



# Is My Baby on Track? A Retrospective Analysis of Newborn Hearing Screening Results and Follow-Up Within the Well Baby Population

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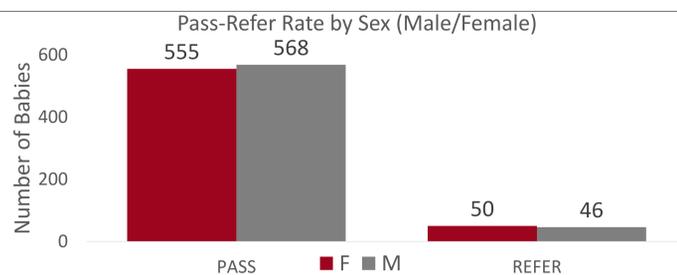


## INTRODUCTION

The universal newborn hearing screening (UNHS) has been implemented in the state of Illinois since December 31, 2002. The aim of this study was to investigate the impact on certain factors, such as birth weight and sex, on the pass-refer rate on the UNHS prior to discharge from the hospital. Previous studies have provided conflicting information regarding relationships between birth weight and sex on referring on the UNHS. Additionally, per the EHDI 1-3-6 guidelines, the newborn hearing screen is to be completed by 1 month of age. This study examined the loss to follow-up percentage and number of infants who completed their UNHS, which is defined as a pass or new identification of hearing loss, by 1 month of age. Congenital cytomegalovirus (cCMV) is a risk factor for hearing loss that is often overlooked based on lack of education on the subject. A newly formed interprofessional team at University of Chicago Medicine is working to increase the offering of cCMV testing following a failed hearing screen in the well-baby population. This implementation is designed to lead to universal screening for cCMV for all infants. **We hypothesized that infants with a higher birth weight (>3300g) and males are less likely to refer on their UNHS compared to infants with birth weight below 3300g and females.**

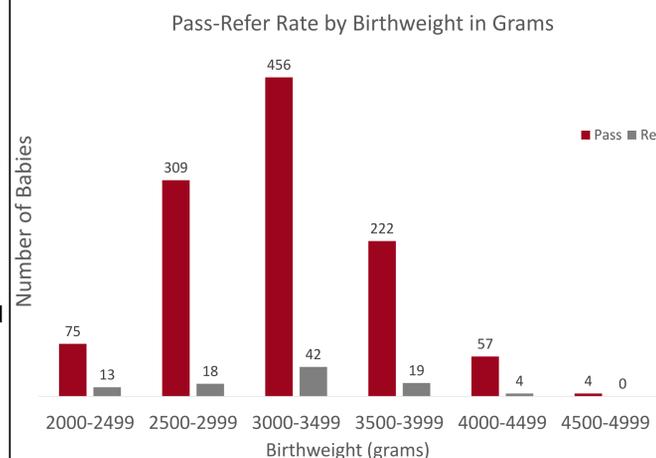
## METHODS

The information of one thousand two hundred and nineteen neonates was obtained from the Hi-Track database for University of Chicago Medical Center from the dates June 1, 2021 – November 30, 2021. Inclusion criteria for the retrospective study included healthy, full term (37 weeks gestation or greater) infants that were discharged from the Mother-Baby Unit. Infants were excluded from the study if they were admitted to the NICU, have a positive family history of childhood hearing loss, or have outer ear abnormalities. The UNHS is completed on all newborns as part of the discharge criteria. The UNHS could be completed utilizing automated-auditory brainstem response testing or distortion product otoacoustic emissions. Information regarding birthweight, socioeconomic status, and sex were evaluated for statistical significance regarding pass-refer rate for this population. Method of delivery, offering and completion of cCMV testing, annual household income and referral loss to follow-up were also examined.

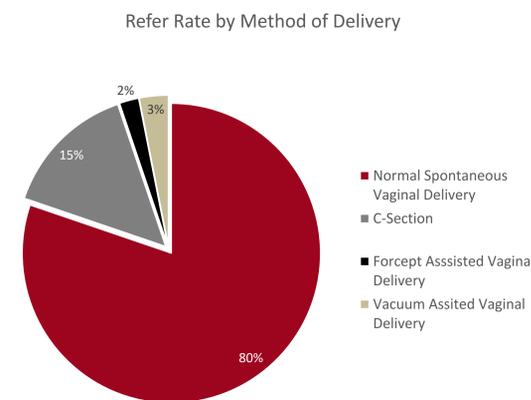


**Figure 1.** Number of babies who pass or refer on UNHS based on biological sex determined at birth

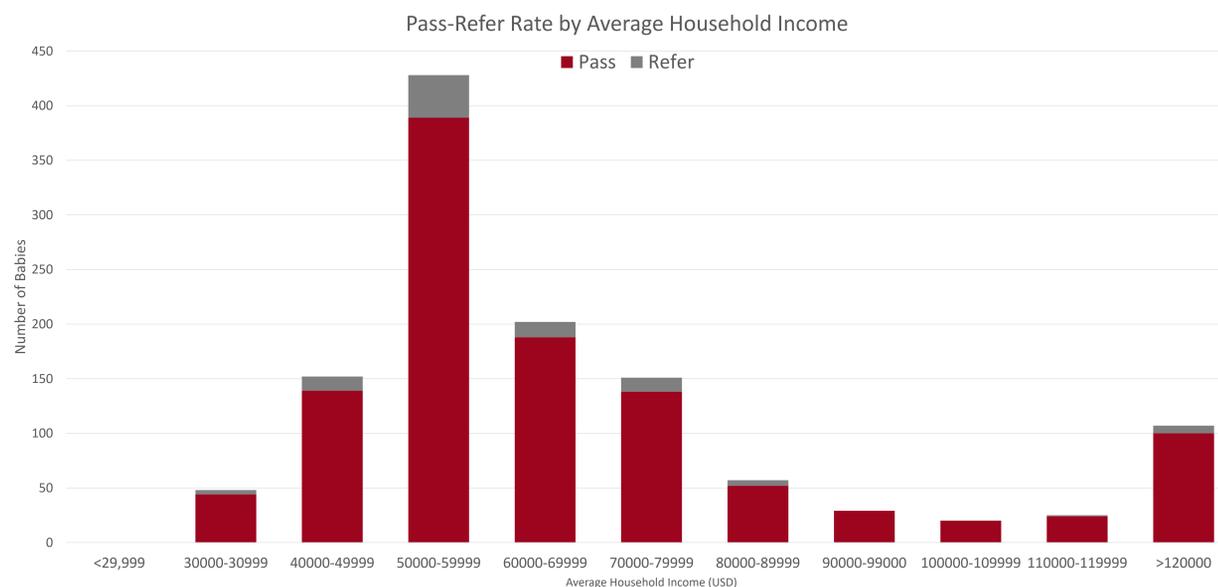
## RESULTS



**Figure 2.** Number of babies who passed or referred on UNHS based on birth weight in grams in set ranges



**Figure 3.** Percentage of well babies who referred on UNHS determined by method of delivery



**Figure 4.** Number of well babies who passed or referred for their UNHS based on average household income determined by birth mother's zip code.

## SUMMARY/CONCLUSIONS

Analysis determined there is not a statistical significance between pass and refer rates for birth weight or sex.

There is a correlation between higher income households and a higher pass rate on the UNHS.

28 out of 96 (29%) referring infants did not follow up at University of Chicago Medicine Audiology by 1 month of age.

Most common reasons for no outpatient appointment by 4 weeks old at our facility included frequent no-shows or same day cancellations, not scheduled by 4 weeks of age, and out of network insurance.

54 out of 96 parents (56%) of infants who referred on the newborn hearing screening were offered testing for congenital cytomegalovirus (cCMV). cCMV testing resulted in zero positive cCMV tests within this well-baby population.

## FUTURE CONSIDERATIONS

Increase education materials on congenital cytomegalovirus for pediatric team and new mothers in the Mother-Baby Unit to increase frequency of offering cCMV testing for infants who fail their newborn hearing screening.

Develop a protocol for scheduling infants who refer on their UNHS and do not schedule within 4 weeks or frequently no-show appointments.

Increase coordination with primary care providers to stress the importance of follow-up following a referred hearing screening.

Investigate potential relationship between hours of life age at the time of hearing screening and referral rate.

## REFERENCES

- [1] Al-Balas HI et. al. (2021). *Journal of Ann Med Surg (Lond)*, vol. 64 102236
- [2] Shahid et. al. (2016). *Journal of Clinical Pediatrics*, Vol. 55, Issue 12
- [3] Illinois early hearing detection and intervention (EHDI) 2020 Annual Report