

# Postnatal Cord Blood Testing

100 pregnant individuals are ready to deliver...

- (1) How many cords are tested at **delivery**?
- (2) Which **newborns** will require cord blood testing?



108 Chestnut Street, Toronto

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# Faculty Disclosure

*In compliance with CPD policy,  
Temerty Faculty of Medicine  
requires the following disclosures  
to the session audience*

- This program has received no financial external support
- Speaker disclosure:



# Objectives

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## Part 1: Maternal

- Does CB need to be collected on **ALL NEONATES**?
- Is CB collection and testing needed for all **GROUP O PATIENTS**?
- Which CB tests are needed for **ALLOIMMUNIZED PATIENTS**?

## Part 2: Neonatal

- Which CB tests are needed for neonates with **HIGH BILIRUBIN** (intermediate-high or higher)?
- Which additional immunohematology tests should (or should not) be performed on cord samples?

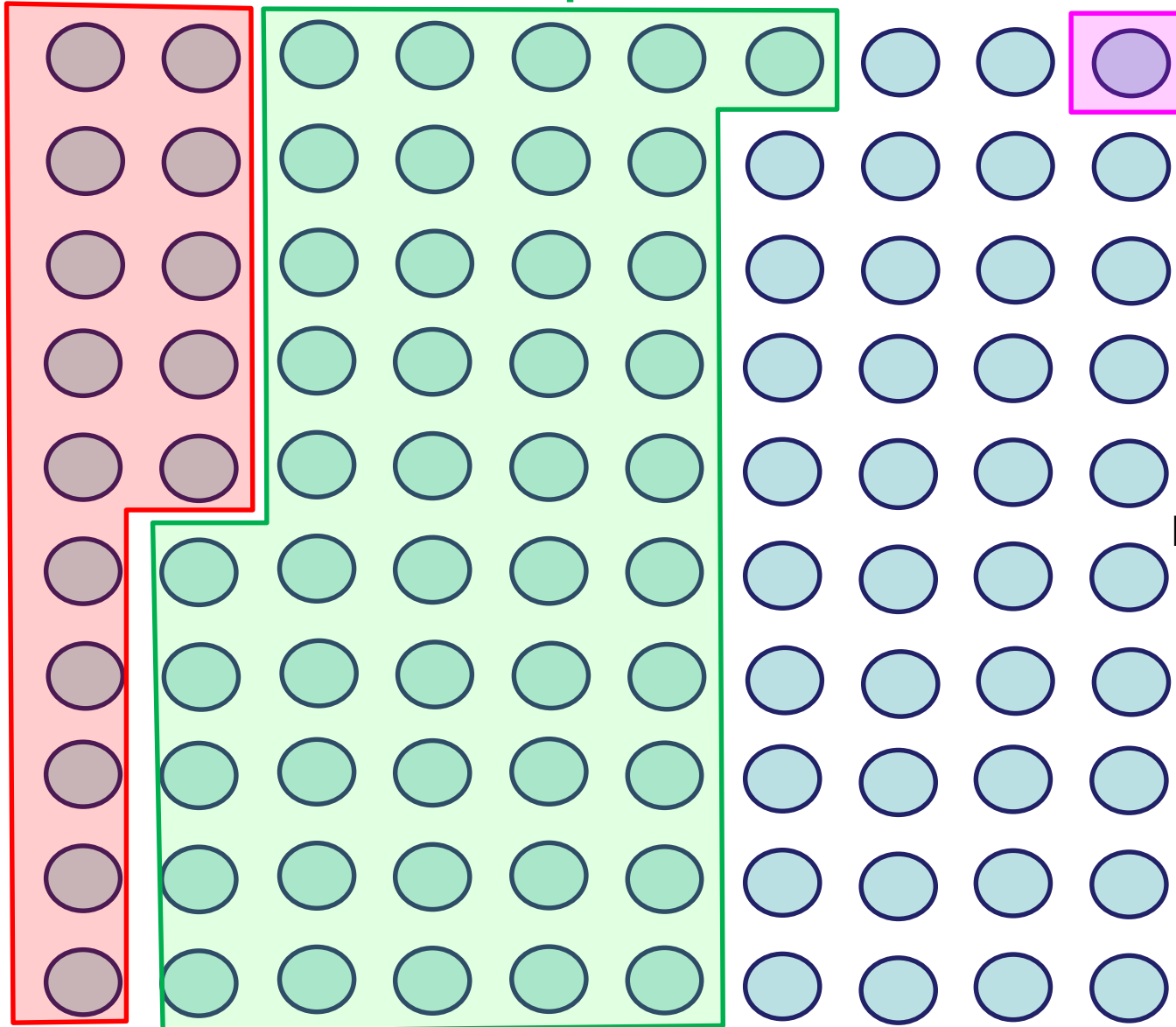


# 100 pregnant individuals are ready to deliver...

RhD-negative

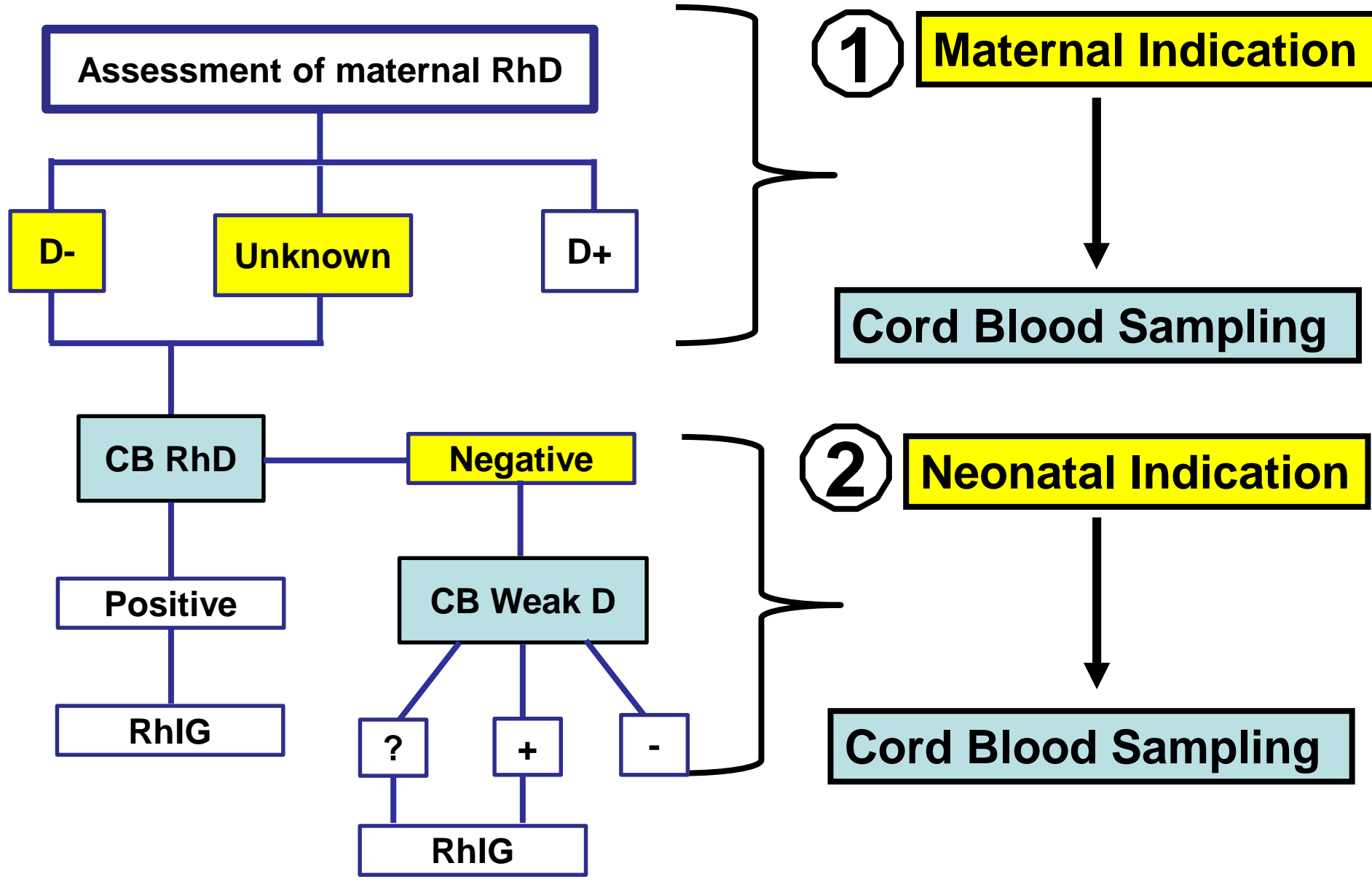
Group O

Alloimmunized



Non-group O

# RhD-negative Patient

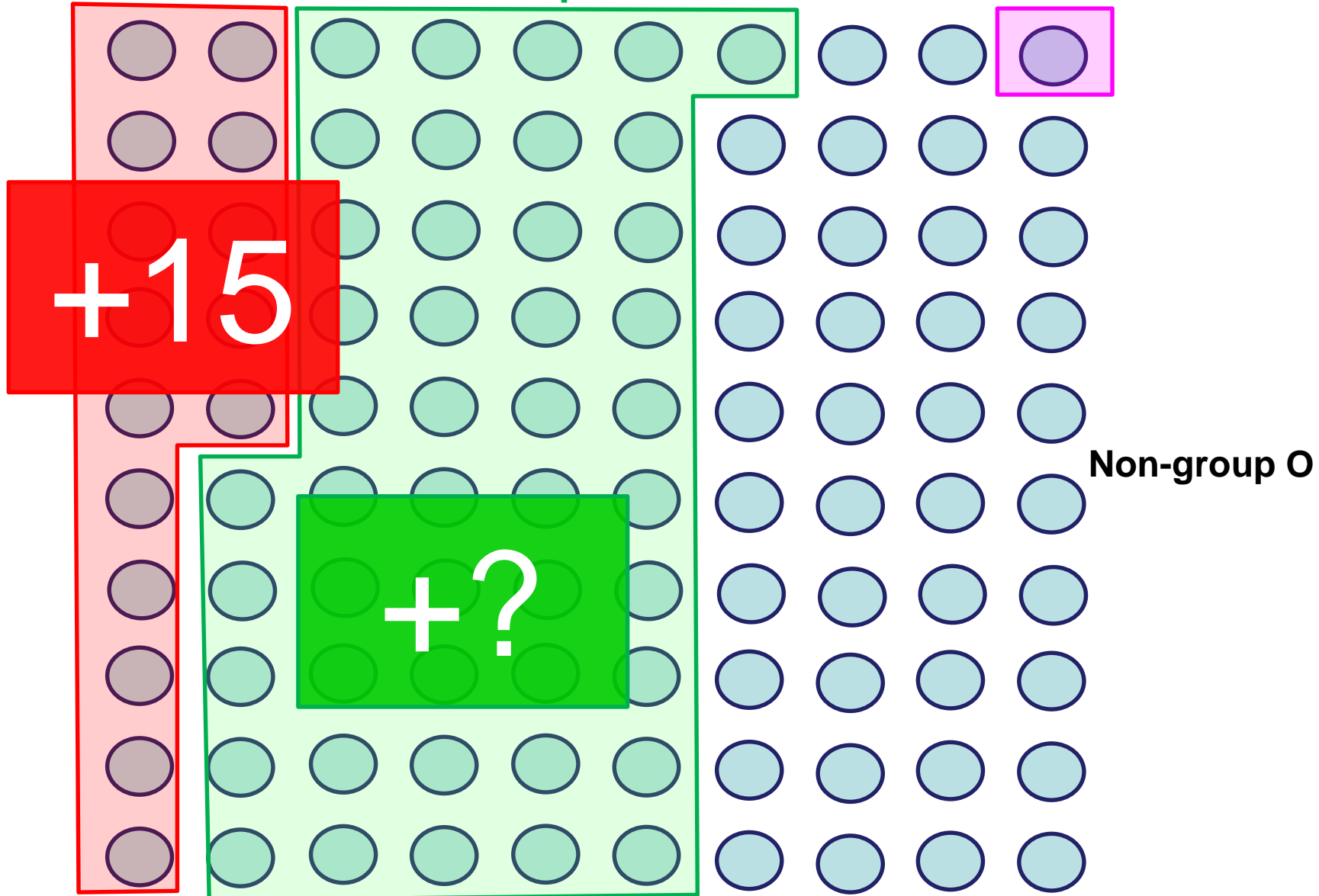


# 100 pregnant individuals are ready to deliver...

RhD-negative

Group O

Alloimmunized



# Group O Patient

170 (57%) of Canadian labs perform routine ABO on cord blood

## WHY?



Detect incompatibility



Predict ABO-HDN



Selective monitoring

## Laboratory Burden

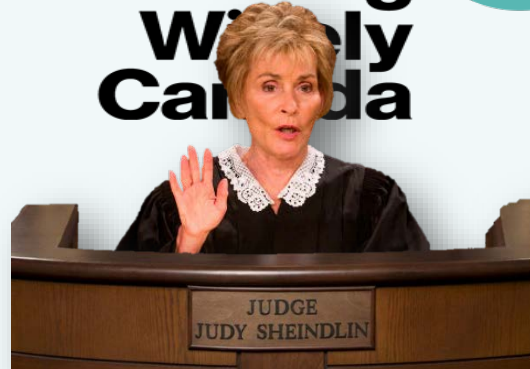
1



2



Choosing Wisely Canada



## Patient Burden?

3



# Predicting ABO-HDN: Routine CB ABO

## Selective testing (Neonatal Indication)

**Leistikow 1995**  
n= 8501

**Han 1988**  
n=623

**Shahid 2007**  
n= 301

**Levine 1985**  
n=1381

**Maldon 1992**  
NR

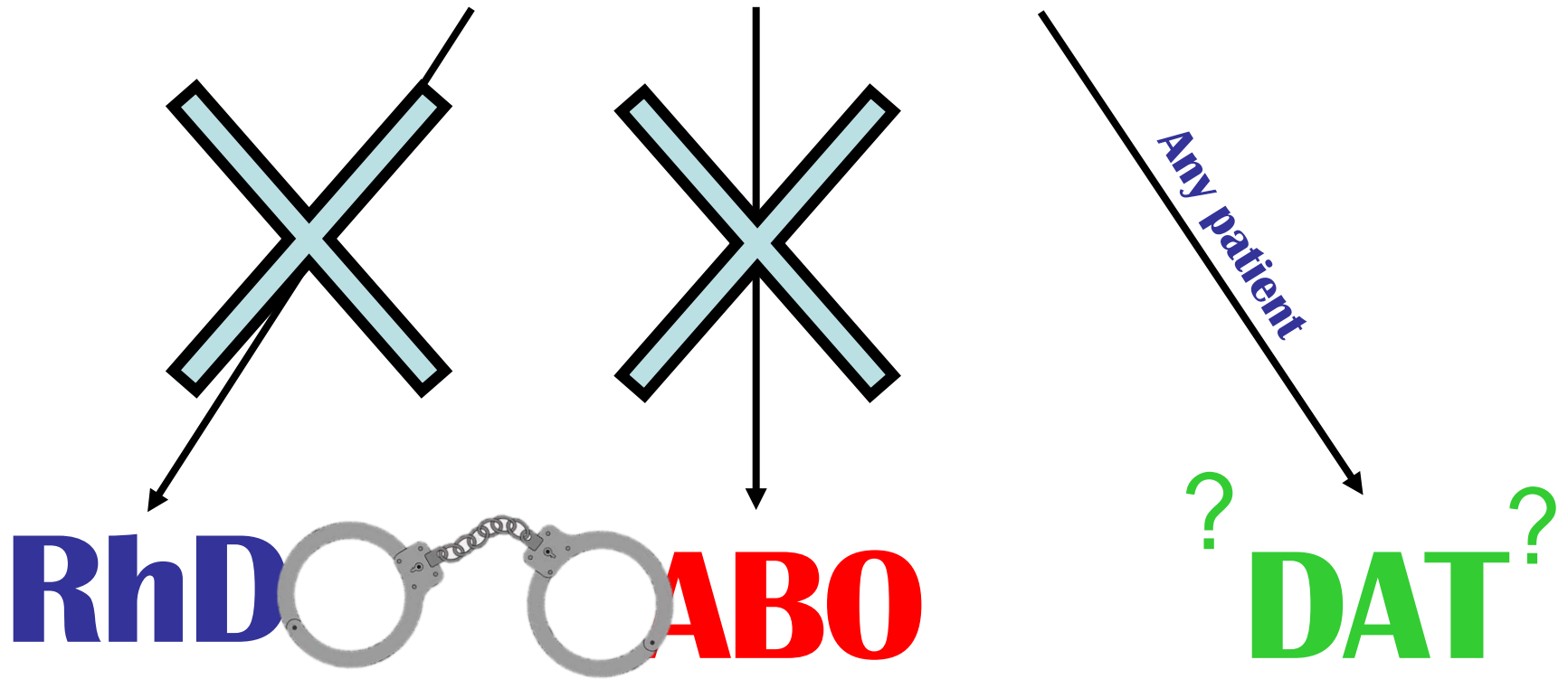
## Reflex testing (Maternal Indication)

**Kube 2021**

**Labs at delivery No Labs**  
n= 891 n=793



# Group O (+) Patient

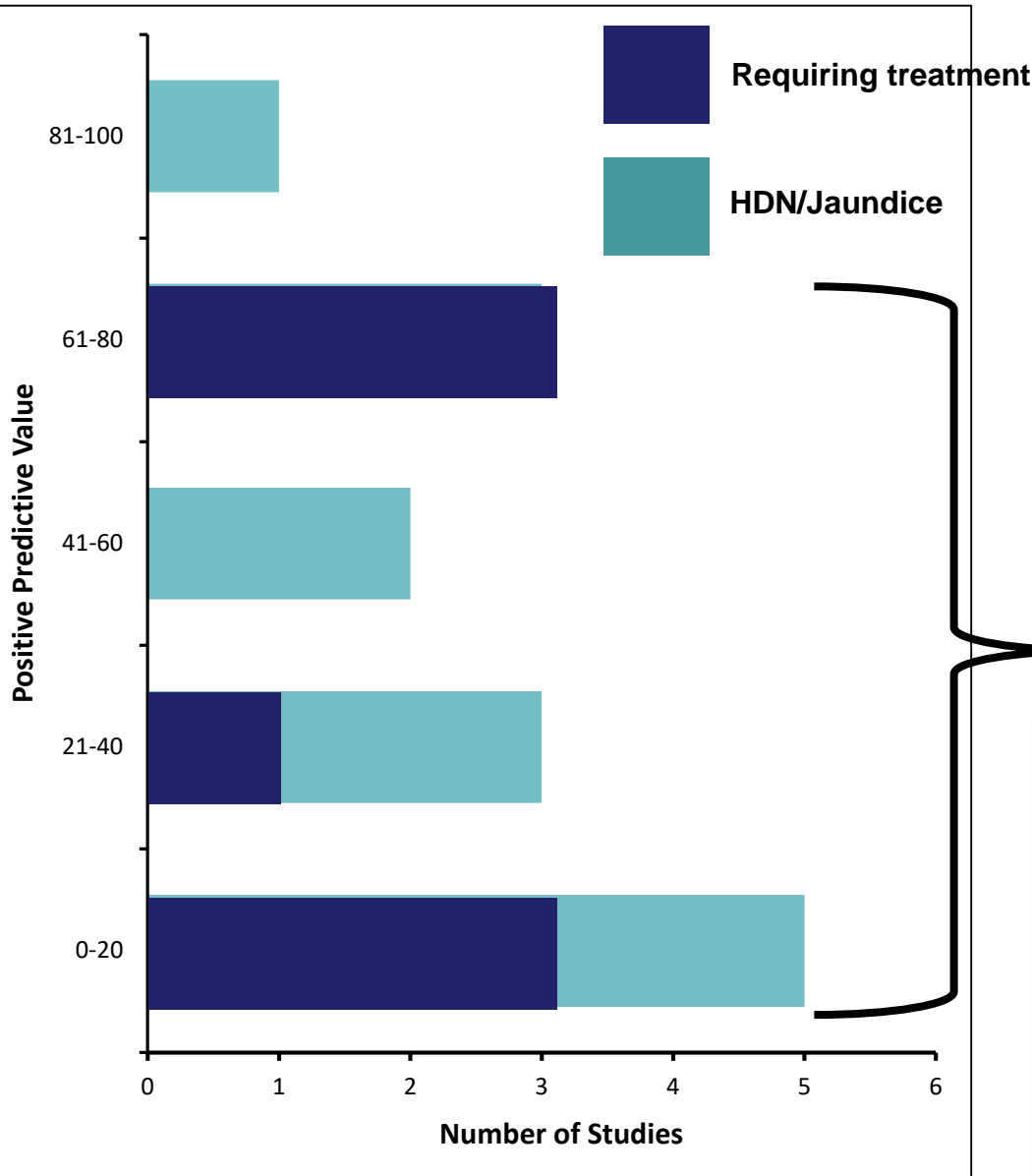


Is **DAT** a better predictor of severe HDN?

147 (50%) of Canadian labs perform routine DAT for group Os

# Is **DAT** a reliable screening test?

n=13



## Consider:

1

Impact of routine antenatal RhIG?

2

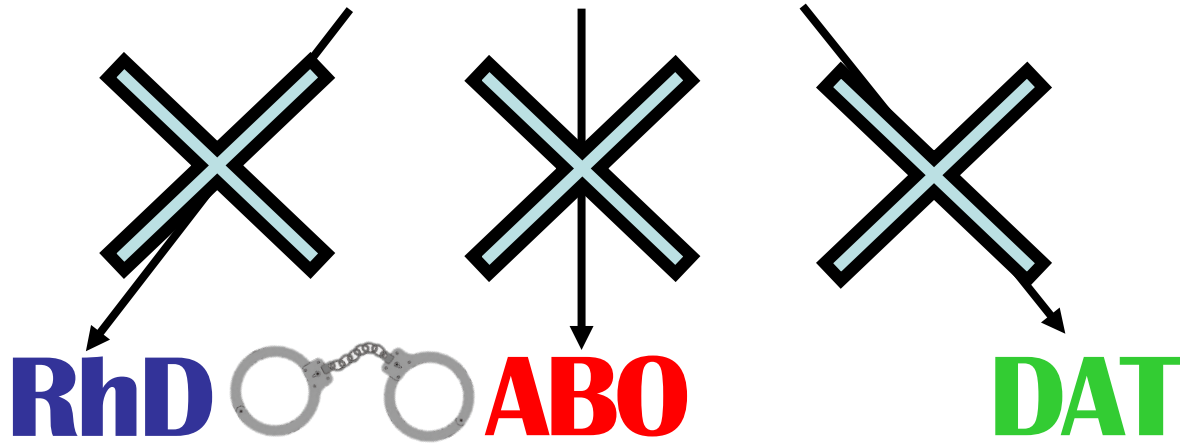
Negative DAT, rule out HDN?  
(NPV 29-88%)

Leistikow 1995

Shahid 2007



# Group O (+) Patient



**Alternative to laboratory screening?**

**Clinical surveillance**



**Selective testing  
(Part 2)**

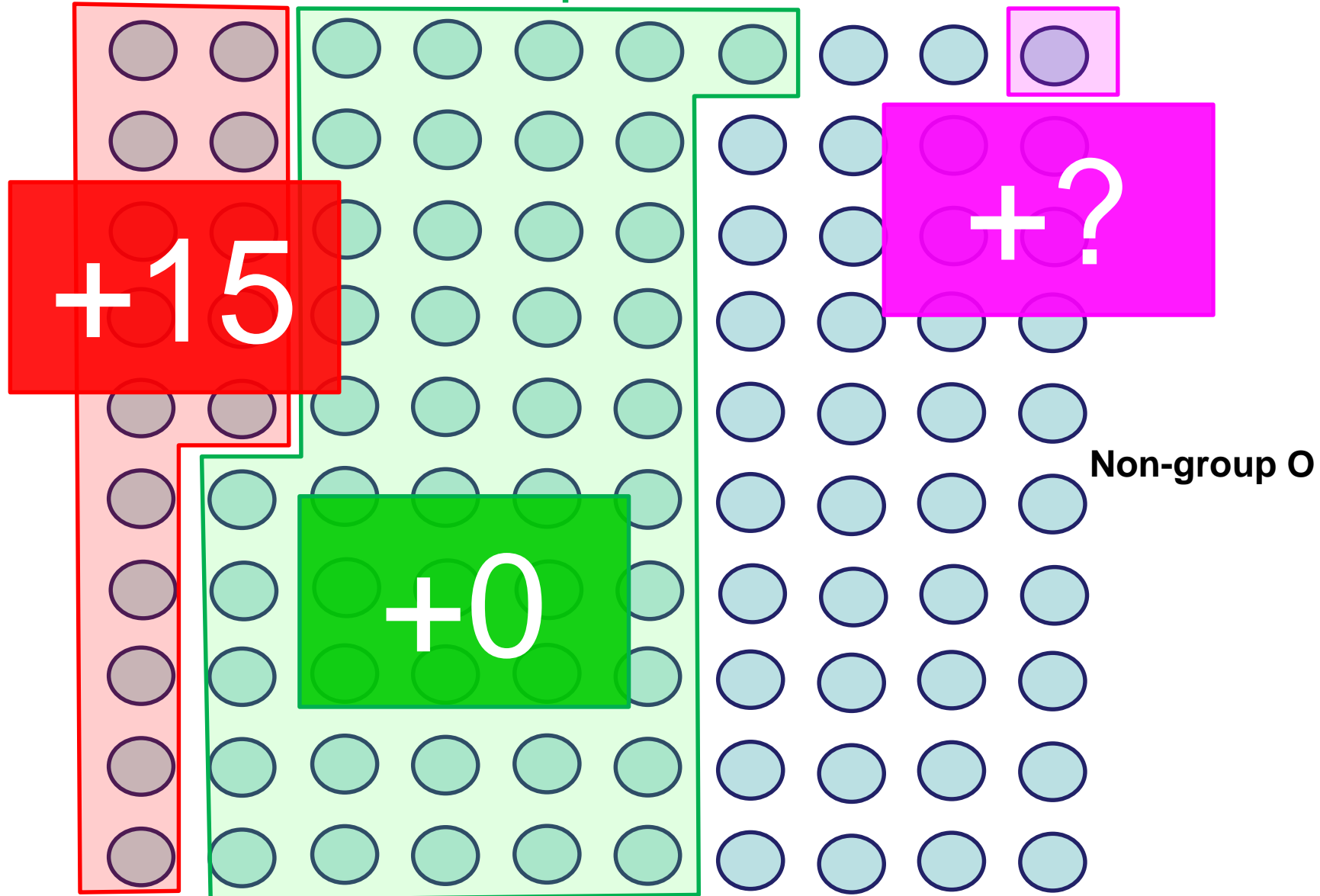


# 100 pregnant individuals are ready to deliver...

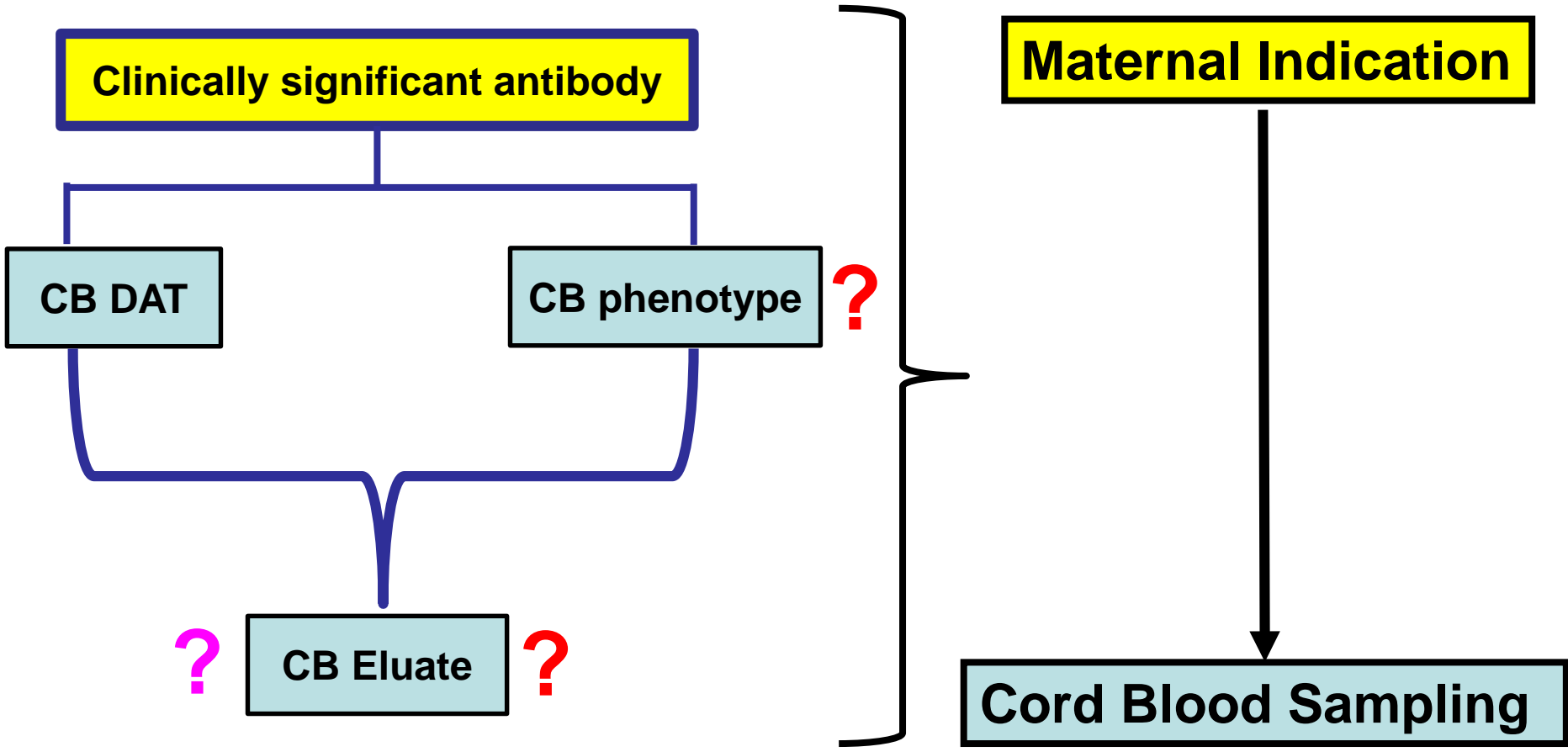
RhD-negative

Group O

Alloimmunized



# Alloimmunized Patient



Value ?

Indication ?

# RBC Eluate Screening

**Group O Patient**



**Procianoy 1987**

**Whyte 1981**

**Van R 2015**

**Alloimmunized patient**

**CB DAT Positive**

**CB Eluate**

**CB DAT Negative**

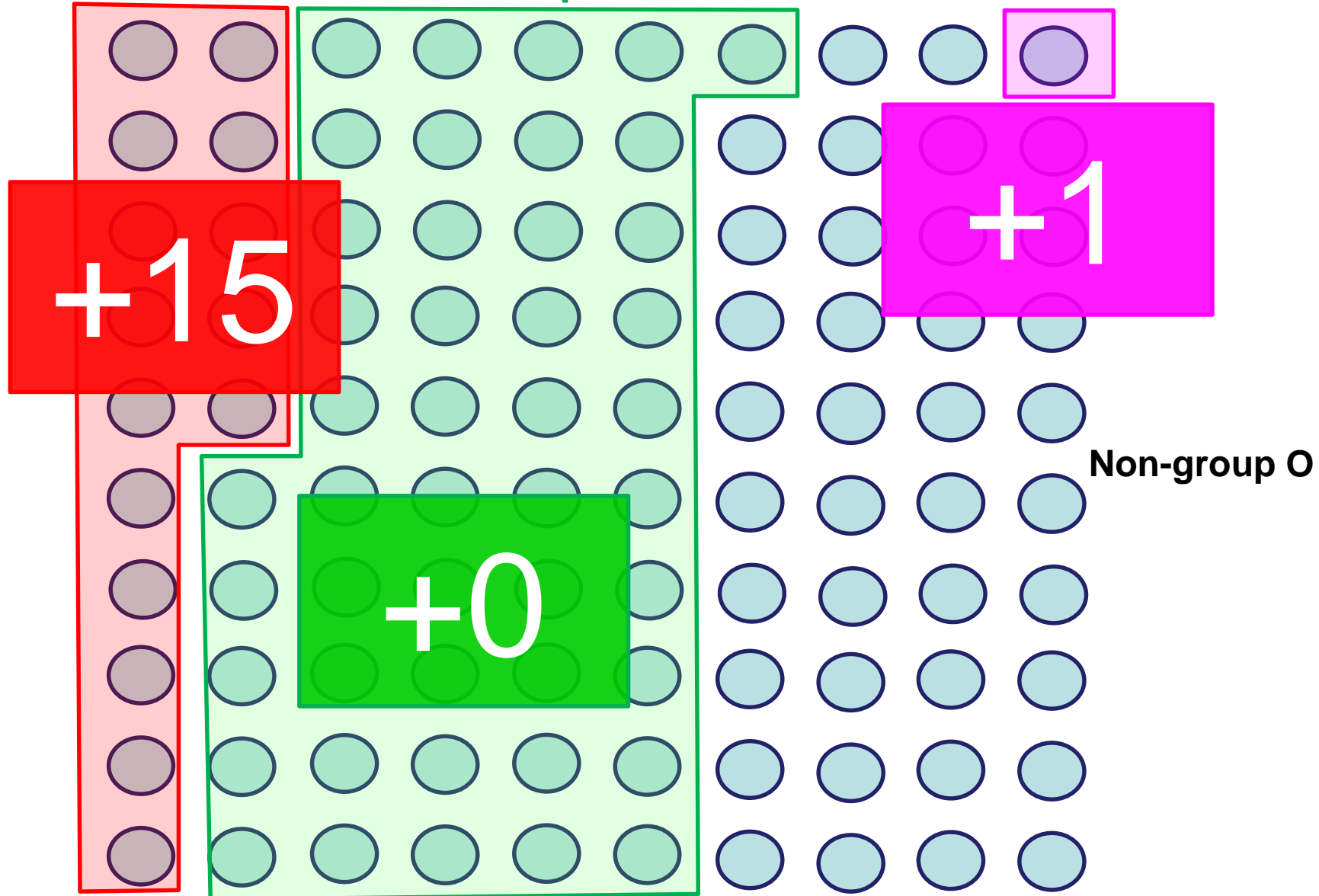
**CB Eluate?**

# 100 pregnant individuals are ready to deliver...

RhD-negative

Group O

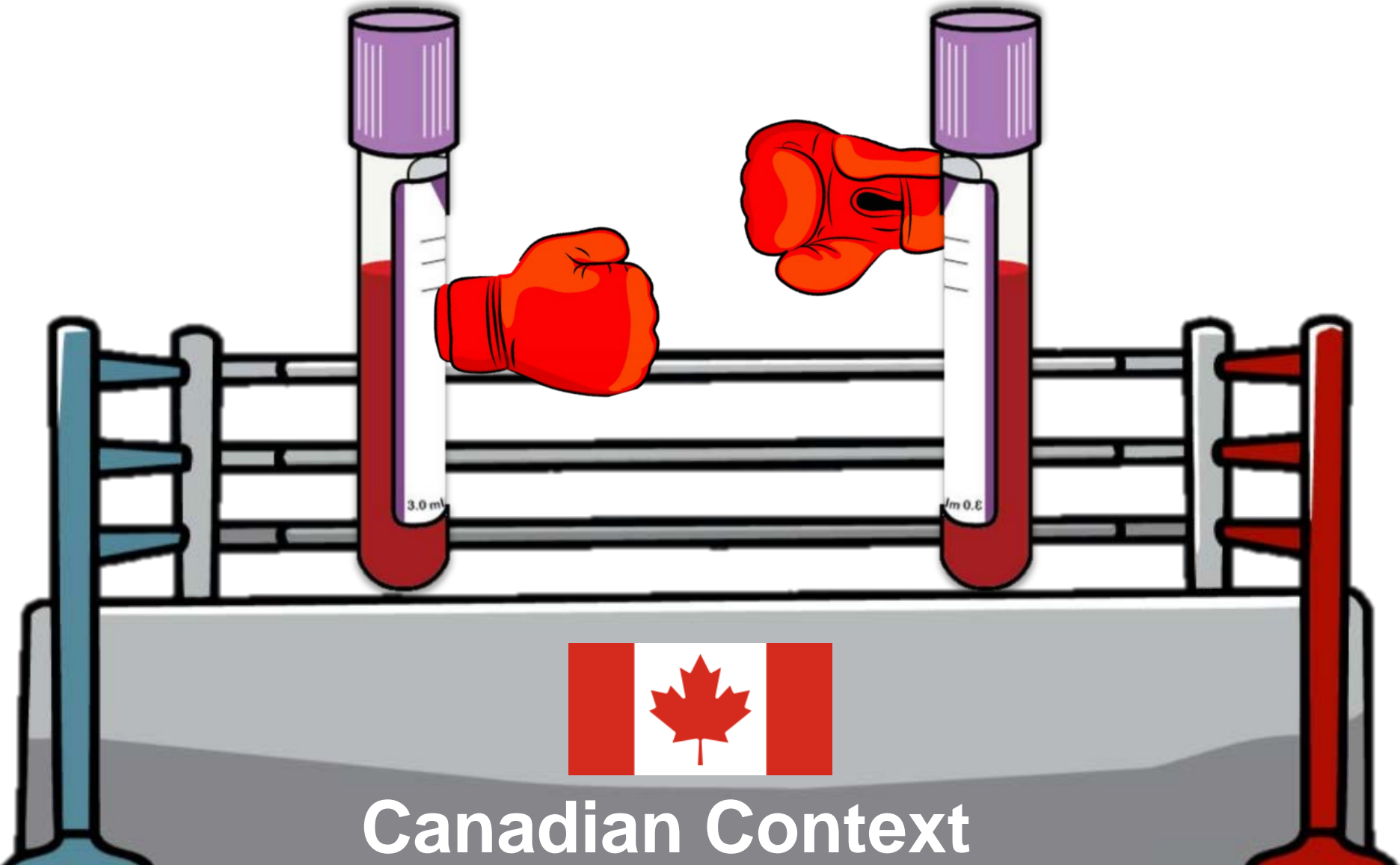
Alloimmunized



# Other patient indications: G6PD Deficiency Testing

**Peripheral Sample**

**Cord Blood Sample**



**Canadian Context**



# Indications for G6PD Deficiency Testing:

**Cord Blood Sample**



**ROUTINE**



**SELECTIVE**

**Hyperbilirubinemia**

- Daughters of fathers at risk
- All infants of mothers at risk



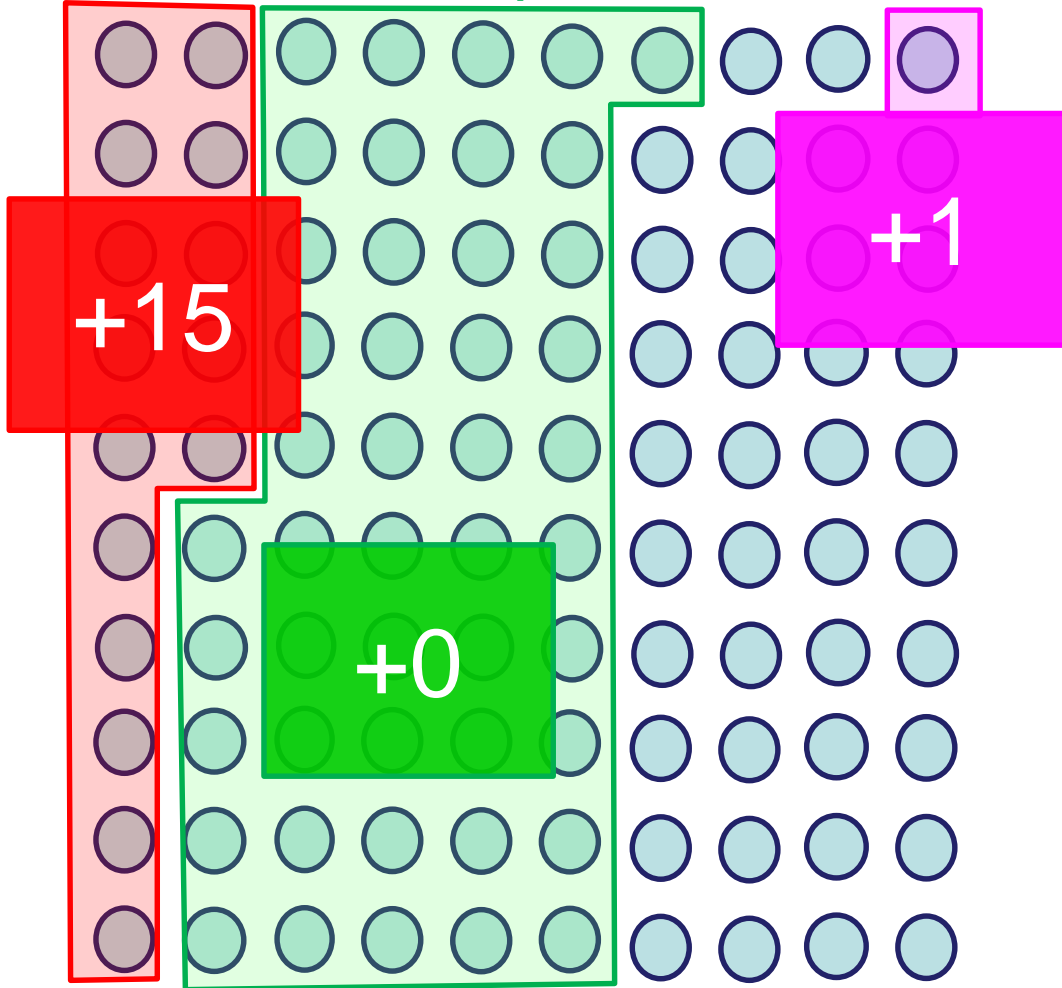
**Canadian Context**

# Part 1: Patient Indications for CB sampling

RhD-negative

Group O

Alloimmunized



**ANSWER: 16**

**Consider:**



# Part 2: Neonatal Indications

## Patient Indications:

RhD negative

Alloimmunization

G6PD prevalence

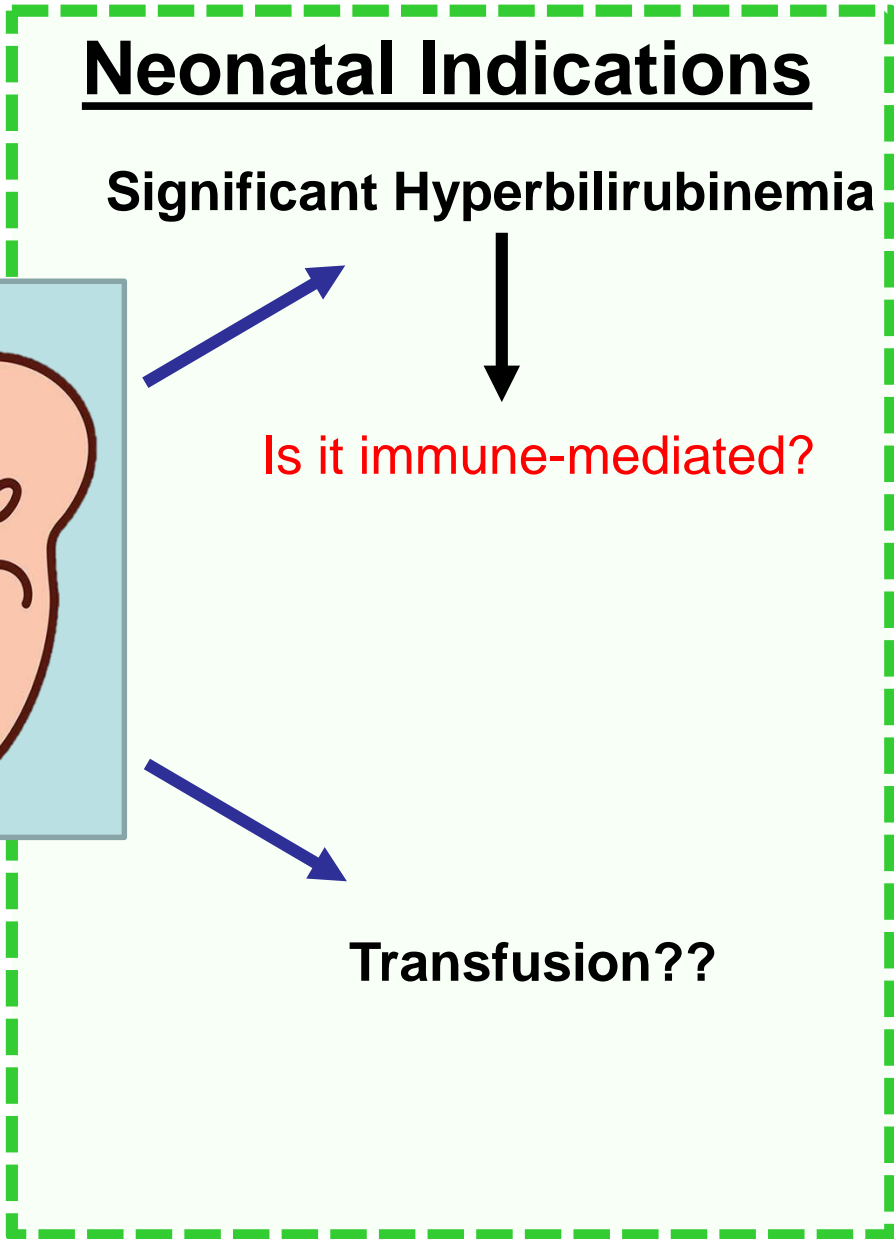


## Neonatal Indications

Significant Hyperbilirubinemia

Is it immune-mediated?

Transfusion??



# Jaundiced Neonate



①

Considered non-immune causes?

Bilirubin

Reticulocytes

Hemoglobin

②

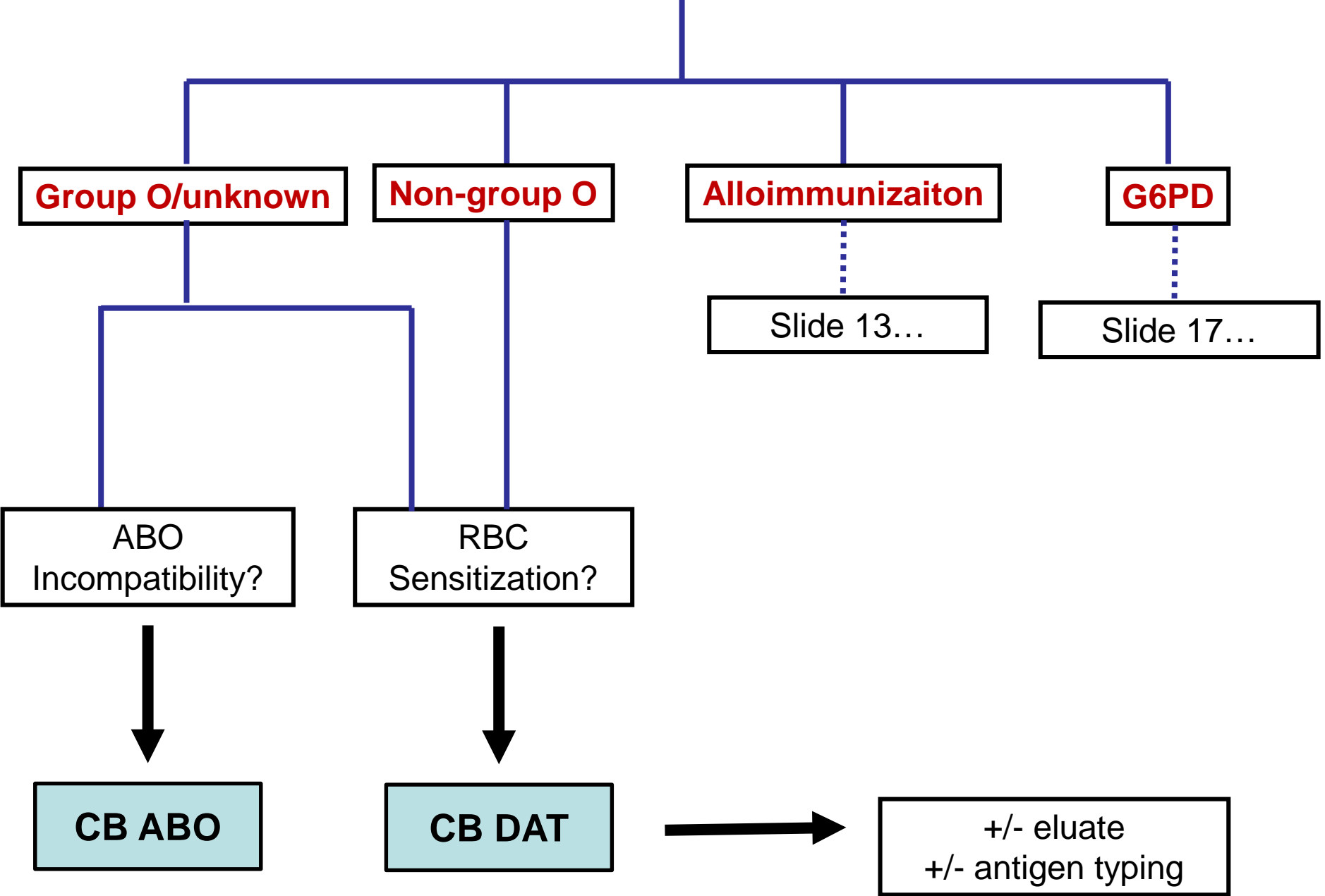
Considered Patient History?

Group O

Non-group O

Alloimmunization

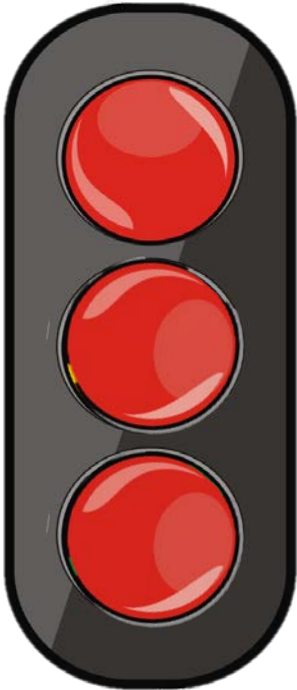
G6PD



PB > CB

Pre-transfusion testing

Sample mishandling



Validation?

Performance?

Recommendation?



# Choosing Wisely<sup>®</sup> Cord Testing

1

Without patient risk...

RhD negative

Alloimmunization

G6PD

OR

2

Neonatal indication...

Significant hyperbilirubinemia