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## Universal Newborn Screening for Congenital Hypothyroidism

Universal screening of all neonates has for long been recognized as the most effective method to prevent the severe developmental and physical morbidities associated with congenital hypothyroidism(1). However, despite its proven community benefits, for health planners in India, this newborn screening program remains a low priority.

Screening of neonates for congenital hypothyroidism (CH) was commenced at the Malankara Orthodox Syrian Church Medical College, Kochi in October 2006. The blood is sampled between 72-120 hours of life by heel prick, on to 'Three' pre-marked circles of 1 cm diameter on Schleiecher and Schuell specimen collection filter paper, air dried and TSH levels estimated by Sandwich Enzyme Linked Immunoassay using Bio-rad® Quantase™ kit. TSH levels less than 10 mU/L were considered normal, 10-20 mU/L considered borderline and >20 mU/L as abnormal(2). The cost per TSH screening test was Rs 85/-.

Infants with TSH values  $\geq 10$  mU/L were reassessed by measuring a 'formal' serum T4 and TSH by ELISA (Lilac®). Those with formal serum TSH  $\geq 20$  mU/L and T4  $< 7$   $\mu\text{g/dL}$  were considered as hypothyroid and included for the present analysis. These infants were immediately commenced on thyroxin replacement therapy of 10-15  $\mu\text{g/kg/day}$ (3). Infants with borderline T4 or TSH values were followed up at biweekly to monthly intervals, until both T4 and TSH levels reached normal levels or serum T4 estimates dropped to hypothyroid levels. 2964 term babies were screened by heel prick over a

12 month period between 1st October 2006 and 30th September 2007. 2872 of these were inborn and were considered for calculating the hospital based incidence of CH. TSH values were  $\geq 10$  mU/L in 106 infants. Serum T4 and TSH assay confirmed neonatal hypothyroidism in 6 of them. All of them were inborn infants. The study revealed congenital hypothyroidism incidence of 2.1 per 1000 (6/2872) amongst inborn term infants, much higher than the incidence of 1 in 4000 reported in Western literature and 1 in 1700 from other regions of India(4,5). The better pick up rate and the lower costs makes TSH assay a better screening tool than T4 assessment(2,4).

Despite the overwhelming evidence of a high prevalence of congenital hypothyroidism in India, this eminently treatable cause for developmental delay and mental retardation continues to await a credible universal screening program. We believe that the filter paper method for TSH assessment is a viable option for the 'universal screening' of newborns for congenital hypothyroidism in India. How long do we have to wait before a mandatory screening program is implemented in our country?

**Urvi Sanghvi and KK Diwakar,**

*Department of Neonatology,*

*Malankara Orthodox Syrian Church*

*Medical College,*

*Kolenchery PO, Kochi 682311, Kerala, India.*

*E-mail: krishnadiwakar@fulbrightweb.org*

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### Let Sabin Guide Polio Eradication in India

The miraculous effect of pulse polio immunization in eradicating poliovirus has been successfully applied to eliminate polio from many countries. Cuba and Slovakia in early 1960s and China in 1995 eradicated poliovirus with just 2-4 rounds(1,2).

In India the goal remained elusive especially in Uttar Pradesh and Bihar even after a decade of mass immunization despite tens of rounds of immunization. The critical requirement for mass immunization to eradicate polio is administering oral polio vaccine to all children simultaneously within the shortest time possible so that the intestines of most children will resist infection and spread of wild poliovirus.

Because of poor community support due to well-known reasons, coverage during pulse polio immunization in these states was inadequate. In the quest to immunize all children, the duration of pulse polio rounds were extended to almost two weeks to enable health workers to visit and revisit all households. The staggering of immunization enabled the virus to find non-resistant intestinal tracts to continue transmission and nullify the effect of mass immunization. The poor sanitary conditions and high virus load prevailing in these areas facilitated transmission. Though immunizing most if not all children during pulse polio is important, it is crucial that immunization be completed within the shortest period. The objective is to establish temporary dominance over the naturally occurring polioviruses and other interfering enteric viruses.

Sabin has the following to state in the conduct of mass immunization to eradicate polio: "The special point about the annual mass vaccinations with OPV for all children younger than three, four or five years of age-which have proven highly successful in Cuba (for the past 20 years), in Brazil (during the past three years), and recently also in Mexico is that all the children are usually vaccinated within one or two days, which quickly breaks the chain of transmission of the virulent viruses, and the annual campaigns create and maintain the maximum number of children with resistant intestinal tracts"(3).

It appears polio can be eradicated from India by a simple change in strategy in the conduct of mass immunization as suggested by the great scientist and visionary Albert Bruce Sabin.

**Paul T Francis,**  
*Associate Professor,*  
*Community Medicine,*  
*Amrita Institute of Medical Sciences,*  
*Cochin 682 026, Kerala.*  
*E-mail: paultfrancis@gmail.com*

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