1524. Sex Differences in Influenza: The Challenge Study Experience

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Session: P-68. Respiratory Infections - Viral

Background. Our understanding of the impact of biological sex on influenza-associated disease and the mechanisms that underpin it is still incomplete. Further investigation of sex-linked effects on influenza pathogenesis and clinical outcomes may help tailor vaccine strategies. Animal studies have shown female mice experience more symptoms than male mice during influenza infection. Similarly, human females of reproductive age have higher rates of influenza and influenza-related hospitalizations. However, data is sometimes conflicting and may be confounded by other important differences in baseline characteristics. Human challenge studies have demonstrated the importance of NAI titers as a correlate of protection and may also provide an ideal opportunity to study sex differences in a homogenous group of participants controlled for confounders.

Methods. Data from 168 volunteers who underwent Influenza A/California/04/2009/H1N1 challenge studies affiliated with NIAID's LID Clinical Studies Unit were compiled to compare differences between sexes. Participants were included in the analysis if they received a challenge dose of virus of 10^7 TCID50 and were excluded if they had received any vaccines or experimental therapy during the study period.

Results. Baseline differences between male and female participants were observed in NAI titers but not HAI titers or age. Outcomes of interest included presence of viral shedding/duration which were similar among sexes. However, symptom number and duration were higher among female participants (p=0.008 and p=0.045 respectively). Ongoing data analysis also shows females have lower post-challenge NAI titers than males.

Conclusion. Female participants in our H1N1 challenge studies had more symptoms and a longer duration of symptoms compared to their male counterparts. Differences in NAI titers may potentially explain the observed relationship between sex and symptoms associated with influenza.

Disclosures. **All Authors**: No reported disclosures

1526. The economic impact of respiratory syncytial virus (RSV) in infants in the United States: systematic literature review

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Session: P-68. Respiratory Infections - Viral

Background. Respiratory syncytial virus (RSV) is a human orthopneumovirus spread by direct contact with symptomatic, infected individuals. An estimated 587,000 RSV LRTIs result in inpatient or outpatient encounters annually among US infants (Rainisch et al 2019). The health care costs associated with RSV include medical costs to insurers, governments, and households, travel, and loss of wages.

Initial summary of Inpatient and Ambulatory Medical Costs p Infant w RSV.JPG Jun 17th, 2020 @ 2:44 PM 852 x 572 122.3 Kb

Table 1. Initial Summary of Inpatient and Ambulatory Medical Costs per Infant with RSV: Mean (Standard Deviation), by Gestational Age and Payer

Gestational Age, Author, Year	Payer	Inpatient Costs+	Ambulatory Costs +	Cost Range
Full term (Shi, 2011)	Medicaid	$11,146 ($122,115)	$9,328 ($162,746) ▽	One year
Full term (Krilov, 2020)	Commercial	$18,937 ($29,367)	---	Per hospitalization
Full term (Goldstein, 2018)	Medicaid	$9,825 ($25,227)	---	Per hospitalization
Full term (Goldstein, 2018)	Commercial	$17,953 ($27,120)	---	Per hospitalization
Full term (McLaurin, 2016)	Medicaid	$9,903 ($46,533)	---	Per hospitalization
Full term (McLaurin, 2016)	Commercial	$12,576 ($36,716)	---	Per hospitalization
Late Preterm (Shi, 2011)	Medicaid	$21,686 ($18,197)	$19,963 ($27,269) ▽	One year
Late Preterm (McLaurin, 2016)	Commercial	$21,552 ($43,709)	---	Per hospitalization
Late Preterm (McLaurin, 2016)	Medicaid	$16,041 ($39,234)	---	Per hospitalization
Late Preterm (Shi, 2011)	Medicaid	$21,686 ($18,197)	$19,963 ($27,269) ▽	One year
Late Preterm* (Krilov, 2010)	Commercial	$26,120	---	Per hospitalization
Not specified** (Amand, 2018)	Commercial	---	$4,371 ($13,411) ◊	One year
Mean Full Term†	**Commercial**	**$16,489 ($31,068)**		
	Medicaid	**$10,291 ($64,625)**		
Mean Late Preterm†	**Commercial**	**$23,836 ($43,709)**		
	Medicaid	**$18,864 ($28,716)**		

+Adjusted to January 2020 USD based on Medical Care Consumer Price Index, Federal Reserve Economic Data; ▽ Outpatient follow-up and ambulatory visits; ◊ Outpatient follow-up, ambulatory visits, and emergency/urgent care; *Gestational age defined as 29-34 weeks and no standard deviation reported; **1-2 years of age; †Standard deviations shown are the averages of the standard deviations of the individual studies included.

Methods: A systematic literature review of the costs associated with children who have RSV was conducted. Following PRISMA methodology, key search terms were searched within article titles and abstracts through PubMed, EconLit, and Scopus. A total of 1,942 unique abstracts were screened independently by two authors and reduced to 180 articles after applying inclusion and exclusion criteria. The number of included articles after reviewing the full text was 66. Costing results were adjusted to USD2020 based on the Medical Care Consumer Price Index.

Results. Costing results were reported mainly for medical costs in inpatient settings. Initial results show that annual mean inpatient costs per RSV patient range among individual studies from $9,825 (SD=$25,227) for full term infants to $26,120 (SD unspecified) for late preterm infants (**Table 1**). Costing results vary by gestational age, with late preterm infants having an annual mean inpatient cost almost 1.6 times that of a full term infant. Inpatient costs for RSV infants are higher for commercial pay versus Medicaid, for both full term infants (commercial mean=$16,489 SD=$31,068, Medicaid mean=$10,291 SD=$64,625) and late preterm infants (commercial mean=$23,836; SD=$43,709, Medicaid mean=$18,864 SD=$28,716). Annual RSV ambulatory costs per infant vary between $4,371 (SD=$13,411) and $19,963 (SD=$27,269), depending on gestational age. Other relevant RSV costs include preventative drug costs, such as palivizumab (average $11,954 per infant).

Conclusion. The literature describes the economic impact of RSV primarily for hospitalization of children with underlying comorbidities. There is a need to better understand costing results for RSV, including the burden in ambulatory settings and indirect costs to families affected.

Disclosures. **All Authors**: No reported disclosures

1527. Incident Sexually Transmitted Infections among Southern Men Who Have Sex with Men Living with HIV in the Era of Biomedical Prevention

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Session: P-69. Sexually Transmitted Infections

Background. Sexually transmitted infections (STI) and HIV disproportionately affect men who have sex with men (MSM) in the U.S. Deep South. The South also continues to bear the majority of incident HIV in the U.S.; concomitantly, STIs have increased among MSM in this region. HIV virologic suppression effectively prevents sexual transmission of HIV (treatment as prevention, TasP), but STIs occur commonly in MSM living with HIV despite this. Here, we describe the incidence of gonorrhea and chlamydia in MSM living with HIV in the context of their viral load (VL) management from 2016 to 2019.

Methods. We analyzed data from adult MSM living with HIV from 2016-2019 in HIV care in Birmingham, AL. Eligible MSM were prospectively enrolled in the CFAR Network of Integrated Clinical Sites (CNICS) and had documentation of at least one HIV viral load and one STI test (gonorrhea or chlamydia at any anatomic site) in the same calendar year. Demographic data is presented by year. STI incident rates were calculated by year by viral load (VL) category, suppressed (VL < 200 copies/ml) and unsuppressed (VL ≥ 200 copies/ml), with incident rate ratios (IRR) and 95% confidence intervals for comparing suppressed VL to unsuppressed VL.

Results. The study cohort included 943, 1084, 1080, and 1106 MSM in each year from 2016-2019, respectively. Of these men, 551 (58%), 623 (58%), 639 (63%), and 676 (61%) were Black or African American with a median age (years) of 46, 45, 44, and 43 from 2016-2019. Most had VL < 200 (79%, 81%, 82%, and 80% from 2016-2019). There were 100, 131, 139, and 168 men with positive GC or CT results per year from 2016-2019. The annual incident rates per 100 person years (PY) for MSM by suppressed and unsuppressed VL as well as IRR are presented in Table 1; the IRR ranged from 3.00-4.34 through the study period. Figure 1 shows incidence rate by VL category.

Table 1: Yearly Incident Rates per 100 person years & IRR by VL

Year	VL < 200 cp/mL	VL >200 cp/mL	IRR (95% CI)
2016	7.95	2.65	3.00 (1.91-4.72)
2017	9.23	2.86	3.23 (2.16-4.83)
2018	10.46	2.41	4.34 (2.83-6.65)
2019	11.93	3.80	3.14 (2.21-4.45)

Figure 1. Incidence Rate by Viral Load Category. PY, person years.

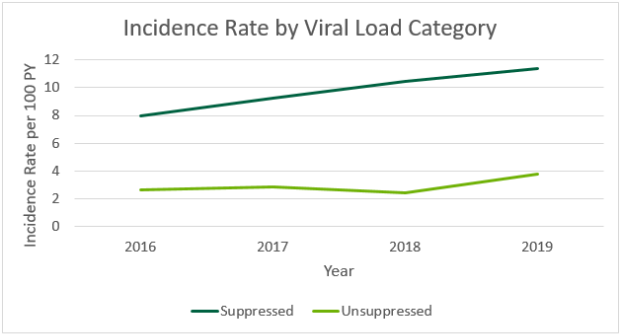

Figure 1. Incidence Rate by Viral Load Category. PY, person years.

Conclusion: In this cohort, incident bacterial STIs were common and increased each year in this analysis for both groups, reflecting national STI trends. MSM with suppressed VL had higher bacterial STI incidence rates and higher risk for incident STI compared to MSM with unsuppressed VL. Novel approaches to STI prevention, such as pre- and post-exposure prophylaxis or vaccines, are necessary to alter the STI epidemic in this population and limit its impact on HIV transmission.

Disclosures. **All Authors**: No reported disclosures