

# A Guide for Nurses & Healthcare Practitioners



**Haemochromatosis • UK**

Helping people live with iron overload



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## Introduction

Historically, venesection or blood-letting has been practised for thousands of years, mostly without helpful effect on the ailments then treated.

However, there are some conditions such as the quite common genetic haemochromatosis which results in the retention of abnormal and potentially poisonous levels of iron, and the rarer condition of polycythaemia in which too many red blood cells (erythrocytes) are produced causing the blood to be too thick.

Regular managed venesection can improve both length and quality of life greatly in these conditions as part of an overall lifestyle and treatment plan.

## Common Indications for Venesection

The planned removal of blood on a regular basis can help reduce body iron levels to safe amounts. This is because the body's red blood cells do contain significant amounts of iron, which helps in the transportation of oxygen around the body as haemoglobin.

As the body is normally readily able to replace lost red cells, blood can often be taken on a weekly or other regular basis to remove what in some cases can be large amounts of unhelpful iron or cells.

## Genetic Haemochromatosis

This is an inherited condition in which an excess of iron is absorbed from the diet and stored in the body. Around 1 in 150 people in the UK, often of north European or Celtic ancestry, have the condition and 1 in 8 are carriers.

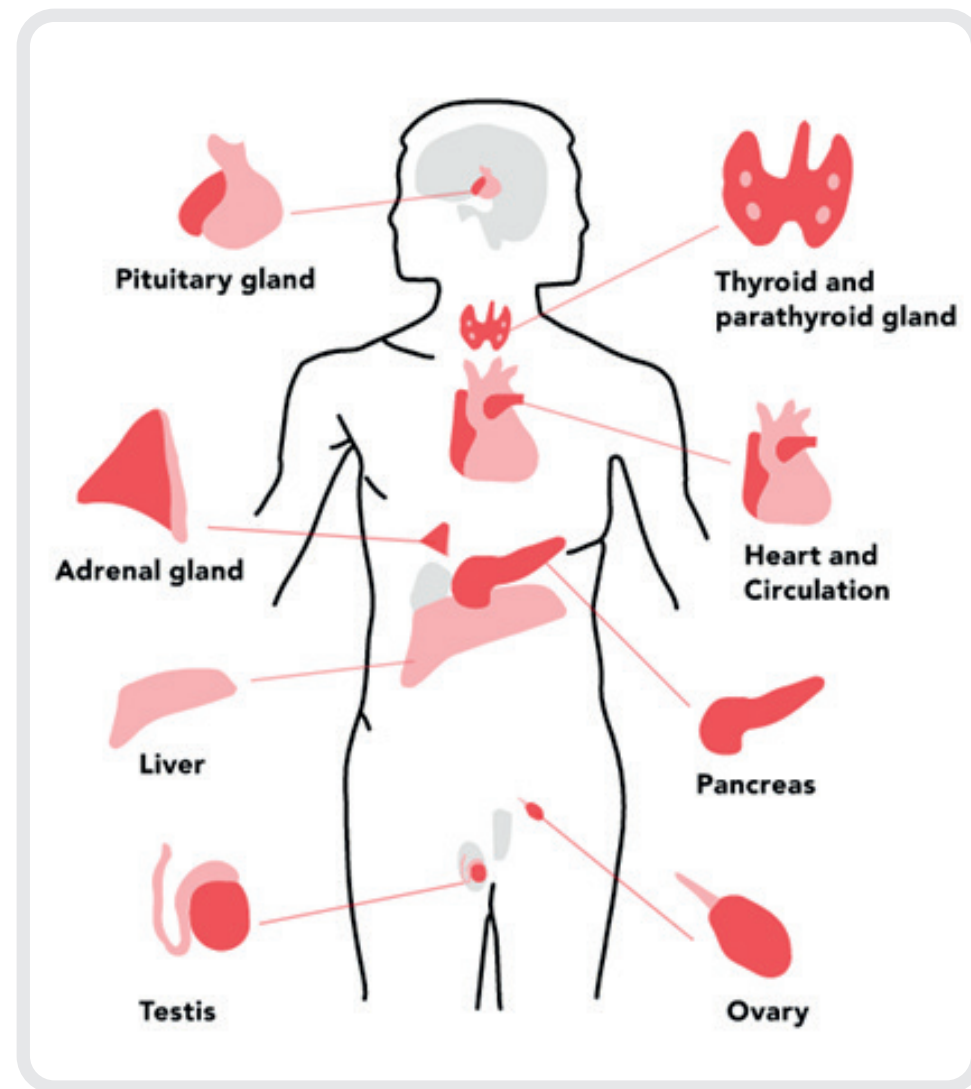
**Over 380,000\*** people affected in UK

*"Hereditary Haemochromatosis – Estimates of Excess Disease In The UK" (July 2019)*  
Professor David Melzer & the Exeter Haemochromatosis Research Group, University of Exeter

As early symptoms may be vague a first indication of danger may be a high serum ferritin (above 300 micrograms/l in males and 200 µg/l in females). The diagnosis is confirmed by a genetic test and other investigations dependent on severity.

Excess iron is toxic to tissues and in large amounts can lead to damage of vital organs such as the liver, leading to cirrhosis and cancer, the heart leading to heart failure and the pancreas and other endocrine organs resulting in diabetes and other metabolic disorders. Damage to other tissues can lead to a wide range of symptoms and conditions such as arthritis.

Venesection is currently the mainstay of treatment for genetic haemochromatosis and may run to many months of initial treatment if iron levels are very high (Haemochromatosis UK 2017).



Ongoing treatment for haemochromatosis through venesection is life-long. After the initial iron removal phase, patients may need continued venesection at regular intervals to maintain healthy iron levels and avoid disease.

Venesection is also beneficial in the treatment of other conditions, including polycythaemia vera and erythrocytosis.



**TABLE 1 – Reasons for and goals of venesection**  
(adapted from Lim and Ho 2017)

<b>Condition</b>	<b>Indication</b>	<b>Target Lab Results</b>
<b>Genetic haemochromatosis</b>	Removal of excess body iron to prevent iron overload-related diseases and end-organ complications	Serum ferritin of less than 20-30µg/L and transferrin saturation less than 50% (Fitzsimons et al 2018)
<b>Polycythaemia vera</b>	Reduction of red cell mass to lower arterial and venous thrombotic risk	Haematocrit (Packed cell volume) <45%
<b>Idiopathic and secondary erythrocytosis</b>	Reduction of blood viscosity if not adequately achieved by pharmacological agents alone	Haematocrit <45%
<b>Transfusion related iron overload</b>	Repeated transfusion of blood products for example during chemotherapy or stem cell transplant	Serum Ferritin in normal range (Below 300 µg/l for males, 200 µg/l for females)

Other conditions, such as porphyria cutanea tarda and rarer forms of haemochromatosis may lead to an excess of iron stores requiring venesection as an aspect of treatment. Excess consumption of iron-containing vitamin and tonic products can also lead to iron overload.

## Before Venesection

Venesection should only take place when a clear written request is made by a relevant health care professional, normally a doctor, advanced clinical practitioner, nurse specialist or nurse consultant. This should include the patient's diagnosis, frequency of venesection, volume to be removed, replacement fluid prescription (where relevant) and the target blood results (serum ferritin, haematocrit, transferrin saturation and haemoglobin).

The request should include any factors which may affect the procedure such as current use of anti-hypertensives, history of heart disease or a previous history of fainting.

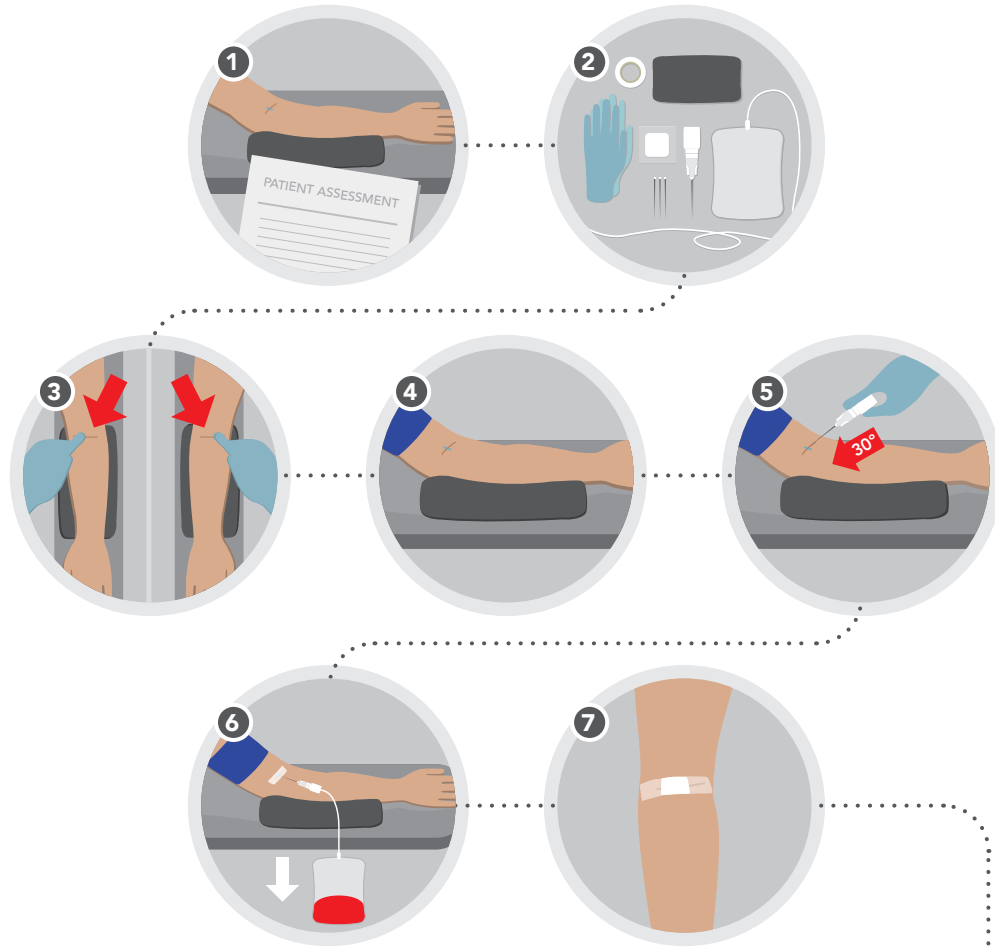
## Gaining Informed Consent

Patients should give written consent to the venesection procedure on the first occasion, following a clear explanation of the procedure and its purpose and potential complications.

Subsequently consent may be verbal. Patients should be advised to eat normally, drink well and keep warm prior to the procedure, which may help blood flow and reduce the risk of fainting.



## The Procedure



### Step by step

1. Make a brief clinical assessment
2. Wash hands, apply apron and prepare equipment as per local infection control and phlebotomy policies
3. Assess both arms for suitability for cannula insertion
4. Consulting with the patient (who may have had regular venesections) select arm and vein for venesection, commonly in the antecubital fossa, and support with a pillow. Apply tourniquet or blood pressure cuff inflated to 40-60 mm/Hg (WHO 2010).

- Positively identify the patient with name, date of birth and hospital number if relevant.
- Check the patient record for the reason for venesection, parameters to monitor and initial written consent (HCPC, 2016; NMC, 2018).
- Explain the procedure and answer any questions.
- Make a brief clinical assessment including any new medical conditions, medications and record vital signs, confirming that the patient has eaten and drunk sufficiently.  
Notify any concerns to senior nursing or medical staff.
- Apply local anaesthetic cream (if required).
- Wash hands, apply apron and prepare equipment as per local infection control and phlebotomy policies:
  - Vascular Access Device with Closed Drainage Collection Bag and Weigh Gauge
  - Blood disposal bin
  - Cleaning agent
  - Tape
  - Gauze/cotton wool
  - Blood pressure manometer or tourniquet
  - Needles
  - Syringe
  - Local anaesthetic if required
  - Blood sample bottles (FBC and serum ferritin if required)
  - Gloves

5. Clean the patient's skin as per infection control guidelines. Insert venesection needle at 30 degrees angle ensuring the bevel is facing upwards. Secure the needle with tape and ensure good flow is established.
6. Take and label blood samples as appropriate. Position the collecting bag (on weigh scales if used) below the patient to facilitate drainage.
7. Once the desired amount has been taken remove the tourniquet or blood pressure cuff, clamp the line, remove the needle and apply firm pressure with cotton wool or gauze to the puncture site. Check for haemostasis then apply a firm dressing.

- If there is a history of fainting or other contra-indications such as low haemoglobin, abnormally high or low blood pressure or heart rate, heart disease or low body weight (less than 50Kg), proceed only with caution and approval of senior staff. Undertake simultaneous fluid replacement or reduce the amount to be removed as prescribed. Patients on Aspirin or anticoagulants may need special care afterwards to prevent excessive puncture site bleeding or haematoma formation.
- Ensure oral fluid is available before, during and after the procedure.
- **[WARNING SYMBOL] Never leave the patient unattended during the procedure.**
- Lie the patient at 45 degrees or flat as tolerated.
- Assess both arms for suitability for cannula insertion.
- The amount of blood to be removed should be as prescribed but is typically 450 mls. On most vascular access devices (VADs) this is measured as 478grams weight (plus the weight of the removal bag).
- Apply alcohol rub to hands and put on plastic gloves.
- Consulting with the patient (who may have had regular venesections) select arm and vein for venesection, commonly in the antecubital fossa, and support with a pillow.
- Apply tourniquet or blood pressure cuff inflated to 40-60 mm/Hg (WHO 2010).
- Clean the patient's skin as per infection control guidelines.

- Insert venesection needle at 30 degrees angle ensuring the bevel is facing upwards. Normally no more than two attempts should be made at needle insertion.
- Secure the needle with tape and ensure good flow is established.
- Take and label blood samples as appropriate.
- Position the collecting bag (on weigh scales if used) below the patient to facilitate drainage.
- Quicker drainage may be encouraged by the patient squeezing a soft ball.
- Once the desired amount has been taken remove the tourniquet or blood pressure cuff, clamp the line, remove the needle and apply firm pressure with cotton wool or gauze to the puncture site.
- Check for haemostasis then apply a firm dressing.

## After Venesection

- Dispose of needle, line and collection system in sharps bin.
- Dispose of blood as per local policy.
- The patient should remain reclining for 10-15 minutes then slowly adopt an upright position.
- Offer oral fluids and biscuits as appropriate.
- Record vital signs.
- Wash hands.
- Ensure follow up appointment for further treatment, blood tests or outpatient review with appropriate forms.

The amount of blood to be removed should be as prescribed but is typically 450 mls. On most vascular access devices (VADs) this is measured as 478grams weight (plus the weight of the removal bag).



## Adjustment to the Diagnosis and Need for Treatment

Management by venesection can seem routine, especially when diagnosed before serious organ damage has occurred. Early detection and management can mean that patients with this condition can look forward to a normal life span although attendance at a busy hospital department for regular (sometimes weekly for many months) venesection can cause strain on employment or domestic life.

Patients diagnosed later in the disease process can suffer quite severe 'vital' organ damage and go on to long term need for treatment and surveillance to detect early signs of liver and heart disease, for example.

Even those not so seriously affected have to come to terms with having a 'genetic disorder' and may be concerned both about their own health and that of their first-degree relatives who may also have the condition or be carriers. They may look for reassurance and support in talking to their siblings, parents and children about this and blood tests are the only way to establish predisposition to the condition. If genetic counselling is available it may be helpful.

Many patients endure a wide range of symptoms such as arthritis, loss of libido, stomach symptoms and may have anxieties about what foods are safe to eat in the context of a 'normal balanced diet'. Written guidance is available both in print and on line from Haemochromatosis UK

[www.haemochromatosis.org.uk](http://www.haemochromatosis.org.uk) together with telephone and email helpline advice and contacts for a range of local support groups.



## Discharge Advice for Patients

- There is a risk of fainting so that on their first occasion or subsequently according to their individual response they should avoid driving and not operate machinery that day.
- Maintain the dressing for 2 to 3 hours after the procedure. If the site bleeds after leaving the department the patient should apply local pressure and to return to the department if it does not stop quickly.
- If feeling faint the patient should sit down, ask for help and bend their head towards the knees.
- Drink at least one litre of extra fluid (water or other suitable choice) and to avoid alcohol.
- Avoid heavy lifting or other strenuous exercise.
- Observe for bruising at the venepuncture site and notify staff of any tingling or swelling in the arm or hand.

## Risks and Complications of Venesection

Venesection is generally safe, provided it is performed in line with these guidelines. However, occasionally one or more of the following complications may arise.

- Haematoma
- Nerve irritation
- Nerve injury
- Compartment syndrome
- Arterial puncture
- Delayed bleeding
- Tendon injury
- Vasovagal fainting
- Scarring of veins

Care should be taken to minimise the risk of these complications arising. If they do, remedial care and advice should be offered.

## References and Further Reading

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## Contact us

We work to support anyone affected  
by genetic haemochromatosis.

Haemochromatosis UK Advice & Help Line  
Telephone (12-3pm weekdays): **03030 401 102**  
Email (24/7): [helpline@huk.org.uk](mailto:helpline@huk.org.uk)  
Website: [www.haemochromatosis.org.uk](http://www.haemochromatosis.org.uk)