

## THE HUMAN TOUCH: HOW ERROR PRONE ARE CLEFT LIP AND PALATE DOCUMENTATION PRACTICES?

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**Keywords:** global health, cleft diagnosis

**Background:** Orofacial clefts such as cleft lip and palate (CLP) are among the most common congenital malformations in the world, often requiring multidisciplinary care and multiple surgical repairs. Comprehensive cleft care for CLP patients depends on accurate and consistent documentation in order to maintain the continuity of care. On a grander scale, accurate documentation practices help enable robust epidemiological and clinical research.

**Materials/Methods:** Smile Train Express (STX), an online comprehensive electronic health record (EHR) system developed by Smile Train, was interrogated for CLP diagnoses, interventions, and surgery types. Cleft diagnoses were recorded as cleft lip, cleft alveolus, cleft hard palate, and cleft soft palate for left and right side and graded as complete, incomplete, or submucous. Documented diagnoses were converted into LAHSHAL notation using automated Microsoft Excel macros. Diagnostic data were collected, analyzed, and categorized as "none", "minor", or "major" data entry error.

**Results:** Initial LAHSHAL conversion of the >1.6 million entries produced over 500 recurring combinations in diagnostic code. "Minor" error included examples such as submucous cleft hard palate only on one side and other documentation errors deemed as having obvious correct diagnosis intent. "Major" errors were generally the anatomically impossible diagnoses. In a large sample from the most active CLP repair countries, 89.5% of the entries contained no apparent error, 10.3% had minor error, and 0.2% had major error.

**Conclusions:** Our analysis revealed that documentation errors happened in over 10.5% of interventions – many being arguably preventable. LAHSHAL notation is a robust and highly detailed approach to document CLP containing unique logic checks for error prevention. We call on the importance of consistency and standardization within documentation, training and agreement in the use of cleft notation, and changes to EHR systems to minimize human error.

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