

Enhancing Pediatric Vaccination Compliance: A process optimization study at Cloudnine Hospitals



Dissertation Presentation :
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Introduction

- Immunization is a key public health tool that significantly reduces child mortality by preventing vaccine-preventable diseases. In India, despite ongoing efforts, many children still miss scheduled vaccinations due to lack of awareness, cultural barriers, and logistical challenges, especially in their first year of life.
- Private hospitals, particularly in urban areas, can play a vital role in addressing this gap. This study examines the impact of structured reminder calls to parents as a means to reduce dropouts and improve vaccination compliance. It highlights how such targeted interventions can strengthen immunization efforts and enhance healthcare delivery.

Problem Statement

1. **Operational Disruptions:** Unkept vaccination appointments disrupt daily hospital operations, affecting planning, scheduling, and the efficient use of staff time and medical resources.
2. **Underutilization of Resources:** Missed appointments result in wasted clinical time slots and underutilization of hospital facilities allocated for vaccination services.
3. **Lack of Effective Reminder Systems:** The absence of proactive, structured follow-up systems such as reminder or recall calls contributes significantly to vaccination non-compliance in urban healthcare environments.
4. **Behavioural and Logistical Barriers:** Parental forgetfulness, lack of awareness, competing priorities, or logistical challenges further exacerbate the issue.
5. **Need for Systematic Intervention:** There is a pressing need to design and implement structured follow-up strategies that can enhance compliance and streamline pediatric care delivery.

Objectives

- To assess the compliance rate of pediatric vaccination among babies born at Cloudnine Hospital.
- To identify key reasons contributing to vaccination dropouts during the immunization schedule.
- To analyze the retention pattern of babies through various vaccination milestones, from the 6th week to the 6th month.
- To evaluate the effectiveness of the vaccination reminder calling process before and after the implementation of a structured calling script.

Scope of Study

- The study was undertaken at Cloudnine Hospitals, located in Jayanagar, Bangalore.
- The study is focused on to evaluate the impact of scheduled follow-up calls regarding vaccinations that are to be given at 6 weeks, 10 weeks, 14 weeks, and 6 months.
- Target group: Parents of infants scheduled for immunization, all the babies born in Cloudnine hospital, Jayanagar.
- Time frame: 1st March'25 –31st May'25.
- This was a real-time, operationally embedded study that utilized primary data collected directly from day-to-day hospital activities. It was integrated into the existing clinical workflow, allowing for accurate, context-specific insights and reflecting actual patient engagement and staff intervention patterns as they occurred.

Methodology

- **Study Design :** Mixed-methods Approach .
- **Methodology :**
 - Effective reminder calls made to parents of infants due for 6, 10, 14-week and 6-month vaccinations.
 - Calls executed by trained hospital customer care executives(CCE's), using a structured script.
 - Calls conducted between 10 AM and 5 PM on weekdays to maximize response.
- **Data Collection Tool:** Customized Excel-based tracker capturing: Patient ID, vaccine due date, call status, response type, final outcome, and parent remarks.
- **Sampling:** Included 400+ scheduled vaccination appointments extracted from hospital records , for every month .

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- **Ethical Considerations:** Maintained confidentiality, voluntary participation, and non-coercive communication.
 - **Outcome Focus:** Measurable improvements in compliance, behavioral insights, and operational feasibility.
 - **Scalability:** Low-cost, replicable, and minimally disruptive to existing hospital workflows.

Result

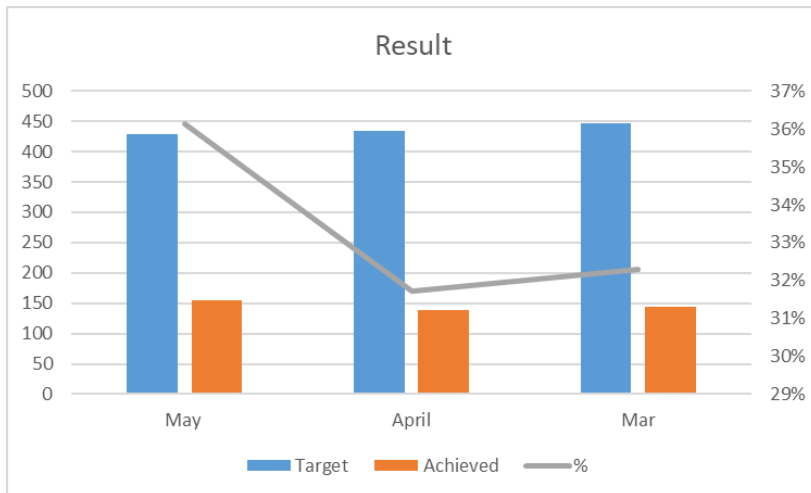
Mar'25	6th Week	10th Week	14 Week	6 Month	Total
Target	112	114	102	118	446
Achieved	39	45	24	36	144
%	35%	39%	24%	31%	32%

Apr '25	6th Week	10th Week	14th Week	6 month	Total
Targets	91	107	109	128	435
Achieved	38	28	31	41	138
%	42%	26%	28%	32%	32%

May '25	6th Week	10th Week	14th Week	6 month	Total
Targets	104	91	115	119	429
Achieved	47	41	24	43	155
%	45%	45%	21%	36%	36%

Result

The project commenced in March, utilizing March data as secondary input. Primary data collection began in April, alongside the development of a structured calling script. Customer care executives were trained on its use to effectively remind parents about vaccinations. While the overall achievement percentage for March and April remained the same, the introduction of the script and training led to improved call quality and better engagement, contributing to enhanced outcomes.



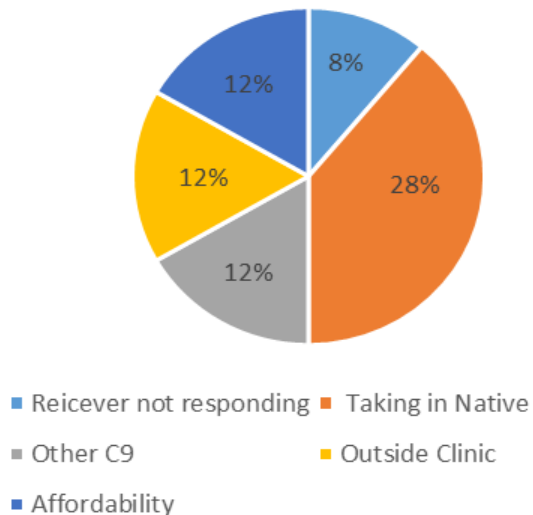
Month	Target	Achieved	%
May	429	155	36%
April	435	138	32%
Mar	446	144	32%

Challenges

- Difficulty in reaching all parents (not answering & disconnecting calls).
- Different reasons of Dropouts .
- Varying responses based on the purpose of call .
- Some resistance due to plans to vaccinate at native places or outside clinics.
- Some parents felt the vaccination charges were priced higher.

Reasons for Dropouts :

Reasons for Dropouts %



- The analysis of dropout cases revealed that the primary reasons included parents opting for vaccination at native place (28%), lack of response to follow-up communication (8%), shifting to other Cloudnine branches (12%), choosing outside clinics for vaccinations (12%), and affordability concerns (12%). These findings underscore the need for improved engagement strategies, and consideration of financial expenses that influence parental decisions.

Discussion

Improved Compliance Through Follow-Up

Structured telephonic follow-ups increased pediatric vaccination attendance.

66.7% of parents were contacted; of these, 64.5% confirmed visits, and 77.8% followed through.

Behavioural Insights

Non-compliance was mostly due to forgetfulness, scheduling issues, travel, or emotional overload—not vaccine resistance.

Parents appreciated personalized reminders and clarification of doubts.

Dropout analysis showed key reasons such as preference for native practices, non-responsiveness, shifting to other Cloudnine branches, choosing outside clinics, and affordability issues. These highlight the need for better communication and support for financial constraints to improve vaccination compliance.

Value of Human-Led Communication

Effective phone calls , lead to better conversion .

Created emotional trust and strengthened hospital-parent relationships.

Helped address specific concerns (e.g., rescheduling due to mild illness or travel).

Data-Driven Decision-Making

Excel logs captured behavioural data (e.g., “doing it in native,” “not answering”).

Enabled tracking of high-risk groups and proactive outreach planning.

Foundation for behavioural analytics and future predictive models.

Scalability and Replicability

Intervention required minimal training and used basic tools (Excel, phone).

Can be expanded across branches or applied to other patient categories.

A model for other preventive services (ANC, chronic disease, diagnostics).

- **Operational Impact**

Improved coordination between departments (front desk, paediatrics, nursing).

Reduction in last-minute cancellations and better vaccine inventory management.

Smoother OPD flow and reduced staff stress during peak hours.

- **Cultural and Emotional Sensitivity**

Parents responded better to calls in local language.

Recognized the emotional context of paediatric care and adapted communication accordingly.

- **Long-Term Potential**

Suggests integration of follow-up processes into hospital SOPs and quality metrics.

Can align with national digital health systems like ABDM and eVIN.

Conclusion

This study highlights the importance of understanding and addressing the reasons for dropouts in the pediatric vaccination schedule. By identifying common barriers such as forgetfulness, vaccine hesitancy, and logistical challenges it becomes possible to design targeted interventions to support parents in adhering to the immunization timeline. Strengthening communication through structured reminder calls, improving parental engagement, and enhancing follow-up mechanisms can significantly improve compliance rates. Ensuring timely paediatric vaccination not only safeguards individual child health but also contributes to broader public health goals through sustained immunization coverage.

Recommendations

- Institutionalize structured telephonic follow-ups as a standard SOP.
- Customize calls by language and contact time.
- Use Excel or CRM tools to maintain follow-up logs and improve data integrity.
- Train non-clinical staff in empathetic communication and knowledge about the process.
- Creating A Vaccination package , for better retention and improve compliance to the vaccination schedule & to make it more affordable.

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Thank You