

Cry as an Indicator of Newborn Health

Human's **first way of vocal communication is through cry**, which infants use to express their basic needs, but also their health.

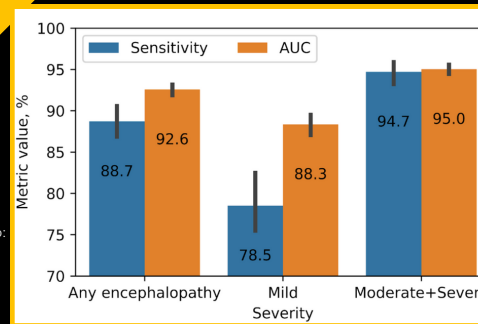
Crying involves mechanisms controlled by the **central and autonomic nervous system** for the coordination of **cardiorespiratory activity and laryngeal musculature**.

Advanced machine learning enables automated signal processing and analysis of cry, **revealing acoustic features that offer insights into the infant's neurological and broader medical status in a non-invasive manner**.

Cry analysis holds promise as a rapid, point-of-care screening tool for infant health but requires further large-scale validation.

Unlocking the potential of newborn cry offers a promising avenue for early diagnosis and intervention in infant health.

Research Highlights



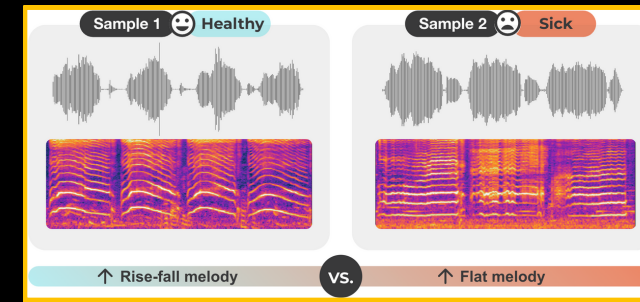
From: Onu, C. et al. (2023). "A cry for help: Early detection of brain injury in newborns" [arxiv:2310.08338](https://arxiv.org/abs/2310.08338)

01. Ubenwa's groundbreaking work achieved **92.5% accuracy** in detecting **neonatal encephalopathy secondary to perinatal asphyxia** from cry sounds alone. **Acoustic features, or "biomarkers"**, like dysphonation and flat melody type distinguished healthy and asphyxiated babies.

02. Past studies have identified unique cries (**higher fundamental frequency, dysphonation, and atypical melodies**) linked to other **neuropathologies** (e.g., intraventricular hemorrhage, prenatal drug exposure, meningitis), as well as **respiratory and cardiac conditions** (congenital heart disease, asthma, respiratory distress syndrome). (ref: Lawford et al. (2022), Chittora et al. (2016))

Case Study

Spectrograms of a Healthy vs Asphyxiated Newborn



CryLab

Get acoustic biomarkers for your study

Ubenwa offers a software platform to manage infant research studies so you can:

- ✓ **Analyse cry recordings**
- ✓ **Customize to your study population**
- ✓ **Store & export acoustic biomarkers of cry**

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