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# The impact of HIV infection and ART on the predicted risk of Down's syndrome

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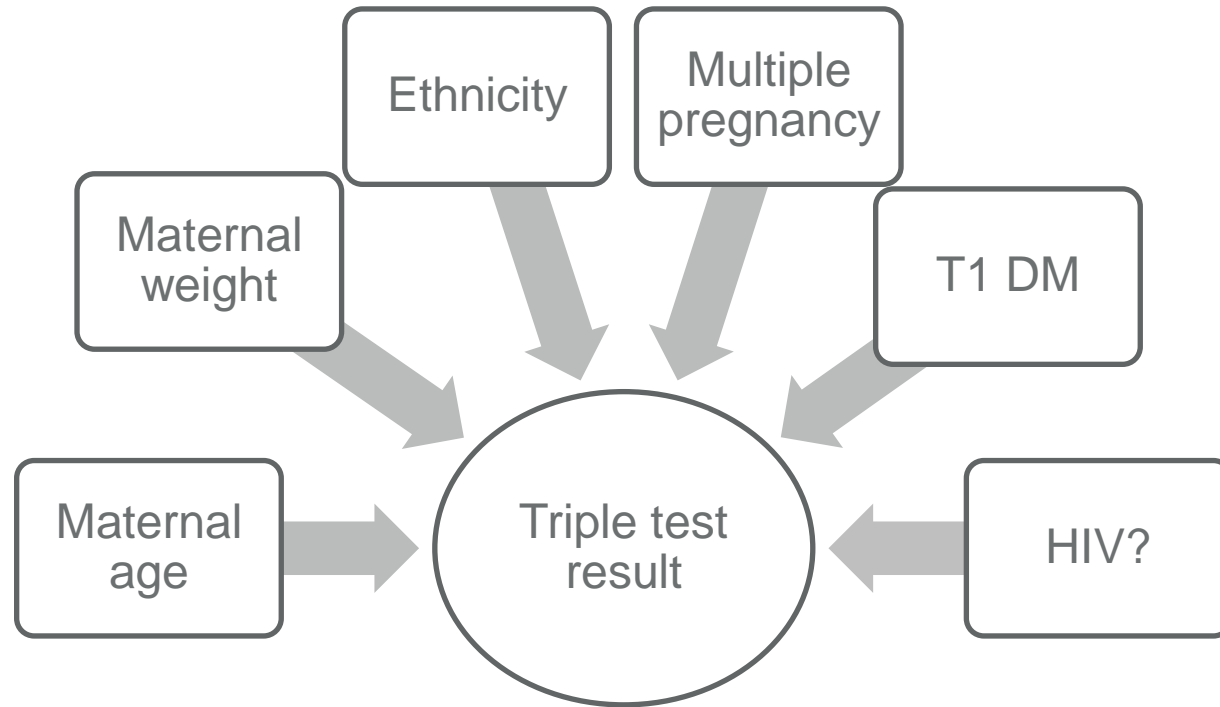
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## Background

Down's syndrome screening is routinely offered to all pregnant women in the UK:

- Combined test (10-14 weeks)
- Triple assay (15-20 weeks)
  - ✓  $\beta$ - human chorionic gonadotrophin (HCG)
  - ✓  $\alpha$ -fetoprotein (AFP)
  - ✓ Unconjugated oestriol (UE3)

## Background



At the time of this work a “**high risk**” screening result was  $>1/250$

## The story so far

Does HIV infection lead to more high risk DS screening results?

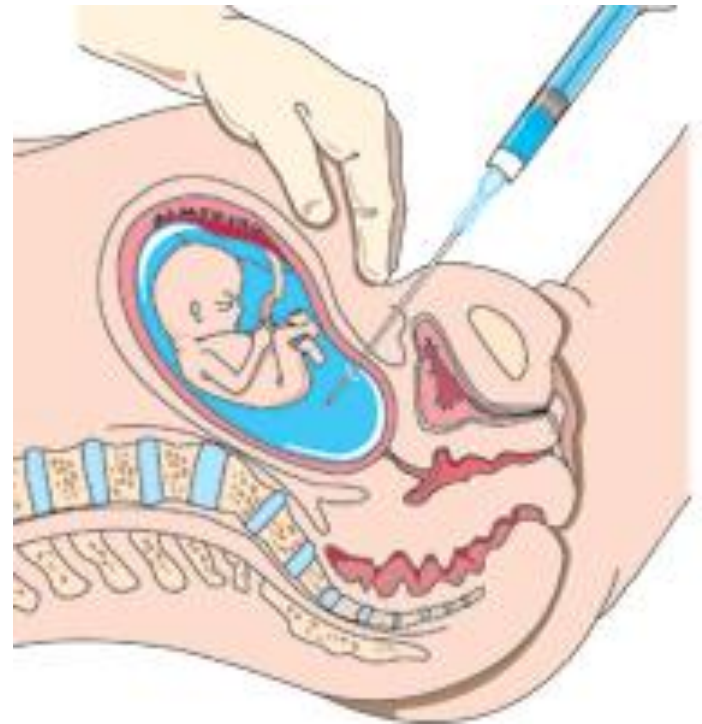
Study	Type (No. Px)	HCG	AFP	UE3	High risk screening vs General population
Neale <i>et al.</i> 2001	Retrospective (76)	-	-	-	↑ (αFP alone, Triple, Quad)
Gross <i>et al.</i> 2003	Retrospective (49)	↑	↑	↔	-
Yudin <i>et al.</i> 2003	Retrospective (34)	↑	↔	↔	↔ (Triple) ↑ (Quad)
Spencer 2010	Retrospective (52)	↔	↔	↓	-

## The story so far

Why is this important?

Diagnostic tests (CVS and amniocentesis):

- 0.5-1% foetal loss (Papantoniou *et al.* 2001)
- HIV transmission (Mandelbrot *et al.* 1996)
- Anxiety



## What we did

**Are there more “high risk” screening results in the HIV positive population?**

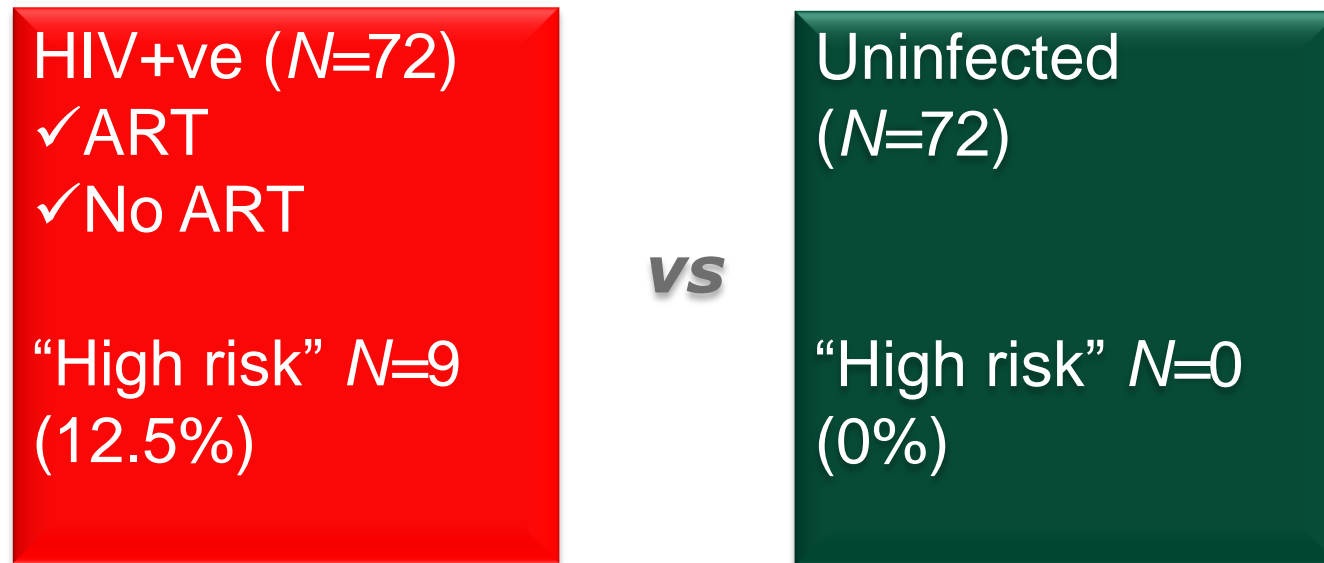
- Retrospective, case-control study
- 72 HIV+ve Vs 72 uninfected controls
- Screening, singleton pregnancy's, 14-18 weeks gestation
- Births took place at St Mary's Hospital, London between January 2002 and July 2009 (Laboratory BWH)

**Do these women have an increased risk of a Down's syndrome affected pregnancy?**

- National Study of HIV in Pregnancy and Childhood (NSHPC) vs National DS register data

## Key findings 1

HIV population compared to uninfected controls:

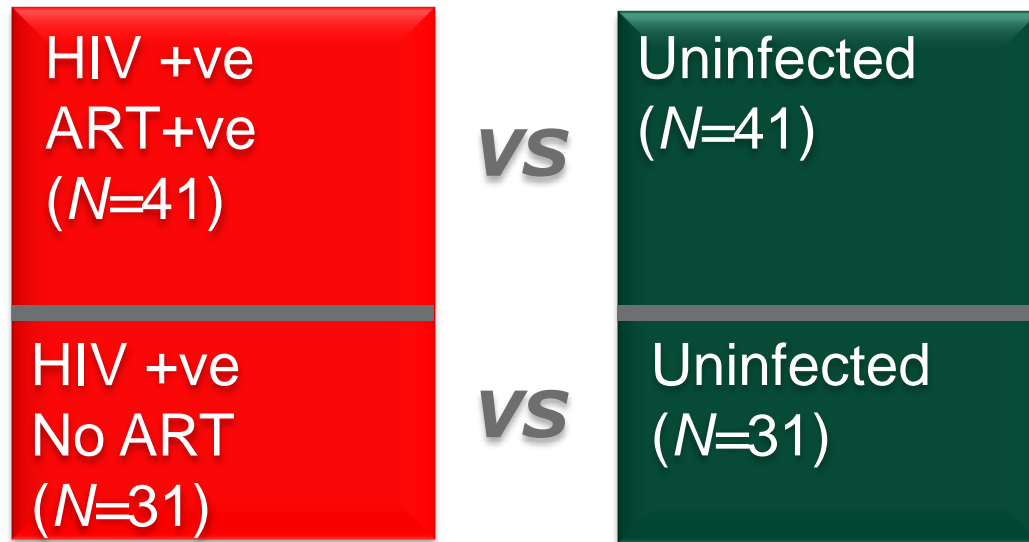


**HIV positive women** were **twice** as likely to receive “**high risk**” screening results: OR = 2.14, 95% CI = (1.79 -2.57)  $p= 0.002$



## Key findings 2

HIV population (without ART) compared to uninfected controls:



- Higher mean hCG MoM (1.64 v 1.07,  $p=0.02$ )
- Higher risk (1/909 v 1/33333,  $p=0.03$ )
- This effect was not seen in patients on ART

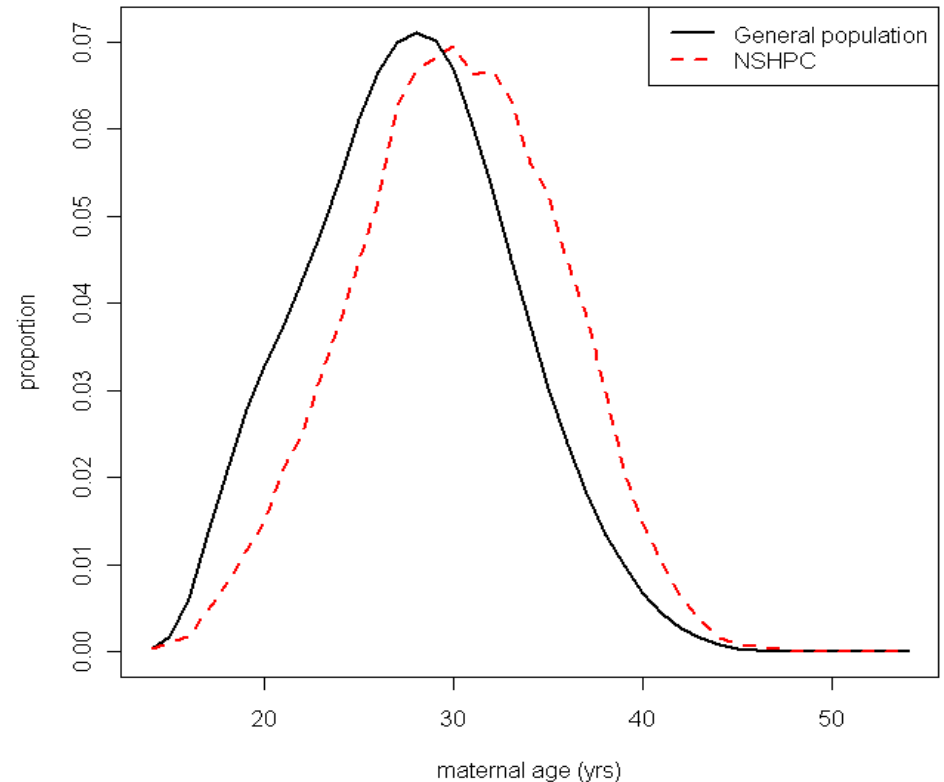
## Key findings 3

### Population based data:

- Incidence in HIV positive population, **1/416**
- Incidence in general population, **1/633**

However, the maternal age differed significantly between the two groups.

**Corrected risk = 0**



Distributions of maternal age at delivery for the general population and among women enrolled in the NSHPC

## Summary

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- HIV positive women are twice as likely to receive a “high risk” screening result compared to an uninfected population
- **A particular problem in patients without ART**
- After adjusting for differences in maternal age, population-based evidence does not support a link between HIV serostatus and an increased chance of a DS affected pregnancy

## Main take home messages

1. If patient presents early enough, offer the combined test ,10-14 weeks (Brossard *et al.* 2008)
2. Preconceptual counselling
3. Know HIV status before interpreting a screening result and referring for invasive diagnostic tests



## Acknowledgements

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