

# Routine Direct Antiglobulin Testing on Cord Blood Samples to Evaluate Neonatal Hemolysis Risk Is of Limited Utility



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## Introduction/ Objective:

A direct antiglobulin test (DAT) is often performed on a neonatal cord blood sample to determine risk of hyperbilirubinemia from hemolytic disease of the fetus and newborn (HDFN). Current practices in hospitals across the US are not standardized for which samples are tested with DAT and elution studies. Furthermore, DAT has a positive predictive value of 15-23% for predicting hyperbilirubinemia that will need intervention. We evaluated the outcomes of cord blood DATs at our institution to determine utility.

## Methods:

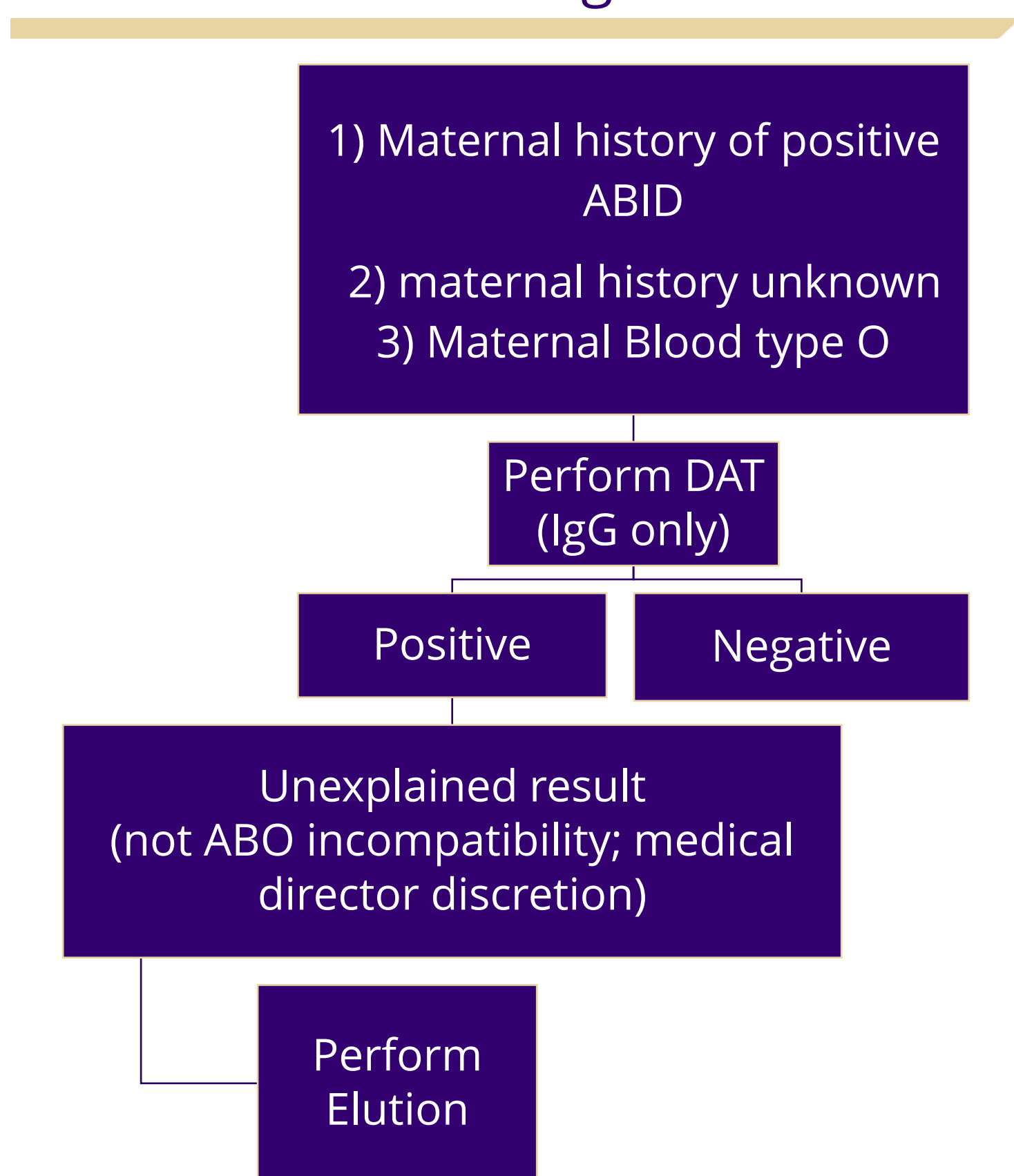
- Single institution retrospective review of data from March 2018- March 2021
- Collected data on maternal antibody screen results, cord blood DATs and elution studies

## QUICK FACTS

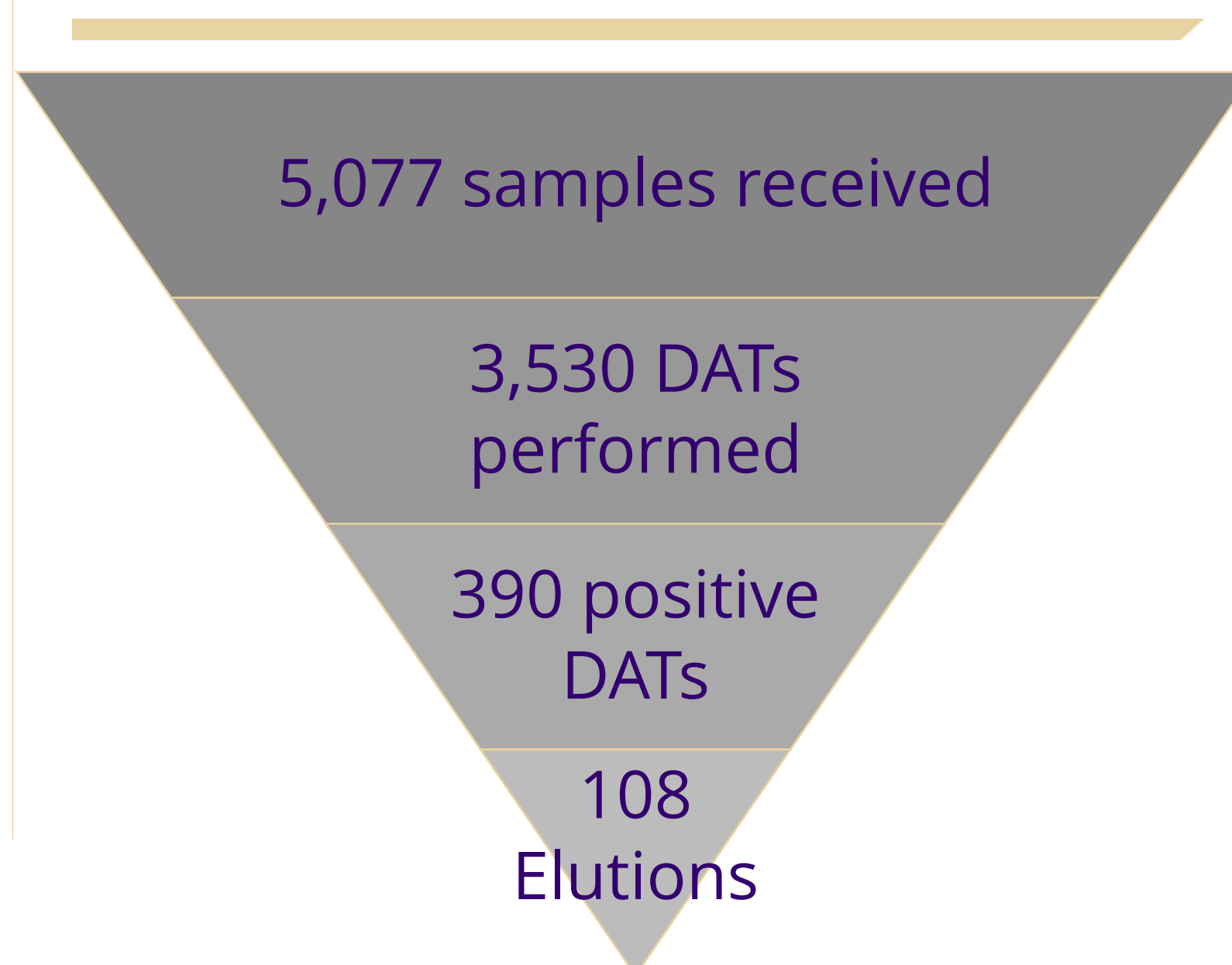
- DATs have a low positive predictive value for hyperbilirubinemia requiring intervention
- Positive DAT results in cord blood are most often due to antenatal RhoGAM for Rh negative mothers and clinically insignificant.
- Preemptive cord blood DATs do not improve our ability to identify significant hyperbilirubinemia
- Cord blood DATs should be reserved for evaluation of hemolysis in neonates

## Results:

### Workflow at UW for Cord Blood DAT Testing



### DAT Testing at UW between March 2018-2021



## Positive Maternal ABID Results

- Positive maternal screens in 576 of 5072 (11%) cases
- Multiple antibodies in 27 patients
- Passive transfer of anti-D (PTAD) following Rhogam in 451/576 (78%) administration

Antibody	Percentage
Passive Transfer of anti-D	78% (n=451)
Antibody of Undetermined Significance	3% (n=20)
Anti-E	3% (n=19)
Anti-c	3% (n=15)
Anti-K	2% (n=14)
Anti-D	2% (n=10)
Anti-Le(a)	2% (n=9)
Anti-M	2% (n=9)
Other: anti-G, A1, Cw, Fy(a), Fy(b), G, IH, Jk(a), Jk(b), Le(b), Lu(b), P1, S, SDA, cold agglutinin, warm autoAB	5% (n=29)

## Cord Blood Elution Results

- DATs were positive for IgG in 390 of 3530 (11%) samples
- Elution studies were only performed for unanticipated positive DAT
  - 27% of positive DAT samples underwent elution

Elution Results	Percentage
Passive Transfer of anti-D	66% (n=71)
No antibody eluted	13% (n=14)
Anti-C	6% (n=7)
Anti-E	5% (n=5)
Anti-D	3% (n=3)
Anti-S	2% (n=2)
Other	5% (n=5)

## Discussion:

- Positive DAT results in cord blood are most often due to antenatal RhoGAM administration in 451/576 (78%) of cases
- Treatment for hyperbilirubinemia is based on the bilirubin value and rate of bilirubin rise regardless of DAT results
- All infants should be monitored for jaundice regardless of DAT results due to low positive predictive value in a pre-emptive setting

## Conclusion:

- Routine DAT testing is of limited utility as most positive results are due to RhoGAM administration
- Cord blood DAT should be reserved for evaluation of immune versus non-immune mediate hemolysis
- Further studies are needed to determine if limiting cord blood testing changes neonatal outcomes