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Respiratory Viruses Edition:

- *Syndromic Surveillance: Using Kansas EDs to track respiratory viral trends*
- *Journal Club: RSV vaccines*
- *Healthy Humor*

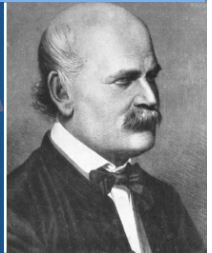
Street Dog Coalition: Clinic Spotlight

Summer 2023
Issue
Thirteen



A Quarterly Insight into Kansas Healthcare Associated Infections, Antimicrobial Resistance and Antimicrobial Stewardship Efforts with a One Health Approach

Semmelweis Times



Educational Activities >>>>

USAAW: Kansas and the Midwest's Role in Antimicrobial Discovery and Utilization

Noon to 1 p.m., November 15, 2023

US Antibiotic Awareness Week is Nov. 18 and KDHE and KHC will be hosting a special antibiotic-oriented webinar. Kansas and the Midwest served a significant role in antibiotic discovery (e.g., did you know the second antibiotic class ever developed, tetracycline, was discovered in a Missouri field?!). This year we examine the historical context Kansas and neighbor states played in antimicrobial discovery and the evolution of antibiotics in human and animal health which have global implications.

[For more information and to sign up.](#)

MASC: Next Generation Sequencing in Antimicrobial Stewardship

Noon to 1 p.m., November 30, 2023

Infectious Diseases physician Dr. Mayer Al Mohager from Baylor College of Medicine will be discussing next generation sequencing (NGS) current and future state, and the role of NGS in antimicrobial stewardship programs.

[For more information and to sign up.](#)

Syndromic Surveillance

Changes in ED Visit Trends for Influenza and RSV Following the COVID-19 Pandemic in Kansas

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Informatics

Introduction

Prior to the COVID-19 pandemic, there was a consistent pattern in the burden of respiratory viruses like influenza and respiratory syncytial virus (RSV), with seasonality occurring from October through May [1,2]. Recognizing the onset and offset of seasonal respiratory viruses like influenza and RSV ensures that prevention strategies, such as monoclonal antibodies to prevent RSV, are deployed in a timely manner. Since influenza and RSV are not reportable conditions in Kansas, meaning KDHE does not receive reports of every diagnosed case or positive lab result, it is necessary to strengthen other surveillance strategies that help monitor the burden of different respiratory viruses.

Historically, the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) has monitored influenza trends, while the National Respiratory and Enteric Virus Surveillance System (NREVSS) has tracked RSV trends. In Kansas, ILINet captures data from family practices,

emergency departments, student health centers, and pediatric offices whose participation is voluntary. Each influenza season in Kansas, ILINet enrolls approximately 30-32 sites that provide data weekly on the proportion of outpatient visits with influenza-like-illness (ILI) symptoms. ILI is defined as fever ($\geq 100^{\circ}\text{F}$ [37.8°C]) with cough or sore throat. As for NREVSS, only three laboratories in Kansas voluntarily provide the Centers for Disease Control and Prevention (CDC) with aggregate numbers of positive test results for RSV. While these surveillance programs were sufficient in the past, changes in the expected circulation of these respiratory viruses have occurred since the COVID-19 pandemic [3]. These changes make it more important for public health officials to incorporate supplemental data sources which are more geographically representative and can provide diagnostic information about which virus is causing symptoms.

One way to examine the burden of specific respiratory viruses in near real-time is by using emergency department (ED) data from the Electronic Surveillance System

Syndromic surveillance (continued) >>>

for the Early Notification of Community-Based Epidemics (ESSENCE). These data are collected by the Kansas Syndromic Surveillance Program (KSSP) which is currently capturing over 98% of ED visits. In this report, we depict patterns of ED visits for influenza and RSV in Kansas during seasons prior to the COVID-19 pandemic (2018-2019 and 2019-2020) compared to seasons during the COVID-19 public health emergency (2020-2021, 2021-2022, and 2022-2023) to better understand the impact of the pandemic on ED burden for these diseases. We also highlight new strategies being implemented by the Kansas Department of Health and Environment (KDHE) that will allow us to better identify trends in COVID-19, influenza and RSV.

Methods

Influenza and RSV-related ED visits from October 2018 through May 2023 were queried in ESSENCE to display temporal patterns in the burden of disease. ED visits were categorized by discharge diagnosis using ICD-10-CM diagnosis codes for influenza (J09-J11) and RSV (B97.4, J12.1, J20.5, and J21.0). Out of state resident visits were excluded. Trends are examined to assess whether there have been changes in ED visits for influenza and RSV during the COVID-19 pandemic.

Results

During the 2018-2019 influenza season, Kansas influenza-related ED visits peaked in February 2019 at around 4.4% of total ED visits (Figure 1). During the 2019-2020 season, there was a peak in influenza-related ED visits in January 2020, measuring at around 5.5%. Subsequently, influenza-related ED visits continued to increase, reaching a second peak at 6.5% of all ED visits in early March 2020. RSV-related ED visits during the 2018-2019 and 2019-2020 seasons exhibited similar trends to influenza, with increased ED visits beginning in January 2019 and 2020, and remaining highest in February of 2019 and 2020, at 0.8% and 1.0% of total ED visits, respectively (Figure 2).

During the 2020-2021 respiratory virus season, ED visits remained low for both influenza and RSV (< 0.4% of total ED visits combined). RSV-related ED visits increased in June 2021, reaching a peak at 1.1% of total ED visits in late September 2021. Influenza-related ED visits increased starting November 2021; however, visits peaked at less than 1.8% of total ED visits. In the most recent 2022-2023 season, RSV-related ED visits increased in late August 2022 and peaking in November 2022, reaching around 1.6% of total ED visits. Influenza-related ED visits increased rapidly at the beginning of October 2022, reaching a peak in December 2022 at 7.7% of total ED visits, before rapidly declining.

Discussion

In Kansas, ED visits associated with influenza and RSV appeared atypical during the timeframe of the COVID-19 pandemic compared to previous seasons. The extent, timing, and duration of this impact differed between viruses. Prior to the COVID-19 pandemic, the trends of ED visits for both influenza and RSV exhibited historically similar patterns, peaking in January and February of 2019 and 2020. These seasonal trends resembled the patterns seen across the country [3,5]. When comparing these trends to the 2020-2021 season during public health emergency, ED visits associated with influenza and RSV were low. Nationally, the occurrence of viral respiratory illnesses other than COVID-19 was diminished during the public health emergency, a possible positive impact of the adoption of non-pharmaceutical interventions including halting inter-

Figure 1:

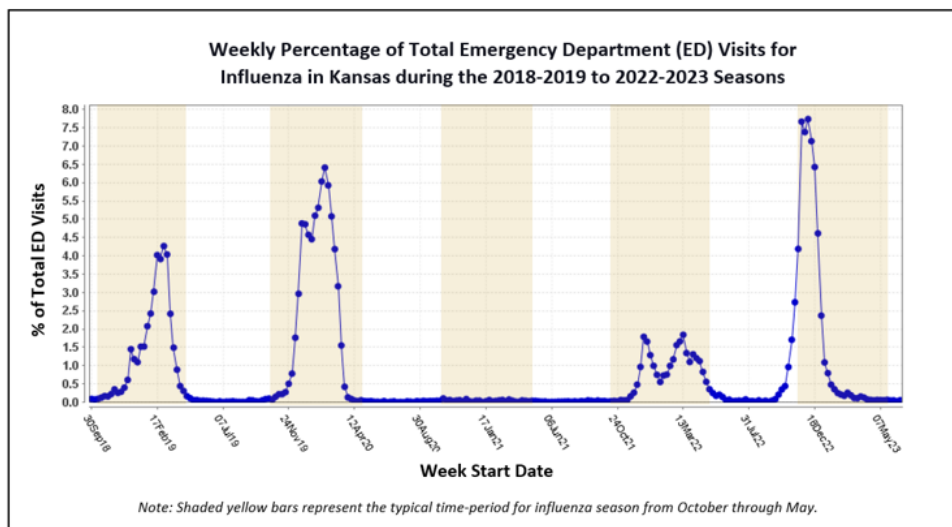
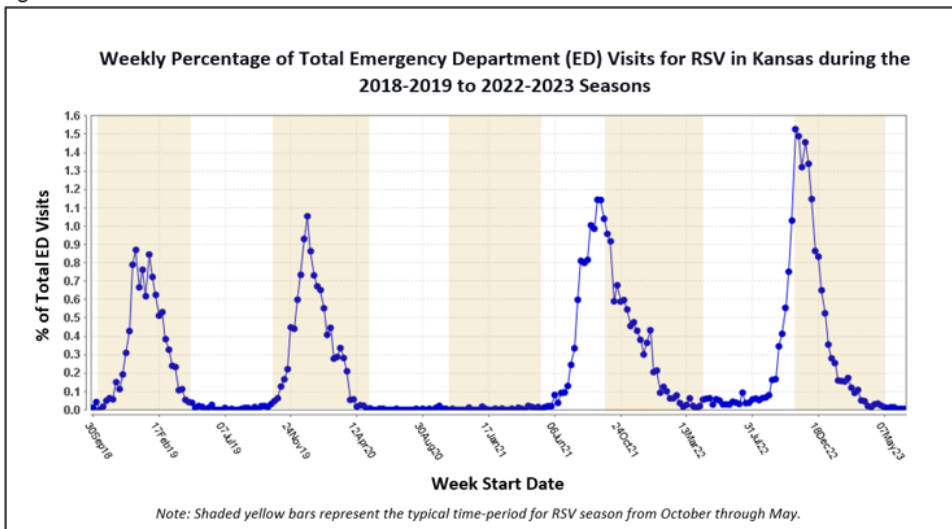


Figure 2:



national travel, mask usage, social distancing, and stay-at-home orders [7]. Unusual circulation patterns for influenza and RSV may impact the ability of healthcare systems to prepare for and respond to an unexpected, unseasonal increase in disease [8]. Given that these diseases are not reportable, there is a need to develop alternative surveillance strategies to monitor disease activity over time and more quickly detect abnormal viral circulation patterns. As a result, KDHE has created new surveillance tools to augment existing surveillance strategies. Trends in ED visits for Influenza, RSV, and COVID-19 at the state and county level are now available year-round on the KSSP [dashboard](#). The Kansas Respiratory Illness Surveillance and Epidemiology Network (RISENet) is another novel program scheduled for deployment during the upcoming 2023-2024 respiratory season. As a part of RISENet, the Kansas Health and Environmental Laboratories (KHEL) will receive laboratory specimens collected from individuals in outpatient settings with suspected respiratory illnesses and test for COVID-19, influenza, and RSV to better understand regional circulation. Additionally, KHEL will perform additional characterizations of the

specimens such as influenza subtyping or COVID-19 genomic sequencing.

Conclusion

The need for timely respiratory virus surveillance has been demonstrated with the observed changes in seasonal viral activity. KSSP and RISENet are tools that will strengthen this capacity. These new tools will assist public health and medical professionals in preparing for upcoming respiratory virus seasons by providing them with the necessary data to understand the impact of different respiratory viruses in near real-time. This awareness of changes in disease activity will allow for valuable insights to be provided quickly and better guide early prevention strategies. For example, awareness of these trends can help determine optimal influenza vaccination schedules or guide reimbursement of monoclonal antibodies, like Synagis® or the new drug Beyfortus™, to prevent RSV. Finally, it's important for medical practitioners to recognize that respiratory viruses might not follow their usual seasonal patterns of spread. The recent demonstration of an altered re-emergence of respiratory viruses underscores the need for a heightened level of suspicion and increased testing to differentiate respiratory pathogens.

Street Dog Coalition Community Animal Homelessness

Dr. Allison Crow, DVM, MPH
Animal Clinic of North Topeka
Street Dog Coalition Topeka Lead



Street Dog Coalition (SDC) has local chapters all over the country that are dedicated to providing free veterinary care to pets of individuals experiencing homelessness with a One Health approach. Dr. Allison Crow graduated from K-State with her MPH in 2013 and DVM in 2014, and started the Topeka, KS chapter of SDC in 2021. In partnership with case managers from Valeo Behavioral Health and the Topeka Rescue Mission, SDC's team is focused on caring for the lives on both ends of the leash. The benefit of pets to human emotional wellbeing, physical health and safety is especially pronounced for our homeless neighbors. In recognition of the power of the human-animal bond, we use vet med as an icebreaker to build relationship and trust with pet owners, which can then lead to connection with other resources so the whole family unit can find hope and healing.

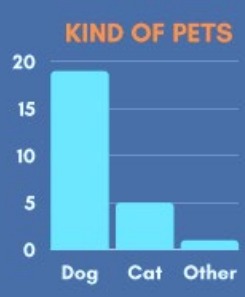
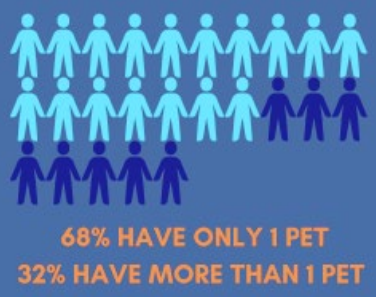
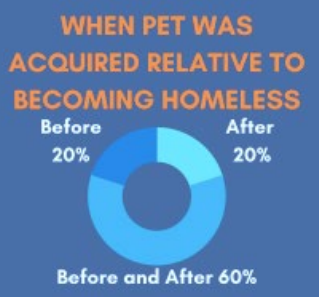
Topeka's SDC hosts clinics two Thursdays a month at the [Mobile Access Partnership \(MAP\)](#) sites, where pet owners can access showers, clothing, food, medical care, mental health support, and housing assistance all in one central location. K-State brings senior vet students to provide veterinary care, and also to learn about practicing

compassion in low-income settings. The clinic focuses heavily on zoonotic disease prevention with rabies and leptospirosis vaccination, as well as monthly treatment for roundworms, hookworms, fleas, and ticks. This has saved multiple dog bite victims from having to complete post-exposure rabies treatments.

Learn more about SDC at <https://www.thestreetdogcoalition.org/topeka-ks> and reach out via the "Contact Us" section if you want to connect. We would love to hear from you!



PET DEMOGRAPHICS



I've seen people wrap their dogs up in 10 blankets before they wrap themselves. - Tara C.

I don't know that the public think of homeless people and pets together. I never did. They probably don't realize the bond...You're partners. - James O.

[Pointing to dog, BamBam] He's like my son. He's my child. - Alice A.



DONATE TO THE STREET DOG COALITION
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305 W. MAGNOLIA #277,
FORT COLLINS, CO 80521
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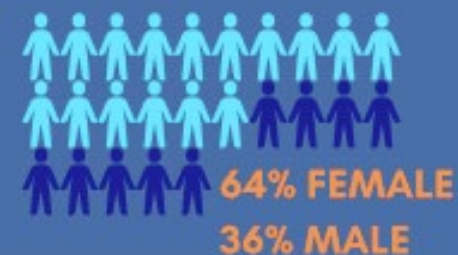
Venmo
@TheStreetDog-Coalition



Dr. Allison Crow, Topeka's Street Dog Coalition Lead, provides veterinary care to people experiencing homelessness in collaboration with Valeo Behavioral Health and the Topeka Rescue Mission

EXPERIENCING HOMELESSNESS WITH PETS IN TOPEKA, KANSAS

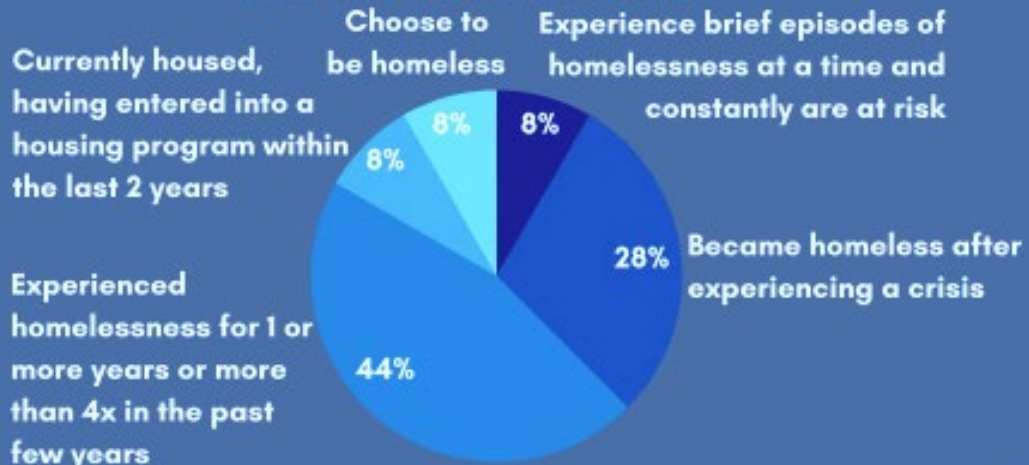
OWNER DEMOGRAPHICS



Homelessness isn't a disease. It's part of what's going on with this life. - Ivan B.

HOMELESSNESS DEMOGRAPHICS

TYPE OF HOMELESSNESS



AVERAGE LENGTH OF EXPERIENCING HOMELESSNESS



It's hard work to survive out here. [Experiencing homelessness] would teach people a lot. - Tina R.

Anything helps. It's a struggle [being homeless]. The smallest things are quite the day maker. - Amanda Z.

A MAJORITY OF HOMELESS OR AT RISK OF HOMELESSNESS INDIVIDUALS AGREE THAT HAVING A PET MAKES IT HARDER TO SECURE CONSISTENT HOUSING*

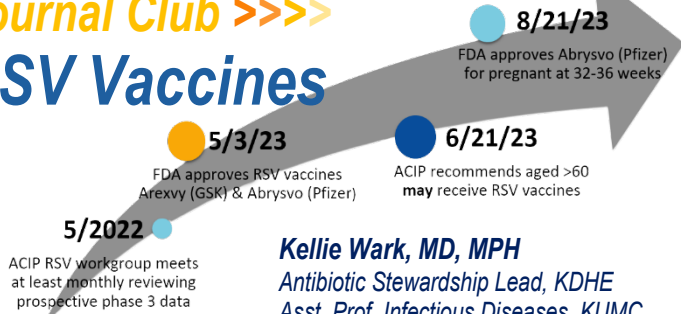
[The public doesn't] know that [homeless individuals] would consider [their pets] their priority. You know, Powder is mine. - Bobby W.



HOW DID THEY HEAR OF OUR SERVICES?

*Supported by case worker testimonies

Journal Club >>>> RSV Vaccines



Kellie Wark, MD, MPH
Antibiotic Stewardship Lead, KDHE
Asst. Prof. Infectious Diseases, KUMC

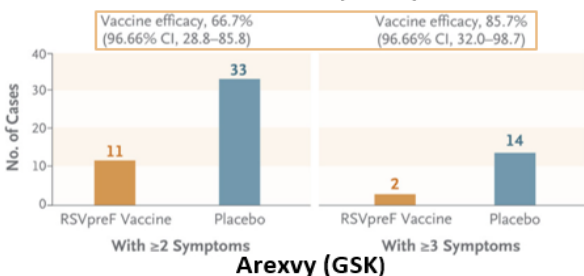
In April's New England Journal of Medicine, [Papi](#)⁹ and colleagues published results of GSK's RSV vaccine results, and the same month [Walsh](#)¹⁰ et al. published data from Pfizer's RSV vaccine. Both phase 3 trials were multinational (17 countries for GSK, 7 for Pfizer), blinded, and compared to placebo. Both trials enrolled only immunocompetent individuals 60 years and older, and excluded those with immunocompromising conditions (e.g., malignancy, HIV (GSK not Pfizer), organ or bone marrow transplant recipients) and because of need to report symptoms and complete diaries those with moderate dementia or uncontrolled neurologic disorders were excluded. GSK enrolled 24,973 and Pfizer enrolled 36,862 people over age 60.

Methods: Trials vaccine efficacy (VE) are not able to be compared head to head as each manufacture used slightly different definitions of lower respiratory tract disease (LRTD) and acute respiratory infection (ARI). Generally speaking, however, ARI was defined as: nasal congestion, rhinorrhea, sore throat, new or increased sputum, new or increased cough, new or increased dyspnea and/or new or increased wheezing. GSK's definition of ARI was a bit broader encompassing systemic complaint: fatigue, fevers/feverish, body aches, headaches or decreased appetite. LRTD was defined as the new or increasing cough-sputum-dyspnea-wheezing and hypoxemia (oxygen saturation under 95% or a need for supplemental oxygen) and elevated respiratory rate (over 20 for GSK and over 25 or 15% increase from baseline for Pfizer).

Another inability to compare VE between the 2 vaccines is the slightly different seasonality studied: GSK season 1 extended May 2021 through April 2022, whereas Pfizer season 1 was from August 2021 through October 2022. VE was calculated for 2 or more symptoms of ARI/LRTD in both manufacturers, with Pfizer additionally calculating VE for preventing 3 or more symptoms. Season 2 VE was also slightly different time periods: GSK tract infections from August 2022 through March 2023, and Pfizer from

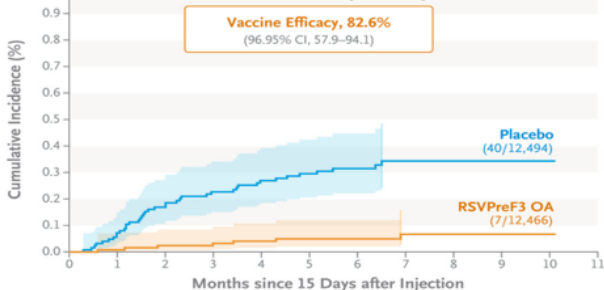
Abrysvo (Pfizer)

RSV-Associated Lower Respiratory Tract Illness



Arexvy (GSK)

RSV-Associated Lower Respiratory Tract Illness



Results: Both manufacturer's VE: GSK VE was 82.6% (2+ symptoms) and Pfizer VE was 66.7% (2+ symptoms) and 85.7% (3+ symptoms). For severe LRTD, GSK's VE was 94.1%, Pfizer did not report severe

LRTD VE. In the subsequent RSV season, VE remained high following the single season-1 RSV injection: GSK VE 74.5% (2+ symptoms). Walsh et al's NEJM manuscript did not publish details on season 2, however an MMWR interim analysis showed Pfizer season-2 VE to be 84.4% (3+ symptoms).¹¹ VE remained high when analyzed by comorbidity status and age group, with the over aged 80 group underpowered (table below).

Test	GSK % (95% CI)	Pfizer % (95% CI)
LRTD Season 1 ¹	2+ s/sx ³ : 82.64 ⁴ (57.9-94.1)	2+ s/sx ³ : 66.75 ⁵ (28.8-85.8) 3+ s/sx ³ : 85.7 ⁵ (32.0-98.7)
LRTD Season 2 ²	56.1 (28.2-74.4)	78.6 ⁶ (23.2-96.1)
Combined Seasons 1 & 2	74.5 (60.0-84.5)	84.4 ⁶ (59.6-95.2)
Severe LRTD	94.1 (62.4-99.9)	?

1. Season 1: 5/2021-4/2022 (GSK), 8/2021-10/2022 (Pfizer)
2. Season 2: 8/2022-3/2023 (GSK), 7/2022-1/2023 (Pfizer)
3. S/sx = signs/symptoms
4. GSK: vax->VE f/u avg 15 mos/participant
5. Pfizer vax->VE f/u avg 12 mos/participant
6. Meigar M, et al MMWR 2023;72(29):799-81.

Age & Comorbidity Group	GSK % (95% CI) 2+ s/sx	Pfizer % (95% CI) 2+ s/sx	Pfizer % (95% CI) 3+ s/sx
60-69	81.0 (43.6-95.3)	57.9 (-7.4 to 85.3)	77.8 (18.7-98.1)
70-79	93.8 (60.2-99.9)	77.8 (18.7-98.1)	100 (-573 to 100)
>70	84.8 (46.9-97.0)		
>80	33.8 (-477 to 94.5)	80.0 (-104 to 99.7)	100 (-191 to 100)
No coexisting conditions	72.5 (30.0-90.9)	70.6 (10.7-92.4)	100 (2.2-100)
1+ coexisting conditions	94.6 (65.0-99.9)	62.5 (-8.4 to 89.1)	75.0 (-39 to 97.9)

Side effects were similar across both vaccines, with severe side effects occurring rarely (3.8% GSK vs 0.9% placebo and 1.0% Pfizer vs 0.7% placebo). Three cases of neurologic inflammatory events (e.g., Guillain-Barre [GBS]) occurred in 3 of 17,922 GSK recipients and 3 of 18,622 Pfizer recipients. Post-GBS event review carried some uncertainty as to underlying axonal polyneuropathy was already present (Pfizer) and hypoglycemic episode with dementia (GSK).

Discussion: While we cannot compare vaccines head-to-head (given variability in seasonality, infection definitions) both vaccines were highly efficacious, exceeding 80% protection from infection, and perhaps more importantly, ~95% for severe disease necessitating hospitalization and supplemental oxygen. Consider offering your patients over age 60 either RSV vaccine. For more information visit [CDC's Health Alert Network RSV vaccine advisory](#).

Healthy Humor >>>>



final thoughts...

Kansas Health Alert Network >>>

KS-HAN is an internet-based, secure emergency alerting system that allows the general public health and emergency preparedness information to be shared rapidly. KS-HAN has the ability to alert registrants by organization, occupation, county, or group through email, work and cell phone, and via SMS text.



KS-HAN is an invitation-only system, to request access [email](#) the KS-HAN Administrator your

- First and Last Name*
- Organization/Employer*
- Work phone number*
- Job role/position*

For more information:

kdhe.ks.gov/801/

**We want to help with HAI/AR and AS!
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