Eliminating Perinatal HIV Transmission in the United States

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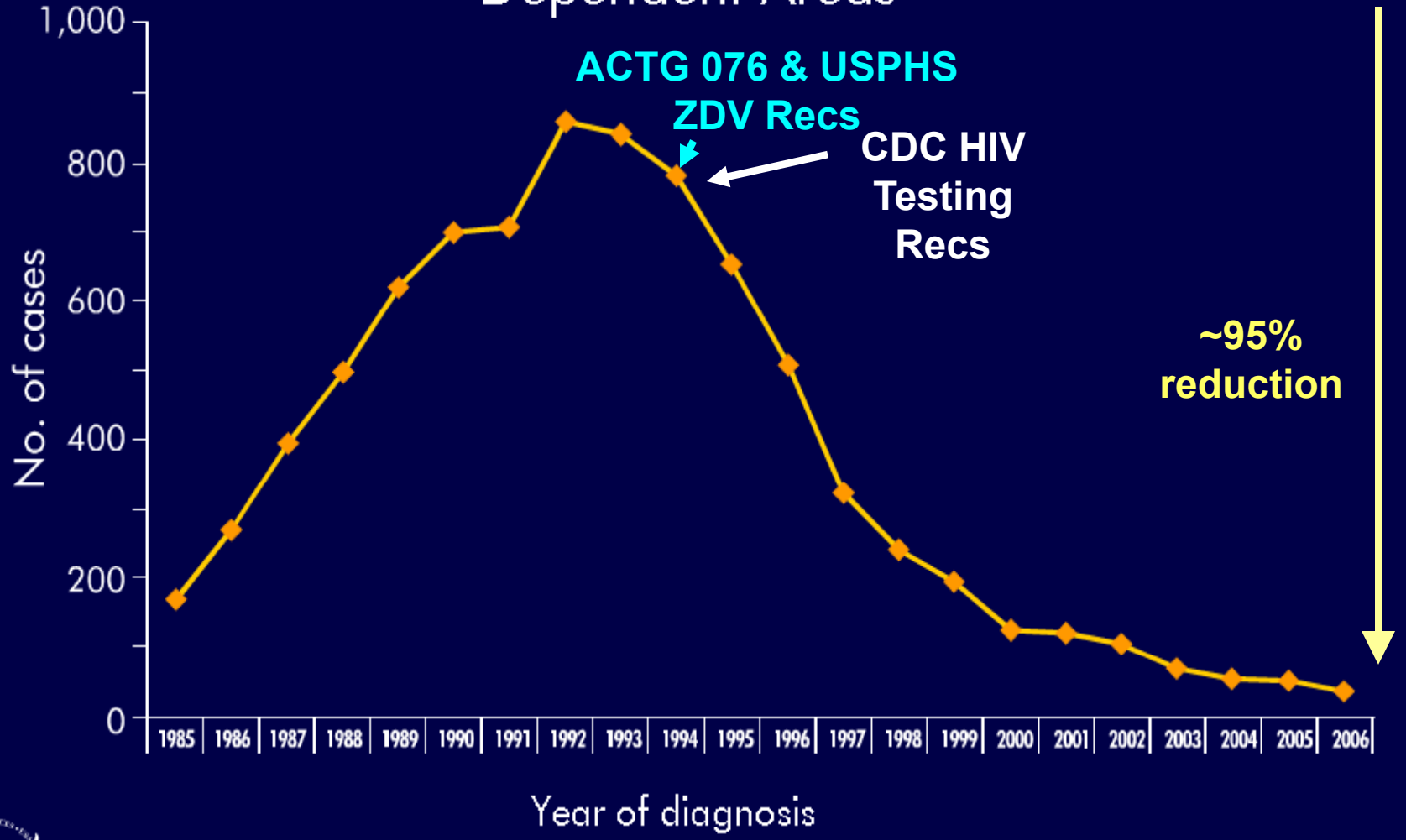
Estimated Number of Perinatally Acquired AIDS Cases by Year of Diagnosis, 1985–2006—United States and Dependent Areas



Note. Data have been adjusted for reporting delays and cases without risk factor information were proportionally redistributed.

Number of perinatally infected infants by year of birth & year reported, in 33 states with HIV infection reporting since 2001—United States.

Year of Report						Total Reported	Number infected infants in birth cohort (95% CI)*
Birth Year	2001	2002	2003	2004	2005		
2001	39	74	31	8	10	162	277 (224-346)
2002		29	50	21	9	109	204 (161-276)
2003			25	34	27	86	167 (127-224)
2004				25	33	58	138 (96-186)

*Data from 33 states with HIV infection reporting were extrapolated to the entire United States. Estimates include adjustments for delays in reporting, and underreporting of cases.

McKenna, Hu. AJOG 2007, Sept. 197: S10-16

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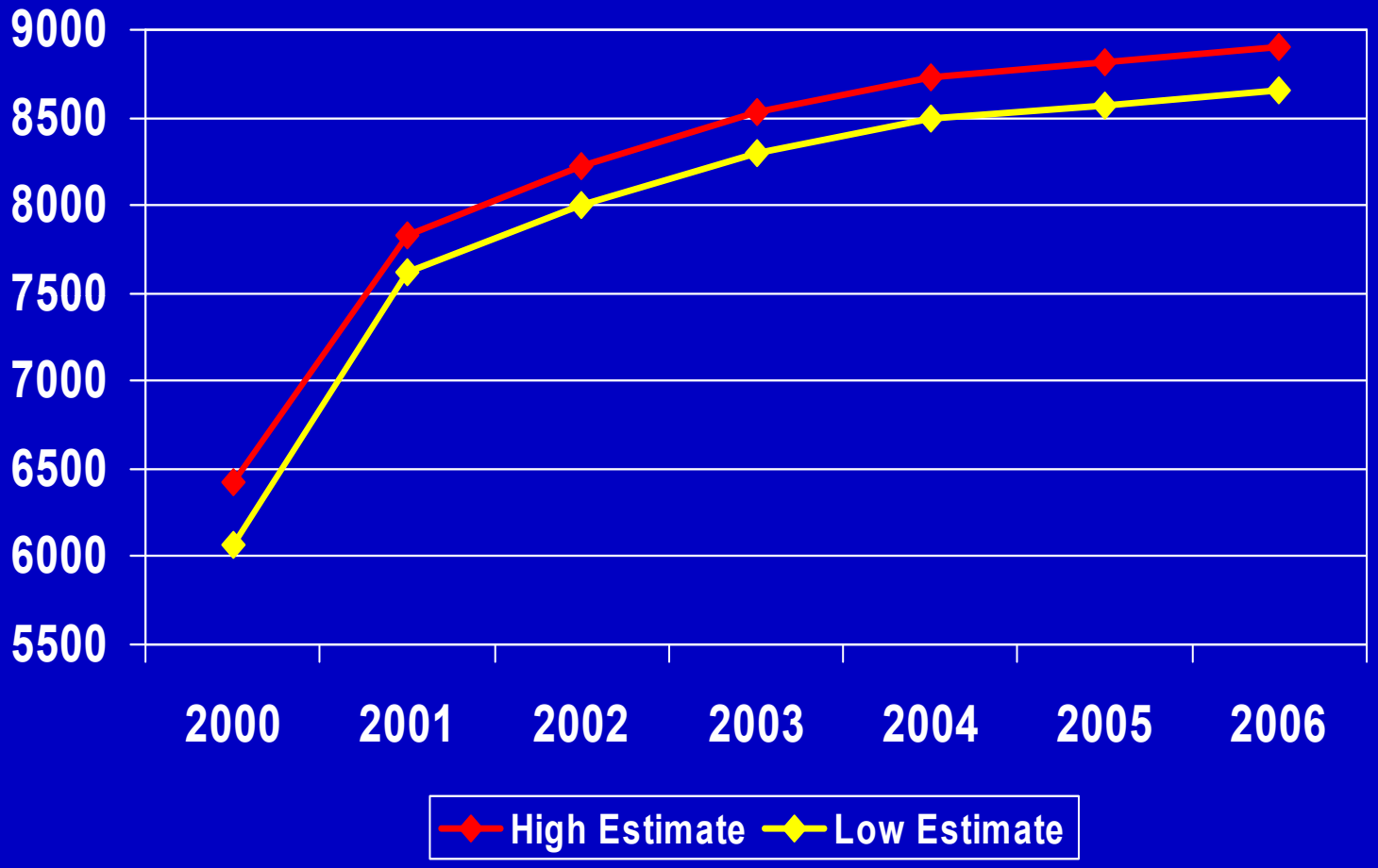
Estimated number of births to women living with HIV infection, 2000-2006, United States

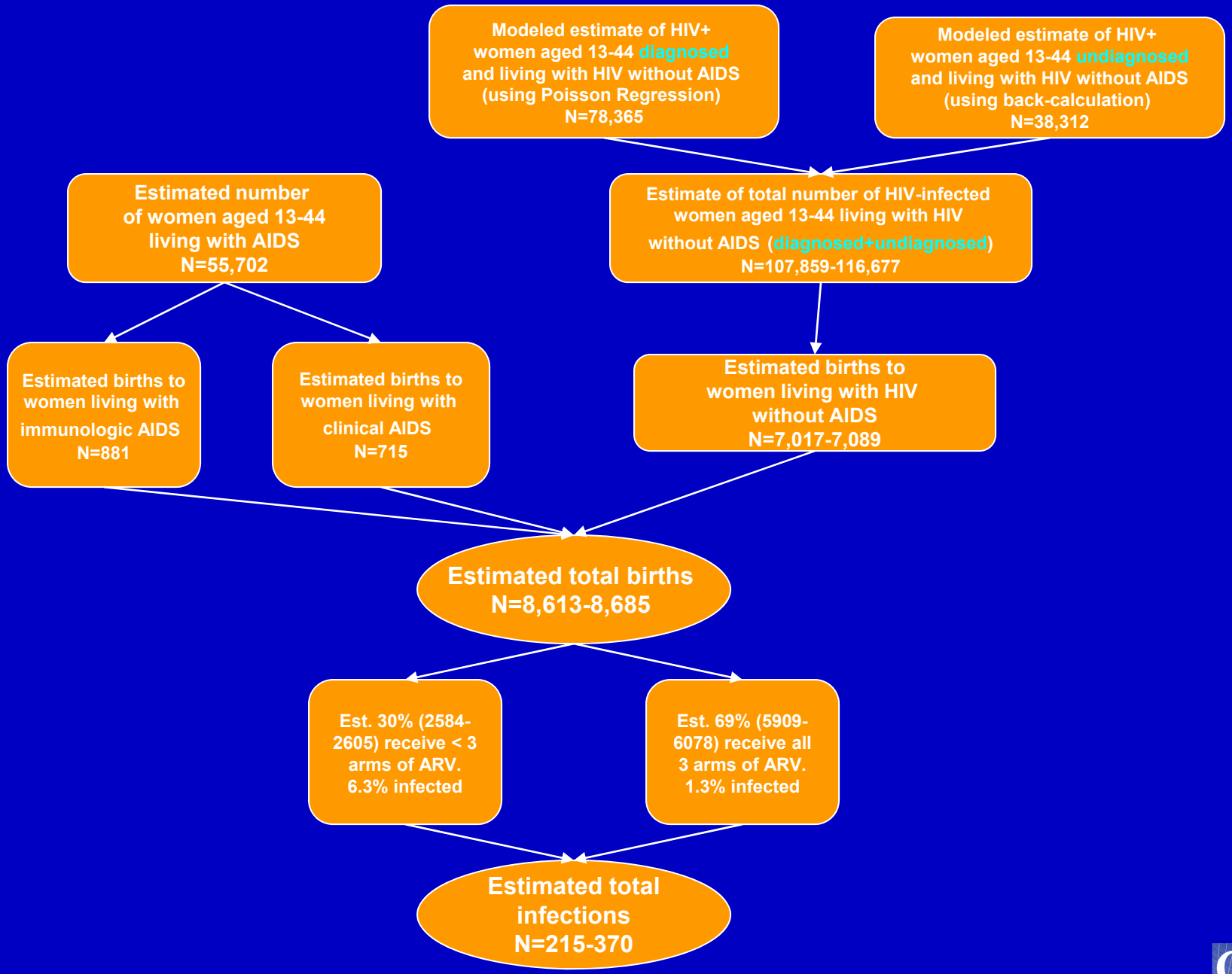


2006 estimate (8,650 – 8900) is ~30% > 2000 estimate (6075 – 6422)

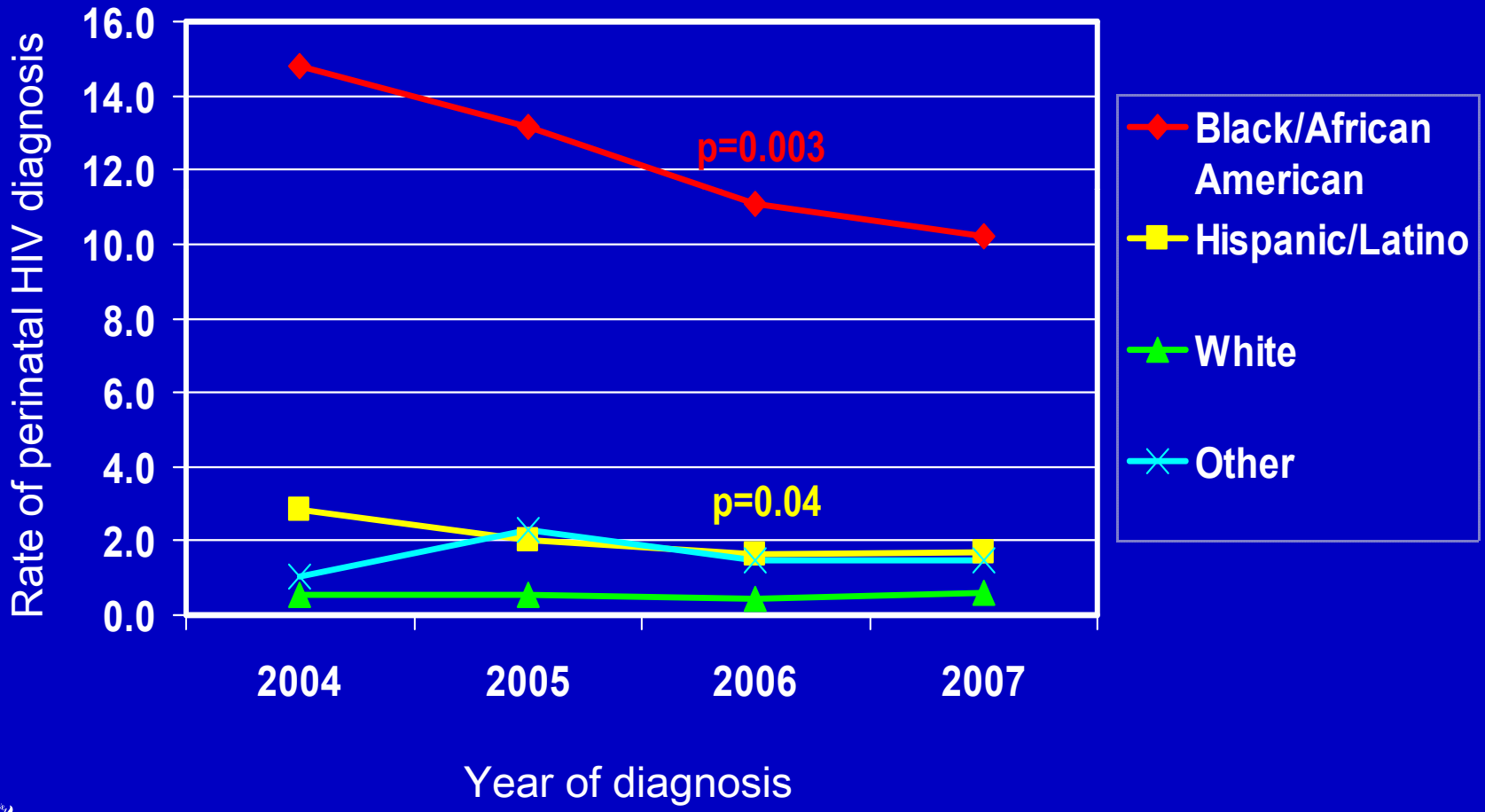
Office of Inspector General (Fleming), 2002

Whitmore, et al. CROI, 2009

Figure 1. Estimation of the number of HIV-infected infants, United States, 2005



Annual rate of diagnoses of perinatal HIV infection per 100,000 infants aged ≤1 year, by race/ethnicity — 34 states, 2004-2007



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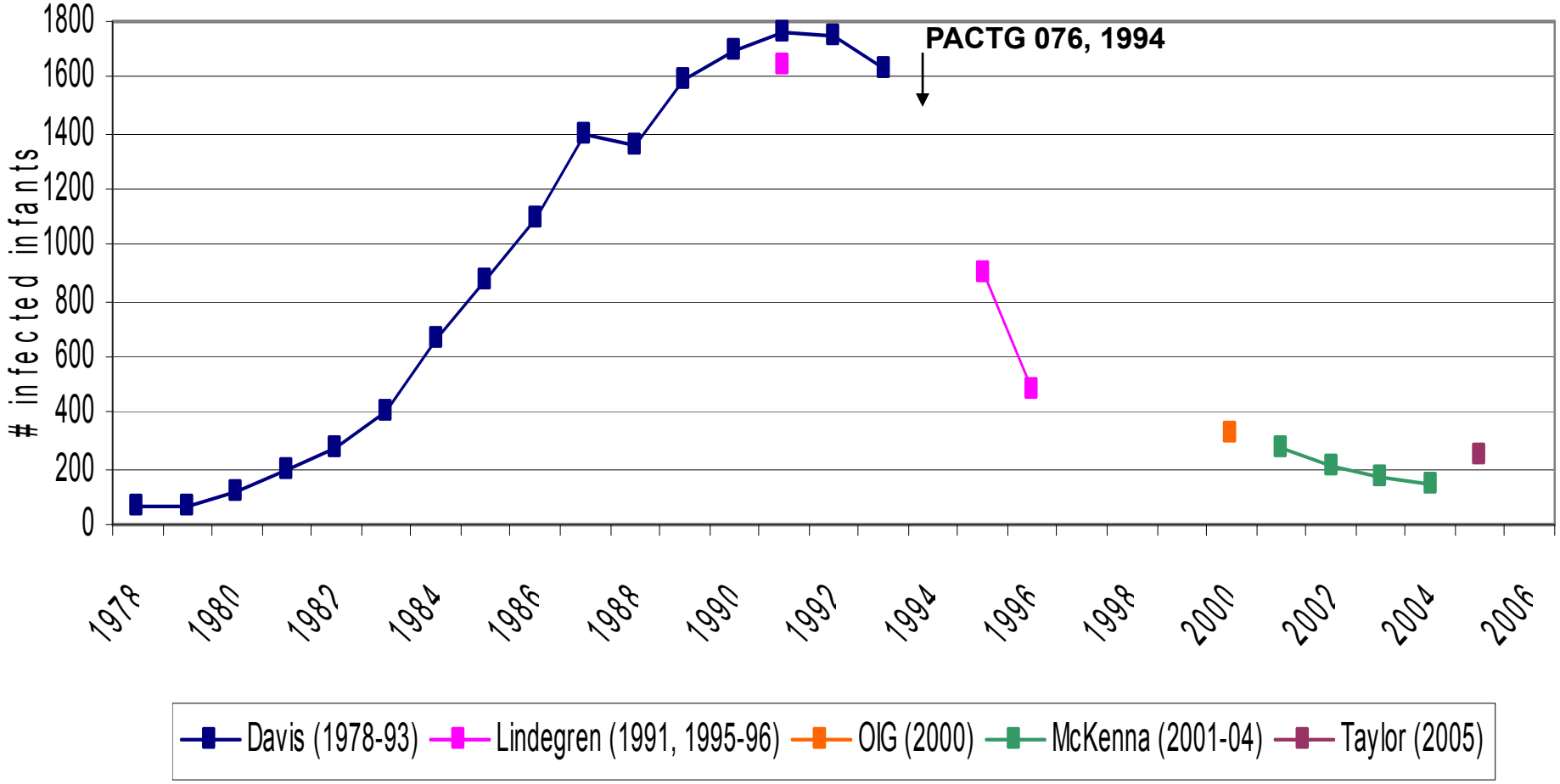
HIV infected infants in the United States: model estimates from 1978-2005



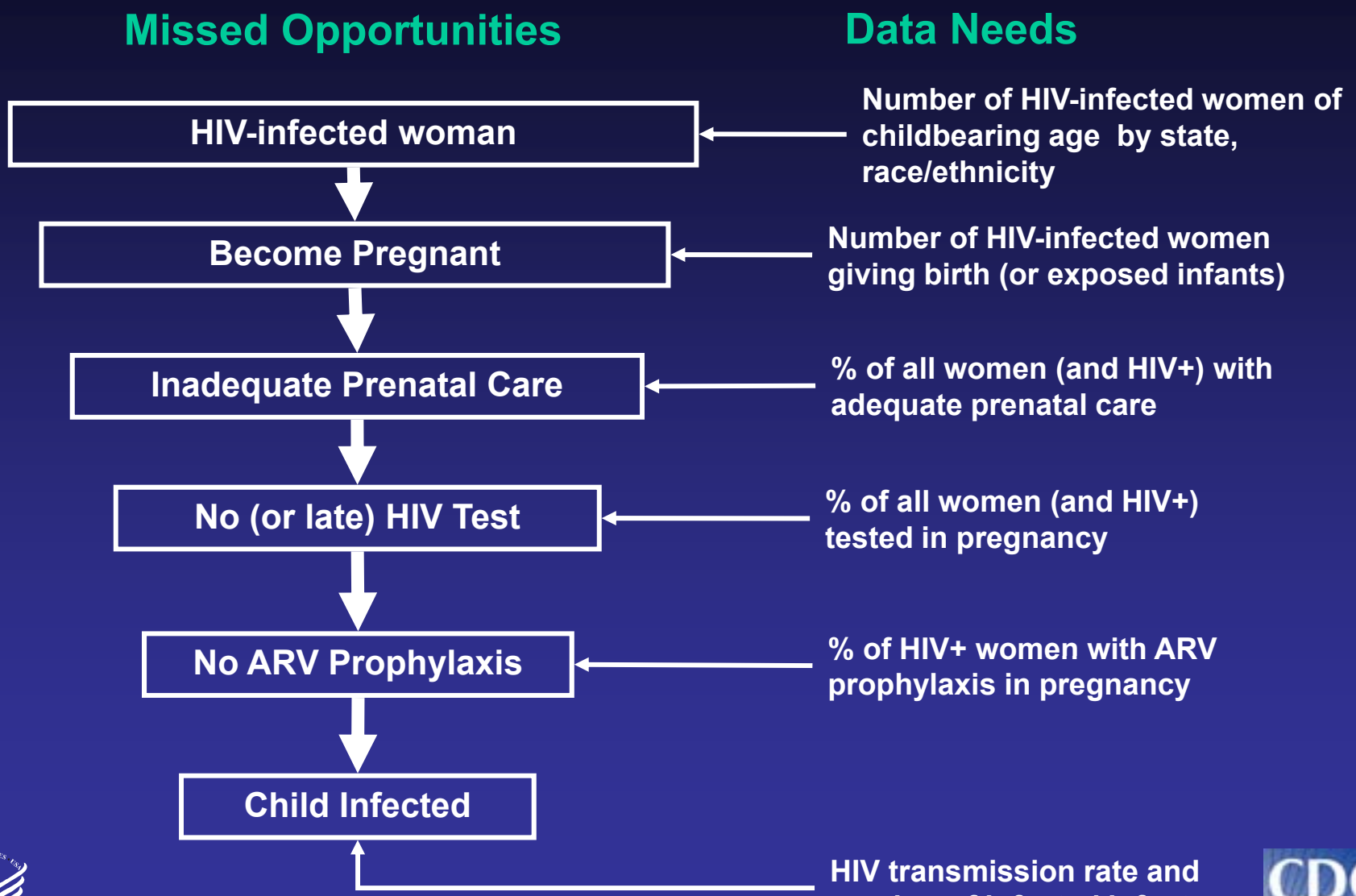
Davis et al., *JAMA* 1995;274:952-5.
Lindegren et al., *JAMA* 1999;282:531-8.
Office of Inspector General (Fleming), 2002.
McKenna & Hu, *AJOG* 2007 Sep;197(3Suppl):S10-6.
Taylor et al., unpublished, 2008.

MCT Rates in Industrialized Countries in the HAART Era

Country	Author	Years	Women	Mother-child transmission rate					% C/S
				Overall	VL<50	with NVP	w/o NVP	w/mat. ARVs	
USA-WITS	Cooper	1996-2000	1542	3.5%			5.0%	1.1% (HAART)	
USA, Europe, Brazil, Bahamas	Dorenbaum	1997-2000	1270			1.4%	1.6%		
France	Warszawski	1997-2004	5721	1.3%	0.4%				
European Collab. Study	ECS	1997-2004	1983	2.87%					
		2001-2003		0.99%					
Sweden	Navér	1999-2003	184	0.6%					80.3%
		2000-2003		0.0%					
Spain	Fernández-Ibieta	2000-2005	632	1.4%					
United Kingdom	Townsend	2000-2006	2100	1.2%	0.1%			0.8% (>2wks ARV)	

Cooper ER, et al. *JAIDS*. 2002 Apr 15;29(5):484-94. ; **Dorenbaum A**, et al. *JAMA*. 2002 Jul 10;288(2):189-98.;**European Collaborative Study**. Mother-to-child transmission of HIV infection in the era of highly active antiretroviral therapy. *CID*. 2005 Feb;40:458-465.; **Navér L**, et al. *JAIDS*. 2006 Aug 1;42(4):484-9. **Townsend CL**, et al. *AIDS*. 2008, in press.; **Warszawski J**, et al. *AIDS*. 2008 Jan 11;22(2):289-99. **Fernández-Ibieta M**, et al. *An Pediatr (Barc)*. 2007 Aug;67(2):109-15.

Perinatal Prevention Cascade



Missed Opportunities—Enhanced Perinatal Surveillance (EPS), 1999-2003, 24 sites, United States

- 8596 HIV-exposed singleton births with known HIV infection status
  - 7605 (88%) had prenatal care
    - 7151 (94%) had HIV testing
      - 6553 (92%) had ARV during pregnancy
        - 4636 (70%) had ARV during Labor/Delivery

Whitmore, S. Outcomes of Missed Opportunities for HIV Perinatal Prevention. National HIV Prevention Conference, 2007.

Prenatal HIV testing rates—national data, United States

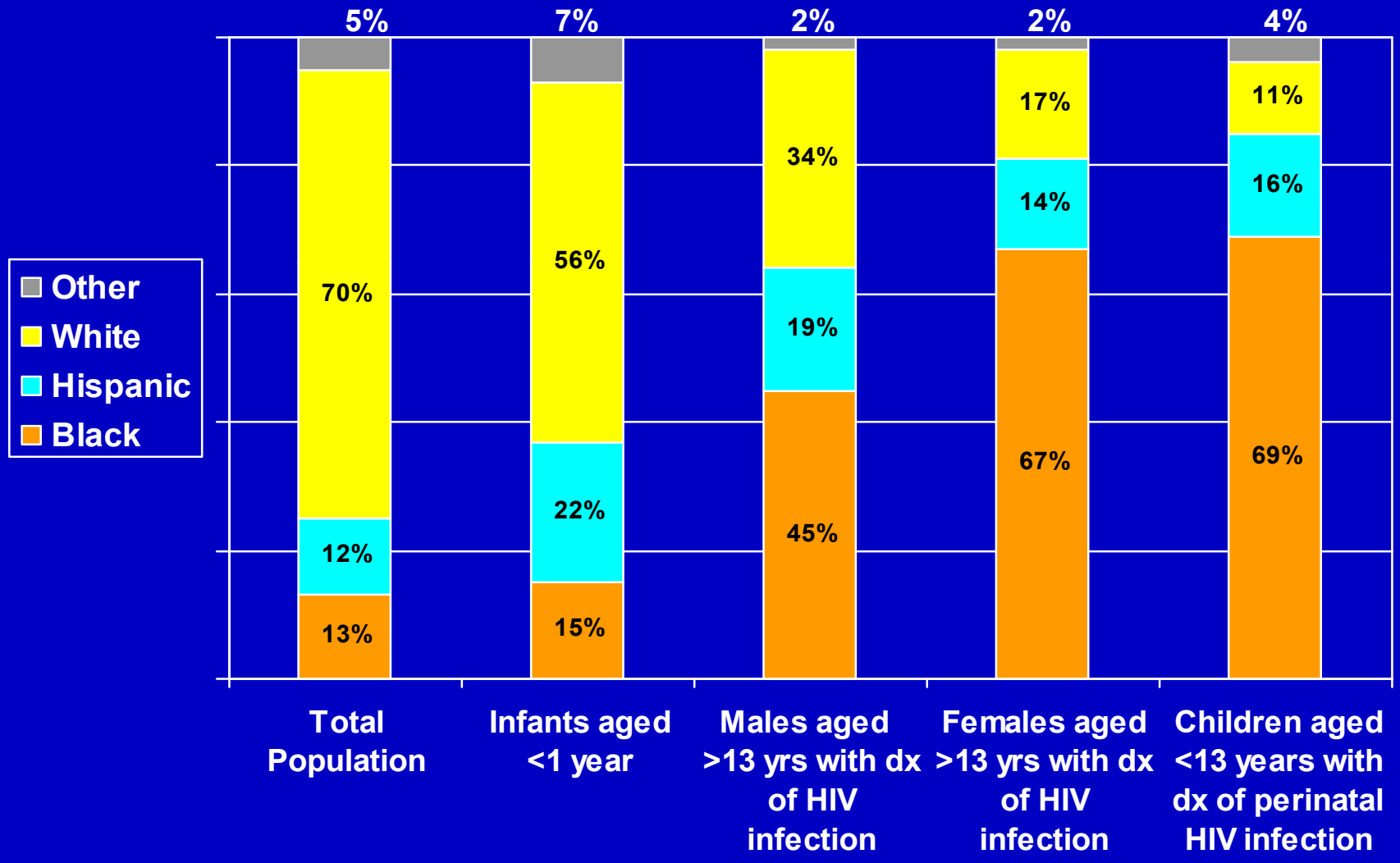
• 69%	2002	National Survey of Family Growth[1]
• 50-96%	2003	DHAP/RTI chart review[2]
• 45-96%	2004-6	Pregnancy Risk Assessment and Monitoring System (PRAMS)[3]
• 74%	2006	National Hepatitis B Hospital Survey[4]

[1]Anderson J, Sansom S, Mat Chil Health J 2006;10:413; [2]Taylor A, unpublished data; [3]Taylor A, Prev Conf 2009; [4]Fitz Harris L, Prev Conf 2009.

Elimination of Perinatal HIV in the Unites States—Why?

- It is feasible
  - We know how
  - We have the tools
- Missed opportunities account for most remaining transmissions
- Cost-savings potentially $25,000,000/yr
  - Discounted lifetime medical care cost for an HIV-infected child= $250,000
  - > 100 perinatal infections per year remaining
- It's the right thing to do.

Racial/ethnic distribution in total population, infants aged ≤ 1 year, persons aged ≥13 years with diagnoses of HIV infection & children with diagnoses of perinatal HIV infection, 34 states, 2004-2007



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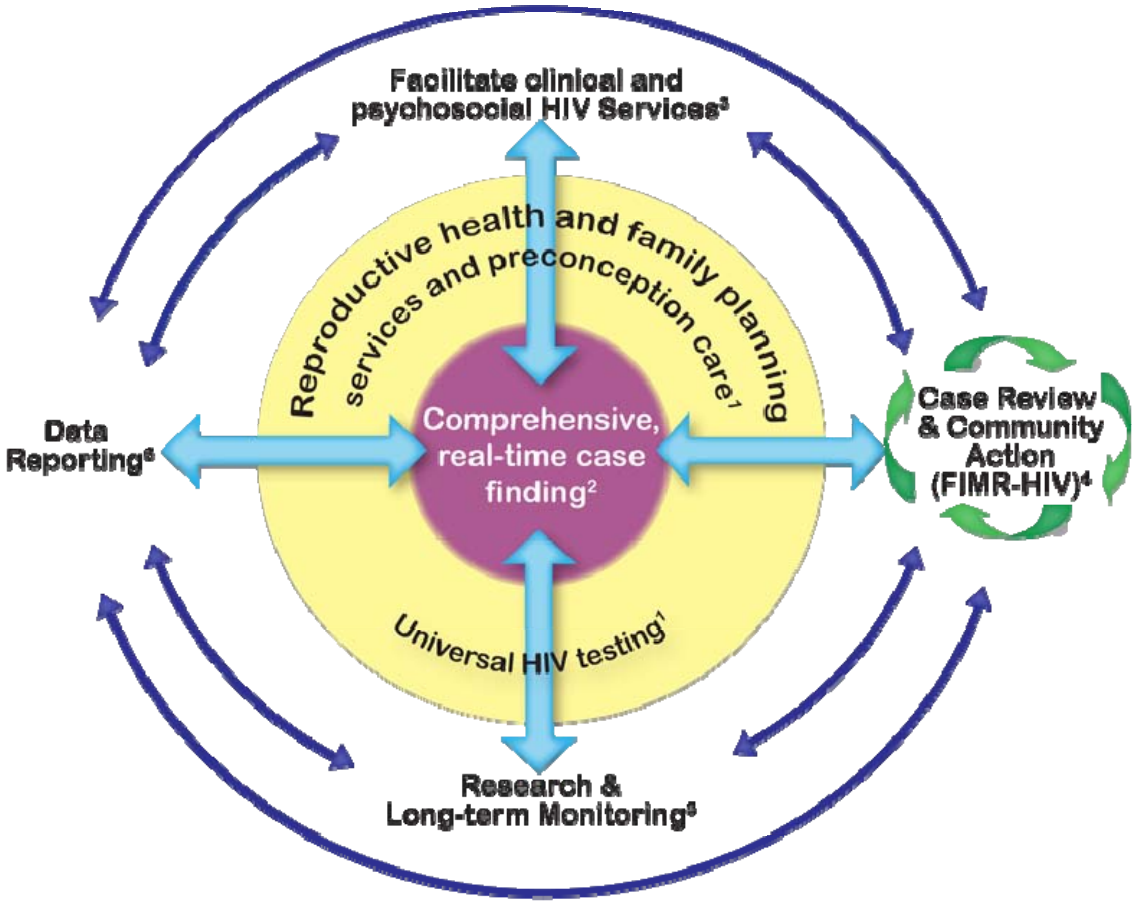
Elimination of Perinatal HIV Transmission in the Unites States—Goal

- **Incidence < 1/100,000 live births**
  - < 40 cases annually among a 4 million birth cohort
- **Transmission Rate < 1%**
  - e.g., < 87 cases in 2006 (8700 HIV-exposed births)

Both goals represent a reduction of >100 cases per year.

Framework to Eliminate Mother-to-Child Transmission of HIV (EMCT)



[1]Reproductive health and family planning services, preconception care, and universal HIV testing are essential components of EMCT and facilitate [2]comprehensive real-time case finding of all HIV-infected pregnant women. Real-time case finding enables: [3]comprehensive clinical care and social services for women and infants; detailed review of select cases to identify and address missed prevention opportunities and local systems issues through continuous quality improvement[4]; research and long-term follow-up to develop and ensure safe, efficacious interventions for EMCT[5]; thorough data reporting for HIV surveillance and EMCT evaluation[6].

Will the annual number of perinatal HIV infections in the United States continue to decline without additional effort?

- Annual number of HIV-exposed births is increasing (30% increase from 2000 to 2006)
- Hardest-to-reach HIV-infected women & their infants pose an ongoing, significant challenge
- Evidence suggests that the annual number of HIV-infected infants is stable or increasing

Brown's Law

"…as a disease control program approaches the end point of eradication,

it is the program, not the disease, which is more likely to be eradicated…

due to the increase of the cost in skill, effort, and resources to trace the last remaining cases and treat them; and to the

increase in the disinterest of society in bearing that cost."

Brown WJ. The first step toward eradication. In: Proceedings of the World Forum on Syphilis and other Treponematoses (Washington, DC). Washington, DC; US Government Printing Office, 1964:21-5.

Elimination of perinatal HIV in the United States—key points

The target population, i.e., HIV-infected (pregnant) women is increasing:

- 30% increase HIV-exposed births/year between 2000-2006
- Further increase may occur due to effects of:
  - Increasing number of HIV-infected women of childbearing age
  - Longer survival and increased well-being of HIV-infected women
  - Safer conception methods (PrEP, assisted reproductive technologies, etc.)

Elimination of perinatal HIV in the United States—key points

- The stark racial/ethnic disparity in HIV MCT deserves further attention & action.
- Not a one-time accomplishment, i.e., an ongoing, annual effort