

**The role of Academic Pediatric Centers  
in the next 30 years of the Domestic  
HIV Epidemic in Children**

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# First things First

- **Everything I do depends on**
  - **approval and support of the Department administration**
- **I am lucky to work in a Department with**
  - **open communication**
  - **work together**
  - **shared vision for a sustainable future.**

# Considerations for this talk

- **An experienced clinical workforce**
  - **Complex to develop**
  - **Expensive to maintain**
- **Community based programs**
  - **Important to do**
  - **Expensive to maintain**
- **Federal funding is always uncertain**

# Clinical Workforce

**Start with a clinical case**

**[in red: where the Department is important]**

## **An Infant with fever and respiratory failure**

- **2 month old male, well in his first 5 weeks of life**
- **3 wks ago: diarrhea, fever, ↓ activity.**
- **Somewhat better in 3 days except diarrhea.**
- **5 days ago: cough and low fever**
- **Day of adm: Worse cough, went to local ED**
- **Local ED (**rural** county): Oxygen saturation=30% [Normal=99%]; trachea intubated, treat with IV fluids, antibacterials**
- **Transported to CHW PICU**

## In PICU

- **Term uncomplicated pregnancy and delivery. Breast feeding.**
- **Development: appropriate for age**
- **All family members healthy**
- **Lives in rural county with married parents. Mom has 10y son in El Salvador, healthy**

## **Days 1 and 2: In the PICU**

- **Needed high levels of mechanical ventilator support to maintain blood oxygen**
- **Fever but no hypotension [not the picture of usual bacterial shock]**
- **No watery nose or sick family members [not the picture of usual overwhelming viral infection]**
- **No clear focus of infection outside lungs.**
- **Negative viral studies [performed quickly in the labs of the hospital with tests devised by the Medical School]**

## Day 3: In the PICU

- **Develops pancytopenia**

	<b>Day1</b>	<b>Day2</b>	<b>Day3</b>
<b>WBC</b>	<b>8.3</b>	<b>3.5</b>	<b>2.3</b>
<b>Hemoglobin</b>	<b>10.3</b>	<b>9.1</b>	<b>7.9</b>
<b>Platelet Count</b>	<b>179</b>	<b>53</b>	<b>69</b>

- **Hematology** consult: consider rare hematologic diseases or leukemia



## Day 4 in the PICU

- **New week/ new attending**
- **More experienced (=old?)**
- **Sent HIV testing**
- **Test positive**
- **Called Infectious Diseases consult**
  - (another old person)
- **Started treatment for HIV and for the pneumonia**

# Where do you fit into this story?

- **Rural**
  - **Do you support outreach programs?**
- **Transport**
  - **Who supports the transport program at your hospital?**
  - **Who pays to staff it?**
  - **Who makes the money from it?**

# Specialized Clinical Care

- **PICU, Hematology, Infectious Diseases**
  - **Which divisions make or lose money?**
  - **Are all subspecialties required at a single institution to offer full service?**
    - **What about sub-sub specialists (HIV)?**
- **Specialized lab testing**
  - **Who develops the tests?**
    - **Who pays for that?**
  - **Who runs the tests?**
    - **Who keeps most of the money?**

## **Experienced clinical workforce**

- **Is this an important part of what academic pediatrics should strive to maintain?**
- **Complex to develop**
  - **High percent market share so the clinicians see many complex cases**
  - **Referrals: regional/national requires outreach (rural not cost effective?)**
  - **What is the relationship between excellent clinicians and researchers?**
  - **Who pays for ongoing education?**
- **Expensive to maintain (experience comes with older age and higher department costs)**

## **Back to the case**

- **Now 2 years old, doing well**
- **Life expectancy in persons living with HIV at age 20:**
  - **5-10 years shorter than without HIV**
    - **Live to age 75 instead of age 82**
  - **based on data in men who have sex with men**
  - **for this child late diagnosis and severity of presentation may further decrease life expectancy**

## **How could this have been prevented?**

- **Test his mother for HIV during pregnancy.**
- **If positive, treat her for HIV.**
- **HIV acquisition by the infant falls dramatically**

# To Identify the Pregnant Woman at Risk for HIV Infection

- **HIV is a sexually transmitted disease**
- **Most pregnant women have had unprotected sex at least once**

**Pregnant women are at risk for HIV infection.**

**All Pregnant Women Should be Tested for HIV**

## **Back to the case: Further discussion with mother**

- **Question “were you tested for HIV during your pregnancy?”**
- **Mother replies**
  - **“They drew lots of blood and told me they would call if any of it was not right”**
- **With maternal permission, we called the lab—no evidence HIV testing was sent**

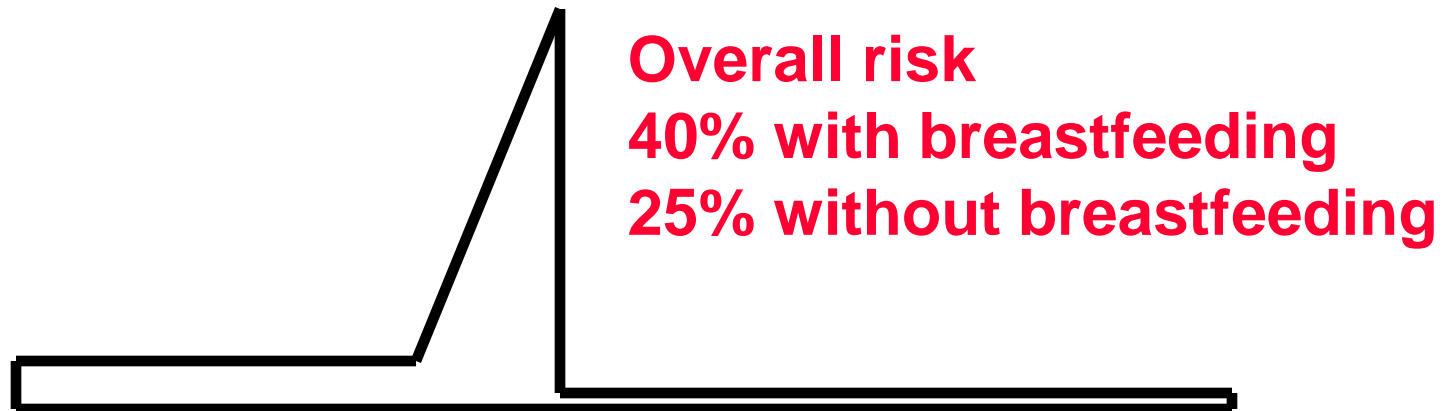


# Timing of Vertical Transmission of HIV

Antepartum

Intrapartum

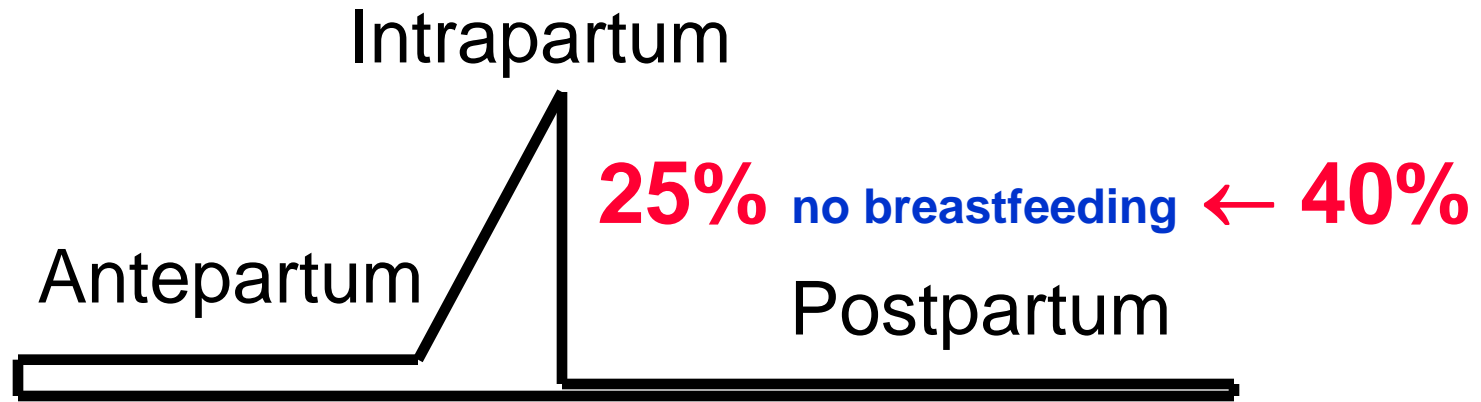
Postpartum



**20-30% antepartum**

**70-80% Intrapartum**

# Preventing Mother-to-Child HIV Transmission: Summary



**AP/IP/PP**

**≤1%**

**HAART to mother  
ZDV to infant**

**IP/PP**

**7-10%**

**ZDV<sup>2</sup>  
ZDV+NVP<sup>3</sup>**

**PP only**

**2.2% (2 or 3 drugs)**

**ZDV + NVP (+ 3TC)**

**No breastfeeding**

1--Nielsen-Saines K. HPTN 040  
NEJM 2012;366:2368

2--Wade NEJM 1999;339:1409

3--Taha TE. Lancet 2003;362:1171

## **Three Failures**

- **For all pregnant women offer HIV test at first prenatal visit, find the result, re-offer if not done or if mother initially declines**
- **Test all pregnant women of unknown HIV infection status at presentation in labor, treat the mother prior to delivery and the infant after delivery.**
- **Know the status of the mother when attending to the infant after birth, and when giving breast-feeding advice**

**What we have done to try to prevent  
these failures**

**Wisconsin HIV Primary Care  
Support Network**

# **Principles of a system of care for HIV-infected children-1991**

- **Pediatric HIV infection is a chronic illness requiring medical care for a long period of time.**
- **Easy access to services is essential to optimal care.**
- **Routine health care needs have to be met efficiently in a family-centered environment.**
- **Complex special needs have to be addressed at intervals. These complex needs increase as the disease progresses.**
- **Medical care is impossible without supporting the social needs of patient and family.**
- **Care needs to be interdisciplinary, collaborative, and coordinated by a case manager.**
- **Community support is essential.**
- **The most cost-efficient care is delivered using existing community organizations.**
- **Needs of various community/minority groups are best assessed by members of those groups.**
- **Continuing education of caregivers and all support personnel is essential.**

# **Wisconsin HIV Primary Care support Network**

- **Statewide focus**
- **Identify all pregnant women with HIV**
  - **Treat the women for their own health and to prevent HIV infection of infant**
- **Follow all children with HIV statewide**
  - **Most care in home community**
  - **Twice yearly at central clinic (Milwaukee and Madison)**
- **RN case management for**
  - **“high risk” women**
  - **Children (perinatal) and youth (behavioral)**

# **Wisconsin HIV Primary Care support Network**

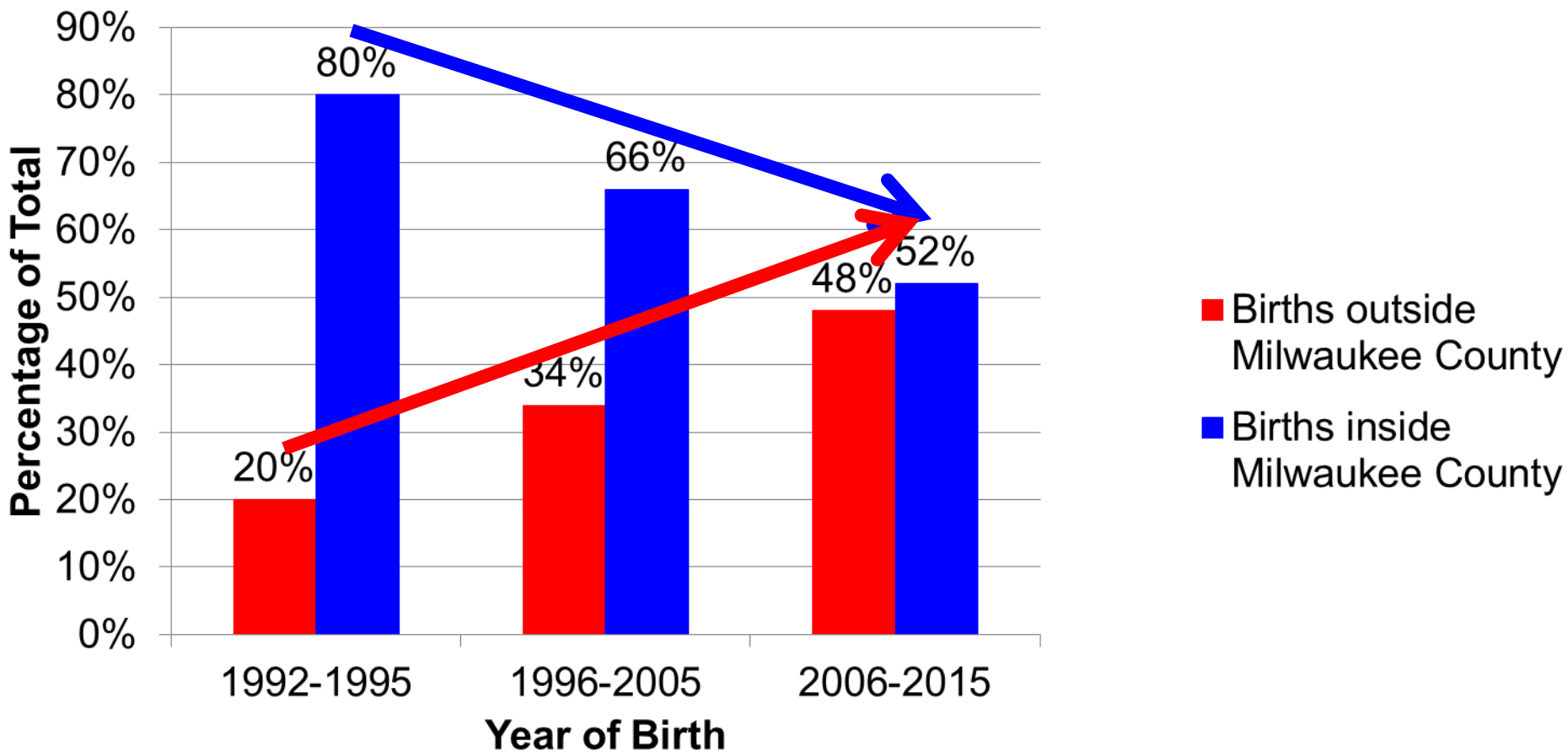
- **Funding from many sources**
- **Ryan White (DHHS)**
  - **Part D: direct federal grant application**
  - **Part B: federal grant to states, we apply to state of Wisconsin for funds**
- **Hospital foundation**
- **Local AIDS Service organization (first year only)**
- **Hospital directly supports 10% of Medical Director's salary**

# Progress in Reducing Perinatal HIV Transmission in Wisconsin

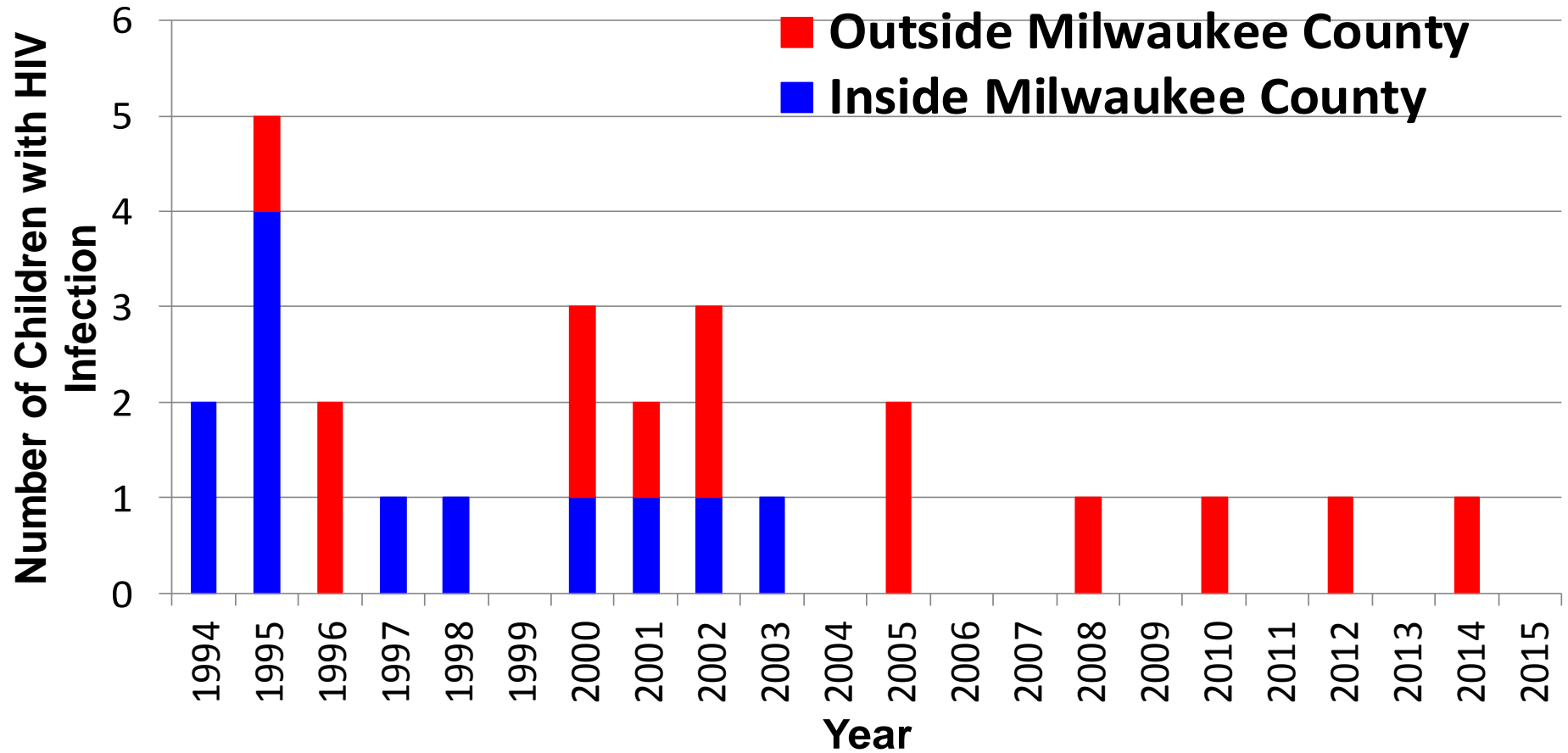
	<b>Total</b>	<b>1992-1995</b>	<b>1996-2005</b>	<b>2006-2015</b>
<b>Total births to women with HIV</b>	<b>463</b>	<b>59</b>	<b>228</b>	<b>225</b>
<b>Babies with HIV</b>	<b>31</b>	<b>13</b>	<b>15</b>	<b>4</b>
<b>Transmission %</b>	<b>6.7</b>	<b>22.0</b>	<b>6.6</b>	<b>1.8</b>



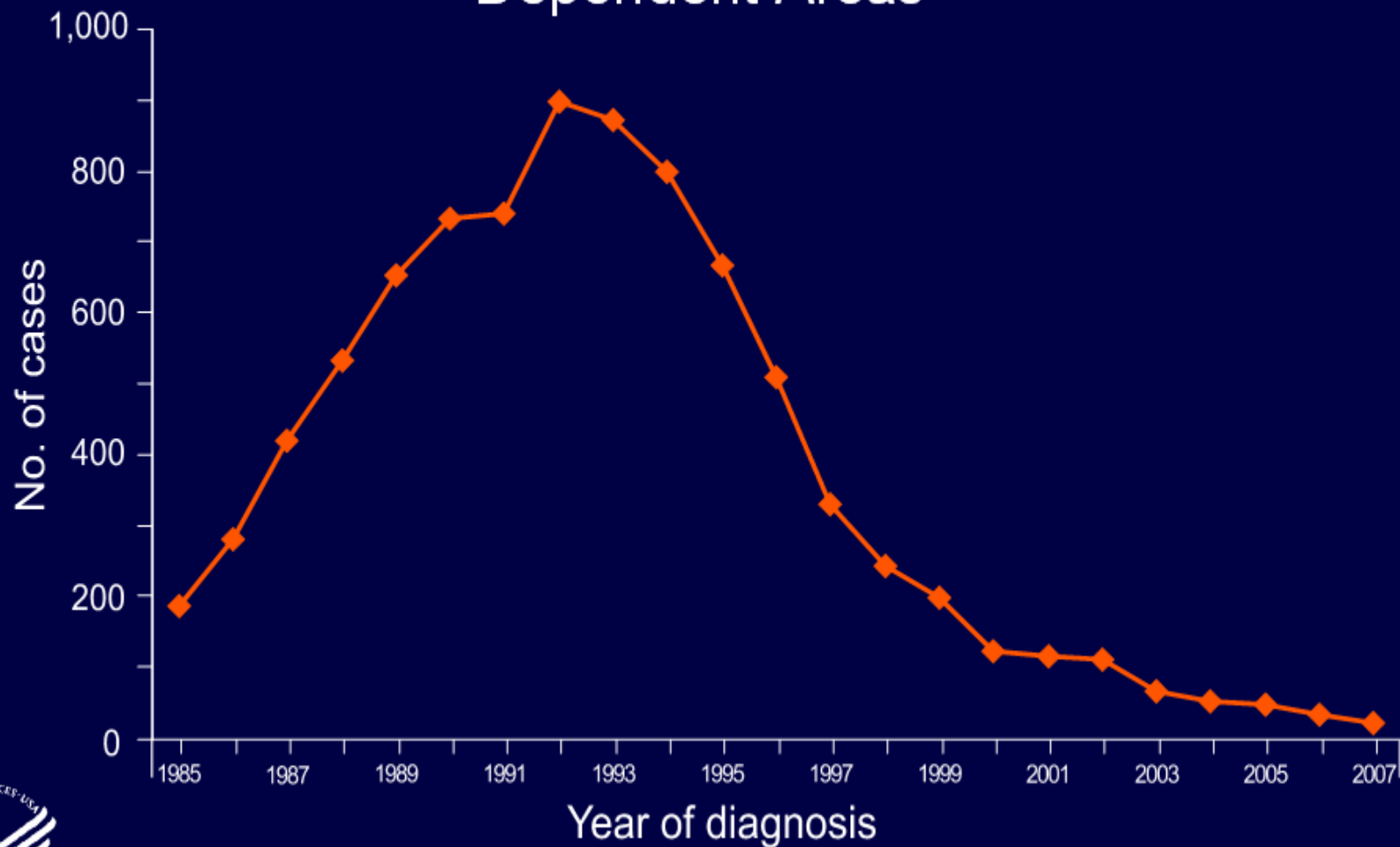
# In Wisconsin, Births to Women with HIV Occur Statewide



# Perinatally Acquired HIV in Wisconsin: Cases per Year by Birth Location, 1994-2015



# Estimated Numbers of Perinatally Acquired AIDS Cases by Year of Diagnosis, 1985–2007—United States and Dependent Areas



Note. Data have been adjusted for reporting delays and missing risk-factor information.



## **What Happens Now?**

- **Fewer cases of perinatally acquired HIV**
- **Still have children living with HIV in the USA: immigrants, adoptees, this patient**
- **Still have need for experienced clinicians**
  - **Deliver care**
  - **Write guidelines**
  - **Continue research to make new treatments available for children with HIV**

# Challenges

- **Less Federal funding**
  - Ryan White part D not in the Federal budget for >3 years
  - IMPAACT funding for pediatric research decreasing domestically, focus on international sites.
- **Fewer cases→**
  - less experienced clinicians
  - Less public support for a public health approach

# **What is the role of the Academic Pediatric Department in Maintaining this clinical and public health expertise?**

- **Education**
- **Research**
- **Care**
- **Public health systems**
- **Money?**
- **Advocacy?**

## **First things also last**

- **Everything I do depends on the approval and support of the Department administration**
- **I am lucky to work in a Department where there is open communication and we can work together toward a shared vision for a sustainable future.**