

messages through Inter-personal Communication (IPC) and Mass media. Most of the people prefer house-to-house approach because of saving of time.

Clustering of un-reached though the un-reached children are spread all over, yet concentrated in clusters, which are at the border with Nepal or in areas with higher concentration of scheduled castes in rural, and Muslims in urban areas.

Timely funding, the banner and poster should be available at least 10 days earlier the actual date of PPI, by increasing the teams, by increasing the frequency of mike and taking cooperation of Mullah for separate announcement from Masjid were suggestions made for improvement of coverage.

**R.J. Yadav,
K. Suresh,***

*Institute for Research in Medical Statistics,
Indian Council of Medical Research,
New Delhi 110 029, India.*

E-mail: rjyadav@hotmail.com

**Program Officer, UNICEF, New Delhi.*

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Phenobarbital Toxic Levels in a Nursing Neonate

Antiepilepsy drugs have revolutionised the management of epilepsy however their use in pregnant and nursing mothers needs careful monitoring(1). Drugs like phenobarbitone, primidone and ethosuximide accumulate in nursing neonates to levels approaching or even exceeding those of their mothers(2).The use of phenobarbital while breastfeed is controversial due to its slow elimination by the nursing infant (3).We report a case of phenobarbital toxicity in a newborn.

A 26-year-old mother with epilepsy (secondary to tuberculous meningitis) who was moderately controlled on 90 mg of

phenobarbitone delivered a male baby at term weighing 2.75 kg .On day one of life baby had an absent suck and became progressively lethargic by the third day. Initially the infant was on when intravenous fluids and later as sensorium improved, baby was breastfed. The anticonvulsant concentrations measured in mother's plasma, breast milk and baby's blood on day 6 showed an increased levels of phenobarbital in the baby's plasma which reached toxic levels by day19 (*Table I*). To avoid cumulative dose effect of phenobarbitone (PB), breastmilk was gradually withdrawn and the baby monitored for withdrawal reactions. A decision was made to reinstitute human milk, once maternal PB was replaced by another antiepileptic drug.

Little data till date is available on transplacental transfer of anticonvulsants.

TABLE I— *Phenobarbital levels (in µg/mL) in Mother, Baby and Breastmilk.*

	Maternal plasma	Baby's plasma	Breast Milk
<i>Day 6</i>			
Pre-PB dose	36.2	12.06	4.34
Post 2½ hrs of dose	32.0	28.34	5.01
<i>Day 19</i>			
Pre-PB dose	32.18	15.36	4.34
2½ hrs post PB dose	28.21	54.71	5.47

What is known, is that potentially reactive metabolites are formed by the fetal liver leading to variable accumulation in the organs. In utero the fetus receives a larger dose of anti epilepsy drugs (AED) via the placenta (80-108%) than the breastfed neonate (20-50%)(4). In fact most neonatal AED concentration at delivery approach maternal serum levels. Neonatal sedation, seizures, methemoglobinemia, reduced weight gain are the uncommon effects of maternal PB intake. Anti epileptics are usually protein bound but in late pregnancy due to low albumin levels, increased free drug levels are found. Therefore, one should be cautious against measuring the total plasm concentration and should aim to test both the protein bound and free drug levels(5).

We recommend regular antenatal monitoring of both free and bound phenobarbital levels, and also that the lowest effective dose be given or else use another

safer AED(6).Newborns exposed prenatally to phenobarbital should have serum drug levels monitored as also for withdrawal symptoms for at least 2-6 weeks of life.

**Mona Pote,
Renuka Kulkarni,
Manish Agarwal,**

*Neonatal Unit, Department of Pediatrics
and Clinical Pharmacology,
T.N.Medical College and B.L.Nair Hospital,
A.L.Nair Road, Mumbai- 400 008, India.
E-mail: monapote@yahoo.co.in*

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