

Assessing the Effectiveness of Voluntary Vaccination in the Prevention of Infectious Viral Hepatitis A

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Abstract

Today, decisive steps must be taken to ensure stable trust and high approval from parents regarding immunization. Achieving the desired results is possible by improving high-quality epidemiological and laboratory data indicators, which facilitate the assessment of immunization efforts and the fight against diseases.

Annotation

Currently, parents demonstrate a stable attitude toward immunization, and fostering benevolent and trustworthy relationships is essential. Fighting diseases through vaccination can achieve excellent results when supported by high-quality epidemiological and laboratory data.

Keywords: elimination, eradication, vaccination, immunization, strategy

Relevance of the Topic

The spread of viral hepatitis among the population and the complications arising from these diseases remain one of the main health challenges today. Based on the epidemiological characteristics and retrospective analyses of the disease, voluntary vaccination against hepatitis A was introduced in mid-2014.

At present, the success achieved in combating most infectious diseases is significantly attributed to immunoprophylaxis efforts (World Health Organization, “Safe Immunization” program, Tashkent, 2014).

The WHO program aimed at combating infectious diseases, their elimination, and the eventual eradication of certain infections is grounded in immunoprophylaxis. Mass immunization of children significantly reduces the incidence of infectious diseases, decreases child mortality, extends life expectancy, promotes active aging, and enables the complete eradication of certain anthroponotic infections.

Currently, immunization effectively addresses over 40 infectious diseases worldwide. In the future, immunoprophylaxis will aim not only at eradicating numerous infectious diseases but also at gradually applying protective practices against an increasing number of infections through this program. In the near future, several new vaccines will be introduced into healthcare practices. Their widespread application will further save the lives of millions of people.

In Uzbekistan, notable progress has been made in implementing the Immunization Program. Immunization against infectious diseases is an integral part of the state's extensive care for the health of its citizens, particularly children. The Immunoprophylaxis Strategy in Uzbekistan is based on current legislation and WHO recommendations and aims to provide affordable, free, and wide-scale coverage of the population.

The prevalence of viral hepatitis among the population and the resulting complications remain a significant issue today. Hepatitis A is transmitted through household contact and is most commonly observed among children under 14 years old. Currently, hepatitis A occupies a considerable share among infectious diseases. Based on its epidemiological characteristics and retrospective analyses, voluntary vaccination against this disease has been introduced.

Research Objective

To study the dynamics of viral hepatitis A in the territory of Fergana city and evaluate the effectiveness of vaccination efforts.

Research Materials and Methods

A comparative analysis of data on viral hepatitis A cases in Fergana city over a 10-year period (2012-2021) was conducted.

Key Data:

- **2012:** Total cases - 619 (absolute), 241.9 (intensive); among children - 566 (absolute), 820.7 (intensive).
- **2013:** Total cases - 668 (absolute), 249.6 (intensive); among children - 590 (absolute), 821.6 (intensive). Increase: Total +3.1%, among children +3.1%.
- **2014:** Total cases - 898 (absolute), 311.6 (intensive); among children - 571 (absolute), 1022.7 (intensive). Increase from 2013: Total +24.8%, among children +24.5%.
- **2015:** Total cases - 495 (absolute), 172.5 (intensive); among children - 423 (absolute), 585.6 (intensive). Decrease from 2014: Total -44.6%, among children -43.9%.
- **2016:** Total cases - 424 (absolute), 152.8 (intensive); among children - 394 (absolute), 512.0 (intensive). Decrease from 2015: Total -11.1%, among children -12.7%.
- **2017:** Total cases - 350 (absolute), 117.2 (intensive); among children - 328 (absolute), 332.9 (intensive). Decrease from 2016: Total -23.3%, among children -24.4%.
- **2018:** Total cases - 399 (absolute), 130.8 (intensive); among children - 362 (absolute), 434.4 (intensive). Increase from 2017: Total +11.6%, among children +12.1%.
- **2019:** Total cases - 274 (absolute), 87.5 (intensive); among children - 241 (absolute), 265.1 (intensive). Decrease from 2018: Total -33.2%, among children -38.9%.
- **2020:** Total cases - 148 (absolute), 47.1 (intensive); among children - 127 (absolute), 130.7 (intensive). Decrease from 2019: Total -46.4%, among children decreased 2-fold.

- **2021:** Total cases - 27 (absolute), 8.4 (intensive); among children - 16 (absolute), 16.0 (intensive). Decrease from 2020: Total 5.6-fold, among children 8.2-fold.

Analysis:

From 2012-2013, the disease rate increased by +3.1%. Between 2013-2014, a significant increase of +24.5% was observed among children. However, from 2014-2015, there was a dynamic decrease (-45.9%), with further decreases in subsequent years, such as -12.6% (2015-2016) and -24.4% (2016-2017). The period of 2017-2018 saw an increase of +12.6%, but 2018-2019 marked a significant decrease of -38.9%. The largest decrease occurred in 2019-2020 (-46.4%).

The introduction of voluntary vaccination in 2014 significantly reduced disease dynamics. Over the 10-year period (2012-2021), the total number of cases was 4,324, with a reduction from 619 cases in 2012 to only 27 cases in 2021.

Conclusion

Considering the transmission of viral hepatitis A through household contact, immunization should be widely implemented in organized groups such as schools and preschools. According to Mirtazayev O.M.'s "Practical Guide to Epidemiology" (Tashkent, 2003), the improvement in public health awareness has led to parents voluntarily vaccinating their children to protect their health.

The success of immunization programs depends on public awareness and participation in vaccination efforts. Local coverage indicators, convenience factors (location, timing, schedule), and public health system engagement are critical. As noted in the WHO "Safe Immunization" program, voluntary immunization has proven to be an effective strategy for preventing hepatitis A. The increased health awareness among the population has made parents more willing to vaccinate their children, emphasizing the importance of voluntary immunization as a preventive measure against hepatitis A.

Recommendations

- Widespread vaccination campaigns in schools and preschools.
- Increased public awareness regarding the benefits of voluntary immunization.
- Addressing barriers to immunization, including access and schedule flexibility.

These measures can enhance the effectiveness of vaccination efforts and significantly reduce the incidence of hepatitis A.

Main References:

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Additional References:

1. Resolution on "Further Improvement of Measures for Diagnosis, Treatment, and Prevention of Viral Hepatitis in the Republic of Uzbekistan," Order of the Ministry of Health of the Republic of Uzbekistan, No. 542, August 27, 2018.
2. Law of the Republic of Uzbekistan "On the Protection of Citizens' Health," August 29, 1996.
3. Law of the Republic of Uzbekistan "On State Sanitary Inspection," Tashkent, 1992.
4. Applicable legal and regulatory documents: orders, methodological guidelines, sanitary norms, and standards of the Ministry of Health of the Republic of Uzbekistan regarding the epidemiology and prevention of infectious and parasitic diseases.
5. Methodological guidelines and recommendations on epidemiology for students of the Faculty of Medical Prevention.
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7. Bonita, R. et al. Basic Epidemiology, 2nd edition, WHO Press, Geneva, 2006, 225 pages.

Internet Resources:

Official website of the Ministry of Health of the Republic of Uzbekistan:
www.minzdrav.uz

Website of the Tashkent Medical Academy (TMA): www.tma.uz

TMA Wi-Fi zone resources: <http://web.tma>

ZiyoNET educational platform.

Lecture materials provided by the Department of Epidemiology, available via departmental email: epidem_@ru.