

Kamarul Akmal L<sup>1</sup>, Sakina MS<sup>1</sup>, Nor Rashidah MN<sup>1</sup>, Vikneswaran S<sup>1</sup>, Rokiah T<sup>1</sup>, Abidah L<sup>1</sup>, Nor Haslina H<sup>1</sup>, Rusni MS<sup>1</sup>  
<sup>1</sup>Otorhinolaryngology Department, Hospital Sultan Abdul Halim, 08000 Sungai Petani, Kedah

## 1) SELECTION OF OPPORTUNITIES FOR IMPROVEMENT

Hearing loss is one of the most common significant congenital abnormalities present at birth. If undetected, it will impair speech, language and cognitive development (1). Thus, the Universal Neonatal Hearing Screening (UNHS) program in Hospital Sultan Abdul Halim (HSAH) is implemented to screen all neonates by the age of one month. However, the current performance did not achieve the benchmark which may lead to the late detection of hearing loss (2). This project aimed to identify the contributing factors for the insufficient coverage rate of UNHS program in HSAH and to formulate remedial measures to increase the coverage.

### PRIORITISATION OF PROBLEM

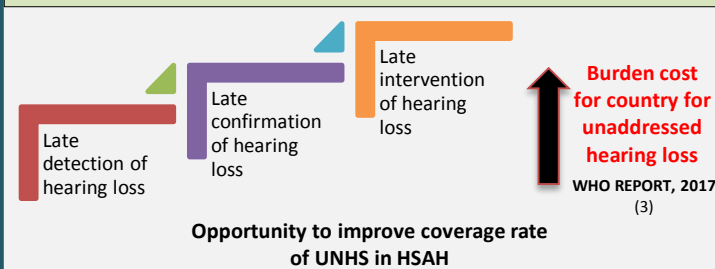
PROBLEM	S	M	A	R	T	SCORE
The performance of Universal neonatal hearing screening (UNHS) was not achieved the quality indicator or benchmarks	32	34	28	31	36	161
Long-waiting time to performed diagnostic Brainstem evoked response (BSER) procedure for children.	28	30	20	18	12	108
Poor hearing aid compliance among elderly user.	23	22	10	17	10	82
Inappropriate management for tinnitus cases.	24	19	11	17	15	86

8 GROUP MEMBERS	SCORE					
	INDICATION	1	2	3	4	5
	Very Low	Low	Fair	High	Very high	

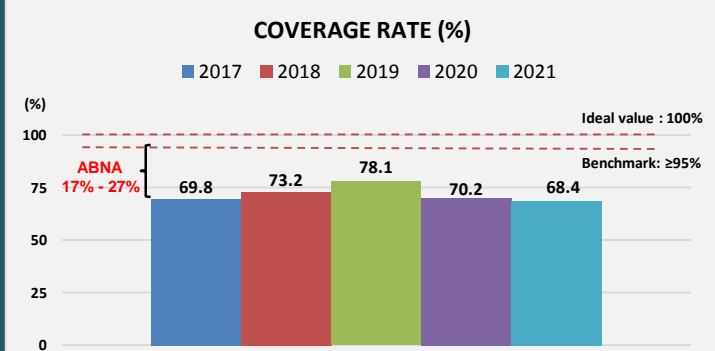
### REASON FOR SELECTION

S	MEASURABLE
	Late detection of hearing loss among newborn may lead to poor intervention and rehabilitation which can effect the development of speech & language, education and social and quality of life later on.
M	APPROPRIATENESS
	Performance reports from between 2017 to 2023 were analyzed and trending performance were comparable.
A	REMEDIAL
	Improving the coverage rate of the UNHS will help the babies with hearing loss to enrol the early intervention and rehabilitation program and this is closely related to department core business, to improve patient's quality of life.
R	TIMELINESS
	Possible cause can be identified and remedied.
T	PROBLEM STATEMENT
	The study can be completed within the timeframe.

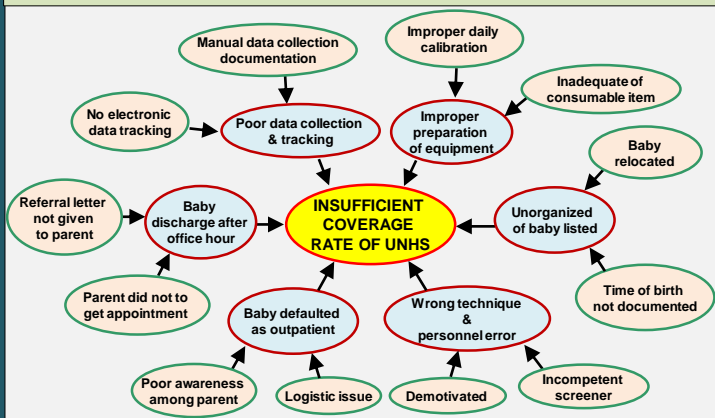
### PROBLEM STATEMENT



### VERIFICATION STUDY



### ANALYSIS CHART



### TERM & DEFINITION

TERMS	DEFINITION
UNHS	Universal Neonatal Hearing Screening (Hearing screening offered to all neonates).
COVERAGE RATE	Coverage rate of UNHS: • Poor coverage : < 40% • Fair coverage : 40% to 69 % • Good coverage : 70% to 94% • Excellent : ≥ 95%

## 2) KEY MEASURES FOR IMPROVEMENT

### OBJECTIVES

#### GENERAL OBJECTIVE

**TO INCREASE THE COVERAGE RATE OF UNIVERSAL NEONATAL HEARING SCREENING (UNHS) PROGRAM IN HOSPITAL SULTAN ABDUL HALIM (HSAH)**

#### SPECIFIC OBJECTIVE

- To determine the coverage rate between 2017 to 2021.
- To identify the contributing factors which lead to the low rate.
- To formulate and implement the remedial actions to increase the rate.
- To evaluate the coverage rate after remedial measure taken.

**REFERENCES**  
 1. Ching TY, Cooke K, Martin V, Day J, Mahler N, Yuan S, Street L, Cook C, Orsini J. Language development and everyday functioning of children with hearing loss assessed at 3 years of age. *Int J Speech Lang Pathol.* 2010  
 2. Guideline for neonatal hearing screening 2019. Medical Development Division MOH, Malaysia  
 3. Global costs of unaddressed hearing loss and cost-effectiveness of interventions: a WHO report, 2017. Geneva: World Health Organization; 2017. Licence: CC BY-NC-SA 3.0 IGO  
 4. Joint Committee on Infant Hearing. Year 2019 position statement: principles and guidelines for early hearing detection and intervention programs. *J Early Hearing Detect Intervent* 2019; 4: 1–44.

## INDICATOR & STANDARD

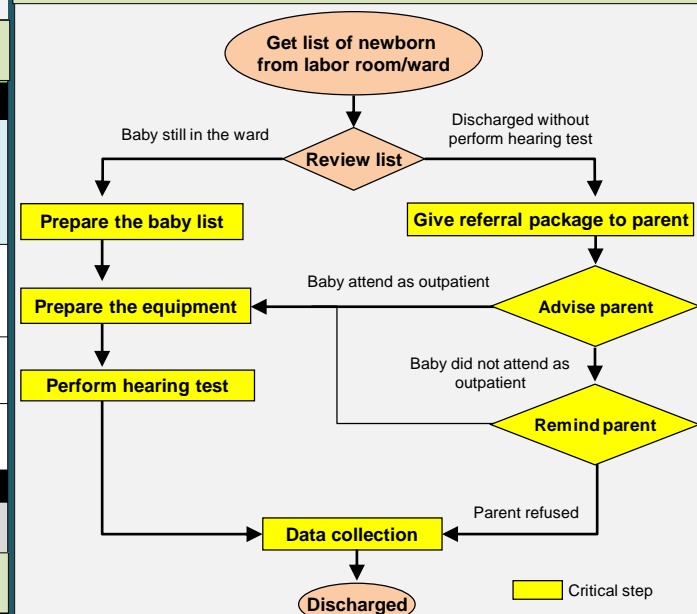
### INDICATOR

Percentage of all inborn newborns who completed screening by 1 months old (28 days of life)

No of inborn babies screened at 1 month  
 Total live birth in HSAH X 100%

**STANDARD ≥ 95%** Based on statement from Joint Committee Infant & Hearing (JCIH 2019) (4)

### PROCESS OF CARE



## MODEL OF GOOD CARE (MOGC)

PROCESS	CRITERIA	STD (%)	PRE	CYC 1	CYC 2	CYC 3
Prepare the listed baby	a) Calculate the number and time of birth for each babies	100	100	100	100	100
	b) Check for discharge planning	100	55	100	100	100
Prepare the equipment	a) Prepare the equipment	100	75	100	100	100
	b) Perform individual biological calibration	100	10	88	100	100
Perform hearing test	a) Perform test in quite environment.	100	100	100	100	100
	b) Repeat test using different machine	100	16	20	19	100
Hand over referral package & advised to parent	a) Prepare referral package to parent.	100	65	92	100	100
	b) Advise parent to come for TCA.	100	65	88	100	100
Remind parent	a) Call/message parent to bring their baby to HSAH or visit nearby hospital	95	15	40	68	94
	b) Documentation the screening result for each babies	100	84	100	100	100
Data collection	a) Daily statistic.	100	45	82	100	100
	b) Daily statistic.	100	45	82	100	100

## 3) PROCESS OF GATHERING INFORMATION

### METHODOLOGY

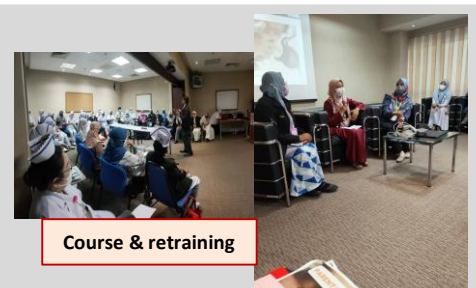
	PRE-REMEDIAL ASSESSMENT	REMEDIAL MEASURES	POST-REMEDIAL ASSESSMENT
Study Design	Retrospective study	Start on Jan 2022	Cross sectional (universal sampling)
Study Period	5 years (2017 - 2021)		Cycle 1: (Jan-June 22) Cycle 2: (July-Dec 22) Cycle 3: (Jan-June 23)
Remedial period	18 months		
Inclusion	All neonates born in HSAH performed hearing screening by 1 months (28 days of life)		
Exclusion	All out born babies/High risk baby (NICU)		
Indicator	Monthly percentage of the coverage rate and referral rate		
Data collection	Descriptive analysis		

### DATA COLLECTION TOOL

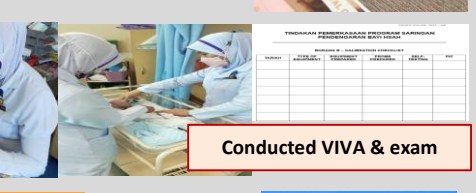
FACTORS	VARIABLE	METHOD OF COLLECTION	SAMPLE UNIT	STD
Unorganized of baby listed	List of baby check list	Review checklist record	Checklist from 1/10/21-5/11/21	100% complete checklist
Improper preparation of equipment	Checklist of biologic calibration	Exam VIVA Self administered	Checklist from 7/11/21-15/11/21	100% good knowledge and practice
Wrong technique and personnel error	Knowledge & correct technique	Exam VIVA Performance appraisal	Testing of 20 babies	100% knowledge and practice
Baby discharged after office hour	Referral package given to parent	Review results from discharged book	All staff of O&G & pediatric ward	100% practice
Parent not get appointment or defaulted	Checklist parent get appointment & list of defaulter	Review appointment slot	Data from 15/12/21-25/12/21	95% come for TCA
Poor data tracking and collection	Data documentation	Review data collection	Data from 1/12/21-31/12/21	100% complete data

## 4) STRATEGIES FOR CHANGE

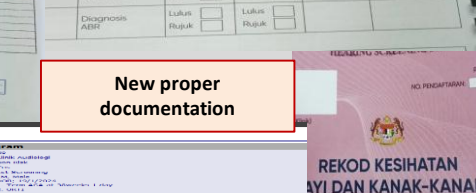
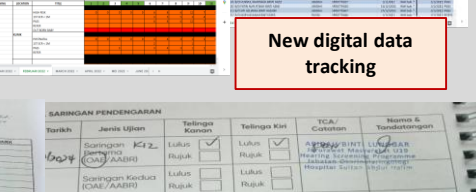
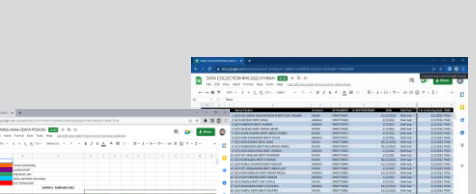
Cycle 1



Cycle 2



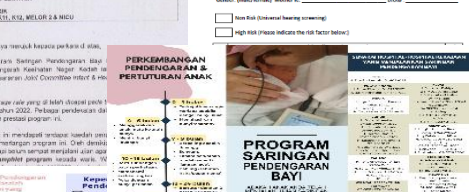
Cycle 3



Cycle 3



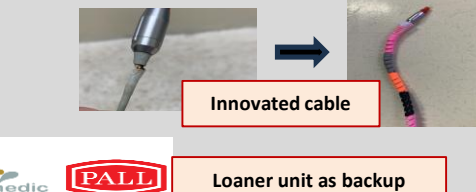
Cycle 3



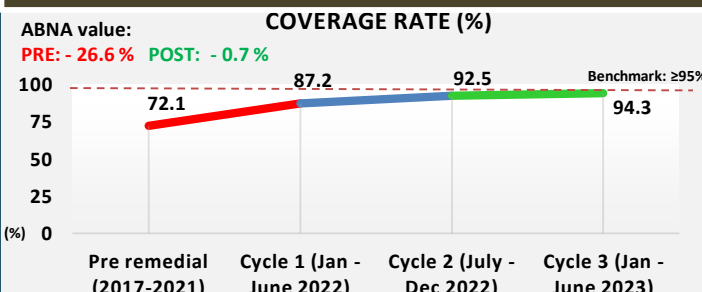
Cycle 3



Cycle 3



## 5) EFFECTS OF CHANGES



## 6) THE NEXT STEP



## 7) CONCLUSION

- The remedial measures implemented has successfully improved the coverage rate of UNHS program in HSAH.
- Smart partnership between MOH and private sector is a good initiative to boost healthcare services for the public.
- Ultimate teamwork between the hearing screening personnel are crucial for UNHS program.
- Sustainability of the UNHS program must take into consideration.

### ACKNOWLEDGEMENT

Dr. Mithali Binti Abdullah Pengarah, Hospital Sultan Abdul Halim  
 Pn Atisha Binti Hanif, Peg Farmasi (Fasilitator), Hospital Sultan Abdul Halim  
 Dr. Azrina Binti Ayob Unit Kualiti (Fasilitator), Hospital Sultan Abdul Halim