

protein level, that may be a confounder while interpreting serum zinc level, is to be evaluated in such a study. It is also interesting to know whether deworming was given prior to iron therapy, as the role of parasitic infestation in deficiency is discussed in the presentation. Deworming is essential to break the negative spiral of worm infestation, malnutrition and altered immunity [4].

The dose of iron 2 mg/kg/day and zinc 5 mg/day is suboptimum to treat deficiency state. The authors have not given any explanation for choosing prophylactic dose for treatment. The reference endorsing the selection of 6-8 years and 9-11 years as the age for cultivating inspiration and wisdom and for formative process and reasoning, respectively, as cited in the concluding paragraph is also missing.

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REFERENCES

1. Umamaheswari K, Bhaskaran M, Krishnamurthy G, Hemamalini, Vasudevan K. Effect of iron and zinc deficiency on short term memory in children. *Indian Pediatr.* 2011;48:289-93.
2. Beard JL. Iron biology in immune function, muscle metabolism and neuronal functioning. *J Nutr.* 2001;131:5685-795.
3. Bhatnager S, Taneja S. Zinc and cognitive development. *Br J Nutr.* 2001;85:S139-45.
4. Koski KG, Scott ME. Gastrointestinal nematodes, nutrition and immunity: Breaking the negative spiral. *Annu Rev Nutr.* 2001;21:297-321.

REPLY

Though data with regards to malnutrition was recorded, it was not described in the article because priority was given to the prime objective of the study which was a correlation between iron and zinc deficiency with memory. Deworming was done prior to start of supplementation of all the students who participated in the study. We had met the parents of the children every week. Parents of 9 children complained that the child had sensation of nausea, and 6 of them gave history of frequent passage of stools. Taking the response into consideration and with the references [1,2] mentioned below, the dose of supplementation was reduced. The reference endorsing the selection of 6-8 years and 9-11 years as the age for cultivating inspiration and wisdom and formative process and reasoning respectively, is Ramesh, *et al* [3].

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REFERENCES

1. Ambruso DR, Hays T, Golderberg NA. Current Diagnosis & Treatment: Pediatrics. Hematological disorder, *Ed.* 19. USA: Mc Graw Hill; 2009.p.811.
2. Kleigman RM, Marcadante KJ, Jenson HB, Behrman RE. Nelson Essential of Pediatrics. 5th Edition. Philadelphia: Saunders; 2006.p.154.
3. Mishra RC, Dasen PR. The influence of schooling on cognitive development: A review of research in India. *In:* BN Setiadi, Supratiknya A, Lonner WJ, Poortinga YH (Eds). Ongoing Themes in Psychology and Culture (Online Ed). Melbourne, FL: International Association for Cross-Cultural Psychology. Available from:www.iaccp.org. Accessed on: July 1, 2011.

Measles Vaccine *versus* MMR

I read the article "Introduction Strategy of a Second Dose Measles Containing Vaccine in India" [1] with great interest. The move, when enforced, may lead to a lot of confusion in the recommendations between the public and the private sector.

In the private sector, pediatricians are already administering the measles vaccine at 9 months followed by MMR at 15 months and an MMR booster at either 5 years or 9-12 years. In fact, even the routine immunization protocol in Delhi, Puducherry, Goa and Sikkim already use the MMR vaccine as the second dose in the second

year of (life and not the measles vaccine).

I wonder what lead to the recommendation of a second dose of measles vaccine and not MMR as the second dose in the second year. If the entire government machinery had been used to push through MMR as the recommended dose in the second year, it would have lead to a wider protection against more diseases while at the same time achieving a uniformity of recommendations between the private and the public sector. With the new recommendations, if I now have a child coming to me who has already taken 2 doses of the measles vaccine at 9 months and 18 months, I would end up giving him 2 more doses of measles in the form of MMR going by the current recommendations for the MMR vaccine.

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REFERENCES

1. Gupta SK, Salsar S, Halder P, Hombergh HVD, Bose AS. Introduction strategy of a second dose measles containing vaccine in India. *Indian Pediatr.* 2011;84:379-81.

REPLY

The main objectives of our article were to describe the strategies adopted by Govt. of India to introduce a second dose of measles vaccine in the country and the rationale behind those strategies [1]. The correspondent here has not questioned the basic rationale behind the introduction of second dose of measles vaccine *per se*, but has raised an issue of choice between measles vaccine and combined mumps-measles-rubella (MMR) vaccine and has recommended that MMR vaccine be used straightaway in childhood immunization in the National Immunization program in India.

For private sector clinicians and their clients, the choice of which vaccine to provide is often governed by the clinician's judgment of the expected benefit-risk ratio of the vaccine and the client's ability to pay for the goods and services offered. The key context is benefit to the individual client and not the community at large. Conversely, selecting a vaccine for a national immunization program in which the Government bears the burden of entire costs and has to consider individual as well as community benefit, is quite different. Public health policy making is often choosing one practically feasible option among many which are ideally possible.

The Universal Immunization Program (UIP) in India is one of the largest immunization programs in the world and targets an annual cohort of approximately 26 million children. Choosing MMR over single antigen measles vaccine (MV) in the national immunization program would have definite cost implications as MMR is considerably more expensive than single antigen MV.

In 2008, the National Technical Advisory Group on Immunization (NTAGI), Govt. of India had deliberated on this issue and recommended that the available data did not justify including the mumps component with measles vaccine as the benefits would not be commensurate with the additional costs incurred [2]. In 2009 and 2010, successive NTAGI sessions once again determined that available epidemiologic evidence did not warrant the

additional cost of mumps antigen with the second dose of measles containing vaccine (MCV).

Measles continues to cause significant morbidity and mortality in young children where vaccination coverage remains low. Rubella and mumps infection do cause significant complications in adolescent and older age groups but once again, the actual burden is not well documented. Introducing mumps and rubella vaccines into childhood vaccination programmes that do not achieve high coverage ($\geq 80\%$) increases the median age at infection and has the potential risk of paradoxically increasing the public health consequences of the very diseases that vaccination is attempting to control. WHO position papers on both mumps and rubella vaccines have stated the risks of such "paradoxical effects" in quite unambiguous terms [3,4]. The evidence for the danger of paradoxical increase of Congenital Rubella Syndrome (CRS) owing to private sector usage of rubella vaccine achieving low coverage overall, comes from observational and modeling studies [3,4].

These are well known facts regarding mumps and rubella vaccine introduction in children. In fact, in its April 2011 meeting, the Strategic Advisory Group of Experts (SAGE) has cautioned against the possibility of paradoxical increase of CRS owing to widespread use of rubella containing vaccines by private sector service that ultimately achieves low overall coverage ($< 80\%$) [5].

The question posed in the end is actually a non-starter from the perspective of the national immunization programme. At present, Govt. of India policy is to give the first dose of measles vaccine between 9 and 12 months to all children in the country. The second dose of measles vaccine will be given through routine immunization between 16 and 24 months of age in 21 states and through mass vaccination campaigns for 9 months to 10 year old children in 14 states. Thus, in any particular state, a child will get the second dose of measles vaccine through either routine immunization or mass campaigns, not both.

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REFERENCES

1. Gupta SK, Sosler S, Halder P, Hombergh HVN, Bose AS. Introduction strategy of a second dose measles containing vaccine in India. *Indian Pediatr.* 2011;48:379-82.
2. Minutes and Recommendations of National Technical Advisory Group on Immunization (NTAGI), 16th June 2008, Ministry of Health and Family Welfare, Government of India. Available at <http://mohfw.nic.in/WriteReadData/1892s/6664716297file23.pdf>. Accessed