

# Apparent Life-Threatening Event (ALTE) ICD-9-CM Code Proposal

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# Overview

- ALTE definition
- Epidemiology
- Variability in clinical approach
- Need for an evidence basis
- Limitations of proxy codes



# ALTE defined

- "an episode that is frightening to the observer and is characterized by some combination of apnea (central or occasionally obstructive), color change (usually cyanotic or pallid but occasionally erythematous or plethoric), marked change in muscle tone (usually marked limpness), choking, or gagging."
  - » National Institutes of Health, Consensus Development Conference on Infantile Apnea and Home Monitoring, Sept 29 to Oct 1, 1986. *Pediatrics*.1987; 79 :292 –299.



# What are the causes of an ALTE?

- 33-50%: GI (gastroesophageal reflux)
- 15-30%: Neurologic (seizures)
- 11-20%: Respiratory (lower respiratory tract infections)
- 4%: ENT
- 1-5%: Cardiac
- In approximately 25-50% of cases no cause can be identified

» Kahn A. Eur J Pediatr (2004) 163: 108–115

» McGovern MC, Smith MBH. Arch Dis Child (2004) 89:1043–1048



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# Apnea does not equal ALTE

- Apnea up to 20 seconds occurs in 43% of healthy term infant
  - » Ramanathan R. JAMA (2001) 285:2199-207
- 0.2-0.9% of infants have apnea requiring admission
  - » Mitchell EA. Acta Paediatr (2001) 90:417-22
  - » Wennergren G. Acta Paediatr Suppl (1993) 82(Suppl 389):S114-6
  - » Kiechl-Kohlendorfer, U. Arch Dis Child (2004) 90:297-300



# Evaluation of ALTE

- Lack of consensus in approach
    - reflux testing (pH probe study or upper GI)
    - sleep study
    - EEG
    - ECG
    - head CT
    - chest x-ray
    - lumbar puncture
    - medications for presumed infection or GER
- » Tieder JS. J Pediatr (2008) 152:629-35



# Cost to US Healthcare System

- Tieder's study of 12,067 patients admitted for ALTE showed
- Mean length of stay of 4.4 days ( $\pm 5.6$  days)
- Mean adjusted charges of \$15,567 ( $\pm \$28,510$ ) per admission
- Mean in-hospital mortality rate was 0.56%
- 30-day readmission rate was 2.5%



# Actually, we're not sure of the impact on the healthcare system

- Because there is no unique code for ALTE Tieder's study population had at least 1 of the following diagnoses:
  - apnea (786.03)
  - respiratory problem of the newborn (770.8)
  - syncope (780.2)
  - altered consciousness (780.09)
  - transient loss of consciousness (780.02)
  - cyanosis (782.5)





# ALTE is not a single symptom

- The term describes a clinical syndrome
- Can occur during sleep, wakefulness, or feeding in infants who are generally >37 weeks gestational age at the time of onset
- Presents with a combination of symptoms



# ALTE is currently tracked based on the presenting symptoms

## ■ Apnea

- newborn 770.81
- apnea 786.03
- central 327.21
- obstructive 327.23

## ■ Change in muscle tone

- muscle weakness 728.87
- other myopathies 359.89
- other symptoms involving nervous and musculoskeletal systems 781.99

## ■ Color change

- newborn cyanosis 770.83
- cyanosis 782.5
- newborn plethora 776.4
- plethora 782.62

## ■ Choking or gagging

- choking sensation 784.99
- choking due to phlegm 933.1



# Why is it important to be able to specifically track ALTE?

- Infants with ALTE have a greater risk of sudden death compared to infants only presenting with apnea and/or bradycardia
- They will more likely benefit from a home apnea/bradycardia monitor
  - » Committee on Fetus and Newborn, American Academy of Pediatrics. Pediatrics (2003) 111(4 Pt 1):914-7
  - » AHRQ guideline for ALTE ([http://www.guidelines.gov/summary/summary.aspx?doc\\_id=3732&nbr=002958&string=alte](http://www.guidelines.gov/summary/summary.aspx?doc_id=3732&nbr=002958&string=alte))



# Without a unique ICD-9-CM code

- We are unable:
  - to track true incidence
  - monitor actual healthcare impact
  - perform adequate research
  
- UK had an ICD-9 code for ALTE - 798.4



# A new ICD-9-CM code for ALTE

- Based on the wealth of international literature and need for better monitoring a unique ALTE code should be added to the next ICD-9-CM edition



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# New unique code for ALTE

- 799.82 Apparent life-threatening event in infant [newborn] [ALTE]



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