

Infusing Confidence in Today's Technology  
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# Medication error – what happens when things go wrong?

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# Medical Error

- Medication error is the most common type of medical error
- Estimated 12,000 NHS deaths/year due to medication errors
- Intravenous (IV) medications higher risk as complex to prepare and administer
- WHO commitment to reduce harm to patients from medication error – by 50% by 2022

Sutherland et al 2018

# Medication error

- Estimated 10.1% IV medication administration associated with error
  - Wrong drug selection
  - Wrong diluent
  - Wrong rate
- Most common error – wrong rate 57.9%

Sutherland et al 2018

# Case Study

- Twins Alfie and Harry McQuillan – born 27 weeks on 30<sup>th</sup> October 2010 Stafford Hospital
- Morphine 50 mcg/hour IV prescribed
- Alfie – 600mcg in 30 minutes
- Harry – 850mcg in 30 minutes
- Transferred to North Staffordshire Hospital
- Died 1<sup>st</sup> November 2010



Post mortem – death due to extreme immaturity with Morphine as contribution to death

## Contributory factors

- Delivered at 5 a.m. when staffing levels low
- Nurses doing many different jobs
- Nurses unsure of dosage and had to read Morphine protocol
- One nurse said she had checked with the other who had confirmed the dose
- Unstable twins in an area where expertise was strictly limited

# Case Study

- 65 year old man end stage renal failure
- Peritoneal dialysis – developed peritonitis
- Accidental acute overdose Gentamicin
- Acute vestibular dysfunction and hearing loss
- Toxic level of Gentamicin (220 ug/ml)
- Immediate haemodialysis
- Daily haemodialysis for 2 days
- Gentamicin level 10 ug/ml following 3<sup>rd</sup> haemodialysis
- Moderate and persistent high frequency hearing loss
- Gradual but incomplete recover from vestibular dysfunction

# Patient controlled analgesia

- > 40% IV medication errors involve opioids, insulin or anticoagulants  
Gebhart 2009
- 3 year study (2010 – 2013) 45,104 patients using PCAs
  - Errors in 406 (0.9%) cases
    - Operator error (54.7%) – wrong infusion rates (24.8%)
    - Device malfunction (32.3%)
    - Prescription error (12.3%)
    - Patient error (0.7%)

Yoonyoung Lee (2019)

# Patient controlled analgesia

- Risk of errors with PCA pumps 3.5 times risk from any other medication administration error
- Challenges due to variability of patient response
- Low but unpredictable incidence of life threatening respiratory depression in young healthy patients
- Institute for safe medication practices recommends smart PCA pumps containing dose error reduction software (DERS)

Maddox et al 2008

# Tyler's story





## References

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