Healthcare-Associated Infections Advisory Committee
Meeting Summary
December 8, 2022
Video Conference

Voting Members Present

Amber Theel, Ariana Longley, Carole Moss, Carolyn Caughell, David Ha, Deborah Ellis, Francesca Torriani, Geanny Ryan, Jorge Salinas, Marisa Holubar (Chair), Michele Lampshire, Zachary Rubin

Voting Members Absent

Anjali Bisht, Ethan Smith, Patricia Sung

Liaison Members Present

Jeffery Silvers-IDAC

Liaison Members Absent

Howard Pitluck-QIN/HSAG, Louise McNitt-CPICD, Kathy Dennis-CAN, Trina Gonzalez-CHA, Michael Butera-CMA

Department Staff Present

Erin Epson-Chief HAI Program, Lanette Corona, Valerie Sandles, Sam Horwich-Scholefield, Liz Mason, Tisha Mitsunaga, Nadia Barahmani, Pearlie Beltran, Lynn Janssen, Jane Siegel, Barbara Allen, Jon Rosenberg, Cherish Mendoza, Erin Garcia, Janice Kim, Becca Czerny, Kristy Trausch, Rebeca Elliott, Rachel Levit, Sujit Vettam, Andrea Parriott, Diana Holden, Lana Sato, Lizette Brenes, Hosniyeh Bagheri, Kiara Velasquez, Mushfika Maknun, Mitra Baradar, Monise Magro, Myesha Febres, Janice Kim, Kristecia Turman, Hilary Metcalf

Call to order, introductions, and review meeting requirements

Chair, Marisa Holubar, called the meeting to order at 10:06 AM.

Item 1. Public Story - Carolyn Caughell

Item 2. Approve September 8, 2022, meeting summary

Meeting summary approved.

Item 3. CDPH HAI Program Updates

Healthcare-Associated Infections Program Antimicrobial-Resistant (AR) Pathogen Updates – Tisha Mitsunaga

The data shows what CDPH has been seeing in California since 2019. Increases in AR pathogens, namely carbapenemase-producing organisms (CPO) and *Candida auris (C. auris)* across the state. Of note, *C. auris* cases almost tripled from 2019 to 2020 and again from 2020 to 2021 with the first COVID-19 surge. Similarly, Carbapenem-resistant *Acinetobacter baumannii* (CP-CRAB) cases surged more than 10-fold between 2020 and 2021, in large part due to a couple of regional

outbreaks. In carbapenemase-producing Carbapenem-resistant Enterobacterales (CP-CRE) cases, there was a bump between 2019 and 2020, possibly a result of them becoming reportable in late 2019. Increases were not unique to California. During the COVID-19 pandemic, there has been a significant increase in AR healthcare-associated infections, including *C. auris* and CPO, in part due to the increase in antimicrobial use, and difficulties following core infection prevention and control guidance, which was also observed. This figure was taken from a recent report released by CDC on the impact of COVID-19 on AR.

There was diversity of specific carbapenemases reported in organisms since 2019. CP-CRE became reportable in October 2019, just before the pandemic. Following large numbers of hospitalizations in the winter of 2020-2021 due to COVID-19, CDPH started seeing increased numbers of CPO reported and in particular, other OXA underlying the large increases in CP-CRAB CDPH as well as previously rare CPO such as dual mechanism organisms – for example NDM + KPC Enterobacter or VIM + IMP Pseudomonas.

Accounting for many of OXA cases has been a large, regional outbreak of NDM-producing Acinetobacter baumannii (CRAB) depicted in this epi curve here. CDPH detected the first few cases mid-2020, early during the pandemic, when many facilities struggled with redirection of many or all of their resources to COVID-19; as a result, CDPH was not able to fully investigate or respond to these cases. Once screening started, in late 2020 into 2021, CDPH discovered there had likely been widespread undetected transmission due to lapses in infection control practices and extensive patient sharing, and subsequently identified more than 200 cases, many outside the index facility and county. However, with support from local health departments and facility colleagues, CDPH has been able to largely contain the outbreak through aggressive response measures and extensive proactive prevention activities.

CDPH was able to detect the first NDM-CRAB case, because the hospital lab participates in CDPH's targeted surveillance program – by routinely sending all CRAB isolates for CP testing + AST to the regional public health lab. A series of maps showed how the outbreak spread from that first county in the central valley in orange, out and southward, to 14 other counties across the state, and dozens of facilities, with 248 cases reported to CDPH through November 2022. While the outbreak was largely contained by Oct 2021, CDPH had started to see more cases in southern CA, and most recently in San Bernardino county which is of particular concern. NDM in CRAB was considered rare prior to the outbreak. Roughly 2/3 also have been dual-mechanism NDM+OXA-23 detected, and more than half have been pan-nonsusceptible (intermediate or resistant to all antibiotics tested at the public health and clinical labs). CAHAN has additional information. *C. auris* graph shows cases reported through Sept 2022, with a total of almost 4000.

Less than a year after CDPH was able to contain the first *C. auris* outbreak in Orange County, they started to see a resurgence of *C. auris* mirroring the first 3 COVID-19 surges through mid-2021.

Unfortunately, since then, case counts have remained elevated, with 13 local health jurisdictions reporting cases. A series of maps shared, showed across time the geographic spread of *C. auris* from Orange County, where the first outbreak was identified and contained. Also denote on the map were higher numbers. *C. auris* is steadily heading north through extensive patient sharing networks. Stanislaus County the most recent addition in September, is particularly concerning because unlike the other cases identified outside of southern California, the patient did not report any international or out-of-state healthcare exposure.

The pie charts shared showed where CDPH is seeing *C. auris* and NDM-CRAB cases. On the left-hand pie chart, ¾ of *C. auris* cases in California have been identified in Long-Term Acute Care Hospitals (LTACH), and another 12% in vSNF. On the right-hand pie chart, among NDM CRAB cases, 40% were reported from ACH, 35% from regular SNF magenta, and 20% from vSNF. In sum, all facility types have been touched by these 2 regional outbreaks. These pathogens have led to numerous Health Advisory or CAHAN alerts, including most recently, for a multistate cluster of VIM CRPA, of which 1 has been identified in LAC. Additional information is available on CDPH HAI website.

Testing Recommendations - Sam Horwich-Scholefield
Recommendations for AR pathogens, specifically CPO and *C. auris*.

Carbapenemase Testing and Patient Safety. Promote antimicrobial stewardship (www.cdph.ca.gov/Programs/CHCQ/HAI/Pages/AntimicrobialStewardshipLandingPage.aspx); Treatment options differ depending on carbapenemase type; Right Diagnosis, Drug, Dose, Duration, and De-escalation.

Knowing whether patient is colonized or infected with a CPO has major implications for antimicrobial stewardship and infection prevention and control. Treatment option differ depending on the type of carbapenemase. New betalactam/betalactamase inhibitors have recently come onto the market and can be used to treat CPO infections, but different drugs are effective against different CPO, for example, Cef-Avi could treat a KPC Klebsiella infection but not one caused by NDM E. coli. This means that knowing the specific carbapenemase type has major implications for the principles of AS, making the right diagnosis, using the right drug at the right dose of the correct duration.

Knowing a patient's CPO status can also improve IPC. When someone screens positive for a CPO, they should immediately be placed on CP. This type of rapid testing can potentially detect carbapenemase genetic material days before traditional AST will flag a CRO. Second, knowing someone's CPO status can greatly improve outbreak detection. If >1 epi-linked patients, for example, in the ICU, test positive for the same CPO around the same time this could indicate a transmission event or some other common source. By relying on ASTs your

IPC department may not have the information to make this link. Third, carbapenemase testing plays a major role in cohorting decisions. For example, resident A may generally share a room or bathroom with resident B because they both are colonized with a KPC-producing organism.

CDPH recognizes that not all labs have the capacity to conduct carbapenemase testing for all carbapenem-resistant isolates, so they developed an algorithm to help prioritize what should get tested. (Graph shared - the first set of criteria in the large grey box in the upper left identifies the first threshold for testing – those isolates that are pan-nonsusceptible, or intermediate or resistant to all antibiotics tested, all CRAB and CRPA nonsusceptible to cefepime, ceftazidime, or ceftolozane-tazobactam, and any sterile site specimen, representing those clinically significant infections. For these isolates, as described in the orange box in the upper right part of the algorithm, CDPH recommend obtaining CP testing that can identify the specific carbapenemase.) For all other isolates, as stated, that labs can **consider** obtaining any type of CP testing. This documentation can be found on the CDPH HAI website.

Laboratory Performs a Test for Presence of Carbapenemase. How many hospitals report using a lab that does some type of carbapenemase testing? Data reported through the NHSN annual hospital survey. Since 2014, about half of all hospitals report NOT performing carbapenemase testing, and this proportion has remained steady to date. However, among hospitals to do report performing carbapenemase testing, CDPH has seen a marked increase in the use of tests that can identify the specific type of carbapenemase, such as KPC or NDM. Recall the importance of knowing the specific CP type.

Access to carbapenemase testing varies across hospitals. The chart shared gave a bit more granularity on the types of tests in use. While half of all hospitals report no carbapenemase testing, a quarter use a molecular test such as PCR that can rapidly identify genetic material that can ID carbapenemases (show in light green), and about 11% use a phenotypic test that can identify the specific type of carbapenemases such as the Hardy Carba-5, and ~8% of hospitals rely on a lab that uses just the modified hodge test, which CDPH generally discourage as it has issues with sensitivity and specificity. 24 labs that use old breakpoints for carbapenems indicate they do not do carbapenemase testing. CLSI updated the breakpoints over a decade ago, and they explicitly recommend that any lab using old breakpoints implement CP testing. A total of nine hospitals (not shown on the chart) rely on labs that use old breakpoints but are performing some sort of carbapenemase testing.

C. auris testing. Not all *Candida* isolates are routinely identified to the species level– in fact, labs will often just list *Candida* in a non-sterile site like using as *Candida* species, assume it's a colonizer not causing an infection, and leave it at that. However, just listing something as

Candida species means we would miss crucial *C. auris* results, since they haven't done the extra step of species ID.

For *Candida* isolates, CDPH recommend identifying those from normally sterile sites to the species level, which aligns with our new submission requirement. In the figure shared, this reflects about one third of our clinical cases reported to CDPH which are identified in blood specimens. CDPH recommend identifying *Candida* isolates to the species level when clinically indicated for patient care, when conducting prospective surveillance (for example, when a new case has been identified), and for patients at high risk for *C. auris* acquisition who may include patients admitted from LTACH or vSNF, those from known *C. auris* outbreak facilities, close healthcare contacts of a known case, colonized or infected with a CPO, especially with other risk factors such as indwelling devices, and those who had overnight healthcare exposure abroad in the past year. The majority of *C. auris* identified in clinical isolates in California have come from non-sterile sites, including urine, respiratory and wound specimens. This highlights the importance of identifying Candida isolated from sterile AND non-sterile sites to the species level in order to improve overall detection of *C. auris*.

Regional AR/MDRO Prevention and Response Strategy

CDPH has a comprehensive containment strategy for preventing and responding to cases and outbreaks of AR pathogens, including CPO and *C. auris*. They have developed a phased approach based on local AR pathogen epidemiology to guide our recommendations, which also consider local public health resource prioritization. Phase 1, in naïve jurisdictions – where they have not yet detected a case of *C. auris*, for example – they focus on prevention by building a strong foundation for lab testing, core IPC practices, antimicrobial stewardship programs, and consistent interfacility communication during patient transfer. These activities are public health-led, with facility engagement. Phase 2, once they detect a new case or cases of an AR pathogen, our prevention activities have set us up to be able to identify AR threats early and feel confident to respond to a case(s) if detected. Public health takes the lead again in supporting affected facilities to aggressively contain spread, including epi investigation, screening, and IPC assessment and education. Public health also actively ensures interfacility communication during MDRO-positive or exposed patient transfer. Phases 3 and 4, after the acute outbreak period, facilities might experience low-level transmission, and the AR pathogen is considered "endemic" after a certain period of time in a jurisdiction or region – CDPH continues focusing on strengthening prevention activities to contain spread, and transition responsibility from public health to the facilities for screening, IPC assessment, and communication. Facilities might move between phase 2 and 3 if they experience a spike in cases.

AR/MDRO Prevention Strategies & Activities - Liz Mason

A key element of CDPH's prevention work is proactive screening via point prevalence surveys. They have been reaching out to LTACH and vSNF with geographic proximity to outbreaks to recommend proactive screening of residents for *C. auris*, CPOs, or both, depending on the epidemiology of the county. Proactive screening can be provided at no cost to the facility. The slide showed a key benefit of proactive screening by comparing the experience of two LTACH. LTACH A, began regular screening after the first case had been detected in the county, identified 24 cases during their first month of screening, and had sustained transmission for over a year. In contrast, LTACH B, began screening proactively before any cases were identified in their county (shown by the 0 cases found in April 2021), and was able to keep case counts very low – in fact, the cases shown were detected during admission screening, which the facility initiated in Sept 2021.

CDPH has reached out to 14 counties to suggest proactive screening for 22 high-risk facilities, with varying results. Some facilities have readily engaged in the preventive work, while others want to postpone or even decline participation. In addition to proactive screening, the HAI IPs can provide proactive onsite IPC assessments. This provides facilities with an extra set of eyes to identify IPC opportunities for improvement, and to feel confident in identifying and caring for a MDRO-positive patient or resident. CDPH has uncovered a consistent need for infection prevention training for environmental services staff. Additionally, infection prevention staff at the facilities are often new to the role, and facilities see frequent turnovers for all roles, including leadership, limiting opportunities to engage in preventive work.

As part of the MDRO conversation with any facility (whether as part of prevention or response), CDPH discuss the capabilities of the lab they use and ways to engage with the public health labs to provide needed testing of clinical isolates for carbapenemases and species identification for *Candida* isolates. They recruit labs to participate in targeted surveillance by sending isolates on for further testing to our regional public health lab in WA state. CDPH's antimicrobial stewardship team has a number of programs to engage hospitals and skilled nursing facilities. As part of the effort to help SNF feel capable of caring for MDRO-positive patients, they are rolling out training for Enhanced Standard Precautions which provides a safety net for preventing transmission from residents with unknown MDRO status. Communication of MDRO status between facilities continues to be a challenge, and they work with local public health partners to promote the use of standardized methods of communicating MDRO status, particularly between long-term care facilities and the acute care hospitals that serve them.

In addition to working with targeted facilities, CDPH has several ongoing, complementary regional and statewide projects. CDPH's regional prevention collaboratives include 3 counties

where they are rolling out a comprehensive array of activities, including hands-on multi-week trainings for EVS staff and CNAs, and providing technical consultation for hospital and SNF antimicrobial stewardship programs. They will engage all participating facilities to support peer-to-peer meetings and learning, and promote interfacility communication. CDPH also has 2 statewide projects – 1 for vSNF focusing on strengthening core IPC practices and another for LTACH focusing on improving antimicrobial stewardship. Participation in regional collaboratives requires substantial engagement by the local public health team, and some counties do not have sufficient staff to support this level of engagement. While facilities may be engaged with CDPH's proactive activities as well as regional and statewide activities, CDPH tries to make sure all activities are complementary and not overburden either LHD or facility staff.

How can the HAI Advisory Committee help CDPH to support AR/MDRO prevention in California?
Engage northern CA LTACH to conduct proactive screening and onsite assessment; Help SNF prepare to successfully manage and prevent transmission from newly-admitted MDRO-colonized residents; Promote carbapenemase testing in clinical laboratories; Support antimicrobial stewardship activities, especially in SNF; Ensure interfacility communication; Educate infectious disease physicians about AR/MDRO Prevention.

Carbapenemase types differ by organism
Certain carbapenemase types tend to be associated with particular CPO. The OXAs are more common among CRAB. OXA-23 forming the majority, with about a quarter from NDM. Other OXAs include 235-like (including 237), and 24/40. Just over half of CP-CRE are KPC-producing, with about a quarter NDM-producing. Among CRPA, VIM is by far the most common carbapenemase. Across all organisms, there are examples of dual-carbapenemase combinations, often including NDM.

Access to Carbapenemase Testing Among 380 Short Stay & LTACHs, NHSN 2021
The NHSN annual survey asks hospitals whether their lab routinely tests for carbapenemases, and if so, what type of test they use. Overall, about half of hospitals report no carbapenemase testing, and this proportion has remained consistent over recent years. A quarter use a molecular test that can rapidly identify carbapenemases (show in light green on the chart), and about 11% use a phenotypic test that can identify the specific type of carbapenemases (shown in lavender). In red, ~8% of hospitals rely on a lab that uses the modified hodge test, which we generally discourage as it has issues with sensitivity and specificity.

VIM-CRPA Call for Cases
CDPH has seen lots of MDROs including NMDROs detected among international HCF exposures, including VIM-CRPA from Mexico. Multistate cluster (6 states) 1 cluster in CA; Rare combination (VIM-80, GES-9, ST-1203); Diverse healthcare settings, specimen sources; Likely product contamination, investigation ongoing; CDPH requesting VIM-CRPA isolate submission via local public

health lab (date of collection on or after Jan 1, 2022). For more information, see CAHAN health advisory (PDF) (www.cdph.ca.gov/Programs/CHCQ/HAI/CDPH%20Document%20Library/CAHAN_VIM-CRPA_Multistate_Cluster_Nov2022_ADA.pdf)

Early detection is key, this can take the form of routine carbapenemase testing of carbapenem-resistant isolates, as mentioned, our algorithm can help prioritize testing. Performing screening testing of patients at high-risk of CPO acquisition, including but not limited to those patients epi-linked to known cases; admitted from LTACH, vSNF, or an outbreak facility; or with healthcare exposure abroad. In terms of immediate response, reporting the case to public health, placing the patient on contact precautions and in a single-bed room, when possible, are key. Communicating CPO status to receiving facilities and conducting an investigation to understand IPC gaps and potential routes of transmission are also important initial steps.

Public health can support:

- Investigation
- Screening

IPC onsite assessments, education, and recommendations

Subcommittee Reports

Item 4. Antimicrobial Resistance/Stewardship Subcommittee - David Ha

Shared meeting discussions.

Item 5. Resilience in HAI Prevention Subcommittee - Deborah Ellis

No information to share at this meeting.

Item 6. Vote for a new HAI Advisory Committee Chair

Zakary Rubin nominated. The committee voted and passed unanimously.

Next committee meeting March 9, 2023. Meeting adjourned at 11:59 AM.