IDWeek 2024

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Congress Review

Review of IDWeek 2024

Location:	Los Angeles, California, USA
Date:	10.16.24-10.19.24
Citation:	Microbiol Infect Dis AMJ. 2024;2[1]:12-20. https://doi.org/10.33590/microbiolinfectdisam/HHKO5583.

THE VIBRANT city of Los Angeles, California welcomed over 12,000 clinicians, scientists, epidemiologists, researchers, advanced practice providers, and teachers in microbiology and infectious diseases at IDWeek 2024. This unique community met to explore new opportunities, forge connections with peers, and inspire the next generation of thought leaders.

Emily Erbelding, Director of the Division of Microbiology and Infectious Diseases (DMID), National Institute of Allergy and Infectious Diseases (NIAID), Maryland, kicked off the Opening Plenary. She likened The City of Angels, which hosted IDWeek for the first time, to the community of microbiology and infectious diseases: embodying ambition, diversity, and limitless possibilities.

The condensed, 4-day meeting was packed with a breadth of forums for discourse, boasting workshops, lectures, interactive and debate sessions, symposia, and "Meet The Professor" talks. The fantastic "BugHub Stage" was front and center in the main foyer, with a constant stream of tidbits presented throughout the week with a packed audience.

The commitment to excellence was evident throughout the week, not least by hundreds of late-breaking science posters and abstracts presented that showcased the hard work and new discoveries at the forefront of the field. The IDWeek 2024 Program Committee must be highly commended for curating a schedule designed to engage students and trainees to enter careers in this field, with a variety of interactive sessions, mentorship opportunities, hands-on experience, and a Careers Fair guaranteed to inspire and support the next generation.

A plethora of awards were bestowed upon outstanding investigators for celebrated abstracts. Awardees included Angelica Kottkamp, New York University (NYU); Shruti Gohil, University of California, Irvine (UCI); Rebecca Reece, West Virginia University, Morgantown; and Judith Martin, University of Pittsburgh, Pennsylvania. Next, we heard from those who had nominated their colleagues who transformed the frontiers of infectious diseases in research, patient care, and education.

Lisa Dumko, Trinity Health Saint Mary's Grand Rapids, Michigan, accepted an award for SIDP Outstanding Clinician Award. In her acceptance speech, she spoke to the importance of recognising providers from community hospitals versus academic medical centers. Recipients of this specific award tend to hail from academic medical

centers. She shared a story with the audience, where she was advised to prepare infectious disease pharmacy residents for less desirable positions where they will have fewer opportunities in community hospitals compared to large academic medical centers. Dumko opposed this statement, affirming that she has had more opportunities over the last 12 years than she could dream possible. "Under-resourced and not funded, but the most rewarding work in the world. You can change prescribing culture, build robust teaching services, and maintain strong research practices in the community space," Dumkow shared. She, therefore, warmly encouraged young people to consider community hospital positions where, given the infectious diseases specialist shortage, the needs of the hospitals are just as great, if not greater, and the opportunities and rewards are just as fulfilling. She concluded with a heartfelt thanks to those working on solutions in antimicrobial resistance as her family are touched by it so deeply.

Accepting his award, David Norman Gilbert, Oregon Health & Sciences University, Portland, shared a tale of the inimitable Alexander Fleming. Today, it is estimated that Fleming has saved over 200 million people's lives worldwide, shared Gilbert. Gilbert even brought in a vial of penicillin from the first commercial availability of penicillin. "Dr Fleming would be excited and enthused about where the next breakthrough was going to come. If I was a young trainee I would be really excited. We've got new diagnostic tools, new treatments, tremendous insights. I can't think of another specialty that is as exciting, dynamic, and never boring", shared Gilbert.

It is admirable that the community of specialists in microbiology and infectious diseases take their shared responsibility for building and commitment to the future community very seriously. Another commitment, how we prepare for the next pandemic, took center stage. The keynote session, "Navigating The Next Pandemic: Policy and Practice Integration" explored both policy and practice solutions to better equip the community to respond to these challenges.

Jennifer Nuzzo, Brown University School of Public Health, Providence, Rhode Island, USA, opened the plenary by reflecting on one, but not sole, under-represented mistake in our response to COVID-19, which was to brand it as a "once in a century pandemic". There are noticeable comparisons with the 1918 influenza pandemic; both events had profound damages. The 1918 influenza pandemic was estimated to have caused 675,000 US deaths, this is at a time that the US population was one-third of what it is today. The COVID-19 pandemic resulted in over 1.2 million deaths. As a head-to-head comparison, the 1918 pandemic was more fatal. Of course, COVID-19 caused a historic loss of life expectancy, eroding a decade worth of progress, Nuzzo solemnly stated. To Nuzzo's primary point, just because an event happened in 1918 and another event happened 100 years later, does not mean it will be another 100 years until the next deathly event happens. The timing of two independent events do not affect each other.

The steady stream of infectious diseases being carefully monitored by the community since COVID-19 speaks to this.

Three months ago, the WHO declared a public health emergency of international concern due to a rise in cases of mpox virus. This was the second mpox global emergency declared in a year. Currently, the US is experiencing some deeply concerning outbreaks of highly pathogenic avian influenza A in animals and people.

This virus has been on the list of potential pandemic threats since it was identified in the late 1990s. So far, this animal virus has not gained the ability to easily infect and spread between people, but if it does gain stability, we would be in another pandemic. Ultimately, the frequency of outbreaks of new infectious diseases is increasing.

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Changes in our environment and our behaviour are giving rise to new disease threats and resurrecting old ones.

At the same time as these hazards are increasing, so too are our vulnerabilities to infectious diseases. “We are living in age of infectious disease threats. We need to stop treating COVID-19 like it’s a one-off,” warned Nuzzo, “We need to start preparing for infectious diseases like the recurring hazards they are”.

There remains work to be done, but this era could usher in new progress. And who else but the microbiology and infectious disease community to progress this work, patient care, and advocacy? “Building on this, we can transform the age of infectious disease threats into the age of infectious disease discoveries!”

One disease threat of global concern, a virus known to be one of the most dangerous in the world, is the Marburg outbreak virus in Rwanda. Rwanda’s Minister of Health, Sabin Nsanzimana, shared a video message with the IDWeek audience.

Continue reading for an in-depth look at the latest research updates from this year's IDWeek.

The Impact of Changing Healthcare Policies on HIV Prophylaxis in Newborns

NEW research presented at IDWeek 2024 revealed that there has been a significant decline in the use of zidovudine single prophylaxis among infants receiving postnatal antiretroviral treatment, due to a shift towards more effective treatment strategies. Yet, a substantial number of infants diagnosed with HIV still did not receive any form of perinatal prophylaxis.

Despite changes in national policy surrounding perinatal HIV transmission and postnatal antiretroviral prophylaxis, there is a lack of real-life data to understand the impact of these policies. Therefore, researchers conducted a population-based retrospective study using the MarketScan Multi-State Medicaid Database from 2009–2021, to assess prophylactic antiretroviral drug use (in particular, use of the zidovudine single prophylaxis) among newborns. The study included 3,147,318 infants, of which 2,304 received postnatal antiretroviral prophylaxis, and the analysis included a linear regression model to identify temporal trends in zidovudine single prophylaxis use.

The results revealed that among the 2,304 infants, 2,123 received zidovudine single prophylaxis in 2009; however, the rate dropped to 71.7% by 2021, correlating with the introduction of dual and triple prophylactic regimens (p for trend <0.001). Additionally, the data showed that triple prophylaxis became more commonly used than double prophylaxis by 2018. Despite the shift towards more effective treatment strategies, 52 infants were diagnosed with HIV within their first year of life, and among them, 27 (51.9%) infants did not receive perinatal prophylaxis, suggesting missed maternal infections.

> **Whilst postnatal HIV prophylaxis strategies have evolved over time, there is still a need for continuous assessment and improvement**

The findings highlight that whilst postnatal HIV prophylaxis strategies have evolved over time, there is still a need for continuous assessment and improvement of postnatal HIV prophylaxis strategies in clinical practice. Future initiatives should focus on enhancing screening and treatment protocols for pregnant individuals living with HIV to ensure that infants receive appropriate prophylactic care. Additionally, ongoing monitoring of HIV transmission rates and treatment efficacy will be essential to inform and refine clinical guidelines, ultimately aiming to eliminate perinatal HIV transmission.

Safety of Mpox Vaccination in Adolescents

A RECENT Phase II clinical trial presented at IDWeek 2024 indicated that the MVA-BN vaccine, currently licensed for smallpox and mpox prevention in adults, is safe and effective in adolescents aged 12–17 years.

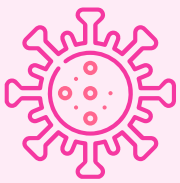
This study was conducted as a response to the rising mpox cases among children in the Democratic Republic of Congo, who represent 70% of infections and 88% of fatalities.
The study aimed to explore the potential of extending vaccine coverage to younger age groups in mpox-endemic regions.

The study was conducted at multiple sites and compared two doses of the MVA-BN vaccine administered to 315 adolescents and 211 adults. The two doses were given 28 days apart, with safety monitored through Day 210 and immune responses assessed 14 days after the second dose. Side effects were generally mild and similar in both groups, with dizziness reported slightly more often in adolescents (3%) but at rates comparable to other vaccines commonly given to teenagers.

Immunogenicity results revealed that adolescents developed strong antibody responses to the vaccine, with antibody titers non-inferior to those seen in adults. Specifically, geometric mean titers in adolescents reached 470.3, compared to 293.2 in adults.

This suggests that the vaccine performs well in both age groups, providing adolescents with a robust immune response.

The interim findings support MVA-BN as a safe and effective vaccination option for adolescents, which could be pivotal in controlling mpox spread in high-risk regions. Further studies are planned to evaluate its efficacy in younger children, aiming to expand protection to the most vulnerable populations.



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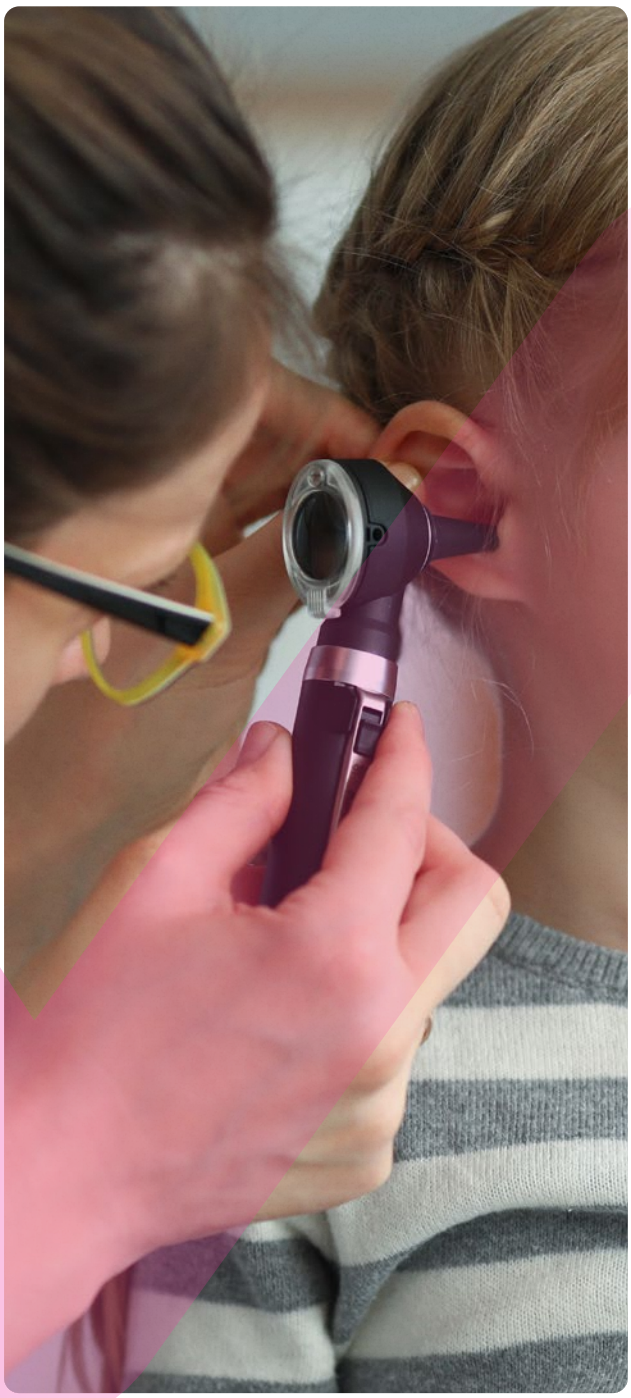
Quality Improvement Initiative Reduces Antibiotic Duration for Pediatric Ear Infections

A RECENT study from the University of Colorado, presented at IDWeek 2024, has shown promising results in reducing the duration of antibiotics prescribed for children with acute otitis media, a common ear infection.



The study, which analyzed the effectiveness of a quality improvement intervention at local emergency and urgent care centers, found that implementing a new clinical pathway and a streamlined electronic health record order set led to shorter antibiotic treatments in many cases.

The retrospective review, including data from 34,324 pediatric patients between January 2019–September 2023, revealed that while the overall rate of antibiotic prescribing remained high (88–93%), compliance with recommended treatment durations increased dramatically. Prior to the intervention, only 3% of children aged 24 months and older were prescribed antibiotics for 5 days or less. After the electronic health record order set was implemented, this figure increased to 83%. Interestingly, the study also found a decline in the use of amoxicillin, the most commonly prescribed first-line antibiotic for acute otitis media. The rate of amoxicillin prescriptions dropped from 77% to 74%.

> **The rate of amoxicillin prescriptions dropped from 77% to 74%**

Despite these positive changes, the study found that overall antibiotic prescribing rates remained high, pointing to the need for further efforts to curb unnecessary antibiotic use. The authors suggest that broader dissemination of the new care pathway and continued efforts to phase out outdated prescribing practices are needed to make more substantial progress in reducing antibiotic overuse.

An Interactive Map to Assess Initial *Clostridioides difficile* Infection Outcomes

HIGH vulnerability scores across multiple social determinants of health are associated with increased severity and mortality in patients with *Clostridioides difficile* infection (CDI), according to new research presented at IDWeek 2024.

Inequities in social determinants of health, including factors such as socioeconomic status (SES), housing, access to healthcare, and racial/ethnic disparities, have been hypothesised to impact CDI outcomes. The Centers for Disease Control's (CDC) Social Vulnerability Index (SVI), a composite tool assessing neighborhood vulnerabilities based on SES, housing characteristics (H&C), race/ethnicity (REM), and housing and transportation (H&T), provides a way to quantify these social risks.

Researchers aimed to examine how each SVI theme impacts the severity of initial CDI episodes and all-cause mortality, with the intention of guiding more precise, socially-informed clinical interventions for CDI.

Researchers analyzed data from adult patients admitted to Loma Linda University Medical Center (LLUMC), California, for initial CDI episodes between January 2020–June 2021. Each patient's address was inputted into the CDC/Agency for Toxic Substances and Disease Registry (ATSDR) SVI Interactive Map, and used to map their neighborhood SVI score, which grouped patients into low vulnerability (SVI scores below 0.4999), and high vulnerability (scores at or above 0.5). A total of 206 patients were included, and outcomes were evaluated against their SVI scores to assess CDI severity and mortality rates.

The findings revealed that patients with high vulnerability scores had significantly worse outcomes. Specifically, initial severe CDI cases were three times more frequent in high vulnerability groups for SES and H&C (29.61% versus 9.22%) compared to low vulnerability patients. For H&T, patients with HV scores had elevated risks of severe CDI (26.21% versus 12.62%) and fulminant CDI (13.11% versus 5.34%) compared to those in the low vulnerability group. REM showed the most pronounced disparity, with a 37-fold increase in initial fulminant CDI (17.96% versus 0.49%) and a ninefold increase in mortality (8.74% versus 0.97%) for high vulnerability patients versus low vulnerability patients.

In conclusion, the study suggests that high social vulnerability, as measured by SES, H&C, REM, and H&T SVI themes, correlates with more severe CDI cases and higher mortality. These findings highlight the importance of addressing social determinants within clinical practice. By integrating SVI data into patient assessments, healthcare providers may better identify at-risk patients and develop targeted interventions that address the specific SDoH impacting CDI outcomes.

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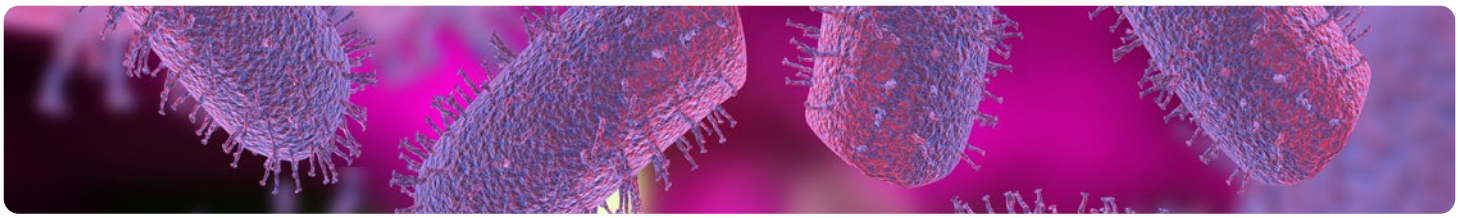

High Mortality Rates Linked to NDM-Positive Infections in Hospitals

A RECENT study, led by Northwell Health in New York and presented at IDWeek 2024, has revealed a concerning rise in infections caused by carbapenemase-producing organisms (CPO), particularly those harboring the *blaNDM* resistance gene, which encodes New Delhi metallo-beta-lactamase (NDM). These infections, often associated with significant morbidity and mortality, pose a substantial challenge in healthcare settings due to their resistance to a wide spectrum of antibiotics.

Conducted across 10 hospitals, this retrospective, multicentre study analyzed positive CPO blood cultures from 2021–2023 and urine cultures from 2023. CPO infections were identified using PCR testing for blood cultures, while urine specimens underwent a lateral flow immunoassay for phenotypic carbapenemase detection. The study assessed clinical outcomes including time to appropriate therapy, hospital stay duration, 30-day readmission rates, and mortality.

The findings indicated that *Klebsiella pneumoniae* was the predominant organism isolated from both blood and urine samples, with urinary tract infections being the main source of CPO bacteremia. Of the carbapenemase genes identified, *blaNDM* was notably prevalent, representing 39% of CPOs in blood samples and 46% in urine samples, underscoring the increasing threat of NDM-harboring organisms within healthcare settings.

Observed clinical outcomes included median times for appropriate therapy for both blood and urine infections that were 3.9 hours and 16 hours, respectively. Hospital stays were prolonged, averaging 20 days for bloodstream infections and 13 days for urine infections.

Thirty-day readmission rates were 16% for blood infections and 50% for urine infections, indicating a high likelihood of recurrent infections. Mortality rates were 39% for bloodstream infections and 6% for urine infections, with NDM-related bloodstream infections reaching even higher mortality, 54% in 2022 and 50% in 2023.

These results underscore the urgency of timely CPO detection and identification of specific resistance genes to inform effective treatment adjustments. Despite prompt interventions, NDM-harboring CPOs continue to drive high mortality rates, pointing to a critical need for improved infection control measures and novel treatment strategies to aid in reducing the spread of these pathogens.

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