**Summary**

The NTS started in 1993 (3 years Bulgarian-Swiss project) in a new centralized screening unit at the University Pediatric Hospital in Sofia (PKU logistic since 1978). TSH was determined by Delta (cut off at initial screening 15 mIU/l, quality control DOQL) in 911 448 NB (06 30 11.2008). Data were registered by special software. Following changes occurred: increase of coverage from 58 (1993) to 99.5% (2007, p<0.001; shift to earlier screening sampling on day 1 and 2 increased from 18.6 (1999) to 24.2 (2005) and 19.8% (2008), but decreased after day 5 from 10.9 to 4.9% (1999 vs 2008); high proportion of late (after day 1) arrived FPC during the whole period: 47 (2000), 17 (2005), 20.6% (2008); Decrease of NB with TSH >15 mIU/l (1st FPC) from 1.8 to 0.09 (1993 vs 2008, p<0.001). Different forms of primary thyroid disturbances were diagnosed in 420 NB (1:2360 screened NB). Treatment with L-T4 was instituted at median age from 18 to 24 (1993 vs 1997) and 13 to 14 (2001-2002 vs 2004-2008) days. Therapeutic strategy changed completely. Follow up studies in screened patients with good compliance showed normal growth and development, according to the individual genetic potential. Systematic thyroid screening in mothers (participation 82.9%) of children with abnormal NTS started in 1998. The NTS was adapted to monitor the iodine supplementation since 1997: NB with TSH >5 mIU/l (3-5 days) decreased from 7.8 (1997) to 9.6% (2000) and declined below 3% in 2006. Stable improvement of all screening process indicators was achieved by integrating efforts of all participants. The transition of the NTS in a more efficient public health program is a constant challenge and of utmost importance for the future extension of all neonatal screening programmes.

**Figure Legends**

- **Figure 1:** Administrative and technical data.
- **Figure 2:** NTS programme – activities, time and participants.
- **Figure 3:** Neonatal Thyroid Screening protocol Bulgaria 1993-2000.
- **Figure 4:** The Bulgarian Neonatal Thyroid Screening (NTS) programme started in 1993 (3 years Bulgarian-Swiss project) in a new centralized screening unit at the University Hospital Pediatric Hospital in Sofia (fig3) using the existing PKU logistic (introduction of PKU screening in 1978 by L. Kalajdzhiieva, I. Kremenov et al.). Aim of the NTS: prevention of irreversible mental retardation due to primary congenital hypothyroidism by implementation of the entire Programme (fig4); Main characteristic feature: introduction as 5 stage programme.
- **Figure 5:** Early and sufficient treatment (substitution with Thyroxine).
- **Figure 6:** Neonatal Thyroid Screening Protocol Bulgaria 1993-2000.
- **Figure 7:** Regional dynamic newborn screening participation 2006 Bulgaria.
- **Figure 8:** Regional dynamic newborn screening participation 1994 in Bulgaria.
- **Figure 9:** Median age at start of therapy in children with congenital hypothyroidism.
- **Figure 10:** Overall prevalence of thyroid disorders in Bulgaria detected by NTS.
- **Figure 11:** Median age at start of therapy in children with congenital hypothyroidism.
- **Figure 12:** Pre- and postnatal length, MP H-SDS (male percentile height standards deviation score), actual (n.a.)
- **Figure 13:** Correlation between bone age and chronological age at study performance.
- **Figure 14:** Regional prevalence of hypothyroid disorders in Bulgaria (1993-1999).
- **Figure 15:** Mean school marks for the previous year (n=31): mean ±S.D.(7) (literature – 5.5±6.6; mathematical – 5.2±5.9, n.a.)
- **Figure 16:** Regional and nation-wide prevalence of hypothyroid disorders in Bulgaria (1993-1999).
- **Figure 17:** Frequency of newborns with NTSH >5 mIU/l and percentage of effectively iodized (KIO3 29-55 ppm) food grade salt in Bulgaria.
- **Figure 18:** Mapping of all Bulgarian districts according to the frequency of TSH in above 5 mIU/l for 1999.
- **Figure 19:** Mapping of all Bulgarian districts according to the frequency of TSH in above 5 mIU/l for 2006.
- **Figure 20:** NTS Network: Bulgaria 1998-2007.