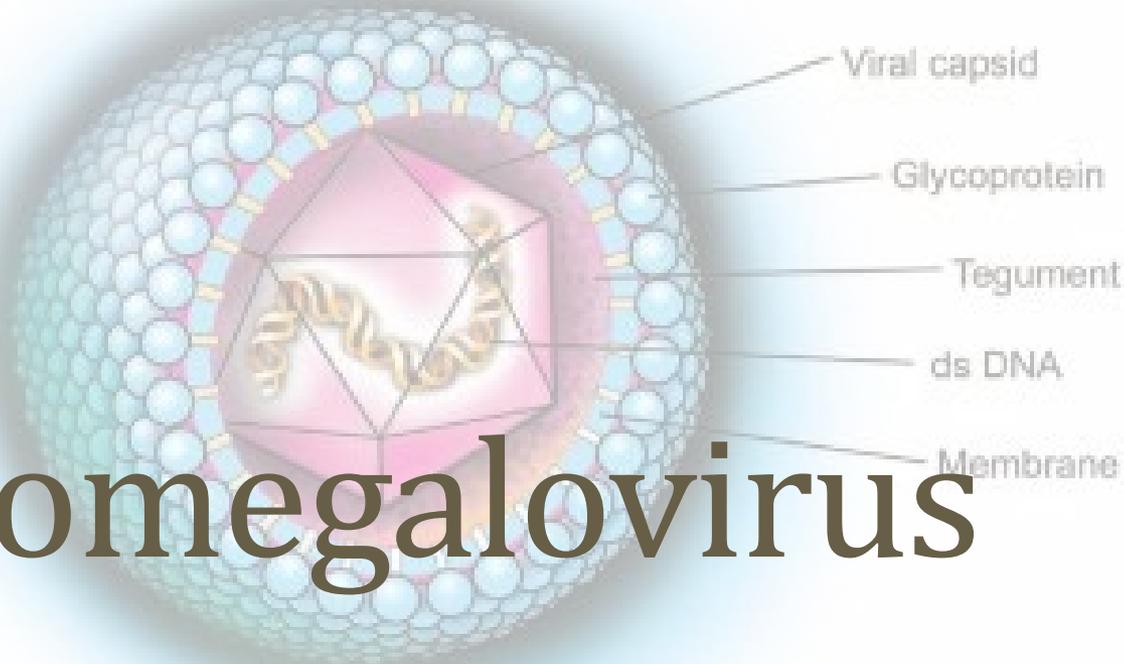


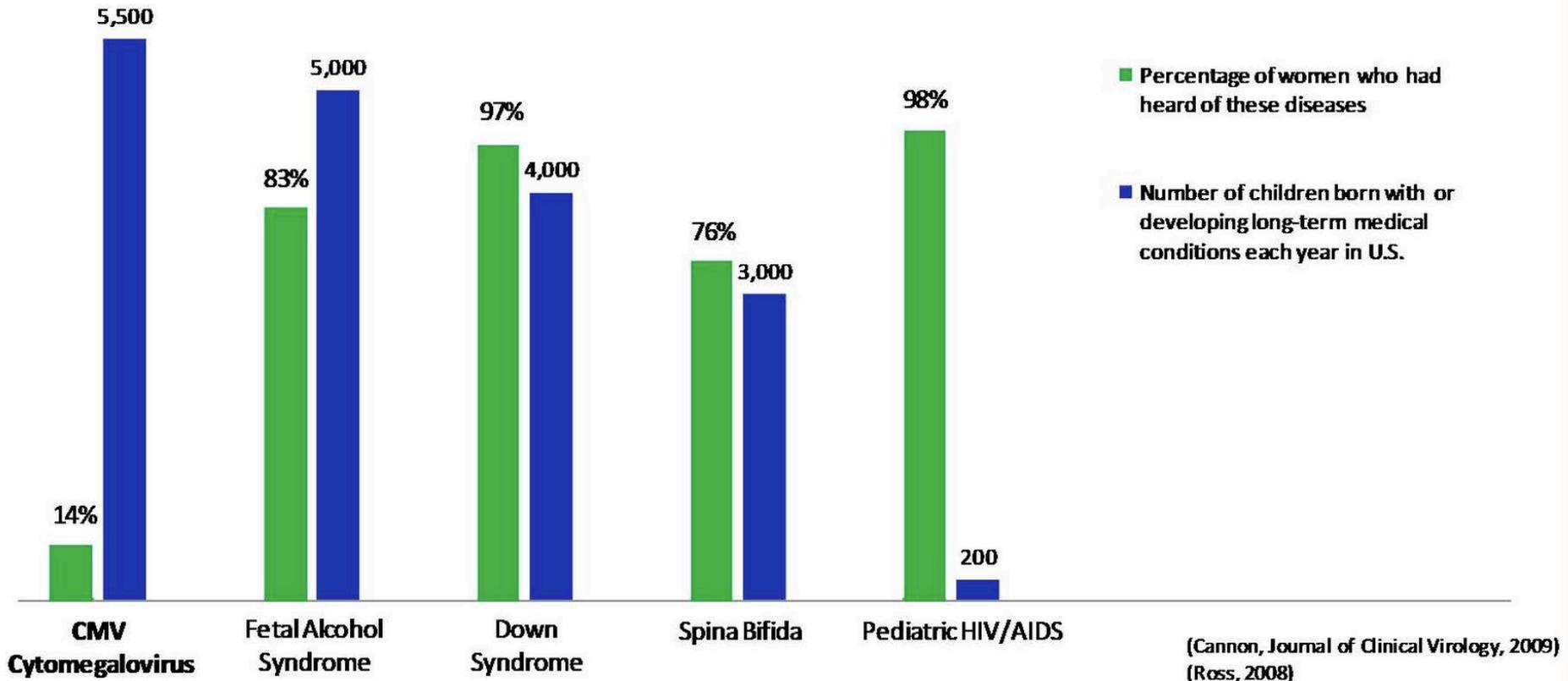
# Cytomegalovirus



HCMV Human Cytomegalovirus

No Financial Disclosures

# Women's Awareness of Conditions Affecting Children VS. Actual Occurrences of those Conditions



Brendan B. McGinnis Congenital CMV Foundation

# Epidemiology

- 50 – 60% of women in the US are at risk for contracting CMV during pregnancy
- Most common congenital infection:
  - Infection rates during pregnancy:
    - Primary infection: 0.7 – 4%
    - Secondary (recurrent) infection: 1%
- Cost of treating sequelae of CMV infection in the US exceeds \$1.86 billion

# Epidemiology

- Risk factors for congenital CMV infection
  - Low socioeconomic status
  - Non-white race
  - Premature birth
  - Neonatal intensive care unit admittance

- Kenneson. Rev Med Virol. 2007

- Risk factor for maternal infection
  - Exposure to young children

- Johnson. Obstet Gynecol Clin N Am. 2014

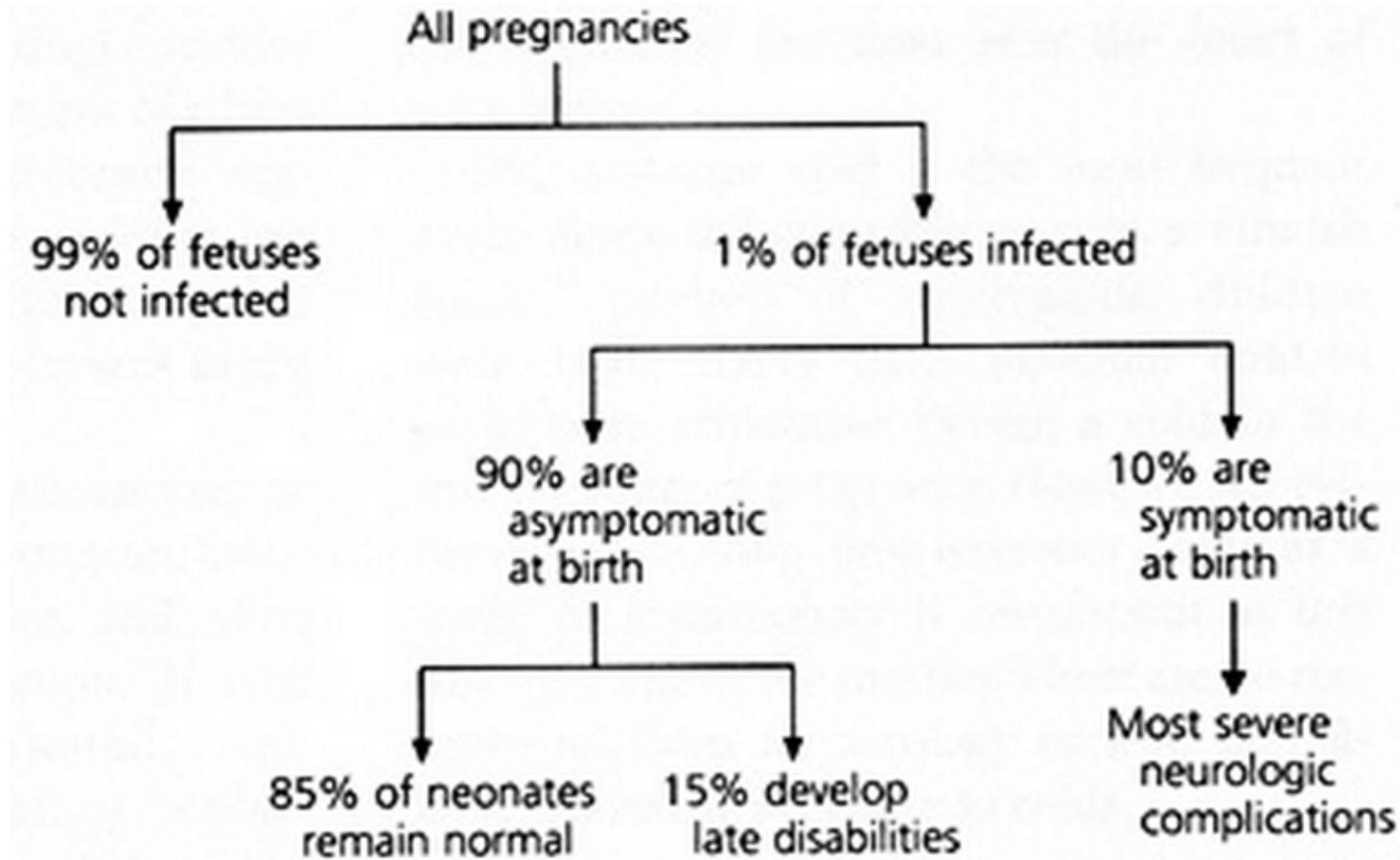
# Transmission

- Transmission occurs through contact with bodily fluids, including:
  - Saliva
  - Urine
  - Tears
  - Blood
  - Mucus
  - Sexual contact
- Transplacental infection
- Breastfeeding

# Vertical Transmission

- Primary Maternal Infection
  - Overall transmission risk: 30-40%
  - 1<sup>st</sup> trimester: 30%
  - 2<sup>nd</sup> trimester: 34-38%
  - 3<sup>rd</sup> trimester: 40-72%
- Secondary Maternal Infection
  - Overall transmission risk: 0.15 – 2%

# Risk of Disability



# Maternal Symptoms

- Usually asymptomatic or nonspecific
- Possible symptoms
  - Fever
  - Fatigue, weakness
  - Generalized discomfort
  - Joint stiffness
  - Muscle aches
  - Night sweats
  - Sore throat
  - Loss of appetite

# Fetal Manifestations

**Table 1**  
**Sonographic findings associated with congenital CMV**

<b>Sonographic Findings</b>	<b>%</b>
Any ultrasound finding	15–52
Intrauterine growth restriction	10
Cerebral ventriculomegaly	3–5
Microcephaly	10
Intracranial calcifications	1–18
Ascites	4
Hydrops fetalis	1
Fluid abnormalities	8
Echogenic bowel	5–26
Liver calcifications	3

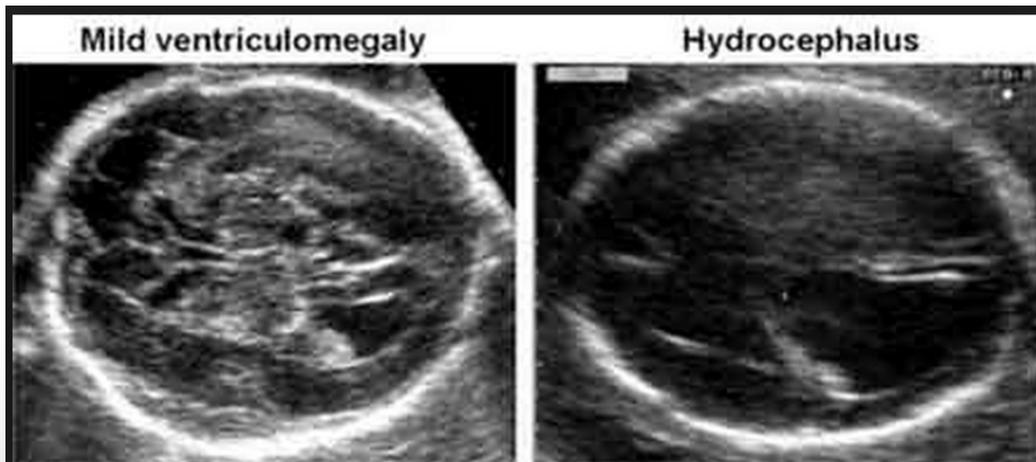
# Fetal Manifestations



[www.medscape.com](http://www.medscape.com)



Castagno. Donald School J Ultrasound Obstet Gynecol.2007

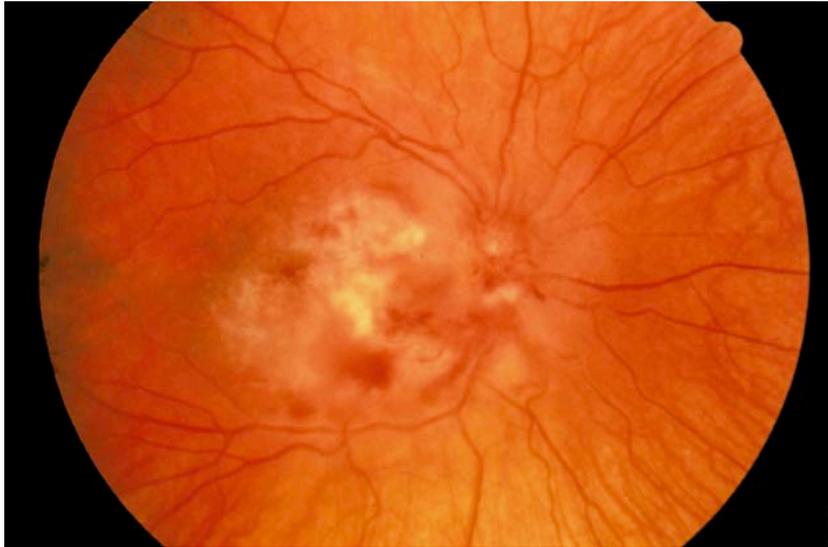


[www.sonoworld.com](http://www.sonoworld.com)



[www.sonoworld.com](http://www.sonoworld.com)

# Neonatal Manifestations

- Thrombocytopenia
  - Petechiae
  - Jaundice
  - Small for gestational age
  - Liver/spleen problems
  - Seizures
  - Hearing loss
  - Chorioretinitis
  - Mental disability
- 
- The image is a fundus photograph of a human eye, showing the retina and optic disc. The retina has a normal orange-red color, but there are several distinct, pale, yellowish-white patches scattered across the field of view. These patches represent areas of chorioretinitis, which is inflammation of the choroid and retina. The optic disc is visible on the right side of the image, and the retinal vessels are clearly visible radiating from it.
- However, neonates with congenital CMV may not show signs at birth

# Long-term Outcomes

- Hearing loss 15%
- Vision loss 2%
- Mental disability 13%
- Microcephaly 5%
- Seizures 5%
- Death 2%

# Diagnosis - Maternal

- Anti-CMV IgG
  - Seroconversion from negative to positive or a  $> 4x$  increase in titer indicates infection
  - IgG avidity – measures the maturity of the IgG antibody
    - 92% sensitivity for the diagnosis of primary infection when combined with IgM titers
- Anti-CMV IgM
  - Pitfalls
    - 10-30% of IgM (+) women have a primary infection
      - IgM may persist for months after a primary infection
      - IgM may be present with secondary infection or in the absence of infection
    - 50-90% sensitivity of IgM for CMV infection

# Diagnosis - Maternal

Confirmation of diagnosis requires either:

- 1. Seroconversion or increase in IgG
- 2. IgM (+) in combination with low-avidity IgG

# Diagnosis - Fetal

- Amniotic fluid via amniocentesis
  - Culture: 70-80% sensitivity
  - PCR: 78-98% sensitivity
  - Lower sensitivity if performed at < 21 weeks gestation



ACOG Practice Bulletin. 2015

# Treatment in Pregnancy

- No therapies currently available
- Antivirals (eg: ganciclovir, valganciclovir) and CMV immune globulin under investigation in research protocols, but clinical use not currently recommended
- Serial fetal ultrasound surveillance recommended to assess for sequelae (eg: growth restriction, ventriculomegaly)

# Prevention



- \* **Wash your hands** often with soap and water for 15-20 seconds, **especially after changing diapers, feeding a young child, wiping a young child's nose or drool, and handling children's toys**
- \* **Do not share food, drinks, or eating utensils used by young children**
- \* **Do not put a child's pacifier in your mouth**
- \* **Do not share a toothbrush with a young child**
- \* **Avoid contact with saliva when kissing a child**
- \* Clean toys, countertops, and other surfaces that come into contact with children's urine or saliva

Thank You