NEWBORN SCREENING IN THE PHILIPPINES

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Abstract. The Newborn Screening Study Group first introduced newborn screening in the Philippines in 1996. This group of pediatricians and obstetricians from 24 hospitals in the metropolitan Manila area developed a newborn screening program: (1) to establish the incidence of six metabolic conditions – congenital hypothyroidism, congenital adrenal hyperplasia, galactosemia, phenylketonuria, homocystinuria and glucose-6-phosphate dehydrogenase deficiency, and (2) to make recommendations for the adoption of newborn screening nationwide. Newborn screening developed in three phases: (1) routine screening for 5 disorders excluding G6PD deficiency in the 24 member hospitals in Metro Manila, (2) addition of screening for G6PD deficiency to the 5-disorder screening panel, and (3) program evaluation with subsequent reduction in the time of sample collection to 24 hrs of age or older (from the initial requirement of 48 hrs. or older) and discontinuation of screening for homocystinuria as a cost cutting measure (due to non-detection of cases). Data from 201 participating hospitals reported in September 2001 confirmed 48 cases of congenital hypothyroidism, 21 cases of congenital adrenal hyperplasia, 2 cases of galactosemia, 4 cases of hyperphenylalanemia and 1,495 cases of glucose-6-phosphate dehydrogenase deficiency. The Department of Health has recognized the significance of the initial data and efforts are now being undertaken to ensure the nationwide implementation of newborn screening.

INTRODUCTION

In the Philippines, the concept of newborn screening (NBS) was first introduced by a group of obstetricians and pediatricians in June of 1996. The group named itself the Newborn Screening Study Group (NSSG) and its project was called the Philippine Newborn Screening Project (PNBSP). The objectives of the PNBSP were: 1) to establish the incidence of six metabolic conditions – congenital hypothyroidism (CH), congenital adrenal hyperplasia (CAH), galactosemia (GAL), phenylketonuria (PKU), homocystinuria (HCY), and glucose-6-phosphate dehydrogenase (G6PD) deficiency, and 2) to make recommendations for the adoption of newborn screening nationwide. The ultimate goal of the project was to gather adequate data to support legislation for a national newborn screening program. The PNBSP has developed in three phases: (1) 1996 – routine screening for 5 disorders excluding G6PD deficiency in the 24 member hospitals in Metro Manila, (2) 1998 – addition of screening for G6PD deficiency to the 5 disorder screening panel, and (3) 2000 – program re-evaluation with subsequent reduction of the time of sample collection to 24 hours of age or older (from the initial requirement of 48 hours or older) and discontinuation of screening for homocystinuria as a cost-cutting measure due to non-detection of cases (Padilla, 2002).

The NSSG initially established newborn screening in 24 hospitals that were accredited by both the Philippine Pediatric Society (PPS) and the Philippine Obstetrical and Gynecological Society (POGS) within the Metro Manila area. In April 1999, the group opened its membership to hospitals that were non-members of PPS and POGS. By September 2001, the group had grown to 201 hospitals, 152 of which were outside Metro Manila.

COVERAGE

Data from 201 participating hospitals reported in September 2001 confirmed 48 cases of congenital hypothyroidism (incidence: 1:3678), 21 cases of congenital adrenal hyperplasia (incidence: 1:8407), 2 cases of galactosemia (incidence: 1:88274), 4 cases of hyperphenylalanemia (incidence: 1:44137) and 1,495 cases of glucose-6-phosphate dehydrogenase deficiency (incidence: 1:61). Among these participating hospitals and communities, the coverage of newborns was ~40-50%. On a national scale, this only covered about 3% of the total newborn population.

COST OF SCREENING

There are two packages being offered by the PNBSP. The first one is for screening of two conditions – CH and CAH, and the charge is approximately US$ 6 (exchange rate of US$1 = PhP 50). The second package offers the full 5-test screening battery and costs approximately US$ 10. The fee is paid by the

Table 1. Laboratory methods used for screening and confirmatory testing.

Disorder	Screening test	Confirmatory test
CH	Fluoroimmunoassay for TSH (Delfia [Wallac] Turku, Finland)	Serum TSH, T_4, T_3 levels, bone age x-ray, thyroid scan
CAH	Fluoroimmunoassay for 17-OHP (Delfia [Wallac] Turku, Finland)	Serum 17-OHP, cortisol, electrolytes (Na, K, Cl), ACTH stimulation test
GAL	Galactose and Gal-1-Phosphate spot test	Beutler test
PKU	Bacterial inhibition assay (Guthrie test)	Thin layer chromatography or tandem mass spectrometry
HCY	Bacterial inhibition assay	Thin layer chromatography
G6PD Deficiency	Formazan ring method	G6PD enzyme assay

newborn's parents, and includes laboratory testing, courier service, laboratory and follow-up administrative costs (including immediate recall of patients with positive screens and extended follow-up). Table 1 shows the different laboratory tests used to screen and confirm cases for each of the disorder included in the panel.

ROLE OF GOVERNMENT

The Philippine Department of Health (DOH) has recognized the significance of newborn screening and has taken a proactive position. In 1999, a multidisciplinary task force was created to formulate actions for the nationwide implementation of newborn screening. In 1999-2000, DOH conducted a series of workshops and training seminars to Regional Coordinators.

In support of the Administrative Order on nationwide implementation of newborn screening, a separate Departmental Order was enacted early in 2001 creating an 11 member Technical Working Group on Newborn Screening (NTWG-NBS) (Lopez, 2001). The NTWG-NBS is composed of representatives from a number of departments within the DOH including the National Epidemiology Center, Center for Health Facility, Center for Family and Environmental Health, Bureau of Health Facilities and Services, Bureau of Local Health Development, and the National Center for Health Promotions. The NTWG-NBS also includes members from the Philippine Society of Pediatric Metabolism and Endocrinology (PSPME), DOH Regional Offices, and the NIH-UPM. The NTWG-NBS was given 4 major responsibilities: (1) to review and develop policies, standards, and guidelines on newborn screening for DOH approval, (2) to review and develop strategies and tools to assure effective and efficient implementation of newborn screening, (3) to formulate a national program, project plan, proposals, and collaborative studies on newborn screening, and (4) to monitor and evaluate implementation of the newborn screening program.

THE FUTURE OF NEWBORN SCREENING IN THE PHILIPPINES

Challenges

The biggest challenge for the Philippine Newborn Screening Program is making newborn screening affordable to the general public. Other funding mechanisms are being explored including allocations from the national budget and local government budget and inclusion among the benefits

Expansion in the community

Community newborn screening pilot projects are currently underway in DOH Region VII at Bayawan, Tanjay and Amlan in Negros Oriental Province.

REFERENCES

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