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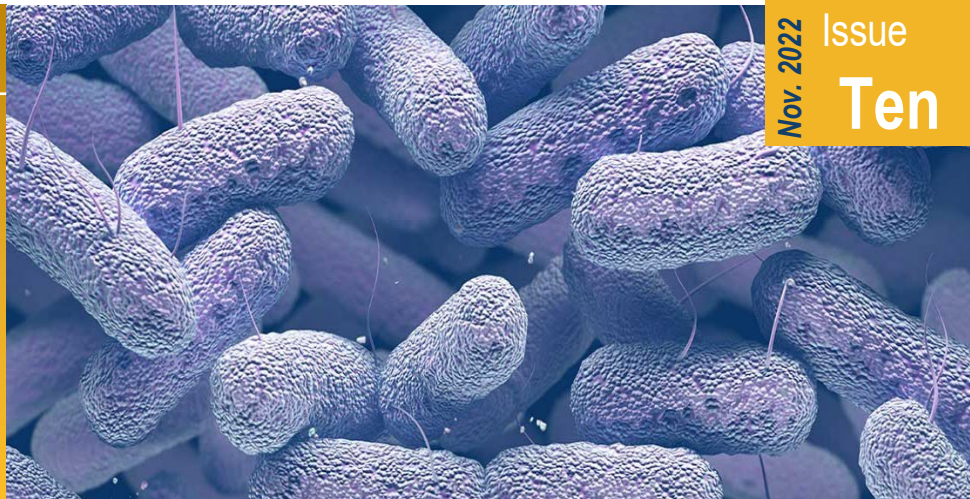
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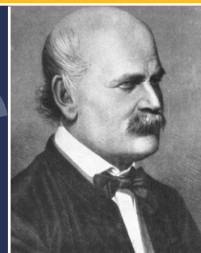
Gubernatorial Proclamation

Nov. 2022 Issue
Ten



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

Semmelweis Times



Educational Activities >>>>

Antibiotic Use & Resistance: Are we doing more harm than good? Noon- 1 p.m., Nov. 17

Kicking off Antibiotic Awareness Week, we review KS antibiotic resistance and use trends, examine ways clinicians can improve antibiotic use. Special emphasis on the outpatient setting with new tools and resources!. Free CME is offered

For more information and to sign up:

khconline.org/initiatives/hiin/education/upcoming-events

Midwest Antimicrobial Stewardship Collaborative (MASC) Noon – 1:30 p.m., Nov. 10

Regional gathering of stewardship clinicians, pharmacists and other leaders aiming to improve antibiotic use through education, sharing and promotion of best practices. Nov. we explore critical access hospital initiatives.

For more information and to sign up:

MidwestASC@gmail.com

Emerging & Re-emerging Infections Polio & Pediatric Hepatitis of Unknown Cause

Dana Hawkinson, MD, MS
Asst. Prof. Infectious Diseases, KUMC
Director of Infection Prevention, KUMC

Poliovirus

In June 2022, the second case of community transmission of poliovirus in the United States since 1979 was detected in Rockland county, New York¹. The first case of paralytic polio since 1979 occurred in 2005, caused by vaccine-derived poliovirus type 1 (VDPV1). The most recent case from NY was a 20-year-old previously healthy polio-unvaccinated male who was hospitalized in NYC with acute flaccid myelitis (AFM) after suffering from fever, neck stiffness and gastrointestinal symptoms. Testing revealed infection with VDPV2, genetically linked to poliovirus detected in Israel and the UK. Seventy wastewater samples have tested positive in the metropolitan NYC region, as well as Rockland and adjacent Nassau and Sullivan counties².

Oral polio virus (OPV) contains replicant competent virus (i.e., attenuated live virus) which can revert to infectious virus during gut replication. This may occur post-vaccination and may be transmitted via stool. OPV use in the US ceased in 2000

when it was replaced entirely by inactivated polio vaccine (IPV). OPV is no longer licensed in the US, however, remains the predominant vaccine in resource-limited countries. Poliovirus type 2 (PV2) was eliminated from OPV in 2016 due to elimination of type 2 wild poliovirus circulation worldwide. IPV protects against all 3 polioviruses.

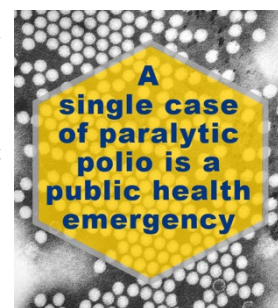
In unvaccinated, approximately one in 1900 PV2 infections may result in paralysis.

Rockland NY county vaccine coverage was 60% in August 2022, with some neighborhoods as low as 37%. Compare this to

the national IPV average of 93%.

Wastewater detection indicates ongoing community transmission, and the NY index case reportedly remains paralyzed.

Current Kansas statues mandate vaccinations for “every pupil enrolling or enrolled in any school,” the list of vaccinations includes IPV^{3,4}.



Collegiate Flu Campaign

#KansasFightsFlu

Campaign to raise awareness on the importance of influenza immunization rates in our communities with the goal to increase rates of influenza vaccinations across Kansas for the 2022-2023 flu season.

For more information:

immunizekansascoalition.org/kansas-

Emerging Infections (cont'd) >>>

Pediatric Hepatitis of Unknown Cause

In late 2021/early 2022 there was recognition of hepatitis of unknown cause in pediatric patients. These cases were initially recognized in the UK, and later in the US. Cases in the US were first identified in five Alabama patients.

As of October 5, there are 368 persons of interest (PUI) and 13 deaths under investigation in the US from 42 states⁵. Six percent of cases have required liver transplantation in the US. Although there are no PUIs in Kansas, all our neighboring states have cases. As of the WHO July 2022 report, 35 countries have identified cases or probable cases, and 22 deaths⁶.

Evaluation for the etiologic agent identified possible links to adenovirus subtype F41 (AdV-F41) and adeno-associated virus (AAV2). AAV2 requires coinfection with a helper virus, such as ADV-F41⁷. SARS-COV-2 infection and COVID-19 vaccination have essentially been ruled out, but that is not to say that there may be some more overarching effect of the pandemic in general which has brought these cases to light. In addition to viral etiology, there is likely a genetic factor contributing, such as with Class II HLA alleles^{7,8}. Investigations are ongoing with new information hopefully becoming known soon.

Antibiotic Stewardship >>>>

Frontiers In Stewardship: Immunocompromised Patients

Chelsea Gorseline, MD

Asst. Prof. Infectious Diseases, KUMC

Transplant Infectious Disease

While antimicrobial stewardship efforts have made great strides in recent years, there remains a gap in interventions geared towards immunocompromised patients. Yet, this population suffers from high rates of antimicrobial utilization, concerning gains in antimicrobial resistance would benefit from such efforts⁹.

There are several barriers to implementation of stewardship interventions in the immunocompromised population, including fear and anxiety of prescribing providers, heterogeneity of immunocompromised populations such as solid organ transplant recipients versus patients with acute

they are developed through a multidisciplinary team, including a representative (i.e., “champion”) from the team responsible for the immunocompromised population being targeted. Handshake stewardship, wherein a member of the antimicrobial stewardship

“Modern surgery would be unacceptably dangerous if infections were likely to be untreatable, and cancer chemotherapy and organ transplantation...would no longer be viable”

Prof. Dame Sally C. Davies
Chief Medical Officer
Dept of Health, London

program rounds with the relevant team, is a time intensive but highly effective method to form strong relationships while reducing antimicrobial use¹⁰.

Prospective audit and feedback can also be effective, but requires the auditor to have subspecialty

allergy de-labeling programs and collaboration with the microbiology lab are other strategies to be considered. As proper planning is key to the success of an intervention, the use of a structured framework to develop an intervention in these populations should be considered. Once such resource is *The Behavior Change Wheel*, a book which provides step-by-step instructions to design, implementation and analysis of interventions using the principles of behavior change¹².

Successful antimicrobial stewardship interventions targeting immunocompromised patients are possible but develop proper planning and collaboration to make the biggest impact.

institutional cultures. In addition, there is little data to support stewardship interventions or durations of effective therapy in these populations. Therefore, a one-size-fits-all approach is not possible and instead requires a tailored and carefully planned approach.

Interventions for immunocompromised populations are more likely to succeed if

knowledge relevant to the immunocompromised population to be successful. Formulary resection has been found to be the least favorable stewardship intervention among transplant clinicians and should not be considered a first line intervention among this population¹¹.

Review of institutional prescribing guidelines, implementation of antibiotic



**KEEP
CALM
AND DO**

**Antimicrobial
Stewardship**

ask the experts >>>>

Dana Hawkinson, MD, MS

KUMC ID Physician answers questions

Q: *What is the difference between the normal COVID-19 vaccine and the new bivalent?*

A: On August 31, 2022, the FDA announced new recommendations for COVID-19 boosters for the fall and were supported by the ACIP 9/1. The recommendation included a booster dose with Pfizer's vaccine for those 12 years and older, or a booster dose with Moderna's vaccine for those 18 years and older. Receipt of the booster dose should occur 2 months after completing primary series, or after someone's last dose.

Both companies' booster vaccine is bivalent, meaning it contains 2 different spikes: the ancestral Wuhan spike as in the original vaccine, and a BA.4/BA.5 spike (the spike from these isolates are identical). The monovalent (i.e., original vaccine) will still be used for primary series vaccinations at this time.

Although we do not fully know the clinical benefit added by the BA.4/BA.5 spike component, as the original vaccines still provide excellent protection against hospitalization, severe disease and death (likely because of our immune system's evolution with previous vaccination and conserved T-cell epitopes¹²), it was felt any benefit would significantly outweigh any risks. Subsequent clinical data will be collected and analyzed.

Q: *What is Jynneos vaccine, and when is it used?*

A: Following exposure or for those expected to have monkeypox (MPX) exposure in near-future, vaccination is recommended to provide pre-exposure and post-exposure protection. Jynneos is a modified vaccinia Ankara (MVA) virus, a non-replicating virus. Jynneos was approved in 2019 for prevention of smallpox and MPX in those 18 and older.

It is dosed as 2 subcutaneous (subQ) injections 4 weeks apart. If the second dose is late, it is administered as soon as possible but the series does not need to be restarted. Due to vaccine shortage, the FDA authorized the use of Jynneos as an intradermal dose, which is 1/5 of that of the subQ dose.

Q: *Where are vaccine sites for Jynneos?*

A: There are vaccine locations statewide, find a location near you by using the [interactive vaccine finder map](#).

Staff Highlight >>>

Cassie Stevenson, RN

Cassie Stevenson is the Senior Infection Preventionist and Health Education Lead with the HAI/AR Section at KDHE. She is a licensed registered nurse in Kansas and earned her associate degree in nursing from Barton Community College in 2010. She has lived in rural Kansas all her life and has enjoyed helping those in the small communities around her.

Before joining KDHE, she worked for a Critical Access Hospital as an Infection Preventionist and Nursing Supervisor. She led her team and community in their COVID-19 response efforts.

Since joining KDHE she has found her passion in helping healthcare facilities across Kansas improve their infection prevention and control programs.



Project Firstline Kickoff >>>

Project Firstline was launched by the CDC in October 2020 to provide infection control education and training for frontline healthcare workers to address long-standing gaps in infection control knowledge and understanding among frontline healthcare workers most recently highlighted by the COVID-19 pandemic.

KDHE HAI/AR Program is launching Project Firstline materials including educational graphics and other print materials, training webinars and events, and other infection control resources designed to meet the needs and learning preferences of frontline healthcare workers in Kansas.



Additional details coming soon!

Healthy Humor >>>>

Infectious Disease Pool Party



"Marco Polio"

Journal Club >>>

Study reveals US children exposed to high volume of antibiotics early in life

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

Background

Kissler and colleagues examined the volume of antibiotics prescribed to U.S. preschoolers, revealing an alarmingly high volume of antibiotics, in this month's edition of *Clinical Infectious Diseases*¹³. While antibiotic prescribing has declined nationally over the past 20 years, the decline coincides with significant decreases in outpatient visits, especially visits related to acute respiratory infections (ARIs). A minority of the antibiotic use improvement is attributable to improved prescribing practices.

To determine which groups and conditions are contributing to higher antibiotic prescriptions, an observation study was undertaken examining medical claims

claims from privately insured US kids under age 5. A secondary outcome examined comorbidities which may have been associated with greater antibiotic prescribing.

Methods

Data on dispensed antibiotics were obtained from private medical insurance claims born between 1 January 2008 and 31 December 2013 continuously enrolled in private insurance. This cohort includes 124,759 children under age 5, representing a convenience sample of 19.1-24.3 million people (5.9-7.6% of the population). Pharmacy claims linked outpatient diagnosis (ICD-9 and ICD-10) to antibiotics. Chronic conditions were identified for each cohort according to the Pediatric Medical Complexity Algorithm (PMCA).

Results

An average of 6.8 antibiotic courses (95% CI 6.7-6.9) were received by age 5, with 91% (95% CI 90-92) having received at least one antibiotic by age 5 in this cohort. The majority of antibiotics (71%) were prescribed for ARIs. The presence of underlying medical conditions increased the odds that a child would be among the top 20% of antibiotic recipients. Children with pulmonary conditions were 2.64 times as likely to be prescribed antibiotics, followed by those with otologic conditions (OR 2.62), immunologic conditions (OR 2.53). Oddly, one of the lowest prescribed comorbidities were malignancies who were **less** likely to be prescribed antibiotics (OR 0.82) although this was non-statistically significant.

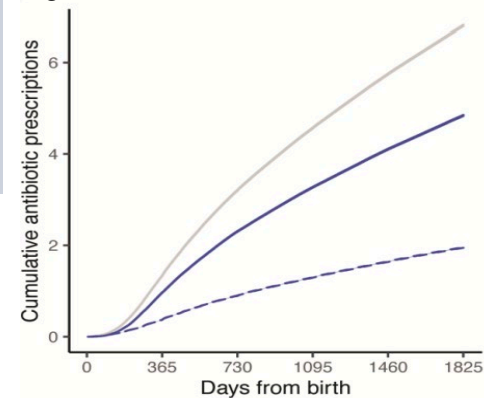


Figure 2: Patterns in dispensed antibiotics to children for all conditions

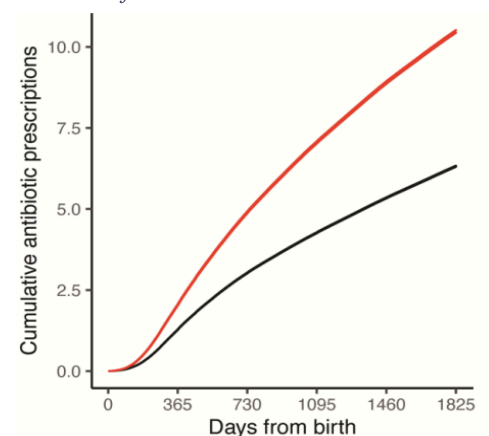


Figure 1: Patterns in dispensed antibiotics to children with (red) and without (blue) pulmonary, otologic or immunologic conditions

Discussion

This study highlights the significant impact ARIs contribute to national antibiotic use. Reducing rates of ARI through vaccination and targeted interventions in those with chronic conditions may result in the greatest bang for our buck.

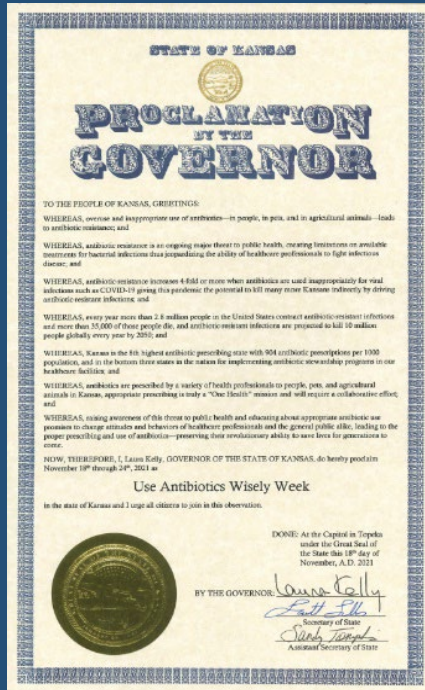
Upcoming events >>>

Kansas Use Antibiotics Wisely Week

Nov. 18-24, 2022

Nationally celebrated as US Antibiotic Awareness Week (USAAW), and World Antimicrobial Awareness Week on a global scale, we use this week to encourage partners across the state to put a special focus on antibiotics (as well as other antimicrobials) and spread the word about what patients and providers can do to help. We invite healthcare providers and the public to participate within their facilities and communities.

Pictured here is a previous gubernatorial proclamation, signed by Governor Laura Kelly, that names this week Use Antibiotics Wisely Week in KS. We have submitted an updated proclamation for signature this year as well.



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We want to help with HAI/AR and AS! Contact us at:

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Do you have topic suggestions for future issues?
Send them to us!

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