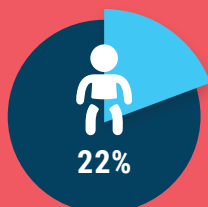




## CHILDHOOD IMMUNIZATION MADE EASY: PARACETAMOL SYRUP FOR AEFI RELATED DROPOUT MANAGEMENT

### Background

India has one of the largest Universal Immunization Programs (UIP) in the world in terms of the quantities of vaccines used, number of beneficiaries covered, geographical spread and human resources involved! The UIP aims at providing access to immunization to over 26 million infants and around 30 million pregnant women annually. India has made tremendous progress in its immunization program over the last decade, including the elimination of polio (2014) and neonatal tetanus (2015). The Government of India has also introduced new life-saving vaccines namely Rotavirus Vaccine (RVV), Japanese Encephalitis (JE) Vaccine for adults, Inactivated Poliovirus Vaccine (IPV), Measles Rubella Vaccine (MR), Pneumococcal Conjugate Vaccine (PCV) and Tetanus Diphtheria (Td) in place of Tetanus Toxoid (TT) to expand the scope of the UIP.



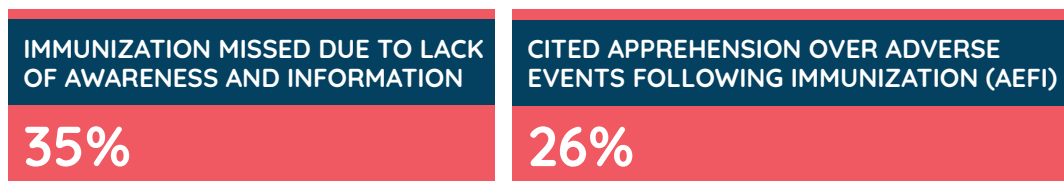
**As the most populous state of India with over 235 million inhabitants, Uttar Pradesh (UP) contributes ~22% (5.9 million) to India's annual birth cohort.** UP has one of the highest infant mortality rates (IMR) at 41 deaths per 1,000 live births in the country, in contrast with India's average IMR, which stands at 33 per 1,000 live births (which, as a signatory to the Sustainable Development Goals (SDGs), India has committed to reducing IMR to 25 by 2030).

The basic vaccination coverage in India has increased from 62% in 2015-16 to 77% in 2019-21, while during the same period, the coverage for Uttar Pradesh has increased from 51.1% to 69.6%<sup>2</sup> due to focused efforts and catch-up campaigns such as Intensified Mission Indradhanush (IMI) within the state.

<sup>1</sup><https://main.mohfw.gov.in/sites/default/files/5628564789562315.pdf>  
<sup>2</sup>[https://main.mohfw.gov.in/sites/default/files/NFHS-5\\_Phase-II\\_0.pdf](https://main.mohfw.gov.in/sites/default/files/NFHS-5_Phase-II_0.pdf)

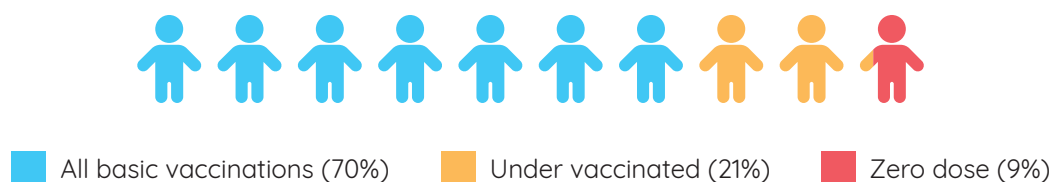
## Zero Dose and Under-Immunized Children: A Cause of Concern

As per the National Family Health Survey (NFHS) - 5 data, Uttar Pradesh has more than 0.5 million zero dose (ZD) children and over 1.2 million under-immunized children, contributing to 28% of India's ZD and under-immunized cohort. Amongst under/un-immunized children, following reasons were cited for missing vaccination (Figures 1 and 2)

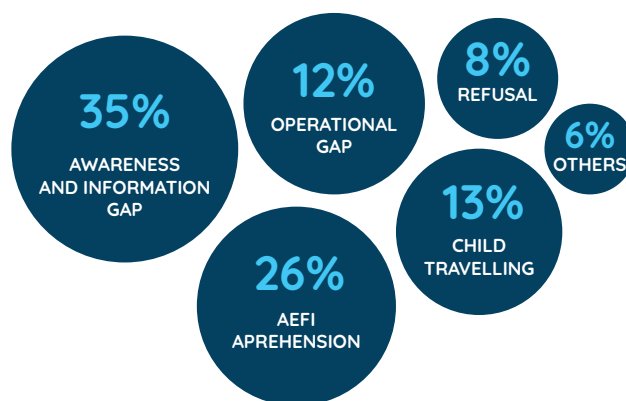


Adverse event following immunization is defined as any untoward medical occurrence that follows immunization and does not necessarily have a causal relationship with the usage of the vaccine<sup>3</sup>.

**Figure 1:** Distribution of children based on their vaccination status, Uttar Pradesh (Source: NFHS-5)



**Figure 2:** Reasons for missing vaccination among children aged 12-23 months (Source: Routine Immunization (RI) monitoring, India 2019)



Vaccines protect an individual against several diseases and are safe. Nevertheless, they can cause mild side effects, such as a low-grade fever or pain or redness at the injection site. Mild reactions go away within a few days on their own.

Apprehensions stemming from the AEFI have been identified as a primary cause for drop-outs in children, particularly after receiving pentavalent or Diphtheria Pertussis Tetanus (DPT)-containing vaccines<sup>4</sup>.

<sup>3</sup><https://main.mohfw.gov.in/sites/default/files/Unit6Adverseeventsfollowingimmunization.pdf>

<sup>4</sup>[https://nhm.gov.in/New\\_Updates\\_2018/NHM\\_Components/Immunization/Guidelines\\_for\\_Immunization/Paracetamol\\_Guidelines.pdf](https://nhm.gov.in/New_Updates_2018/NHM_Components/Immunization/Guidelines_for_Immunization/Paracetamol_Guidelines.pdf)

## Fever and Pain Management Following Immunization

Paracetamol, an analgesic and antipyretic drug, is the preferred medication for treating fever and pain following immunization. The recommended dose of paracetamol is 10-15mg/kg body weight every 8 hours, with a maximum of four doses within 24 hours<sup>5</sup>. It is considered safe and well-tolerated, with a low occurrence of side effects.

## Practices related to Paracetamol use in Universal Immunization Program

Vaccinators (including Auxiliary Nurse Midwife (ANMs)/health workers) dispense tablet-form paracetamol at immunization session sites to address fever, local pain and swelling following vaccination. The health workers suggest using fractional doses like 1/4th, 1/6th, or 1/8th of a 500 mg tablet to manage post-vaccination fever. This practice raised concerns about potential inaccuracies in dosing, especially the risk of overdosing in infants, as evenly breaking paracetamol tablets into required fractions can be challenging. Mothers/caregivers struggle to crush and dissolve paracetamol tablets in liquid, leading to potential choking hazards. In some cases, other drugs have been mistakenly given instead of paracetamol, causing adverse events. There was lack of standardised practices for paracetamol use in managing post-vaccination fever across states<sup>6</sup>.



## Recommendation and Guidelines<sup>7</sup>

In 2020, the Government of India (GoI) recognized the need for clear instructions on paracetamol use after vaccination for managing post-vaccination fever. Based on the recommendations of an expert group operational guidelines were released for paracetamol use in the UIP.

The guidelines recommended that Syrup Paracetamol should be given if fever arises post-vaccination. While Syrup Paracetamol is available in various strengths (120 mg/5ml, 125mg/5ml, and 250mg/5ml), for children aged six weeks to six years in the UIP, a 125mg/5ml strength is preferred to ensure consistency and prevent dosing errors.

<sup>5</sup>AEFI Surveillance and Response Operational Guidelines, MoHFW, Government of India, 2015

<sup>6</sup>[https://nhm.gov.in/New\\_Updates\\_2018/NHM\\_Components/Immunization/Guidelines\\_for\\_immunization/Paracetamol\\_Guidelines.pdf](https://nhm.gov.in/New_Updates_2018/NHM_Components/Immunization/Guidelines_for_immunization/Paracetamol_Guidelines.pdf)

<sup>7</sup>Guidelines On Use of Syrup Paracetamol Following Vaccinations, MoHFW, Government of India, 2020

## Uttar Pradesh: Status & Gaps and Role of Uttar Pradesh Technical Support Unit

In the same year (2020), following GoI guidelines, the Government of Uttar Pradesh (GoUP) formulated guidelines instructing the use of Syrup Paracetamol following vaccination. However, due to the Covid-19 pandemic, the implementation of this policy remained uneven across the state.

During Chhaya Integrated Village Health Nutrition and Sanitation Day (CIVHSND)<sup>8</sup> observations and block immersions, UP TSU found that the availability of Syrup Paracetamol 125mg/5ml at CIVHSND sites remained a major challenge.

### A DEEP DIVE INTO THE PROBLEM REVEALED TWO MAJOR REASONS FOR THIS:



Procurement pathway for Syrup Paracetamol was unclear to the block officials



The vaccinators were not aware of the need and/or of the dose to be prescribed

## Role of UPTSU in enhancing the availability, adequacy and utilization of Syrup Paracetamol

### i. Ensuring Availability of Syrup Paracetamol

The data from CIVHSND observations was utilized to advocate for ensuring the availability of Syrup Paracetamol at CIVHSND sites. The GoI guidelines state that Syrup Paracetamol 125mg/5ml was included in state Essential Drugs List (EDL) and should be procured like any other essential drug. After confirming that the drug was already part of state EDL and was being procured by UP Medical Supplies Corporation (UPMSCL)<sup>9</sup>; UPTSU facilitated coordination meetings between UPMSCL, State EPI Officer, and General Manager-RI National Health Mission (NHM) to ensure adequate availability of Syrup Paracetamol 125mg/5ml at district level drug warehouses.

District Immunization Officers were sensitized during several review and capacity-building meetings and workshops that the same pathway, as used for other EDL drugs, should be utilized for indenting Syrup Paracetamol by the health care facilities using the passbook system.




<sup>8</sup>Village Health and Nutrition Day (VHND) now called Chhaya Integrated Village Health and Sanitation and Nutrition Day (CIVHSND) was conceptualized under the National Health Mission, MoHFW. It is being implemented across the country since 2007 as a community platform, connecting the community and health systems and facilitating convergent actions. It attempts to bring health, early childhood development, nutrition and sanitation services to the doorstep and promote community engagement for improved health and wellbeing.

<sup>9</sup>The Uttar Pradesh Medical Supplies Corporation Limited (UPMSCL) was incorporated in 2018 as an independent corporation to undertake centralised procurement and management of essential drugs, equipment and medical supplies. UPTSU further supported the Government of Uttar Pradesh (GoUP) in operationalising UPMSCL.

## ii. Reissuance of guidelines for syrup paracetamol utilization for AEFI

Guidelines regarding the utilization of Syrup Paracetamol 125mg/5ml in the immunization program were reissued by the Director General Family Welfare. The letter also instructed that refresher trainings be conducted for all ANMs during the monthly meetings. UP TSU supported the development of a presentation to facilitate the short refresher training which was shared along with the guidelines. UP TSU also began tracking the availability and consumption of Syrup Paracetamol at the warehouse level and actively supported GoUP in mitigating any stockouts at warehouses.

As a follow-up to the refresher training, UP TSU also assisted GoUP in developing a short video on Syrup Paracetamol for building the capacities of ANMs and ASHAs. A condensed version of the video was tweeted, and the entire video was posted on the Facebook handles of NHM UP to raise awareness about the availability of Syrup Paracetamol. The video was widely shared in WhatsApp groups across the state, with Mission Director (MD)-NHM taking the lead and sharing the video along with a message in all state groups.



**नियमित टीकाकरण कार्यक्रम में**  
**पैरासीटामॉल सिरप 125mg/5ml**  
**के इस्तेमाल हेतु दिशा निर्देश**

 जून 2022



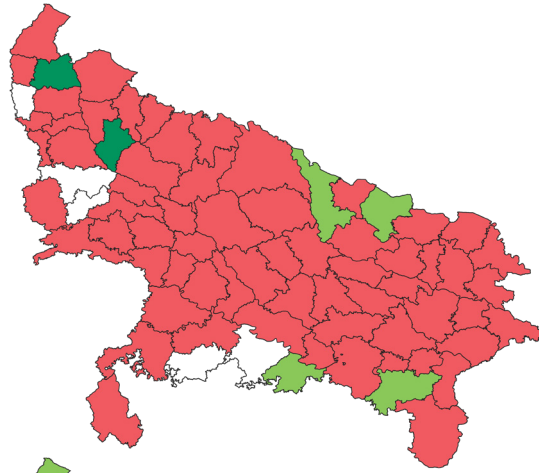
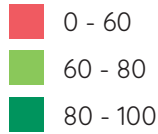
Scan the QR Code to watch the video on  
Importance of Child Immunization

## iii. Capacity building and handholding support for estimation and distribution

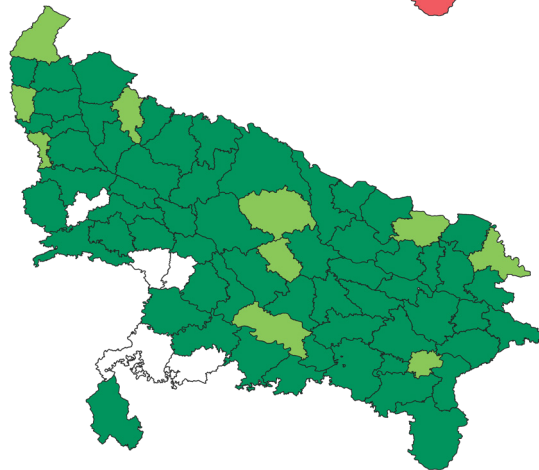
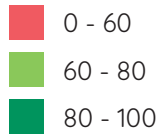
UP TSU provided support to the state, districts, and blocks in estimating the annual and monthly requirements. Pharmacists received assistance in estimating ANM-wise requirements. The UP TSU field team, with prior experience from a similar exercise conducted state-wide for IFA tablets, ensured the distribution of Syrup Paracetamol to ANMs.

## Progress

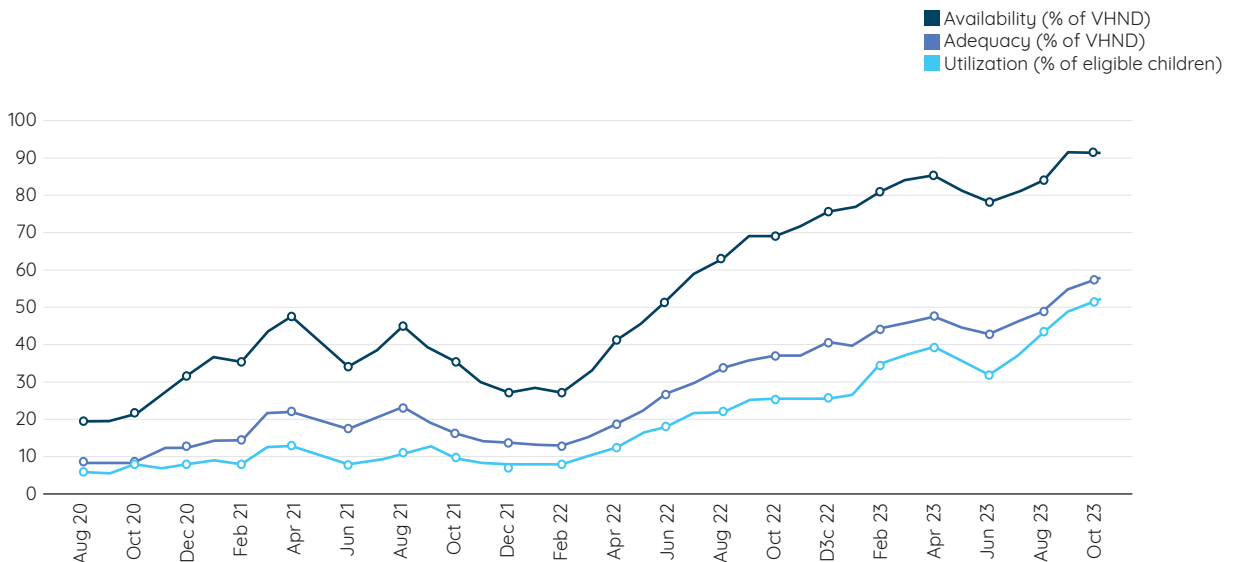
% of CiVHSND session with availability of PCM syrup (June 2022)



% of CiVHSND session with availability of PCM syrup (Oct 2023)



**Figure 3:** Availability, adequacy and utilization Syrup Paracetamol (125mg/5ml)<sup>10</sup>



The availability of Syrup Paracetamol increased from ~51% of the 3,073 CiVHSNDs observed in June 2022 to ~91% of the 2,590 CiVHSNDs observed in October 2023. The utilization has also seen marked improvement, with ~56% of the children receiving Penta/DPT being provided Syrup Paracetamol in October 2023, compared to ~24% in June 2022.

<sup>10</sup>Adequacy: Availability of PCM syrup  $\geq$  number of children received DPT containing vaccine.

<sup>10</sup>Availability: Syp Paracetamol 125mg/5ml available at CiVHND

<sup>10</sup>Utilization: Proportion of under 2 children vaccinated with DPT containing vaccine received Syp Paracetamol 125mg/5ml



## Way Forward

UP TSU continues to provide technical support to increase availability, adequacy in coverage and optimal utilization of Syrup Paracetamol at CiVHSNDs and other RI sites. UP TSU does this by tracking availability at CiVHSNDs and warehouses and supporting capacity building of FLWs and block officials, as needed. Additionally, the UP TSU is also in the process of demonstrating a novel digital communication strategy using the Direct to Consumer platform, which can use segmented data to deliver targeted messages using multiple digital channels. Once piloted, UP TSU will assist GoUP in implementing it on a larger scale across the state. We firmly believe that the combined impact of these interventions will significantly narrow the immunization gap. These two interventions combined have the potential to address over 60% of the reasons (AEFI apprehension and information/awareness gap) for un-/under-vaccination.



“Parents find it easier to administer syrup to their young children. Previously, post-vaccination, we provided paracetamol tablets for AEFI. Since giving tablets to children was inconvenient, parents used to purchase syrup, incurring additional expenses. Now, our provision of Syrup Paracetamol has increased parental trust and reduced dropouts caused by children experiencing fever and excessive crying after vaccination.”

**Suman, ANM, Narkhori Subcentre, Chetara Block, Sonbhadra District, Uttar Pradesh**

“After my child developed a fever following vaccination, I administered Paracetamol syrup as suggested by ANM didi. Administering Paracetamol syrup to the child is easy with a measuring cap. Now, I am not afraid of vaccinations and will go for the next scheduled vaccination as well.”

**Tanu, Mother, Imali Village, Nevada Block, Kaushambi District, Uttar Pradesh**





## Uttar Pradesh Technical Support Unit

Uttar Pradesh Technical Support Unit (UP TSU) was established in 2013 under a Memorandum of Cooperation signed between the Government of Uttar Pradesh (GoUP) and Bill & Melinda Gates Foundation (BMGF) to strengthen the Reproductive, Maternal, Newborn, Child, Adolescence Health and Nutrition (RMNCAH+N). University of Manitoba's India-based partner, India Health Action Trust (IHAT) is the lead implementing organization. In 2020, with an aim to improve immunization coverage and equity outcomes in Uttar Pradesh (UP), UP TSU established a Routine Immunization Program Management Unit - a collaboration between UoM, IHAT and Clinton Health Access Initiative.



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