

ingestion of sweet liquids, use of pacifier, breast feeding, cooling of the injection site, and topical or oral analgesia, can help infants or children cope with the discomfort associated with vaccination. Pretreatment (30-60 minutes before injection) application of 5% topical lidocaine-prilocaine emulsion can decrease the pain of vaccination by causing superficial anesthesia. Topical lidocaine-prilocaine emulsion should not be used for infants who are receiving treatment with methemoglobin-inducing agents. Use of a topical refrigerant (vapocoolant) spray immediately before vaccination can reduce the short-term pain associated with injections and can be as effective as lidocaine-prilocaine cream. Administration of multiple injections simultaneously rather than sequentially also helps in reduction of pain. Use of the correct size needle and the correct site also reduces procedural pain and so does the application of pressure at the site of injection. Withdrawing the plunger after insertion to check for blood in the syringe prolongs the process of injection and is no longer recommended.

One study indicates that acetaminophen or ibuprofen used immediately and for 24 hours following DTwP vaccination reduces fever, discomfort and pain following vaccination in young infants. There is no evidence to suggest that using these agents prophylactically following DTwP in older children, or DTaP or other vaccines at any age is of any help in reducing post vaccination pain.

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## Vi Conjugate Typhoid Vaccine

The introduction of the conjugated typhoid vaccine in India (Peda Typh™), and for the first time in the world, has come as one of the vaccines on the wish list of pediatricians living in the South of Globe. This novel vaccine has been found to be safe and effective in inducing very high levels of immune response (>90%) in infants, young children and adults. Since this vaccine induces 'T' cell dependent response, it would get boosted by field exposure and is expected to confer long lasting immunity. This new vaccine can be used to vaccinate and protect patients after clinical recovery and thus prevent disease carriers and relapses. We wish to offer our views on the previous correspondence on this issue(1,2).

Serologic correlates of typhoid immunity induced by Vi antigen was first reported by Felix and Pitt in 1935(3). Over the years the protective immunity conferred by Vi antigen has been well established and adopted by the WHO(4). The commonly known antigens of *S. typhi* viz 'O' & 'H' antigens induce serological response which are not protective in nature.

The valuable suggestion for bridging studies can only be taken up when an equivalent vaccine becomes available(1). Clinical trials are suggested involving more volunteers of all age groups over longer periods to establish that results of Peda Typh™ vaccine shall be similar to the Vi-rEPA vaccine in the Vietnam trials. Bio-Med (P) Ltd shall support any such initiative to bring more scientific information. Already more than 30000 doses of Peda Typh™ have been used over past 6-7 months all over India in all age groups. If doctors cooperate by providing serum samples for analysis, huge database can be created.

Reservations have been expressed on the relevance of vaccination for control of typhoid in India(2). Typhoid is very prevalent in whole of India. Everyone knows about typhoid as a common disease which has affected atleast one family member over 20 years time. The disease is in the memory of everyone due to its characteristic fever lasting for over 3 weeks, damaging consequences and high cost of treatment.

Typhoid vaccine was withdrawn from the UIP of Government of India in 1985 since the whole cell typhoid vaccine available at that time was highly reactogenic and provided very low protective value. The withdrawal of typhoid did not signal the significance of typhoid in India. Epidemiologists in affected countries would like to see control of typhoid by vaccination of over 60-70% population from the current levels of 4-5% only. Vaccination is at least 10 times cheaper and will save innumerable man days lost, doctor's time, and hospital space, and the pain and suffering etc.

The launch of Vi conjugated typhoid vaccine (Peda Typh<sup>TM</sup>) is expected to bring an end of age old disease of man, since *Salmonella typhi* has no other host except man as was the case with smallpox virus.

*Competing interests:* Author is an employee of Bio-Med(P) Ltd, which manufactures Peda Typh.<sup>TM</sup>

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## Drugs for Cardiac Diseases

Working group deserves appreciation for such a comprehensive article on management of various important cardiac problems(1). However few issues need clarification:

- Inspite of better and safer drugs being made available, unfortunately digoxin is still the most commonly used medicine for heart failure in clinical practice. And this has been endorsed by you by keeping digoxin at first place among all. Interestingly later on you have mentioned ACEi as first line drug(1).
- For hypertension, how much time one should wait, if BP is not being controlled by one drug, before adding the second one.
- My last and most serious concern is regarding dopamine. Indications of dopamine listed are – to improve renal perfusion, birth asphyxia and myocardial ischemia. Renal dose of dopamine is obsolete(2), rather it may be harmful. For remaining two indications references given are of 1978 and 1979! Millions of gallon of water has passed under the bridge since than. Dopamine, now, known to be most tachy-arrhythmogenic among all vasopressors(3), then how this drug can be indicated for myocardial ischemia?
- Dopamine reduces gastric mucosal pH, adversely affects blood flow at microcirculation level, increases pulmonary shunt and causes immunosuppression then perhaps it would be more detrimental to the asphyxiated babies.
- Management algorithm for septic shock describes only hypotensive patients. Hypotension occurs very late and represents uncompensated state. Whereas in pediatric septic patients normotensive, low cardiac output, high SVR shock is more common(4). Drug recommended for such shock is dobutamine(4). For treatment of pediatric hypotensive shock though many authorities still recommend dopamine as the first line drug, but its age related insensitivity(5) and if not superior than at least similar hemodynamic profile of norepinephrine makes norepinephrine a preferred choice.