

SIMPLIFYING PEDIATRIC IMMUNIZATION WITH A FULLY LIQUID PENTAVALENT VACCINE: EVIDENCE FROM A TIME-MOTION STUDY

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Background

Immunization is essential to achieve the Millennium Development Goal (MDG) of reducing child mortality. Immunization reduces the costs of treatment and of disability caused by infectious diseases. However, many obstacles remain to meet global objectives of eradicating vaccine-preventable diseases. Rationalising vaccination delivery, for example by combining vaccines, allows the introduction of new vaccines into immunization programs without necessitating additional visits to the healthcare provider. Furthermore, simplification of vaccine delivery reduces the potential for handling errors, facilitates training and enables vaccination programs to reach children in remote areas. Technological improvements such as fully liquid combination vaccines in a single injection have been developed to simplify supply and administration of vaccines. Adherence and completion of immunization schedules will be supported. The availability of new vaccines and easy-to use technologies will strengthen vaccination delivery systems, alleviate immunization workload and hence contribute to increasing health service performance.

Methods

A study was carried out to understand implications of a single vial fully liquid pentavalent DTP-HepB-Hib vaccine given as one injection in terms of resource requirements, efficiency and impact on vaccination programs.

A time-motion study was conducted at the Institute of Child Health (ICH) in Calcutta, India.

The observational study compared a fully liquid pentavalent DTP-HepB-Hib vaccine in a single vial with a combination vaccine in multiple vials requiring reconstitution. Vaccination staff preparing, administering and disposing the vaccines, and eligible children for the routine childhood vaccination schedule were observed during the immunization procedure. Every vaccination step was timed and recorded. 312 children were vaccinated over 6 weeks in 2006. An analysis was done to estimate potential time and cost savings.

Results

Study results indicated statistically significant time savings for vaccine preparation and total vaccine consultation for the single vial combination vaccine of about 50% and 20% as compared to multiple vial combination vaccines. Package volume is less for a fully liquid vaccine, leading to potential cost savings for storage and distribution. At current vaccine load, working time savings at ICH are estimated to be about 20 working days per year. Extrapolated to India, delivery time savings could be over 100,000 working days and cost savings up to US\$ 50 million per year.

Conclusion

A single vial fully liquid pentavalent combination vaccine offers important time gains for vaccine delivery as compared to a multiple vial vaccine requiring reconstitution. Single injection combination vaccines simplify logistics, training and delivery management and offer significant time savings, critical in view of health staff shortage. Single vial combination vaccines have the potential to facilitate introduction of new antigens into immunization programs, simplify immunization schedules, contribute to better resource management and ultimately improve efficiency of immunization programs.

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