



# Blood Day for Primary Care

What should I do to investigate a high ferritin?

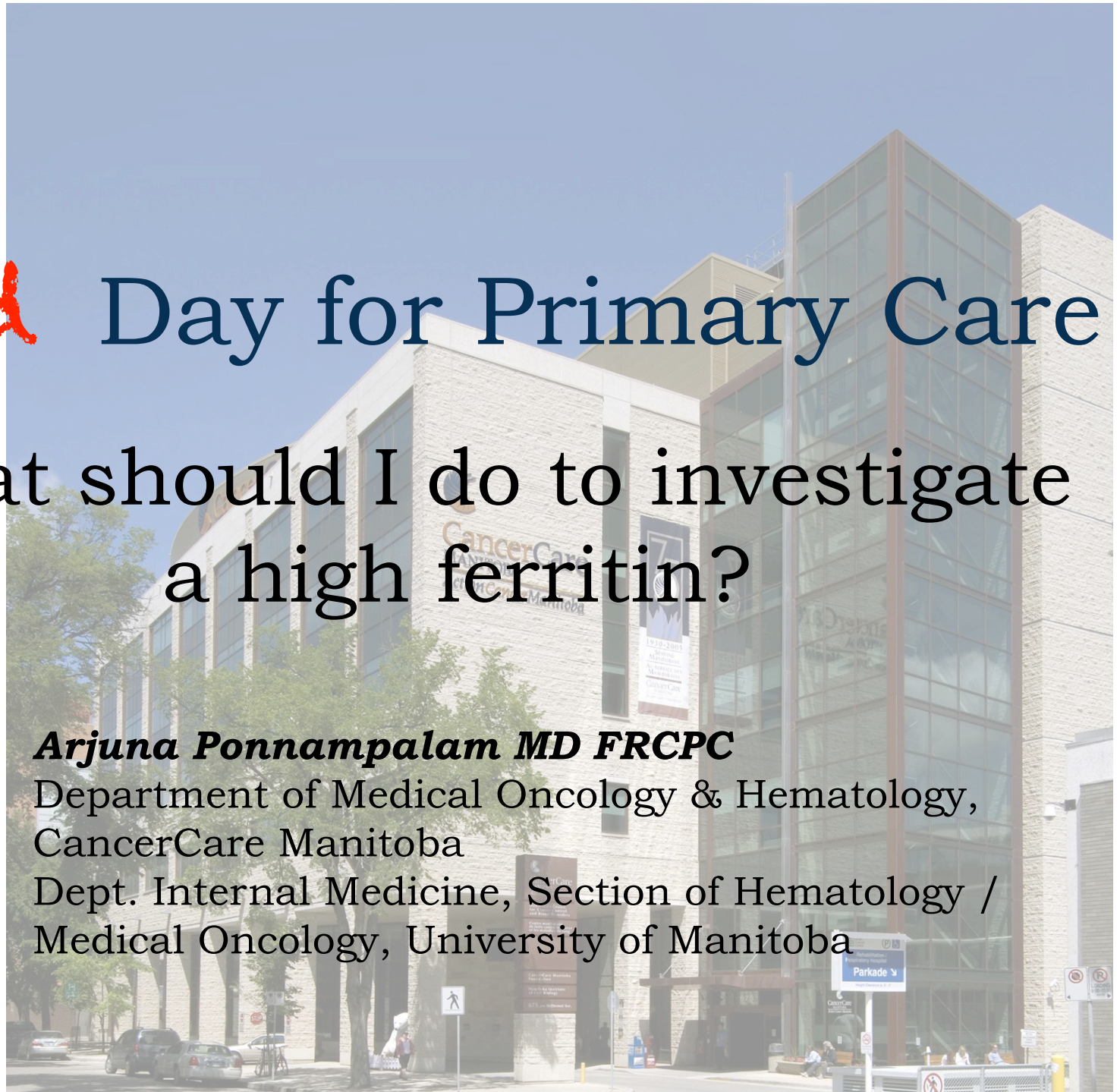
***Arjuna Ponnampalam MD FRCPC***

Department of Medical Oncology & Hematology,  
CancerCare Manitoba

Dept. Internal Medicine, Section of Hematology /  
Medical Oncology, University of Manitoba



UNIVERSITY  
OF MANITOBA





# Disclosures

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No relevant disclosures



## Objectives

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1. Develop working knowledge of iron homeostasis and storage as it relates to ferritin
2. Develop a broad differential diagnosis for an elevated ferritin in an adult patient
3. Clarify utility of HFE gene testing in selected individuals
4. Clarify the role of phlebotomy in patients with iron overload



## Interactive question

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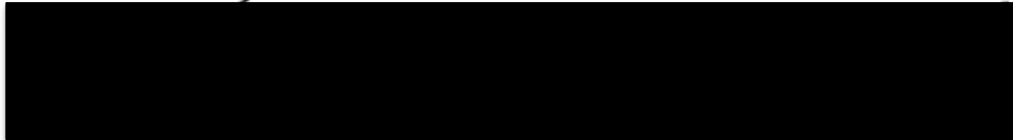
1. Which of the following is the most common cause of an elevated ferritin in a patient presenting to your practice?
  - a) Hepcidin mutation
  - b) HFE C282Y/C282Y mutation
  - c) Inflammation
  - d) Transfusion support



Dr. HEMATOLOGY ONCOLOGY DEPARTMENT  
HEALTH SCIENCES CENTRE MS5-820 SHERBROOK STREET  
WINNIPEG, MB  
R3E0Z3  
Phone: Fax:

JUL 21 2011  
REFerral OFFICE

787-2197 / 786 0621



Dear Dr.

Thank you for seeing [REDACTED], a 42 year old male patient. He has been having markedly increased ferritin levels with his last level being 1013. His Iron was 35 and TIBC was 52. He also had a CXR and CT abdomen done that was normal. The patient denies any joint pains and his physical examination was essentially normal. He is also awaiting and allergist review for large unexplained hives/ urticaria that he gets all over his body at times. I will attach copies of his results. Your review of this patient and advise on management is appreciated.

**Active Medications:** EXPIRED LOSEC 20 MG DELAYED RELEASE CAPSULE EXPIRED 1 CAP QD 1 MO30  
DICLOFENAC 4% GEL AND LIDOCAINE 2% GEL 1 APPLN BID PRN 1 MO30 As directed  
elbow brace- narrow see instructions for tennis elbow right arm  
Physiotherapy see instructions For right tennis elbow  
EXPIRED BETADERM VALERATE 0.1% TOPICAL CREAM EXPIRED 1 APPLN BID PRN 30 Day  
EXPIRED NIX CREAM RINSE TOPICAL SOLUTION EXPIRED 1 APPLN QD 1 Day Aply from head to toe and leave on for 8 hours

**Allergies:** No Allergies recorded  
**Medical History:** mildly elevated lipids

**Family History:**

Sincerely,

11



LAB # 08874		Jan 24, 2014		UNITS
ALKALINE PHOSPHATASE	63		50 - 125	U/L
GGT	80	*	0 - 50	U/L
AST	49	*	< 35	U/L
ALT	75	*	10 - 40	U/L
IRON	35	*	5 - 30	umol/L
TIBC	52	*	50 - 75	umol/L
FERRITIN	1013	*	25 - 400	ng/L
B12	395	*	133 - 430	pmol/L
TSH	1.2		0.4 - 4.2	mU/L
FREE T4	13.7		9.7 - 25.7	pmol/L
FREE T3	6.0		3.7 - 6.9	pmol/L

*usl*



**REQUEST FOR CONSULTATION**

To: St Bon. Face Hospital

Hematology

Fax Number: 786-0621



CONSULTATION DATE:

DATE: \_\_\_\_\_

TIME: \_\_\_\_\_

NO SHOW FEE: \_\_\_\_\_

(lives in a group home)

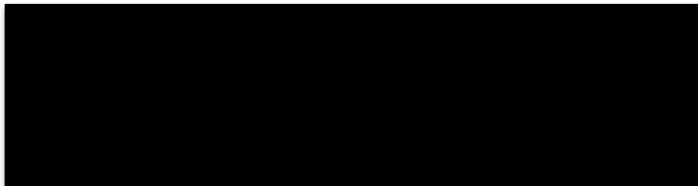
family history of  
hemochromatosis

Robert has cerebral  
palsy  
and iron studies

? hemochromatosis

Please review & advise

Thank you



Priority: Normal  
Specimen Date: 15 May 14  
Specimen Time: 02:33  
Received Date: 15 May 14  
Date Printed: 16 May 14

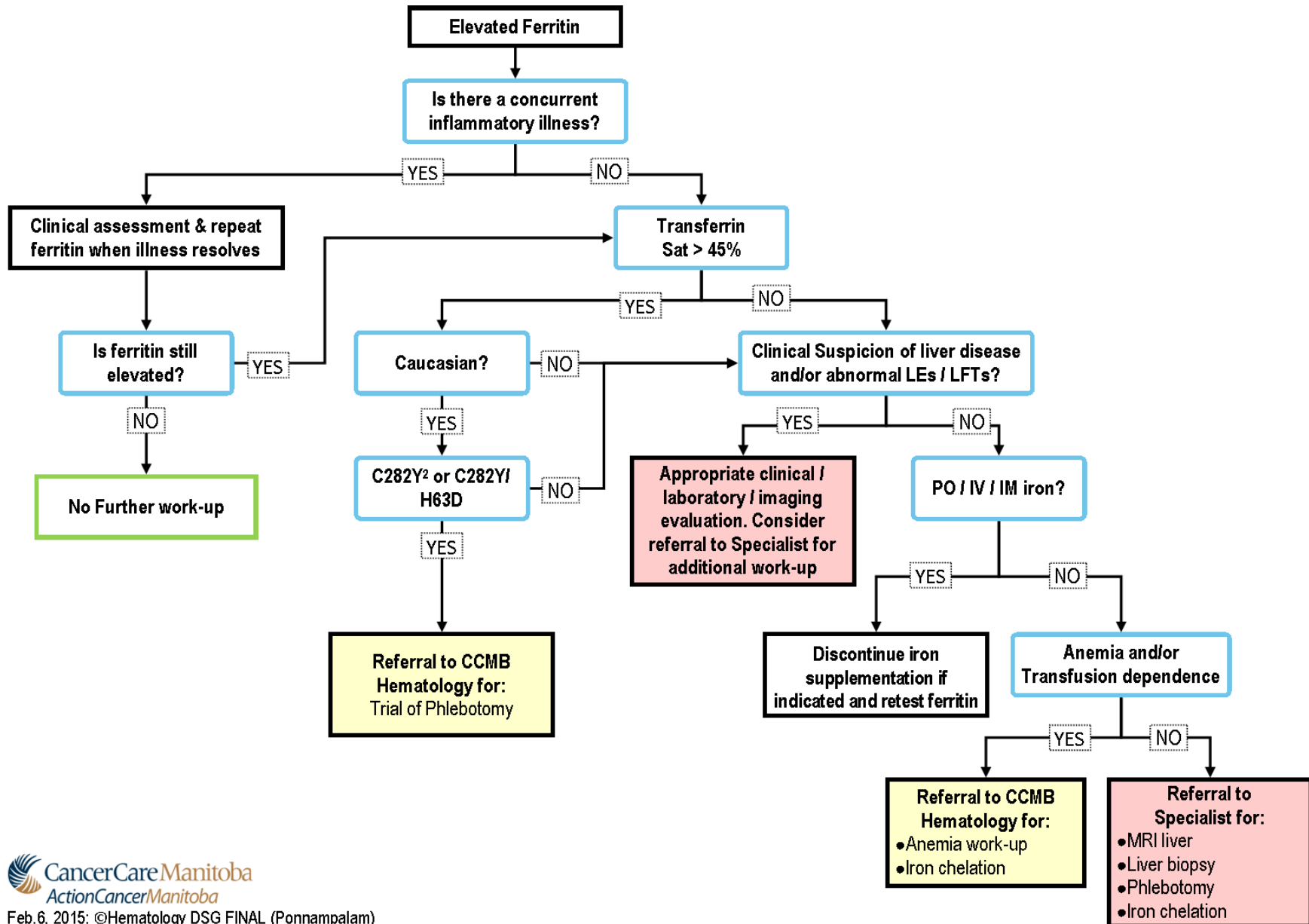
**HAEMATOTOLOGY**

Iron	18	9 - 30	umol/L	
Iron Binding (TIBC)	*29*	45 - 81	umol/L	#
IRON % SATURATION = 62%				#
Ferritin	1041	< 12.0	ug/L	Iron deficient
		12.0 - 30.0	ug/L	Depleted iron store
		31.0 - 79.0	ug/L	Reduced iron stores
		80.0 - 300.0	ug/L	Normal iron stores
		> 300.0	ug/L	Likely iron overload

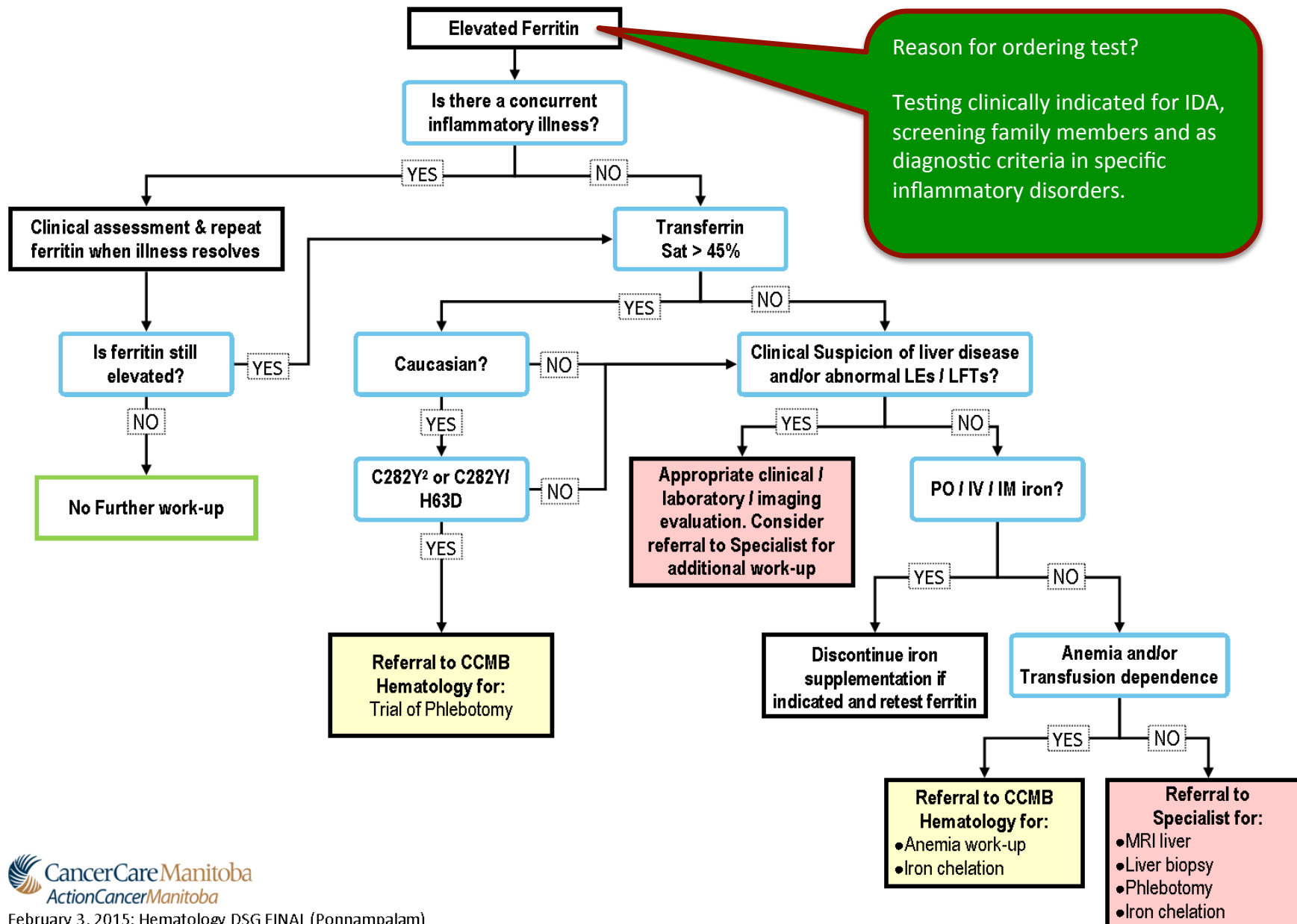
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# Work-Up of HIGH FERRITIN



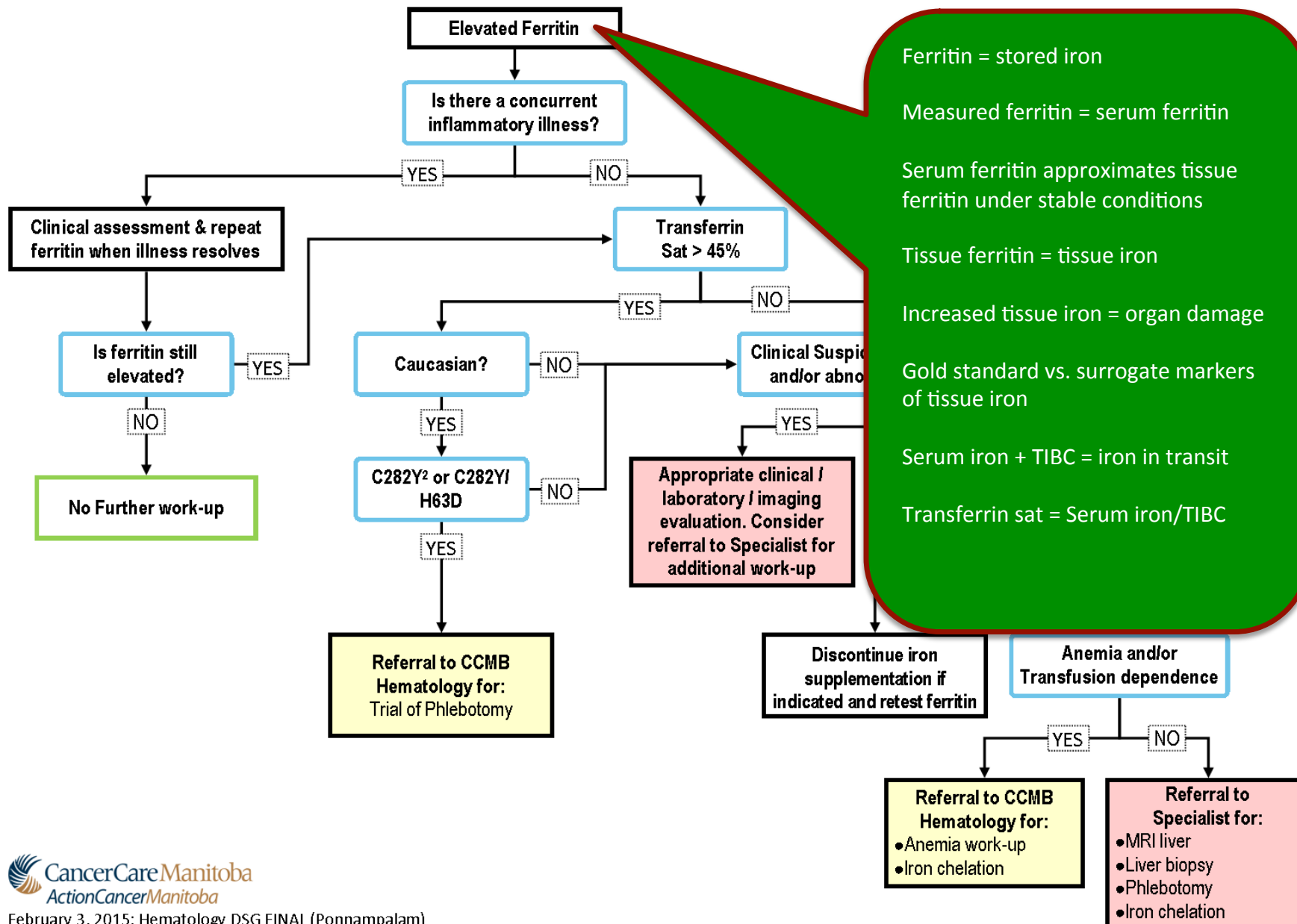
## Work-Up of HIGH FERRITIN



Reason for ordering test?

Testing clinically indicated for IDA, screening family members and as diagnostic criteria in specific inflammatory disorders.

## Work-Up of HIGH FERRITIN



Ferritin = stored iron

Measured ferritin = serum ferritin

Serum ferritin approximates tissue ferritin under stable conditions

Tissue ferritin = tissue iron

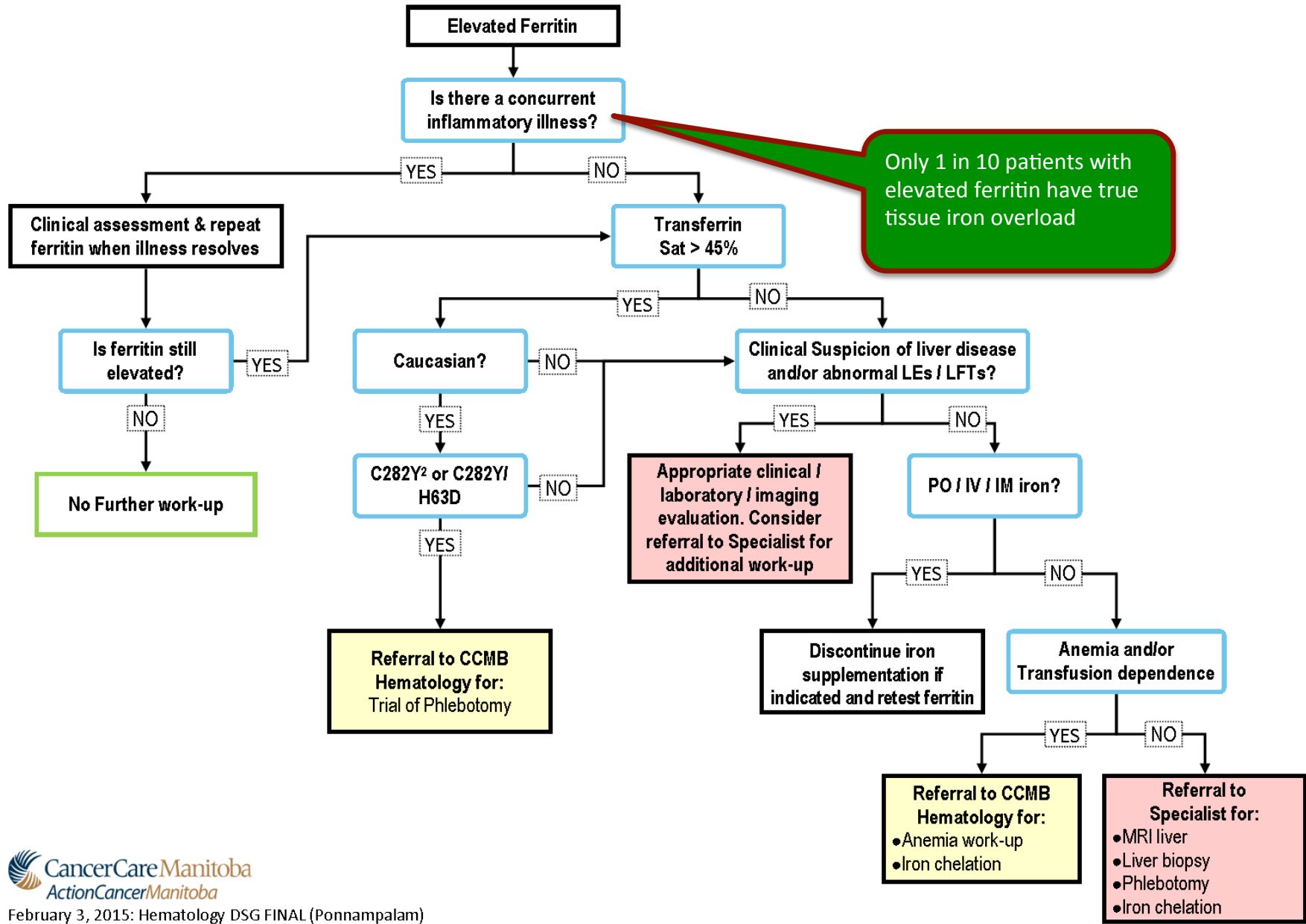
Increased tissue iron = organ damage

Gold standard vs. surrogate markers of tissue iron

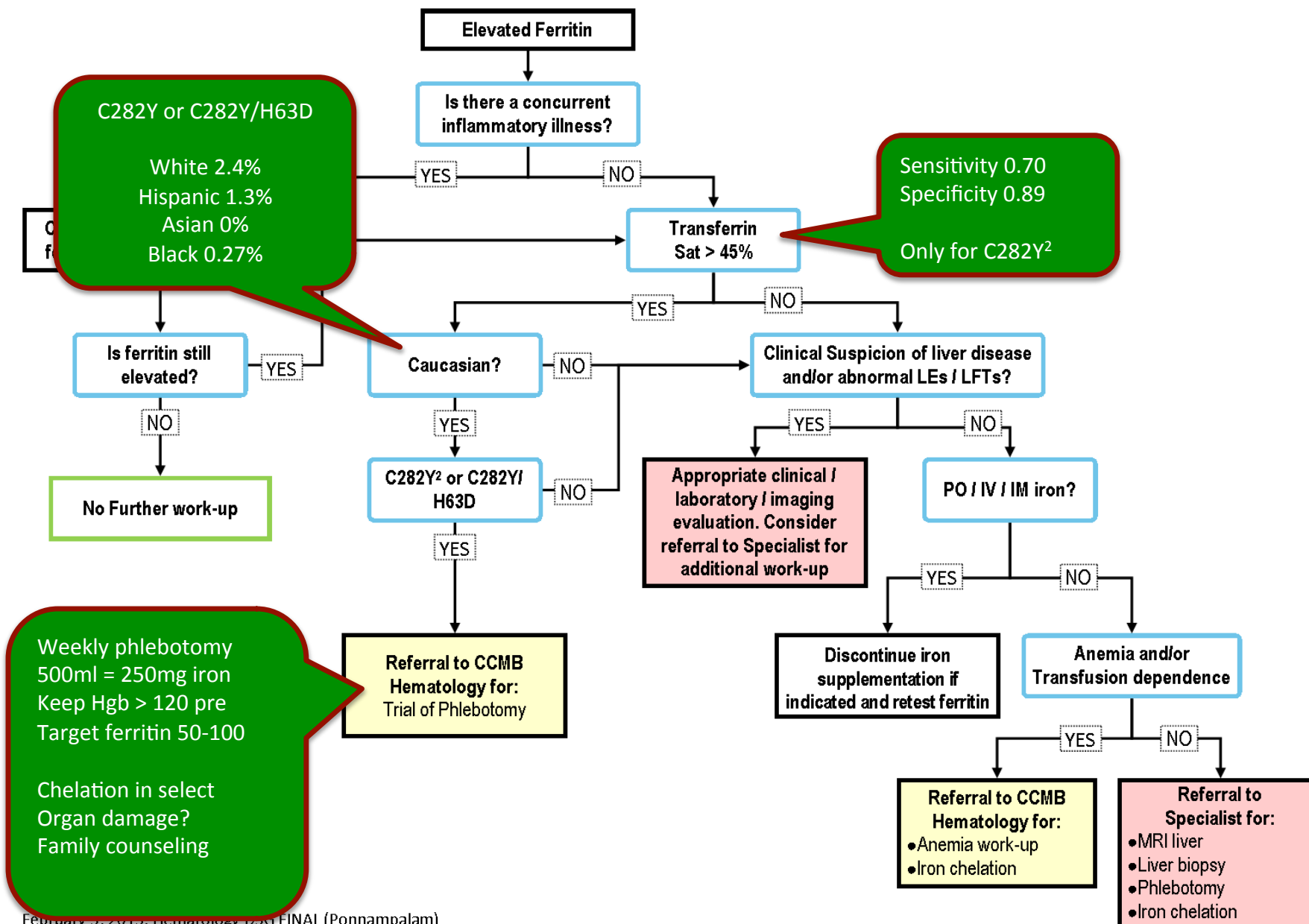
Serum iron + TIBC = iron in transit

Transferrin sat = Serum iron/TIBC

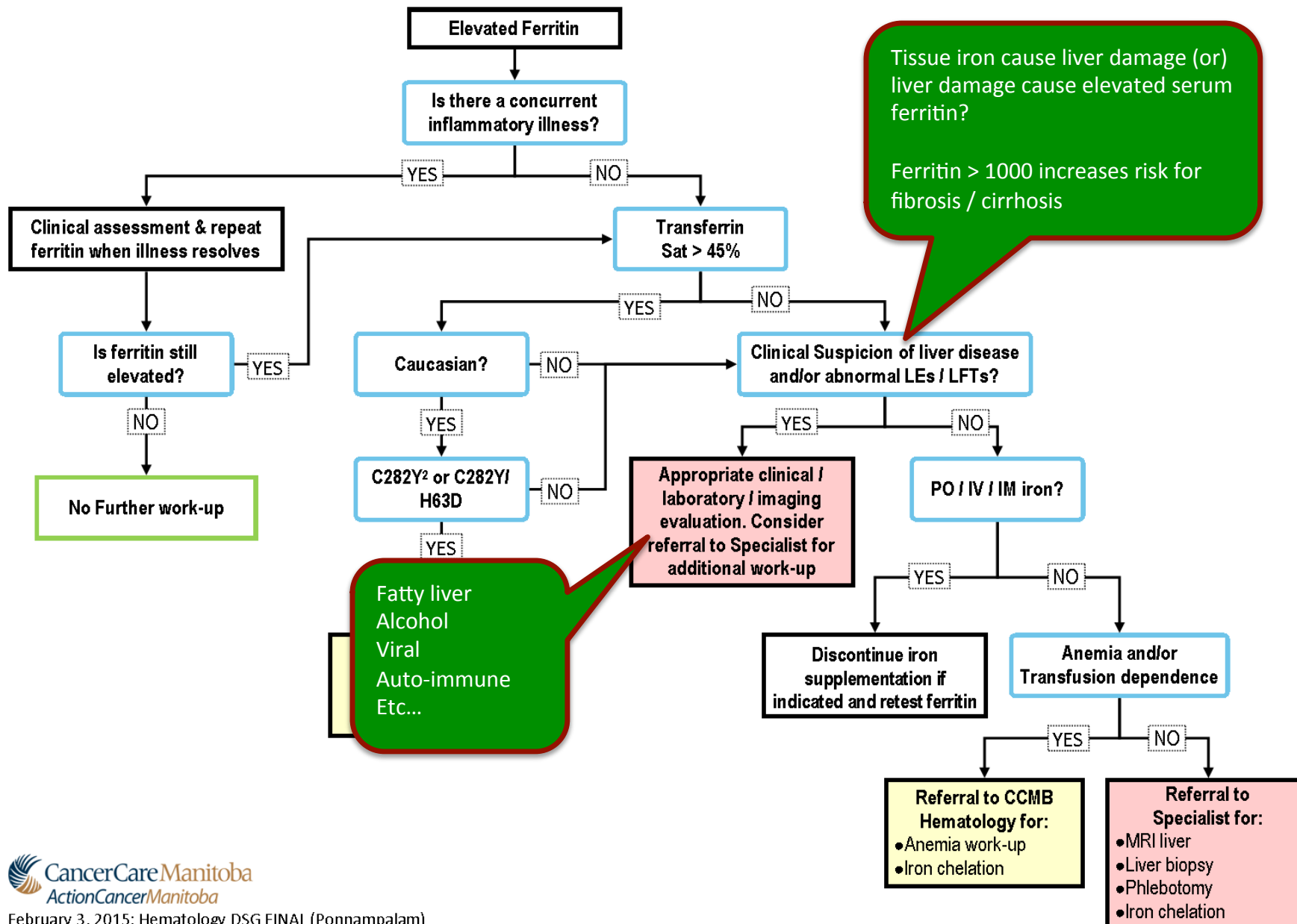
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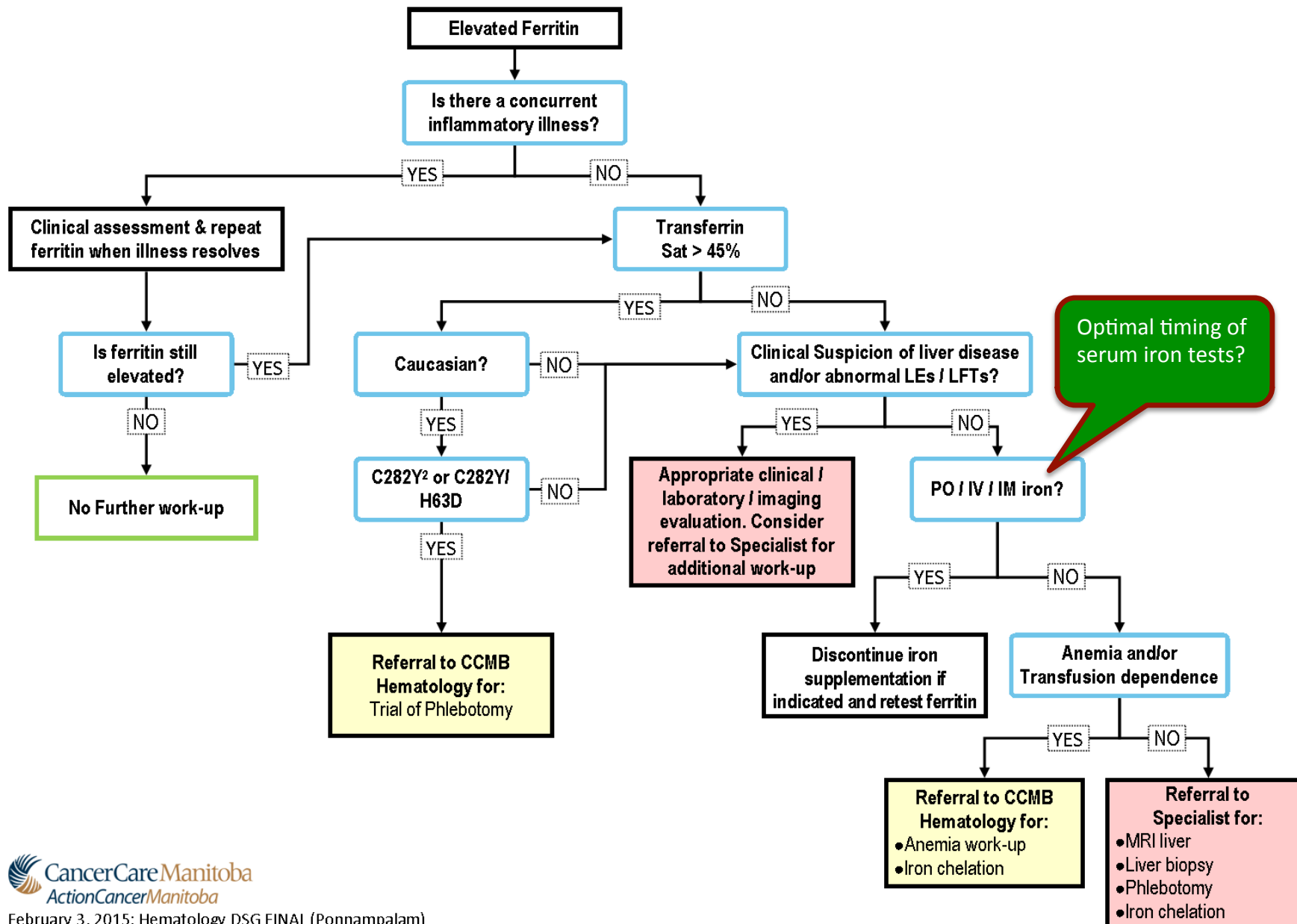
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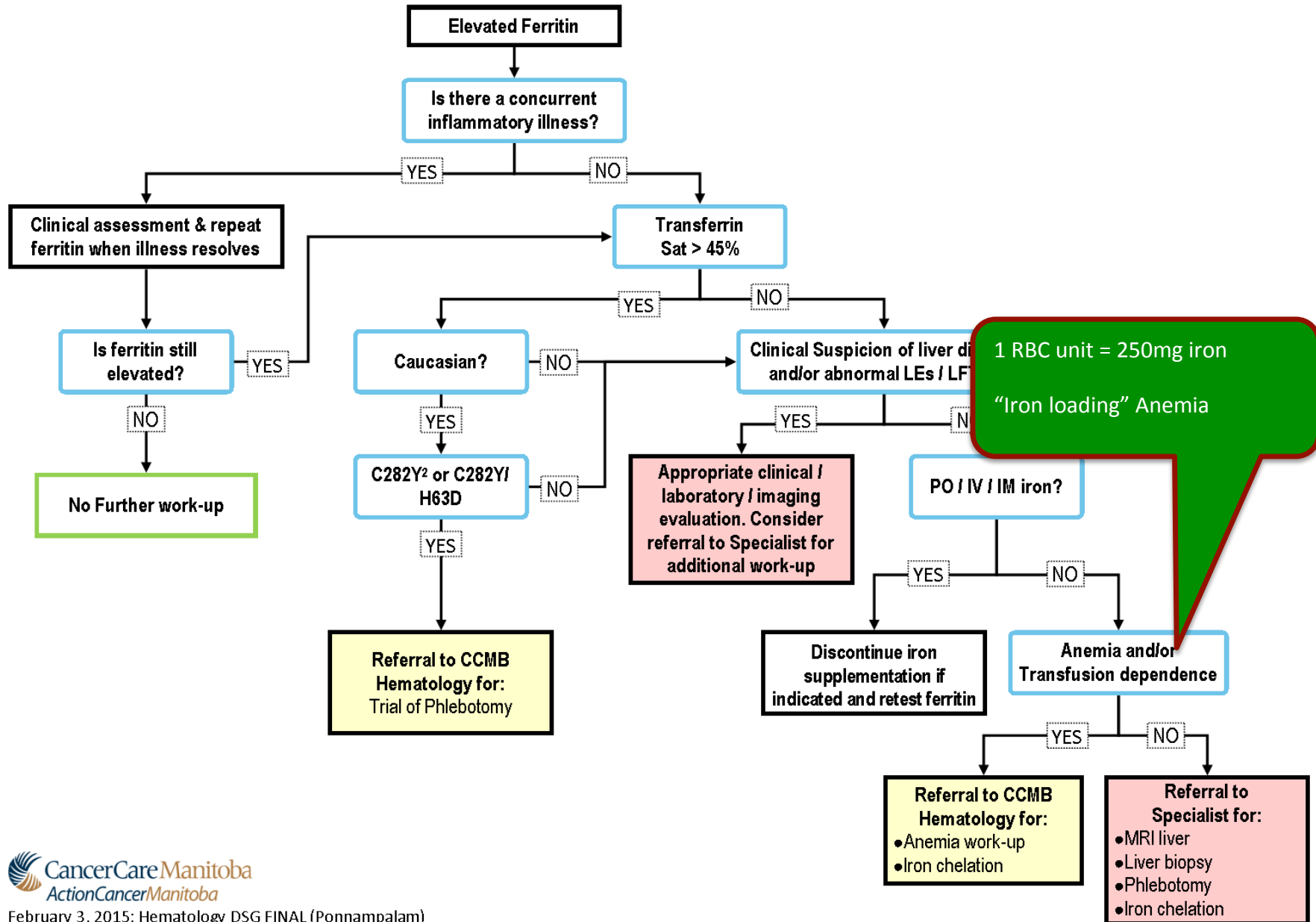
## Work-Up of HIGH FERRITIN



## Work-Up of HIGH FERRITIN



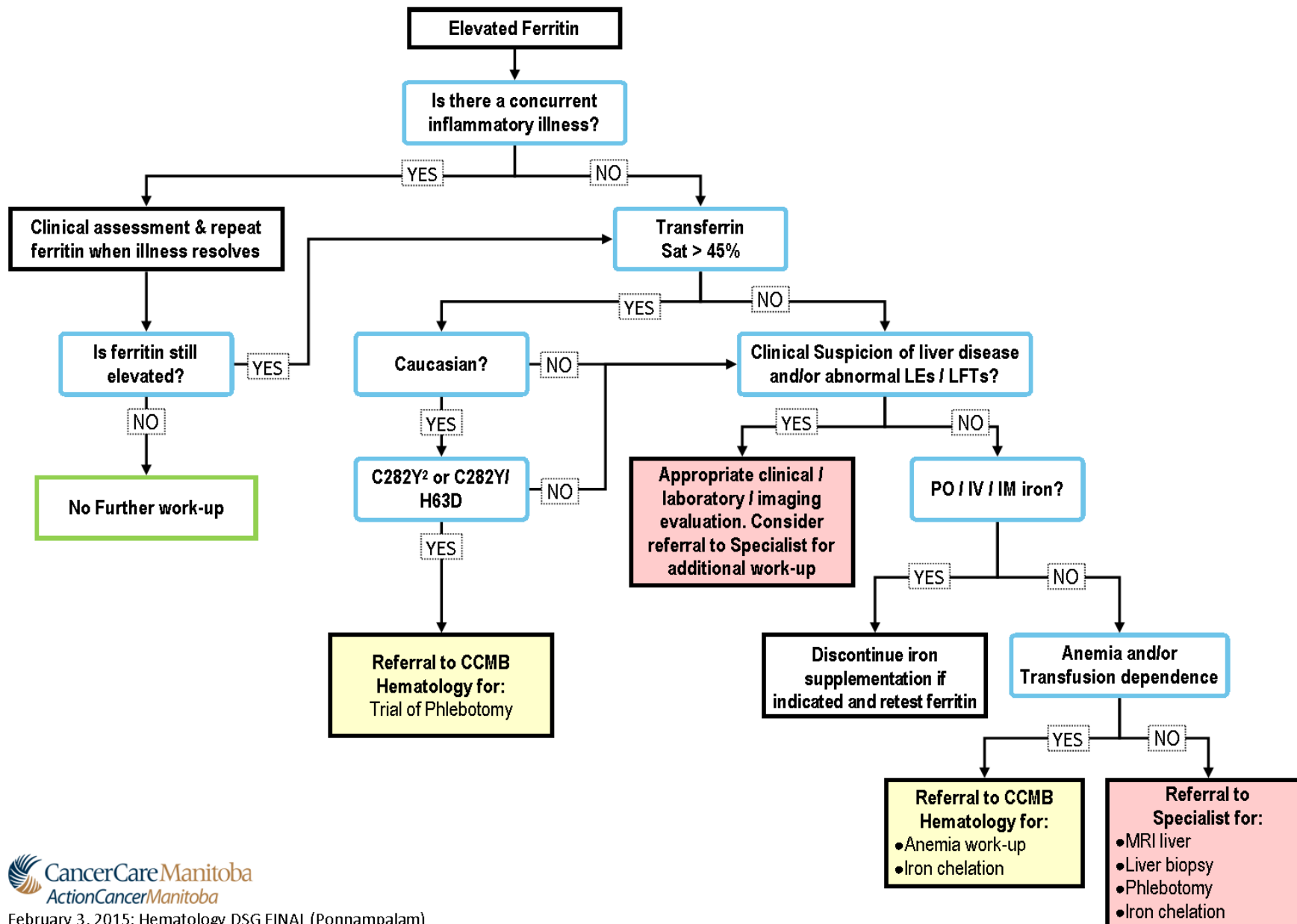
## Work-Up of HIGH FERRITIN



1 RBC unit = 250mg iron  
 "Iron loading" Anemia



## Work-Up of HIGH FERRITIN





## Take Home Messages

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- 1 in 10 patients with elevated ferritin have tissue iron overload
- Common causes of elevated ferritin are inflammatory disorders and liver diseases
- Phlebotomy is the mainstay of treatment for patients with tissue iron overload



# Questions?

*Arjuna Ponnampalam*  
*aponnampalam@cancercare.mb.ca*

