

Worldwide Hemochromatosis (Haemochromatosis)

References, Tips and Websites

© 2019 George R Lewycky <http://georgenet.net/bloodhemo> grlewicky [at] yahoo dot com

#iron #phlebotomies #exjade #organizations #clinicaltrials #fda #glossary #livertoxicity
#genetics #finding-a-doctor #tips #tests #Hemochromatosis #Haemochromatosis #liver #symptoms

FEEL FREE TO EMAIL ME OTHER WEBSITES OR INFO YOU THINK WOULD BENEFIT OTHERS HERE

```
<script type="text/javascript"
src="//rf.revolvermaps.com/0/0/6.js?i=5e3ilf7jle4&am;p;m=7&am;p;c=e63100&am;p;cr1=ffffff&am;p;f=arial&am;p;l=0&a
mp;bv=90&am;p;lx=-420&am;p;ly=420&am;p;hi=20&am;p;he=7&am;p;hc=a8ddff&am;p;rs=80" async="async"></script>
```

History & Genetics

The disease was first described in 1865 by [Armand Trousseau](#) in a report on [diabetes](#) in patients presenting with a bronze pigmentation of their skin which is why it's also called "*Bronzed diabetes*".

The term "haemochromatosis" was first used in 1889 by Friedrich Daniel von Recklinghausen https://en.wikipedia.org/wiki/Friedrich_Daniel_von_Recklinghausen describing the dark tissue staining in the liver now known to be from heavy deposits of haemosiderin leading to cirrhosis and organ damage.

A human has 23 pairs of chromosomes--a set from each parent. In the 1970s, French researchers first mapped the gene for hemochromatosis to the vicinity of the human lymphocyte antigen (HLA) region on the short arm of chromosome 6, in which 85% of the 178 patients diagnosed with hemochromatosis. The iron overloading disease has the same mutation in both pairs

Dr. John Feder and a team of scientists including Dr. Roger Wolff of Mercator Labs Menlo Park, California (also known as Progenitor Labs) discovered the gene for hemochromatosis, named it **HFE** (**h** for hemochromatosis, and **fe** for iron) in August 1996.

<http://www.the-scientist.com/?articles.view/articleNo/18979/title/Genetics/>
http://articles.latimes.com/1996-07-30/news/mn-29419_1_iron-overloading
<http://www.nature.com/ng/wilma/v13n4.868281725.html>
<http://www.pubfacts.com/author/Roger+K+Wolff>

<http://www.bioiron.org/pdf/nomenclature%202.pdf>

- **Juvenile hemochromatosis.** This affects adolescents and young adults ages 15 to 30. This form leads to a severe overload of iron, which can cause heart and liver disease.
- **Neonatal hemochromatosis.** In this form, iron builds up very quickly in an infant's liver and can cause severe organ damage.
- **Transfusion related hemochromatosis.** This is a result of iron overload caused by many blood transfusions in patients with disorders that cause them to not make enough red blood cells.

Myths & Realities

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2657669/>

<https://thechirurgionsapprentice.com/2016/07/28/the-cutters-art-a-brief-history-of-bloodletting/>

Famous people with HH

<http://blogcritics.org/even-celebrities-are-not-immune-to/>

- The Hemingway's: Ernest, his siblings Ursula and Leicester, his father Clarence, and his granddaughter Margaux
 - John Steinbeck
 - Steve (Terrence Steven) McQueen
 - John Vernon Bouvier III (father of former First Lady Jacqueline Kennedy Onassis)
 - Marie Warder
 - Beethoven (cirrhosis due to hemochromatosis?)
 - Jim Becker (Green Bay Packers)
 - Frederick Abinger (Tom) Warder
-

Youtube videos

Hemochromatosis videos on Youtube

https://www.youtube.com/playlist?list=PLyw5PCdDWDO5q_piCXWkoo2MNGF14SsES

Anemia & Hematology videos on Youtube

<https://www.youtube.com/playlist?list=PLyw5PCdDWDO683AuABWc7YZusWUmFSazh>

Related books on Amazon

https://www.amazon.com/hz/wishlist/ls/EEP2411VXD4C?ref_=wl_share

Twitter

Twitter resources and news

<https://twitter.com/search?src=typd&q=hemochromatosis>

<https://twitter.com/Haem>

<https://twitter.com/haemchrtosisIRL>

<https://twitter.com/HepCommJournal>

<https://twitter.com/IrishHaemAssoc>

<https://twitter.com/MolecPath>

<https://twitter.com/PKdeficiency>

International mailing list of patients provided by Iron Disorders Institute

<http://www.irondisorders.org/online-discussion-group/>

Phlebotomies & Locations

<http://www.hemoinfo.org/facilities/>

<http://www.fda.gov/BiologicsBloodVaccines/BloodBloodProducts/RegulationoftheBloodSupply/Variations/ucm164649.htm>

<https://www.fda.gov/vaccines-blood-biologics/regulation-blood-supply/list-establishments-granted-approval-variance-21cfr6403d-and-21cfr6403f>

<http://www.toomuchiron.ca/2014/04/therapeutic-phlebotomy-techniques-a-patients-view/>

https://en.wikipedia.org/wiki/List_of_blood_donation_agencies_in_the_United_States

https://en.wikipedia.org/wiki/Blood_donation

FDA Collection of Blood and Blood Products from Patients with Hemochromatosis

<https://www.fda.gov/BiologicsBloodVaccines/BloodBloodProducts/RegulationoftheBloodSupply/Variations/ucm164649.htm>

Donating Blood

Can I donate blood or will a blood bank accept my blood instead of me going for a phlebotomy ?

<http://abcnews.go.com/Health/MensHealth/football-fan-paying-tickets-saved-fatal-disease/story?id=10109129>

<http://www.ncbi.nlm.nih.gov/pubmed/15190395>

<http://www.redcrossblood.org/donating-blood/eligibility-requirements/eligibility-criteria-topic>

Blood tests & calculations

<https://www.omnicalculator.com/health/transferrin>

<https://www.omnicalculator.com/health/bmi>

CHELATION, Exjade & Phlebotomies alternatives

<http://georgenet.net/bloodhemo/FILES/images/Phlebotomy%20alternatives.jpg>

http://www.afferix.com/PDF/Porter_DFO_DFX_2013.pdf

<http://www.irondisorders.org/chelation-therapy>

<http://www.thalassemia.com/treatment-chelation.aspx#gsc.tab=0>

<http://www.thalassemiapatientsandfriends.com/index.php/board,5.0.html>

<http://www.us.exjade.com/index.jsp>

Clinical Trials

<http://hemonc.cho.org/media/2015-sickle-cell-research-studies.pdf>

<https://clinicaltrials.gov/>

<https://clinicaltrials.gov/ct2/about-studies/learn>

<https://clinicaltrials.gov/ct2/results?term=hemochromatosis&Search=Search>

<http://navigator.reaganudall.org/>

Iron

http://www.anemiainwomen.com/html/about_iron.htm

<http://www.melbournehaematology.com.au/pdfs/guidelines/melbourne-haematology-guidelines-iron-studies.pdf>

<http://www.merckmanuals.com/home/blood-disorders/iron-overload/hemochromatosis>

<http://www.webmd.com/a-to-z-guides/iron-fe>

https://en.wikipedia.org/wiki/Iron_overload

<https://getpocket.com/explore/item/iron-is-the-new-cholesterol>

blood transfusions (<http://www.nhlbi.nih.gov/health/health-topics/topics/bt>)

Certain medications can absorb Iron also <http://www.toomuchiron.ca/2014/04/therapeutic-phlebotomy-techniques-a-patients-view/>

Transplants or being a donor

<https://unos.org/>

<https://organize.org/>

https://www.research.va.gov/research_in_action/First-successful-liver-transplant.cfm

<https://transplant.surgery.ucsf.edu/conditions--procedures/liver-transplant.aspx>

<https://www.mayoclinic.org/tests-procedures/liver-transplant/about/pac-20384842>

<https://liverfoundation.org/for-patients/about-the-liver/the-progression-of-liver-disease/liver-transplant/>

<https://columbiasurgery.org/liver/faqs-about-life-after-liver-transplant>

<https://my.clevelandclinic.org/health/treatments/8111-liver-transplantation>

<https://www.nyp.org/transplant/transplant-services/liver-transplant>

<http://www.childrenshospital.org/conditions-and-treatments/treatments/liver-transplant>

<https://www.uchicagomedicine.org/conditions-services/transplant/liver-transplant>

<https://www.yalemedicine.org/conditions/liver-transplant/>

Rare Disorders

<https://rarediseases.org> National Organization for Rare Disorders

<https://rarediseases.org/contact-us/>

<https://www.raredisorders.ca/> (Canada CORD)

<https://rarediseases.org/> (United States NORD)

<https://www.raredisorders.ca/resources/> Assorted International organizations

Liver Glossary

<http://www.globalliver.org/liver-glossary>

<https://livertox.nih.gov/glossary.html>

Children's Liver Association

http://samples.sainsburysebooks.co.uk/9781444300543_sample_383161.pdf

<http://www.childrenshospital.org/conditions-and-treatments/treatments/liver-transplant>

<https://www.classkids.org/>

American Liver Foundation: www.liverfoundation.org

CORE- Center for Organ Recovery & Education: www.core.org

Children's Hospital of Pittsburgh: <http://www.chp.edu/our-services/transplant/liver/liver-transplant-necessary/liver-diseases-transplant>

Are your medications (past & present) safe on your liver

Liver Toxicity database of Medications (DILI/DILD) - see if your medications past or present could be causing liver damage

<https://livertox.nih.gov/>

<https://livertox.nih.gov/drugliverinjury.html>

Drug Induced Liver Injury (Disease) DILI / DILD

<http://www.hepcnet.net/drugsandliverdamage.html>

http://www.liverfoundation.org/downloads/alf_download_614.pdf

<https://www.merckmanuals.com/home/liver-and-gallbladder-disorders/drugs-and-the-liver/effects-of-drugs-on-the-liver>

Medications, Side effects and Dictionary

<https://www.drugs.com/>

can create your own account to track past and present meds

<https://www.rxlist.com>

<https://www.rxlist.com/drug-medical-dictionary/article.htm>

<https://www.fda.gov/drugs/drug-information-consumers/finding-and-learning-about-side-effects-adverse-reactions>

ORGANIZATIONS - WORLDWIDE

Hemochromatosis Information Society

<http://www.hemoinfo.org/>

<http://www.hemoinfo.org/facilities/>

Gastroenterological Society of Australia

<https://www.gesa.org.au/resources/patients/health-information-fact-sheets/>

<https://www.gesa.org.au/resources/reference-links/> worldwide organizations

<https://twitter.com/HepCommJournal>

British Liver Trust

<https://www.britishlivertrust.org.uk/liver-information/liver-conditions/haemochromatosis/>

The Haemochromatosis Society (Haemochromatosis UK)

<http://haemochromatosis.org.uk/>

<http://haemochromatosis.org.uk/resources/>

Irish Haemochromatosis Association

<http://www.haemochromatosis-ir.com/home.html>

<http://www.haemochromatosis-ir.com/other-associations-and-societies>

Global Liver Institute

<http://www.globalliver.org/resources> Liver Disease Resources

<https://twitter.com/GlobalLiver>

Hepatoma Research

<https://hrjournal.net/>

<https://twitter.com/HepatomaRes>

Canadian Hemochromatosis Society (CHS)

<https://www.toomuchiron.ca/>

<https://www.blood.ca/en/blood/iron>

<https://www.toomuchiron.ca/support/chapters/>

<https://twitter.com/IronOutCanada>

International BioIron Society

<http://www.bioiron.org/default.aspx>

<http://www.bioiron.org/resources/links.aspx>

Haemochromatosis UK

<http://haemochromatosis.org.uk/>

<https://www.facebook.com/groups/haemochromatosis/>

<https://twitter.com/IronOverloadUK>

<http://haemochromatosis.org.uk/wp-content/uploads/2017/09/001-THS-2017-Pharmacists-no-bleed.pdf>

Irish

Irish Haemochromatosis Association – Dublin:

<http://www.haemochromatosis-ir.com/>

IRISH DNA ATLAS PROJECT

<https://www.familyhistory.ie/index.php/en/2012-04-22-23-12-47>

https://www.familyhistory.ie/docs/DNA/DNA_01.pdf

<http://www.americanhs.org/irish%20in%20the%20blood.htm>

Celtic Curse

<http://celticcurse.org/>

<https://twitter.com/CelticCurse>

Haemochromatosis Australia

<http://www.haemochromatosisza.org/>

<http://www.melbournehaematology.com.au/>

<https://haemochromatosis.org.au/>

<https://haemochromatosis.org.au/links/>

<https://haemochromatosis.org.au/wordpress/wp-content/uploads/2018/04/HYQA2017-web.pdf>

<https://twitter.com/Haem>

UNITED STATES ORGANIZATIONS

American Hemochromatosis Society

<http://www.americanhs.org/>

<http://www.americanhs.org/faq.htm>

<https://twitter.com/testhfe>

Iron Disorders Institute (U.S.) www.irondisorders.org

National Heart, Lung, and Blood Institute (U.S.) www.nhlbi.nih.gov

American Liver Foundation (ALF)

<http://www.liverfoundation.org>

American Association for the Study of Liver Diseases

<https://www.aasld.org>

<http://americanhs.org>

<https://twitter.com/AASLDTweets>

Iron Disorders Institute

<http://www.irondisorders.org/>

<https://www.hemochromatosis.org/>

<https://www.hemochromatosis.org/connect-with-us/>

Genetics & finding a Genetics Counselor (USA & Canada)

Geneticist / Genetics Counselor – maybe if planning on children or need medical clarifications

(US) <http://www.nsgc.org/page/find-a-gc-search>

(Canada) <https://www.cagc-accg.ca/index.php?page=225&id=>

(Glossary) <https://www.genome.gov/glossary/index.cfm>

<http://www.bioiron.org/pdf/nomenclature%202.pdf>

<http://consumerhealthchoices.org/wp-content/uploads/2015/10/ChoosingWiselyGeneticTestsACMG-ER.pdf>

Navigating the Genetics of Iron Overload

<http://rickssnp.weebly.com/doctors.html> | <http://rickssnp.weebly.com/genetics-terms.html>

The Hemochromatosis Gene <http://ironic-health.com/>

LINKS TO FIND A DOCTOR

Links below can help you find doctors based on your city, zipcode, insurance, etc.

<https://health.usnews.com/doctors>

<https://www.castleconnolly.com/>

<https://www.consumerreports.org/doctors/how-to-find-a-good-doctor/>

<https://www.healthgrades.com/>

<https://www.zocdoc.com/>

<https://amino.com/find-care/>

Finding a Hemochromatosis Doctor

<http://www.americanhs.org/doctors.htm>

<http://celticcurse.org/wp-content/uploads/hemo-doc-stars-list-7-2014.pdf>

<http://www.lifescrypt.com/doctor-directory/condition/h-hereditary-hemochromatosis.aspx>

Expertscape Ranks Top Doctors and Hospitals in Hemochromatosis

<http://www.expertscape.com/ex/hemochromatosis>

<https://www.prlog.org/12273488-expertscape-ranks-top-doctors-and-hospitals-in-hemochromatosis.html>

Doctors

What doctor(s)/specialists should I see or might be involved with?

- Gastroenterologist
- Hepatologist – liver specialist
- Endocrinology - diabetes is common with HH

- Hematologist/Oncologist – study and analyze your bloodwork; genetics; phlebotomies (removing blood to lower the Iron in your blood stream)
- Nutritionist/Dietician – to remove Iron out of the your diet and increase other nutrients you might need
- Pathologist – reviews MRI, CAT, Ultrasound or Biopsy
 - Might be beneficial to get 2nd opinions or ask the doctor for another review
- Geneticist / Genetics Counselor – maybe if planning on children or need medical clarifications
 - (US) <http://www.nsgc.org/page/find-a-gc-search>
 - (Canada) <https://www.cagc-accg.ca/index.php?page=225&id=>
 - (Glossary) <https://www.genome.gov/glossary/index.cfm>
- **Consider 2nd opinions or even firing your doctor and re-evaluating test results if you are not satisfied**

Check to see if the doctor has experience with Hemochromatosis, phlebotomies, liver diseases.

As always keep copies of your medical tests and records, remember Doctors move, retire, pass away, etc.

Teaching hospitals are a good place to start and they would all be on the same computer/records system also

Common Tests/Diagnostics

- **Blood Tests**
 - <https://labtestsonline.org/> good reference of values of many blood tests that are done
 -
- Standard
 - Liver Function Tests (LFT) - <http://www.aafp.org/afp/1999/0415/p2223.html>
 - Complete Blood Count (CBC)
 - Ferritin – over 200-300 ng /ml is probably hemochromatosis
 - Ferritin reflects the body's iron stores. Blood ferritin levels increase when the body's iron stores increase.
 - <https://medlineplus.gov/ency/article/003490.htm>
 -
 - Transferrin saturation (TSAT) –
 - Transferrin is a protein that binds and transports iron around the body. With higher levels of iron, more of the transferrin is carrying iron. Transferrin saturation rates of 45 percent should be evaluated.
 - (transferrin saturation index) = serum iron / TIBC
 - Try to keep between 20- 50%
 - Hgb
 - ALT <http://www.gastroendoneews.com/Hepatology-in-Focus/Article/08-17/ACG-Redefines-Normal-Range-of-ALT/42158>
 -
 - MCV – if low probably iron deficiency until hematologist reviews case.
 - Iron deficiency says they are bleeding until some good gastroenterologist
 - Indicator of bone marrow is a rich dark-maroon color laden with iron or a dull gray victim of piracy from occult bleeding, malabsorption, genetic sabotage, or dietary neglect
 - Iron panel
 - Serum Iron <https://medlineplus.gov/ency/article/003488.htm>
 -
 - serum ferritin and/or gamma-glutamyl transpeptidase (GGT) levels
- Additional
 - Vitamin D - deficiency very common
 - <http://articles.mercola.com/sites/articles/archive/2014/05/28/vitamin-d-deficiency-signs-symptoms.aspx>

- B12 – red cells reproduction especially if anemic or Hgb drops
 - NOTE: some laboratories have different ranges and they can be computed on age, gender
- **Ultrasound (US)**
 - Don't take Pathologist report/findings as gospel, might need MRI
- **MRI (w/wo contrast)**
- **MRI w/ Ferriscan** - accurate measurement of liver iron concentration (LIC) through a non-invasive, MRI-based technology
 - <http://www.resonancehealth.com/products/ferriscan-mri-measurement-of-liver-iron-concentration.html>
 - <http://www.resonancehealth.com/images/files/FerriScan/FerriScan%20Fact%20Sheet%20Mar%202015.pdf>
 - <http://haemochromatosis.org.au/wordpress/wp-content/uploads/2012/12/Ferriscan-Fact-Sheet-Web.pdf>
 - <https://twitter.com/hashtag/ferriscan>
- **Bone marrow aspiration** is a procedure that involves taking a sample from the soft tissue inside your bones. Bone marrow is the spongy tissue found inside bones. It contains cells that produce white blood cells, red blood cells, and platelets inside larger bones such as the: spine and *invasive*
-
- **Bone marrow aspiration (biopsy):** the procedure is similar to liver biopsy in that a needle is used to penetrate the bone marrow. The needle gathers a small amount of tissue from the marrow, which is stained for iron in the same way as a liver biopsy. Bone marrow tissue reveals the blood cell health and activity. This procedure is performed most often on patients with blood cancers, unexplained iron deficiency anemia or who are preparing for bone marrow transplantation. (*invasive & gold standard but risky*)
 - <http://www.mayoclinic.org/tests-procedures/bone-marrow-biopsy/basics/why-its-done/prc-20020282>
 - <http://www.pathologyoutlines.com/topic/bonemarrowiron.html>
-
- **Fibroscan** to see if Iron is in your liver besides your bloodstream. *non-invasive* technology
 - <http://www.myliverexam.com/en/lexamen-fibroscan.html>
 - <http://www.fibroscan.com/en/products>
 -
- **CT (computed tomography) -**
- **Genetics** (HFE: C282Y or H63D are the most common. S65C & 845A also exist)
 - LAL-D
- **Bone Density test** – especially if Vitamin D deficient, Osteoporosis
- **Ferritometer** - or **SQUID** for Superconducting Quantum Interference Device—is a *non-invasive* technology that measures liver iron in about 15 minutes using super-cooled magnets. Uses magnetic fields to measure the amount of iron stored in the liver. Non-invasive liver iron measurements are currently available at two locations in the United States: Columbia-New York Presbyterian in New York (SQUID) and Children's Hospital & Research Center in Oakland, California.
 - <http://www.indianpediatrics.net/apr2012/apr-268-269.htm>
 - <http://www.tristantech.com/>
 - http://www.ironotoxicity.com/hcp/diagnosis/imaging_studies/magnetic.jsp
 -
 - UCSF Benioff Children's Hospital Oakland has one of only four ferritometers in the world. <http://www.thalassemia.com/research-squid.aspx#gsc.tab=0>
 - <http://www.childrenshospitaloakland.org/main/news/204.aspx>
 - http://www.chori.org/Current_News/Previous_Years/01_feb_ferritometer.html
- **Liver Biopsy** – the **gold standard** and *invasive*
 - http://www.hopkinsmedicine.org/gastroenterology_hepatology/clinical_services/specialty_services/liver_biopsy.html
 - Liver stores 70% of body's iron
 - Liver biopsy will help confirm the diagnosis and identify the amount of scarring, if any, in the liver.
 - Don't take Pathologist report/findings as gospel
 - Can request your slides be reviewed by another pathologist (2nd opinion)

- **Aixplorer** - the first ultrasound system to provide you with the following imaging benefits of ShearWave Elastography which is a comfortable, non-invasive technology that can be used for assessing and staging patients with chronic liver disease
 - <http://www.supersonicimagine.com/Aixplorer-R/Hepatology-Gastroenterology>
 - <http://www.sandhillsci.com/wp-content/uploads/2016/03/Sandhill-Aixplorer-Brochure.pdf>

FIRST DOCTOR VISIT

What do I tell my doctor ?

Ever had any blood transfusions – could explain iron

Family Heritage / Genetics – your last name might not be obvious for them to detect if Irish, Italian, etc that usually have HH

Medications & Supplements you take past and present

Especially medication that are known to damage your liver

<https://www.merckmanuals.com/home/liver-and-gallbladder-disorders/drugs-and-the-liver/effects-of-drugs-on-the-liver>

Tattoos even

USUAL DOCTOR EXAM / RE-EXAM

Blood test

Checking Thyroid and ankles

Examine liver area (fatty liver, etc)

Decide if you need a phlebotomy (maintenance)

Review you medications (past & present) especially highlight medications listed here:

<http://www.hepcnet.net/drugsandliverdamage.html>

<https://www.merckmanuals.com/home/liver-and-gallbladder-disorders/drugs-and-the-liver/effects-of-drugs-on-the-liver>

<http://drugs.com> has a good feature that's free to maintain your medications and print it when needed

Family & Medical history and/or heritage and genetics (Last name/Married name misleading)

Drinking alcohol

Ask if vaccines needed: Hepatitis A & B ?

Any Liver issues currently, or family history (cancer, hepatitis, etc)

<http://www.mayoclinic.org/diseases-conditions/hemochromatosis/diagnosis-treatment/preparing-for-appointment/ptc-20167333>

Images of HH, Organs affected, Liver

<http://georgenet.net/bloodhemo/FILES/FirstTimers/OrgansAffectedIron-Overload.jpg>

http://georgenet.net/bloodhemo/FILES/FirstTimers/Hepatic_PhysicalSigns.jpg

http://georgenet.net/bloodhemo/FILES/FirstTimers/Diagram_ChronicLiverDisease.jpg

<http://georgenet.net/bloodhemo/FILES/images/hemochromatosis.jpg>

<http://georgenet.net/bloodhemo/FILES/images/Skin%20bronzing.jpg>

<http://georgenet.net/bloodhemo/FILES/images/liverdiagram2.jpg>

Images of NASH & NAFLD

http://georgenet.net/bloodhemo/FILES/images/liverstages_NASH.jpg

<http://georgenet.net/bloodhemo/FILES/images/NASH%20%26%20NAFLD.png>

http://georgenet.net/bloodhemo/FILES/images/NAFLD_Nature.jpg

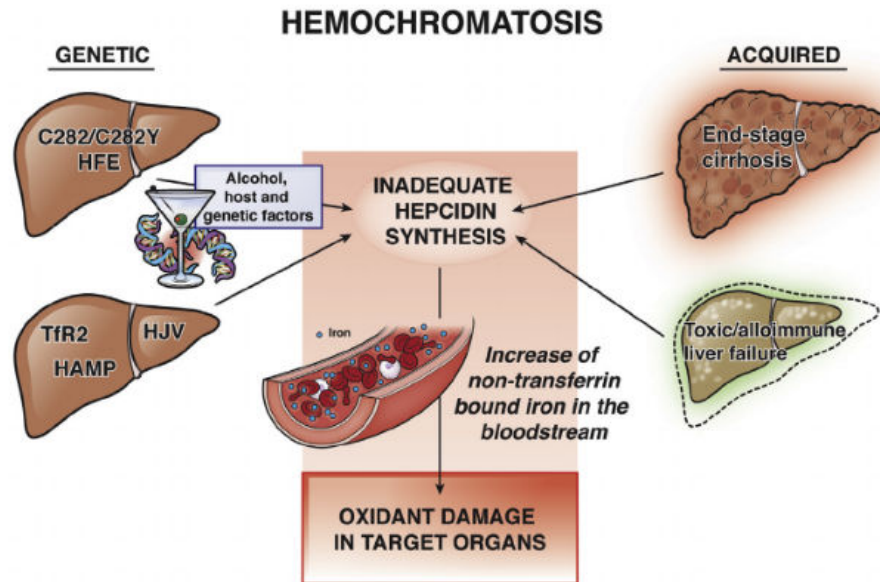
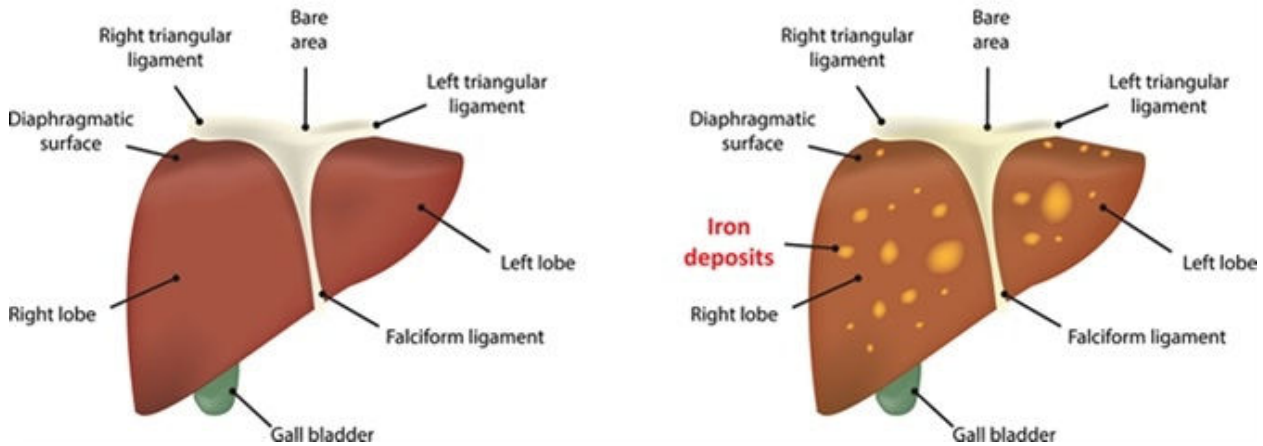


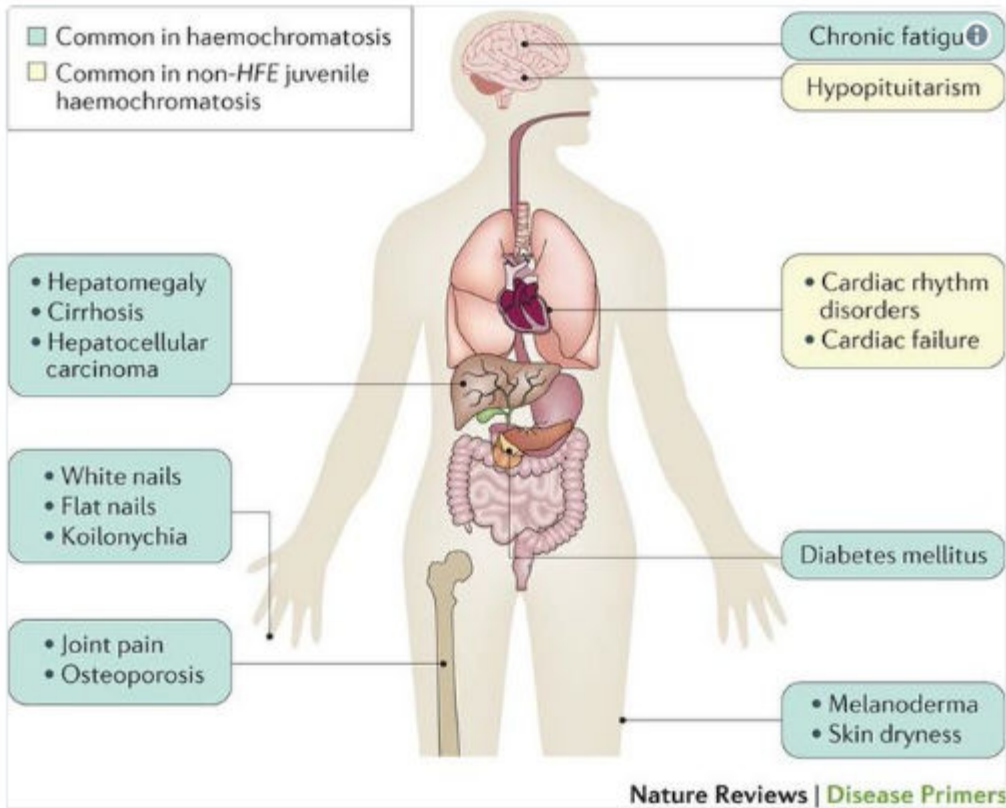
Figure 5. Genetic and nongenetic causes of hemochromatosis. The clinical syndrome of hemochromatosis, characterized by inappropriate hepcidin synthesis/activity, progressive appearance in the serum of non–transferrin-bound iron, including redox-active forms, such as labile plasma iron, followed by tissue iron overload in parenchymatous organs is associated with genetic loss of proteins involved in hepcidin regulation (genetic or hereditary hemochromatosis) or hepatic disorders leading to persistent and prolonged loss of hepcidin-producing liver mass (acquired hemochromatosis) (see text for details).

Hereditary Haemochromatosis

Healthy

Iron Overload





NatureRevDisPrimers
 @DiseasePrimers



#Haemochromatosis can be asymptomatic for many years. When symptoms manifest, they can be general and affect several organ systems go.nature.com/2GFCr9G

6:03 PM - Apr 6, 2018

11 16

By George R Lewycky

Grlwycky [at] yahoo dot com

<http://Georgenet.net/bloodhemo>

Friday, August 16, 2019