

# Anti D and Early Abortion

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# Disclosures

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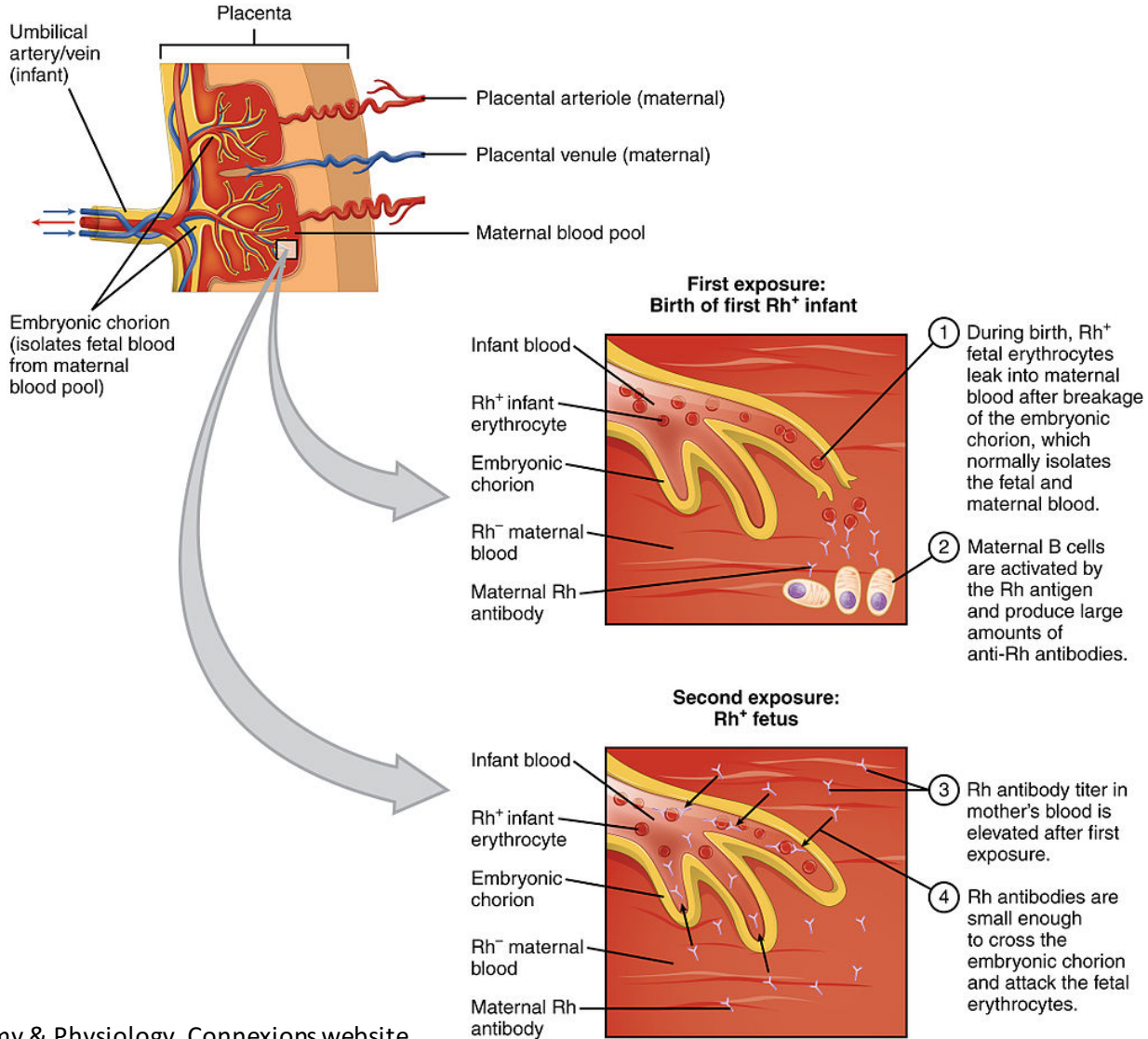
- None.

# Rh Negativity Rates

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<b>Population</b>	<b>Rh(D) Neg</b>	<b>Rh(D) Pos</b>	<b>Rh(D) Neg Alleles</b>
Basques	21%-36%	65%	~ 60%
Britain	17%	83%	
China	<1%	>99%	
Europeans	16%	84%	40%
India	0.6%-8.4%	99.4%-91.6%	
Moroccans	9.5%	90.5%	
Moroccans (High Atlas)	~29%	71%	
Subequatorial Africa	1%-3%	99%-97%	
United States	15%	85%	

# Hemolytic Disease of the Newborn



# International Policies on Anti D

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- Most countries recommend testing and treating all Rh-negative pregnant women with anti D.
- The Netherlands and Sweden only test and treat **>7 weeks LMP for induced abortions** and **>10 weeks LMP for spontaneous abortions**.
- Women On Web only tests and treats patients **>12 weeks LMP for medication-induced abortions**.

# Evidence for Anti D

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- **Do Rh-negative women with an early spontaneous abortion need Rh immune prophylaxis?**

Visscher RD, Visscher HC

Am J Obstet Gynecol 1972; 113: pp. 158-165

- The only randomized, double-blind, controlled study to evaluate the benefit of anti D in the first trimester of pregnancy found that the incidence of alloimmunization was zero, with (0/19) or without (0/38) anti D treatment.

# Evidence for Anti D cont'd

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- **Do Rh-negative women with first trimester spontaneous abortions need Rh immune globulin?**

Hannafin B, Lovecchio F, Blackburn P  
Am J Emerg Med. 2006 Jul; 24(4): 487-9

- “Given the lack of supporting evidence, it would seem reasonable to forgo administration of RhIG to Rh-negative women with a first trimester threatened or spontaneous abortions in whom the clinician is certain the gestational age is less than 14 weeks.”

# What volume of blood is in an 8-week fetus?

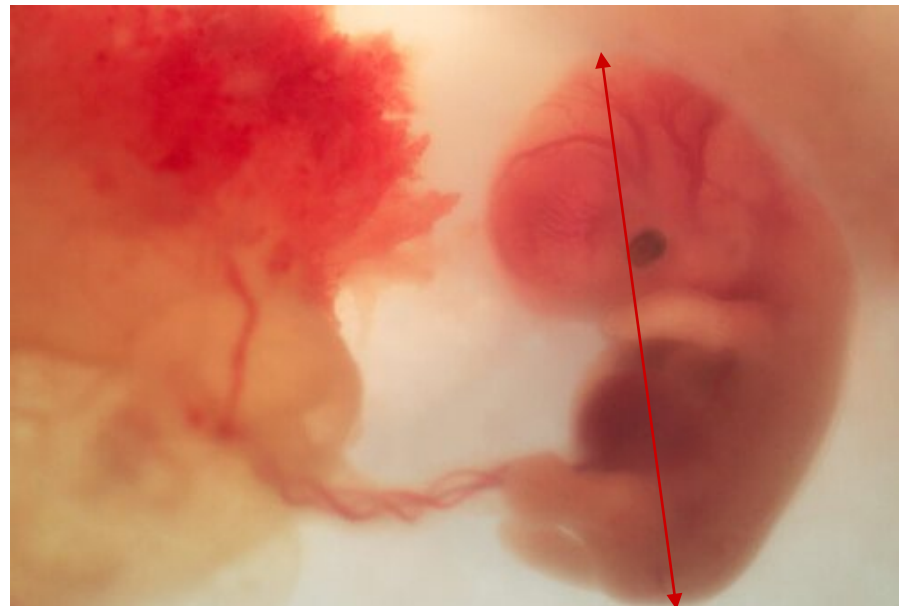
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## ■ Rh-prophylaxis in early abortion.

Fiala C, Fux M, Gemzell Danielsson K

Acta Obstet Gynecol Scand. 2003 Oct; 82(10): pp. 892-903

- Less than **0.33 cc**



14 mm



# What volume of blood is in a 12-week fetus?

## ■ Rh-prophylaxis in early abortion.

Fiala C, Fux M, Gemzell Danielsson K

Acta Obstet Gynecol Scand. 2003 Oct; 82(10): pp. 892-903

○ 4.2 cc



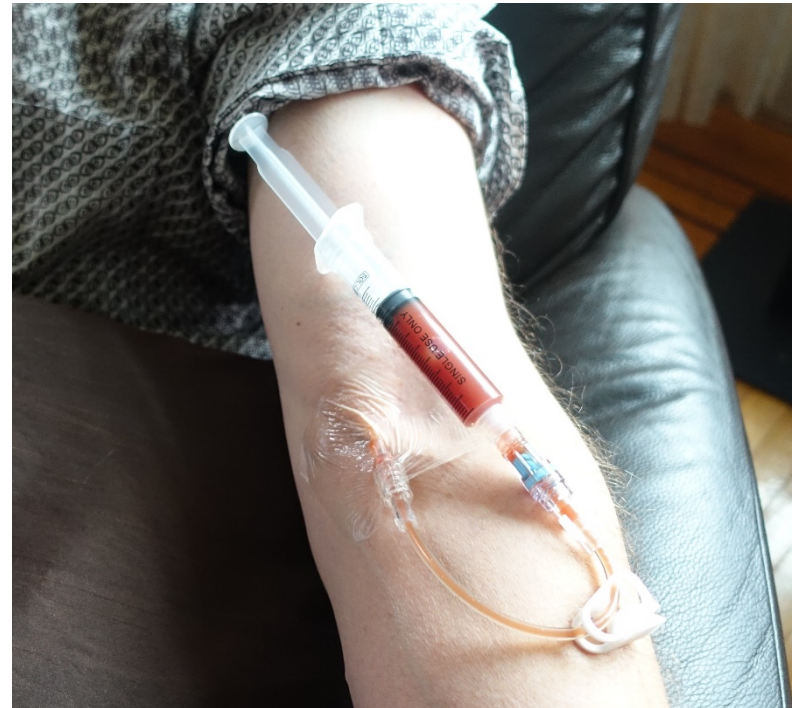
# How much blood causes clinically significant antibodies?

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## ■ Experimental studies on Rh immunization.

Stern K, Davidsohn I, Masaitis L  
Am J Clin Pathol. 1956; 26: pp. 833-43

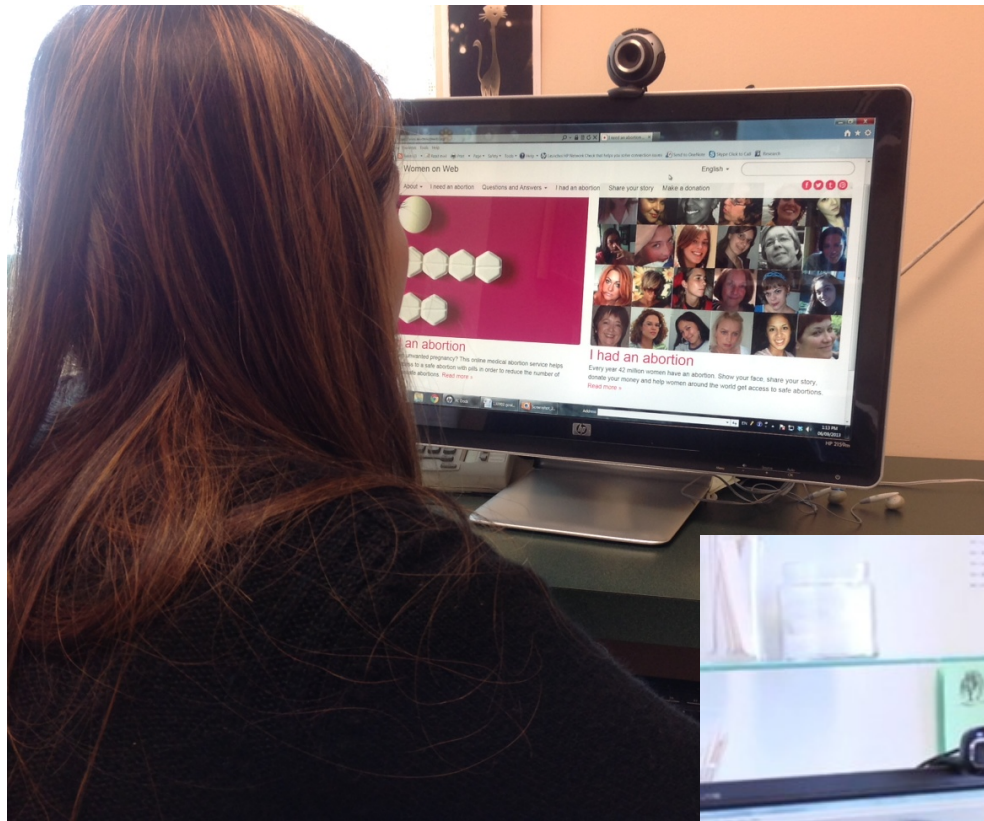
- Over 7.5 cc



# Why do we care?

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- **Risks** with Anti D (in the past)
- **Costs** of testing and treating
- **Shortages** of Anti D
- **Privacy** outside abortion clinics
- **ACCESS:** especially for telemedicine



**Women On Web**  
~8000/year

**Willow Women's Clinic**  
~200/year



Can we safely stop testing for Rh status and immunizing Rh-negative women having early abortions? A review of Rh alloimmunization in Canada and the Netherlands.

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# Hypothesis

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- We expect no significant difference in the rate of Rh alloimmunization in women between Canada and the Netherlands.

# Methods

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- **10-year** comparison of Canada and the Netherlands (2006-2015)
- Policies
  - Canada: all women tested and treated
  - Netherlands: >7 weeks for induced abortions and >10 weeks for spontaneous abortions
- Data collected:
  - Induced and spontaneous abortion rates
  - Number of births
  - Rh negativity rate
  - Clinically significant perinatal antibodies – **outcome measure**

# Defining Clinically Significant Perinatal Antibodies

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- Antibodies are considered clinically significant in causing HDFN if:
  - 1) they are predominantly IgG antibodies (and can therefore cross the placenta).
  - 2) the antigen is present on fetal red blood cells.
  - 3) the antibody is known to bind to the fetal antigen resulting in anemia. (This can be due to either hemolysis of fetal red cells or fetal bone marrow erythroid suppression.)
  - 4) the titre of the antibody is above 16.



# Methods cont'd

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- Population comparison:
  - Total fertility rate
  - Total number of pregnancies
  - Number of births
  - Number of induced and spontaneous abortions

# Results: Table 1

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Country	Induced abortions	Estimated spontaneous abortions	Births	Abortion rate	Total fertility rate
Canada	912 435	844 196	3 764 763	1.9	1.62
Netherlands	316 583	390 336	1 793 390	1.2	1.73

- **Total fertility rate:** average number of children that would be born alive to a woman during her lifetime
- **Abortion rate:** the number of abortions per 1 000 pregnancies

# Results: Table 2

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Country	Rh negativity rate
Canada	13.0%
Netherlands	14.5%

# Results: Table 3

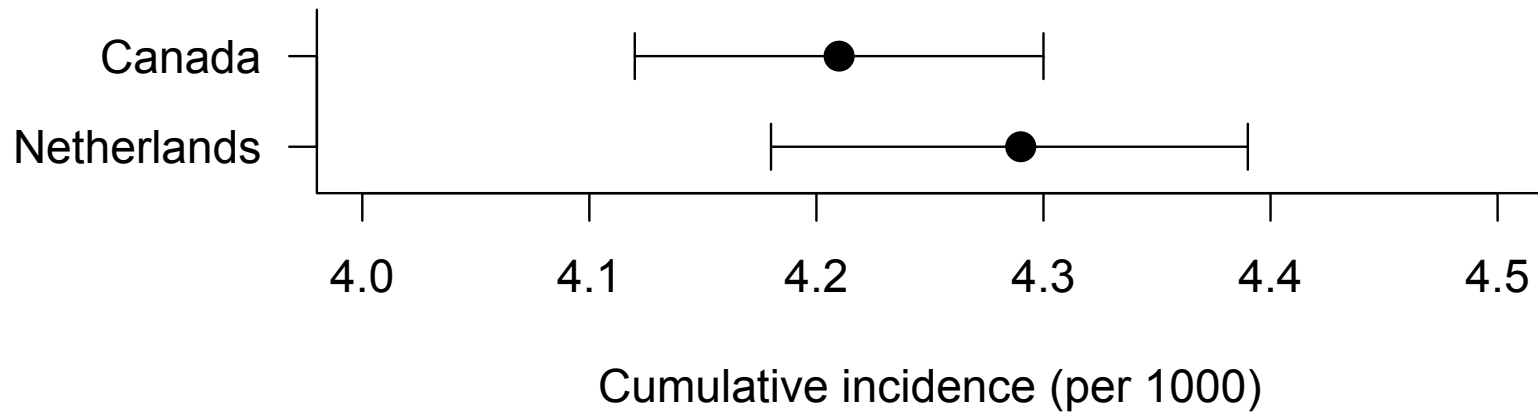
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Country	# pregnant women tested	# women with clinically significant perinatal antibodies
Canada	1 964 229	8 272
Netherlands	1 816 457	7 316

- **Canada:** 4.21/1 000 (95% CI 4.12 to 4.30)
- **Netherlands:** 4.29/1 000 (95% CI 4.18 to 4.39)

# Results: Figure 1

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# Sources of Error

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- Not all induced abortions are reported
- Spontaneous abortions are not reported
- How many women were tested and treated?
- **In Canada:**
  - Only 6/13 provinces and territories reported
  - Before 2014, only # of antibodies, not # women with antibodies were reported (requiring estimates)
  - 2006-2009 fiscal years instead of calendar years reported

# Possible Confounders

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- Different abortion rates, fertility rates, and rates of medical vs. surgical abortions
- Possible difference in compliance with policy
- Missing data

# Study Strengths

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- Almost 2 million women from each country
- 10 years of data
- 10 years after policy change in the Netherlands
- Both countries use same definition of clinically significant antibodies



# Conclusion

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- The anti D policies in the Netherlands are safe for women.

# But what about 12 weeks?

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- Fetal blood volume = 4.2 cc
- Minimum amount of blood needed for significant antibodies = 7.5 cc
- No evidence that anti D is needed

# Thank you!

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