

# Impact of Simulation Module on Parenteral Route of Vaccine Administration in Paediatric Post Graduate Training

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**Background:** Simulation based teaching has evolved as a novel modality in post graduate curriculum. Safe immunization practices form one of the core competencies of paediatric post graduate education. The standard vaccination guidelines have been established by IAP-ACVIP and CDC-ACIP. By assessing the impact of simulation module on parenteral route of vaccine administration, we hope to improve the quality of immunization practice among future paediatricians ultimately leading to better healthcare.

**Aim:** To study the impact of Immunization simulation using Infant mannequins in paediatric post graduate training

**Objective:** Comparison of the knowledge and confidence in administration of vaccines by parenteral routes after the simulation based training module with baseline

**Duration of the study:** 1 year 5 months (April 2023 - September 2024)

**Methodology:** After obtaining informed consent, the paediatric PGs' pre-session assessment of knowledge and confidence (4 point Likert scale) in the administration of vaccines by various routes was done. A video demonstration followed by skill training using injection-training padded mannequins on the routes of vaccination as per standard practice was done. Following that, a hands-on practice session was conducted. At the end of the module, the participants' knowledge and confidence levels were reassessed and feedback obtained. During analysis, demographic and module fidelity data were expressed in percentage. The knowledge and confidence were expressed as mean(+SD). Using Wilcoxon signed rank test, comparison of pre and post test data was done. A 10 month follow up audit of their performance was done and feedback at the end of their immunization postings was obtained.

**Results:** Among the 36 participants, 80.5% had witnessed any one of the parenteral routes and only 52.7% had administered parenteral vaccines. Intradermal route was perceived to be the most difficult (80.6%). In the knowledge domain the mean scores had significantly improved from 6.8+1.3 to 8.4+1.22 pre and post session ( $p<0.005$ ). Prior to the training module, only 88.8%, 72.2% and 52.7% had rated their confidence levels to be partially confident or confident in i.m, s.c and i.d routes respectively. There was a significant increase in confidence levels post the training module with 94.1%, 86.1% and 72.2% stating that they were more confident in i.m, s.c, i.d routes. Comparing the mean scores in each of the parenteral routes, there was a statistically significant improvement ( $p<0.05$ ). In the feedback analysis, 94.4% had rated the fidelity of the module to be strong, 77.7% concurred that the module simulated real life scenario and 88.8% students felt that the module would be helpful in actual vaccine practice.

**Conclusion:**

The simulation based training module on parenteral route of vaccine administration is a useful method with high fidelity to improve the knowledge and confidence in paediatric post graduates.

**Keywords:** Parental routes, Simulation module, Hybrid simulation module

## References

1. Purple Book IAP Guidebook on Immunization 2022
2. CDC-ACIP guidelines on vaccine administration Presenting author: Dr. Ajitha. P

## Abbreviations:

i.m. - intramuscular, i.d. - intradermal, s.c.- subcutaneous, PG- post graduate

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