Multidrug-Resistant Organisms (MDRO) Investigations – Pulling Local Health Departments Into the Fold

MDRO Containment Unit

Healthcare Associated Infection Section



MDHHS - Emerging Infectious Diseases Division

Healthcare-Associated Infection (HAI) Section

Infection Prevention Unit

- Infection prevention technical assistance, including policy and procedure review, interpretation of guidance, etc.
- Dialysis infection
 prevention support
- Infection Control Assessment and Response (ICAR) site visits

Epidemiology Unit (SHARP Unit)

- Surveillance for Healthcare-Associated & Resistant Pathogens (SHARP)
- Epidemiology and surveillance
- Emerging Infections Program (EIP)

MDRO Containment Unit

- Investigation, response, and prevention of MDRO's
- Coordination and assistance of *C. auris* and CPO screening programs
- ICAR site visits (MDRO Focus)

Antimicrobial Resistance & Genomics Epidemiologist

- Strategic plans, workplans and guidance
- Coordinates and analyzes trends and outcomes of data
- Collaborates with Bureau of Labs (BOL) on integration of genomic data

What is the MDRO Containment Unit?



- Communicating Novel MDROs
 - Candida auris
 - Carbapenemase-Producing organisms (CPO*)
- Provide infection prevention recommendations for facilities experiencing single cases or multicase outbreaks
 - Setting up Point Prevalence Survey (PPS)
 - Infection Control Assessment and Response (ICARs)
 - Environmental services
 - Cleaning product evaluation
 - Personal protective equipment (PPE)
 - Transmission-based isolation vs Enhanced Barrier Precautions (EBP)
 - Provide resources and education



*CRAB, IMP, VIM, NDM, KPC, OXA-48, *VISA, *VRSA



Risk Factors for MDROs in Nursing Homes



Colonization vs. Clinical Infection





For clinical infection to occur, pathogens must transmit to a person from a source, enter their body, invade tissues, multiply and cause clinical symptoms (e.g. fever).

C. auris and many **MDRO's do not** have any specific signs and symptoms associated to a clinical case and the source/location of infection will determine symptoms first.

Colonization is when someone has a pathogen on or in their body but **does not** have symptoms of an infection.

Colonized people can still transmit the pathogen they carry.

Colonization with Novel MDRO's is lifelong, and IPC recommendations and containment strategies are often the same for Colonization and Clinical cases

Overall MDRO Prevention Strategy in Healthcare Facilites





Healthcare Workers (Lab, IP, DON, Etc.)

- Be sure case is reported to MDSS/LHD/State (brick book requirements)
- Ensure patient tracing and Infection Prevention Controls in place
- Do your own IPC investigations (line lists)
- Audits
- Screening

Public Health (LHD)

- Start case investigation (MDSS)
- Connect with IPs/DONS to see if they need assistance
- Contact state partners for screening info/assistance
- State partners will help facilitate screening and provide specific IPC recommendations

Investigations and Facility Response

Collecting case information

- Demographics
- History & Physical
- Progress note
- Discharge note

Collecting information on healthcare exposures from the past 30-90 days

- Locations
- Date ranges
- RoommatesBed history

Providing setting appropriate IPC recommendations targeted towards *C. auris* or CPO

• ACH vs SNF

Screening recommendations and follow-up with response activities

MDRO

Containment

Scheduling screeningBOL or WIARLN

LHD and/or MDRO Containment

and/or MDRO Containment

LHD

and/or MDRO Containment

LHD

Contact Tracing – Shifting Gears on Investigations



- What and Who are **Contacts and healthcare exposures**?
 - Contacts can include roommates/suite-mates/patients who share services or spaces
 - For CPO and *C. auris* investigations, including the various healthcare organizations too (acute care, nursing homes, home health care, rehab facilities etc.
- When doing case investigations, tracking down healthcare exposures from 30-90 days is most important.
 - This means learning about rooms, units, or high-risk services/care
 - The new case investigation form walks through all of this information



Contact Tracing – Shifting Gears on Investigations





Thinking back on the case study, knowing the unit, and if something like wound care, or rehab was provided can help us later pinpoint a mode of transmission when WGS results are in, especially when patients didn't share a room!



Whole Genome Sequencing





Always double check the notes tabs! Facilities and MDRO Unit communicate info there!

Case Example – Connecting the dots





ⁿ Why Colonization, and awareness Matters:

Klebsiella Pneumoniae NDM+ cluster was identified ---> affecting 2 patients

At a glance, they didn't look related, when each case was identified at facilities **A**, and **B**.

However, when WGS came in – it told us to look harder at each case....

Contact Tracing – Shifting Gears on Investigations





Why Colonization, and awareness Matters:

Klebsiella Pneumoniae NDM+ cluster in 2 patients, one at facility A, the other facility B – WGS told us they were related.

- When looking back at the investigations, more digging was needed to uncover facility C.
 - Both patients were at facility C before going to A, and B,
 - but one patient had care at multiple other facilities before going to C even
 - Both shared a unit at facility C
 - Both had similar services (respiratory therapy + wound care)
 - Care was received in 3 different counties and in 5+ healthcare facilities among both patients over the course of 90 days.

Quality AND Quantity of Information

- WGS told us to look harder this is why info given on the first information gathering is so important
- Ways to improve the process
 - Notes uploaded to MDSS
 - Attachments from records
 - Info looking back 30-90 days depending on intensity of case
 - Fill in detail case form





Investigations: Make Them or Break Them



Delayed isolate submission and or delayed MDSS case submission	Isolate submitted to BOL and reported via MDSS within 24 hours
Information not provided in timely manner	Case information provided to LHD/State within 24/48 hours
Information quality poor, requiring additional follow-up	Admitting and accepting facilities informed of MDRO status for their own follow-up
Patients not informed of their own MDRO Status	Screening conducted on all possible exposures in timely manner
Patients not screened or flagged for screening due to KNOWN exposure	Evaluate IPC program, and conduct follow-up PPS where necessary

Data Collection - Completion



-	Laboratory	y Testing a	and Mic	robiology In	formation	I				
Type of facility where specimen was co Acute Care Hospital Autopsy	llected: ong-Term Acute Car Inknown	e Hospital	Long-Term (Care Facility O	Dutpatient	Other				
Date Specimen Collected (mm/dd/yyyy, 03/22/2025) County of the facil Detroit City	lity where specime	n collected:	Facility where specime DETROIT RECEIV Other Facility (Outpati	en collected: /ING HOSPITAL ent Location or Ou	& UNIV HE t of State Fac	ALTH (cility), sp	DENTE 🗸		
For Clinical Case: Sp	ecimen Source: putum specimen		Othe	r source, specify:						
For Colonization/Screening Case: Sc	creening swab anator	mical site: v	Othe	r site:						
Clinical Lab Specimen ID (unique isolat	te No.): E	Bureau of Labs (or D:	other Public H	lealth Lab) Specimen	WGS Accession	D:				
Test Type:	For Healthcare F	acility Where Spe	cimen Collec	ted						
Other, specify Date of Patient Admission or Outpatient Encounter (mm/dd/yyyy) Date Patient Outpatient Encounter (mm/dd/yyyy) Culture 03/22/2025 03/23/20						is placed in C	iont et F	Precautions/Isolati	on (if an inpatient) (mm/dd/yyyy)
	Patient Admitted/F Long-Term Ca Long-Term Ad	Presented From: are (e.g., nursing h cute Care Hospital	ome, SNF)	Acute Care Hose Unknown	spital	ume Other, specify	,			
	Facility admitted fi	rom: R	IVERVIEW H	HEALTH & REHAB C	ENTER			~		
	Patient Locations									
	Admission/ Move date (mm/dd/yyyy)	Unit	Unit Type		Room	Contact Precaution or EBP	s	Roommates	Shared Bathroom	Discharge/ Move date (mm/dd/yyyy)
	03/22/2025	5Q	ICU	~	5Q06-A	Yes	$\mathbf{\vee}$	No 🗸	Unknown 🗸	
	03/22/2025	ED	Emergenc	y Department 🗸		No	$\mathbf{\vee}$	Unknown 🗸	Unknown 🗸	03/22/2025
				\sim			\sim	~	~	
				~			$\mathbf{\vee}$	~	~	

- Patient recently
 somewhere else? Those facilities need to know!
- Contacting those facilities is a must so they can conduct their own investigations and MDRO screening

Healthcare Facility Exposure



If a patient was recently discharged from a facility, dates for locations are needed!

This helps identify overlap with other MDRO cases

Has Patient previously been hospitalized in an Acute Care Hospital in the last 90 days (prior to admission or outpatient encounter when specimen collected): Yes No Unknown If Yes, please indicate the facility name and dates of stay, and locations (if known)								
Acute Care Hospital Patient Locations								
County Unit		Acute Care H Unit Type	lospital	Room	Contact Precaution	ns or EBP	From <i>(mm/dd/yyyy)</i> Roommates	To <i>(mm/dd/yyyy)</i> Shared Bathroom
Wayne ED	~	COREWEL Emergency	L HEALTH DEAR / Department 🗸	BORN HOSPIT. Es03, DH57,	AL I No	* *	03/15/2025 No ¥	03/17/2025 Shared Bathroom 🗸
Wayne 3East	~	COREWEL Medical	L HEALTH DEAR	BORN HOSPIT	AL	~	03/17/2025 res V	03/19/2025 Shared Bathroom 🗸
Wayne 7 South	~	COREWEL Medical	L HEALTH DEAR	BORN HOSPIT	AL No	~	03/19/2025 Yes 🗸	03/20/2025 Shared Bathroom 🗸
Wayne 3 East	~	COREWEL Medical	L HEALTH DEAR	BORN HOSPIT	AL No	~	03/20/2025 No ¥	03/28/2025 Shared Bathroom ❤
Wayne 3 East	~	COREWEL Medical	L HEALTH DEAR	BORN HOSPIT	AL No	* *	03/28/2025 Yes 🗸	03/28/2025 Shared Bathroe
County Unit	۷	Acute Care Unit Type	e Hospital 🗸	Room	Contact Precau	✓ tions or EBP ✓	From Room Lates V	shared Bathroom ❤
County Unit	~	Acute Care Unit Type	e Hospital ❤	Room	Contact P acat	✓ Itions or EBP ✓	From Roommates ∨	To Shared Bathroom ❤
County Unit	~	Acute Care Unit Type	e Hospital	Room	Contact Precau	✓ tions or EBP ✓	From Roommates ∨	To Shared Bathroom ❤
Acute Care Hospital Roommates								
First Name	Last	Name	Date of Birth (mm/dd/yyyy)	Unit/Room	Date From (mm/dd/yyyy)	Date To (mm/dd/yyyy)	Notes (includes dates in	common, transfers, etc.)
				3 East 0353	03/17/2025	03/19/2025	The patient and t	he roommates have b€
				7 South 0729	03/19/2025	03/20/2025	The patient and t	he roommates have be
				3 East	03/28/2025	03/28/2025	The patient and t	he roommates have be

Dates +

Rooms/Units allows for identification of epidemiological links to other cases, or possible
 exposures to other patients!

Data Collection



- Uploading documents directly allows for accurate data
- Notes can be used to communicate further details on cases

NORSECTION OF THE OWNER OWNER OF THE OWNER	Locked by KEMMEK (KARI	SSA KEMME)				
Investigation ID:						CP
New Note :						
				ſ	Save Note	Help
						(114)
Previous Case Notes (Asce	nding):					
				4	a.	
Added by KEINDEK	on 04/03/2025 at 12:08:02 PN	4		1	8	
NDM +, KPC+, Enterot	pacter Cloaces confirmed with	BOL				
*** Added by	on 04/03/2025 at 01:37.5	PM ***				
					2	
Electronic Documents						
Electronic Documents Add Date Date 5	Sent to PH Event Date	Sender F	eportability Reason	Enco	sunter Type	Vie
Electronic Documents Add Date Date S Case Documents	Sent to PH Event Date	Sender f	Reportability Reason	Enco	sunter Type Attach N	Vie ew Docume
Electronic Documents Add Date Date S Case Documents Date	Sent to PH Event Date Name	Sender f	eportability Reason	Descriptio	ounter Type Attach N n View	Vie ew Docume Delet
Electronic Documents Add Date Date S Case Documents Date 04/03/2025	Sent to PH Event Date Name Name Enterobacter cloacae cpx_NDM KPC	Sender f e C_ blood prelim _DOC	eportability Reason	Descriptio NDM, KPC+	Attach N View View	Vie ew Docume Delete
Electronic Documents Add Date Date S Case Documents Date 04/03/2025 Case Detail History	Sent to PH Event Date Name Name Enterobacter cloacae cpx _NDM KPC	Sender f e C_ blood prelim _DOC	Reportability Reason	Descriptio NDM, KPC+	Attach N Attach N N View	Vie ew Docume Delete
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Electronic Documents Add Date Date S Case Documents Date 04/03/2025 Case Detail History Version Add Date 04-07-2025 03:09:06 PM 04-03-2025 12:08:50 PM	Sent to PH Event Date Name Enterobacter cloacae cpx _NDM KPC Last Set as Active Version 04-07-2025 03:09:06 PM 04-03-2025 12:08:50 PM	Sender f e C_ blood prelim _DOC CPO CPO	eportability Reason 3.26.25.pdf User Name KARISSA KEMME	Descriptio NDM, KPC+ View View F View	Attach Ni Attach Ni N View View Restore Restore	Vie ew Docume Delete Delete Delete Delete

Electronic Death Records System (EDRS) Reports

Diagnosis Code Cause Of Death 1B Cause Of Cause Of Cause Of Death 1C Death 1A Death 1D Alcoholic Adult Respiratory Distress Candida Glabrata Cirrhosis Syndrome due to Covid 19 Pneumonia Sepsis **Other** Conditions **Code 800** Decedent Mname Med Make a note stating COD. Facility K703 Confirm not a case. chronic kidney disease **Entity Axis Entity Axis Code2** Entity Axis Entity Axis Code1 Code3 Code4 K703 B377 J189 180

Diagnosis Code

|--|

Example 1:

Need to confirm type of candidemia with facility, leave a note, then close it out.

Cause Of Death 1B Cause Of Cause Of Cause Of Death 1A Death 1C Death 1D septic shock candidemia **Code 800** Decedent Mn me Other Conditions Pieu raciiity B377 gastric cancer **Entity Axis Code2 Entity Axis** Entity Axis Entity Axis Code1 Code3 Code4 B377 A419 C169 **Entity Axis Entity Axis Code6** Entity Axis Entity Axis Code5 Code7 Code8

Either way . . . leave a note!

WHY is this important?





CDC Requirements for Reporting

WGS Tracing and case connections/clusters – reported to CDC



Limiting patient exposures to MDRO's



Your work is what is reported at a national level!

Infection Prevention SAVES LIVES

Who is your regional Epi? MDSS Support Resources



MDSS Support Resources

Please be prepared to describe the issue in detail to support personnel.

- For browser and connectivity issues contact your local information technology support staff.
- Your Regional epidemiologist is the primary point of contact for issues specific to using the MDSS. (See contacts provided in the table below).



Region	Name	Telephone/Cell Phone	E-mail	Counties
1	Meghan Weinberg	517.749.2153 (Cell)	WeinbergM1@michigan.gov	Clinton, Eaton, Gratiot, Hillsdale, Ingham, Jackson, Lenawee Livingston, Shiawassee
2N	Nicole Parker- Strobe	517.930.6906 (Cell)	ParkerStrobeN@michigan.gov	Macomb, Oakland, St. Clair
2S	Joyce Lai	734.727.7204 517.930.6958 (Cell)	LaiJ@michigan.gov	Detroit City, Monroe, Washtenaw, Wayne
3	Melanie Perry	989.832.6690 517.582.0737 (Cell)	PerryM12@michigan.gov	Alcona, Arenac, Bay, Genesee, Gladwin, Huron, Iosco, Lapeer, Midland, Ogemaw, Oscoda, Saginaw, Sanilac, Tuscola
5	Bethany Reimink	517.719.0407 (Cell)	ReiminkB@michigan.gov	Allegan, Barry, Berrien, Branch, Calhoun, Cass, Kalamazoo, St. Joseph, Van Buren
6	Fatema Mamou	517.204.6086 (Cell)	<u>MamouF@michiqan.qov</u>	Clare, Ionia, Isabella, Kent, Lake Mason, Mecosta, Montcalm, Muskegon, Newaygo, Oceana, Osceola, Ottawa
7	Roger Racine	517.930.6914 (Cell)	<u>RacineR@michigan.gov</u>	Alpena, Antrim, Benzie, Charlevoix, Cheboygan, Crawford, Emmet, Grand Traverse, Kalkaska, Leelanau, Manistee, Missaukee, Montmorency, Otsego, Presque Isle, Roscommon, Wexford
8	Scott Schreiber	517.930.3089 (Cell)	SchreiberS@michigan.gov	Alger, Baraga, Chippewa, Delta, Dickinson, Gogebic, Houghton, Iron, Keweenaw, Luce, Mackinac, Marquette, Menominee, Ontonagon, Schoolcraft

 If your Regional epidemiologist is unavailable, you may contact the Surveillance and Infectious Disease Epidemiology Section at the Michigan Department of Health and Human Services at: (517) 335-8165 and email inquiries may be sent to: mdhhs mdss@michigan.gov When to contact MDRO Containment Unit?



- General questions and concerns related to *C. auris* and CPOs
- Questions around CPO and C. auris screening
- MDRO-focused ICAR visits

 Assistance with response guidance and/or recommendations around CPO and *C. auris*

Coming Soon . . .

- Continued support to local health departments to comprehensively investigate CPOs
- Preparing local health departments to comprehensively investigate and provide infection prevention recommendations for electronic lab reports of Candida auris beginning <u>Fall 2025</u>
 - Trainings will include: in-person opportunities, MDSS case investigation job aids, and Infection Prevention guidance materials



Resources & Contact Information



Types of HAIs

Contact Us:

www.Michigan.gov/HAI



MDHHS-HAI@michigan.gov

