

# Reducing the outpatient recall rate in the Universal Newborn Hearing Screening Program: A process improvement project.



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## Background

The Universal Newborn Hearing Screening (UNHS) Program of KK Women's and Children's Hospital uses a 2-step automated auditory brainstem response (AABR) protocol to screen newborns before discharge. Those who do not pass are either rescreened the next day or given an out-patient rescreen appointment at 3-6 weeks of life if they are discharged. This outpatient rescreen is time consuming and difficult. The yearly rate of outpatient rescreens ("recall rate") has increased from 1.5%(2002) to 5.0%(2012).

## Aim

To reduce the outpatient recall rate by 30% .

## Method

- Three simple steps were identified for modification / improvement after root cause analysis were carried out from October 2013, after a brief pilot project in August 2013.
  - At 7am, the screeners first screened all the newborns who were present in the nursery, even if they were not scheduled for immediate discharge, instead of locating newborns due for discharge at 12 noon.
  - A change in the screening hours of one screener from 7am-3pm to 9am-5pm allowed 2 extra hours to screen newborns who were born / did not pass screening in the morning.
  - The screening protocol (Figure1) was amended as shown in Figure 2. The screener was limited to 2 screens at each screening attempt and a maximum of 4 screens in three screens.
- Data for the month of October 2012 was analyzed for comparison with October 2013.
- Outpatient screening was analyzed for both months.
- The monthly recall rates in 2012 and 2013 were calculated to determine the sustainability of the new process.
- Data was obtained from the UNHS database and from manual recording.

Figure 1. The original screening protocol.

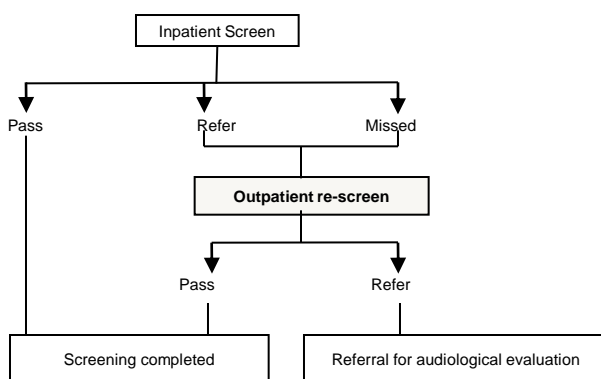
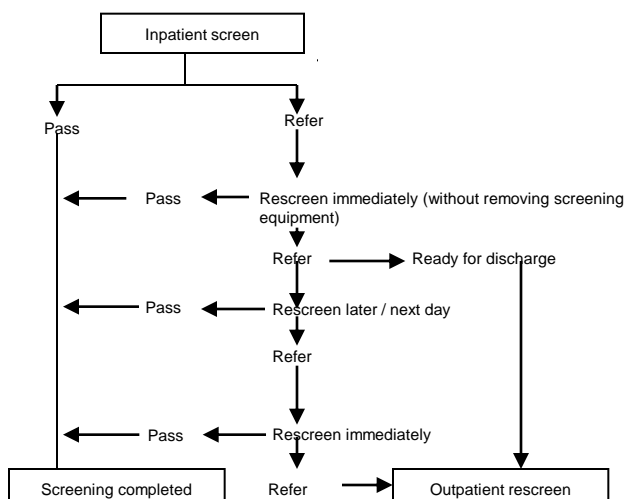


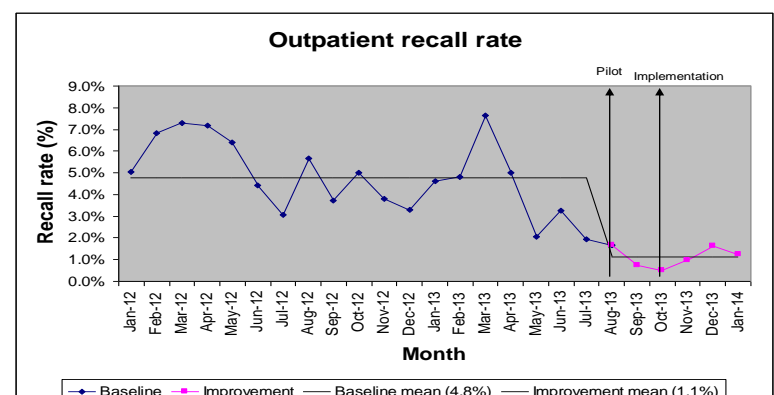
Figure 2. The amended screening protocol



## Results

- 78 newborns were screened during the extended screening hours of 3- 5pm in October 2013, constituting 9.0% of the total workload.
- The ratios of the numbers of screens to newborns (1.22:1 in 2012 and 1.24:1 in 2013) were not statistically different ( $p>0.05$ ) .
- The recall rate fell from 5.6% (57 newborns) in October 2012 to 0.6% (5 newborns) in October 2013 ( $p<0.05$ ).
- The first screen was performed at 4 hours of life. 228(26.4%) and 148 (17.1%) screens were performed between 4-6 and 6-12 hours respectively. There was no difference in the pass rates obtained during the 2 periods of time ( $p>0.005$ ).
- In October 2012, 10 of the 57 newborns who needed outpatient rescreening did not keep their appointments. Repeat reminders via 26 phone calls and letters were given before 9 out of the 10 were finally rescreened. In October 2013, all 5 eligible newborns were rescreened as outpatients without the need of reminders or letters.
- The measures taken were sustainable. The mean monthly recall rate fell by 75.6% from a mean of 4.5% (before October 2013) to 1.1% from October 2013 onwards (Figure 3),

Figure 3. Outpatient recall rate from Jan 2012 to 2014.



## Discussion

- The 3 steps taken were identified only after a very rigorous review of the screening process and movements of screeners/ newborns.
- The project was successful for the following reasons:
  - The window of opportunity to screen newborns in the nursery increased. At the start of the work day, the screeners had at least an hour of uninterrupted screening time before the major ward activities began.
  - The screener was able to screen newborns who, in the past would have been screened the next morning. Mornings were always stressful for the screeners, as the many ward routines often interrupted the screening of newborns .
  - The UNHS screeners and ward staff were consulted at the start of the project and agreed to the amended processes.
- The screeners reported better work satisfaction as they had fewer long and difficult rescreen cases as outpatients and less need to recall newborns who missed their appointments.

## Conclusion

- The outpatient recall (rescreen) rate was reduced successfully by 75.6% by implementing 3 simple steps.
- By reducing their service burden, the UNHS staff could concentrate on inpatient screening and rescreening.
- As fewer newborns needed outpatient rescreens, the burden on parents was also reduced.
- The incidence of congenital hearing loss will be carefully monitored to ensure that the measures taken do not result in a possible increase in false negative screening.