

# SESLHD GUIDELINE COVER SHEET



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<b>KEY TERMS</b>	Leech therapy
<b>SUMMARY</b>	This document outlines the management of leech therapy and provides information about the use of leech therapy including:  Ordering of leeches, transport of leeches, storage of leeches, application of leeches, observations for leech therapy, use of antibiotics in leech therapy, removal of leech, disposal of leeches.

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## Leech Therapy Guideline

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## Section 1 - Background

The purpose of this guideline is to provide clinicians with best practice recommendations for the safe use of Leech Therapy in the event of venous congestion, this is a complication that can occur after reconstructive microsurgery<sup>2,3,4</sup>

Leeches are used following plastic reconstructive surgery for flaps, revascularisation and reimplantation surgeries<sup>3</sup>

When the use of leeches is indicated nursing and medical staff are to adhere to this guideline.

Patients must be informed that local infection, septicaemia<sup>4,6</sup>, and meningitis are recognised complications and that they will receive prophylactic antibiotics to decrease these risks. However, prophylaxis might also fail (e.g. if resistance was apparent)<sup>4</sup>

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## Section 2 - Definitions

### ***Medicinal Leech (Hirudo Medicinalis):***

- Leeches are annelids comprising the subclass Hirudinea. These organisms have two suckers, one at each end, called the anterior and posterior sucker. The posterior is mainly used for leverage while the anterior sucker, consisting of the jaw and teeth, is used to connect to a host for feeding. They use a combination of mucus and suction (caused by concentric muscles in the initial six segments) to stay attached.
- Leeches release a vasodilator, a peptide called Hirudin. It causes the blood vessels near the leech to become dilated, it is a highly effective anticoagulant. Leeches provide an effective means to reduce blood coagulation, relieve pressure from pooling blood, especially after plastic surgery, and stimulate circulation in reattachment operations for organs with critical blood flow. Leeches increase perfusion within congested tissue by actively drawing off blood<sup>6</sup>.
- Leeches are single patient, single use only<sup>1, 11</sup>.

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## Section 3 - Responsibilities

### Medical practitioners are responsible for:

- Identifying patient need for leech therapy and explaining therapy to patient ([Section 4](#))
- Providing clinical handover of such to the appropriate Nursing staff ([Section 4](#))
- Prescribing appropriate antibiotic therapy for the duration of the leech therapy ([Section 4.7](#))
- Monitor for signs of complications ([Section 4.5](#))

### Nursing staff are responsible for:

- Ordering and appropriately storing leeches ([Sections 4.1](#) and [4.3](#))
- Explaining the procedure to the patient ([Section 4](#))
- Providing shift to shift clinical handover of leech therapy to colleagues
- Applying leech to the appropriate location on the patient ([Section 4.4](#))
- Administer prescribed antibiotic therapy as per medical orders
- Monitor for signs of complications ([Section 4.5](#))
- Monitor and record patient observations ([Section 4.6](#))
- Remove and discard leeches when feeding has ceased ([Sections 4.8](#) and [4.9](#))

## Section 4 - Guideline

Leech Therapy must be ordered in the patient's health care record by the treating medical team. The order must specify treatment parameters, e.g. continuous/intermittent therapy, length of therapy (estimated, which will assist with ordering leeches) and specific placement of the leech on the patient<sup>11</sup>. Clinical handover of this information must be provided to the appropriate Nursing staff.

Leech Therapy must be explained to the patient by the medical team. Patients must be informed that local infection, septicaemia<sup>4,6</sup>, and meningitis are recognised complications. To prevent this they will receive prophylactic antibiotics to decrease these risks however the patient must be informed that prophylaxis may fail (e.g., if antibiotic resistance was apparent)<sup>4</sup>.

Consent must be documented in the healthcare record that the patient has agreed to Leech Therapy. If the patient is unable to give consent, the treating team are to obtain consent from the next of kin or guardian.

Personal protective equipment (PPE), e.g. gloves, must always be worn when handling leeches.

### 4.1 Ordering Supply of leeches

- Ordering and receipt documentation are kept by the NUM. Standing order number is updated and kept by NUM as appropriate.
- Leeches are purchased from Liverpool Hospital (main switch 02 9828 3000), Ward 5 D (Orthopaedic and Trauma unit), direct telephone number **02 8738 7540/7541**.
- Liverpool Hospital accepts telephone orders for leeches but require a Standing Purchase Order Number from the requesting hospital. If this is not available a letter requesting leeches is to be faxed to Liverpool Hospital, fax number 02 9828 3109
- Leeches are available in one size only at a cost of \$25 each (current as at December 2014)
- As a guide for ordering; leech therapy is commonly required for 3 to 7 days<sup>11</sup> and only one leech is usually applied at a time.

### 4.2 Transport of Leeches

- During Business Hours the NUM of the ward that requires the leeches contacts Liverpool Hospital to arrange delivery of the leeches. An 'Oracle' request is to be completed and marked URGENT to ensure Liverpool Hospital is supplied with a purchase order number
- Outside business hours the After-Hours Nurse Manager arranges delivery and charges the leeches to the appropriate cost centre
- In most cases leeches are transported from Liverpool Hospital by taxi (check local procedures for arranging and paying for this).

### 4.3 Storage of Leeches

- Leeches must be stored in a cool, dark environment<sup>5</sup>, e.g.: the same jar and cardboard box they were transported in.
- Ideally the leeches should remain in the tank water they were transported in, if this needs to be changed 'water for injections' should be used. NB: Only half-fill the jar or the leeches may drown.

- Ensure there are small air holes in the lid of the jar. The holes should be no bigger than a 19-gauge needle to prevent the leeches from escaping.<sup>5</sup>
- Do not place fed leeches with unfed leeches as they will eat each other.

#### 4.4 Contraindications to leech therapy

- Leech therapy should not be used in patients who are immunocompromised, those with bleeding disorders and those with pre-existing arterial insufficiency<sup>11</sup>.

#### 4.5 Application of Leeches

- Explain to the patient the reasons and benefits of leech use as this will assist in decreasing the patient's anxiety and psychological stress<sup>11</sup>.
- One to one nursing must be practiced if patients are:
  - undergoing continuous leech therapy
  - undergoing intermittent leech therapy with a break of less than 2 hours between leeches
  - cognitively impaired
- Paediatric patients and their family members may require additional support and education prior to the application of leech therapy.
- **Do not** clean the intended attachment area with sodium chloride 0.9% (normal saline) as the leech will not attach
- It is advisable to barrier dress the area where the leech is to be attached<sup>6</sup>. This barrier can be sodium chloride 0.9% (normal saline) soaked gauze and/or impregnated gauze e.g. Jelonet™ in conjunction with a physical barrier to prevent leech wandering. Physical barriers may include a polystyrene cup with a hole cut in the base to go over the body part, covering the open end with a film dressing (e.g. Tegaderm™ or Opsite™) or Hudson mask
- Gently take the leech out of its specimen jar, either with a pair of plastic forceps or by gloved hands. Position the leech on the required area. Ensure the fatter end anchors to the patient. (Leeches have a sucker at each end of their bodies, the thinner end is the eating end and the fatter end anchors the leech to the host)
- If the leech is reluctant to attach use some 5% dextrose on the area or prick the area with a needle to get a small amount of blood in the area
- Leeches are single patient, single use only<sup>1,5,11</sup> and then must be discarded as per [Section 4.8](#). The practice of purging the leech should not occur, refer to section 4.8 for additional notes.

#### 4.6 Monitoring for complications of Leech Therapy

- Mild Allergic reactions such as pruritus (itching), wheal formation and blisters<sup>4</sup>
- Infection caused by bacteria and other microorganisms that the leech may carry and pass on<sup>4</sup>
- Foreign body reaction against leech jaw that can remain in tissue when leech forcibly removed
- Severe allergic or anaphylactic reactions including red blotches or an itchy rash over the body, swelling around the lips or eyes, feeling faint or dizzy, and difficulty breathing<sup>8</sup>
- Necrosis with chronic progressive ulcer due to leech bite toxin or antigens in leech saliva<sup>9</sup>

#### 4.7 Observations for Leech Therapy

- Leech therapy forms can be ordered through Streamline order number NHSIS0460 (refer to [Appendix A](#))
- Monitor the site at least every 15mins to check for detachment and ensure the leech has not migrated<sup>11</sup>.
- Hourly microvascular observations to be recorded in the patient's health care record for the duration of the therapy.
- Each leech bite can ooze up to 400 mL, therefore regular Haemoglobin checks are required<sup>11</sup>. Additionally anticoagulant/antiplatelet medication is often used (as per treating VMO instructions)<sup>4</sup>

#### 4.8 Use of Antibiotics in Leech Therapy

- Leeches have a bacterium in their stomach, *Aeromonas hydrophila*, which can cause wound infection<sup>10,11</sup>.
- Prophylactic oral ciprofloxacin 500 mg twice daily is prescribed. If the patient cannot tolerate oral therapy, IV ciprofloxacin 200 mg twice daily is prescribed as prophylaxis against infection from this organism with the attendant antibiotic associated risks<sup>1,3,4,5,7,11</sup>.
- For patients allergic to ciprofloxacin, alternative antibiotic therapy must be prescribed (e.g. trimethoprim with sulfamethoxazole 160-800 mg twice daily). In this event, it is recommended the local Pharmacy department or Infectious Disease department clinician be consulted<sup>10</sup>.

#### 4.9 Removal of Leeches

- Each leech should be left in place for as long as it is feeding. The leech will cease feeding and detach from the patient when it is engorged<sup>5,11</sup>. Ideally leeches are removed only after they have become detached from the patient
- Do not forcibly remove the leeches as their teeth may remain in the patient and this has the potential to cause a wound infection<sup>11</sup>.
- If you want to remove a leech, touch it on its head with a cotton tip dipped in sodium chloride 0.9% (normal saline), alcohol or methylated spirits. Handle the leech with a gloved hand.
- The practice of purging leeches is not recommended<sup>1</sup> as the leech will be more difficult to attach after its initial application and can compromise the surgical outcome.
- However in the event leeches are in short supply, purging may be necessary. This should only be practiced when fresh leeches are not available. Purging can be achieved by placing the leech into a sodium chloride 0.9% and table salt solution as soon as they are removed from the patient. Once the leech has purged, remove from solution and rinse, return the leech to its original specimen jar. Label the jar 'used leech' and only utilise if absolutely necessary.

#### 4.10 Discarding of Leeches

- Leeches found away from the original attachment site on the patient, i.e. on the floor or on the bed, must not be reused and must be discarded
- Leeches are disposed of in clinical waste<sup>11</sup>. The specimen jars containing the used leeches, must be sealed in either a pathology biohazard bag or in a small yellow

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clinical waste bin liner securely fastened with a cable tie. Leeches do not necessarily need to be dead prior to disposal

- This securely fastened package is placed into the clinical waste bin located in the ward.

## Section 5 – Documentation, References, Revision and Approval History

### Documentation

- Patient’s Health Care Record
- Leech therapy form (Stream Solutions order number NHSIS0460)
- National Inpatient Medication Chart (NIMC)
- Guidance MS

### References

#### Internal

- [NSW Ministry of Health Infection Control Policy PD2007\\_036](#)
- [NSW Ministry of Health Hand Hygiene Policy PD2010\\_058](#)

#### External

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12	Parts of this document have been formulated with kind permission of Katie Laing RN MRCNA, CBL3 Trauma, Orthopaedics & Plastics Unit, Division of surgery, Liverpool Health Service and Julia Kittscha, CNC Stomal Therapy, TWH, ISLHD

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## Revision and Approval History

Date	Revision no:	Author and approval
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12.2.15	1	Endorsed by D&QUMC
11.3.15	1	Endorsed by Clinical and Quality Council

