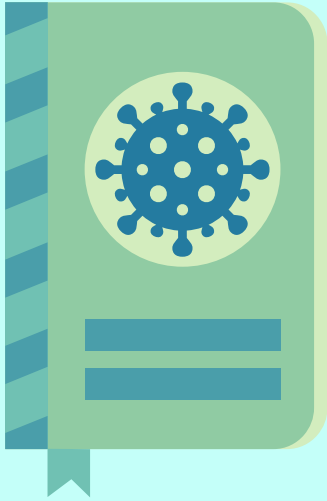


All Hands On Deck!

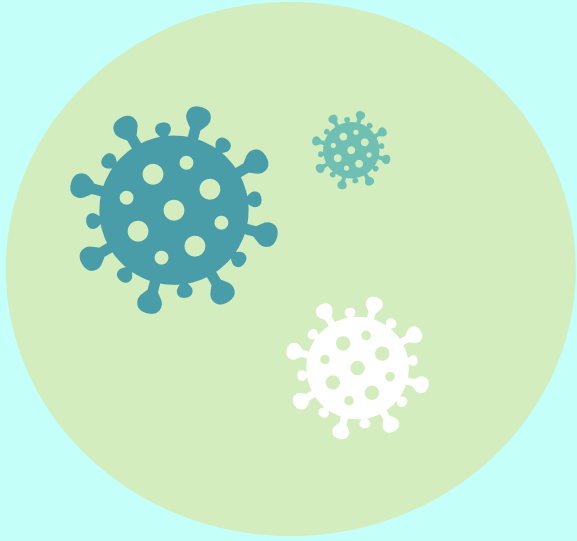
Supporting the development of
children with congenital
cytomegalovirus

Megan H. Pesch, MD, MS
University of Michigan
National CMV Foundation

DISCLOSURES



- National CMV Foundation
- Consultant for Moderna, MedScape



What is cytomegalovirus (CMV)?

- Common cold virus
- Can cause mild cold like symptoms
- Most US adults have been exposed
- Generally harmless in healthy people

CMV



Congenital CMV



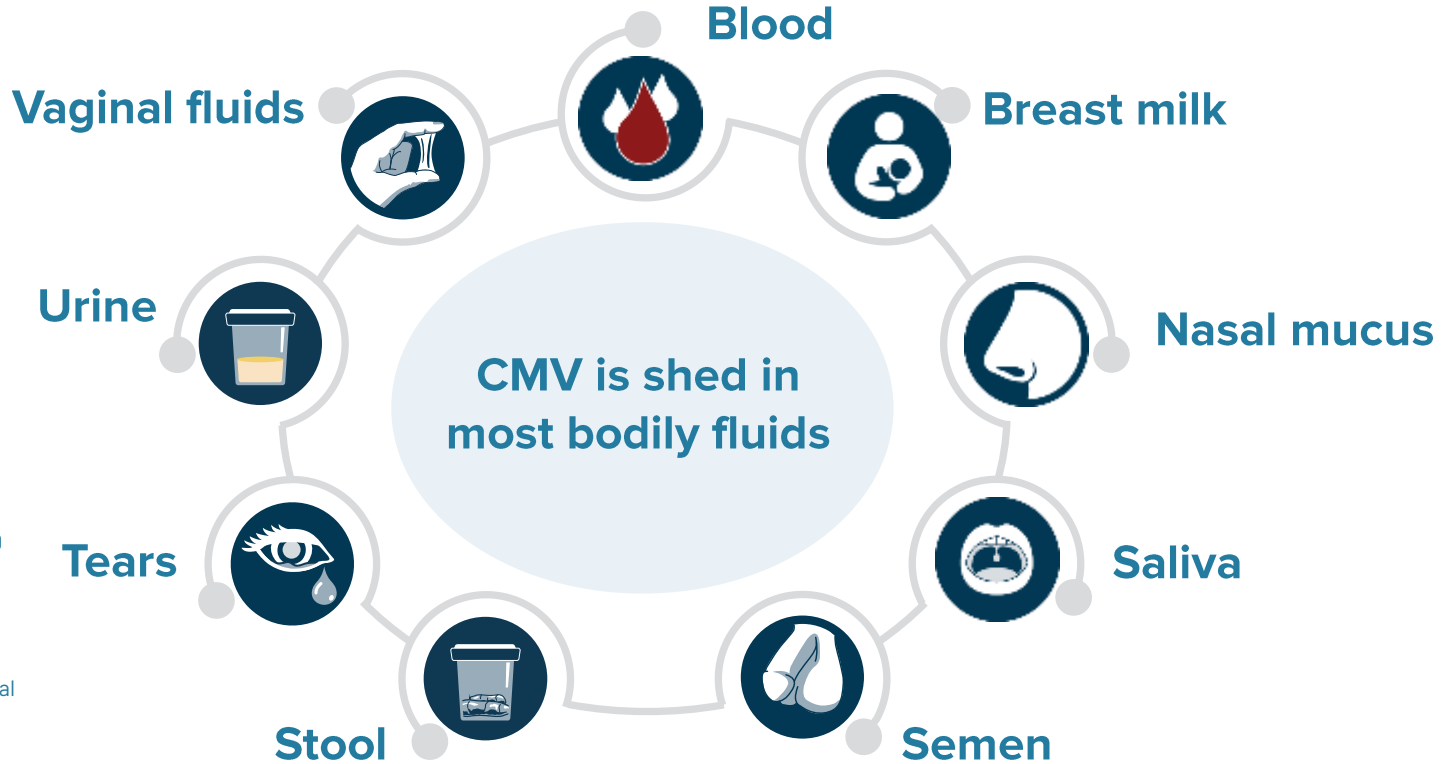
Congenital CMV in a Nutshell



Leading non-genetic cause of
neonatal/childhood hearing loss

Leading infectious cause of
neurodevelopmental disabilities

CMV Is Transmitted Through Bodily Fluids



Slide design: MedScape/ WebMD
Pesch MH, et al. BMJ. 2021;373:n1212; Gugliesi F, et al. Microorganisms. 2020;8:685; OSHA. Accessed April 20, 2022. <https://www.osha.gov/cytomegalovirus/hazards>.

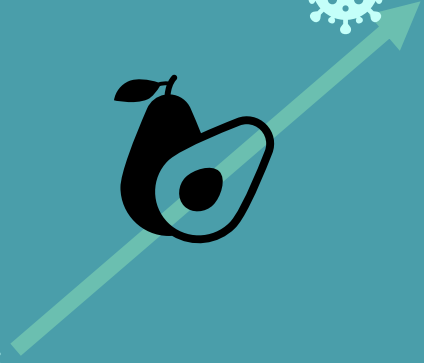
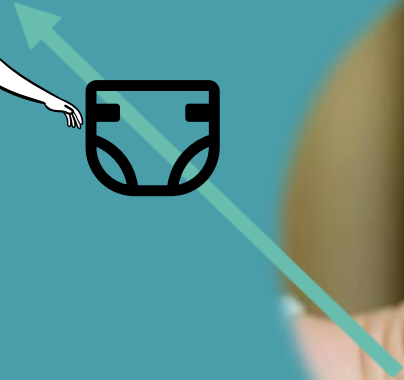
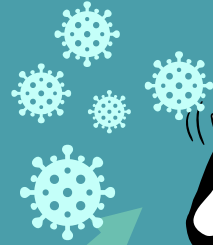
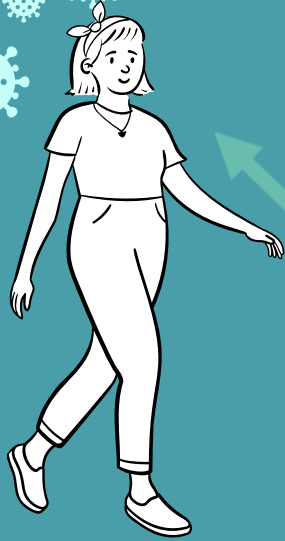
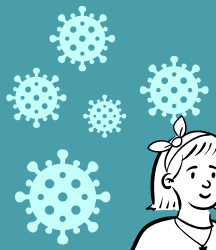
Who is at risk of catching CMV?

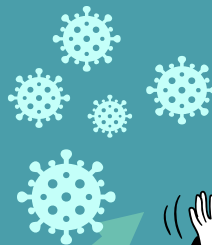
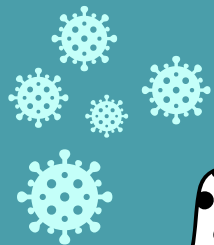


EVERYONE

Who is at the highest risk of transmitting CMV?







CMV



Congenital CMV



CMV risk

- Toddlers in group daycare
- Individuals who work with young children
- Prenatal counseling can impact behavior in pregnancy



How do I protect myself against CMV?



Question:

I've had CMV before, does that mean I'm immune?

Answer:

Nope!

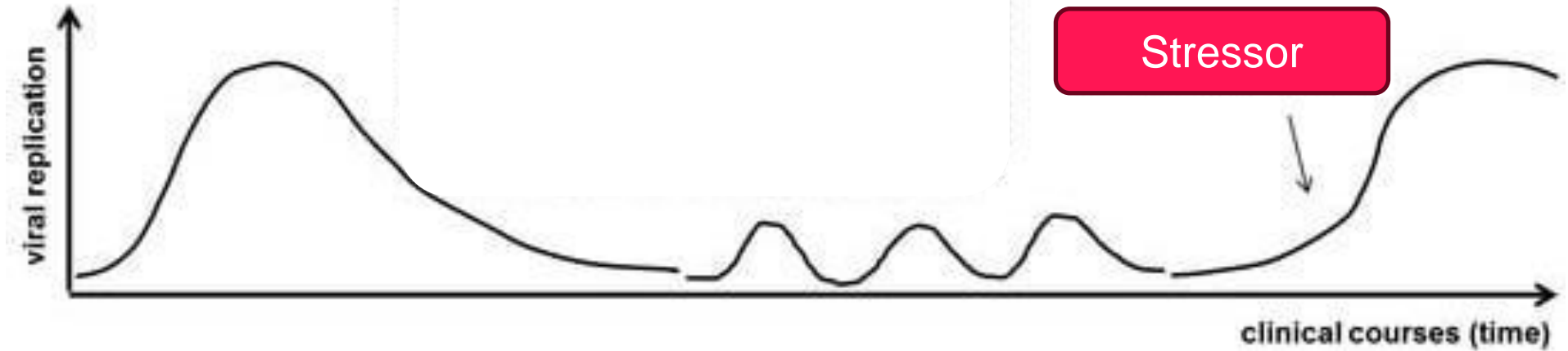
**You can catch different strains (like COVID).
You can have a reactivation**

Primary infection

Latent

Reactivation

Stressor



Question:

Should pregnant people avoid caring for babies with congenital CMV?

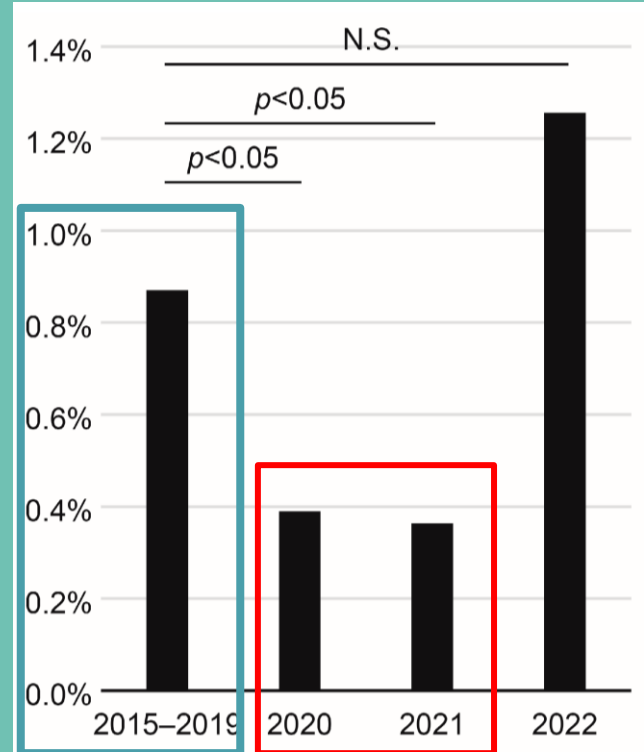
Answer:

Nope!

CMV is spread through bodily fluids, most children at daycare will be shedding it already. Practice universal precautions with all children

CMV antibody rates in pregnant women decreased during the COVID Pandemic

Toriyabe, et al., 2023. Transient Decrease in Incidence Rate of Maternal Primary Cytomegalovirus Infection during the COVID-19 Pandemic in Japan. *Viruses*, 15(5), p.1096.



Question:

Should I wear a mask around a child I know has congenital CMV?

Answer:

Nope!

CMV is spread through direct contact with bodily fluids, not through respiratory droplets

Question:

How does a child shed the virus in their bodily fluids after a CMV infection?

Answer:

3 months to 1 year

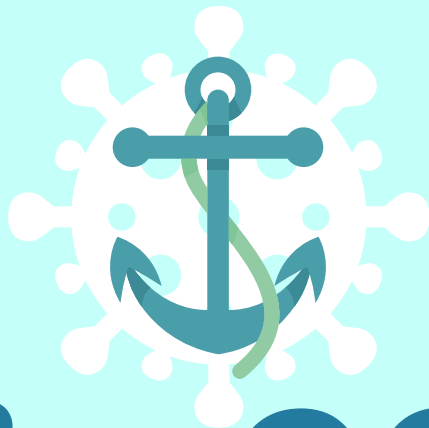


Congenital CMV: Impact on children



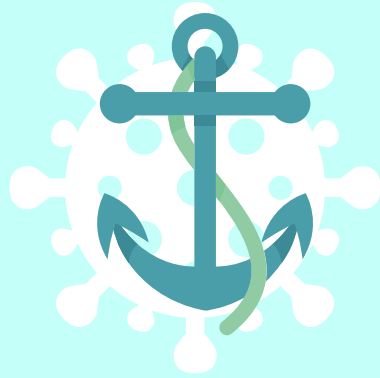
5%

of US pregnancies encounter CMV infection



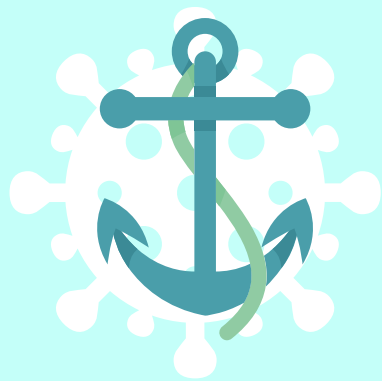
1 in 200

Live born US infants each year



30,000

Live born US infants each year



20%

of childhood SNHL



Categorization of severity

90%

“asymptomatic”^[a,b]

Most children with congenital CMV will go on to have **typical development**

10%

symptomatic^[b]

Infants with signs at birth tend to have more **health challenges**

Pathophysiology of CMV Infection During Pregnancy

Severity

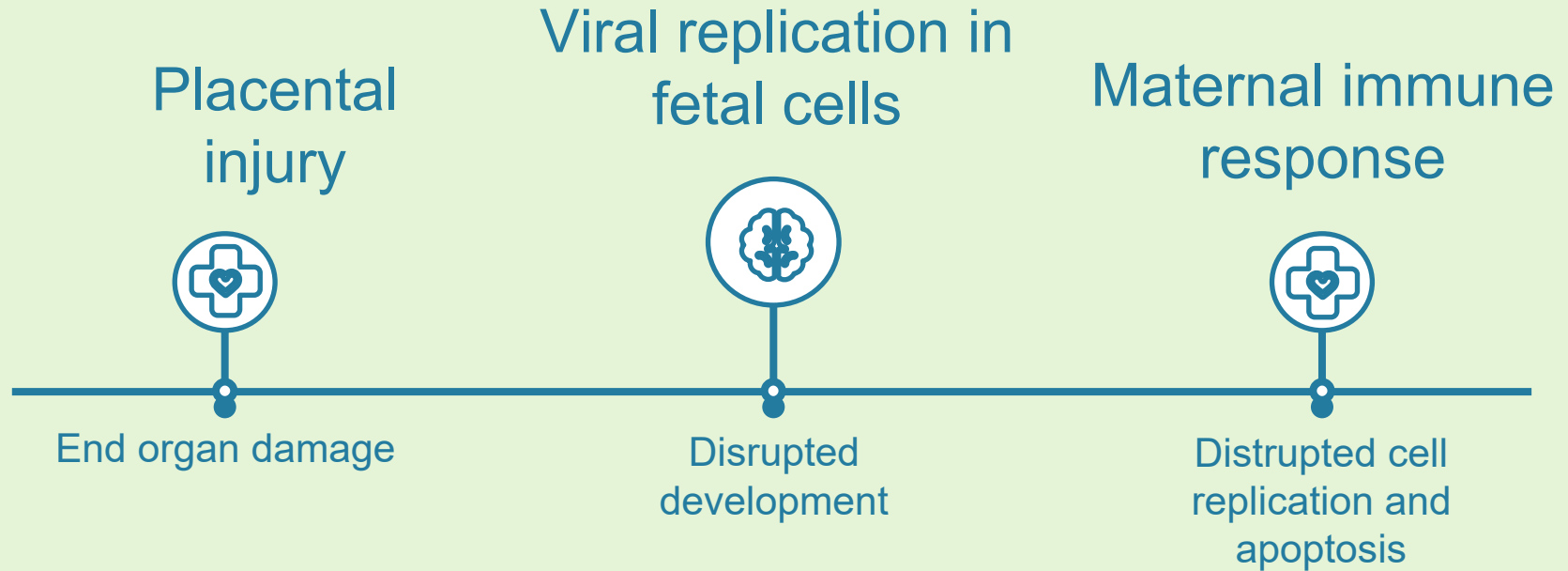


Transmission

CMV, cytomegalovirus.

Chatzakis C, et al. Am J Obstet Gynecol. 2020;223:870-883. [This Photo](#) by Unknown Author is licensed under [CC BY](#)

Mechanisms of fetal injury



Pathophysiology of CMV Infection During Pregnancy

Severity



Transmission

CMV, cytomegalovirus.

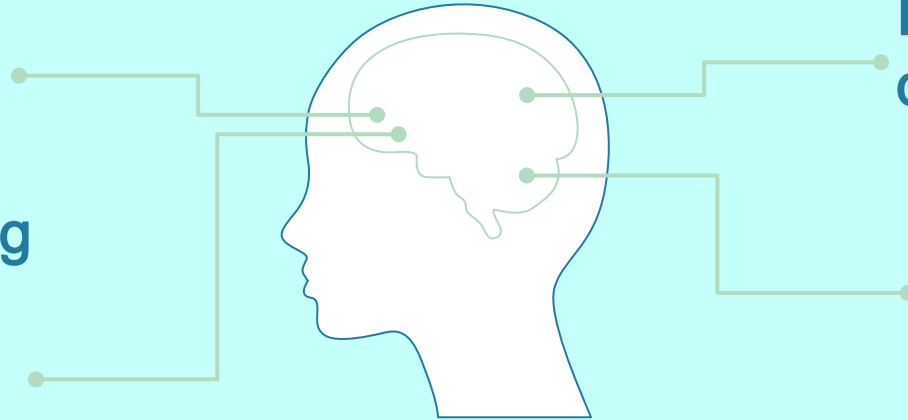
Chatzakis C, et al. Am J Obstet Gynecol. 2020;223:870-883. [This Photo](#) by Unknown Author is licensed under [CC BY](#)

Neurodevelopmental Outcomes

Cerebral Palsy

Motor Planning Disorders

Epilepsy



Intellectual disability
Vestibular dysfunction

Hearing Loss

Autism

Behavior disorders

Symptomatic Congenital CMV (10-15%)

- Small for gestational age
- Microcephaly
- Petechiae/purpura
- Jaundice
- Hepatosplenomegaly
- Seizures
- Intracranial abnormalities
- Laboratory abnormalities
- ** Does not include isolated SNHL



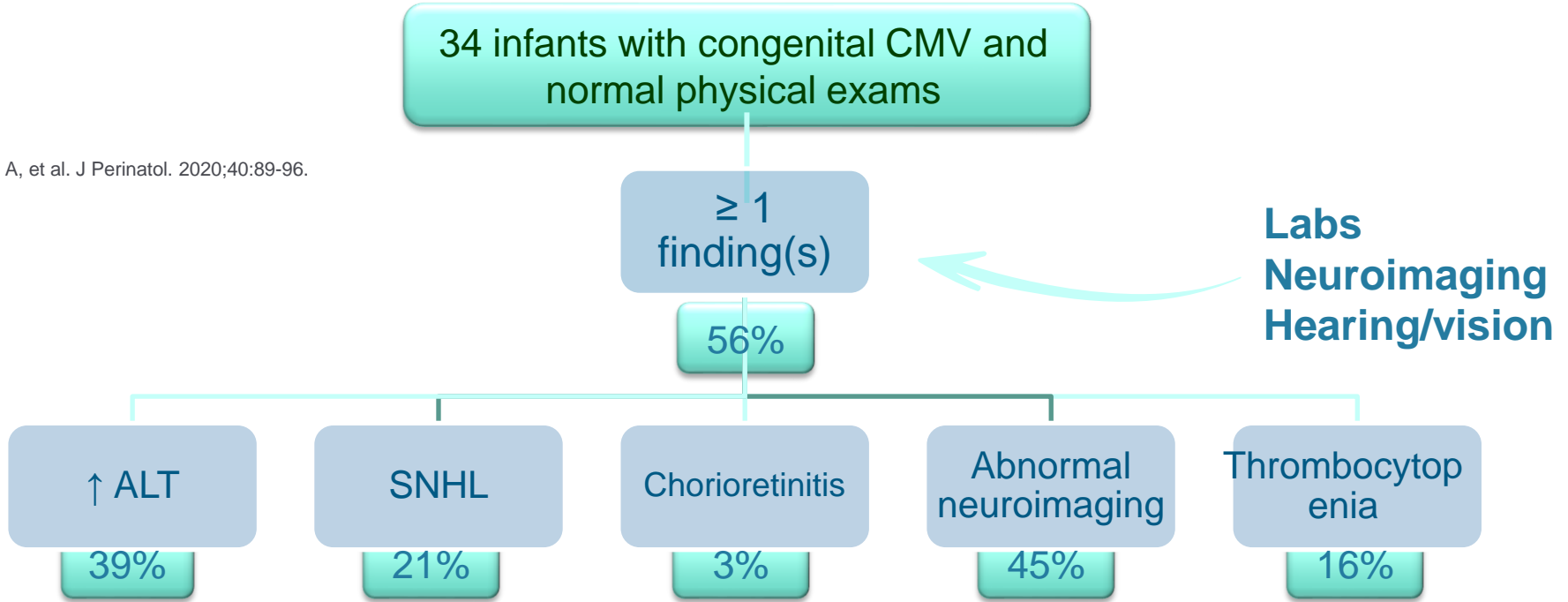
“Asymptomatic” congenital CMV (85-90%)

- Normal physical exam
- Normal labs
- No brain effects
- **Can have hearing loss**



Evaluation of Clinically Asymptomatic High Risk Infants with Congenital CMV Infection

Ronchi A, et al. J Perinatol. 2020;40:89-96.



My story







Spectrum of Congenital CMV Sequelae

BORN SYMPTOMATIC (10%)

BORN ASYMPTOMATIC (90%)

Death	Medically fragile	Multiple Impairments	Developmental Delays	Hearing Loss	None
<ul style="list-style-type: none"> Miscarriage Stillbirth Infant or child loss 	<ul style="list-style-type: none"> Cerebral palsy Seizures Failure to thrive Hearing loss Vision loss 	<ul style="list-style-type: none"> Cerebral palsy Vision loss Hearing loss 	<ul style="list-style-type: none"> Cognitive delays Learning issues Feeding and sleeping issues Vision loss Hearing loss 	<ul style="list-style-type: none"> Hearing aids Cochlear implants Communication and learning issues Mild vision disorders 	<ul style="list-style-type: none"> No visible delays or impairments

SEVERE

MODERATE

MILD

Long-term Outcomes in Asymptomatic Congenital CMV

~20%

Hearing loss by
18 years

~45%

Vestibular & gaze
stability
dysfunctions

30%

Balance
difficulties

Long-term Outcomes in Asymptomatic Congenital CMV

Asymptomatic = Confusing Misnomer



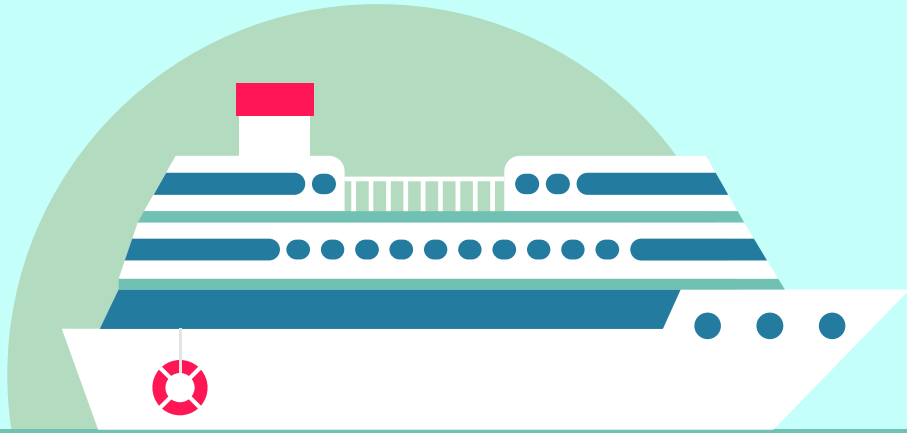
Autism risk



Learning
disabilities



Developmental
delays



Diagnosing congenital CMV

Nationally

1%

of infants with cCMV are
diagnosed based on clinical
suspicion alone

Michigan Medicine

0.2%

of infants with cCMV are
diagnosed based on clinical
suspicion alone

Congenital CMV Diagnosis



“

A race against the
clock

”

**Must test
before 21
days old**



Positive CMV test but is it...



Congenital ?



Past CMV cold ?

CONGENITAL CMV

Testing Modalities

URINE



SALIVA



How do you know which babies to test for congenital CMV?



SF1698

VIVIAN♥ACT

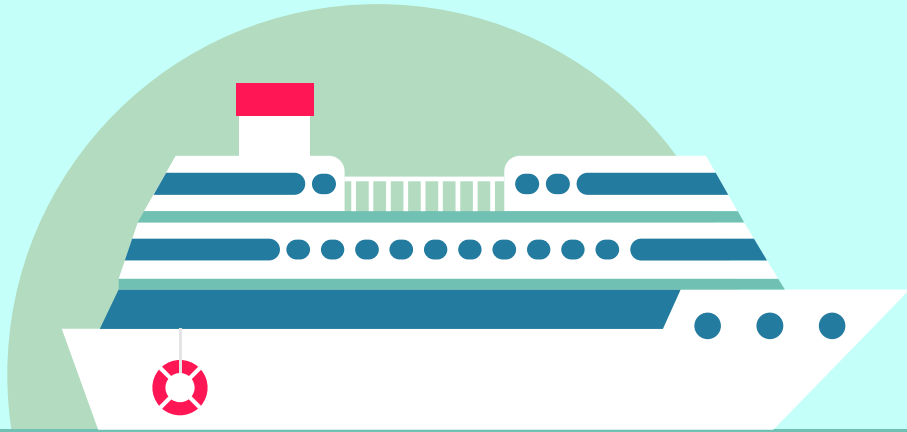
STOP CytoMegalovirus
from devastating 400+ MN
families a year



- Minnesota Senate. Vivian Act. 2021. https://www.senate.mn/committees/2021-2022/3095_Committee_on_Health_and_Human_Services_Finance_and_Policy/SF1698%20Vivian%20Act%20CMV_Handout.pdf (accessed Sep 30, 2022)

Do parents want to know?

- YES!!
- Parents of grown children who remained asymptomatic still say they were happy they knew
- Surveyed parents – happy to pay for it



CMV TREATMENT

Treatment

Anti-viral medication for most severely affected
(x 6 months)



Early
intervention



Manage
existing
conditions



Monitor for
new
conditions



Family
support

Congenital CMV Treatment

Management of existing sequelae



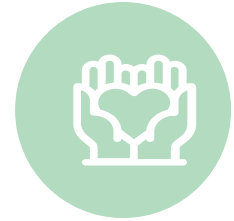
- Hearing loss
- Epilepsy
- Cerebral palsy
- Feeding issues

Monitoring for new sequelae



- Hearing loss
- Developmental delays
- Feeding issues
- Autism
- Retinal scarring

Early Intervention



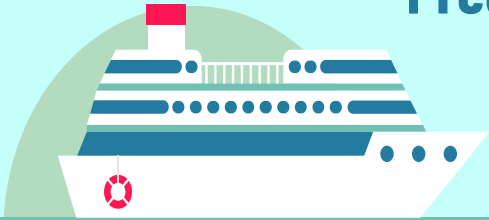
- Hearing aids/ cochlear implants
- PT / OT/ Speech
- ASL
- Bracing

Summary

CMV is a common virus spread in bodily fluids (DAYCARE!!)

Universal precautions can limit spread

Pregnant people who catch CMV can pass it to the fetus



Summary

Most babies with congenital CMV have normal outcomes, some have hearing loss and developmental delays

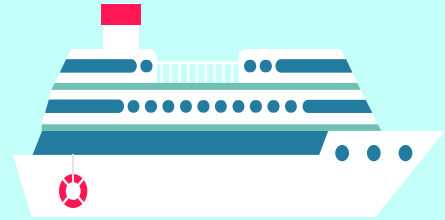
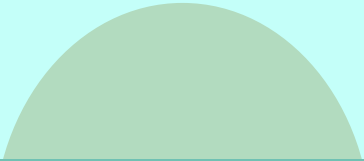
Most babies with congenital CMV look healthy at birth



Summary

Newborn screening leads to diagnosis and opportunities for treatment

There are treatments for congenital CMV



THANK YOU

IG: [@DrCMVMom](#)
pesch@umich.edu
Twitter X [@MeganPeschMD](#)

