Please note that clinical key documents are not designed to be printed, but to be viewed on-line. This is to ensure that the correct and most up to date version is being used. If, in exceptional circumstances, you need to print a copy, please note that the information will only be valid for 24 hours

Inserting and Managing Peripheral Vascular devices

Key Document code:	WAHT-TP- 083	
Key Documents Owner:	Dana Picken	Consultant Paediatrician
Approved by:	Paediatric Quality Improvement meeting	
Date of Approval:	9th February 2024	
Date of review: **This is the most current version and should be used until a revised document is in place**	9th February 2027	

Key Amendments

Date	Amendment	Approved by
19th Nov 2020	Document extended for 1 year	Dr J West/Paediatric QIM
26th March 2021	Approved with no amendments	Paediatric QIM
26th Sept 2023	Addition of administration protocols	
9th February 2024	Addition of PVD record	Paediatric Guideline review day
	Second person to assist – Play Specialist – distraction / Nurse / HCA	

Introduction & Competencies required

Introduction

To facilitate holistic and timely treatment for patients, nurses increasingly need to develop their competence in inserting peripheral intravenous cannulae. For nurses working with children and young people this is usually regarded as an expanded role (RCN 2005).

It is expected that all staff performing peripheral cannulation should follow this policy when working within the Worcestershire Acute NHS Trust.

In order to do this safely the practitioner must have a basic knowledge of the following:

1. The relevant anatomy and physiology of the suitable sites for peripheral cannulation.
2. The criteria for choosing both the vein/site and device to use.
3. The potential problems which may be encountered, how to prevent them and necessary interventions.
4. The health and safety/risk management of the procedure, as well as the correct disposal of equipment (refer to Needlestick Policy).
5. The practitioner should also demonstrate correct usage of all equipment used for peripheral cannulation.

The circulatory system is a closed sterile system and peripheral cannulation, is a breach of this system providing a method of entry for bacteria. Aseptic principles must therefore be adhered to throughout the procedure.

The practitioner must be aware of the physical and psychological comfort of the child and to appreciate the value of adequate explanation and procedures to reduce anxiety and fear.

Competencies required

The Royal College of Nursing (2005) advise that there are considerable differences between children of varying ages, and they recommend that practitioners develop competence within specific age bands according to their area of practice. They describe the age band as 0 to 1 years, 1 to 5 years and 5 years

and above. Advice should be sought from senior colleagues before performing the skill on pre term infants pre 34 weeks

Non medical practitioners undertaking the skill of peripheral cannulation should complete the following

1. Theory relating to peripheral cannulation via a course recognised by the trust
   And
2. Minimum of 5 supervised successful cannulations
   Or
3. Minimum of 1 supervised successful cannulation per age range if evidence of previous competency can be shown.

NOTE: If the practitioner intends to achieve competency across the three age ranges then they must evidence a minimum of 10 successful cannulations with a minimum of one from each age range

It is expected that medically qualified practitioners will have achieved and developed the requisite knowledge and skill of cannulation of paediatrics patients as part of their core medical training and development.

Reducing Anxiety Pain & Discomfort

Willock et al (2004) explains that an important role of the children's nurse is to help children cope with procedures and reduce any adverse effects and distressed caused. They explain that these children may need their parents and the health care professionals help to cope by providing distraction and comfort, as well as topical pain relief.

Prior to cannulation the practitioner should:

- Assess the child or young person's perception of pain
- Create a safe, comfortable, calm and child focused environment
- Be empathetic rather than directive
- Consider the use of play and distraction techniques
- Consider using play specialist and psychologist to prepare child for procedure
- Consider the use of local anaesthetic preparations, e.g. EMLA, LMX4, Ametop, Ethyl Chloride spray, as per administration protocols (Appendices 3-6).

Equipment list

- Plastic tray and sharps bin
- Chlorhexidine 2% in 70% Alcohol (Chloroprep)
- Sodium chloride 0.9% flush and appropriate sized syringe
- Appropriate size cannula
- Gauze swab
- Appropriate IV dressing
- Tourniquet if indicated
- Eye protection if indicated
- Non-sterile surgical gloves *(Gloves **must** be worn when carrying out cannulation procedures)*

Site selection & Veins to avoid

Site selection

It is important to make a full assessment of the patient and their veins before the vein and the device are chosen.

INSERTION OF AN INTRAVENOUS CANNULA SHOULD ONLY BE CONSIDERED IF THERE IS A CLEAR INDICATION FOR ITS USE

When selecting a vein for ***cannulation*** there are a number of factors, which should be taken into consideration

- Insertion site
- Condition of the vein
- Purpose of the infusion (rate and solution to be infused)
- Duration of therapy – over 7 days consider a long line or central access device, if applicable

The sites of choice *See chart below*

SITE	AGE	VEINS USED
Antecubital	All Ages	Cephalic, Basilic, Median
Foot	Infant, Toddler	Saphenous, Median, Marginal, Dorsal Arch
Hand	All Ages	Metacarpal, Dorsal Venous Arch, Tributaries of Cephalic and Basilic
Forearm	All Ages	Cephalic, Basilic, Median, Antebrachial
Scalp	Infant, Toddler	Superficial temporal, Frontal, Occipital, Postauricular, Supraorbital, Posterior Facial

(Modified from Wheeler & Frey 1995)

Preference should be given to a vessel which is unused, easily detected by inspection and or palpation, patent and healthy. These veins feel soft, bouncy and will refill when depressed. They should be straight and free of valves to ensure easy advancement of the cannula into the vein. Valves can be felt as small bumps in the vein or may be visualised at bifurcations (Mallet & Bailey 1999).

The ***median cubital vein*** of the antecubital fossa is often used, however this should be avoided wherever possible due to it being in an area of flexion and it's close proximity to arteries and nerves. In emergency situations, it is acceptable practice to use these veins.

The Metacarpal veins are accessible, easily visualised and palpated and are well suited to short term or outpatient IV therapy.

Veins to avoid

Visual inspection will enable the practitioner to avoid areas of phlebitis, infection or oedema, bruised or inflamed veins, or any veins which have undergone multiple punctures. If previous phlebitic or infiltrated areas are used for cannulation, accurate site assessments cannot be performed. Also if damaged veins are used, greater injury to the skin and vein will occur (Perucca 1995) See appendix 1 for Detection and Management Scale for Peripheral Phlebitis.

Using veins which are tender, schlerosed, thrombosed, fibrosed or hard is unacceptable and can result in pain and undue stress (Weinstein 1993)

It is important to note that veins should not be re-cannulated at a point lower than a recently used site in the same vein. Healing will be adversely affected if the vein continues to be used for infusion. Problems relating to phlebitis, thrombophlebitis and infection could be exacerbated for the same reason (Finlay 2004)

Cannulation procedure

1. Prepare all equipment needed to cannulate the patient.

2. Check patient identification (using identification band) and explain the procedure to the patient and/or legal parent/guardian as indicated and gain verbal consent. Ascertain any previous problems that the patient may have had and any allergies. Allow for time to answer questions and discuss problems which may have previously arisen.

3. Use alcohol gel or Wash and dry hands and put on non-sterile gloves.

4. Depending on the age of the child create adequate venous filling by gently using manual application or by applying a tourniquet 5-10cms above the cannulation site. The manual application or tourniquet should be tight enough to obstruct venous return but not arterial flow (you should still be able to feel a pulse).

    a) Avoid limbs with compromised circulation

    b) Avoid veins that have had recent venepunctures

    c) Avoid joint areas

    d) Avoid access near long term indwelling devices

5. If necessary, encourage venous filling by tapping the vein lightly, gently opening and closing the fist (if using arm), lowering the extremity below heart level, applying a warm compress or immersing the limb in warm water.

6. Clean the selected skin site with Chlorhexidine 2% in 70% Alcohol (Chloroprep). The prepared skin area should be 4 to 5cms and the solution applied in a an up and down and side to side motion. The skin should be cleaned for 30 seconds to 1 minute (Weinstein 1993). The area should be allowed to air dry for a minimum of 30 seconds. Fanning, blowing or blotting of the prepared area is contraindicated (Dougherty & Lamb1999). Do not re-palpate the vein or touch the skin.

7. Remove the device from the packaging and inspect for any faults.

8. Anchor the vein by applying manual traction on the skin a few centimetres below the proposed insertion site with your non-dominant hand.

9. Using your dominant hand insert the IV device, bevel side uppermost, into the skin at an angle of 15 to 40º (dependent on the depth of the vein).

10. Entry of the needle tip into the vein is indicated by the presence of blood in the cannula flashback chamber.

11. Level the device by decreasing the angle between the cannula and the skin and advance the cannula a further 2 mm into the vein. This ensures that both the stylet and cannula have entered the vein.
12. Either hold the stylet stationary while advancing the cannula off the stylet OR withdraw the stylet slightly so that the stylet is within the cannula but still accessing the vein, observe for secondary flashback and slowly advance cannula and stylet as one into the vein.

13. Release the tourniquet or manual pressure, apply pressure to the vein above the cannula tip (to avoid blood spillage) and remove stylet completely.

14. Dispose of the stylet immediately into an approved sharps container at point of use.

15. Attach the obturator cap, administration set or an appropriate primed extension set such as a Vygon Octopus with Bionector.

16. Secure the cannula with a sterile, transparent, waterproof dressing such as Smith & Nephew IV 3000/tegaderm dressing as indicated.

17. Flush the cannula with 0.5 to 5mls of sodium chloride 0.9%, using a push-pause method (see flushing the cannula) to check patency, observing the site for signs of swelling or leakage. Assess the patient for any pain or discomfort.

18. Document in who inserted the cannula, the type and gauge of the cannula, site used and the reason for the cannulation. Date of removal of the device must also be recorded in the clinical record.

19. Practitioners should only make two attempts at cannulation. If both attempts fail the procedure should be referred to a more experienced colleague. Cannula are single use only and a new cannula should be used for each attempt.

Care of cannula

- When a cannula is inserted within the Trust, it is the responsibility of the person inserting the cannula to document its insertion.

- Management and aftercare of a peripheral vascular access device following insertion is the responsibility of all who care for the cannula.

- Site should be inspected for signs of phlebitis, inflammation or infiltration hourly and before and after intermittent injection of drugs. *See appendix 1 for Detection and Management Scale for Peripheral Phlebitis* If the cannula is still required it should be removed and re-sited if the phlebitis score is stage 1 or above. The phlebitis score (see appendix 2) will be documented at least daily.

- Remove and change dressing carefully, if wet or soiled using aseptic technique.

- When handling equipment and associated apparatus always use aseptic technique and wear procedure gloves to avoid contamination.

- Cannula should be removed and resited (if still required) at 72 hours regardless of any sign of phlebitis. In paediatric patients cannula can remain in place for longer than 72 hours but only in exceptional circumstances.

- Administration sets should be changed every 12 hours for colloid and blood products, every 24 hours for IV drug infusions/feeding and every 72 hours for clear fluids. If at any time an administration set is disconnected it must be discarded and a new set attached.

- All connections should be checked for tightness and the port cap should be kept closed at all times. Do not over tighten connections.

- Flush the cannula with 0.5 to 5mls 0.9% sodium chloride 0.9% 8 hourly if not actively being used and prior to and following intermittent administration of IV therapy.

Complications and Prevention

Haematoma:

- To avoid insertion related haematoma ensure adequate venous filling and plan procedure carefully.
- To prevent withdrawal haematoma apply digital pressure to the puncture site for 3 to 4 minutes after removal of cannula.

Infiltration:

- Avoid areas of flexion wherever possible.
- Use flexible plastic cannula and ensure good fixation of cannula.

Thromboembolism:

- Use the smallest cannulae necessary for the task in the most distal vein thought suitable by the practitioner.
- If an infusion stops as a result of clot formation the cannula should be re-sited.
- Flushing the cannula to dislodge a clot should not be attempted
-

Air Embolism:

- Ensure all devices attached to cannula are primed and all air removed.
- Ensure infusions are discontinued before bag or bottle completely empty.
- Ensure all luer lock fittings are hand tight

Phlebitis and septicaemia:

- Use aseptic techniques.
- Choose smallest gauge cannula for prescribed treatment.
- Ensure good secure fixation of all connections.
- Dilute and administer irritant drugs as prescribed.

Extravasation:

- Check patency prior to administration of vesicant drugs, using 0.9% Normal Saline and ensure frequent monitoring.
- Avoid using cannula that are sited at points of flexion.
- Preference should be given to use of plastic cannula.
- Administer drugs in accordance to drug advice sheet, BNF or Pharmacy.
- Wherever possible use cannula that were inserted successfully at first attempt and give vesicants first check if there is relevant policy for extravasation in children

Removal of Cannula

- Wash and dry hands apply non sterile procedure gloves
- Remove dressings whilst holding the cannula securely in place **(Do not use scissors)**
- Hold a piece of dry sterile gauze over insertion site but do not apply digital pressure until cannula removed
- Apply pressure for 2 to 3 minutes or until bleeding has stopped. Elevate arm if bleeding persists.
- Apply fresh sterile gauze and secure with tape
- Check cannula to ensure catheter complete and undamaged

Monitoring and Compliance

This section should identify how the Trusts plan to monitor compliance with and the effectiveness of this Treatment pathway. It should include auditable standards and/or key performance indicators (KPIs) and details on the methods for monitoring compliance.

WHAT?	HOW?	WHO?	WHERE?	WHEN?
These are the 'key' parts of the process that we are relying on to manage risk.	*What are we going to do to make sure the key parts of the process we have identified are being followed?*	*Who is responsible for the check?*	*Who will receive the monitoring results?*	*Set achievable frequencies.*
	Clinical Audit	Paediatric Clinical Governance Committee		Every 12 months
	Staff Electronic Record system	Local Managers/Staff		8-10 weeks
	Clinical Audit/Observation	Paediatric Clinical Governance Committee		
		S Weale, K Haley & R Delves		Yearly
	Review of Datix and completed "escalation trigger list"	Nursing Staff		
	6 Monthly Audit	CYP Nursing and Medical Staff		6 monthly
Viewing Arrangements	Spot checks	Children's wards or Emergency Departments	CYP Standards Committee, escalating to Trust Children's Board if required	Three times a year
Documentation – Completion of Checklist: Following the death of a CYP in hospital. Professional Contact List	Audit of checklists via CYP medical records	Children's Wards or Emergency Departments	CYP Standards Committee, escalating to Trust Children's Board if required	Three times a year

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Appendix 1: Peripheral Vascular Devices Record Sheet

Detection and Management Scale for Peripheral Phlebitis			
Number	**Signs**	**Picture**	**Action**
0	No pain or signs		Continue to observe
1	Pain / redness around insertion site		Remove and replace cannula in a different site. Observe site
2	Pain, redness, swelling Palpable venous cord		Remove and replace cannula in a different site, if still required. Observe Involve medical team to assess for systemic symptoms.
3	Pain, swelling, redness induration, palpable venous cord above 3 cm Presence of pus		Remove cannula, cut tip with sterile scissors and send tip for C+S Take set of blood cultures Involve medical team to assess for systemic symptoms. Therapy to be discussed with microbiology
4	All of the above Presence of tissue damage		As in action 3 plus complete clinical incident form

Appendix 2: Peripheral Vascular Devices (PVD) Record Sheet

Please attach patient sticker here or record:

Name: .....

NHS No: ☐☐☐☐☐☐☐☐☐☐

Unit No: ☐☐☐☐☐☐☐☐☐☐

D.O.B: .....

Male ☐ *Female* ☐

Worcestershire NHS
Acute Hospitals NHS Trust

Patient Ward / Dept (specify)..... .....

Ward/Dept where cannula inserted if different from above ..... .

PERIPHERAL VASCULAR DEVICES (PVD) RECORD SHEET

1

Date of insertion / / Time of insertion.....

Insertion Site (please circle all that apply) Left / Right Hand / Wrist / Forearm / Anti Cubital Fossa other (please specify)

Cannula Size / Gauge (please circle one) 14G Orange 16G Grey 17G White 18G Green 20G Pink 22G Blue 24G Yellow 26G Purple

Signature of person inserting cannula
PLEASE PRINT NAME

Date/time and person inserting cannula unknown ☐ (tick box if appropriate)

Designation (Please circle one option) Doctor /Nurse /Midwife /Paramedic /Theatre /Generic Worker

DAY	DATE	CANNULA REMOVED	PHLEBITIS SCORE	ACTION TAKEN / COMMENTS	SIGNATURE
1		YES / NO			
2		YES / NO			
3		YES / NO			

Date Cannula removed ...../...../..... REMOVE/REPLACE NO LATER THAN 3 DAYS AFTER INSERTION

PHLEBITIS SCORE ON REMOVAL OF CANNULA .....

2

Date of insertion / / Time of insertion.....

Insertion Site (please circle all that apply) Left / Right Hand / Wrist / Forearm / Anti Cubital Fossa other (please specify)

Cannula Size / Gauge (please circle one) 14G Orange 16G Grey 17G White 18G Green 20G Pink 22G Blue 24G Yellow 26G Purple

Signature of person inserting cannula
PLEASE PRINT NAME

Date/time and person inserting cannula unknown ☐ (tick box if appropriate)

Designation (Please circle one option) Doctor /Nurse /Midwife /Paramedic /Theatre /Generic Worker

DAY	DATE	CANNULA REMOVED	PHLEBITIS SCORE	ACTION TAKEN / COMMENTS	SIGNATURE
1		YES / NO			
2		YES / NO			
3		YES / NO			

Date Cannula removed ...../...../..... REMOVE/REPLACE NO LATER THAN 3 DAYS AFTER INSERTION

PHLEBITIS SCORE ON REMOVAL OF CANNULA .....

3

Date of insertion / / Time of insertion.....

Insertion Site (please circle all that apply) Left / Right Hand / Wrist / Forearm / Anti Cubital Fossa other (please specify)

Cannula Size / Gauge (please circle one) 14G Orange 16G Grey 17G White 18G Green 20G Pink 22G Blue 24G Yellow 26G Purple

Signature of person inserting cannula
PLEASE PRINT NAME

Date/time and person inserting cannula unknown ☐ (tick box if appropriate)

Designation (Please circle one option) Doctor /Nurse /Midwife /Paramedic /Theatre /Generic Worker

DAY	DATE	CANNULA REMOVED	PHLEBITIS SCORE	ACTION TAKEN / COMMENTS	SIGNATURE
1		YES / NO			
2		YES / NO			
3		YES / NO			

Date Cannula removed ...../...../..... REMOVE/REPLACE NO LATER THAN 3 DAYS AFTER INSERTION

PHLEBITIS SCORE ON REMOVAL OF CANNULA .....

4

Date of insertion / / Time of insertion.....

Insertion Site (please circle all that apply) Left / Right Hand / Wrist / Forearm / Anti Cubital Fossa other (please specify)

Cannula Size / Gauge (please circle one) 14G Orange 16G Grey 17G White 18G Green 20G Pink 22G Blue 24G Yellow 26G Purple

Signature of person inserting cannula
PLEASE PRINT NAME

Date/time and person inserting cannula unknown ☐ (tick box if appropriate)

Designation (Please circle one option) Doctor /Nurse /Midwife /Paramedic /Theatre /Generic Worker

DAY	DATE	CANNULA REMOVED	PHLEBITIS SCORE	ACTION TAKEN / COMMENTS	SIGNATURE
1		YES / NO			
2		YES / NO			
3		YES / NO			

Date Cannula removed ...../...../..... REMOVE/REPLACE NO LATER THAN 3 DAYS AFTER INSERTION

PHLEBITIS SCORE ON REMOVAL OF CANNULA .....

5

Date of insertion / / Time of insertion.....

Insertion Site (please circle all that apply) Left / Right Hand / Wrist / Forearm / Anti Cubital Fossa other (please specify)

Cannula Size / Gauge (please circle one) 14G Orange 16G Grey 17G White 18G Green 20G Pink 22G Blue 24G Yellow 26G Purple

Signature of person inserting cannula
PLEASE PRINT NAME

Date/time and person inserting cannula unknown ☐ (tick box if appropriate)

Designation (Please circle one option) Doctor /Nurse /Midwife /Paramedic /Theatre /Generic Worker

DAY	DATE	CANNULA REMOVED	PHLEBITIS SCORE	ACTION TAKEN / COMMENTS	SIGNATURE
1		YES / NO			
2		YES / NO			
3		YES / NO			

Appendix 3

Administration protocol for General Sales List (GSL), Pharmacy Only (P) Medicines, and Medical Devices

Lidocaine 2.5% with Prilocaine 2.5% (EMLA)

Medicines Information

Name/forms of Medicine *(document which form is administered to the patient)*	**Lidocaine 2.5% with Prilocaine 2.5%** (EMLA 5%)
Indication *(when it can be used)*	Topical Local anaesthesia before venepuncture or venous cannulation
Route	Topical to the skin
Dose	Term newborn to below 3 months: Apply up to 1g for a maximum of 1 hour prior to procedure. Maximum of 1 single dose in any 24-hour period. Child 3-11 months: Apply up to 2g for a maximum of 1 hour prior to procedure. Maximum of 2 doses, separated by at least 12 hours within any 24-hour period. Child 1-17years: Apply a thick layer 1-5 hours prior to procedure. Maximum of 2 doses, separated by at least 12 hours within any 24-hour period
Frequency	Apply to site of venepuncture or venous cannulation and cover with occlusive dressing;
Maximum dose in 24 hours	As above
Maximum duration of treatment	As required
Do NOT give in these circumstances	Should not be applied to damaged skin. Children with atopic dermatitis a shorter application time of 15-30 minutes is recommended.
Warnings/Adverse reactions (see product information for full details)	Hypersensitivity Can cause skin reactions.

Appendix 4

Administration protocol for General Sales List (GSL), Pharmacy Only (P) Medicines, and Medical Devices

Lidocaine 4% (LMX4)

Medicines Information

Name/forms of Medicine *(document which form is administered to the patient)*	**Lidocaine 4%** (LMX4)
Indication *(when it can be used)*	Topical Local anaesthesia before venepuncture or venous cannulation
Route	Topical to the skin
Dose	Child 1- 2 months: Apply up to 1g at least 30 minutes before the procedure. Maximum application time 60 minutes and perform procedure approximately 5 minutes after removing the cream. Child 3-11 months: Apply up to 1g at least 30 minutes before the procedure. Maximum application time 4 hours and perform procedure approximately 5 minutes after removing the cream. Child 1-17years: Apply 1-2.5g at least 30 minutes before the procedure. Maximum application time 5 hours and perform procedure approximately 5 minutes after removing the cream
Frequency	Apply to site of venepuncture or venous cannulation and cover with occlusive dressing;
Maximum dose in 24 hours	As above
Maximum duration of treatment	As required
Do NOT give in these circumstances	Should not be applied to damaged skin.
Warnings/Adverse reactions (see product information for full details)	Licensed in children from 1 month Hypersensitivity

Appendix 5

Administration protocol for General Sales List (GSL), Pharmacy Only (P) Medicines, and Medical Devices

Tetracaine Gel (Ametop)

Medicines Information

Name/forms of Medicine *(document which form is administered to the patient)*	**Tetracaine Gel** (Ametop)
Indication *(when it can be used)*	Topical Local anaesthesia before venepuncture or venous cannulation
Route	Topical to the skin
Dose	Child 1 month – 4 years: Apply the contents of up to 1 tube (can be applied at separate sites, at a single time or appropriate proportion). Maximum cumulative dose in a 24-hour period should not exceed 2 tubes. Child 5-17 years: Apply contents of 5 tubes (can be applied at separate sites, at a single time or appropriate proportion). Maximum cumulative dose in a 24-hour period should not exceed 7 tubes.
Frequency	Apply to site of venepuncture or venous cannulation and cover with occlusive dressing; remove gel and dressing after 30 minutes for venepuncture and after 45 minutes for venous cannulation.
Maximum dose in 24 hours	See above
Maximum duration of treatment	As required
Do NOT give in these circumstances	Not licensed for use in neonates. Should not be applied to damaged skin. Previous hypersensitivity reaction to tetracaine
Warnings/Adverse reactions (see product information for full details)	Can cause Oedema; skin reactions. Hypersensitivity The systemic toxicity of local anaesthetics mainly involves the central nervous system; systemic side effects unlikely as minimal absorption following topical application.

Appendix 6

Administration protocol for General Sales List (GSL), Pharmacy Only (P) Medicines, and Medical Devices

Ethyl Chloride Spray (Medical Device)

Medicines Information

Name/forms of Medicine *(document which form is administered to the patient)*	**Ethyl Chloride Spray (Medical Device)**
Indication *(when it can be used)*	Topical Local anaesthesia before venepuncture or venous cannulation. Use only as supplied in aerosol cans (do not use glass vials)
Route	Topical to the skin
Dose	Use test dose, some patients find the intensely cold feeling intolerable Hold the spray 6-8 inches from the skin and spray for maximum of 15 seconds. Stop if skin turns white or if snowy coating appears (risk of frostbite with over exposure). Injection should be performed immediately after application (within 10 seconds)
Frequency	Maximum single exposure 15 seconds, less if skin turns white or snowy coating appears. Repeated applications not advised in a single episode.
Maximum dose in 24 hours	See above
Maximum duration of treatment	As above
Do NOT give in these circumstances	Not to be used on areas of inflamed or broken skin or on patients who have previously had an allergic or adverse reaction to ethyl chloride.
Warnings/Adverse reactions (see product information for full details)	Use in a well ventilated area. Ensure skin is intact and has returned to normal temperature and colour following the procedure. Avoid any kind of ignition source Do not mix with water or any other liquids Cautions as per aerosols Avoid contact with eyes