

# Newborn Hearing Screening: High Risk Populations of Loss to Follow-up in Louisiana, 2007-2011

Xiaoling Ye\*<sup>1</sup>, Tri Tran<sup>2, 3</sup>, Mary Jo Smith<sup>2</sup>, Jeanette Webb<sup>2</sup>, Terri Mohren<sup>2</sup> and Melinda Peat<sup>2</sup>

<sup>1</sup>Tulane University School of Public Health and Tropical Medicine, Department of Epidemiology, new orleans, LA, USA; <sup>2</sup>Louisiana DHH OPH CSHS Early Hearing Detection and Intervention Program, new orleans, LA, USA; <sup>3</sup>LSUHSC School of Medicine, Department of Pediatrics, new orleans, LA, USA

## Objective

The objective of this study was to explore who were at high risk of loss to follow-up among newborns who failed initial hearing screening tests prior to hospital discharge in Louisiana between 2007 and 2011.

## Introduction

Newborn hearing screening prior to hospital discharge is implemented in all states and some U.S. territories. All newborns who fail the hearing screening are encouraged to follow up to get further tests to confirm diagnosis of hearing loss as early as possible, preferably by three months of age. Loss to follow-up of hearing screening is defined as a newborn who fails the initial hearing test before hospital discharge but does not follow up with further hearing tests to confirm diagnosis of hearing loss. Defining high risk populations of loss to follow-up is necessary not only to improve the rate of loss to follow-up, but also to enhance the capacity for early confirmed diagnosis and ease of access to care for patients with hearing loss in the state.

## Methods

The data of Louisiana Early Hearing Detection and Intervention Surveillance linked with birth certificates were used for analyses. The study included 15,145 newborns who were born between 2007 and 2011 in Louisiana and failed the initial hearing screening tests prior to hospital discharge. Loss to follow-up of hearing screening included both data which were and were not confirmed by audiologists. All variables defining characteristics of newborns and mothers were derived from birth certificates. Unadjusted and adjusted logistic regression models were conducted to evaluate relationships between loss to follow-up and characteristics of newborns and mothers. Linkpro 3.0 and SAS 9.3 were used for data linkage and analyses. Alpha was set at .05 for statistical significance.

## Results

The rate of loss to follow-up was 32.3% in Louisiana between 2007 and 2011. Results of adjusted logistic regression model indicated that very preterm newborns (< 32 weeks of gestational age, odds ratio [OR]: 1.31, CI95% [CI]: 1.1-1.6) or preterm newborns (32-36 weeks, OR: 1.18, CI: 1.05-1.32) were more likely to be lost to follow up. In addition, newborns to mothers with the following characteristics had higher odds of loss to follow-up: living in urban areas (OR: 1.14, CI: 1.06-1.23), smoking during pregnancy (OR: 1.24, CI: 1.11- 1.39), unmarried (OR: 1.16, CI: 1.06-1.26), paid for delivery by Medicaid (OR: 1.12, CI: 1.01-1.25), lower education (not completed high school, OR: 1.53, CI: 1.38-1.70; completed high school, OR: 1.20, CI: 1.10-1.32), younger age (< 20, OR: 1.33, CI: 1.11-1.60; 20-24, OR: 1.32, CI: 1.13-1.54) and higher number of previous live births ( 1 previous live birth, OR: 1.38, CI: 1.26-1.51; > 1 previous live birth, OR: 1.87, CI: 1.70-2.01). The odds of loss to follow-up were not significantly different between groups of race and ethnicity.

## Conclusions

Preterm birth newborns and those mothers who are young, low educated, smoke during pregnancy, have Medicaid pay for delivery, have higher number of previous live births, unmarried at birth, and live in urban areas are target populations for intervention to improve loss of follow-up of hearing screening in Louisiana.

## Keywords

Early newborn hearing screening; Loss to follow-up; Linked data; Birth certificate

\*Xiaoling Ye

E-mail: janice.ye268@gmail.com

