunities. Arch Iran Med 2019;22:361-8.
13. Salimi V, Abbasi S, Zahraei SM, Fatemi-Nasab G, Adjaminezhad-Fard F, Shadab A, *et al*. Implementation of a National Measles Elimination Program in Iran: Phylogenetic analysis of measles virus strains isolated during 2010–2012 outbreaks. PLoS One 2014;9:e94846.
14. Zahraei SM, Mohammadbeigi A, Mohammadsalehi N, Sabouri A, Afrashteh S, Arsang Jang S, *et al*. Monitoring of surveillance quality indicators of measles in Iranian districts: Analysis of measles surveillance system 2014-2016. J Res Health Sci 2018;18:e00418.
15. Carrieri V, Madio L, Principe F. Vaccine hesitancy and (fake) news: Quasi-experimental evidence from Italy. Health Econ 2019;28:1377-82.
16. MacDonald NE, SAGE Working Group on Vaccine Hesitancy. Vaccine hesitancy: Definition, scope and determinants. Vaccine 2015;33:4161-4.
17. World Health Organization (WHO). Measles Risk Assessment Tool, Setup guide. 2017. Available from: https://www.who.int/immunization/monitoring_surveillance/routine/Measles_Risk_Assessment_Tool_setup_guide_V1.5_EN.pdf?ua=1. [Last accessed on 2021 Mar 04].