

## Newborn Screening, Inborn Errors of Metabolism

## AB041. Establishment of age specific reference intervals of neonatal thyroid stimulating hormone in Pakistani population: experience at a tertiary care center

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**Background:** Reference intervals (RI) of neonatal thyroid stimulating hormone (nTSH) are method and population dependent as well as age specific. The aim of this study was to determine the RI of nTSH based on laboratory data in Pakistani population.

**Methods:** A cross-sectional analysis of results of serum nTSH of neonates ( $\leq 1$  month of age) acquired from October 2015 to March 2016. An analysis of TSH serum samples was performed on an automated immunoassay system (ADVIA<sup>®</sup> Centaur<sup>™</sup>, Siemens Diagnostics, NY, US). The IFCC/CLSI recommended method was used for the determination of upper and lower end points covering 95% of the reference values of each analyte with respective 90% confidence intervals (CI). Subjects were sub-grouped

according to age,  $\leq 5$  days of life and 6 days to 1 month. Standard statistical methods were used for data analysis using the MedCalc 16.2.1 software package (MedCalc, Mariakerke, Belgium). Furthermore, upper cutoff of nTSH was verified on subsequent nTSH samples received from October to December 2016.

**Results:** A total of 6,400 nTSH tests were performed, amongst them 88% (n=5,610) were aged  $\leq 5$  days of life. The RI for  $\leq 5$  days age group was calculated to be 0.62 (CI: 0.58–0.67) to 14.97 (CI: 14.5–15.63) uIU/mL. And for the 6 days to 1 month age group was 0.462 (CI: 0.35–0.62) to 9.102 (CI: 8.5–10.6) uIU/mL. Furthermore, upper cutoff of nTSH was verified on subsequent nTSH samples received from October to December 2016 (n=4,082). Fifty-one samples in the age group 0–5 days and 12 samples in the 6 days to 1 month age group resulted in higher levels than the upper cutoff. Additionally, FT4 analysis revealed normal levels for the samples having nTSH values within normal range.

**Conclusions:** We recommend reporting neonatal TSH values in neonates using age and population specific RI.

**Keywords:** Thyroid stimulating hormone; neonates; reference interval (RI)

doi: 10.21037/atm.2017.s041

**Cite this abstract as:** Ahmed S, Jafri L, Khan AH, Siddiqui I, Majid H, Ghani F. Establishment of age specific reference intervals of neonatal thyroid stimulating hormone in Pakistani population: experience at a tertiary care center. *Ann Transl Med* 2017;5(Suppl 2):AB041. doi: 10.21037/atm.2017.s041

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