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THE CRUCIAL SHIELD: WHY VACCINATION IS PARAMOUNT?

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Abstract
Few medical interventions compete with vaccines for their cumulative impact on health and well-being of entire populations. Routine immunization of children in the United States now targets 16 vaccine preventable diseases; and vaccines are now routinely given across the lifespan. Immunization efforts achieved the global eradication of smallpox, as well as the elimination of polio, measles, and rubella from the Americas. The childhood vaccine series including DTP, polio, MMR, Hib, hepatitis B, and varicella vaccines is estimated to prevent 14 million infections, avoid 33,000 premature deaths, and save $9.9 billion in direct costs as well as $33 billion in indirect costs for each U.S. birth cohort fully vaccinated. Newer vaccines such as pneumococcal conjugate, rotavirus, and hepatitis A vaccines have also reduced illness and hospitalizations among the target populations but also have amplified benefits beyond their direct effects through reduced transmission from those immunized toother groups. Although for most of the 20th century there was a substantial delay between a vaccine's introduction in developed countries and its broad use in poor countries, newer global public–private partnerships and advocacy are leading to accelerated uptake of new and underutilized vaccines. Since the Measles Initiative was established in 2001, more than 700 million children worldwide have received a measles vaccination and an estimated 4.3 million childhood measles deaths have been averted. The full impact of increasing routine immunization further and implementing new vaccines against.(6,7)

Keywords: vaccine; immunization; epidemiology; public health; infectious diseases.

1.Introduction

Vaccination is the most important thing we can do to protect ourselves and our children against ill health. They prevent millions of deaths worldwide every year. Since vaccines were introduced in the UK, diseases like smallpox, polio and tetanus that used to kill or disable millions of people are either gone or are now very rarely seen. Other diseases like measles and diphtheria have reduced to a very low number of cases each year since vaccines were introduced. These cases are often related to travel. However, if people stop having vaccines, it's possible for infectious diseases to quickly spread again. Immunization programs manage to reach children in nearly every region, neighbourhood, and household in the population. The cumulative benefits of this collective scientific and public health effort are enormous and include extended life expectancy, parental freedom from fears of crippling or life-threatening scourges of childhood, disappearance of disruptive community epidemics, and economic savings from averted disease and disability. Vaccines protect against several acute infectious diseases and the long-term complications of these infections, which range from congenital rubella syndrome to Hepatitis B and Human Papilloma virus related cancers. Much of this

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progress was accomplished over the past 50 years in the developed world, but progress often lagged by decades in resource-poor settings. The past decade, however, has seen greatly accelerated impact in developing countries through unprecedented levels of public–private partnership and investment. Although numerous continue to threaten these successes, the scorecard currently shows science and immunization programs winning the contest against the vaccine-preventable diseases they target. In the annals of medicine, few innovations have had as profound an impact on global health as vaccination. Since the development of the smallpox vaccine by Edward Jenner in 1796, vaccines have saved countless lives, eradicated diseases, and revolutionized public health practices. Yet, despite their remarkable success, vaccines continue to face scrutiny and scepticism in some quarters. In this article, we delve into the importance of vaccination, exploring why it remains a cornerstone of disease prevention and public health.(1)

National Vaccination Day, also known as Immunization Day or Polio Ravivar, is an annual event
celebrated in India on March 16th. The day is observed to promote vaccination campaigns and raise awareness about the importance of vaccines in preventing infectious diseases.

The first National Vaccination Day was celebrated in India in 1995 to eradicate polio from the country. Since then, it has become an important event in India's public health calendar. On this day, the Indian government and various organisations conduct vaccination drives across the country to immunise children and adults against various diseases. The focus is on providing vaccines to those who may have missed their scheduled immunisations.

National Vaccination Day is also an opportunity to educate people about the benefits of vaccination and dispel any myths or misconceptions about vaccines. Through awareness campaigns, the public is made aware of the importance of.

2. Historical Background Data:

Vaccine-Preventable Disease	Prevaccine No. (y)				Vaccine Date(s), y[f]	Most Recent Postvaccine Reported No.		Prevaccine Estimated Annual No. vs Most Recent Reported No. (% Reduction)	
	Estimated Annual Average		Peak						
	Cases[b]	Deaths[c]	Cases[d]	Deaths[e]		Cases, 2006[g]	Deaths, 2004[h]	Cases	Deaths
Diphtheria	21 053 (1936-1945)	1822 (1936-1945)	30 508 (1938)	3065 (1936)	1928-1943	0	0	21 053 (100)	1822 (100)
Measles	530 217 (1953-1962)	440 (1953-1962)	763 094 (1958)	552 (1958)	1963, 1967, 1968	55	0	530 162 (99.9)	440 (100)
Mumps	162 344 (1963-1968)	39 (1963-1968)	212 932 (1964)	50 (1964)	1940s, 1967	6584	0	155 760 (95.9)	39 (100)
Pertussis	200 752 (1934-1943)	4034 (1934-1943)	265 269 (1934)	7518 (1934)	1914-1941	15 632	27	185 120 (92.2)	4007 (99.3)
Poliomyelitis, acute	19 794 (1941-1950)	1393 (1941-1950)	42 033 (1949)	2720 (1949)	1955, 1961-1963, 1987	0	0	19 794 (100)	1393 (100)
Poliomyelitis, paralytic	16 316 (1951-1954)	1879 (1951-1954)	21 269 (1952)	3145 (1952)	1955, 1961-1963, 1987	0	0	16 316 (100)	1879 (100)
Rubella	47 745 (1966-1968)	17 (1966-1968)	488 796 (1964)	24 (1968)	1969	11	0	47 734 (99.9)	17 (100)
Congenital rubella syndrome	152 (1966-1969)	Not available	20 000 (1964-1965)	2160 (1964-1965)	1969	1	0	151 (99.3)	Not available
Smallpox	29 005 (1900-1949)	337 (1900-1949)	110 672 (1920)	2510 (1902)	1798	0	0	29 005 (100)	337 (100)
Tetanus	580 (1947-1949)	472 (1947-1949)	601 (1948)	511 (1947)	1933-1949	41	4	539 (92.9)	468 (99.2)

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3. Safeguarding Against Diseases:

Vaccination stands as one of the most effective tools for preventing infectious diseases. By stimulating the body's immune system to produce antibodies against specific pathogens, vaccines bolster immunity without causing the disease itself. This pre-emptive defence mechanism not only shields vaccinated individuals from falling ill but also curtails the spread of contagious diseases within communities. (2)

4. Eradicating Deadly Diseases:

The history of vaccination is replete with triumphs in disease eradication. Smallpox, once a scourge that claimed millions of lives annually, was declared eradicated in 1980, thanks to a global vaccination campaign led by the World Health Organization (WHO). Similarly, polio, once endemic in numerous countries, is on the brink of elimination, with only a handful of cases reported annually. These victories underscore the transformative power of vaccination in eliminating deadly diseases and alleviating human suffering.

5. Protecting Vulnerable Populations:

Vaccination not only safeguards individuals but also confers community-wide protection through the concept of herd immunity. When a significant portion of the population is vaccinated against a contagious disease, it becomes difficult for the pathogen to spread, thereby shielding those who cannot be vaccinated due to medical reasons or age-related vulnerabilities. This collective immunity is crucial for protecting infants, the elderly, and individuals with compromised immune systems who are particularly susceptible to severe illness.(3)

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6.Preventing Outbreaks and Resurgences:

The resurgence of vaccine-preventable diseases serves as a stark reminder of the perils of complacency. In recent years, pockets of vaccine hesitancy and misinformation have fuelled outbreaks of measles, pertussis, and other preventable diseases in various parts of the world. These outbreaks not only result in unnecessary suffering and mortality but also strain healthcare systems and impose significant economic burdens. Vaccination remains paramount in preventing the resurgence of once-controlled diseases and preserving hard-won gains in public health.

7. Combating Emerging Threats:

In an interconnected world where infectious diseases can swiftly transcend borders, vaccination plays a critical role in combating emerging threats. The COVID-19 pandemic vividly illustrates the importance of vaccine development and deployment in controlling the spread of novel pathogens. Rapid advances in vaccine technology, coupled with global collaboration and coordination, have enabled the development and distribution of highly efficacious COVID-19 vaccines in record time. These vaccines offer a pathway out of the pandemic, underscoring the indispensable role of vaccination in safeguarding public health in an ever-evolving landscape of infectious diseases. (6)

8.Vaccines do

• help to protect you and your child from many serious and potentially deadly diseases
• protect other people in your family and community – by helping to stop diseases spreading to
people who cannot have vaccines, such as babies too young to be vaccinated and those who are too ill to be vaccinated
• undergo rigorous safety testing before being introduced – they're also constantly monitored for side effects after being introduced
• sometimes cause mild side effects that will not last long – you may feel a bit unwell and have a sore arm for 2 or 3 days
• reduce or even get rid of some diseases – if enough people are vaccinated

9.1vaccines do not

• do not overload or weaken the immune system – it's safe to give children and adults several vaccines at a time and this reduces the number of injections needed
• do not contain mercury (thiomersal)
• do not contain any ingredients that cause harm – only ingredients essential to making them safer and more effective and only in very small amounts
• do not cause autism – studies have found no evidence of a link between the MMR vaccine and autism (5)

10.Side effects

Most of the side effects of vaccination are mild and do not last long.

The most common side effects of vaccination include-

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• the area where the needle goes in looking red, swollen and feeling a bit sore for 2 to 3 days
• feeling a bit unwell or developing a high temperature for 1 or 2 days
• older children and adults may feel faint
• feeling tired, having a headache, mild fever, or flu-like symptoms

Some children might also cry and be upset immediately after the injection. This is normal and they should feel better. after a cuddle. Common side effects usually pass after a few days. (8)

11.CONCLUSION

While much has been achieved through use of human vaccines, the potential for further impact is
substantial. Scientific advances can be applied to hasten production and simplify delivery of vaccines, but social and political commitment to immunization programs must be sustained to reap the full benefits of these tremendous medical discoveries.

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