

## PCCL Session: Summary Report and Resources

PCCL session topic: “Seizing the Moment – A complicated case of status epilepticus.”

Date: August 16<sup>th</sup>, 2024.

### Learning objectives:

1. Options for vascular access and size of equipment
2. Discuss management of patients with challenging vascular access
3. Supports for when vascular access fails

### Case Summary

A 16mo male with a past medical history of severe obesity (25kgs) and congenital airway malformations presented with 4 days of cough, and 1 day of fever and increased work of breathing. He was brought to hospital after developing a generalized tonic-clonic seizure. By length his estimated weight was 10-11kg (Purple on the Broselow tape) but his actual weight was in the Orange range.

3 kg, 4 kg, and 5 kg zones	3 kg, 4 kg, and 5 kg	< 3 mos
Pink	6–7 kg	3–5 mos
Red	8–9 kg	6–11 mos
Purple	10–11 kg	12–24 mos
Yellow	12–14 kg	2 yrs
White	15–18 kg	3–4 yrs
Blue	19–23 kg	5–6 yrs
Orange	24–29 kg	7–9 yrs
Green	30–36 kg	10–11 yrs

There was extremely difficult vascular access due to obesity. Intraosseous (IO) attempts failed. IO was achieved with ultrasound guidance after more than 3 hours. Eventually taken to the OR for intubation as respiratory status worsened and a femoral central line placement.

## Key Concepts/Outcomes

### NEEDLE SELECTION

The needle sets do not have “adult” or “pediatric” sizes. Each needle set is US FDA-cleared with weight range guidelines. The single use sterile needle sets are 15 gauge, 304 stainless steel available in 3 lengths.

Clinical judgment should be used to determine appropriate needle set selection based on patient weight, anatomy and tissue depth overlying the insertion site.

**With the needle set inserted through the soft tissue and touching bone, the 5 mm mark (at least one black line) must be visible outside the skin for confirmation of adequate needle set length prior to drilling.**



Clinical experience with the device will ultimately present a more rapid approach to needle set selection, but the 5 mm mark assists the clinician with establishing which needle set is appropriate for the patient.

Significant obesity may contribute to challenges in establishing intravenous access. The yellow IO needle may be too short. Alternate needle options include: spinal/lumbar needle or bone marrow needles. <<Reference **Pediatric Procedural Adaptations for Low-Resource Settings**: A Case-Based Guide by Slusher, Tina M; Bjorklund, Ashley R; Lauden, Stephanie M (2022)>>

A bone marrow biopsy needle will have a luer lock for IV fluids

If IV access is established, a small dose of ketamine (0.25-0.5mg/kg) could be used to settle an agitated patient. This could support optimization of the patient position, allow provision of 100% oxygen effectively and provide gentle CPAP for ventilation/oxygenation support. This becomes more challenging to give any sedation without an IV, but intranasal medications could be considered (fentanyl)

Additional Resources:

[Positioning Infants and Children for Airway Management - Pediatric Anesthesia Digital Handbook \(maskinduction.com\)](https://maskinduction.com/)

## Paediatric intraosseous insertion at a glance

### NEEDLE SELECTION



**INDICATION:** Need for immediate IV access without ability to insert line. \*All intravenous medication can go via intraosseous line including inotropes\* Do not use >24hrs.

### CONTRAINDICATIONS

- Fracture in the bone of insertion
- Infection at site of insertion
- Landmarks not identifiable
- IO/attempted IO access in bone within last 48 hrs
- Prosthesis /orthopaedic procedure near site

Proximal Tibia	Proximal Femur < 6yr old	Proximal Humerus >6yr old
<p>1. Position: Infant: flexed knee, Adolescent: straight leg</p> <p>2. Palpate tibial tuberosity (bony thickness below patella)</p> <p>3. Insert 2-3cm below + medial to tibial tuberosity into the flat antero-medial surface of tibia</p>	<p>1. Position: straight leg.</p> <p>2. Palpate 2-3cm above external condyle</p> <p>3. Insertion just medial to midline to avoid tendon</p>	<p>1. Position: Elbow adducted, hand over the umbilicus</p> <p>2. From the mid-shaft humerus, palpate up, toward the proximal aspect/humeral head.</p> <p>3. Palpate small bony protrusion close to shoulder.</p> <p>4. Insert at base of greater tubercle (Insert at 45° to bone)</p>

The resources shared throughout this session are for reference purposes only. Please consult your health authority leaders for guidance on adoption and use of these resources within your local context.

The advice provided during the PCCL sessions is not intended to replace the clinical judgment of the healthcare providers who are with the patient. While PCCL sessions may suggest recommendations, the final decisions regarding a child's care and treatment should always rest with the healthcare professionals involved in their care at both the referring and receiving centres.

If you need additional in the moment support refer to the Provincial Pediatric Virtual Support Pathways: <https://childhealthbc.ca/pcc/provincial-pediatric-virtual-support-pathways>