

## VACCINOLOGY I

### SCIENCE AND PRACTICE OF VACCINE SCHEDULING

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**Abstract:** *Vaccination is the most successful and cost-effective health intervention in human history. The success of vaccination programs stands on three pillars namely safe and effective vaccines, high population coverage and optimal scheduling. The scheduling of any vaccine is not straight forward. It is affected by immunological, epidemiological, programmatic factors and the dynamic interactions among these factors in any given population at any given time. This article describes the science and practice behind this scheduling and how this scheduling is different for an individual child as recommended by Indian Academy of Pediatrics and for the community at large, as represented by the National immunization chart (Universal Immunization Program).*

**Keywords:** *Scheduling vaccines, Immunization chart, Universal immunization program.*

### Points to Remember

- *Vaccine schedule is planned based on immunological, epidemiological, programmatic factors and the dynamic interactions among these factors.*
- *National Immunization schedule is mainly focussed on the community, because responsibility of public health is in the best interest of community.*
- *IAP Immunization schedule is focused on the individual child, because vaccination in health-care is in the best interest of each child.*
- *Though the objectives are slightly different, the private health-care and public health programs including vaccination schedules should be complementary and not contradictory regarding immunological basics, ethics and epidemiology.*
- *The scheduling of vaccines is not fixed, but is a dynamic one depending on local epidemiology of the disease, gain in insight/ data and availability of the newer vaccines.*

### References

1. World Health Organization. Immunization. Available online: <https://www.who.int/news-room/facts-in-pictures/detail/immunization>. Accessed on November 5, 2020.
2. Pemde HK. Basic immunology. In: Advisory Committee on Vaccines and Immunization Practices, Indian Academy of Pediatrics. IAP Guidebook on Immunization 2018-2019. Balasubramanian S, Shashtri DD, Shah AK, Pallab Chatterjee, Harish Pemde, Shivananda S, Vijaya Kumar Guduru (eds), 3<sup>rd</sup> Edn, Jaypee Brothers Medical Publishers, New Delhi, 2020; pp14-27.
3. Siegrist CA. Vaccine immunology. In: Plotkin SA, Orenstein WA, Offit PA, editors. Vaccines. 6<sup>th</sup> edn. Philadelphia: Saunders Elsevier; 2013; pp14-33.
4. Chatterjee P. Scheduling of vaccines. In: Advisory Committee on Vaccines and Immunization Practices, Indian Academy of Pediatrics. "IAP Guidebook on Immunization 2018-2019, 3<sup>rd</sup> Edn, Jaypee Brothers Medical Publishers, New Delhi, 2020; pp84-92.
5. Shastri DD. Immunization in Special Situations. In: Advisory Committee on Vaccines and Immunization Practices, Indian Academy of Pediatrics. IAP Guidebook

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- on Immunization 2018-2019, Balasubramanian S, Shashtri DD, Shah AK, Pallab Chatterjee, Harish Pemde, Shivananda S, Vijaya Kumar Guduru (eds), 3<sup>rd</sup> Edn, Jaypee Brothers Medical Publishers, New Delhi, 2020; pp405-432.
6. Kumar P, Vashishtha VM. The issues related to introduction of a new vaccine in National Immunization Program of a developing country. *J Pediatr Sci* 2010; 5:e45.
  7. Mittal SK, Mathew JL. Expanded program of immunization in India: time to rethink and revamp. *J Pediatr Sci* 2010; 5:e43.
  8. Vashishtha VM, Kumar P. 50 years of immunization in India: progress and future. *Indian Pediatr* 2013; 50(1): 111-118.
  9. Edwards KM, Decker MD. Pertussis vaccines. In: Plotkin SA, Orenstein WA eds. *Vaccines* 4<sup>th</sup> edn, Philadelphia, Saunders 2004; pp471-528.
  10. Church JA, Parker EP, Kirkpatrick BD, Grassly NC, Prendergast AJ. Interventions to improve oral vaccine performance: a systematic review and meta-analysis. *Lancet Infect Dis* 2019; 19(2):203-214.
  11. Balasubramanian S, Shah A, Pemde HK, Chatterjee P, Shivananda S, Guduru V, et al. Indian Academy of Pediatrics (IAP) Advisory Committee on Vaccines and Immunization Practices (ACVIP) Recommended Immunization Schedule (2018-19) and Update on Immunization for Children Aged 0 Through 18 Years. *Indian Pediatr* 2018; 55:1066-1074.
  12. Vashishtha, VM. Scheduling of Vaccines. In: Gupta P, Menon PSN, Ramji S, Lodha R, Editors. *Textbook of Pediatrics for Postgraduates*, 2<sup>nd</sup>Edn: Jaypee Bros, New Delhi, 2017; pp1053-1059.