



Leeds ReCAP Initiative

Reducing Cardiac Arrests on PICU



Leeds Children's
Hospital Appeal



Khurram Mustafa (ST6)





How it started

- Clinical leadership
- PICU
- LTHT: 50% reduction in 2222 calls
- Quality Improvement
- Human Factors



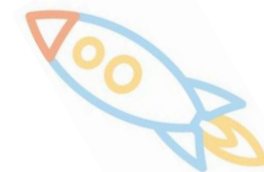
**Aim: To reduce Cardiac arrests on PICU by
50% in 12 months**





Incidence

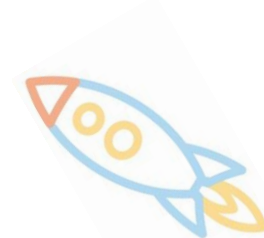
- Majority of cardiac arrests in children happen on PICU
- Single-centre study in the UK reported an incidence of 1.8% on PCICU
- Multi-centre studies report incidence between 1% and 5.5%
- Survival to discharge: 27% to 45%





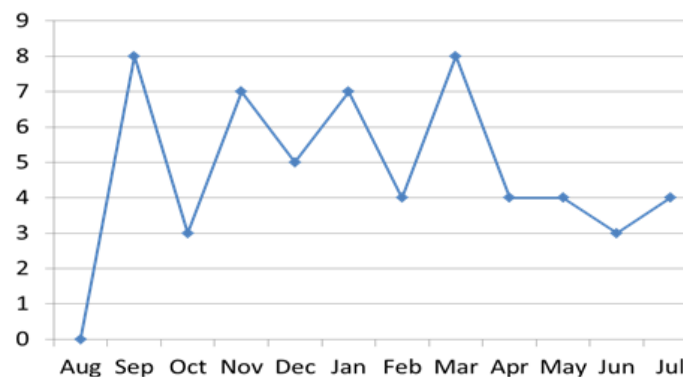
Risks

- Patient to nurse assignment ratios
- High unit occupancy
- Absence of in-house senior intensivist
- Unit volume
- Surgical vs non-surgical patients
- Sepsis
- Less than 48 hours since admission





- At LCH PICU (Aug 2015 – Jul 2016)
 - CPR: 7.2 episodes /100 admissions
 - ROSC: 87.7%
 - Survived to hospital discharge: 70%



- Higher risk of mortality among non-cardiac patients, Risk ratio: 3.7



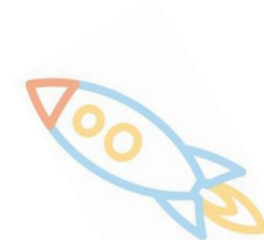


Episodes of CA

- Arrhythmia in a child with pacing wires
- Previous history of CA
- Anticipated inotropic support



Human Factors!

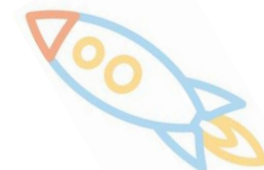
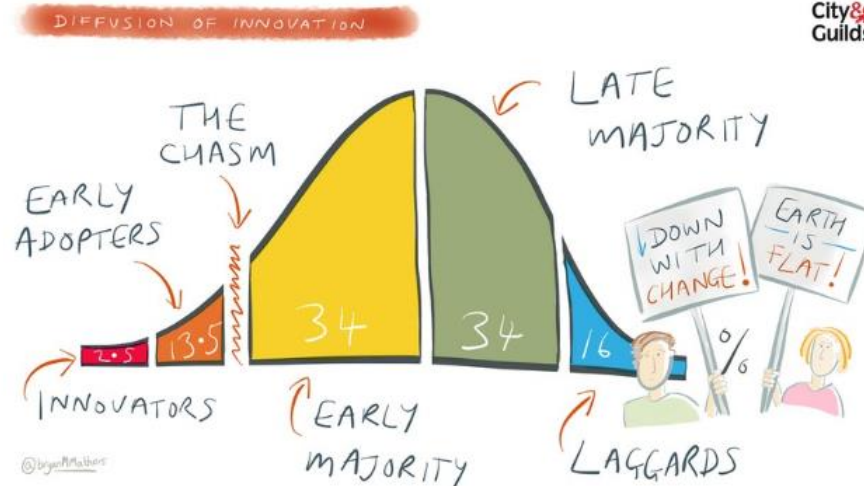




Team

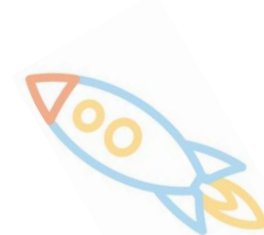


City & Guilds





- <https://drive.google.com/file/d/12aA1NsH-szIDZ4DIImWYkj9dCfjK0oOvc/view>
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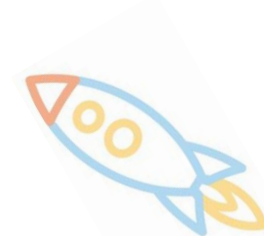


Pre-brief

Is this child at risk of CA in next 12 hours?



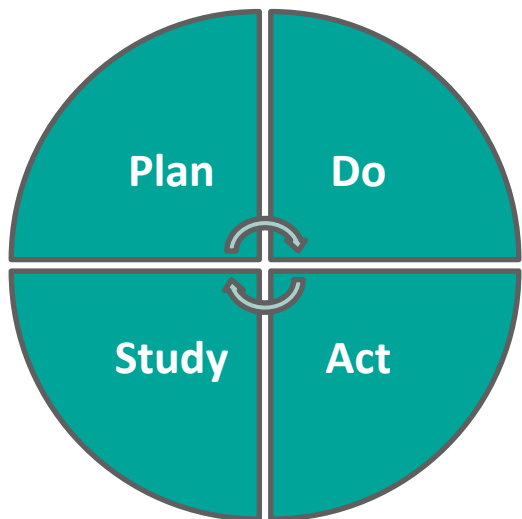
- Diagnosis and brief history
- Major risk factors for CA
- Assessment
- Recognition of deterioration
- Plan if deteriorates
- Role allocation in case of cardiac arrest
- Questions/Clarifications



Leeds ReCAP Initiative:

Reviewing Cardiac Arrests on PICU

5 Steps to fewer Cardiac Arrests





Examples

- Recurrent SVTs
- ECMO
- Transfer
- ARDS
- Days without CPR:
 - 70 days in August 2017
 - 88 days in October 2018





Safety culture

- Team work
- Information sharing

Consultants

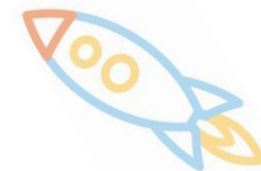
- Introduction
- Identification of child who is at risk of CA
- Role allocation

Nurses

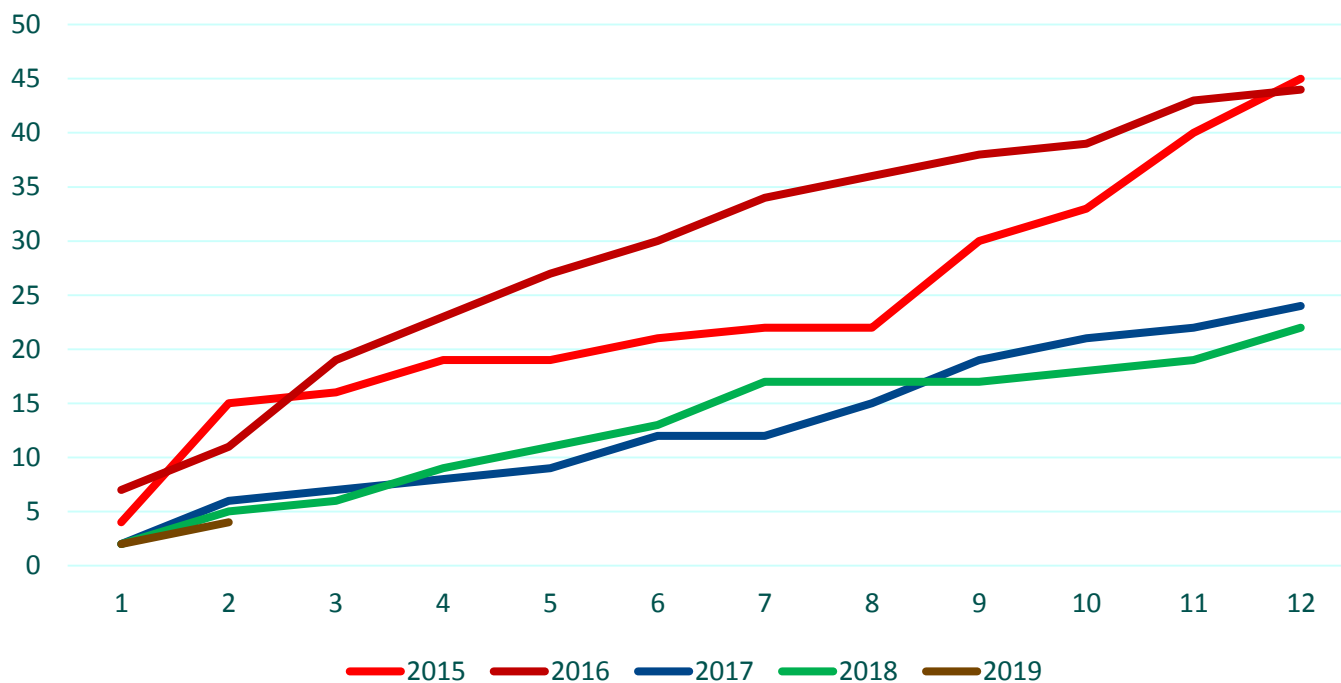
- Better understanding
- Clear plan
- Empowering

Junior Doctors

- Teaching and training opportunity
- Confidence



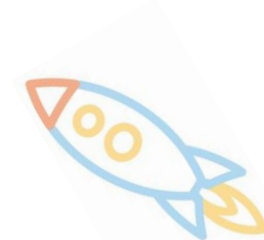
Cumulative chart



A stylized kite icon with orange, yellow, and blue colors, trailing a yellow and blue string with small blue dots.

Challenges

- Large team, Culture
- Baseline Data
- National statistics
- Rare outcome
- Data Collection





Future

- Adopted by other teams
- Condition specific Pre-brief
- MDT simulation
- PEER Initiative (Paediatric Early Escalation and Response)
- MSc research



Single Ventricle Pre-Brief Documentation

Diagnosis:

Surgeries and interventions:

Risk factors:

Balancing of 2 circulations from 1 ventricle (fluid overload, systemic or pulmonary under-perfusion, pulmonary over-circulation)

Infection

Aspiration (due to GORD)

Duct/Shunt occlusion

Recognition of Deterioration:

Reduction in Saturations below <75%

Increase in Saturations >90%

Increased work of breathing

Poor perfusion and/or raising lactate

Medical Plan if deteriorates:

Airway: If not maintaining call PICU to intubate and secure airway

Breathing: Use air or mixer during resuscitation – DO NOT give large amount of Oxygen, aim Sats >75%

Circulation: If poor perfusion, give fluid bolus (D/W Paediatric cardiology if repeated boluses needed)

Acute deterioration while on Prostin: change delivery route to different IV access

If persistently desaturated listen for shunt murmur, if no murmur d/w paediatric cardiology regarding IV heparin (BT Shunt, ductal stent) ± Prostin (ductal stent)

INFORM CARDIAC REGISTRAR OF DETERIORATION ASAP





PEER Initiative

Paediatric Early Escalation and Response

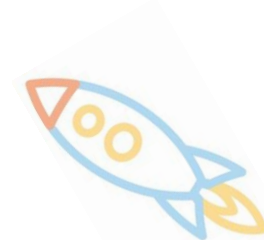
- Early escalation:
 - Recognition of 'at risk' patients
 - Watcher list
- Response:
 - Addressing Human factors
 - Emergency team meetings
 - Pre-brief





Summary

- Shared learning
- Encouraging early adopters
- Ambitious but realistic aim
- Key areas for improvement
- PDSA/Method
- Link-in with other projects



Leeds ReCAP Initiative
(Reviewing Cardiac Arrests on PICU)


The Leeds
Teaching Hospitals
NHS Trust



KEEP CALM
and
ASK FOR A PRE-BRIEF


Leeds Children's
Hospital





References

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