

Congenital CMV Prevention Counselling during Pregnancy

Using the Theoretical Domains Framework to Explore
Providers' Behavioural and Systemic Barriers to CMV
Infection Counselling During Pregnancy

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Disclosures: Eliana Castillo

- **Any direct financial relationships, including receipt of honoraria:**
 - Speaker -no compensation- at educational events sponsored by Moderna and Pfizer (2022)
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Objectives

- Review congenital CMV (cCMV) infection evidence-based prevention strategies.
- Discuss behavioural and systemic barriers to discuss cCMV prevention during pregnancy with your patients.
- Identify actionable strategies for providers to have effective discussions regarding cCMV prevention with their patients

An ounce of prevention is worth a pound of cure

Benjamin Franklin , 1735

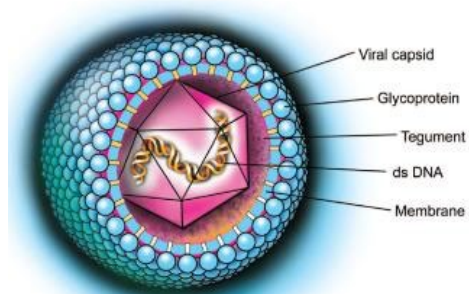
Video - Why Didn't You Tell Me About CMV?



A real life story: 2 colleagues

CMV and cCMV 101

- Ubiquitous: It is everywhere, and everyone gets it, sooner or later
- **Most common congenital infection:**
 - 0.13% 1 in 720 Ontario 2023**
 - 3.9 to 6.5 per 1000 USA 2022
- Accounts for 10% to 25% of all childhood sensorineural hearing loss (SNHL)
- Disabilities occur or develop in 15%-20% of infected newborns



HCMV Human Cytomegalovirus

1/5 congenitally infected babies will suffer permanent disability

Burden: Canada & AB

ORIGINAL ARTICLE

Congenital cytomegalovirus infection in high-risk Canadian infants: Report of a pilot screening study

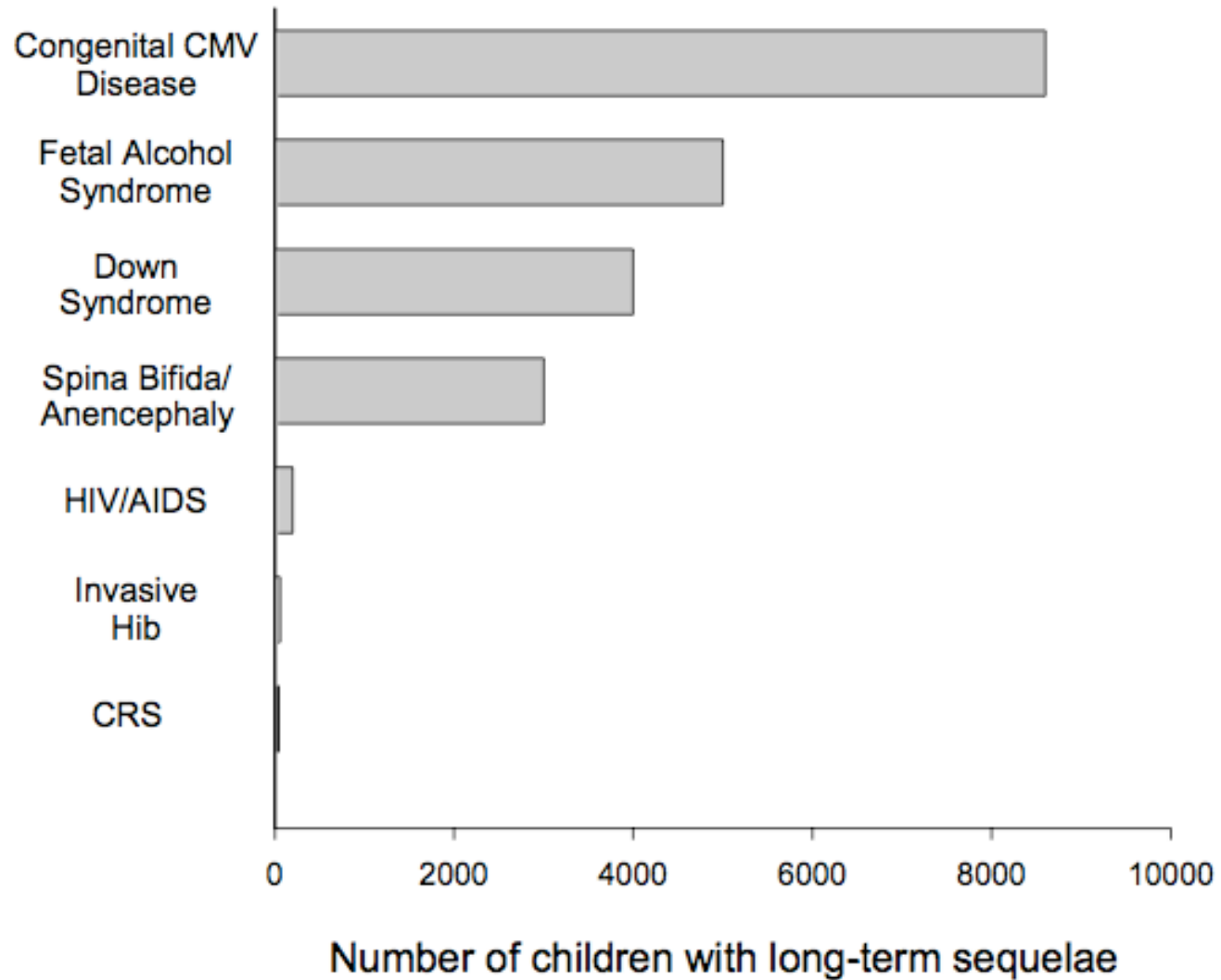
Wendy Vaudry MDCM FRCPC¹, Rhonda J Rosychuk PhD PStat¹, Bonita E Lee MD MSc FRCPC^{1,2},
Po Yin Cheung MD PhD FRCPC¹, XL Pang PhD², Jutta K Preiksaitis MD FRCPC²

W Vaudry, RJ Rosychuk, BE Lee, PY Cheung, XL Pang, JK Preiksaitis. Congenital cytomegalovirus infection in high-risk Canadian infants: Report of a pilot screening study. Can J Infect Dis Med Microbiol 2010;21(1):e12-e19.

Infection congénitale à cytomégalovirus chez des nourrissons canadiens à haut risque : Rapport d'une étude pilote de dépistage

- **Incidence cCMV 1.5%** (1.3%VLBW Vs1.7% SGA)
- N= 137 consecutive VLBWs or SGA infants Alberta
- Neonatal urine viral culture and PCR and CMV PCR dried blood spots

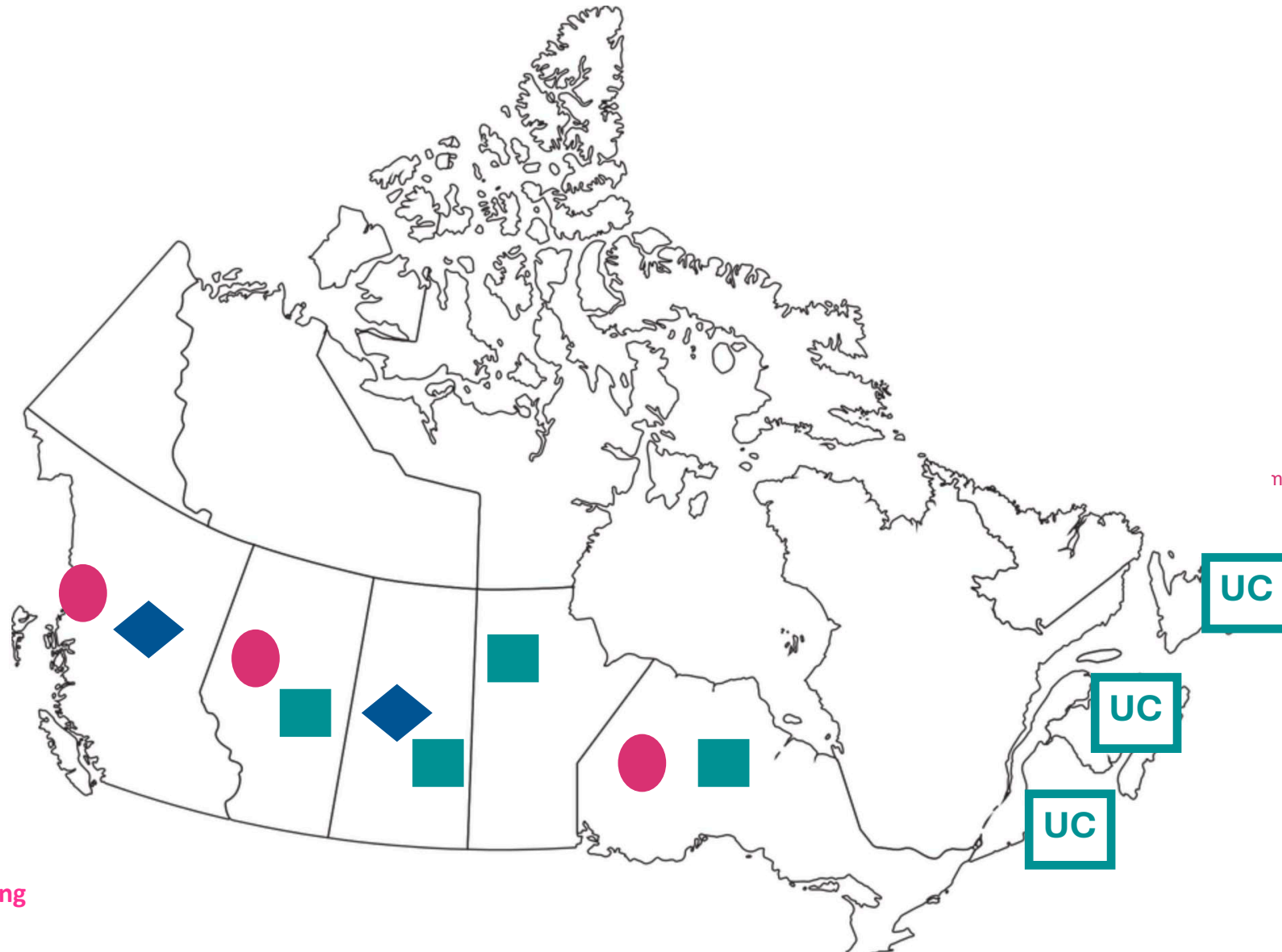
cCMV Relative Economic Burden






Adapted from Cannon, M.J. and K.F. Davis, Washing our hands of the congenital cytomegalovirus disease epidemic. BMC Public Health, 2005. 5: p. 70.

**Why does this matter to you and
your practice?**

Newborn CMV/Hearing Screening Canada 2025



-  Universal Newborn cCMV Screening
-  Targeted Newborn cCMV Screening
-  Universal Newborn Hearing Screening





Congenital Cytomegalovirus

SOGC CLINICAL PRACTICE GUIDELINE · [Volume 43, Issue 7, P893-908, July 2021](#)

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Guideline No. 420: Cytomegalovirus Infection in Pregnancy

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Guideline No. 420: Cytomegalovirus Infection in Pregnancy

6. This guideline recommends discussing education and hygiene measures to prevent CMV acquisition with all patients, regardless of serologic status, before conception and through pregnancy, especially early in the antepartum period (*B, high*).

— Prevention —

There are simple and effective prevention measures you and your loved ones can take to mitigate the risk of CMV transmission during pregnancy. If you are pregnant or planning to become pregnant, talk with your doctor about CMV.

5 Simple Tips to Help Prevent CMV



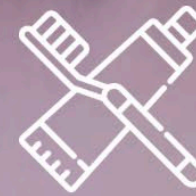
do not share
food, utensils,
drinks or straws



do not put a
pacifier in your
mouth



avoid contact
with saliva
when kissing a
child



do not share a
toothbrush



wash your
hands

CMV

IF YOU'RE PREGNANT, ASK YOUR DOCTOR ABOUT CMV

CYTOMEGALOVIRUS

Cytomegalovirus (CMV) is a common virus that can infect almost anyone. Once infected, your body retains the virus for life. Most people don't know they have CMV because it rarely causes problems in healthy people. But if you are pregnant, CMV is cause for concern because the infection can be transmitted to your baby.

RESEARCH



1 in 200 Canadian infants are infected with CMV during pregnancy.



1 in 5 children with congenital CMV will have a permanent disability such as hearing loss or developmental delay.



Young children infected with CMV usually have no symptoms but easily spread the infection to others through saliva and urine. If a pregnant woman is living with a young child infected with CMV, her chance of developing the infection is 1 in 4.

PREVENTION



Wash your hands often with soap and water for 15-20 seconds



Do not share food, drinks, or eating utensils with young children



Do not put a child's pacifier in your mouth



Avoid contact with saliva by kissing a young child on the forehead instead of the lips



Clean toys, countertops and other surfaces that come in contact with children's urine or saliva



CMV is the leading cause of preventable hearing loss in children



If your baby fails their newborn hearing screen, ask about CMV testing



Congenital CMV can cause learning disabilities



Talk to your healthcare provider about CMV today

Google: SOGC CMV infographic

- <https://www.pregnancyinfo.ca/wp-content/uploads/2021/06/CMV-Infographic-EN-FR.pdf>

**What difference would it make
if I discuss CMV prevention with
pregnant patients?**

Effectiveness of CMV Prevention Counselling

- **Women in pregnancy are more motivated to engage with educational interventions and to make lifestyle changes**
- Educational interventions
 - increase knowledge about CMV and how to prevent it
 - increase compliance with preventative behaviours
 - reduce seroconversion

Rodríguez-Muñoz, M.F., et al., Hygiene-based measures for the prevention of cytomegalovirus infection in pregnant women: a systematic review. *BMC Pregnancy Childbirth*, 2024. 24(1): p. 172.

Barber, V., et al., Prevention of Acquisition of Cytomegalovirus Infection in Pregnancy Through Hygiene-based Behavioral Interventions: A Systematic Review and Gap Analysis. *Pediatr Infect Dis J*, 2020. 39(10): p. 949-954.

Effectiveness of Hygiene

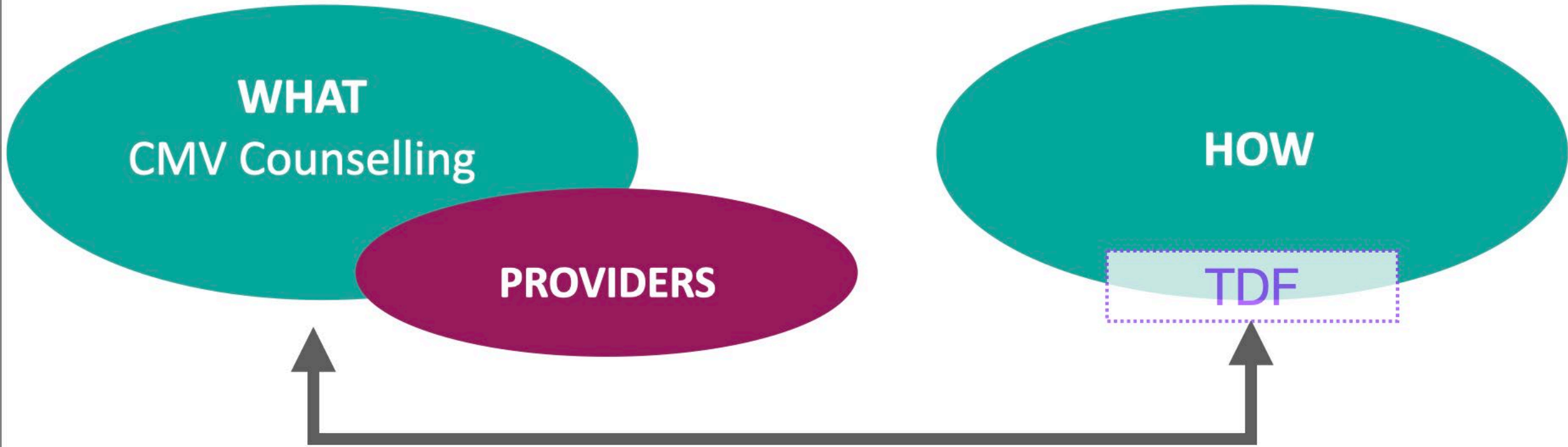
- In pregnant women hygiene-based interventions reduced the risk of seroconversion
 - (4/331) vs (24/315) $P < 0.001$ remained significant after adjustment for potential cofounders. **NNT treat of 16** (95% CI: 10–30)
 - (5/2583) Vs (11/2594) N=16 women who seroconverted, 15 were at high risk of infection, 12 women had a child <3yo at home and 7 were pediatric nurses or doctors. **Need for hygiene information to be focused on the handling of young children.**

Does hygiene counseling have an impact on the rate of CMV primary infection during pregnancy? Results of a 3-year prospective study in a French hospital. J Clin Virol.2009;46 (suppl 4):S49–S53.

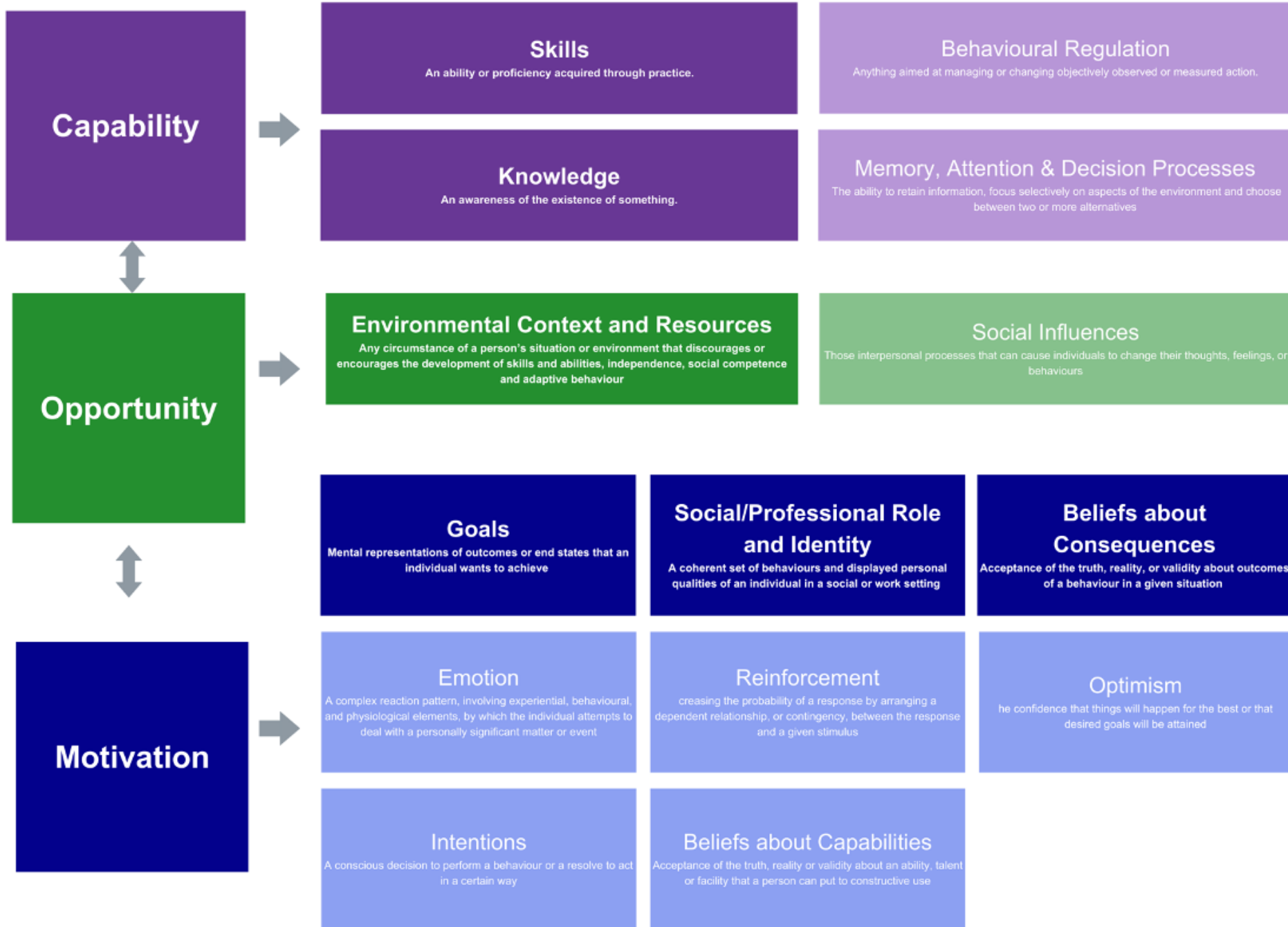
Revello MG, Tibaldi C, Masuelli G, et al; CCPE Study Group. Prevention of primary cytomegalovirus infection in pregnancy. EBioMedicine. 2015;2:1205–1210

Methods

- Convenience sample at a national conference.
- Perinatal health care providers (HCPs) completed a twenty-seven question, Likert-scale survey designed to **identify barriers and enablers to discuss cCMV prevention during pregnancy using theoretical domains framework (TDF)**
- Questions were analyzed using descriptive statistics.



COM-B
People will do the WHAT if they are capable (C), have the opportunity (O), and the motivation (M)



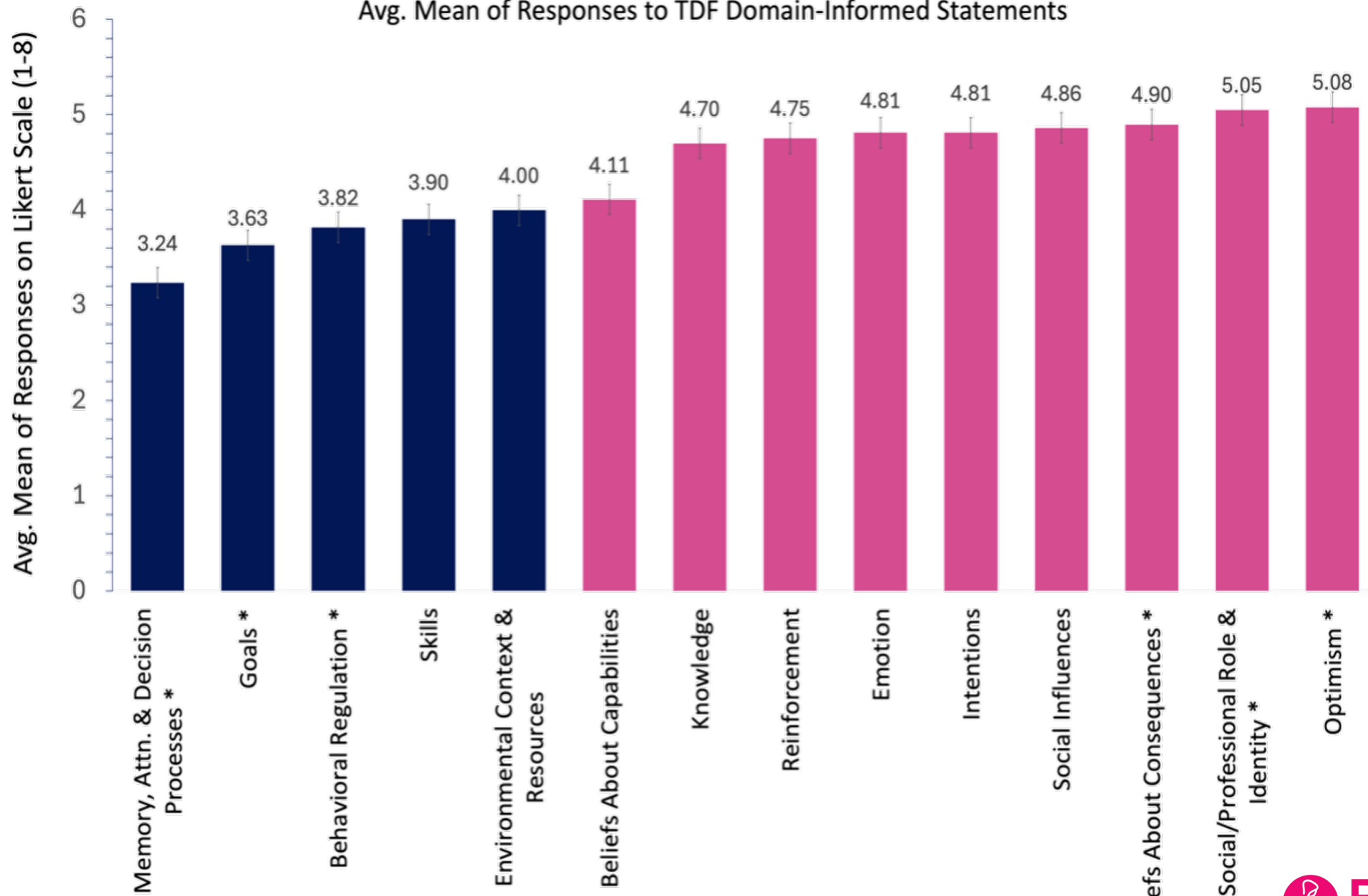
Results N=116 Providers

Physicians (62%) nurses (n = 10, 9%), and others (mostly trainees (n = 28, 24%).

Years of Practice:

- 0–5 years: n = 60 (52%)
- 6–10 years: n = 13 (11%)
- 10–15 years: n = 7 (6%)
- More than 15 years: n = 35 (30%)

Avg. Mean of Responses to TDF Domain-Informed Statements



Theoretical Domains Framework (TDF) Domains

Barriers to cCMV Prevention Counselling

- Prioritization of cCMV discussions was identified as a challenge (TDF Domain = Goals).
- Participants expressed limited strategies for addressing challenges and low agreement to statement: “I have strategies in place to discuss CMV prevention even when there are barriers” (TDF Domain = Behavioral regulation).
- Forgetfulness was also identified as a barrier (n = 55; 50%), suggesting that cCMV discussions were not part of routine care (TDF Domain = Memory, attention, and decision processes).

Barriers to cCMV Prevention Counselling

- Systemic challenges
 - 34.2% (n = 39) of participants citing time constraints
 - 24.3% (n=27) having appropriate resources (TDF Domain = Environmental context and resources).

Knowledge of cCMV

- 75-80% knew it is COMMON and that 20% of cCMV babies will have long term sequelae
- Only 58% could correctly identify all effective interventions: **antiviral therapy and early hearing detection not on their radar!**

Knowledge/Awareness SOGC Guidelines

- The knew about them or NOT
 - Strongly Agree/Agree: n = 63 (54%)
 - Neutral: n = 30 (26%)
 - Disagree: n = 24 (20%)
- Perceived Evidence Strength of SOGC Guidelines
 - Strongly Agree/Agree: n = 45 (38%)
 - Neutral: n = 30 (26%)
 - Disagree: n = 14 (12%)

Enablers to cCMV Prevention Counselling

- Providers strongly believed cCMV discussions were important (TDF Domain = Beliefs about consequences)
- Felt positively about cCMV prevention (TDF Domain = Optimism)
- Intended to discuss cCMV prevention (TDF Domain = Intention)
- Recognised that it was their professional responsibility (TDF Domain = Social/professional role and identity).

Beliefs about Capabilities

- I am confident about my ability when discussing education and hygiene measures to prevent CMV acquisition with my patients/clients.
- I find it difficult to discuss education and hygiene measures to prevent CMV acquisition with my patients/clients.

Further Work

- Rework the scale to increase internal validity
- Apply it to other samples of HCPs
- This is needed to tailor Interventions!

Take Home Messages

- CMV is common
- Congenital CMV infection-related disability is PREVENTABLE
- CMV is coming your way
 - **Your patients are willing to change their behaviour during pregnancy**
 - **Can you “pack” CMV prevention with the usual “universal precautions” you give to your patients?**

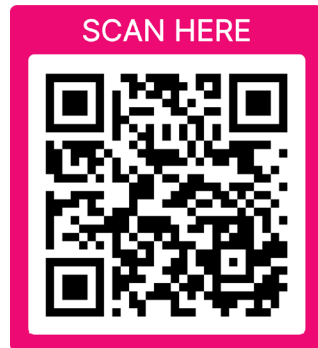


Why Didn't You Tell Me about CMV Video on YouTube

Thank you!



Learn more about PEP-C
research.ucalgary.ca/pep-c



PEP-C Lab Information Page
University of Calgary



See our work in action
vaccinesinpregnancycanada.ca



Vaccines in Pregnancy Canada
(VIP Canada) Website



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Gynaecology

Background: CMV was Unspoken Off

- USA 2008 n=305 OBS/GYN: <50% ever counsel pregnant women on cCMV.
[MMWR Morb Mortal Wkly Rep. 2008. 57 \(03\): 65-68](#)
- France n=800 MD's & MW: 81% aware cCMV mode of transmission but only 5% correctly identify all hygiene to prevent infection.
<https://pubmed.ncbi.nlm.nih.gov/22819537/>
- Germany n=40 MW: 30% could state measures to reduce infection risk.
<https://pubmed.ncbi.nlm.nih.gov/23219415/>
- Netherlands 2009 n=246 MDs: only 23-52% aware.
<https://pubmed.ncbi.nlm.nih.gov/19818680/>

Background: CMV Remains Unspoken Off

- 2018 Australia n=774 MDs MWs: <10% ever counsel pregnant women on cCMV
<https://pubmed.ncbi.nlm.nih.gov/28693346/>
- 2022 Spain n=338 MD's & MW: 50% of MDs and 25% MWs “chat CMV”
<https://pubmed.ncbi.nlm.nih.gov/35705068/>
- 2024 Switzerland n=116 MDs n= 226 MWs 63% chat CMV, 37% who do cite lack of knowledge and forgetfulness
<https://pubmed.ncbi.nlm.nih.gov/38383491/>