19 JULY

National Immunization Coverage Estimates for 2022

WHY IN NEWS?

Recently, the WHO and UNICEF released national immunization coverage estimates for 2022. **India's DPT3 vaccine coverage reached an all-time high of 93%, surpassing the pre-pandemic record of 91% in 2019 and showing significant growth from 85% in 2021**.

Universal Immunization Programme (UIP): -

Background:

- The Expanded Programme on Immunization **began in 1978** and later expanded beyond urban areas, becoming the Universal Immunization Programme (UIP) in 1985.
- It became part of the Child Survival and Safe Motherhood Programme in 1992 and was included in the National Reproductive and Child Health Programme in 1997.
- Since the launch of the National Rural Health Mission in 2005, UIP has remained an integral part of it.

About:

- The Universal Immunization Programme **targets around 2.67 crore newborns and 2.9 crore pregnant women annually.**
- It provides **free immunization against 12 vaccine-preventable diseases.**
- Nationally, it covers **9** diseases, including **Diphtheria, Pertussis, Tetanus, Polio, Measles, Rubella, severe form of Childhood Tuberculosis, Hepatitis B, and Meningitis & Pneumonia caused by Hemophilus Influenza type B**.
- Sub-nationally, it covers **3** diseases: **Rotavirus diarrhoea, Pneumococcal Pneumonia, and Japanese Encephalitis**.
- A child is considered fully immunized if they receive all due vaccines as per the national immunization schedule within the first year of age.

Major milestones:

- The UIP achieved two significant milestones: the **elimination of polio in 2014** and the **elimination of maternal and neonatal tetanus in 2015.**

The key findings:

Global Coverage:

- Global immunization services reached approximately 4 million more children in 2022 compared to the previous year.
- However, around 20.5 million children worldwide remained either unvaccinated or under-vaccinated, missing out on one or more routine immunization vaccines.

Coverage in India:

- India accounted for 1.6 million of the unvaccinated and under-vaccinated children for DPT-3 (diphtheria, pertussis, and tetanus) vaccine.
- **DPT vaccine** is given in three doses to **children below 7 years of age** and is used to assess routine immunization service provision.

- India's coverage rate for **DPT3 (diphtheria, pertussis, and tetanus)** vaccines reached an **all-time high of 93%,** surpassing the pre-pandemic record of 91% in 2019.
- This significant increase indicates a sharp rise from the 85% coverage recorded in 2021.

Performance of WHO South-East Asia Region:

- The WHO South-East Asia Region showed the best immunization recoveries among all WHO regions.
- This progress is largely attributed to efforts made by India and Indonesia.

Impact of Inequities in Immunization Coverage:

- Inequities in immunization coverage create pockets of unvaccinated children, posing risks of outbreaks of preventable diseases like measles and diphtheria.

WAY FORWARD:

- **Strengthening Routine Immunization Services**: Eg- the Indian state of Kerala, the "Mission Indradhanush" campaign targeted underserved areas, leading to a significant increase in immunization coverage from 61% to 81%.
- **Innovations in Vaccine Delivery**: Eg- In Rwanda, Zipline, a drone delivery service, successfully transported vaccines and blood products to remote health canters, ensuring timely vaccinations.
- **Digital Health Technologies:** Eg- In Bangladesh, the "mHealth" project used mobile phones to track children's vaccination status, leading to an increase in immunization coverage.
- **Community Engagement:** Eg- In Nepal, the "Female Community Health Volunteers" program increased immunization coverage by involving local women as advocates and immunization providers.
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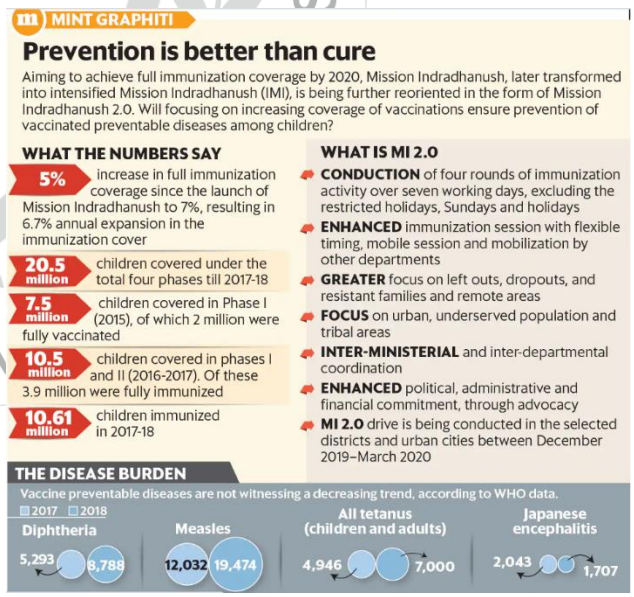
PRELIMS SPECIFIC: - Mission Indradhanush:

- Launched in December 2014, Mission Indradhanush (MI) seeks to achieve a 90% full immunization coverage for children.
- MI focuses on areas with low immunization rates and hard-to-reach regions, where unvaccinated and partially vaccinated children are most prevalent.
- So far, six phases of MI have been completed, covering 554 districts throughout India.
- In 2017, the Intensified Mission Indradhanush (IMI) was introduced to further boost the immunization campaign significantly.



National Research Foundation (NRF) Bill, 2023

WHY IN NEWS?

One of the significant bills scheduled to be presented in the current monsoon session of Parliament is the National Research Foundation (NRF) Bill, 2023.

National Research Foundation (NRF) Bill, 2023:

- The NRF Bill proposes the establishment of a **centralized body** to fund research with a **budget of ₹50,000 crore** over the next five years.
- The NRF takes inspiration from successful models like the US National Science Foundation and the European Research Council.
- The plan is to **source a significant portion of its budget (₹36,000 crore) from the private sector.**
- The rationale behind attracting more private money is based on the fact that the private sector contributes around 70% of research expenditure in many developed countries.
- The **aim is to galvanize university research in India** by increasing private sector participation and investment.

The current situation of research in India:

- **Spending on research** in India has historically been around **0.6%-0.8% of GDP**, lower than the 1%-2% seen in science and technology-driven economies.
- In countries like China, the US, and Israel, the **private sector** contributes nearly 70% of research expenditure, whereas in India, it accounts for only **about 36% of the total research spending**, roughly ₹1.2 lakh crore in 2019-20.
- The number of students enrolled in PhD programs in 2018 was 161,412, representing less than 0.5% of the total student enrolment in higher education, which includes undergraduate and postgraduate students in universities, colleges, and standalone institutes.

Challenges:

- The **lack of scientific training** hampers researchers, leading to a shortage of competent researchers in the country.
- There is **insufficient coordination** between university research departments, businesses, government departments, and research institutions.
- **Inadequate investment** in research and development contributes to the scarcity of private sector research companies in India.
- The **absence of a code of conduct for researchers** and **inter-university rivalries** are common challenges that need addressing.
- Delays in research studies occur due to inadequate secretarial and computer assistance.
- The **lack of rewards for researchers** is a significant factor behind the underperformance of Indian institutions in research.

WAY FORWARD:

- **Foster Industry-Academia Collaboration**: Eg- Massachusetts Institute of Technology (MIT) in the USA collaborates extensively with private companies, leading to innovations like the development of 3D printing technologies.
- **Increase Research Funding**: Eg- countries like South Korea increased their research and development expenditure from 2.2% of GDP in 1996 to 4.5% in 2018

- **Promote Research in Emerging Fields**: in emerging fields such as artificial intelligence, biotechnology, and renewable energy can put India at the forefront

GM MUSTARD

WHY IN NEWS:

- Over the last two decades, India has experienced a strong discourse surrounding GM crops, with environmentalists, scientists, farmers, and the higher judiciary raising inquiries about their safety, efficacy, and necessity. Recently, activists have even approached the Supreme Court to seek a ban on the cultivation of the Genetically-Modified (GM) food crop - Dhara Mustard Hybrid-11 (DMH-11) - citing various concerns.

ABOUT GM MUSTARD:

- DMH-11 is a homegrown genetically modified variety of mustard, known as **transgenic mustard**.
- It is created by **crossing** the Indian mustard variety **'Varuna'** with the East European **'Early Heera-2'** mustard.
- DMH-11 contains two foreign genes, **'barnase' and 'barstar**,' obtained from **Bacillus amyloliquefaciens, a soil bacterium**. These genes facilitate the breeding of high-yielding commercial mustard hybrids.
- The **barnase gene** in Varuna induces **temporary sterilit**y, preventing natural self-pollination, while the **barstar gene** in Heera **counteracts barnase's effect**, allowing seed production.
- DMH-11 has demonstrated approximately **28% higher yield** compared to the national check and 37% more than the zonal checks, receiving approval from the GEAC.
- The "**Bar gene**" maintains the genetic purity of hybrid seeds.

ISSUES REGARDING GM MUSTARD:

- GM mustard is a crop designed to be **tolerant to herbicides**, but **concerns** have been raised by **farmers and campaigners** about the **potential adverse health effects** of spraying hazardous chemicals on the plant. They also argue that it may not be suitable for India's agricultural conditions and is **environmentally unsustainable**.

- A wide range of stakeholders, including environmentalists, scientists, lawmakers, farmers, consumers, and members of the higher court, have expressed **doubts about the necessity, safety, and effectiveness of Genetically Modified (GM) food.**

- Committees involved in the evaluation of GM mustard have highlighted **significant weaknesses in the regulatory system** and emphasized the need for utmost caution. They have also pointed out **deficiencies in the safety assessment of GM crops.**

- The Government has not made the full biosafety dossier of GM mustard publicly available and has stated that it should not be categorized as a Herbicide Tolerant (HT) crop.

WHY GM MUSTARD IS NECESSARY?

- **India's import of edible oils is increasing** to meet domestic demand, causing a reduction in foreign exchange reserves.
- GM Mustard is seen as crucial to **reduce the forex drain** caused by agricultural imports.
- The **productivity of oilseed crops** like soybean, rapeseed mustard, groundnut, sesame, sunflower, safflower, and linseed in India **is significantly lower than global productivity** of these crops.
- Crossing genetically diverse parents leads to hybrids with higher yield and better adaptation, which can potentially **address the productivity gap** in oilseed crops.

PRELIMS SPECIFIC: OTHER GM CROPS IN INDIA

- **Bt Cotton:** Bt cotton contains foreign genes from Bacillus thuringiensis (Bt) bacterium, enabling the crop to produce a protein toxic to the pink bollworm insect. It is the only permitted GM crop in India. Additionally, Bt cotton has a gene from another soil bacterium, making it resistant to the pesticide glyphosate.

- **Bt Brinjal:** Bt brinjal has a gene that protects the plant from fruit and shoot borer infestations. The government faced opposition from NGOs and anti-GMO campaigners, leading to delays in its commercial distribution.

- **DMH 11 Mustard:** DMH-11 mustard, created by Deepak Pental and colleagues at the University of Delhi's South Campus, has genetic modifications that allow cross-pollination in a naturally self-pollinating crop.

- **Worldwide variants:** Genetically modified versions of maize, canola, and soybeans are available globally.