

Paediatric Emergencies, is your DGH ready:  
QI Projects

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Introduction

Bringing changes comes with accepting differences!



District General Hospitals (DGH) often manage Paediatric emergencies. Some of these emergencies may require transfer to Tertiary care for continuation of care. DGH are often under resourced in providing optimal care. DGH’s are facing challenges with junior doctor rota gaps and staff shortages.

Agenda

With the aim of self-sufficient and bringing best intensive care management to DGH, we designed and started 3 Quality Improvement projects

- 1. Multi-disciplinary Paediatric Simulation.
- 2. Vascular access in Paediatric patients – GUIDE.
- 3. GRAB Bag and DRUG Box for Paediatric Resuscitation.



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Multi-disciplinary Paediatric Simulation

Simulation was established with support of college tutor from both Paediatric and Anaesthetic. It was jointly attended by trainees. Paediatric trainees are exposed to various PICU emergencies in simulation to develop a pathway of escalation and stabilisation with support of Anaesthetic trainees safely.



Vascular access in Paediatric. With support from ED, A&CU and Paediatrics Consultant and Registrar -developed a guide for vascular access.



**PCH Paediatric Vascular Access: Choosing an appropriate line**

**Paediatric Central Venous Access at PCH**

1. If only for difficult access, consider a 22G Bion Leaderflex in a cubital or saphenous vein  
2. Children have a higher risk of venous thrombosis - consider alternatives & limit number of lumens  
3. There is a small footprint, high frequency ultrasound probe on one of the Theatre Sonosite Ultrasounds  
4. Higher risk of accidental arterial placement: use ultrasound, take a gas, CXR and transduce if any doubt

| Weight   | Diameter | Depth (cm) | Right IV | Femoral            | Suggested line from our stock: |
|----------|----------|------------|----------|--------------------|--------------------------------|
| <3 kg    | 4 Fr     | 4 cm       | 5 cm     | 4Fr 5cm 2-lumen    |                                |
| 3-5 kg   | 4 Fr     | 5 cm       | 6 cm     | 4Fr 5cm 2-lumen    |                                |
| 5-10 kg  | 5 Fr     | 6 cm       | 8 cm     | 5Fr 8cm 3-lumen    |                                |
| 10-20 kg | 5 Fr     | 8 cm       | 13 cm    | 5Fr 13cm 3-lumen   |                                |
| 20-40 kg | 5 Fr     | 10 cm      | 13 cm    | 5Fr 13cm 3-lumen   |                                |
| 40-50 kg | 8.5 Fr   | 12 cm      | 16-20 cm | 8.5Fr 16cm 4-lumen |                                |
| 50+ kg   | 8.5 Fr   | 12-16 cm   | 16-20 cm | 8.5Fr 16cm 4-lumen |                                |

**Arterial Lines**

1. Arterial lines in infants are unreliable and at higher risk of distal ischaemia  
2. Ultrasound guided radial cannulation in all age groups is preferred

| Weight | Arterial Line                    |
|--------|----------------------------------|
| <3kg   | 24G Jetco Cannula                |
| 3-50kg | 22G Jetco Cannula                |
| >50kg  | 20G Standard adult arterial line |

**Lines stocked at PCH:**

| Line                             | Location |
|----------------------------------|----------|
| 4Fr 5cm 2-lumen                  |          |
| 5Fr 5cm 2-lumen                  |          |
| 5Fr 8cm 3-lumen                  |          |
| 5Fr 13cm 3-lumen                 |          |
| 8.5Fr 16cm 4-lumen               |          |
| 22G Bion Leaderflex              |          |
| 20G Bion arterial leadercath     |          |
| 22G & 24G Jetco cannulae         |          |
| Intra-Osseous Kit                |          |
| Umbilical artery catheters       |          |
| Small footprint Ultrasound probe |          |

Paediatric Procedure Trolley in ED & ICU

Paediatric Procedure Trolley in ED only Main Theatre Sonosite

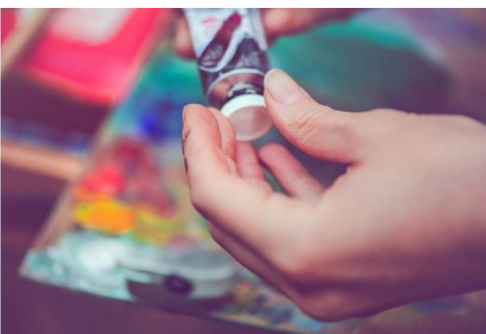
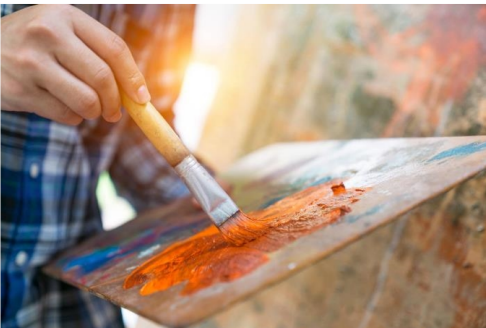
GRAB Bag and DRUG Box for Paediatric Resuscitation.

Crash bleep teams were not up to date with the contents of GRAB Bag and its location as noted in a pre-QI survey. We developed a list of its content and a guide on its usage. Regular checks became part of HCA's job list monthly. Emergency Drug box was created and kept in Emergency theatre for Anaesthetic.



Summary

PICANET recommends care delivery for level 2 patients close to their home in a DGH but at the same time DGH’s need to be prepared for Paediatric emergencies requiring transfer to Level 3. Our QI projects achieved goals with available resources and motivated team members.



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References:PICANet 2020 annual report summary: