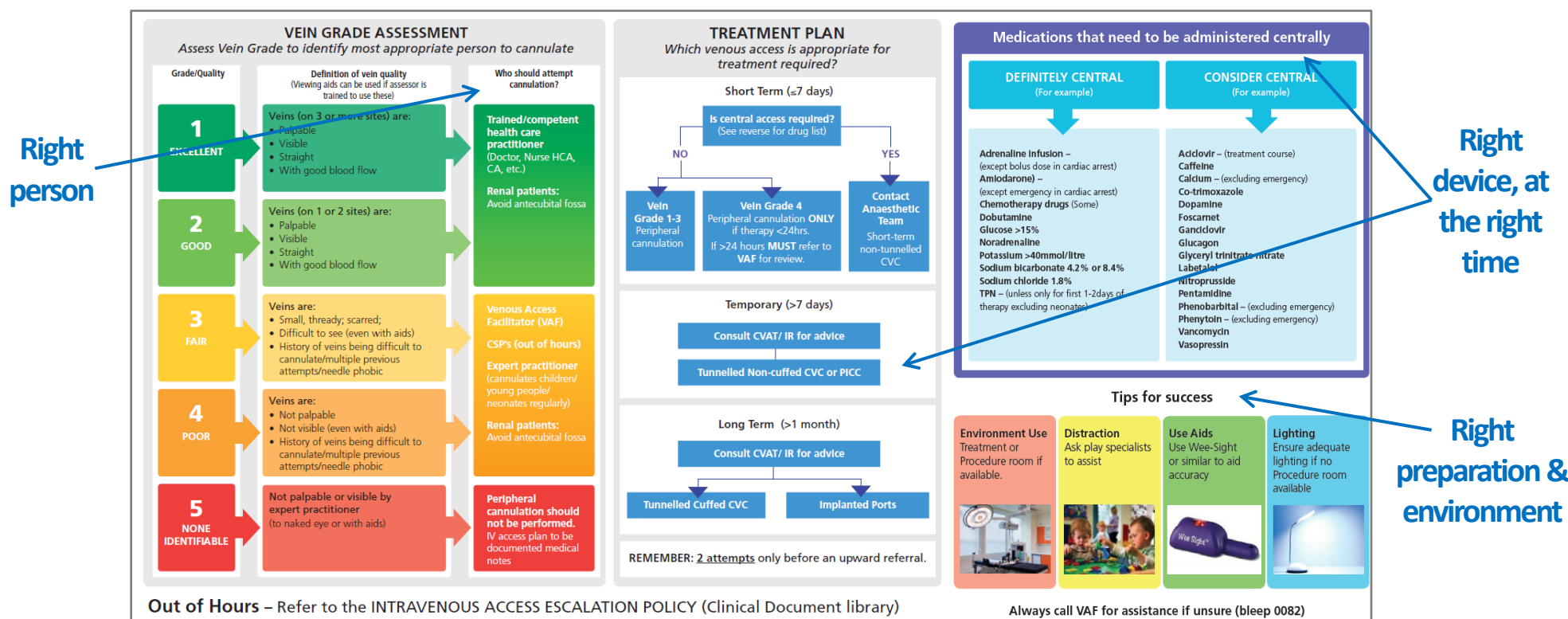# Vessel Health & Preservation (VHP) Framework: Putting the child first in vascular access

Aim: To reduce the incidence of extravasation injuries and repeated cannulation attempts at GOSH by 30 March 2019

Intervention: The Vessel Health & Preservation (VHP) tool was introduced to standardise vein assessment and appropriate escalation. It also supports clinical teams in advocating for their patient every time IV access is required.

How we did it: An MDT project group was established, led by the Chief Nurse
- Developed the GOSH paediatric VHP tool, based on the national adult tool.
- A number of PDSA cycles were carried out on pilot wards, with adaptions based on staff feedback
- Rolled out Trust-wide through the interactive 'Vessel Health Roadshow' engagement event
- Vein grade embedded into care pathways on EPIC (electronic patient records)
- VHP embedded in Trust policy, guideline and training
- Educational video developed for staff and families

VEIN GRADE ASSESSMENT
Assess Vein Grade to identify most appropriate person to cannulate

Right person

Grade/Quality	Definition of vein quality (Viewing aids can be used if assessor is trained to use these)	Who should attempt cannulation?
1 EXCELLENT	Veins (on 3 or more sites) are: • Palpable • Visible • Straight • With good blood flow	**Trained/competent health care practitioner** (Doctor, Nurse HCA, CA, etc.) **Renal patients:** Avoid antecubital fossa
2 GOOD	Veins (on 1 or 2 sites) are: • Palpable • Visible • Straight • With good blood flow	
3 FAIR	Veins are: • Small, thready; scarred; • Difficult to see (even with aids) • History of veins being difficult to cannulate/multiple previous attempts/needle phobic	**Venous Access Facilitator (VAF)** **CSP's (out of hours)** **Expert practitioner** (cannulates children/ young people/ neonates regularly) **Renal patients:** Avoid antecubital fossa
4 POOR	Veins are: • Not palpable • Not visible (even with aids) • History of veins being difficult to cannulate/multiple previous attempts/needle phobic	
5 NONE IDENTIFIABLE	Not palpable or visible by expert practitioner (to naked eye or with aids)	**Peripheral cannulation should not be performed.** IV access plan to be documented medical notes

TREATMENT PLAN
Which venous access is appropriate for treatment required?

Short Term (≤7 days)

Is central access required? (See reverse for drug list)

NO → Vein Grade 1-3 Peripheral cannulation / Vein Grade 4 Peripheral cannulation ONLY if therapy <24hrs. If >24 hours **MUST** refer to **VAF** for review.

YES → **Contact Anaesthetic Team** Short-term non-tunnelled CVC

Temporary (>7 days)
- Consult CVAT/ IR for advice
- Tunnelled Non-cuffed CVC or PICC

Long Term (>1 month)
- Consult CVAT/ IR for advice
- Tunnelled Cuffed CVC / Implanted Ports

REMEMBER: **2 attempts** only before an upward referral.

Out of Hours – Refer to the INTRAVENOUS ACCESS ESCALATION POLICY (Clinical Document library)

Medications that need to be administered centrally

Right device, at the right time

DEFINITELY CENTRAL (For example)	CONSIDER CENTRAL (For example)
Adrenaline infusion – (except bolus dose in cardiac arrest)	Aciclovir – (treatment course)
Amiodarone – (except emergency in cardiac arrest)	Caffeine
Chemotherapy drugs (Some)	Calcium – (excluding emergency)
Dobutamine	Co-trimoxazole
Glucose >15%	Dopamine
Noradrenaline	Foscarnet
Potassium >40mmol/litre	Ganciclovir
Sodium bicarbonate 4.2% or 8.4%	Glucagon
Sodium chloride 1.8%	Glyceryl trinitrate nitrate
TPN – (unless only for first 1-2days of therapy excluding neonates)	Labetalol
	Nitroprusside
	Pentamidine
	Phenobarbital – (excluding emergency)
	Phenytoin – (excluding emergency)
	Vancomycin
	Vasopressin

Tips for success

Right preparation & environment

Environment Use	Distraction	Use Aids	Lighting
Treatment or Procedure room if available.	Ask play specialists to assist	Use Wee-Sight or similar to aid accuracy	Ensure adequate lighting if no Procedure room available

Always call VAF for assistance if unsure (bleep 0082)

Outcome: The VHP tool is now operational on all GOSH wards, helping ensure children and young people have the *right vascular access device*, placed at the *right time*, by the *right person*, in the *right clinical environment*.

Benefits: Patient safety and experience improved – appropriate IV access inserted by expert practitioners reduces risk of extravasation, phlebitis, treatment delays, prolonged hospital stays, or infection. Cannulation is less traumatic, with fewer repeated attempts.

Measures of improvement:
- Reduced no. of extravasations reported monthly on Datix: from **3.85 to 2.29**
- Sustained reduction in no. of extravasations referred monthly to the Plastics team: from **11.7 to 5**
- Reduced no. of cannulation attempts by clinicians prior to referral to Vascular Access Facilitators (VAF): from **1.9 to 1.2**
- Reduced % of patients with >two unsuccessful cannulation attempts before referral to VAFs: from **34% to 15%**

Staff feedback:

The VHP "helps prevent distress in children with excess attempts of cannulation"

It has "given me confidence to escalate"

Extravasations injuries referred to Plastics Team

Legend: UCL, LCL, Measure, Mean, Median

% patients with more than 2 unsuccessful cannulation attempts before referral to VAFs

Legend: UCL, LCL, Measure, Mean, Median

GOSH QI

Great Ormond Street Hospital for Children NHS Foundation Trust