

Intraosseous Insertion & Fluid Resuscitation

For on site tutorials as part of the remote simulation program
Paediatrics: P3

This project was possible due to funding made available by Health Workforce Australia

Introductions

Lets introduce ourselves!!



General Aims

- Learn in a team setting
- Blend clinical skills with team skills
- Reflect critically on practice

Ground Rules

- Participation
- Privacy
- Confidentiality
- Disclaimer
- Debriefing
- Mobile phones

Objectives

- Indications & contraindications for insertion of an intraosseous needle
- Selection & preparation of IV fluids for resuscitation
- Rehearsal of skills in a simulated environment

Intraosseous Access

- Indications
 - Administration of emergency drugs and fluids in a critically ill or injured.
 - Temporising measure until more definitive intravenous access can be obtained in time critical management.
 - Where other methods of access to the vascular system have failed or not possible.

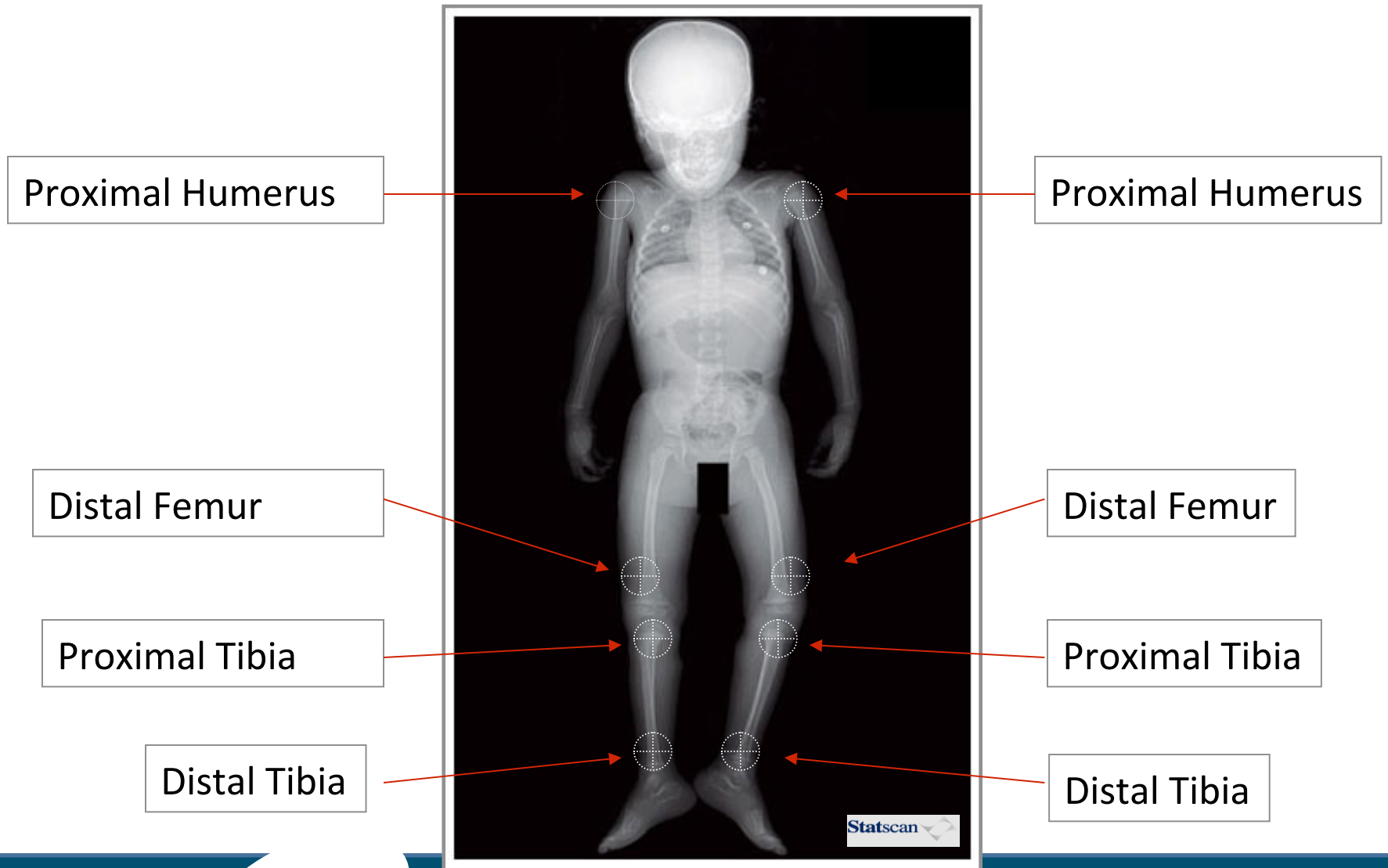
Contraindications

- Fracture of the target or proximal bones.
- Site of previous IO insertion attempt.
- Bone disease e.g. osteogenesis imperfecta.
- Infection in the skin at the insertion site
- Vascular injuries that may prevent reliable venous outflow.

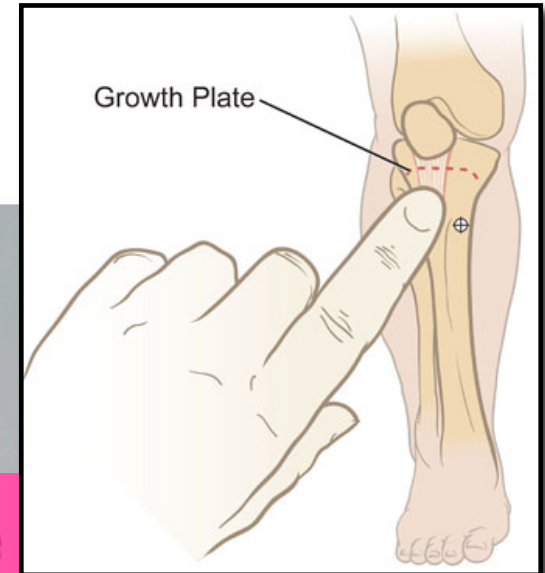
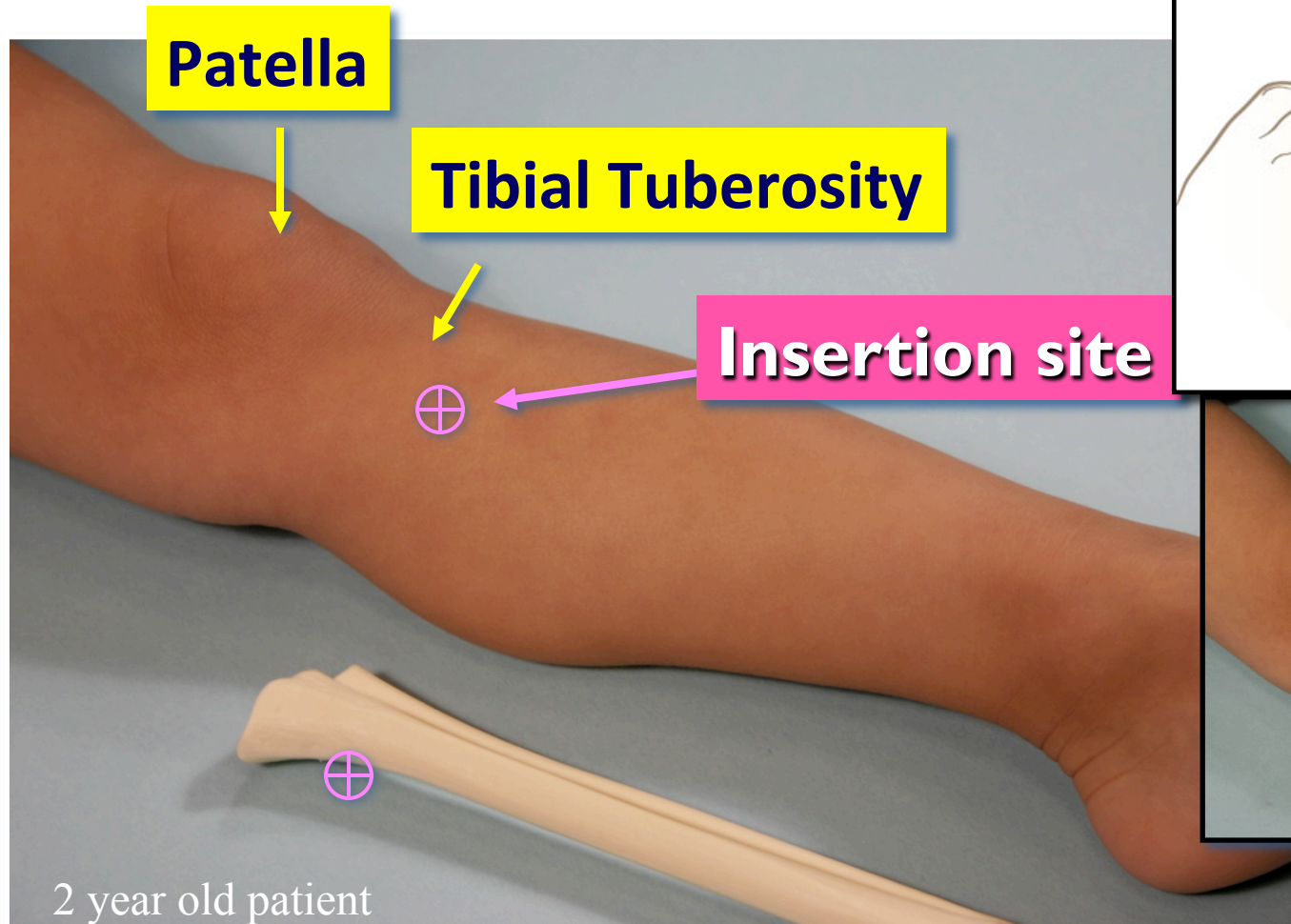
How effective is an IO?

- Rapid access to circulation – 10 seconds
- Drugs and fluids administered via an intraosseous needle are distributed as fast with similar plasma concentrations as those administered intravenously.
- Aspirate can be used for laboratory tests, but you **MUST** inform the lab staff it is bone marrow

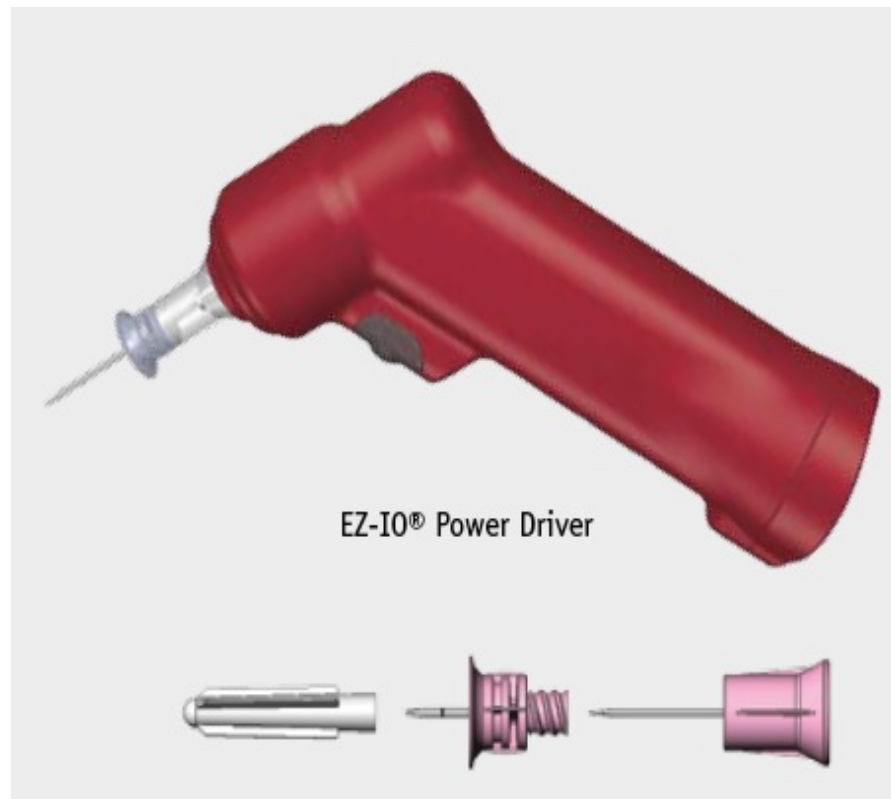
Intraosseous Insertion sites



Identify Landmarks



IO devices





The Conscious Patient

- Insertion has pain score 1-3
- Infusion is painful.
- Little evidence but option to use lignocaine bolus in conscious patient
 - 0.5mg / kg

Preparation for fluid bolus

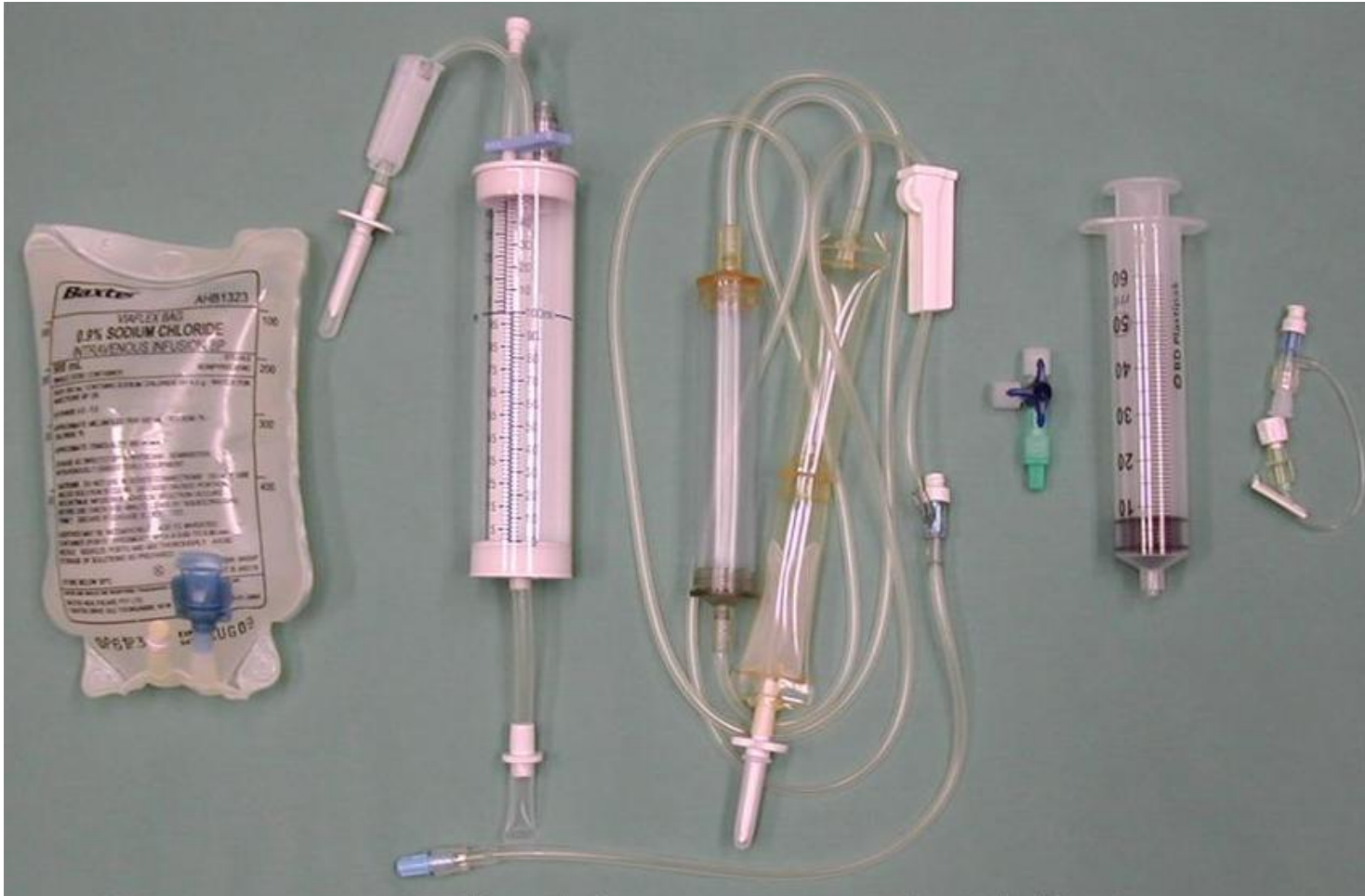
Age < 1 year

- 0.9% normal saline
- Burette
- Blood giving hand pump set
- 3 way tap
- 60ml syringe
- T piece extension

Age 1- 8 yrs

- 0.9% normal saline
- Burette
- Blood giving hand pump set
- 3 way tap
- large bore extension

Components for administration of a Paediatric Fluid Bolus in Patients aged < 1 year of age



Components for administration of a Paediatric Fluid Bolus in Patients aged 1 – 8 years of age



Components for administration of a Paediatric Fluid Bolus in Patients aged > 8 years



Scenario

Triage Category 1 to resuscitation area

- Please listen to the triage nurse for handover

Questions?



Photo courtesy of Edward Truemper, MD - Children's Hospital of Nebraska

Summary

- Consider IO insertion when immediate access required & IV unsuccessful after 90 secs
- All fluids & drugs can be given via IO
- Laboratory tests can be sent, but tell the lab it's marrow
- Insertion site is the antero-medial surface of the tibia, approximately 1-3 cms below the tibial tuberosity
- Bolus fluids N/S with an age appropriate set up

References

- Vidacare. EZ-IO by Vidacare Training Program, 2009

Acknowledgments

Topic expert author: Jane Cichero

Simulation session author: Jane Cichero

Module Expert Working Party and Peer Review Team

Nichola Concannon Staff Specialist Sydney Children's Hospital

Jane Cichero NE Sydney Children's Hospital

Tom Grattan-Smith Staff Specialist NETS

Zoe Rodgers FACEM Prince of Wales Hospital

Educational consultants:

Stephanie O'Regan Nurse Educator SCSSC

Clare Richmond FACEM

Morgan Sherwood Simulation Fellow SCSSC

Leonie Watterson Director Simulation Division SCSSC

John Vassiliadis Deputy Director SCSSC

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