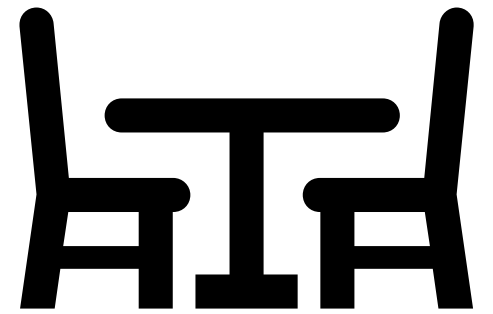




APIC-GL October 2025

Outbreak Investigation Tabletop Group Exercises

Novel MDRO



1:15 pm – 2:45 pm	<i>Interactive communicable disease exposure tabletop exercises</i> ● ACH: Jayna Berger, Michigan Medicine ● CAH: Alison Rewa, Sparrow Eaton/Ionia ● LTC: Randy Holland, Hillsdale Hospital
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Goals for Today



Gain a better understanding of the current literature of CRE in the US and Michigan



Take the first step in developing an MDRO response plan for your facility to help you investigate your next (or first) case of CRE transmission



Utilize the SBAR format to effectively and efficiently communicate problems and recommendations at your facility

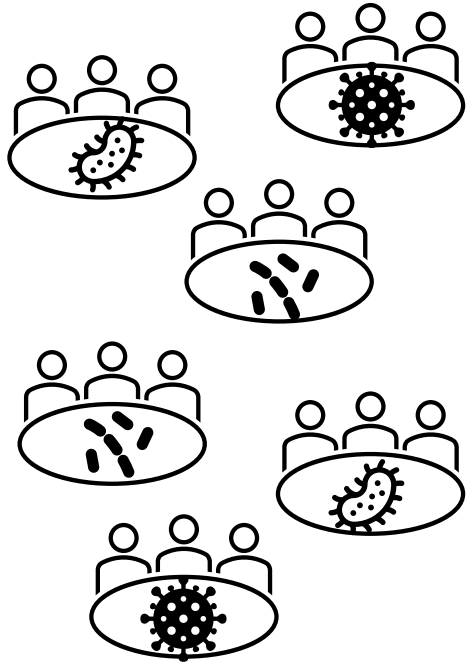


Gain a deeper understanding of how MDROs are managed across facilities.



Interact with other IPs and have fun!

Form
Groups of 3



The Outbreak Breakdown



Outbreak
Notification

Group
Activity

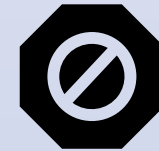
15 mins



Investigation

Group
Activity

30 minutes



Prevention
Measures

Group
Activity

15 minutes

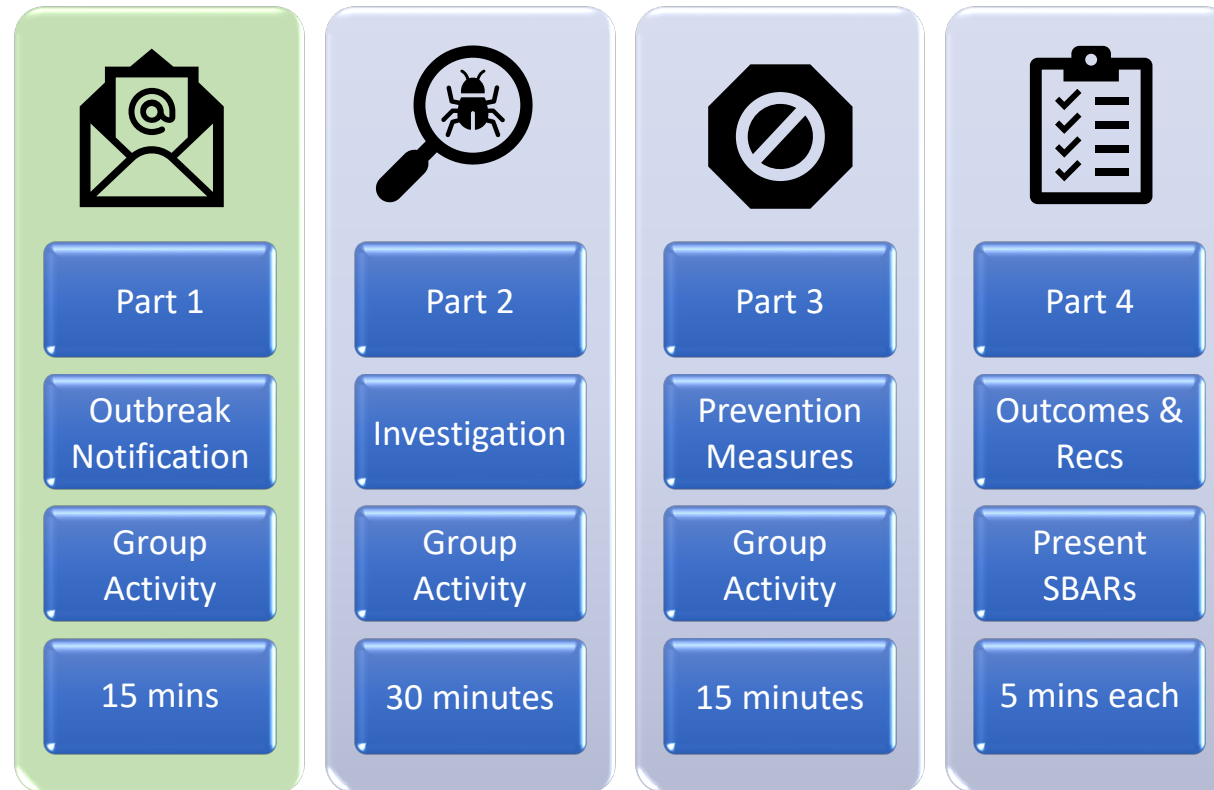


Outcomes &
Recommend
ations

Groups
present
SBARs

5 mins each

The Outbreak Breakdown





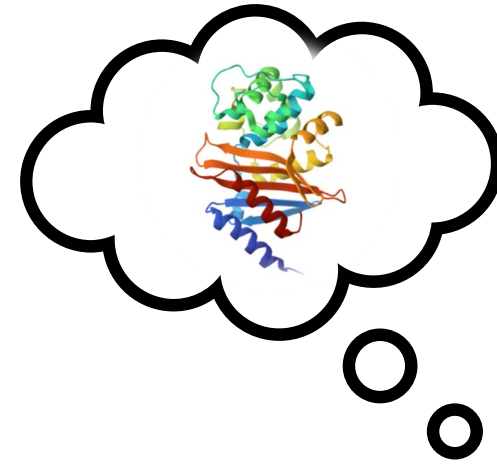
Part 1- Outbreak Notification

- It's Tuesday Morning, March 11, 2023. You've finished your mug of coffee and settled into what you think will be a full day of prep time for a meeting with the MICU leadership team on Friday. The MICU is a 12-bed intensive Care unit in the 600-bed teaching hospital in the midwestern US where you work as an Infection Preventionist. The unit is committed to providing the highest level of patient care. They are a fantastic team to work with. You're excited to share that they've gone 365 days without a CLABSI or CAUTI!
- Then....an email pops up from one of your infectious disease physicians. The subject line reads:

“Re: NDM/OXA+ K pneumo”

Part 1- Outbreak Notification

- You immediately recall an OXA investigation last year that involved MDHHS. You know anything with OXA is a big deal and is a reportable infection.
- You take a deep breath and open the email...



From: hospitalepidemiologist@med.umich.edu>
Sent: Tuesday, March 11, 2023 9:29 AM
To: pharmacist@med.umich.edu>; youthelp@med.umich.edu, yourboss@med.umich.edu
Cc: patientsphysician@med.umich.edu>; antimicrobialstewardshippharmacist@med.umich.edu>; microbiologylabmanagere@med.umich.edu>

Subject: Re: NDM/OXA+ K pneumo

Not great, Jim. I copied our colleagues from IPE—can we look into this?

-Elaine, Hospital Epidemiologist, Infection Prevention

From: infectiousdiseasespharmacist@med.umich.edu>;
Sent: Tuesday, March 11, 2023 9:28 AM
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Subject: NDM/OXA+ K pneumo

Hi Elaine,

You've probably seen this NDM/OXA-48+ K pneumo already (from 8889888). This is a very unusual genotype for someone from the U.S. and makes me wonder if there may have been some sort of link to Mr. Smith (4445444) who also has an NDM/OXA-48+ K pneumo with an identical aminoglycoside resistance pattern (gent <=2, tobra >8, amik 16). From my cursory IP look, it seems like Mr. Smith was in the MICU from 1/11 until 2/8 and Ms. Brown admitted on 2/17. Copied microbiology lab manager as well.

-Jim, Pharmacist

Part 1- Outbreak Notification



This immediately sounds like a possible lab confirmed case of transmission



Mr. Smith...that name is so unusual...it has a nagging familiarity to it...



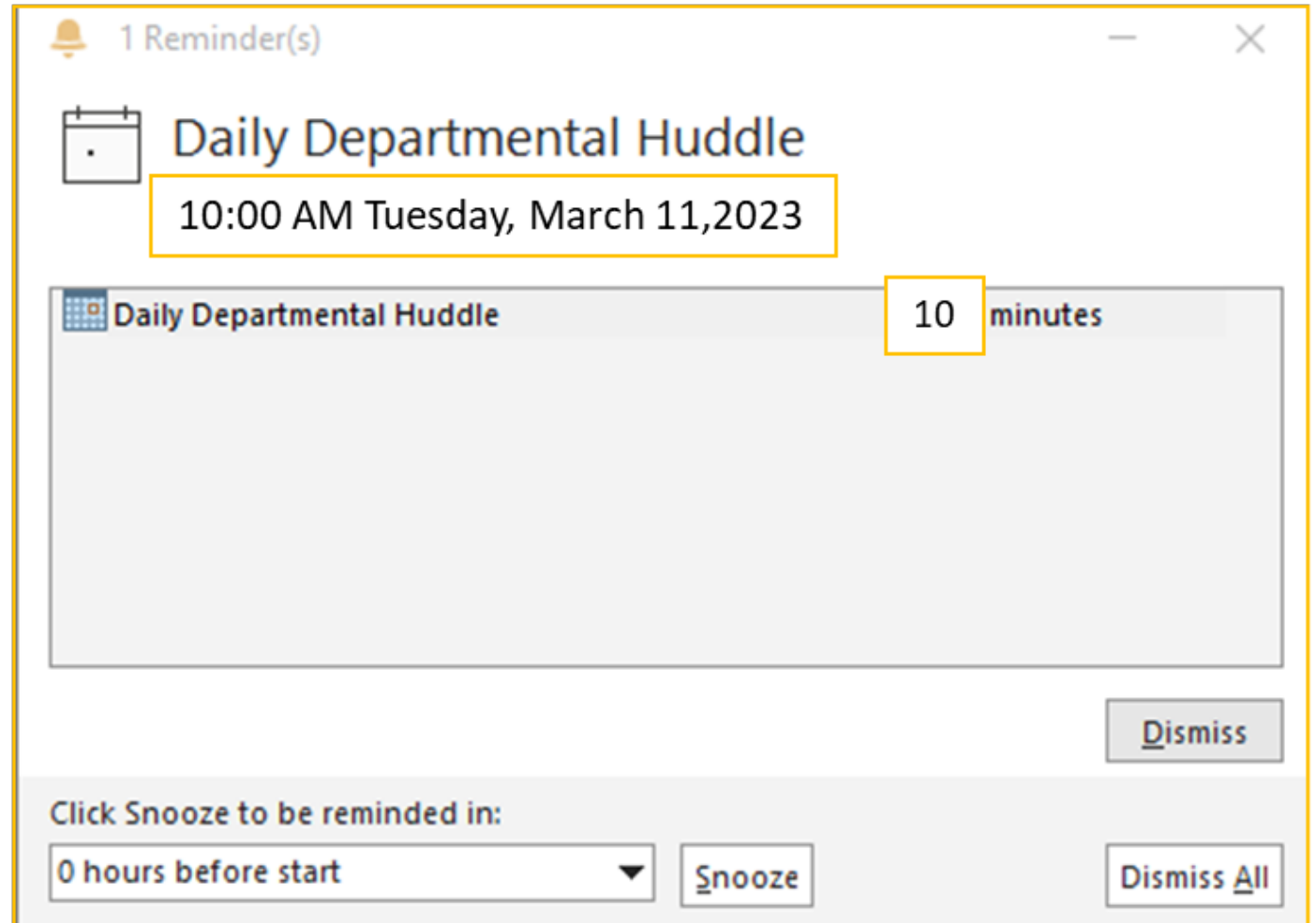
You search your email for Mr. Smith's name and Medical Record Number. Aha! On January 11th, when he first admitted, you were consulted on his CRE case. You know Isolation Precautions have been in place since he admitted. Generally, appropriately isolated patients are not considered risks for transmission.



What could have happened?

Part 1- Outbreak Notification

- Just then, your trusty calendar reminds you about the departmental “Daily Huddle” in 10 minutes.
 - A regularly scheduled opportunity to briefly share issues of the day with your team
 - Ask for help
- You have 10 minutes to complete the following....



Outbreak Notification- Group Activity 10 mins

- Communicate
 - Review notification email and craft a reply
 - Prepare a situation summary for Huddle
- Confirm Disease
 - Review patient labs, organisms, sensitivities, dates
- Prevent Transmission
 - Ensure appropriate isolation, cleaning, and disinfection
- Set a case definition
 - Person, place, time, clinical factors, review bed trace
- Do a brief lit review of NDM/OXA-48+
- Group to answer “Check-in” questions



Tools Provided for Part 1 of Group Activity

- Email notification
- Labs from medical record
- Contact Precautions Policy and sign
- Bed trace
- Participants should use personal devices to lit review

The collage displays several tools provided for the group activity:

- Urine Culture Lab Report:** A screenshot of a lab report titled "Urine Culture" showing a "Result Notes" section with "0 Result Notes" and a "Susceptibility" table. The table lists various antibiotics and their corresponding resistance levels (e.g., Amoxicillin - Sensitive, Ciprofloxacin - Sensitive).
- Urine Culture Urine, Straight Cath (URCA):** A screenshot of a lab report titled "Urine Culture Urine, Straight Cath (URCA)" showing a "Result Notes" section with "0 Result Notes" and a "Susceptibility" table. The table lists various antibiotics and their corresponding resistance levels (e.g., Amoxicillin - Sensitive, Ciprofloxacin - Sensitive).
- UMH Infection Prevention Contact Precautions Policy:** A screenshot of a policy document titled "UMH Infection Prevention Contact Precautions Policy". It includes sections for "I. Policy Statement, Purpose, and Scope" and "II. Definitions".
- Contact Precautions Sign:** A green sign with the text "CONTACT PRECAUTIONS" and a diagram showing a person in a room with a sign on the door.
- Bed Trace Chart:** A chart titled "BED TRACE" showing a timeline from January 2023 to March 2023. It tracks the location of patients (Mr. Smith, Mr. Brown, Mr. Green) across different rooms (120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000).

Part 1- Outbreak Notification Communicate

- You should let folks know that you've received this info right away.
- Draft a response email. What should it say?

From youthelP@med.umich.edu

From: hospitalepidemiologist@med.umich.edu>

Sent: Tuesday, March 11, 2023 9:29 AM

To: pharmacist@med.umich.edu>; youthelP@med.umich.edu, yourboss@med.umich.edu

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-Jim, Pharmacist

Part 1- Outbreak Notification Confirm Disease

- **Patient Smith**
 - **1/11/23 Admit to MICU (known CRE)**
 - **1/19/23 Urine Culture Collected**
 - **1/21/23 Ucx Resulted**
 - **2/8/23 Discharged from MICU**

Urine Culture

Status: Edited Result - FINAL Visible to patient: Yes (not seen)

Specimen Information: Urine

0 Result Notes

Component
URINE CULTURE

Klebsiella pneumoniae ↑ VC

Comment: >100,000 cfu/mL
Aztreonam+Avibactam 0.25mcg/mL
For aztreonam-avibactam, a minimum inhibitory concentration (MIC) is reported without an interpretation because clinical breakpoints for this drug combination have not been established. This drug demonstrates a vitro activity against metallo-beta-lactamase (MBL) producing Enterobacteriales. Its clinical efficacy is under evaluation in clinical trials. Surveillance data indicate that the MICs of MBL-producing Enterobacteriales (n=580) ranged from <=0.015/4 to 8/4 ug/mL.
Susceptibility result from Wisconsin State Laboratory of Hygiene in Madison, Wisconsin.
** CONTACT PRECAUTIONS ARE REQUIRED **
NDM (Carbapenemase) resistance marker detected.
OXA (Carbapenemase) resistance marker detected.

Resulting Agency
NCRC

Susceptibility

	BP	Klebsiella pneumoniae KB	MIC
Amikacin			16 mcg/mL Sensitive
Amoxicillin + Clavulanate			>16 mcg/mL Resistant
Ampicillin			>16 mcg/mL Resistant
Ampicillin + Sulbactam			>16 mcg/mL Resistant
Aztreonam	>64 mcg/mL Resistant		>8 mcg/mL Resistant
Cefazolin			>16 mcg/mL Resistant
Cefepime			>8 mcg/mL Resistant
Cefiderocol		Sensitive	
Ceftazidime			>16 mcg/mL Resistant
Ceftazidime/avibactam	>64 mcg/mL Resistant		>16 mcg/mL Resistant
Ceftriaxone			Resistant
Cefuroxime			>16 mcg/mL Resistant
Cephalexin (cystitis only)			Resistant
Ciprofloxacin			>0.5 mcg/mL Resistant
Ertapenem			>2 mcg/mL Resistant
Fosfomycin			<=64 mcg/mL ¹
Gentamicin			<=2 mcg/mL Sensitive
Imipenem/Relebactam			8 mcg/mL Resistant
Levofloxacin			>2 mcg/mL Resistant
Meropenem			>4 mcg/mL Resistant
Meropenem/Vaborbactam			>8 mcg/mL Resistant
Nitrofurantoin			>64 mcg/mL Resistant
Piperacillin/tazobactam			>64 mcg/mL Resistant
Tigecycline			<=2 mcg/mL
Tobramycin			>8 mcg/mL Resistant
Trimethoprim/Sulfa			>4 mcg/mL Resistant

¹ Fosfomycin susceptibility breakpoints only exist for Escherichia coli and Enterococcus faecalis. The risk of clinical failure with fosfomycin for non-E. coli Gram negative organisms is high. Fosfomycin should only be used for the treatment of cystitis when no oral alternatives are available and when the expected harm of treatment failure is minimal.

[Linear View](#)

Part 1- Outbreak Notification Confirm Disease

• Patient Brown

- 2/17/23 Admit to MICU
- 2/23/23 Urine Cx Collected – No growth
- 3/8/23 Urine CX Collected
- 3/11/23 Urine Cx Resulted – CRE+

Urine Culture Urine, Straight Cath (URCA)

Status: Final result Visible to patient: Yes (not seen)

Specimen Information: Urine, Catheterized

0 Result Notes

Component

URINE CULTURE

Resulting Agency

Culture yields no growth.

NCRC

Urine Culture

Status: Final result Visible to patient: Yes (not seen)

Specimen Information: Urine

0 Result Notes

Component

URINE CULTURE

Klebsiella pneumoniae

Comment: >100,000 cfu/mL

** CONTACT PRECAUTIONS ARE REQUIRED **

OXA (Carbapenemase) resistance marker detected.

NDM (Carbapenemase) resistance marker detected.

Resulting Agency

NCRC

Susceptibility

		Klebsiella pneumoniae MIC
Amikacin	16 mcg/mL	Sensitive
Amoxicillin + Clavulanate	>16 mcg/mL	Resistant
Ampicillin	>16 mcg/mL	Resistant
Ampicillin + Sulbactam	>16 mcg/mL	Resistant
Aztreonam	>8 mcg/mL	Resistant
Cefazolin	>16 mcg/mL	Resistant
Cefepime	>8 mcg/mL	Resistant
Ceftazidime	>16 mcg/mL	Resistant
Ceftazidime/avibactam	>16 mcg/mL	Resistant
Ceftriaxone	>16 mcg/mL	Resistant
Cefuroxime	>16 mcg/mL	Resistant
Cephalexin (cystitis only)	>16 mcg/mL	Resistant
Ciprofloxacin	>0.5 mcg/mL	Resistant
Ertapenem	>2 mcg/mL	Resistant
Fosfomycin	<=64 mcg/mL ¹	
Gentamicin	<=2 mcg/mL	Sensitive
Imipenem/Relebactam	8 mcg/mL	Resistant
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[Linear View](#)

Susceptibility Comments

Klebsiella pneumoniae

Part 1- Outbreak Notification

Prevent Transmission: Policy

UMH Infection Prevention **Contact Precautions** Policy

I. Policy Statement, Purpose, and Scope

The purpose of this policy is to minimize the spread of selected communicable diseases, conditions or microorganisms which may be transmitted by direct contact with the patient or items in the patient's environment. It may also be used in certain situations when the consequences of spread may be extreme and/or when Standard Precautions (SP) alone may not be effective in preventing transmission. CP/CP-D is used in addition to UMH ICC policy Standard Precautions.

II. Definitions

Barriers - Gloves, masks, gowns, or other personal protective equipment that prevent exposure to infectious microorganisms.

Colonization - the presence of microorganisms without the production of disease.

Standard Precautions (SP) - Precautions to prevent spread of potentially infectious agents present in moist body substances including nonintact skin. These precautions should be practiced for all patients.

Specific disease/condition requiring CP/CP-D and duration of precautions:

Disease/condition	Duration of Precautions	Private Room Required	Sign	Refer to*:
Adenovirus infection, GI disease or viremia	GI: until 48 hours after diarrhea resolves Viremia: until 48 hours after diarrhea resolves Viremia in immunocompromised patients: until 48 hours after diarrhea resolves and one negative test.	Yes or cohorted	Contact Precautions-D	Contact IPE
Antibiotic-resistant microorganisms: MRSA (open, draining wounds only), ESBL, CRE, MDRO (e.g., carbapenem-R pseudomonas and Acinetobacter spp.), <i>C. auris</i> , VISA, VRSA *VRE does NOT require Contact Precautions	Duration of inpatient admission unless screening initiated in consultation with IPE.	Yes or cohorted	Contact Precautions	Exhibit A
<i>C. difficile</i>	Duration of hospitalization.		ns-D	Exhibit B



Part 1- Outbreak Notification

Prevent Transmission: Practice

The screenshot displays the Epic EMR interface for a patient named UMCL, Uncle. The interface shows a summary of the patient's medical history, including a COVID-19 positive status and isolation updates. A large blue arrow points from the 'Infection: CRE' and 'Isolation: Contact' sections to a blue box labeled 'Interdepartmental Communication – Electronic Medical Record'. Another blue arrow points from the 'Interdepartmental communication – Point of Care Visual Cues' box to a 'CONTACT PRECAUTIONS' sign.

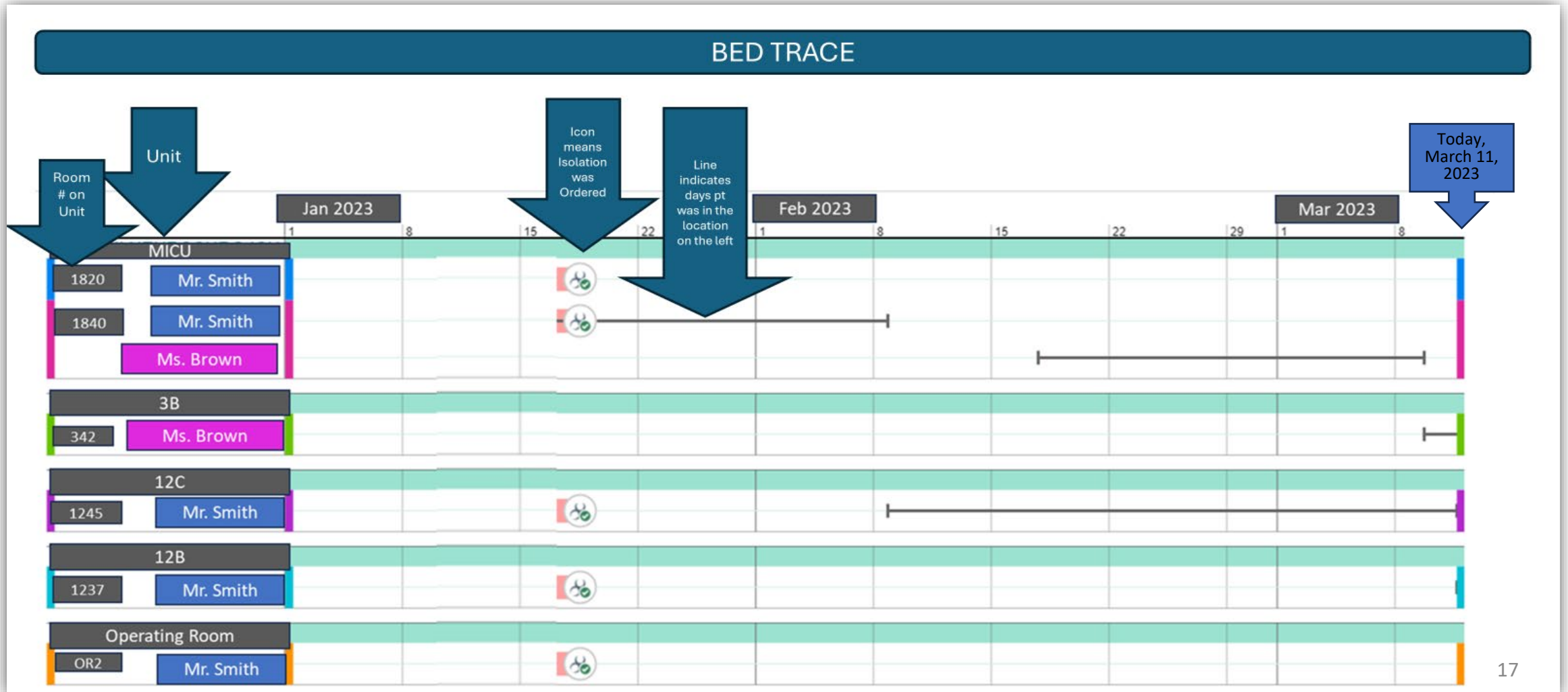
Interdepartmental
communication –
Point of Care Visual Cues



Interdepartmental
Communication –
Electronic Medical Record

Part 1- Outbreak Notification

Set case definition: use bed trace



Part 1- Outbreak Notification

Post Group Activity Check-In Questions (10 mins)

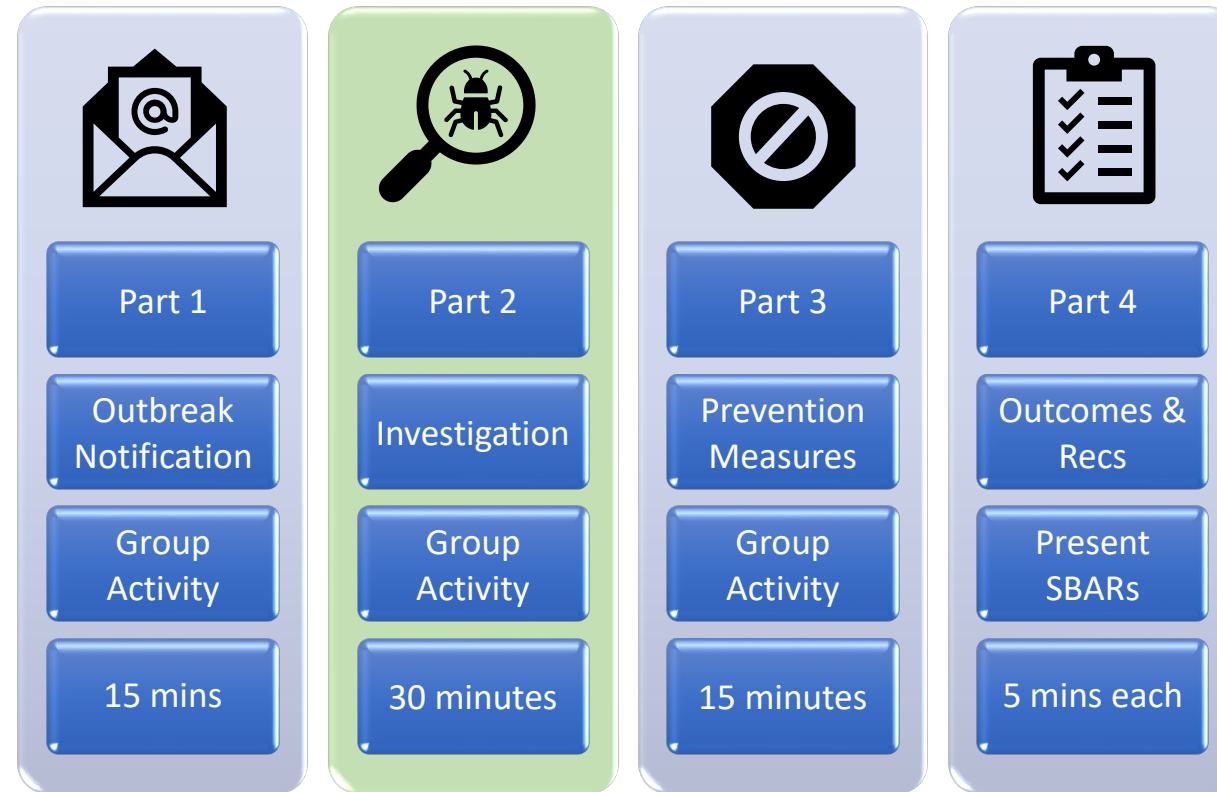
- What did your reply email say?
- Were you able to confirm disease?
- Did you have any actions to take to prevent transmission?
- What is your case definition?
- What did the labs and the bed trace tell you?
- What do you know about CRE from literature? Specifically, about NDM/OXA 48? What are known reservoirs and indications from other outbreaks?

Part 1- Outbreak Notification

Post Group Activity Check-In Questions and Answers

- What did your reply email say?
 - Should be something along the lines of “Interesting, I’m going to look into this immediately. Let’s chat at huddle in a few mins.”
- Were you able to confirm disease?
 - Yes, both patients had the same organisms with the same sensitivities, just as the pharmacist identified.
- Did you have any actions to take to prevent transmission?
 - No. Both patients were appropriately isolated. Though, since pt. Brown was not in isolation until her test resulted positive, it might be a good idea for the unit to do a re-clean of all unit managed equipment and common areas, just to be sure.
- What is your case definition?
 - Case definition is a patient, connected to the MICU, from January-March, with positive CRE NDM/OXA cultures
- What did the labs and the bed trace tell you?
 - Labs confirmed matching organisms, bed trace identified a common room, neither Mr. Smith nor Mrs. Brown are still in the MICU
- What do you know about CRE from literature? Specifically, about NDM/OXA 48? What are known reservoirs and indications from other outbreaks?
 - This NDM/OXA 48 is unexpected in the US let alone Midwest. CRE is known to be associated with water sources, scopes, and healthcare worker hands

The Outbreak Breakdown



Part 2- Investigation

Departmental Huddle, you

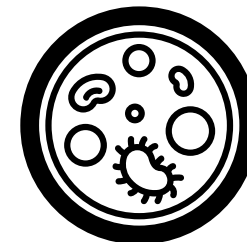
- At Huddle, you share what you know so far.
 - 2 patients w/ novel MDRO linked by MICU room 1840, separated by time.
 - Mr. Smith
 - Admitted to MICU room 1840 from 1/11-2/8
 - Known CRE NDM/OXA-48 colonization/infection upon admission
 - CRE NDM/OXA-48 is most often w/ international healthcare
 - Pt w/ multiple international admissions
 - Contact Precautions since admission
 - Mrs. Brown
 - Admitted to MICU room 1840 from 2/17-3/8
 - No hx of MDROs or any requirement for Transmission based precautions
 - Negative Urine culture while in MICU
 - Now w/ CRE NDM/OXA-48 from urine, 20 days into admission
 - Literature suggests that water sources, improperly cleaned patient equipment such as endoscopes, and the hands of healthcare workers are the most common sources for transmission.



Part 2-Investigation

Departmental Huddle, your team

- Your team assists by providing additional info and direction
 - Your Hospital Epidemiologist shares that they consulted on this new patient and discovered that Ms. Brown has had minimal healthcare exposure and zero international travel. In fact, Ms. Brown doesn't even have UTI symptoms so there is no clinical need to treat this urine culture.
 - A fellow Infection Preventionist reminds you of the “MDRO Response Plan” that has been drafted with guidance and resources for what to do in the event of an HAI case of a novel MDRO. They also share that there have been no other known NDM/OXA-48 positives in the hospital lately.
 - The Infection Control Analyst responsible for MDRO surveillance sends you a separate email notification of Mrs. Brown's positive culture that contains a couple additional pieces of helpful information
 - The departmental leadership decides that a single novel CRE HAI event is highly concerning and must be investigated as an outbreak.
- You have been given the go-ahead to
 - ✓ initiate additional case finding through patient culturing
 - ✓ initiate source identification through environmental culturing



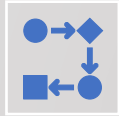
Investigation- Group Activity, 30 minutes



Fill in

Complete a linelist of known cases

- Are you missing anything?



Review

Review MDRO Response Plan

- What actions should you take? What have you already done?



Review

Review Contact Precautions Policy as it pertains to the environment and CRE

- What is required for patients with CRE?
- What special environmental cleaning requirements are there?
- Were all patient environments cleaned according to policy?



Identify

Identify patients to be screened

- Why would a patient make this list? Are you missing anything?



Communicate

Communicate to unit leadership, patient providers, and other relevant areas for awareness. Initiate patient screening.

- In real life you would be on the phone or in person



Go

Go to unit and determine what potential sources in the environment to culture. While there and collecting specimens, you observe

Tools Provided for Part 2 of Group Activity

Linelist Skeleton

Analyst CRE lab Notification

MDRO Response Plan

Contact Precautions Policy

Blank Table to list tested patient

Unit Photos and Observation Notes

id	Patient	Admit date	Room	Discharge Date	Disposition (where are they now?)	Adm'l msl from bed line	Test Collect Date	Test Result	Test Source	Test result	Isolation Precautions initiation date	Procedures/Interventions
885468	Smith, Mr.	1/11/2023										Tracheostomy Bronchoscopy ECG/KG Weg MRI & CT Dx Ultrasound in ICU Interventional Radiology AC Line placement ECHO
885988	Brown, Mr.	2/17/2023	3/9/2023									Tracheostomy Bronchoscopy ECG/KG Weg MRI & CT radiology

MDRO Response Plans

Definitions

CRE = Carbapenem Resistant Enterobacteriaceae
CPO = Carbapenemase Producing Organism

- The following **A/E** **carbapenemase** and detection indicates a CPO: **KPC, NDM, OXA-48, VIM, IMP**
- The following is a marker for CRE in M/Care and is **NOT** a **carbapenemase**: **CTX-M**
- Note: CRE can produce the CTX-M gene. These CRE are **NOT** CPO.
- MDRO: **penicillinase** and **carbapenemase** can also carry **carbapenemase** (e.g., VIM, NDM, IMP, OXA).

CPO Response

- Ensure patient is coded for "CRE" in M/Care and contact precautions are initiated.
- Send "CRE alert" email (see appendix A) to patient's care and unit leadership (e.g., medical director, nursing leadership, IM and ID).
- Recent scope use (only recent channel endoscopes (e.g., RUC, DRG))
- RA notification email will include any recent endoscopy channel end and used on patient.
- Contact MRU Safety Level at 6-8768 (or alternatively, MRU) upon request that endoscopes are pulled and double checked.
- Eyes on the unit
 - Isolate and hand hygiene events
 - Verify CP sign in door.
 - Verify that disinfectant wipes are **available** and the toilet is clean.
 - Observe (in general) that people are following precautions correctly.
 - Intervene / correct 2-3 for the unit as needed.
 - Report "eyes on" findings and CP violations to unit DRG/infect.
 - Perform exposure work-up as needed (see guidance below).
 - For patients that are no longer admitted, the high alert email and eyes on. But scope use and exposure **still** should still be considered.

Novel MDRO Response

- Follow response plan for CPO. Modify communications as appropriate (e.g., novel MDRO, etc.).

Infection Prevention Contact Precautions Policy

Policy Statement, Purpose, and Scope

The purpose of this policy is to contain the spread of selected transmissible diseases, including those that are resistant to antimicrobials, which may be transmitted by direct contact with the patient or items in the patient's environment. It may also be used in situations where the consequences of spread may be severe and/or where Standard Precautions (SP) alone may not be effective in preventing transmission. CPO is used in addition to SP policy Standard Precautions.

Specific diseases/conditions requiring CPO and duration of precautions:

Disease/condition	Duration of Precautions	Room	Sign	Refer to
Antibiotic-resistant enterococci:				
MRSA (open, draining wounds)	Duration of symptom admission unless otherwise indicated in consultation with ID.	Sign or substituted	Contact Precautions	Substituted A
ESBL				
CRE: MDRO (e.g., carbapenem-resistant enterobacteriaceae spp.)				
C. diff.				
VISA				
VISA				

*CRE does NOT require Contact Precautions

www.infectionpreventionandcontrol@umich.edu
Sent: Tuesday, March 14, 2023 11:46 AM
To: infectionprevention@umich.edu

Subject: Inpatient CRE - MICU

Carbapenemase detected, not on scope list, reported.

Hi Mr. (patient name)

Dear Mr. (patient name)

Flag: Abnormal Status: Final result (Collected: 3/9/2023 Provider Status: Ordered 2/2/23)

Specimen: Urine Information:

Component: **Carbapenemase** Abnormal

A detectable concentration of carbapenemase was detected in your specimen.

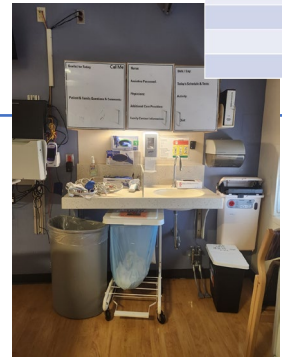
Comments: **>100,000 cfu/mL**
** CONTACT PRECAUTIONS ARE REQUIRED **
CRE (Carbapenemase) resistance marker detected.
MDRO (Carbapenemase) resistance marker detected.

Remarks:

Normal urgentist flow present.
Acceptability for research use only.

UMMS
Infectious Disease
approvals

Site



Part 2- Investigation

Group Activity Tool, Linelist to fill in

MRN	Patient	Admit date	Room Discharge Date	Disposition (where are they now?)	Add'l rms from bed trace	Test Collect Date	Test Result date	Test Source	Test result	Isolation Precautions initiation date	Procedures/interventions
4445444	Smith, Mr.	1/11/2023									Tracheostomy Bronchoscopy EEG/EKG Xray MRI & CT DVU Ultrasound in ICU Interventional Radiology Art Line placement ECHO
8889888	Brown, Ms.	2/17/2023	3/9/2023								Tracheostomy Bronchoscopy EEG/EKG Xray MRI & CT DVU Ultrasound in ICU Interventional Radiology Lumbar Puncture Apheresis

Your analyst started a linelist during huddle and filled in any procedures they were able to find. Aren't they wonderful?
What commonalities are you seeing? Are you missing anything?

Part 2- Investigation Group Activity Tool, Analyst Notification

What additional
information is provided
from this email?

From: infectionpreventionanalyst@med.umich.edu>

Sent: Tuesday, March 11, 2023 11:46 AM

To: infectionpreventionist@med.umich.edu>

Subject: Inpatient CRE - MICU

Carbapenemase detected, not on scope list, reported.

Brown, Mrs. (8889888)

Result Information

Flag: Abnormal	Status: Final result (Collected: 3/8/2023 20:25)	Provider Status: Ordered
-----------------------	--	--------------------------

Specimen Urine
Information:

Component

URINE CULTURE Abnormal

Klebsiella pneumoniae

Comment:

>100,000 cfu/mL

**** CONTACT PRECAUTIONS ARE REQUIRED ****

OXA (Carbapenemase) resistance marker detected.

NDM (Carbapenemase) resistance marker detected.

Part 2- Investigation Group Activity Tool, MDRO Response Plan

MDRO Response Plans

Definitions

CRE = Carbapenem Resistant *Enterobacteriaceae*

CPO = *Carbapenemase* Producing Organism

- The following *ARE carbapenemases* and detection indicates a CPO: KPC, NDM, OXA-48, VIM, IMP
- The following is a marker for ESB and is *NOT* a *carbapenemase*: CTX-M
 - Note: CRE can produce the CTX-M gene. These CRE are *NOT* CPO
- MDROs (including *Pseudomonas* and *Acinetobacter*) can also carry *carbapenemase genes*
- Novel MDRO = Carbapenem-resistant *Pseudomonas* (CRPA) or *Acinetobacter* (CRAB) with detection of an uncommon *carbapenemase* (e.g., VIM, NDM, IMP, OXA)

CPO Response

- Ensure patient is coded for "CRE" in *Michigan* and contact precautions order is for CRE. Add a comment to the infection flag to indicate which *carbapenemase* was detected
 - Send "CRE high alert email" email (See appendix A) to patient's current care provider and unit leadership (e.g., medical directors, nursing leadership, MPLAN partners)
- Recent scope use (only elevator channel endoscopes (e.g., EUS, EBUS))
 - IPA notification email will include any recent elevator channel endoscopes that were used on patient
 - Contact MPU, Kathy Lewan at 6-6708 (or alternatively, MPU department at 6-9250) and request that endoscopes are pulled and double HLD'd
- Eyes on the unit
 - Isolation and hand hygiene rounds
 - Verify CP sign on door.
 - Verify that disinfectant wipes are available and the isolation cart is out and stocked.
 - Observe (in general) that people are following precautions (HH, PPE, equipment cleaning).
 - Intervene / correct 1-3 'on the spot' as needed.
 - Report "eyes-on" findings and CP reminders to unit DMS huddle
- Perform exposure work-up as needed (see guidance below)
- For patients that are no longer admitted, the high-alert email and eyes on unit are not required. But scope use and exposure *work-ups* should still be considered.

Novel MDRO Response

- Follow response plan for CPO. Modify communications as appropriate (e.g., replace CRE with novel MDRO, etc.)

Appendix A – CRE high alert email

On xx/xx/xx, patient (MRN) was identified to have infection with a *Carbapenemase*-producing (CPO), Carbapenem-Resistant Enterobacteriaceae (CRE) organism.

Carbapenem-Resistant Enterobacteriaceae (CRE) are a group of highly antibiotic resistant gram-negative bacteria that are incredibly difficult to treat due to their limited susceptibility to other antibiotics. When CRE organisms are *carbapenemase*-producing (CPO) they have the ability to share their resistance genes with other organisms.

IPE will review this patient's isolation history and may recommend screening other patients if a risk of transmission is identified. This would require assistance from a unit provider to place screening test orders and assistance from nursing staff for specimen collection. I will notify you if screening is recommended.

Infections with CRE can be spread via direct contact from patient to patient or from patient to healthcare worker to another patient via contaminated hands or equipment. By following Contact Precaution guidelines, we can prevent the spread of CRE infections in our hospital.

Please discuss the following Contact Precautions guidelines at DMS huddles and with your teams:

- Hand Hygiene and PPE**
 - Cleansing hands prior to donning gloves
 - Gloves and gown are to be worn upon entry to a CRE-infected patient room, with all *garb* being removed prior to exiting the room.
 - Hands must be cleaned upon leaving the room
- All equipment should be properly cleaned**, according to manufacturer's protocol and using a hospital-approved disinfectant, before leaving the room or for use on next patient. Make sure hospital-approved disinfectant wipes are available for use prior to bringing equipment into a patient's room.
- Proper communication upon patient transport.** Communicate CRE status on unit transfer or when a patient goes off the unit for tests or procedures.
- Patient movement.** Patients may not ambulate outside their room except for essential purposes only. If leaving room for tests or clinical appointments, make sure patient has clean gown, clean hands and transport vehicle is covered with a blue pad, *sheet* or towel.
- CRE info sheet below** should be provided to patient/*family*
<http://www.med.umich.edu/preeducation/docs/InfectionControl/CRE-FAQs.pdf>

Thank you for your support in preventing the spread of CRE. Please contact IPE if you have any questions.

Appendix E: MDRO Exposure and HAI work-up

Determine the need for work-up in consultation with the unit HE

Exposure work-up should be considered for patients who were not in any isolation until:

- Newly identified CPO with NDM, OXA, VIM, or IMP detected
- Newly identified *C. auris* isolates

HAI work-up should be considered for areas where there is a concern for unit transmission including:

- 2 or more patients with the same MDRO or same novel *carbapenemase* (NDM, OXA, VIM, or IMP) on the same unit at the same time. At least one patient is an HAI MDRO.
- Known breaks in use of CP on a unit with a patient who is in isolation for a novel MDRO or *C. auris*

Who to test

- Exposure work-up screening. Consider testing the following patients:
 - Patients who used the same scope as an MDRO patient from the date of use by MDRO patient to the day the scope was *sterilized*
 - Roommates of an MDRO patient
 - Additional testing of other high-risk patients who were on the unit at the same time as the MDRO patient can be considered (e.g., consider additional testing if roommates or scope patients test positive)
- HAI work-up screening. Consider one of the following testing options:
 - Conduct a point prevalence survey of all patients currently on the unit for >24hr
 - Test patients on the unit who are considered at high-risk for MDRO *acquisition*

MDRO Work-up tips

- Unless if a known break in CP was identified, patients properly isolated in CP for an MDRO on admission are not considered a transmission risk. An exposure or HAI work-up does not need to be *completed*
- Discuss a plan for patient refusals with HE. In some cases, follow-up is not needed for patient *refusals*
- If you are planning to test many patients, notify the micro lab ahead of time so they are aware of the plan to screen and so they can ensure that they have enough supplies to perform the screening tests.
 - The micro lab stocks a limited number of CRE plates, so always check with the lab about supplies ahead of time if doing point prevalence screening.
- Notify Risk of any screening – patients to be screened and *results*
- If screening is initiated due to a health department notification, make sure you close the loop with the health department when the work-up is complete.
- See CDC document for more guidance: <https://www.cdc.gov/hai/containment/guidelines.html>

Tips for screening admitted patients:

- Have current provider notify patient about possible exposure, interest to screen, and place the screening test order in *Michigan*.
- Send information about specimen collection to unit nursing leads and/or patient's current *nurse*
- Notify micro lab of screening – number of patients screened, approximate timeline to send *specimens*

Tips of screening outpatients (e.g., roommates and patients with scope use):

- Patient notification and placing screening test *orders*
 - Create a plan for who will contact patients and place screening test orders. Ideally this will be a provider from the unit or the provider who performed the procedure. You can consider asking clinic providers if patient has an upcoming appointment. A HE may be able assist with notifications.
- Specimen collection
 - Create a plan to have specimens collected at an upcoming appointment (if there is one scheduled)
 - If no upcoming appointments, utilize the MDRO screening test kit to mail supplies and instructions to patients (saved in MDRO folder)
 - When mailing kits to patients, consider using certified *mail*
 - Swabs* for the testing kits can be obtained from any inpatient *unit*
- For patients at other facilities or at long-term care centers, MDHHS SHARP unit may be able to help facilitate notifications and screening tests.

What actions should you take? What have you already done?

Part 2- Investigation Group Activity Tool, Contact Precautions Policy

Infection Prevention Contact Precautions Policy

Policy Statement, Purpose, and Scope

The purpose of this policy is to minimize the spread of selected communicable diseases, conditions or microorganisms which may be transmitted by direct contact with the patient or items in the patient's environment. It may also be used in certain situations when the consequences of spread may be extreme and/or when Standard Precautions (SP) alone may not be effective in preventing transmission. CP/CP-D is used in addition to ICC policy Standard Precautions.

Specific disease/condition requiring CP/CP-D and duration of precautions:

Disease/condition	Duration of Precautions	Private Room Required	Sign	Refer to*:
Antibiotic-resistant microorganisms: MRSA (open, draining wounds only), ESBL, CRE, MDRO (e.g., carbapenem-R pseudomonas and Acinetobacter spp.), <i>C. auris</i> , VISA, VRSA	Duration of inpatient admission unless screening initiated in consultation with IP.	<u>Yes or cohorted</u>	Contact Precautions	Exhibit A
*VRE does NOT require Contact Precautions				

1. Patient care supplies, equipment, and trash:

- Whenever possible, dedicate items to CP or CP-D rooms.
- Items that may be used for another patient (multiuse items) must be disinfected between uses (See item-specific protocol on the [Equipment](#)

[Cleaning Chart](#)). Items used in CP-D patient rooms must be disinfected with a hospital-approved sporicidal disinfectant.

- All items that cannot be disinfected (e.g., gauze, tape, etc.), must be discarded when the patient is discharged.
- Items such as patient clipboards and charts must either be kept in the room or outside the room (not both).
- Paperwork going into an CP or CP-D inpatient's room should stay in the room until either the patient is discharged or the paperwork goes into the chart.
- Handle laboratory specimens, trash, medical waste (including sharps), and linen according to the [SP policy](#) and [Regulated Medical Waste Protocol](#).
- Regular non-disposable dishes may be used. Menus and requisition slips require no special precautions. Trays may be delivered by Patient Food & Nutrition Services staff following CP or CP-D.
- Food brought from home for the patient may be kept in a unit refrigerator if covered with a clean secondary container which is dated and labeled, e.g., paper bag, plastic wrap, or container.

2. Environment/Cleaning:

- Rooms shall be cleaned using routine daily cleaning procedures per [Environmental Services' policy](#).
- Discharge cleaning shall be performed as outlined in the [Environmental Services' policy](#) when patients are discharged or transferred. Cubicle curtains are changed upon discharge or transfer of patient.
- The CP or CP-D sign should remain on the door until cleaning is completed. EVS staff remove the sign after cleaning the room.

EXHIBIT A-

Infection Control Guidelines: To Prevent Transmission of Antibiotic-Resistant Microorganisms

Policy Statement, Purpose, and Scope

The purpose of this policy exhibit is to prevent and control the spread of antibiotic-resistant microorganisms.

Definitions

Antibiotic-resistant microorganisms requiring Contact Precautions - for the purposes of this policy are defined as patients infected or colonized with the following microorganisms:

- MRSA - Methicillin-resistant *Staphylococcus aureus* (from open, draining wounds)
- ESBL - Extended spectrum beta-lactamases
- CRE - Carbapenem-resistant [Enterobacterales](#)

- MDRO - Other gram negative bacteria including *Pseudomonas* and *Acinetobacter* with resistance to a carbapenem

- C. auris* – *Candida auris*
- VISA – Vancomycin-intermediate *Staphylococcus aureus*
- VRSA – Vancomycin-resistant *Staphylococcus aureus*
- Other microorganisms with antibiotic-resistance profiles considered to be epidemiologically significant by IP

Carbapenem resistant or producing Enterobacterales: [Enterobacterales](#) (including *E. coli*, *Klebsiella* species, *Enterobacter* species, *Citrobacter* species, *Serratia* species) with resistance to any carbapenem (imipenem, meropenem, doripenem, ertapenem).

Extended spectrum beta-lactamases: Gram-negative bacteria, especially *K. pneumoniae* and *E. coli*, may produce ESBL. ESBLs are enzymes that are capable of inactivating a wide spectrum of β-lactam antibiotics (third generation cephalosporins (i.e., ceftazidime, cefotaxime, and ceftriaxone) and monobactams (e.g., aztreonam)).

VISA: *S. aureus* with laboratory-determined MIC to vancomycin of 4-8 mcg/ml. A more general term for VISA in the literature is glycopeptide intermediate *S. aureus* (GISA) that reflects resistance to the whole class of glycopeptide antibiotics (i.e., vancomycin, teicoplanin).

VRSA: *S. aureus* with laboratory-defined susceptibility to vancomycin ≥16 mcg/ml.

VRE: Vancomycin resistant enterococci except vanC isolates (e.g., *E. casseliflavus*, *E. gallinarum*). This is an antibiotic-resistant microorganism of interest but does NOT require Contact Precautions for patient care.

Policy Standards

Procedures/Actions

- The Pharmacy Therapeutics Committee oversees guidelines for the proper use of antimicrobial agents, which will also serve to control development of resistant strains.
- IDENTIFICATION/NOTIFICATION:

- The microbiology lab shall immediately notify Infection Prevention (IP) when a novel MDRO is isolated from a patient specimen.
- Physicians, non-physician practitioners (NPs, PAs, midwives, etc.), or IP staff shall place an order for Contact Precautions (CP) for all patients with a history of an antibiotic-resistant microorganism that requires CP, a newly positive result of an antibiotic-resistant microorganisms that requires CP, or admitted from an outside facility with an antibiotic-resistant microorganism that requires CP.

C. PREVENTION OF PATIENT-TO-PATIENT TRANSMISSION:

- Contact Precautions (CP) are required for:
 - MRSA – Only patients with MRSA-positive open, draining wound infections must be placed in CP. CP is not required for other MRSA-positive lab results (e.g., blood, urine, respiratory, nasal swab).
 - ESBL CRE, MDRO, *C. auris*, VISA, VRSA – All patients who test positive for ESBL CRE, MDRO, *C. auris*, VISA, VRSA from any site must be placed in CP.
 - VRE – CP is NOT required for patients who test positive for VRE from any site.
- Private room with private bath or appropriate cohort ([see cohorting](#) guidelines) is required.
- Duration of precautions:
 - Inpatients who test positive for antibiotic-resistant microorganisms that require CP must remain in precautions for the duration of their hospital stay. IP staff may occasionally evaluate patients on a case-by-case basis to determine if the CP status can be removed.
 - Readmission of Patients Previously Identified with an Antibiotic-Resistant Microorganism:
 - MRSA: If a patient previously discharged on CP with MRSA is readmitted and has an open, draining wound, the patient must be placed in CP until wound is confirmed to be negative for MRSA.
 - ESBL CRE, MDRO, *C. auris*, VISA, or VRSA: If a patient previously discharged on CP for ESBL CRE, MDRO, *C. auris*, VISA, or VRSA is readmitted the patient must be placed in CP until discontinuation of precautions is approved by IP.
 - VRE: CP is NOT required for patients previously identified to have VRE.
 - Physicians, non-physician practitioners (NPs, PAs, midwives, etc.), or IP staff may place an order for appropriate laboratory tests as needed to evaluate for discontinuation of precautions.
- Cleaning Following Removal of CP designation during an admission:
 - If IP approves discontinuing CP during the same admission that the patient was placed in CP, the room must be cleaned according to the EVS discharge protocol, or the patient must be moved to a new room.
 - Rooms of patients in CP for CRE or *C. auris* who are discharged shall undergo whole-room decontamination after discharge cleaning is complete. Exceptions shall be approved by the house manager.

What does your policy say is required for patients with CRE?
What special environmental cleaning requirements are there?
Were all patient environments in this exercise cleaned according to policy?

Part 2- Investigation

Group Activity Tool, Patients to be screened

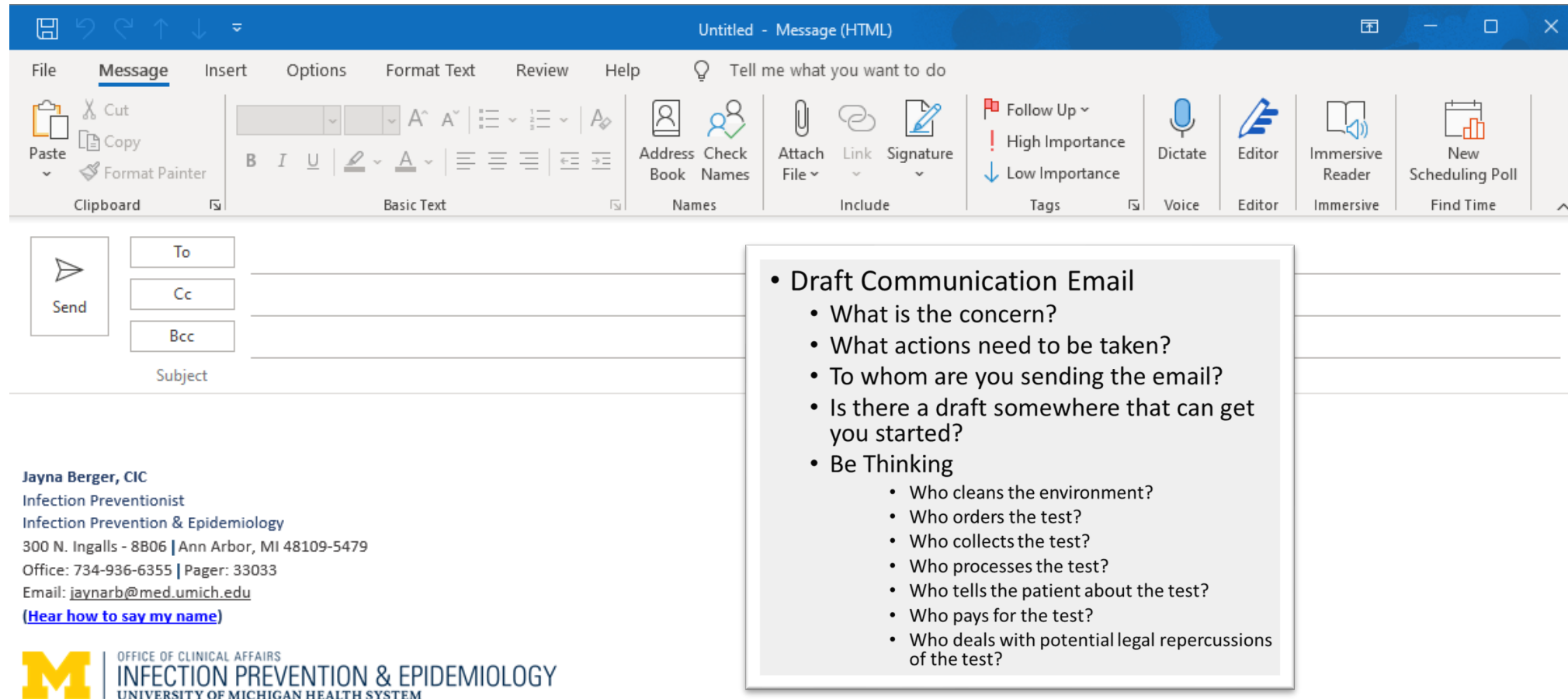
- Given commonalities identified on your linelist, who should be screened?

Name	MRN	Location	CRE Test Date	CRE Test Result

Why would a patient make this list? Are you missing anything?

Part 2- Investigation

Group Activity Tool Email Communication



The screenshot shows an email client window titled "Untitled - Message (HTML)". The interface includes a ribbon with tabs: File, Message, Insert, Options, Format Text, Review, and Help. The "Message" tab is active, showing options for Clipboard (Paste, Cut, Copy, Format Painter), Basic Text (Bold, Italic, Underline, Text Color, Background Color, Paragraph), Names (Address Book, Check Names), Include (Attach File, Link, Signature), Tags (Follow Up, High Importance, Low Importance), Voice (Dictate), Editor (Editor), Immersive (Immersive Reader), and Find Time (New Scheduling Poll). Below the ribbon is a "Send" button and fields for To, Cc, Bcc, and Subject. The email body contains contact information for Jayna Berger, CIC, an Infection Preventionist at the University of Michigan Health System. A callout box on the right lists bullet points for drafting a communication email.

Jayna Berger, CIC
Infection Preventionist
Infection Prevention & Epidemiology
300 N. Ingalls - 8B06 | Ann Arbor, MI 48109-5479
Office: 734-936-6355 | Pager: 33033
Email: jaynarb@med.umich.edu
([Hear how to say my name](#))

OFFICE OF CLINICAL AFFAIRS
INFECTION PREVENTION & EPIDEMIOLOGY
UNIVERSITY OF MICHIGAN HEALTH SYSTEM

- Draft Communication Email
 - What is the concern?
 - What actions need to be taken?
 - To whom are you sending the email?
 - Is there a draft somewhere that can get you started?
 - Be Thinking
 - Who cleans the environment?
 - Who orders the test?
 - Who collects the test?
 - Who processes the test?
 - Who tells the patient about the test?
 - Who pays for the test?
 - Who deals with potential legal repercussions of the test?

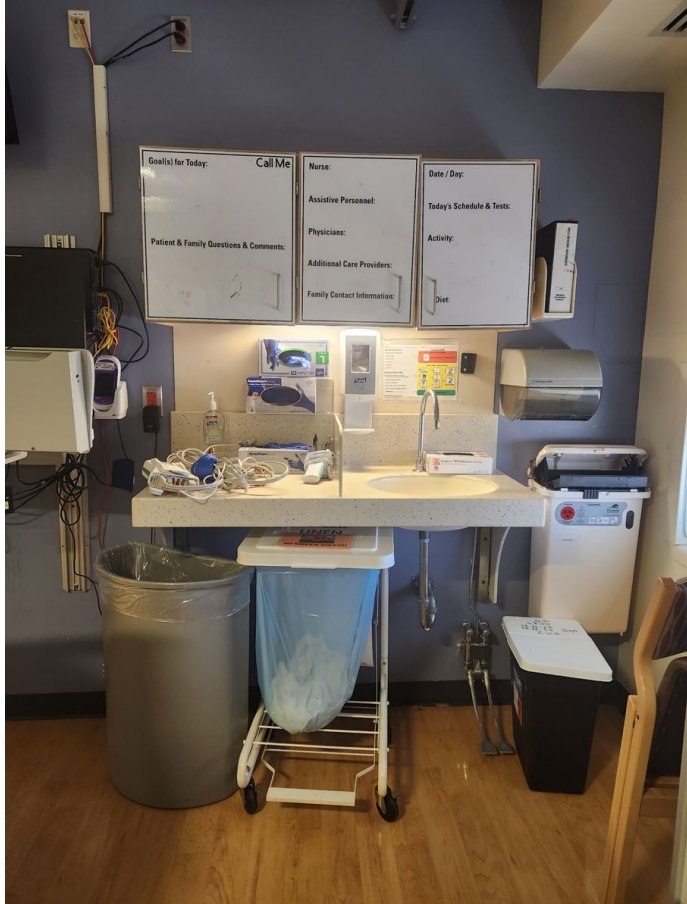
Part 2- Investigation

Group Activity Tool, Pics from Gemba to patient ready MICU Room 1840



Part 2- Investigation

Group Activity Tool, Pics and notes from MICU and “patient ready” room 1840



- You see that room 1840 is the largest on the unit and has an ante-room with sink
- You witness healthcare workers entering supply cabinets without performing hand hygiene in other occupied patient rooms
- There is clutter on the counters near the sinks
- Patient care supplies stored in the “splash zone”
- Respiratory care supplies in empty room look like they may have been left over from the previous patient
- Unknown substances on the toilet

Part 2- Investigation

Post Group Activity Check-In Questions (30 mins)

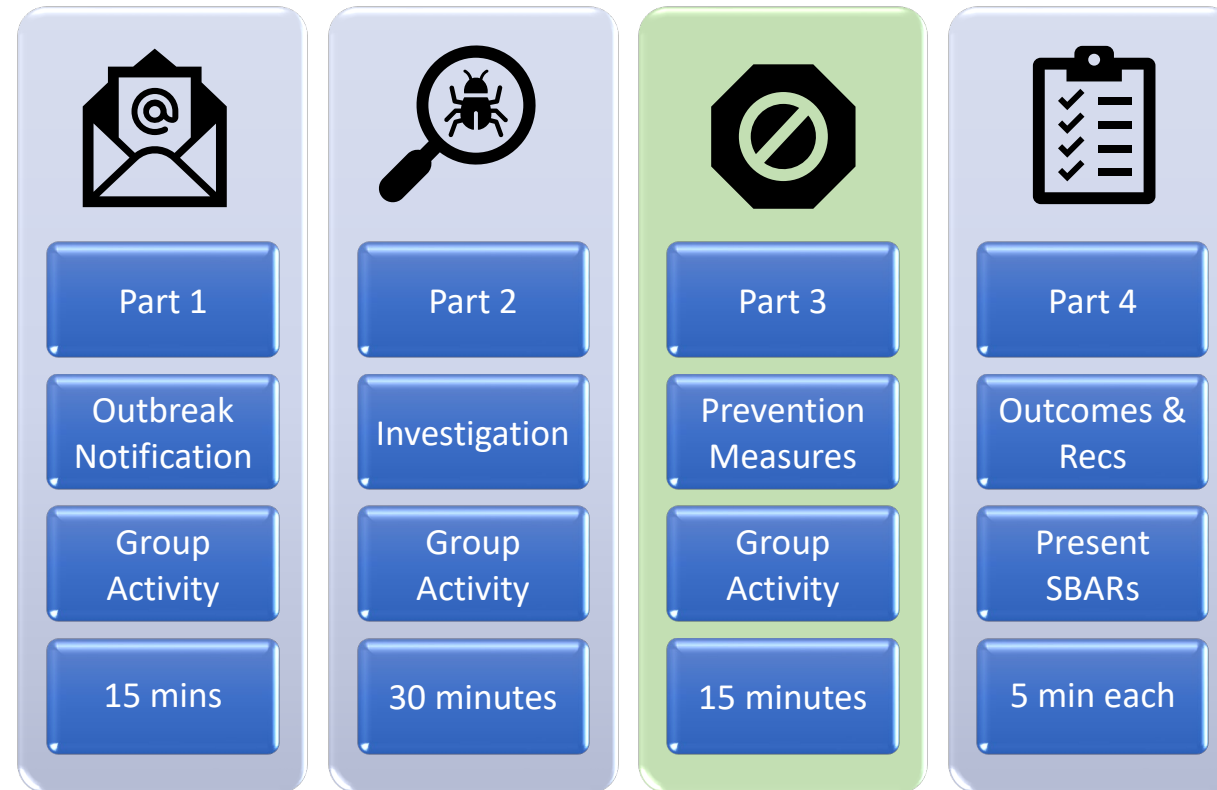
- What did your linelist tell you? Were you missing anything?
 - What did you learn from the Analyst email?
- What actions on the MDRO Action script had you already done?
 - What did you still need to do?
 - What patients did you decide to test?
- From the CP policy, what are the special environmental cleaning requirements for patients with CRE? Were all patient environments cleaned according to policy?
- Who did you communicate to? What was the content of your communication?
- What environmental locations did you test?

Part 2- Investigation

Post Group Activity Check-In Questions & Answers

- What did your linelist tell you? Were you missing anything?
 - Not only room but procedures were common as well. Including procedures performed with equipment stored on the unit. Recommend unit equipment cleaning, i.e. ultrasound machines.
 - What did you learn from the Analyst email?
 - That second patient was not exposed to reprocessed scopes, so those should come off your list of possible sources
- What actions on the MDRO Action script had you already done? Ensured EMR coding
 - What did you still need to do?
 - A LOT!
 - What patients did you decide to test?
 - All Patients currently in ICU and any unknown patients that were in the room in-between Mr. Smith and Ms. Brown and after
- From the CP policy, what are the special environmental cleaning requirements for patients with CRE? Were all patient environments cleaned according to policy?
 - Whole room decontamination must be done for CRE
 - Did you realize that Room 1840 was not decontaminated after Ms. Brown discharged from it? She was not yet known to be colonized with CRE at the time of her discharge from that room to 3B. Gold star if you saw this!
- Who did you communicate to? What was the content of your communication?
 - You sent the communication to the MICU Leadership, Patient Providers, Your IP Director, Hospital Epidemiologists, Risk Management, Housekeeping, Microbiology lab
 - Use CRE High Alert Email as base, modify as appropriate.
- What environmental locations did you test?
 - Participant choice! I would have chosen the 2 Sinks in room, toilet, toilet base, supply cabinet, doors, and a few flat surfaces. Also a few in other patient rooms or high touch surfaces

The Outbreak Breakdown



Part 3- Prevention Measures

- It's 2 days later, you and your hand hygiene observers have been doing observations on both CRE patient rooms. Clearly staff are aware and on high alert. Compliance has never been better!
- All patient CRE screening swabs have resulted this morning and are negative
- All environmental cultures have preliminary results that are positive for common water and skin organisms, but negative for *Klebsiella*
- Due to visible organic matter in room 1840, Housekeeping has recleaned and performed whole room decontamination...again.
- All unit equipment and common surfaces have been re-cleaned
- Due to your observations, all supplies in the cabinets in the patient room were either disinfected or discarded

Part 3- Prevention Measures

Group Activity (10 mins)

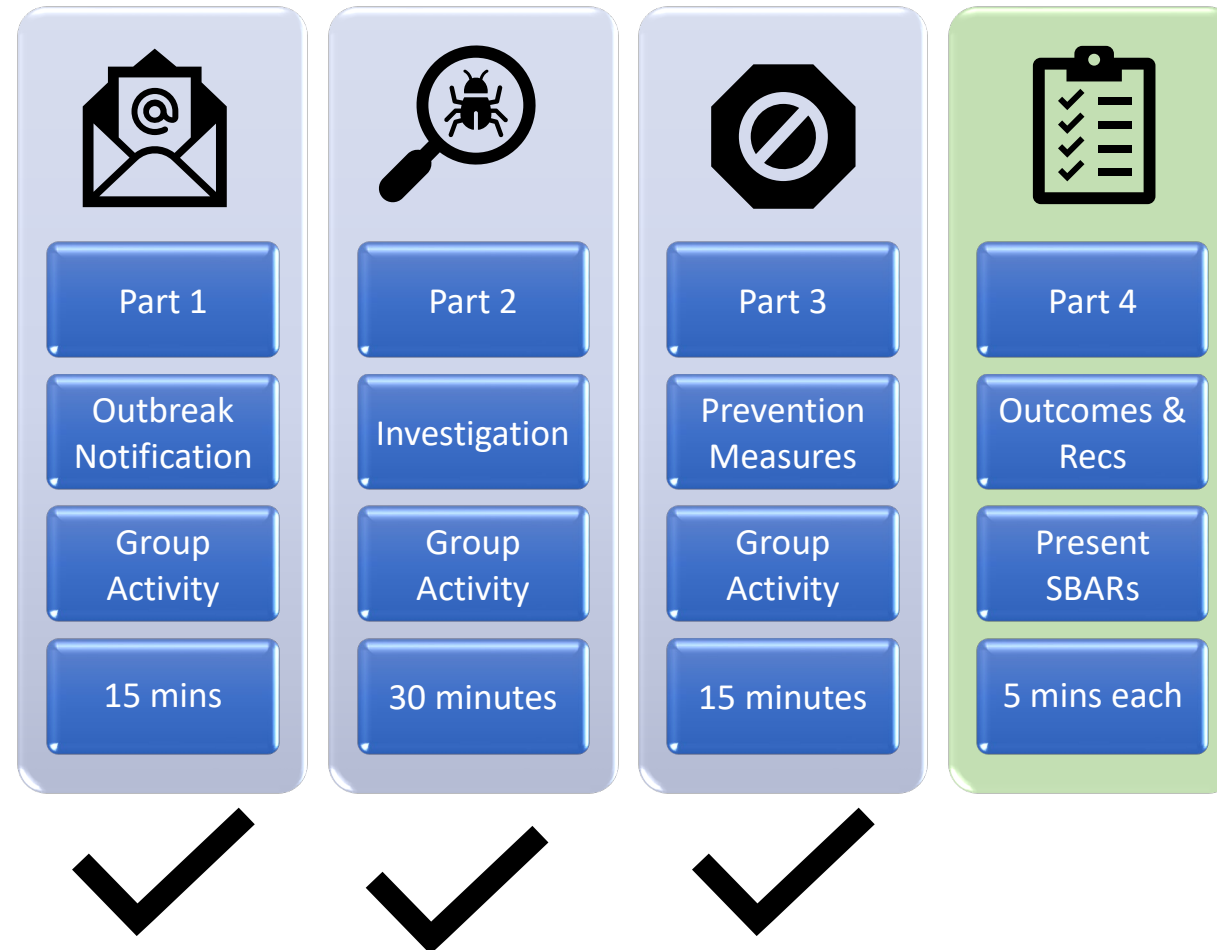
- After your initial investigation, you decide that both the unit staff and housekeeping have opportunities to improve.
- Create an SBAR to share your process improvement recommendations.
- Groups will have 10 minutes to complete SBAR table

S ituation	The bottom line (the problem, the issue)
B ackground	What do you know? (History, past events, past fixes)
A ssessment	What is happening now? (Current findings, needs, concerns)
R ecommendations	What's next? (recommendation, request, plan)

2023 Novel MDRO Transmission SBAR

S ituation	Infection Prevention was notified of
B ackground	CRE NDM/OXA is an organism of concern because
A ssessment	Our investigation identified
R ecommendations	To prevent future transmission, Infection prevention recommends

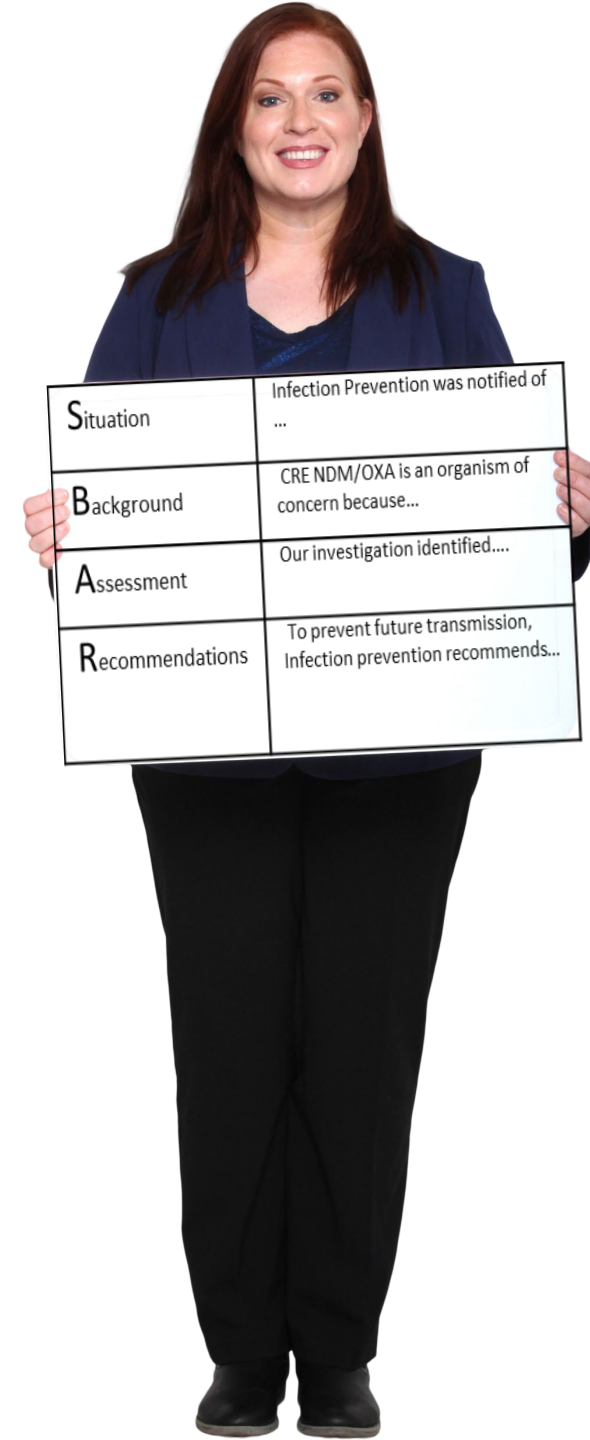
The Outbreak Breakdown



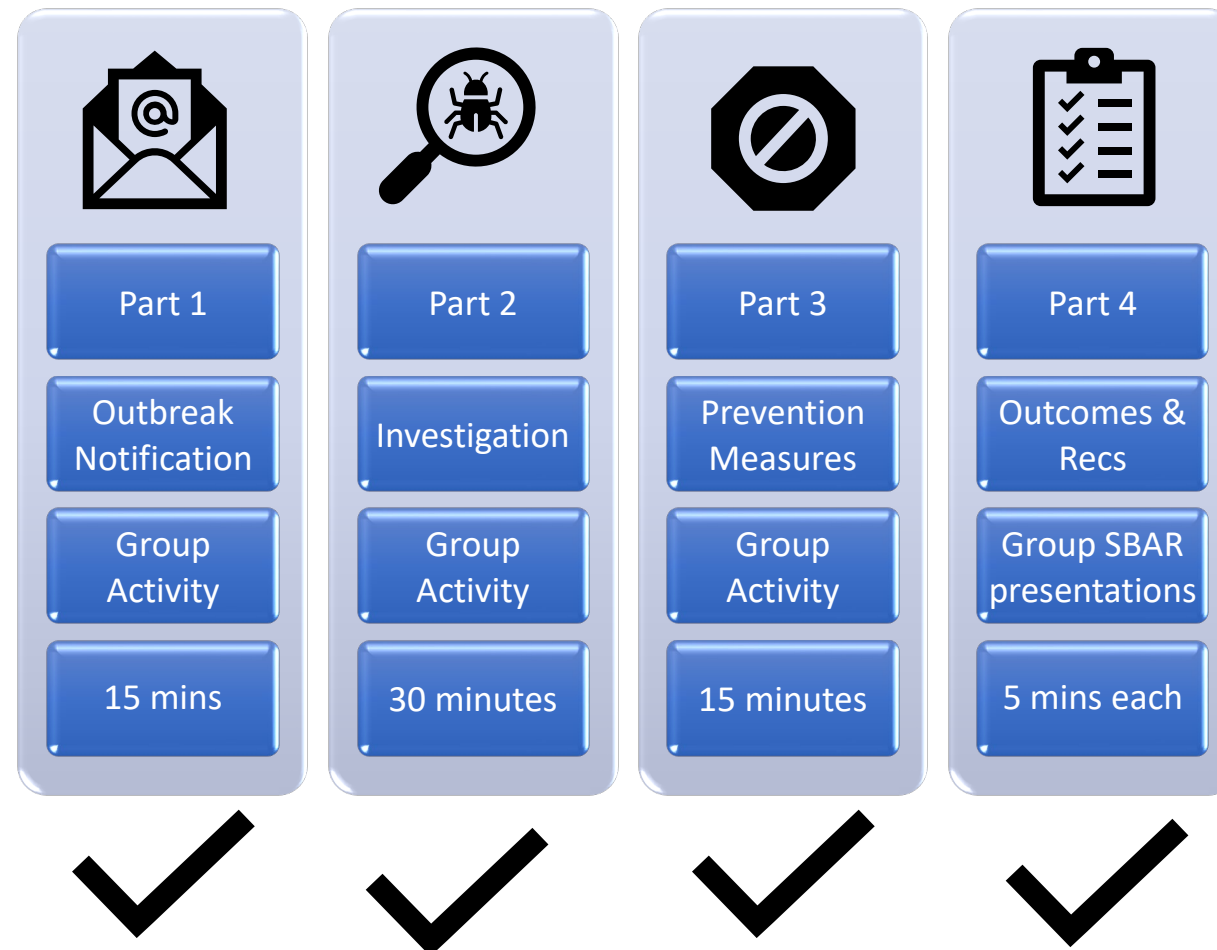
Part 4- Outcomes and recommendations

Group Activity

- Share your SBAR with leadership and when appropriate, declare your outbreak over
- Volunteer groups will have 3-5 mins to share their SBAR



The Outbreak Breakdown



Further Points to Ponder

- Would you want to re-culture the 1840 environment after the cleaning? Why or why not?
- If anyone from your first round of testing was positive, what would be your next steps?
- If any environmental cultures were positive, what would be your next steps?
- That room had an airborne isolation ante-room...they rarely have patient that require Airborne Isolation in the MICU. What do they use that room for anyway?
- If Ms. Brown's positive urine culture wasn't treated, why was she cultured?