Investigating Unexpected Child Deaths

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Introduction

• Aim:
  • To enhance skills and confidence in investigating and reviewing unexpected child deaths, according to the new Kennedy guidelines.

• Learning objectives:
  • To develop an understanding of some of the pathophysiological pathways involved in unexpected deaths, and use this to inform history taking and scene examination.
  • To enhance confidence in interpreting findings, enabling effective leadership of final case discussions and contribution to CDOP.
Outline

- New Kennedy guidelines – what is different?
- Triple risk and pathophysiology of SIDS
- Important findings in examination, history and scene visits
- CDOP review and complete Form C
  - SUDI
  - Sudden death of teenager
- Question and answer session on anything SUDIC / CDOP

Kennedy 2 – The Joint Agency Response
Aims

- Establish, as far as possible the cause or causes of the infant’s death
- Identify any potential contributory or modifiable factor
- Provide ongoing support to the family
- Ensure that all statutory obligations are met
- Learn lessons in order to reduce the risks of future infant deaths
Core components of Joint agency response

- Careful multi-agency planning of the response
- Ongoing consideration of the psychological and emotional needs of the family, including referral for bereavement support
- Initial assessment and management, including a detailed and careful history, examination of the infant, preliminary medical and forensic investigations, and immediate care of the family including siblings.
- An assessment of the environment and circumstances of death
- A standardised and thorough post-mortem
- A final multi-professional case discussion meeting

Joint agency response

- Local joint agency SUDI protocols
- Joint examination of the body by paediatrician and police
- Joint interview of parents by paediatrician and police
- Joint home visit by paediatrician and police to examine the scene of death
- Final case discussion to review cause and risk factors for death to be held prior to inquest and CDOP
- CDOP to review all SUDI cases
- LSCB have statutory responsibility to develop joint agency responses and ensure this is appropriately commissioned.
Triple Risk Hypothesis

Intrinsic Risk Factors
- Male Gender
- Prematurity
- Genetic polymorphisms
- Prenatal exposure to cigarettes and/or alcohol

Extrinsic Risk Factors
- Prone or side sleep position
- Bed sharing
- Over-bundling
- Soft bedding
- Face covered

Brainstem respiratory control
Pre-Botzinger complex
Potential mechanisms for SIDS

- SIDS could be due to a failure in respiratory control, particularly of auto-resuscitation.
- Normal respiration is controlled by several neural networks in the brainstem
  - Any defect in one network readily compensated for by others
  - SIDS infants typically do not have respiratory control difficulties in life

Respiratory control in hypoxia

- During hypoxia, only one neural network remains active – in the pre-Botzinger complex
  - Sigh or gasp in response to hypoxia or hypercapnia
- This solo network is therefore vulnerable to any failures in its pathway
- The network is dependent on the neurotransmitter serotonin – some evidence prenatal exposure to smoke effects serotonin pathways in the brainstem
- Potentially network at risk due to infection, over heating, or any other stressor.
Auto-resuscitation


Could it be overlay?

**Accidental asphyxia**
- Post-mortem examination frequently inconclusive
- Rarely, massive pulmonary haemorrhage or facial petechiae
- Cannot differentiate accidental from intentional asphyxia
- Determination relies on detailed history, scene examination and case review

**SIDS**
- Post-mortem examination inconclusive
- Determination relies on detailed history, scene examination and case review
International comparison of SUDI rates

History taking

- Very detailed account of events from antenatal until death
- Parental smoking – especially antenatally
- Previous miscarriage or sibling death – genetic vulnerability
  - Notify CONI HQ
- Minor illness – infection may trigger SIDS
- Parental medication - ? Impaired arousal
- Parental drug misuse
- Parental alcohol consumption
- Febrile convulsions or epilepsy? Family history of epilepsy?
  - Toddler deaths – possibly similar to SUDEP
Examining the child

- Overall appearance
  - Post-mortem changes
  - Hygiene
  - Markers of disease
- Examine entire body
  - Skin markings
  - Injuries
  - Medical interventions (removal of lines etc.)
- Growth parameters and core body temperature
- Document on body charts

Post-mortem changes

- Frothy blood-stained mucus
- Dependent livido
Form C for ‘real’ cases

- Billy and Justine – SUDI
- Susie – teenager

- Each table to attempt to complete a Form C for one case. – 10 mins
- Discuss our conclusions
- Template Form C based on my interpretation

Conclusion

- Kennedy 2 - main theme is joint working throughout the SUDI process
- Detailed history, examination, and scene visit will contribute greatly to understanding what actually happened
- Final case discussions are to provisionally agree a cause of death and share this with the coroner who determines official cause
Conclusion

• Form C – use 0-3 as detailed
• For SUDI /SIDS risk factors have been well described
• Evidence base for other cases is less clear
• Parenting capacity risks: if poor parenting had contributed in any way to the death, even if an isolated event (eg alcohol and co-sleeping)
• Service provisions risks: failings in medical care, lack of provision of services or access to them.

Useful references