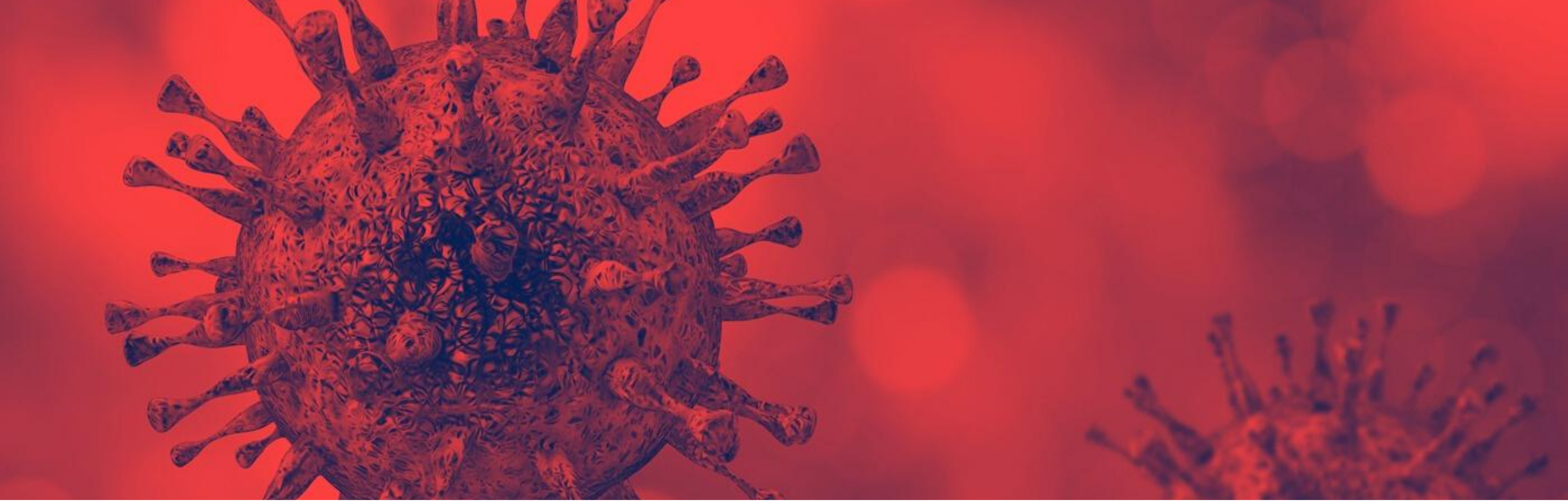


Trends in the Seroprevalence of Cytomegalovirus Infection in Children Aged 1-5 in the United States

Presenter: Shalini Nair

Introduction

What is Cytomegalovirus (CMV)

Prevalence and Manifestation

Significance and Impact

Gaps and Implications

Methods

NHANES 2017-2018

Race and CMV Status

Age, Gender, Household Income, Household Size, Ever Breastfed

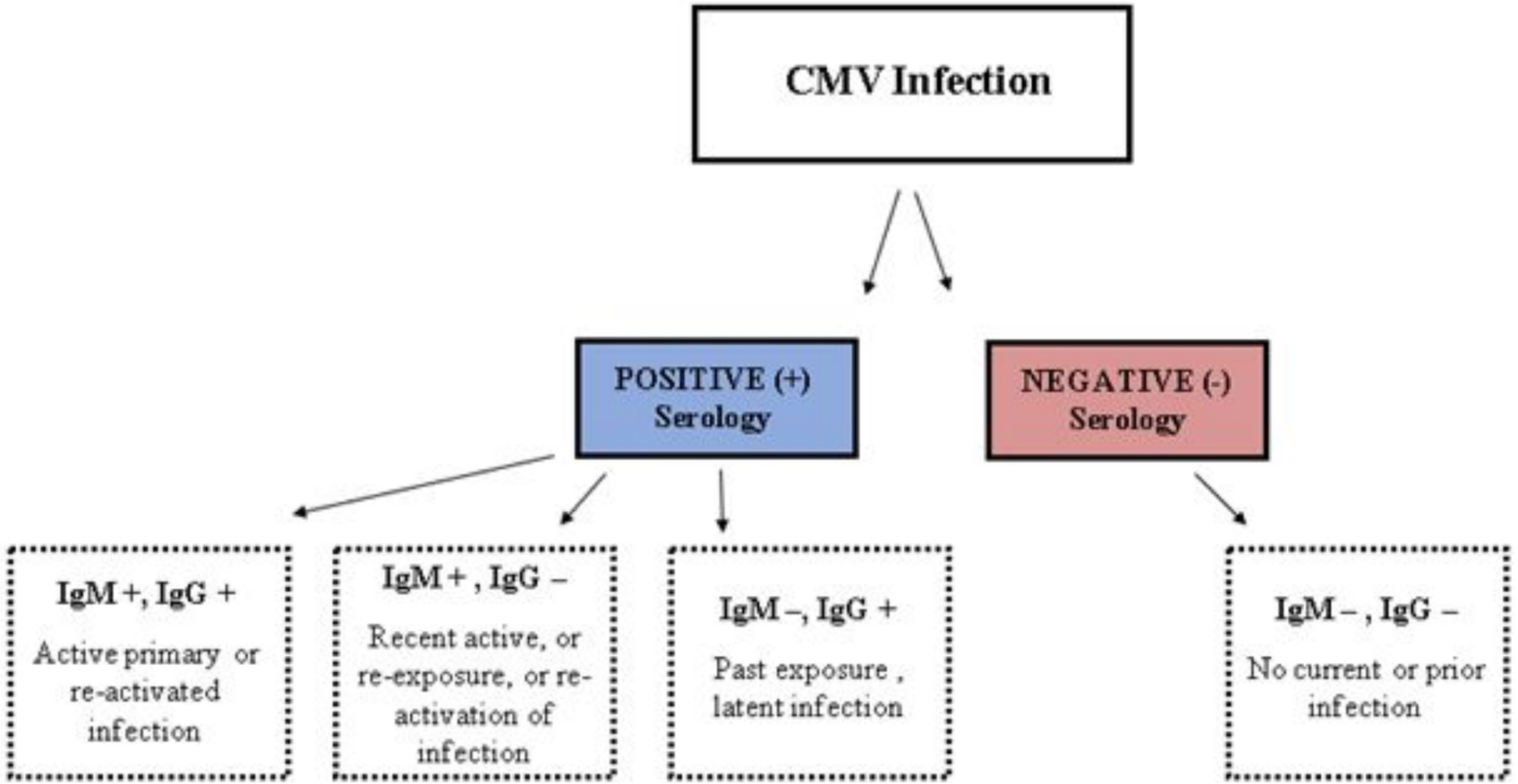
Reclassification of CMV

Paired serology results

Bivariate analysis

Multiple logistic regression

Outcomes


CMV Infection
POSITIVE (+) Serology
NEGATIVE (-) Serology
IgM +, IgG +
Active primary or re-activated infection
IgM + , IgG –
Recent active, or re-exposure, or re-activation of infection
IgM –, IgG +
Past exposure , latent infection
IgM – , IgG –
No current or prior infection

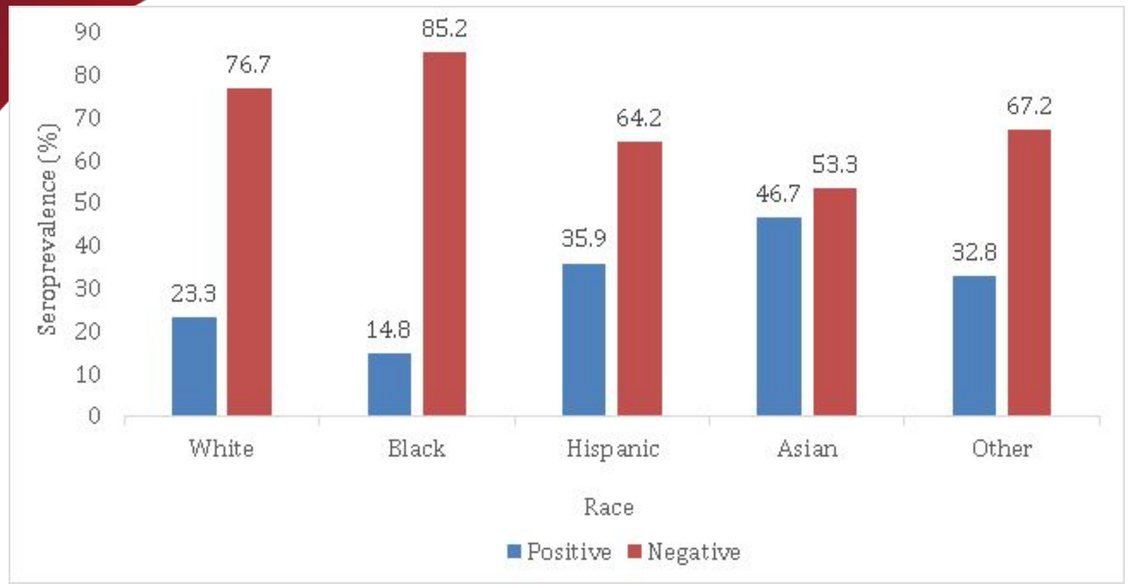
Variable	Male	Female	Total
Sample size, n (%)	264 (49.4)	271 (50.7)	535 (100)
Age, mean (SD)	2.86 (1.37)	3.04 (1.44)	2.96 (1.41)
Race, n (%)			
White	102 (45.7)	121 (54.3)	223 (41.7)
Black	67 (58.3)	48 (41.7)	115 (21.5)
Hispanic	49 (46.2)	57 (53.8)	106 (19.8)
Asian	13 (43.3)	17 (56.7)	30 (5.6)
Other	33 (54.1)	28 (45.9)	61 (11.4)
Household Income (n = 884), n (%)			
< $25,000/yr	83 (50.9)	80 (49.1)	163 (30.8)
$25,000 - $54,999/yr	80 (52.3)	73 (47.7)	153 (28.6)
$55,000 - $74,999/yr	32 (52.5)	29 (47.5)	61(11.4)
> $75,000/yr	69 (43.7)	89 (56.3)	158 (29.5)
Household Size, n (%)			
2	7 (50.0)	7 (50.0)	14 (2.6)
3	53 (57.6)	39 (42.4)	92 (17.2)
4	69 (41.8)	96 (58.2)	165 (30.8)
5+	135 (51.1)	129 (48.9)	264 (49.4)
Ever Breastfed, n(%)			
Yes	206 (48.0)	223 (52.0)	429 (80.2)
No	58 (54.7)	48 (45.3)	106 (19.8)
CMV Infection, n (%)			
Positive	61 (43.3)	80 (56.7)	141 (26.4)
Negative	203 (51.5)	191 (48.5)	394 (73.6)

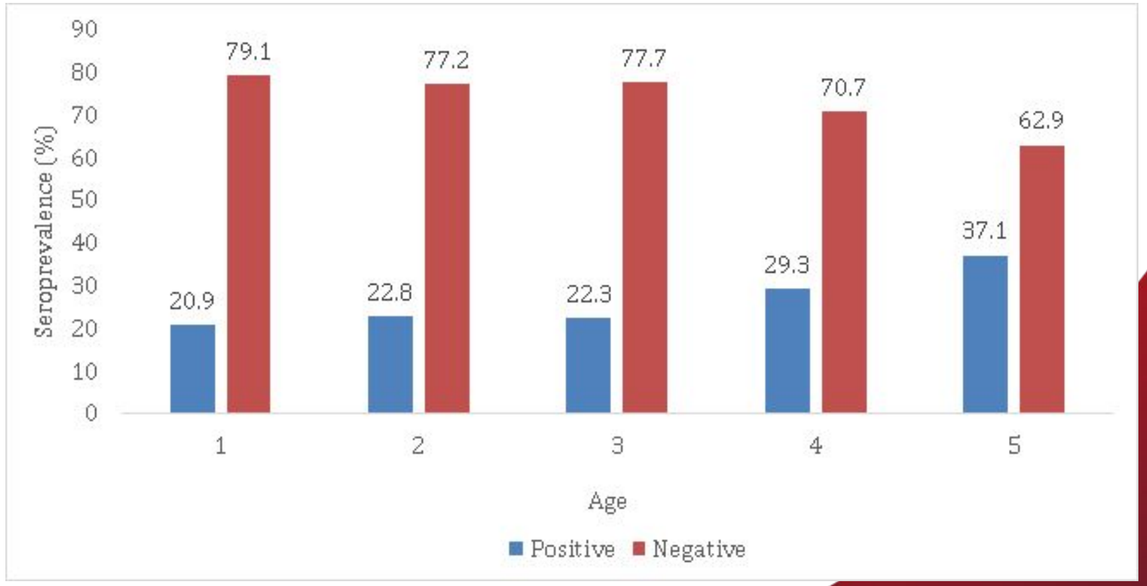
Characteristics of the Study Sample

Bivariate Analysis

Variable	CMV Infection	No CMV Infection	Statistical Testing
Sample Size (n = 535), n(%)	141 (26.4)	394 (73.6)	
Race, n(%)			CHISQ=21.6, p=0.0002
White	52 (23.3)	171 (76.7)	
Black	17 (14.8)	98 (85.2)	
Hispanic	38 (35.9)	68 (64.2)	
Asian	14 (46.7)	16 (53.3)	
Other	20 (32.8)	41 (67.2)	
Age, mean (SD)	3.25 (1.44)	2.85 (1.38)	T=2.84, p=0.0049
Gender, n(%)			CHISQ=2.83, p=0.0923
Male	61 (23.1)	203(76.9)	
Female	80 (29.5)	191 (70.5)	
Ever Breastfed, n(%)			CHISQ=7.25, p = 0.0071
Yes	124 (28.9)	305 (71.1)	
No	17 (16.0)	89 (84.0)	
Household Income, n(%)			TREND Z= -0.28, one sided p = 0.3905
< $25,000/yr	46 (28.2)	117 (71.8)	
$25,000 - $54,999/yr	39 (25.5)	114 (74.5)	
$55,000 - $74,999/yr	13 (21.3)	48 (78.7)	
> $75,000/yr	43 (27.2)	116 (72.8)	
Household size, n(%)			TREND Z= -0.58, one sided p = 0.2804
2	5 (35.7)	9 (64.3)	
3	21 (22.8)	71 (77.2)	
4	51 (30.9)	114 (69.1)	
5+	64 (24.2)	200 (75.8)	

Results


90
80
70
60
50
40
30
20
10
0
Seroprevalence (%)
76.7
85.2
64.2
53.3
67.2
23.3
14.8
35.9
46.7
32.8
White
Black
Hispanic
Asian
Other
Race
Positive
Negative


90
80
70
60
50
40
30
20
10
0
Seroprevalence (%)
79.1
77.2
77.7
70.7
62.9
20.9
22.8
22.3
29.3
37.1
1
2
3
4
5
Age
Positive
Negative

Multivariate Analysis

Variable	Model 1	Model 2	Model 3
Predictor: Race			
White	Reference	Reference	Reference
Black	0.570 [0.313, 1.041]	0.576 [0.314, 1.058]	0.572 [0.306, 1.069]
Hispanic	1.838 [1.110, 3.042]*	1.772 [1.065, 2.948]*	1.656 [0.955, 2.870]
Asian	2.877 [1.317, 6.287]**	2.543 [1.152, 5.616]*	2.523 [1.114, 5.716]*
Other	1.604 [0.865, 2.976]	1.570 [0.839, 2.936]	1.513 [0.797, 2.873]
Age (year)		1.185 [1.027, 1.367]*	1.182 [1.022, 1.366]*
*** significant at p<0.05, ** significant at p<0.01**			

Non-significant covariates included in Model 2: Gender

Non-significant covariates included in Model 3: Gender, Ever Breastfed, Household Size, Household Income

Conclusions

- Distribution of seroprevalence varies significantly by race, age
  - Contrary finding: Black and Hispanic populations not significant
- Increased prevalence overall from previous estimates
- No variations by breastfeeding?
  - Other factors involved?
- Limitation: Not enough power to assess causal relationships
  - Small sample size, unweighted observational data

Future Study

- Larger sample size to fully analyze risk factors
- Greater inclusion of covariates not included in NHANES
- Seroprevalence in adults

- Ultimate goal: development of a treatment or vaccine

Resources

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Thank you!