1. Introduction and Who Guideline applies to

Although haemodialysis (HD) has become a routine treatment, adverse side effects, and occasionally life threatening clinical complications still happen. Venous needle dislodgement (VND) is one of the most serious accidents that can occur during HD (Van Waeleghem et al, 2008). Considerable, or even fatal, blood loss due to VND have been described in the literature (Mactier and Worth 2007). Although the majority of dialysis treatments are conducted under the supervision of clinical nursing staff, the venous needle can still become dislodged and the blood loss may not be detected immediately. This blood loss only takes few minutes to prove fatal.

Dialysis equipment must provide a system which protects the patient from blood loss due to venous needle dislodgement. Although this need is currently partly met by venous pressure monitoring, studies of serious incidents showed that dialysis machines do not always produce a venous pressure alarm when completely disconnected or if venous pressure alarm limit is not properly set (Hurst, 2009). A safer solution has long been required to prevent and detect venous dislodgement.

Factors that may increase the risk of VND are:-

- Patients who have side effects during haemodialysis which may result in movement for example muscle cramps or hypotension.
- Patients with some degree of dementia or confusion.
- Patients who have communication impairments may not speak up when something is wrong.
- Patients who are nursed in an side room
- Patients who are not easily visible to the nursing staff administering their care.
- Patients with clammy or ‘sweaty’ skin which may pose possible risk of VND if needles are not secured properly.
- Patients with a femoral graft who cover their access with a blanket for dignity, thereby both obstructing visual monitoring of the needle and risking the tape adhering to the blanket and dislodging the needle.
- Patients who dialyse with their arm under a blanket
- Reduced visibility due to dimmed lighting, for example at night

2. Guideline Standards and Procedures

Measures to Prevent Venous Needle Dislodgement (VND) during Haemodialysis

- Staff, patients and carers should be aware of VND and the consequences.

- Emphasize to dialysis staff that securing the placed needle is **crucial** to preventing dislodgements. Nursing staff MUST take the time to securely tape the needle to the patient’s skin without taping over the connector and obscuring potential problems.

- Staff should be educated not to adjusting alarm to minimize nuisance alarms. Recent dialysis machine models set the lower venous alarm limit just below the existing venous line pressure, rather than using this pressure to centre the alarm limits as older machines do. This ensures the machine is more sensitive to a drop in pressure so alarm limits should not be centred or widened to limit alarms. Although this will not detect all dislodged needles, it increases the number that may be detected.

- Staff should be aware that the venous pressure alarm is not a reliable means to detect all venous line needle dislodgement. Staff should be able to observe the blood lines during patients' haemodialysis treatment or to check them regularly if the patient is not easily observed.

- Advise patients to keep all needle and blood line connections from being covered with blankets or other linen when possible so that staff can monitor the connections. Educate patients who are capable and has capacity to observe their blood lines for disconnections, and to notify staff immediately if the needle or tape becomes dislodged.

- All patients using a fistula or graft for dialysis access should be assessed for their level of risk of VND, using risk assessment in their care plan. If the patient is dialysed in a side room or is considered a risk of venous needle dislodgement then an alarm device intended for monitoring venous needle dislodgement is to be used and observations increased.

- Patients who undertake haemodialysis at home should be offered a blood sensor and be given adequate training for the operating procedure to minimise the risk of venous needle dislodgement whilst at home.

Use of alarms to detect Venous needle dislodgement

- Blood/moisture detectors in use within UHL include; Redsense blood detector, Haemodialert moisture detector and VennAcc the Fresenius moisture detector. Redsense and Haemodialert will give an audible alarm. VennAcc will stop the machine pump and alarm.

- Devices should be cleaned with clinell wipes between patients.

- Adhesive sensors should be **SINGLE PATIENT** use ONLY.

- The area around the vascular access should be large enough for taping, and should be cleaned and dried before cannulation.

- Staff should be adequately trained in taping recommendations and device knowledge before using it on intended patients. A consistent method should be used for taping needles and blood lines. Appendix one (attached) demonstrates the taping recommendations for these devices.

- Blood lines should be looped loosely to allow movement of the patient, and to prevent blood lines pulling on the needles.

- If it is necessary to reposition a needle, all taping should be replaced.

3. Education and Training

All nursing staff –registered and unregistered must be trained in the use of the VND devices available in their area by a competent and experienced practitioner.

4. Monitoring Compliance

What will be measured to monitor compliance	How will compliance be monitored	Monitoring Lead	Frequency	Reporting arrangements
Datix reports of VND	Datix report to M&M	Deputy Head of Nursing	Monthly	M &M

5. References

EDTNA/ERCA (2018) Venous Needle Dislodgement: A safety Issue. Available at https://vnd.edtnaerca.com/ . Accessed on 02.08.21

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Sandroni, S. (2005) Venous needle dislodgement during haemodialysis: an unresolved risk of catastrophic haemorrhage. **Haemodialysis International**. Vol. 9, pp. 102-103.

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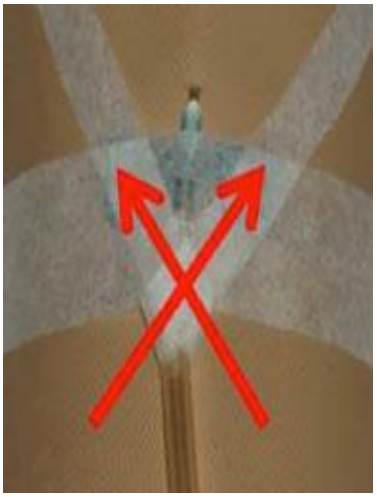
6. Keywords

Venous needle dislodgement, VND, Redsense, HEMOdialert.

APPENDIX ONE: VENOUS NEEDLE TAPING GUIDELINE

Taping of fistula needle



Chevron taping must be used and sterile tape or dressing.

Redsense taping guideline:

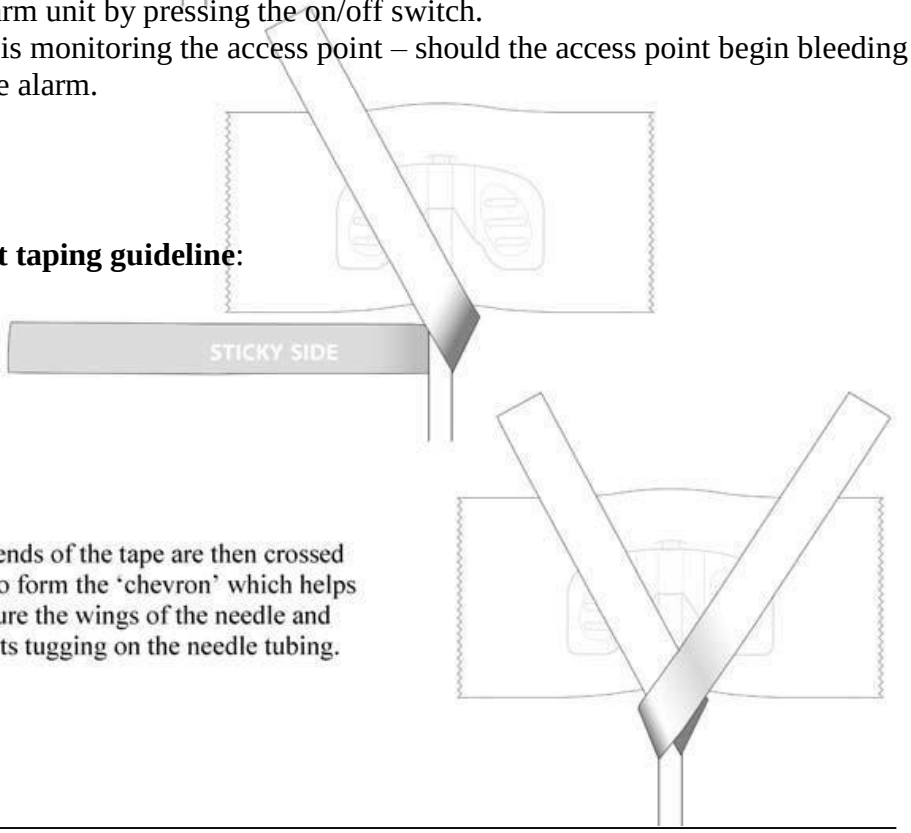
lle is fixed in place by a
f adhesive fabric (such as
Mölnlycke Health Care).

The tape (such as Millipore, 3D) used to make the chevron is positioned under the needle tubing close to the adhesive fabric with the sticky side facing up.

How to use it:

1. Attach the alarm unit to the patient in a comfortable position.
2. Connect the sensor patch cable to the alarm unit by pressing the connector into the socket until a click is heard.
3. Remove the backing tape from the sensor patch and secure it over the venous needle (The centre of the patch should be directly over the access point).
4. Activate the alarm unit by pressing the on/off switch.
5. Now Redsense is monitoring the access point – should the access point begin bleeding the alarm unit will sound the alarm.

B. HEMOdialert taping guideline:



The ends of the tape are then crossed over to form the 'chevron' which helps secure the wings of the needle and resists tugging on the needle tubing.

THE USE OF BLOOD DETECTION DEVICES IN THE PREVENTION OF VENOUS NEEDLE DISLODGEMENT

RRCV

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