

# Models for Increasing the Newborn Screening Performance of Health Facilities

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## ABSTRACT

Newborn screening (NBS) was introduced in the Philippines in 1996. After 12 years of implementation, a review of performance of the NBS facilities shows that there is a wide range of NBS performance from zero to 100%. This paper aims to review the NBS facilities (NSFs) that have at least 90% NBS coverage and to identify the successful strategies that have pushed the high coverage.

*Key Words: newborn screening, newborn screening facilities*

## Introduction

Newborn screening (NBS) was introduced in the Philippines in 1996 by the Newborn Screening Study Group (NSSG).<sup>1</sup> The NSSG was established to determine the incidence of common metabolic disorders and subsequently, to make recommendations to policymakers for a national neonatal screening program. The NSSG started with 24 Metro Manila hospitals in 1996 and expanded to 41 in 1998, 153 in 2000, 248 in 2002, 366 in 2004, 1231 in 2006 and 2,107 by 2008. The main push for the increase in number of NBS facilities (NSF) was the passage of Republic Act 9288 or the Newborn Screening Act of 2004,<sup>2</sup> which required NBS as part of health facilities' licensure. NSF refers to any health facility that offers NBS services, i.e. hospitals, lying ins, birthing centers or rural health units (RHUs). Aside from the licensing requirement, the law obliges all health practitioners to inform its clients about the nature and benefits of NBS. Further, it stipulates inclusion of NBS in the Philippine Health Insurance coverage. NBS became part of the Philippine Health Insurance Newborn Care Benefit Package (NCP) in December 2006<sup>3</sup> and guidelines were issued on the same month.

Despite legislation and the coverage of NBS by insurance, the national coverage of newborns being screened has remained low at 21% for 2008, assuming live births of 1.7 million babies per year. The Newborn Screening Reference Center (NSRC),<sup>4</sup> a component institute of the National

Institutes of Health, University of the Philippines – Manila (NIH), monitors the performance of all NSFs, in coordination with the Centers for Health Development (CHD) of the Department of Health.

This paper reviews activities of the NSFs that have at least 90% NBS coverage and identifies strategies that have resulted in the higher coverage.

## Materials and Methods

The performance ratings of NSFs for year 2007 and 2008 were generated from the NSRC database. The NSRC collects data from the NBS Centers (NSCs), the laboratories that run the samples from the NSFs. Currently, there are 2 NSCs – NSC-NIH which runs samples of the Luzon group of NSFs and the NSC Visayas at the West Visayas State University Medical Center, which runs samples of the Visayas and Mindanao group of NSFs. [Note: the Mindanao NSC will open on April 2009 to serve the Mindanao area]. The following are the inclusion criteria for the NSFs: 1) with performance rating of 90% and above; 2) enrolled as NSF for 2007 and 2008; and 3) with complete data (live births and screening coverage) for both 2007 and 2008. NSFs with missing data for either 2007 or 2008 were excluded. As of January 2009, 127 NSFs had complete data for both 2007 and 2008 and qualified for computation of performance rating. Performance rating was computed as follows.

$$\text{Performance rating} = \frac{\text{Number of newborns born and screened in the facility}}{\text{Number of live births}} \times 100$$

Individual data profiles were obtained to identify facilities whose strategies for NBS implementation appeared most successful.

## Results and Discussion

A total of 127 NSFs were included in the study. The NSFs were categorized based on the following: private hospitals, private lying-ins, government hospitals, and government lying ins. Government hospitals included Department of Health (DOH) Retained Hospitals and Local Government Unit (LGU) Hospitals.

Table 1 presents the list of NSFs according to performance rating, category and region. Of the 127 NSFs, 83% are private hospitals, and 12% are government hospitals.

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Seventy-three percent of government hospitals and 55% of private hospitals reached the 100% performance level. CHD – National Capital Region (NCR) and CHD - Region 6 have 23% and 26%, respectively of the facilities performing at the 100% performance level. However, most of the performing government hospitals reside in CHD 6. The rest of the government hospitals are from CHD NCR and CHD 7. Table 3 shows that most of the NSFs performing within the 95 to 99% performance range were private hospitals from CHD 4A. Consistently, most private hospitals in CHD 4A have performed in the 90 – 94% range followed by hospitals in CHD NCR, CHD 3 and CHD 7.

Reviewing the individual data profile and documented practices of these facilities reveals some commonalities. The effect of legislation appears not to have been readily appreciated by many NSFs. The NSFs recognized the effect of the Newborn Screening Act of 2004 only when the DOH Bureau of Health Facilities (BHFS) Licensing Division began strictly enforcing the requirement for NBS as part of facilities' accreditation and renewal. The inclusion of NBS in the Philhealth NCP along with newborn standard routine procedures coupled with strong advocacy encouraged most private hospitals to improve their performance ratings to the 100% level.

Even without the intervention of the BHFS licensing requirement and Philhealth NCP, 18 private hospitals, 1 DOH retained hospital, 2 government and private lying-ins in CHD NCR and CHD 4A have incorporated NBS in their delivery package and for 1 government lying-in and 1 DOH Retained hospital, it was supported with a hospital policy.

For CHD 6, 9 of 10 performing government hospitals belong to the province of Negros Occidental. Three government hospitals have created hospital policies following the implementation of RA 9288 in 2004. More importantly, the provincial government of Negros Occidental, in coordination with the CHD 6, played an important role in the successful performance of the health facilities in this region.

Three models of activities affecting NBS implementations can be derived: 1) use of legislation; 2) issuance of hospital policy; and 3) CHD and LGU partnership. These models are currently being circulated to other health facilities in the country for consideration in an effort to increase the number of newborns screened.

#### MODEL A: Legislation

Newborn screening became law in 2004. Prior to the law, the number of facilities offering NBS in the country totaled 344. Implementation of the RA 9288 required: 1) performance of NBS as a requirement for hospital facility license application and its renewal; 2) NBS as part of Philhealth's newborn care package and accreditation process; and 3) offering of NBS in both public and private facilities as part of the standard newborn care. The inclusion of NBS as part of Philhealth's NCP in 2006 has made little impact to date for the rest of the enrolled NBS facilities. Of the total

maternity claims, only 1% took advantage of the NCP.

#### MODEL B: Hospital Policy

The inclusion of NBS as a hospital policy, particularly as part of the maternity package in private and some government hospitals, provides no other option to parents than to have their babies screened. For example, San Lorenzo Ruiz Women's Hospital, following several years of NBS implementation and advocacy, recently enacted a hospital policy<sup>5</sup> requiring full implementation of NBS as part of the delivery package. Inclusion of NBS in the delivery package combined with the Philhealth NCP package improved their coverage performance to 100%. Similarly, Don Salvador Benedicto Hospital, responding to RA 9288, implemented NBS as a hospital policy requiring NBS 24 hours following delivery as a standing order. The government lying-in facility at Las Pinas, which caters to the indigent populous of the municipality, includes NBS as part of Wednesday policy orientation. Delivery and accompanying supplies are free, but NBS must be paid by the parents. Parents are informed that failure to obtain NBS means that they must pay for the delivery and accompanying supplies.

#### MODEL C: CHD and LGU Partnership

The partnership of CHD and LGU in all aspects of the NBS will only be feasible if there is a political will at all levels: 1) the CHD and the provincial/municipal health officer lobbying the program to the head of the LGU; and 2) the head of the LGU supporting NBS through the creation of ordinances and provision for funding schemes to be implemented in all public, district and provincial hospitals.

Negros Occidental is one of the five provinces that compose the CHD 6 (Western Visayas Region). It has 13 cities and 19 municipalities; 1 provincial hospital, 11 district hospitals, 2 community hospitals and 3 city hospitals. A single pediatrician advocated for NBS in the province in 2003. NBS was advocated at the provincial level – governor, provincial health officer and provincial administrator. These officials were convinced of the value of NBS and expressed their support for province-wide implementation. Together with the CHD 6 staff, a series of trainings were conducted; and a provincial NBS committee was organized. In 2004, Resolution No. 0348 series of 2004 was signed by the Provincial Council.<sup>6</sup> This resolution informed all local government units and private and public hospitals of enactment the NBS law. The provincial government of Negros Occidental issued a Provincial Tax Ordinance ordering a new standard of billing to all district hospitals to include NBS fee of P600 in the delivery package, of which P550 is paid to the laboratory and the savings of P50 from each patient is being utilized for indigent patients.

Advocacy was intensified after the release of the resolution and the provincial tax ordinance. The NBS committee headed by its Provincial Health Office promoted NBS to radio and local TV stations; update on NBS was

**Table 1.** Performance of NSF 2007 - 2008

Hospital Name	Category	REGION	Performance	Performance
			Rating 2008	Rating 2007
Tagbilaran Community Hospital Corp.	Private Hospital	7	100%	45%
C. P. Reyes Hospital	Private Hospital	4a	100%	93%
Alfredo E. Maranon, Sr. Memorial District Hospital	Government Hospital	6	100%	100%
Bataan Doctors Hospital	Private Hospital	3	100%	100%
Callejo Medical Clinic	Private Hospital	NCR	100%	100%
Don Salvador Benedicto Memorial District Hospital	Government Hospital	6	100%	100%
Dr. Victor R. Potenciano Medical Center	Private Hospital	NCR	100%	100%
Lorenzo D. Zayco District Hospital	Government Hospital	6	100%	100%
Saint Gabriel Hospital	Private Hospital	6	100%	100%
Cadiz District Hospital	Government Hospital	6	100%	99%
Cattleya – WPMC	Private Lying-In	NCR	100%	99%
Midsayap Community Doctors Hospital	Private Hospital	12	100%	99%
Olivarez General Hospital	Private Hospital	NCR	100%	99%
Aklan Coop. Mission Hospital	Private Hospital	6	100%	98%
Bago City Hospital	Government Hospital	6	100%	98%
Naic Doctors Hospital	Private Hospital	4a	100%	98%
Capitol Medical Center	Private Hospital	NCR	100%	97%
E.D. Lim Maternity & General Hospital	Private Hospital	3	100%	97%
Medical Center Manila	Private Hospital	NCR	100%	97%
Mt. Carmel Diocesan General Hospital	Private Hospital	4a	100%	97%
St. John The Baptist Medical Center, Inc.	Private Hospital	4a	100%	97%
Manila Adventist Medical Center	Private Hospital	NCR	100%	96%
Chong Hua Hospital	Private Hospital	7	100%	95%
University Of Perpetual Help Rizal Medical Center-Las Piñas	Private Hospital	NCR	100%	95%
Bcu – Sto. Niño Jesus Medical Center Foundation, Inc.	Private Hospital	CAR	100%	94%
Mpi – Medical Center Muntinlupa	Private Hospital	NCR	100%	94%
Bayawan District Hospital	Government Hospital	7	100%	93%
Dr. Jesus C. Delgado Memorial Hospital	Private Hospital	NCR	100%	93%
St. Paul’s Hospital –Iloilo	Private Hospital	6	100%	93%
Allah Valley Medical Specialists Center	Private Hospital	12	100%	92%
Davao Doctors Hospital	Private Hospital	11	100%	92%
Gov. Leandro L. Fullon District Hospital	Government Hospital	6	100%	92%
Teresita L. Jalandoni Provincial Hospital	Government Hospital	6	100%	92%
Marikina Valley Medical Center	Private Hospital	NCR	100%	90%
Medical Center Imus	Private Hospital	4a	100%	89%
Alabang Medical Clinic – Muntinlupa Branch	Private Hospital	NCR	100%	88%
San Pablo Doctor’s Hospital	Private Hospital	4a	100%	88%
Kidapawan Medical Specialists Center, Inc.	Private Hospital	12	100%	87%
Tiglaog General Hospital	Private Hospital	3	100%	87%
Remedios Trinidad Romualdez Hospital	Private Hospital	8	100%	86%
Naic Holy Spirit Medical & Lying-In Clinic	Private Lying-In	4a	100%	85%
Capiz Emmanuel Hospital	Private Hospital	6	100%	84%
Perpetual Help Hospital – Manila	Private Hospital	NCR	100%	84%
St. Therese – Mtc Colleges Hospital	Private Hospital	6	100%	84%
Tugon Medical Clinic And Hospital	Private Hospital	6	100%	84%
Saint Jude Hospital, Inc.	Private Hospital	6	100%	83%
Wfmc – Enriquez	Private Lying-In	12	100%	82%
Great Saviour International Hospital, Inc.	Private Hospital	6	100%	81%
Iloilo Mission Hospital	Private Hospital	6	100%	81%
San Pedro Hospital Of Davao City, Inc.	Private Hospital	11	100%	81%
Bethany Hospital	Private Hospital	8	100%	80%
Our Lady Of Pillar Medical Center	Private Hospital	4a	100%	79%
St. Dominic Medical Center	Private Hospital	4a	100%	79%
Valencia Sanitarium & Hospital	Private Hospital	10	100%	79%
La Viña General Hospital, Inc.	Private Hospital	10	100%	78%
Q.C. St. Agnes General Hospital, Inc.	Private Hospital	NCR	100%	78%
Queen Mary Help Of Christians Hospital	Private Hospital	4a	100%	77%
Notre Dame De Chartres Hospital	Private Hospital	CAR	100%	76%
Bethany Hospital, Inc. – San Fernando	Private Hospital	1	100%	74%
Bethel Baptist Hospital, Inc	Private Hospital	10	100%	72%
Bishop Joseph Regan Memorial Hospital	Private Hospital	11	100%	72%
Ramos General Hospital	Private Hospital	3	100%	71%

Auguis Clinic & Hospital	Private Hospital	12	100%	70%
Binalbagan Infirmary	Government Hospital	6	100%	62%
Cagayan De Oro Medical Center, Inc.	Private Hospital	10	100%	62%
Sta. Maria Josefa Foundation Hospital	Private Hospital	5	100%	48%
St. James Hospital, Inc.	Private Hospital	4a	100%	41%
St. Anthony College Hospital	Private Hospital	6	100%	22%
Helen Dela Cruz – WPMC	Private Lying-In	NCR	100%	20%
Valenzuela City Emergency Hospital	Government Hospital	NCR	100%	10%
Holylife Healthcare Center	Private Hospital	NCR	100%	3%
San Carlos City Hospital	Government Hospital	6	100%	0%
United Doctors Hospital Of Tagum, Inc.	Private Hospital	11	100%	0%
Sta. Cruz Laguna Polymedic, Inc.	Private Hospital	4a	99%	104%
Laguna Doctors Hospital	Private Hospital	4a	99%	99%
Metropolitan Medical Center	Private Hospital	NCR	99%	98%
Maria Lourdes Maternity Hospital	Private Hospital	NCR	99%	91%
San Lorenzo Ruiz Women’s Hospital	Government Hospital	NCR	99%	91%
Manila Doctors Hospital	Private Hospital	NCR	99%	87%
Tagum Doctors Hospital, Inc.	Private Hospital	11	99%	84%
Los Baños Doctors Hospital, Inc.	Private Hospital	4a	98%	100%
Bohol St. Jude General Hosp.	Private Hospital	7	98%	96%
Calamba Doctors Hospital	Private Hospital	4a	98%	95%
Jaime B. Berces Memorial Hospital	Private Hospital	5	98%	94%
Mindanao Medical Center	Private Hospital	12	98%	88%
Novaliches General Hospital	Private Hospital	NCR	98%	88%
West Visayas State University Medical Center	Government Hospital	6	98%	69%
Celis Maternity Clinic	Private Hospital	4a	97%	97%
Manila East Medical Center	Private Hospital	4a	97%	96%
Lipa Medix Medical Center	Private Hospital	4a	97%	95%
Our Lady Of Peace Hospital	Private Hospital	NCR	97%	94%
Las Piñas City Lying-In Center	Government Lying-In	NCR	97%	93%
Dr. Amando Cope Memorial Hospital	Private Hospital	5	97%	88%
Las Piñas Doctors Hospital	Private Hospital	NCR	97%	88%
Dr. Pablo O. Torre Sr. Memorial Hospital	Private Hospital	6	97%	86%
Tamondong Mem. Clinic & Hosp.	Private Hospital	12	97%	70%
Angeles Medical Center, Inc.	Private Hospital	3	96%	100%
Biñan Doctors Hospital, Inc.	Private Hospital	4a	96%	100%
Socsargen County Hospital	Private Hospital	12	96%	98%
St. Martin De Porres Hospital – San Juan	Private Hospital	NCR	96%	95%
St. Victoria Hospital	Private Hospital	NCR	96%	88%
Divine Grace Medical Center	Private Hospital	4a	96%	86%
Saint Elizabeth Hospital, Incorporated	Private Hospital	12	96%	73%
St. Jude Hospital & Medical Center	Private Hospital	NCR	95%	83%
Metro Rizal Doctors Hospital	Private Hospital	4a	95%	81%
Van Dave Maternity Clinic	Private Lying-In	10	95%	70%
Surigao Medical Center	Private Hospital	CARAGA	95%	55%
San Pedro Doctors Hospital, Inc	Private Hospital	4a	94%	100%
Isaac & Catalina Medical Center	Private Hospital	3	94%	98%
UPLB Health Service	Government Hospital	4a	94%	84%
Batanes General Hospital	Government Hospital	NCR	94%	81%
Medical Mission Group Hospitals & Health Services Cooperative	Private Hospital	4b	94%	65%
Cebu Velez General Hospital	Private Hospital	7	94%	40%
Immaculate Heart Of Mary Hospital, Inc.	Private Hospital	5	94%	0%
Evangelista Medical Specialty Hospital	Private Hospital	4a	93%	100%
World Citi Medical Center (Quezon City Medical Center)	Private Hospital	NCR	92%	96%
Saint Patrick’s Hospital Medical Center	Private Hospital	4a	92%	92%
Brokenshire Integrated Health Ministries, Inc.	Private Hospital	11	92%	43%
Las Piñas City Medical Center	Private Hospital	NCR	91%	96%
Family Care Hospital	Private Hospital	4a	91%	93%
Pines City Doctors’ Hospital	Private Hospital	CAR	91%	82%
North Caloocan Doctors Hospital	Private Hospital	NCR	91%	67%
Atang Dela Rama Health Center & Lying-In Clinic	Government Lying-In	NCR	90%	96%
Molino Doctors Hospital	Private Hospital	4a	90%	92%
Dr. Amando L. Garcia Medical Center	Private Hospital	3	90%	90%
Lucena United Doctors Hospital	Private Hospital	4a	90%	89%
Holy Child Hospital	Private Hospital	7	90%	78%

**Table 2.** Distribution of 2008 performance rating of NSFs according to facility category

Category	Performance			Grand Total
	100%	≥95% but <100%	≥90% but <95%	
Government Hospital	11	2	2	15
Government Lying-In	0	1	1	2
Private Hospital	58	30	17	105
Private Lying-In	4	1	0	5
Grand Total	73	34	20	127

**Table 3.** Distribution of NSFs with 100% performance rating in 2008 according to Region and Category

REGION	Category			Grand Total
	Government Hospital	Private Hospital	Private Lying-In	
CHD 1	0	1	0	1
CHD 3	0	4	0	4
CHD 5	0	1	0	1
CHD 6	9	10	0	19
CHD 7	1	2	0	3
CHD 8	0	2	0	2
CHD 10	0	4	0	4
CHD 11	0	4	0	4
CHD 12	0	4	1	5
CHD 4a	0	10	1	11
CHD CAR	0	2	0	2
CHD NCR	1	14	2	17
Grand Total	11	58	4	73

**Table 4.** Distribution of NSFs with 95 to 99% performance rating in 2008 according to region and category

REGION	Category				Grand Total
	Government Hospital	Government Lying-In	Private Hospital	Private Lying-In	
CHD 3	0	0	1	0	1
CHD 5	0	0	2	0	2
CHD 6	1	0	1	0	2
CHD 7	0	0	1	0	1
CHD 10	0	0	0	1	1
CHD 11	0	0	1	0	1
CHD 12	0	0	4	0	4
CHD 4a	0	0	10	0	10
CHD CARAGA	0	0	1	0	1
CHD NCR	1	1	9	0	11
Grand Total	2	1	30	1	34

**Table 5.** Distribution of NSFs with 90 to 94% performance rating in 2008 according to region and category

REGION	Category			Grand Total
	Government Hospital	Government Lying-In	Private Hospital	
CHD 3	0	0	2	2
CHD 5	0	0	1	1
CHD 7	0	0	2	2
CHD 11	0	0	1	1
CHD 4a	1	0	6	7
CHD 4b	0	0	1	1
CHD CAR	0	0	1	1
CHD NCR	1	1	3	5
Grand Total	2	1	17	20

regularly discussed during meetings; NBS messages were integrated in the regular health education activities of hospitals; and the civil society has also been involved in the advocacy campaign.

Despite these efforts, most constituents could not afford the screening fee. Hospitals such as Don Salvador Benedicto and Bago City Hospital introduced different funding mechanisms i.e. "lay-away" system. The provincial government recognized the need for additional funding. Each hospital under the provincial's economic enterprise was given individual trust fund accounts solely for NBS for easy collection and payment. Two Hundred Thousand Pesos (P200,000) was allocated yearly to be used to subsidize the screening fee of indigent constituents. As a result, the number of babies screened in the province grew from 16% in 2003 to 100% in most of its hospitals in 2007.

### Conclusion

Three models have been identified to be successful strategies: 1) use of legislation; 2) issuance of hospital policy; and 3) CHD and LGU partnership. These models are continuously being circulated to other health facilities in the country for consideration and identification of strategies in an effort to increase the number of newborns screened.

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