

HIV Diagnosis in Infants: The Clinical Context



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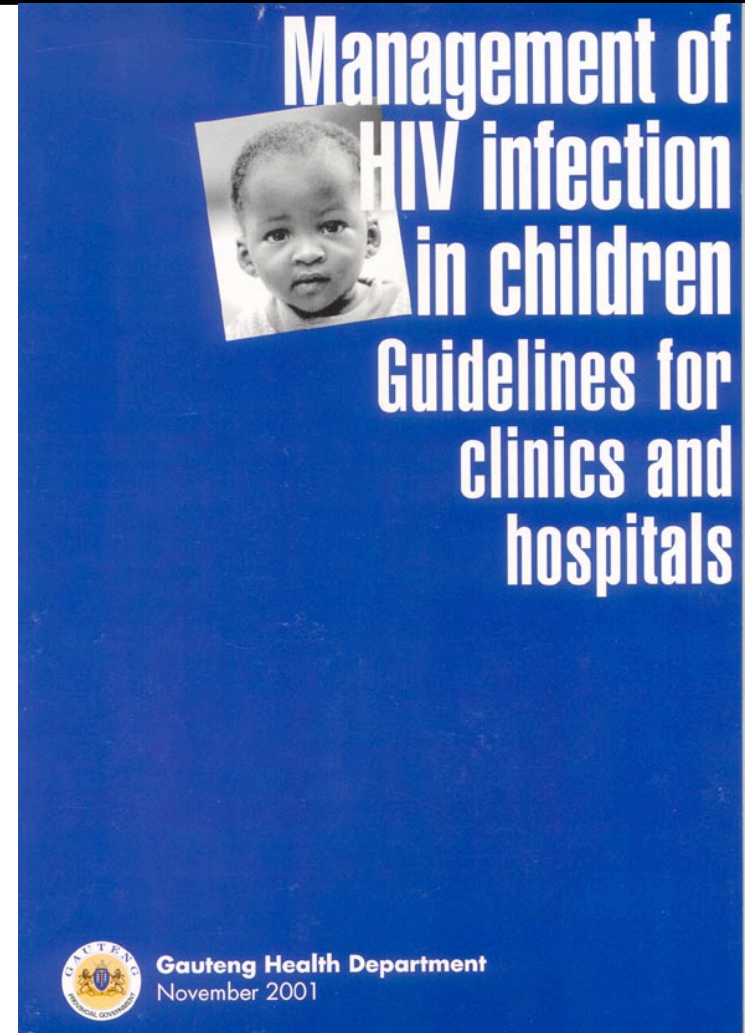
WHY DIAGNOSE?

- PREVENTION
 - monitor PMTCT program – HIV transmission
- TREATMENT
 - Access to appropriate care for
 - HIV exposed, HIV status unknown
 - HIV exposed but uninfected
 - HIV infected

CURRENT CLINICAL PRACTICE

“Low resource setting” protocol

- Follow *all* HIV-exposed infants for 1 year
- Co-trimoxazole prophylaxis from 6-weeks
- HIV ELISA test at 12-months





Caring together for life
Khomanani

National Antiretroviral Treatment Guidelines

CORONATION HOSPITAL
DR. COOVADIA A.

FIRST EDITION

HIV AND AIDS POLICY GUIDELINES • DEPARTMENT OF HEALTH

National Antiretroviral Treatment Guidelines



National Department of Health
South Africa 2004



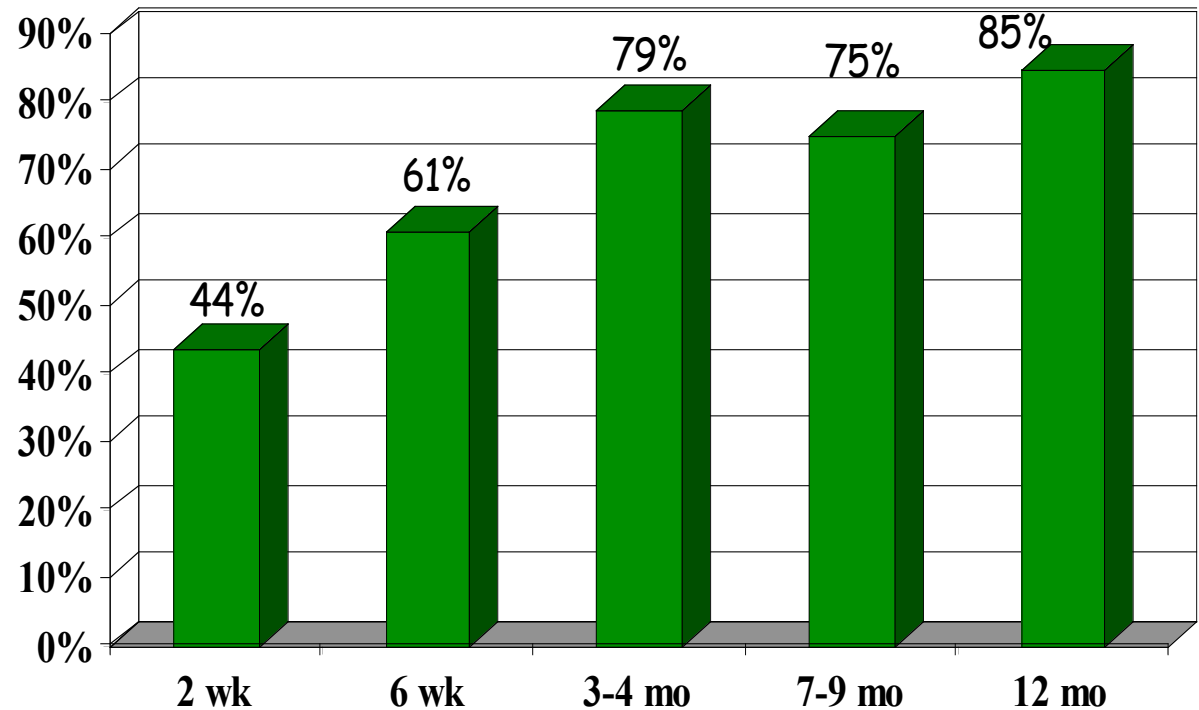
**Rapid HIV testing may be less reliable in children than in adults.
Rapid HIV tests should not routinely be performed in children.**

De Baets, et al. Clin Diagn Lab Immunol 2005

HIV-exposed infants lost to follow up



**CORONATION
PMTCT CLINIC**



Oct 2001 – 2003 (24 months)

Sherman et al. S Afr Med J 2004;94:289

36% of HIV-infected infants die by 1 year of age

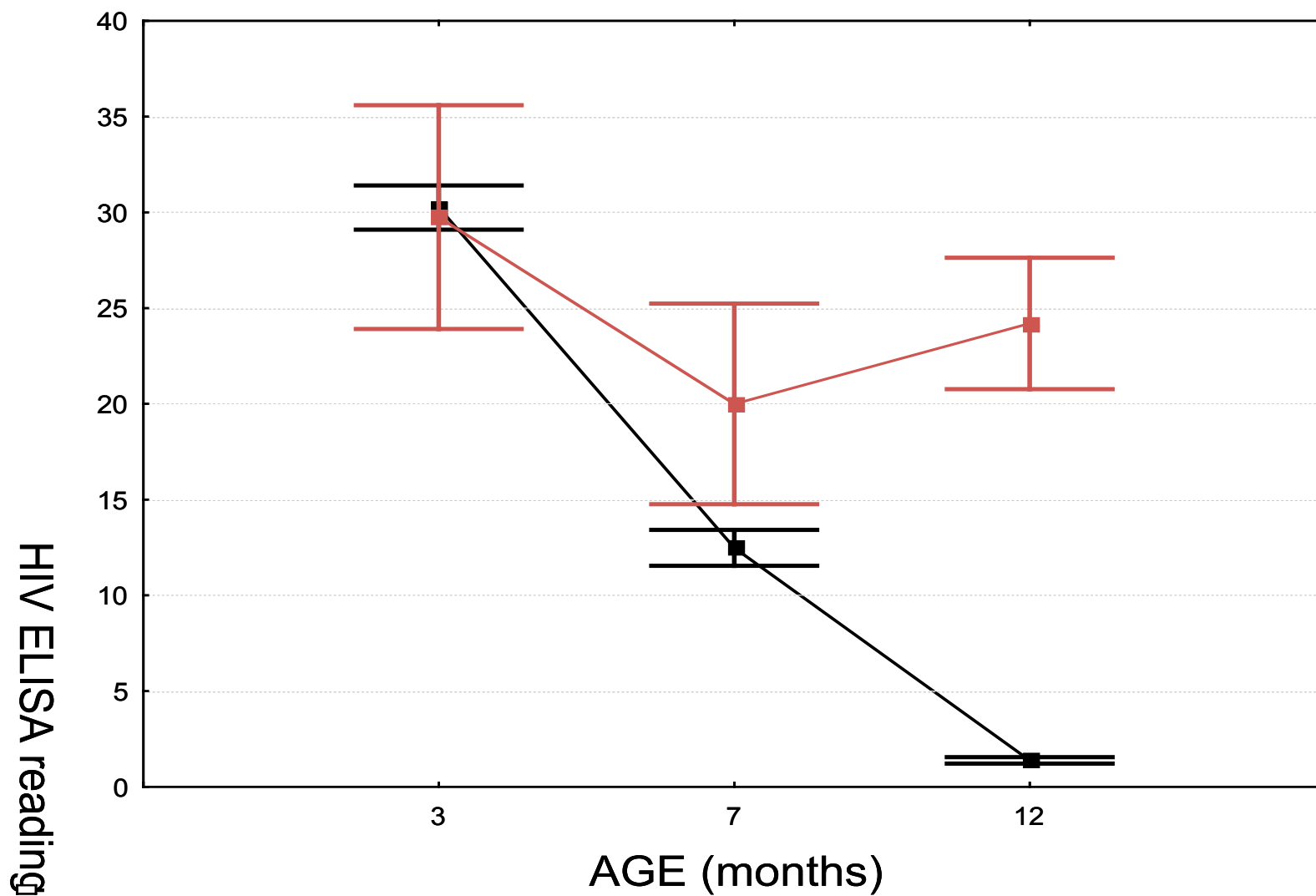
Jones et al. Bulletin of WHO 2005;83(7):559-560

**NO PMTCT PROGRAM ASSESSMENT
NO ACCESS TO HIV CARE !!**

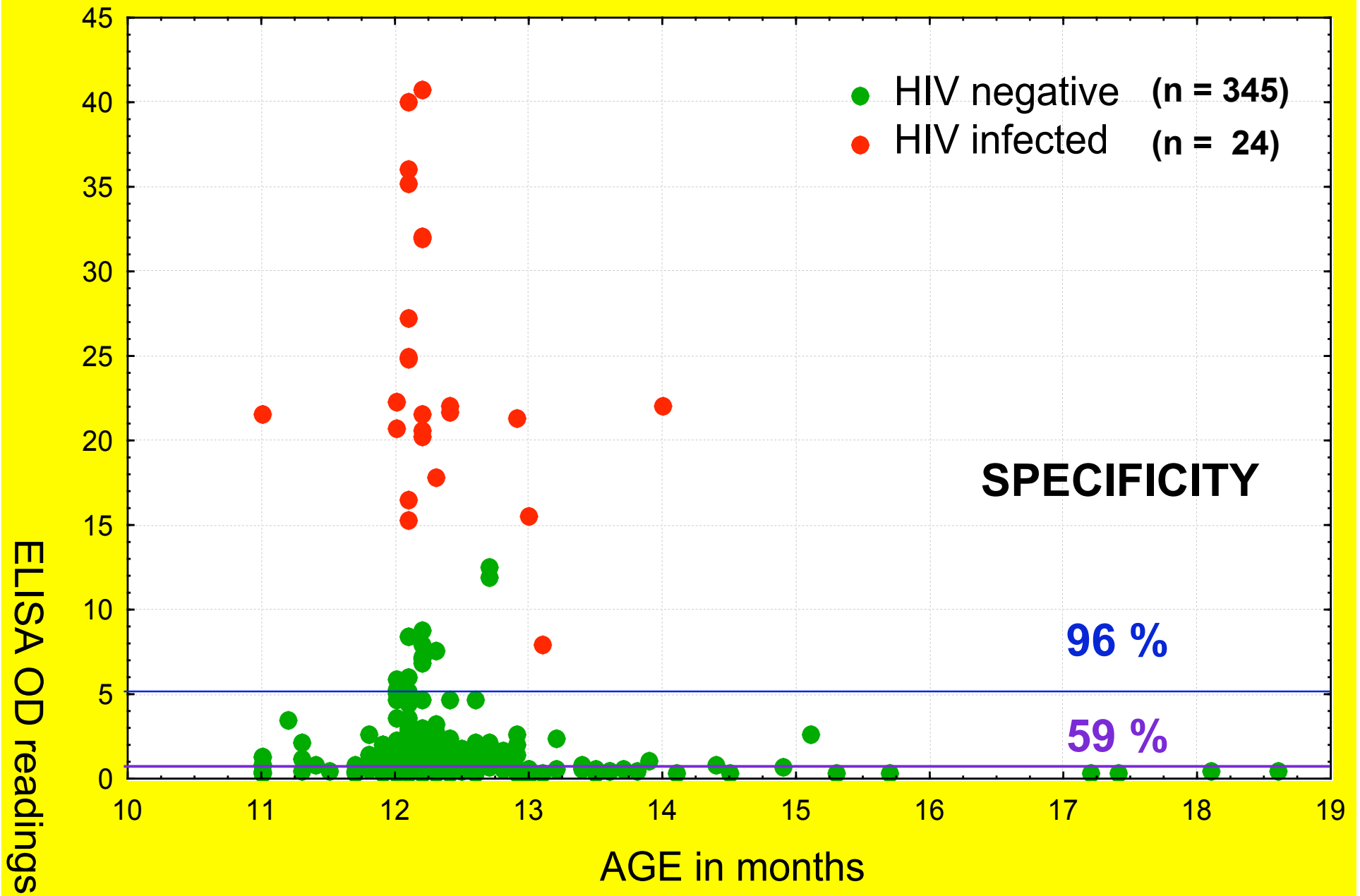
CLINICAL ASSESSMENTS

Age	n	HIV	HIV	Doctor's examination		IMCI clinical algorithm	
		pos	neg	sensitivity	specificity	sensitivity	specificity
6 weeks	301	26	275	56%	90%	17%	97%
3 months	290	23	267	67%	96%	11%	100%
7 months	258	20	238	94%	99.5%	47%	99.6%
12 months	234	15	219	93%	99.5%	50%	99.5%

Serial HIV ELISA readings from 301 exposed infants according to HIV infection status



Serum HIV ELISA tests (IMx & Axsymm) in 369 infants
Median age = 12.1 months



RAPIDS!

ORAL FLUID HIV TESTS

Oral fluid [HIV Ab] < blood [HIV Ab]

OF HIV ELISA test

(OraSure[®] & Vironostika[®])



Rapid OF HIV test

(OraQuick[®])



ORAL FLUID HIV TESTS

		HIV infected children	Sensitivity	HIV uninfected children	Specificity
Serum HIV ELISA (n=291)	+	20	100%	112	
	-	0		159	59%
O.F. HIV ELISA (n=291)	+	19	95%	18	
	-	1		253	93%
OraQuick (n=235)	+	13	87%	6	
	-	2		214	97%
False negative results				False positive results	

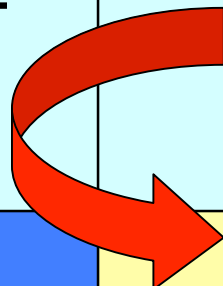
Median age = **12.2** months (11 – 18 months)

At 12-months: repeat testing reduced from 45% to 8-12%

HIV TESTS BY AGE

	Birth	>18 months
EXPOSURE	Maternal status HIV ELISA or Rapid	
HIV STATUS	Viral detection assays (DNA/RNA PCR or US p24Ag)	HIV ELISA or Rapid

	Birth	>18 months
EXPOSURE	Maternal status HIV ELISA or Rapid	
HIV STATUS	Negative HIV ELISA or Rapid	HIV ELISA
	Viral detection assays (DNA/RNA PCR or IgG 24 Ag)	HIV ELISA or Rapid



BREASTFEEDING

	Birth	12 months	>18 months
EXPOSURE	Maternal status HIV ELISA or Rapid		
HIV STATUS	Viral detection assays (DNA/RNA PCR or US p24Ag)	ELISA reading or ? Rapid	HIV ELISA or Rapid

CONCLUSIONS

- ‘During’ seroreversion: 6 - 18 months of age?
- Use available tests
 - HIV ELISA readings (blood & OF)
 - Rapid tests (blood & OF)

To: diagnose HIV negative children earlier
identify children for > expensive assays

- **IDEAL:** all exposed children tested by ≤ 6 wks

ACKNOWLEDGEMENTS

All WOMEN & CHILDREN participants

COLLABORATORS

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PRESUMPTIVE DIAGNOSIS

n = 301 infants

26 HIV+

10 (sensitivity 38%) correctly identified

5 infants died before 12 months not identified

274 HIV-

10 (specificity 96%)

incorrectly identified as HIV+

7/10 were aged 6 weeks

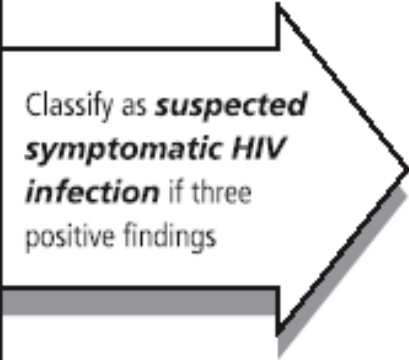
IMCI ALGORITHM

Ask

- Does the child have pneumonia today?
- Has the child had any diarrhoea in the past 3 months?
- Has the child had any episode of persistent diarrhoea 14 days in the past 3 months?
- Has the child got an ear discharge now or in the past?

Then look and feel

- Is the child's weight below the third centile?
- Does the child have poor weight gain according to history or the "Road to health card"?*
- Any enlarged lymph glands in more than one of the following sites : neck, axillae, or groin?
- Is there oral thrush?
- Is there parotid swelling?



Classify as ***suspected symptomatic HIV infection*** if three positive findings

WHO PRESUMPTIVE Dx

- Infant is confirmed HIV-antibody positive;
- Aged under 18 months; and
- Symptomatic with two or more of the following:
 - oral thrush;
 - severe pneumonia^(*)
 - severe wasting/malnutrition^(*)
 - severe sepsis^(*)

- Other factors that support the diagnosis of severe HIV disease in an HIV-seropositive infant include:
 - recent HIV-related maternal death
 - advanced HIV disease in the mother
 - CD4 < 25 %.

Confirmation of the diagnosis of HIV infection should be sought as soon as possible.

CLINICAL ASSESSMENTS for diagnosis

Paediatricians versus the IMCI algorithm

							Performance of clinical assessments							
Age	n	True HIV status		Doctor's clinical assessments			Doctors' assessments				IMCI clinical algorithm			
		N	P	N	P	Unknown [% of total]	SN %	SP %	PPV %	NPV %	SN %	SP %	PPV %	NPV %
6 wks	301	275	26	210	33	58 [19]	56**	90**	30	96	17	97	30	94
3 mo	290	267	23	224	21	45 [16]	67**	96*	57	97*	11	100	100	93
7 mo	258	238	20	223	18	17 [7]	94**	99.5	89	99.5*	47	99.6	89	96
12 mo	234	219	15	208	15	11 [5]	93**	99.5	87	99.5*	50	99.5	88	97

N = negative

P = positive

SN = sensitivity

SP = specificity

* p < 0.05

** p < 0.005