Southern Health and Social Care Trust

Day Clinical Centre
Ramone Building
Craigavon Area Hospital

GUIDELINES FOR VENESECTION CLINIC FOR HAEMOCHROMATOSIS PATIENTS

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HAEMOCHROMATOSIS

SCOPE:
This guideline provides general recommendations only for the management of Haemochromatosis. It applies to adult patients only.

DEFINITIONS:
No classification of haemochromatosis comfortably encompasses all forms of Iron overload.

Haemochromatosis is the clinical condition of Iron Overload.

Genetic haemochromatosis refers predominantly to iron accumulation in the body due to the inheritance of mutations in the *HFE* gene on both copies of chromosome 6. This leads to excessive absorption of iron from the blood.

Secondary iron overload (secondary haemochromatosis, haemosiderosis) describes iron overload following chronic blood transfusion for haematological conditions.

DESCRIPTION:
Haemochromatosis is a condition caused by continued absorption of iron from the upper small intestine, despite normal and then increased total body iron. This leads to accumulation of iron in the tissues as the body has no means of getting rid of excess iron. In advanced disease, iron accumulation causes widespread tissue damage including diabetes mellitus and cirrhosis.

WHO SHOULD BE TESTED?

a) Patients who have symptoms or signs that might be caused by iron overload. These patients with (unexplained):
   - Arthritis (including premature osteoarthritis)
   - Congestive heart failure or cardiomyopathy
   - Adult-onset diabetes
   - Persistent elevation of liver enzymes or cirrhosis
   - Secondary hypogonadism
   - Increased skin pigmentation

b) Patients with persistently elevated serum ferritin not explained by underlying inflammatory/systemic disease.

Notes: **.**Serum ferritin has a wide reference range and may vary with age and gender.
.First degree relatives of a known case of *HFE*-related haemochromatosis should be offered testing.
.Other groups at risk of iron overload include patients receiving long-term red cell transfusion support for chronic anaemia.
.Serum ferritin levels may be elevated out of proportion to total body iron store in patients with infections, inflammation, or cancer.

TESTS:

1. Measure serum iron concentration and total iron binding capacity and calculate transferring saturation. (100 x serum iron/TIBC) %
2. If transferring saturation is greater than 50% repeat the measurement on a fasting sample. This sample is not influenced by dietary intake.

   A fasting transferring saturation of greater than 55% (men and post-menopausal women) or 50% (pre-menopausal women) indicates iron accumulation.
3. Measure serum ferritin concentration.

Notes: Transferrin saturation is the most specific and sensitive test for iron accumulation. Although a raised transferring saturation provides an early indication of iron accumulation, the transferring saturation is not necessarily raised in young people who are homozygous for haemochromatosis. Furthermore there are many other cases for raised transferring saturation.

Serum ferritin concentrations reflect the level of storage iron in the body but do not exceed the upper limit of normality until liver iron concentrations are elevated; they then rise disproportionately with the degree of liver damage. Serum ferritin concentrations are not usually abnormal in the early stages of iron accumulation. False positives include acute and chronic inflammarory conditions and hepatic steatosis. In normal patients, concentrations of >300 µg/l for men and post-menopausal women and >200 µg/l for pre-menopausal women indicate elevated iron stores.

4. Genotypic testing

Notes: This has the advantage of providing a result which is the same at any stage of iron accumulation and is not influenced by dietary intake or tissue damage. However, it is not certain that the majority of people homozygous for C282Y mutation will eventually develop the clinical condition. In the UK, 5 % of patients lack these mutations of the *HFE* gene, and at the moment only biochemical assays can detect iron overload in this group.

5. Liver biopsy

Notes: A liver biopsy should be carried out for any patient with raised transferrin saturation, a serum ferritin concentration of >1000µg/l and/or evidence of liver damage (hepatomegaly or raised AST activity). For patients with a raised transferring saturation, a ferritin concentration of< 1000µgl, no hepatomegaly and normal AST activity, no biopsy is necessary, because the risk of hepatic fibrosis or cirrhosis being present is low.

TREATMENT

Venesection (therapeutic phlebotomy) is the treatment of choice for haemochromatosis. Serum ferritin is the preferred method for monitoring response to therapy.

NEW PATIENT (NP)

Prior to initiating a venesection program, the patient should be thoroughly assessed for possible end organ damage. Patients with ferritins >1000µg/l should have liver function tests because of the increased risk of cirrhosis and hepatoma.

Venesection is effective because it removes blood cells that contain iron. Each unit of blood removed contains approximately 225-250mg of iron in the haemoglobin.

Venesection 1 unit (450-500 ml) weekly until the serum ferritin concentration is ≤ 50µg/l and transferring saturation is < 50%.

Monitor Hb levels after every 5 venesections and reduce rate of venesection if anaemia develops (normal haemoglobin range is 130-180g/dl for men and 120-160g/dl for women)

Monitor serum ferritin and transferring saturation levels monthly.

MAINTENANCE PATIENT (MP)

Once serum ferritin concentrations are ≤ 50µg/l then patient can move to maintenance phase.

Bloods checked every 3-4 months- serum ferritin, transferring saturation, Hb, . Bleed 1 Unit periodically to maintain serum ferritin ≤50 µg/l.

How often a person needs venesection during this phase varies based on the severity of the symptoms.

Men usually need to have 3-4 units of blood taken yearly to maintain level.

Women may need to have 1 -2 units of blood taken yearly to maintain level.

Some people, especially older people, may not need to have any more treatments, but they do need their serum ferritin level checked at least yearly.

Patients on maintenance therapy may be eligible to donate to the Northern Ireland Blood Transfusion Service, but they would have to attend the Blood Transfusion Service Sessions as the Southern Trust is unable to Transport and store the Venesection units correctly for donation. They would also need to be referred by Medical Staff and registered with the Blood Transfusion Service.

2014 (2014 proposal to be removed??)

Due to staffing levels and increase in number of patients requiring venesection, we are suggesting the following guidelines for the management of these patients:

Please advise if you agree or wish to suggest alternative?

Currently only 8 patients can be accommodated per clinic and 3 clinics per week, total of 24patients per week. Currently we are treating 23 patients, per week and have 6 patients on periodic 3, 4, 6 or 12 monthly.
Also when Staff nurse on study/annual leave clinic has to be cancelled.

Proposed:
Weekly venesection until levels < 750µg/l (? 500 or? 400),
Fortnightly until levels ≤ 300 µg/l (? 200),
Monthly until levels ≤ 50 µg/l.

24/04/2018

DCC are now doing 14 venesections twice a week= 28 per week with view to adding third clinic and eliminating waiting list – more/ new staff are being trained

Weekly venesection only (*not done fortnightly or monthly as regular procedure as per proposal above*) until levels are below 50ug/l because fortnightly and monthly would leave spaces idle and also if there is a high incidence of DNAs & CNAs patients' next appointments would become monthly and accordingly their treatments would be extended….If there are concerns about Hb dropping half bags can be drained weekly.

Appendix A: Protocol for Venesection in the Day Clinical Centre Craigavon

Background:

Venesection is a term used for the procedure of entering a vein with a needle to obtain a sample >200mls for diagnostic purposes, or to monitor blood components or to treat various medical conditions. It is a common invasive procedure for hospital patients. It can now be routinely performed by nursing/midwifery staff.

Aims of Protocol:

- To ensure the registered nurses/midwives have been educationally prepared and developed the skills to undertake the procedure.
- To ensure the safety and comfort of patients.

Protocol:

- The procedure must be carried out by a qualified doctor or by a registered nurse/midwife who has completed a venepuncture or cannula training programme and undertaken practical supervision on at least 3 occasions before performing the procedure.
- Registered nurse/midwife must not puncture the skin more than twice whilst undertaking the procedure.
- Where difficulty is experienced or anticipated the patient must be referred to the doctor.
- Always sit, or preferably lie the patient down before taking blood. Whenever feasible samples of >200mls should be taken with the patient lying down on a bed or couch.
- If you are taking blood with a patient seated, ensure there is sufficient space immediately adjacent to lie the patient down should they experience a vaso-vagal episode.
- Blood collection should be carried out away from public areas.

- Samples should not be taken from men if haemoglobin is lower than130ug/dl. Samples should not be taken from women if haemoglobin is lower than 120ug/dl. If so contact medical staff.
- Blood pressure, pulse rate and respiration rate should be recorded prior to and following procedure.
- A record of the procedure and outcome must be recorded.
- All blood samples must be treated, as potentially infectious and safe disposal/ transport of samples and safe sharps practice must be followed when taking or handling blood.

- The patient should be given replacement fluid at least equal to the volume of fluid removed in procedure before leaving (ie. 400mls)
- Patients should rest following the procedure for approximately 30 minutes or until they feel sufficiently recovered from the procedure.
- Discharge patient after appropriate time, providing all observations are satisfactory.

Before Patient Leaves:

- Advise them to seek medical advise if they develop any symptoms which suggest an infection (e.g. fever in the hours or days after the procedure)
- Provide contact numbers for the Day Clinical Centre or first point contact e.g. GP and /or attendance at the hospital's A&E
- Ensure follow up for assessment or next procedure date has been arranged

Safe Sharps Practice:

- Use vacutainer collection equipment or single use collection unit whenever feasible.
- Wear gloves when taking blood.
- Needles should never be recapped.
- Never carry sharps in your hand.
- Sharps disposal containers should be available at the point of use.
- Used equipment should be discarded into a sharps disposal container immediately after use. Equipment should never be over-filled: discard when ¾ full
- Needles and syringes should be discarded as a single unit.

GUIDELINES FOR PERFORMING VENESECTION
in the Day Clinical centre, Craigavon Area Hospital.

(All New Patients' and Maintenance Patients' details are logged in Venesection file)

Provide patient with information leaflets on their first visit

New Patients & Maintenance Patients – blood tests guide

Optimum Haemoglobin Levels Prior to venesection

Male > 130 ug/l Female > 120 ug/l

(if less contact medical staff)

Hb to be checked every five weeks during the patient's venesection treatment to ensure that the patient's Hb does not fall below these levels

If HB falls below the above levels the patients are asked to miss one week and get their HB checked at their GP surgery that week and ring the ward with the results before their next venesection clinic.

Ferritin levels required during venesection

if Ferritin > 1000ug – 10th weekly ferritin check to be done
if Ferritin < 500ug – 5th weekly ferritin check to be done

When ferritin is at 120ug proceed with a further three venesections then send bloods to labs for testing and if result < 50ug/l then treatment has finished. If remains > 50ug/L continue until target achieved

For every 30ug above 120ug do an extra venesection (for maintenance patients)
eg: ferritin level 150ug do four venesections and then patient goes to GP to have post treatment bloods done. Patients ring the ward with results.
Again only when ferritin level is < 50ug/l is treatment finished.

When bloods are taken in the Day Clinical Centre it is the responsibility of the Nurse sending the bloods to the labs to look up the results and record them and ask the patient to ring the ward for the results to see if they need further venesections.

Maintenance Patients go to their GP every six months for blood checks, but do not go onto the maintenance list until their ferritin levels are > 120ug/l, trans ferritin saturation levels are > 50 ug/l, these are recorded in the venesection file.

Venesection Procedure using a Single Blood Pack Unit

The standard equipment provided for venesection is a blood collection unit with a 15 gauge stainless steel needle attached to the unit.

- Prepare medical notes
- Prepare trolley for venesection.

Equipment required:

- Single Blood Pack Unit with anticoagulant.
- BP Cuff
- Alcohol Swabs
- Skin tape
- Sterile gauze balls x 2
- Dressing Tape
- Protection pad
- Recliner chair/ Couch with adjustable height
- Clean Gloves & apron
- Appropriate Sharps Box and Burn Bin

Preparation of patient:

- Introduce yourself to patient, explain the procedure and gain verbal consent to proceed and document same
- Wash hands and apply PPE.
- Confirm relevant patient identifiers including patient's name, address and date-of-birth.
- Record the Blood Pressure, (B/P), Pulse and SP02.
- Ensure Patients have eaten and that they have been drinking water before and during venesection (ie. 500mls).
- Weigh patient and if 50kgs or below only bleed half a bag of blood.
- Ensure the patient is seated on a reclining chair/couch.
- Check if the patient requires blood samples, if so open the valve on the small collection bag, and obtain accordingly.

Perform Venepuncture:

- Place the patients arm on a pillow covered with a protection pad.
- Place the Manual B/P cuff about 2 inches above the elbow to allow the vein to be accessed, inflate the cuff to around 80ug of mercury three times and on the fourth inflation hold it at 20- 40 ug to create adequate venous filling.
- Median cubital vein or outer lower cephalic vein can be used however the basilica vein runs close to the basilica artery therefore this vein should be avoided if possible.
- Alternative venous sites can be used for difficult venepuncture
- Check for allergies to skin preparation and adhesive materials.
- Clean the area and allow adequate drying time.
- Do not re-palpate the area to avoid re-contamination.
- Lower collection unit by placing the collection bag on the bottom shelf of the trolley and lay the sheathed needle and tubing over your knee.
- Anchoring the vein is a key to successful insertion of the venesection needle.

Perform venesection (phlebotomy)

- With the B/P cuff at 20-40 mmHg maintain good skin traction during the insertion, approach the vein at a low angle with the bevel up (indicated by a black dot at the hub of the needle).
- When the flow of blood is visual, decrease the angle to the skin and advance the needle 2 more millimetres into the vein and lower the B/P cuff to 40ug. Hold the needle in this position and with your left hand hold the collection bag at your knee level, frequently checking that there is flow of blood. If the flow has stopped adjust the needle slightly.
- If the patient complains of pain at the insertion site after insertion this could mean that the needle is close to a valve in the vein causing it to go into a spasm, again adjust the needle slightly and if pain continues totally removed the needle.
- If the patient is bleeding too quickly raise the collection bag but not higher than the insertion site. Decrease the inflated cuff to <_ 20mmHG .
- Bleeding time should be between 10/15 minutes.
- Encourage oral fluid during venesection.

- Be aware of signs of vasovagal onset. The patient may complain of getting very warm, feeling sick or "just feel funny". If this happens deflate the B/P cuff, remove the needle, apply pressure to the puncture site, raise the feet and lower the head. Check patient B/P pulse SPo2, keep talking to the patient and if necessary apply O2 via non re-breather mask at 10L/per minute.

- Document same in notes and if concerned about the patient ,contact or request the doctor to review patient ASAP.

To remove the venesection needle post drainage.

- Place the collection bag on bottom shelf of trolley.

- Release the B/P cuff, hold a gauze ball over the puncture site and remove the needle.

- Apply firm pressure to the site for approx._> 1 minute.

- Hold the needle upright to allow the blood to drain down the tube before clamping the tube and use safety device attached to cover needle.

- Dispose of the blood collection bag into the orange burn bin.

- Check the puncture site after two minutes and if there is no evidence of bleeding apply a plaster followed by a gauze ball and skin tape.

- B/P can be checked 7-10 minutes post venesection .

- If the patient has had their feet raised during venesection lower them and check B/P 7-10 minutes later & during this time complete documentation.

- Place label in next week's appointment time.

- Ensure Patient is aware of discharge plan.

- Put a lab label including CNA (could not attend) and DNA (did not attend) in the admissions folder.

- If blood samples are collected, label same and check name and DOB with the patient write urgent blood forms. Ask the patient to ring the ward at the end of the week after 15.30pm for results.

- It is the responsibility of the nurse who obtains blood samples to check the results at the end of the week to see if the patient requires further venesections.

- Blood pressure, pulse rate and respiration rate should be recorded following procedure.

- A record of the procedure and outcome must be recorded.
- All blood samples must be treated, as potentially infectious and safe disposal/ transport of samples and safe sharps practice must be followed when taking or handling blood.
- The patient should be given replacement fluid at least equal to the volume of fluid removed in procedure before leaving (e.g. cup of tea/ 400mls)
- Patients should rest following the procedure for approximately 30 minutes or until they feel sufficiently recovered from the procedure.
- Discharge patient after appropriate time, providing all observations are satisfactory.

Before Patient Leaves:

- Advise them to seek medical advise if they develop any symptoms which suggest an infection (e.g. fever in the hours or days after the procedure)
- Provide contact numbers for the Day Clinical Centre or first point contact e.g. GP and /or attendance at the hospital's A&E
- Ensure follow up for assessment or next procedure date has been arranged

Safe Sharps Practice:

- Use vacutainer collection equipment or single use collection unit whenever feasible.
- Wear gloves when taking blood.
- Needles should never be recapped.
- Never carry sharps in your hand.
- Sharps disposal containers should be available at the point of use.
- Used equipment should be discarded into a sharps disposal container immediately after use. Equipment should never be over-filled: discard when ¾ full
- Needles and syringes should be discarded as a single unit.

Venesection Procedure using an 18 gauge needle or cannula

Purpose: for those with poor venous access who require venesection

- Prepare medical notes
- Prepare trolley for venesection.

Equipment required:

- 18 gauge IV butterfly needle with 60 ml syringe (x5)
- BP Cuff
- Alcohol Swabs
- Skin tape
- Sterile gauze balls x 2
- Dressing Tape
- Protection pad
- Recliner chair/ Couch with adjustable height/ Bed
- Clean Gloves & apron
- Appropriate Sharps Box and Burn Bin

Procedure:

1. **Prepare Patient & Equipment** (as with Single Blood Collection Unit)

2. **Perform Venepuncture**

    - Maintain BP cuff to 20-40 mm Hg
    - Select and clean site
    - Perform venepuncture **by** advancing butterfly needle appropriately

3. **Perform Venesection (phlebotomy)**

    - Attach leur lock adaptor to syringe and manually draw the blood.
    - Adjust the pressure of cuff to 40mm Hg
    - On completion release BP cuff and remove IV device
    - Apply pressure, dress site
    - Monitor patient and discharge per protocol as per Single Blood Collection Unit

4. **Post Venesection needle removal and discharge care as per Single Blood Collection Unit**

Appendix B: Looking after yourself (Advice for Patients)

Having Haemochromatosis does not mean that you have to go out of your way to avoid iron, but to regulate the amount of iron in your diet. It is better that you try to balance your intake, as foods containing iron will also contain other nutrients that are essential for your general well-being.

How can I control the iron in my diet?

There are two forms of dietary iron, known as haem and non-haem. Haem iron is found in animal tissues while non-haem iron exists in plant or vegetable materials.

The amount of iron you absorb from eating foods made from various plant sources ranges from around 1% up to 10%. Absorption from animal food sources is much higher, at between 10%and 20%.

You should avoid consumption of the following:

> Vitamins or multivitamin supplements that contain iron
> Vitamin C in pill form as this increases absorption of non-haem iron. Vitamin C from fruit and vegetables does not need to be avoided
> Breakfast cereals that are 'fortified' with iron
> Shellfish such as oysters, mussels and clams as these contain a bacteria that may be fatal to people with iron overload
> Because of the increased absorption from animal foods you may wish to cut down on eating red meat. Offal (organs such as heart, liver, kidneys etc.) in particular is very iron-rich.

There are certain substances that should be included in your diet:

> Calcium, as found in dairy foods, limits the absorption of haem iron (it is therefore helpful to consume dairy foods when you are eating meat)
> Tannin, as found in tea, limits the absorption of iron.

It is a good idea to develop a habit of reading the package labelling on processed foods to find out their nutritional content. You may be surprised to learn that even certain breads may have too much iron for you.

While watching your diet is essential, it is important to note that it is very unlikely you will prevent the development of haemochromatosis or be able to avoid the need for venesection by dietary means.

Alcohol and haemochromatosis

The relationship between excessive drinking and haemochromatosis remains the subject of much research. At one time, drinking too much alcohol was wrongly considered to be the cause of haemochromatosis.

Studies now show that the combination of alcohol and iron increases the way in which free radicals cause 'oxidative stress' in the body. This means that drinking alcohol is likely to speed up and worsen the impact of the disease. If you have cirrhosis it is sensible to avoid alcohol completely.

Exercise
A common symptom of haemochromatosis is not having the energy to carry out physical tasks. This may improve with venesection. You should talk with your Doctor or Nurse before undertaking any strenuous activity.

INFORMATION AND SUPPORT GROUPS

The Haemochromatosis Society
Hollybush House
Hadley Green Road
Barnet
Herts EN5 5PR
Tel: 020 8449 1363
Email: info@haemochromatosis.org.uk
www.haemochromatosis.org.uk

A group supporting patients with their problems. The Society promotes awareness among the health professionals, patients and their families, the general public and policy makers so the haemochromatosis may be diagnosed and treated in time. It encourages and supports research, and publishes a quarterly newsletter.

Irish Haemochromatosis Association
The Carmichael Centre
North Brunswick Street
Dublin 7
Email: info@haemochromatosis-ir.com
www.haemochromatosis-ir.com

A charity providing support and information for people with haemochromatosis and related disorders. The Association produces a newsletter, brochures and other media to provide information about, and raise awareness of haemochromatosis.

REFERENCES /ADDITIONAL READING

This Guideline should be read in conjunction with the following;

Genetic Haemochromatosis, Guidelines on diagnosis and therapy, British Committee for Standards in Haematology, British Society for Haematology.
Haemochromatosis, British Liver Trust.

Policy for performing Venesection, Southern Health and Social Care Trust (2006).

Policy for Intravenous Cannulation, Southern Health and Social Care Trust, (2006).

Venepuncture, Manual of Clinical Nursing Procedures, The Royal Marsden, (Intranet access SHSCT).

Guidelines for records and record keeping, Nursing and Midwifery Council, (2005).

Standards for conduct, performance and ethics for nurses and midwives, Nursing and Midwifery Council, (2008)