



AUR Module Value Set Resources

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Objectives

By the end of this session, you will be able to:

- Describe Antimicrobial Use and Resistance (AUR) Module value set resources provided by NHSN
- Determine the purpose of each value set resource and how they apply to AUR Module data
- Determine where to find updates to the AUR Module value set resources

Intended Audience

- Individuals responsible for/involved in AUR Module implementation, maintenance, and advanced analysis
 - Hospital pharmacists, Infection Preventionists, informaticists/information technology (IT) professionals
 - Software vendors
 - NHSN Group users (e.g., health systems)

What is a value set versus a code system?

- Value set: Set terms and corresponding codes from one or more code systems that define clinical concepts to support effective & interoperable health information exchange
 - Examples: organisms, antimicrobials
- Code system: Collection of concepts (ideas) with unique identifiers that exist in some sort of structure
 - Examples: SNOMED CT, LOINC

Sources:

<https://vsac.nlm.nih.gov/>

<https://mmshub.cms.gov/measure-lifecycle/measure-specification/specify-code/code-systems-vocabularies-terminologies>

NHSN use of value sets & code systems

- NHSN uses a lot of value sets from various code systems!
 - SNOMED CT (e.g., organisms)
 - RxNorm (e.g., antimicrobials)
 - LOINC (e.g., antimicrobial susceptibility tests)
 - HSLOC & CDCNHSN (e.g., NHSN location codes, specific AU routes of administration)
 - Proprietary code systems created by NHSN
 - And more!

How does NHSN use value sets?

- Create a list of what is eligible to be reported
- Each item in the list has a specific code used to represent that entity
- Codes from value sets are used in the Clinical Document Architecture (CDA) files to report data to NHSN

- Example:
 - List of antimicrobials reported for Antimicrobial Use (AU) Option
 - Assign each antimicrobial the corresponding RxNorm ingredient level code
 - Use RxNorm codes in the AU CDA file for reporting AU data to NHSN

How do facilities & vendors use NHSN value sets?

- Review NHSN prescribed value sets
- Review facility level data to determine what code system is used
 - Terminology standards (SNOMED CT, LOINC, RxNorm, etc.)
 - Local codes created by facility
- Map codes used by facility to the codes specified by NHSN
 - Completed by facility or vendor
- Plan for yearly updates/checks

Focused on AUR value sets

- AU Option
 - Antimicrobials
 - Routes of administration
- AR Option
 - Pathogens
 - Specimens
 - Antimicrobial susceptibility panels (made up of a group of susceptibility tests)

About the NHSN IDM

- IDM: Information Data Model
- Contains information on value sets, variables/data elements, and business rules used in NHSN
- Used by:
 - NHSN developers – all content
 - Software vendors – some content
 - Hospitals/health systems – small amount of content

About the IDM (cont.)

- Updated according to changes in each NHSN release
 - **Green** = change
- First two columns of each tab show NHSN version # and associated Change Request (CR) or defect for the change

	A	B
	Planned	
1	Version ▾	CR/ Defect ▾
2	11.1.0	C3219
3		
4	11.1.0	C3219

- Found on the CDA Toolkits page:
<https://www.cdc.gov/nhsn/cdaportal/toolkits.html>

AU Option antimicrobials

Laura Blum, MPH

Eligible AU Option antimicrobials (IDM)

- Currently 96 antimicrobials eligible for 2024 AU Option reporting
 - Must include all in reporting with value of specific number, 0, or NA
- List available in “Antimicrobial Ingredients 2024” tab in IDM
- IDM included in AU and AR Toolkits, which can be found on the NHSN CDA Submission Support Portal (CSSP):
<https://www.cdc.gov/nhsn/cdaportal/toolkits.html>

Implementation Toolkits & Resources

[Print](#)

Updated January 2, 2024

On This Page

- [Toolkits](#)
- [Release 12.0](#)
- [Protocols, Forms & Training Links](#)
- [Links & Resources](#)



Toolkits

CDA import files are created based on the NHSN HAI Implementation Guides (IG). Due to NHSN protocol changes, CDA imports for specific events and summary reports are required to be created per specific IG versions for specific year(s).

The CDA contains required template identifiers, specific vocabulary, specific constraints, etc., that are detailed in the IG. The creation of CDA is more complicated than the creation of CSV files and is usually mediated by an infection control software system that packages the data into the correct format.

Listed below are the most recent IG and supplemental documents that you will need to reference for CDA creation. Please review the [Guide to CDA versions](#) to determine which IG you will need for specific events and summary reports.

CDA Toolkits

Antimicrobial Use & Resistance (AUR) 	
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- [Antimicrobial Resistance \(AR\) Toolkit](#) [ZIP - 6 MB] (Print only content)
- [Antimicrobial Use \(AU\) Toolkit](#) [ZIP - 3 MB] (Print only content)

Antimicrobial Ingredients tab in IDM

- Code
 - Local mnemonic created by NHSN, currently used in NHSN analysis reports
- displayName
 - Abbreviated and full name of antimicrobial as they appear in NHSN
- Valueset AURPH
 - “X” indicates antimicrobial is eligible for AU Option reporting

Planned Version	Defect ICR	Value	Code	displayName	codeSystem	Valueset AURPH
		620	AMAN	AMAN - Amantadine	2.16.840.1.113883.6.88	X
9.2	2003	641	AMK	AMK - Amikacin	2.16.840.1.113883.6.88	X
		723	AMOX	AMOX - Amoxicillin	2.16.840.1.113883.6.88	X
		197	AMC	AMOX - Amoxicillin with Clavulanate	2.16.840.1.113883.6.88	X

*Source for RxNorm codes: <https://mor.nlm.nih.gov/RxNav/>

Store the value in "Code" in the AREvent.drug field. Create a map between value and code.

binding="DYNAMIC"

Antimicrobial Ingredients tab in IDM (cont.)

- Value
 - RxNorm code reported to NHSN for the antimicrobial
- codeSystem
 - Object identifier (OID) used for RxNorm codes in the CDA file

Planned Version	Defect /CR	Value	Code	displayName	codeSystem	Valueset AURPH
		620	AMAN	AMAN - Amantadine	2.16.840.1.113883.6.88	X
9.2	2003	641	AMK	AMK - Amikacin	2.16.840.1.113883.6.88	X
6		723	AMOX	AMOX - Amoxicillin	2.16.840.1.113883.6.88	X
7		197	AMOXWC	AMOX - Amoxicillin with clulana	2.16.840.1.113883.6.88	X

Antimicrobial Ingredients tab in IDM (cont.)

- Changes since previous version of the IDM are highlighted green

Planned Version	Defect /CR	Value	Code	displayName	codeSystem	Valueset AURPH
9.2	2003	2187	CTET	CTET - Cefotetan	2.16.840.1.113883.6.88	X
10.1	2835	1539239	DALBA	DALBA - Dalbavancin	2.16.840.1.113883.6.88	X
		22299	DAPTO	DAPTO - Daptomycin	2.16.840.1.113883.6.88	X
10.1	2835	1927663	DELAF	DELAF - Delafloxacin	2.16.840.1.113883.6.88	X
		3356	DICLOX	DICLOX - Dicloxacillin	2.16.840.1.113883.6.88	X
9.2	2003	3640	DOXY	DOXY - Doxycycline	2.16.840.1.113883.6.88	X
9.4	2125	2055906	ERAV	ERAV - Eravacycline	2.16.840.1.113883.6.88	X
		325642	ERTA	ERTA - Ertapenem	2.16.840.1.113883.6.88	X
		4053	ERYTH	ERYTH - Erythromycin	2.16.840.1.113883.6.88	X
10.1	2835	1111103	FIDAX	FIDAX - Fidaxomicin	2.16.840.1.113883.6.88	X
		4450	FLUCO	FLUCO - Fluconazole	2.16.840.1.113883.6.88	X
9.2	2003	4550	FOSFO	FOSFO - Fosfomicin	2.16.840.1.113883.6.88	X
12.0	C4049	138099	GEMIF	GEMIF - Gemifloxacin	2.16.840.1.113883.6.88	X
10.1	2835	1596450	GENTA	GENTA - Gentamicin	2.16.840.1.113883.6.88	X
9.2	2003	34482	IMPWVC	IMPWVC - Imipenem with Cilastatin	2.16.840.1.113883.6.88	X
5	21		IMCIC	IMCIC - Imipenem/Cilastatin	2.16.840.1.113883.6.88	X

Eligible AU Option antimicrobials (Eligible Agents spreadsheet)

- List of Antimicrobial Agents Eligible for AUR Module can be found on AUR Module website under “Supporting Materials”:
<https://www.cdc.gov/nhsn/psc/aur/index.html>

Supporting Materials

[How to Report Zero AR Events](#) [PDF - 400 KB]

[User Rights in NHSN - AUR Module - January 2021](#) [PDF - 450 KB]

[Phenotype Definitions for AR Option Data - January 2024](#) [PDF - 200 KB]

[Promoting Interoperability - Guidance for NHSN Facilities - March 2023](#) [PDF - 500 KB]

[Promoting Interoperability - Guidance for NHSN Facilities - March 2023 - En Español](#) [PDF - 358 KB]

[2014 Baseline SAAR Details - December 2018](#) [PDF - 100 KB]

[List of Antimicrobial Agents Eligible for AUR Module - January 2024](#) [XLSX - 500 KB]


List of Antimicrobial Agents Eligible for AUR Module

- “AU - Antimicrobial Agents” tab contains comprehensive list of all antimicrobials ever eligible for AU Option reporting
- May be easier to read and understand than IDM

Antimicrobial Agent	Value ^a	NHNS Drug Code	Antimicrobial Category	Antimicrobial Class ^b	Antimicrobial Subclass ^b	First Reported ^c	Last Reported	Notes:	Color Key
AMANTADINE	620	AMAN	Anti-influenza	M2 ion channel inhibitors		Jan-10			Newly FDA approved drug
AMIKACIN	641	AMK	Antibacterial	Aminoglycosides		Jan-10			Drug not new but added due to change in RxNorm coding
AMIKACIN LIPOSOMAL	2059180	AMIKLIP	Antibacterial	Aminoglycosides		Oct-18		First reported date is the date of FDA Approval	Drug removed
AMOXICILLIN	723	AMOX	Antibacterial	Penicillins	Aminopenicillin	Jan-10			
AMOXICILLIN/CLAVULANATE	19711	AMOXWC	Antibacterial	B-lactam/ B-lactamase inhibitor combination		Jan-10			
AMPHOTERICIN B	732	AMPH	Antifungal	Polyenes		Jan-10			
AMPHOTERICIN B LIPID COMPLEX	2001759	AMPBLC	Antifungal	Polyenes		Jan-20		Not a new drug but added due to change in RxNorm coding	
AMPHOTERICIN B LIPOSOMAL	236594	AMPHOT	Antifungal	Polyenes		Jan-10			
AMPICILLIN	733	AMP	Antibacterial	Penicillins	Aminopenicillin	Jan-10			
AMPICILLIN/SULBACTAM	1009148	AMPIWS	Antibacterial	B-lactam/ B-lactamase inhibitor combination		Jan-10			
ANIDULAFUNGIN	341018	ANID	Antifungal	Echinocandins		Jan-10			
AZITHROMYCIN	18631	AZITH	Antibacterial	Macrolides		Jan-10			
AZTREONAM	1272	AZT	Antibacterial	Monobactams		Jan-10			
BALOXAVIR MARBOXIL	2099995	BALMAR	Anti-influenza	Polymerase acidic endonuclease inhibitors		Oct-18		First reported date is the date of FDA Approval	
CASPOFUNGIN	140108	CASPO	Antifungal	Echinocandins		Jan-10			
CEFACLOR	2176	CEFAC	Antibacterial	Cephalosporins	Cephalosporin 2nd generation	Jan-10			
CEFADROXIL	2177	CEFAD	Antibacterial	Cephalosporins	Cephalosporin 1st generation	Jan-10			
CEFAZOLIN	2180	CEFAZ	Antibacterial	Cephalosporins	Cephalosporin 1st generation	Jan-10			
CEFDINIR	25037	CEFDIN	Antibacterial	Cephalosporins	Cephalosporin 3rd generation	Jan-10			
CEFDITOREN	83682	CEFDIT	Antibacterial	Cephalosporins	Cephalosporin 3rd generation	Jan-10	Dec-19		
CEFEPIME	20481	CEFFP	Antibacterial	Cephalosporins	Cephalosporin 4th generation	Jan-10			

List of Antimicrobial Agents Eligible for AUR Module (cont.)

- Antimicrobial Agent
 - Name of antimicrobial as it appears in NHSN
- Antimicrobial Category
 - Antibacterial, antifungal, antiviral, anti-influenza, or monoclonal antibody
- Antimicrobial Class
- Antimicrobial Subclass



	A	B	C	D	E	F	G	H	I	J	K
1	Antimicrobial Agent	Value *	NHSN Drug Code	Antimicrobial Category	Antimicrobial Class ^b	Antimicrobial Subclass ^b	First Reported ^c	Last Reported	Notes:		Color Key
2	AMANTADINE	620	AMAN	Anti-influenza	M2 ion channel inhibitors		Jan-10				Newly FDA approved drug
3	AMIKACIN	641	AMK	Antibacterial	Aminoglycosides		Jan-10				Drug not new but added due to change in RxNorm coding
4	AMIKACIN LIPOSOMAL	2059180	AMIKLIP	Antibacterial	Aminoglycosides		Oct-18		First reported date is the date of FDA Approval		Drug removed
5	AMOXICILLIN	723	AMOX	Antibacterial	Penicillins	Aminopenicillin	Jan-10				
6	AMOXICILLIN/CLAVULANATE	19711	AMOXWC	Antibacterial	B-lactam/ B-lactamase inhibitor combination		Jan-10				

List of Antimicrobial Agents Eligible for AUR Module (cont.)

- Value
 - RxNorm code reported to NHSN for the antimicrobial
- NHSN Drug Code
 - Local mnemonic created by NHSN, currently used in NHSN analysis reports



	A	B	C	D	E	F	G	H	I	J	K
	Antimicrobial Agent	Value ^a	NHSN Drug Code	Antimicrobial Category	Antimicrobial Class ^b	Antimicrobial Subclass ^b	First Reported ^c	Last Reported	Notes:		Color Key
1	AMANTADINE	620	AMAN	Anti-influenza	M2 ion channel inhibitors		Jan-10				Newly FDA approved drug
2	AMIKACIN	641	AMK	Antibacterial	Aminoglycosides		Jan-10				Drug not new but added due to change in RxNorm coding
3	AMIKACIN LIPOSOMAL	2059180	AMIKLIP	Antibacterial	Aminoglycosides		Oct-18		First reported date is the date of FDA Approval		Drug removed
4	AMOXICILLIN	723	AMOX	Antibacterial	Penicillins	Aminopenicillin	Jan-10				
5	AMOXICILLIN/CLAVULANATE	19711	AMOXWC	Antibacterial	B-lactam/ B-lactamase inhibitor combination		Jan-10				

List of Antimicrobial Agents Eligible for AUR Module (cont.)

- First Reported
 - First date antimicrobial can be submitted to AU Option
- Last Reported
 - Last date antimicrobial can be submitted to AU Option for removed antimicrobials
- Notes
 - Any relevant info for reporting each antimicrobial

A	B	C	D	E	F	G	H	I	J	K
Antimicrobial Agent	Value ^a	NHSN Drug Code	Antimicrobial Category	Antimicrobial Class ^b	Antimicrobial Subclass ^b	First Reported ^c	Last Reported	Notes:		Color Key
AMANTADINE	620	AMAN	Anti-influenza	M2 ion channel inhibitors		Jan-10				Newly FDA approved drug
AMIKACIN	641	AMK	Antibacterial	Aminoglycosides		Jan-10				Drug not new but added due to change in RxNorm coding
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AMOXICILLIN	723	AMOX	Antibacterial	Penicillins	Aminopenicillin	Jan-10				
AMOXICILLIN/CLAVULANATE	19711	AMOXWC	Antibacterial	B-lactam/ B-lactamase inhibitor combination		Jan-10				

List of Antimicrobial Agents Eligible for AUR Module (cont.)

- Antimicrobials added since AU Option was created are highlighted teal
- Antimicrobials with changes to their RxNorm codes are highlighted purple
- Removed antimicrobials are highlighted orange

Antimicrobial Agent	Value ^a	NHSN Drug Code	Antimicrobial Category	Antimicrobial Class ^b	Antimicrobial Subclass ^b	First Reported ^c	Last Reported	Notes:	Color Key
AMANTADINE	620	AMAN	Anti-influenza	M2 ion channel inhibitors		Jan-10			Newly FDA approved drug
AMIKACIN	641	AMK	Antibacterial	Aminoglycosides		Jan-10			Drug not new but added due to change in RxNorm coding
AMIKACIN LIPOSOMAL	2059180	AMIKLIP	Antibacterial	Aminoglycosides		Oct-18		First reported date is the date of FDA Approval	Drug removed
AMOXICILLIN	723	AMOX	Antibacterial	Penicillins	Aminopenicillin	Jan-10			
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AMPHOTERICIN B		AMPH	Antifungal	Polyenes		Jan-10			
AMPHOTERICIN B LIPID COMPLEX	2001759	AMPBLC	Antifungal	Polyenes		Jan-20		Not a new drug but added due to change in RxNorm coding	
AMPHOTERICIN B LIPOSOMAL	236594	AMPHOT	Antifungal	Polyenes		Jan-10			
AMPICILLIN	733	AMP	Antibacterial	Penicillins	Aminopenicillin	Jan-10			
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CEFAZOLIN	2180	CEFAZ	Antibacterial	Cephalosporins	Cephalosporin 1st generation	Jan-10			
CEFDINIR	25037	CEFDIN	Antibacterial	Cephalosporins	Cephalosporin 3rd generation	Jan-10			
CEFDITOREN	83682	CEFDIT	Antibacterial	Cephalosporins	Cephalosporin 3rd generation	Jan-10	Dec-19		
CEFEPIME	70481	CEFFP	Antibacterial	Cephalosporins	Cephalosporin 4th generation	Jan-10			

AU Option routes of administration

Laura Blum, MPH

AU Option routes (IDM)

- AU Option accepts four routes of administration
 - Intravenous (IV), intramuscular (IM), digestive, and respiratory
- Route codes listed at the bottom of “Denom AU” tab in the IDM
- There is only one code accepted for each route

	B	C	D	E	F	G	H	I	J	K	L
1	Planned Version	Defect /CR	NHSN Table	NHSN Column	Value Set	Description	Entry Method	Required	Format	Values	Business Rules
	8.5	1349	PSSummaryAU	numDaysPresent		Total number of days present	numeric entry	R	Numeric		“Total number of days present” must be >= 0 If locCDC in ‘FACWIDIN’ then Total Number of days must be <= 99999 Otherwise, must be <= 50000
16											
17	11.1.0	C3626	PSSummaryAU	drugIngredient		Antimicrobial Ingredient	CDA entry only	R	Character(10)	See Antimicrobial Ingredient tab	If eventDate >= 1/1/2023, all drugs listed in “Antimicrobial ingredients 2022” are required for record to be saved.
18	6.4	337	PSSummaryAU	numTherapyDays		Number of Therapy Days	CDA entry only	R	Numeric		must be >= 0 Allow entry of “NA”, not applicable.
19	6.4	337	PSSummaryAU	numAdmissions		Number of Admissions	CDA entry only	C	Numeric		must be >= 0, entry only allowed and required if locCDC = FACWIDIN
20	6.4	337	PSSummaryAU	routeDrugAdmin	AURDescRoute/371	Route of administration	CDA entry only	R	Character(10)		
21											
22	The following map should be created to map the standard code passed by CDA to the NHSN code for route:										
23			DIGEST	2522-1							
24			RESP	2523-9							
25			INTRAVEN	47625008							
26			INTRAMUSC	78421000							

Note about AU Option route codes

- Digestive and respiratory route codes are from CDCNHSN code system
- IV and IM routes are SNOMED CT codes

	B	C	D	E	F	G	H	I	J	K	L
1	Planned Version	Defect /CR	NHSN Table	NHSN Column	Value Set	Description	Entry Method	Required	Format	Values	Business Rules
	8.5	1349	PSSummaryAU	numDaysPresent		Total number of days present	numeric entry	R	Numeric		"Total number of days present" must be >= 0 If locCDC in 'FACWIDIN' then Total Number of days must be <= 99999 Otherwise, must be <= 50000
16											
17	11.1.0	C3626	PSSummaryAU	drugingredient		Antimicrobial Ingredient	CDA entry only	R	Character(10)	See Antimicrobial Ingredient tab	If eventDate >= 1/1/2023, all drugs listed in "Antimicrobial ingredients 2022" are required for record to be saved.
18	6.4	337	PSSummaryAU	numTherapyDays		Number of Therapy Days	CDA entry only	R	Numeric		must be >= 0 Allow entry of "NA", not applicable.
19	6.4	337	PSSummaryAU	numAdmissions		Number of Admissions	CDA entry only	C	Numeric		must be >= 0, entry only allowed and required if locCDC = FACWIDEIN
20	6.4	337	PSSummaryAU	routeDrugAdmin	AURDescRoute/371	Route of administration	CDA entry only	R	Character(10)		
21											
22	The following map should be created to map the standard code passed by CDA to the NHSN code for route:										
23			DIGEST	2522-1							
24			RESP	2523-9							
25			INTRAVEN	47625008							
26			INTRAMUSC	78421000							

SNOMED CT AU Routes of Administration

- Many concepts can represent IV, IM, digestive, and respiratory* antimicrobial administrations
- Suggested roll-up to four accepted route of administration codes included in SNOMED CT AU Routes of Administration spreadsheet in the AU Toolkit

*Intrapleural administrations are not eligible for AU Option reporting and should be excluded from respiratory administrations

	A	B	C	D
1	Note: Antimicrobial usage is sub-stratified within the NHSN AU module based on four routes of administration: Respiratory, Intramuscular, Intravascular, and Digestive. The following SNOMED codes can be used by vendors to standardize AU reporting from participating facilities based on the route of administration. Other routes of administration not listed here are excluded from this module (i.e., antibiotic locks, intraperitoneal, intraventricular, irrigation, topical).			
2				
3				
4	Route of Administration Values to be used for the NHSN Antimicrobial Use Module (Using January 2012 SNOMED Hierarchy)			
5	Sub-stratified Route Type	Value Accepted by the AU IG	SNOMED routes included within sub-stratified route type	SNOMED CT_CID
6	Respiratory tract route (includes inhaled and nebulized antimicrobials)	2523-9	none	-
7				
8				
9	Intramuscular route (IM)	78421000	none	-
10				
11				
12	Intravascular route (IV)	47625008	intravenous route	47625008
13			intravenous central route	418114005
14			intravenous peripheral route	419993007
15				
16				
17	Digestive tract route	2522-1	gastroenteral route	372454008
18			enteral route	417985001
19			intracolonic route	448492006
20			colostomy route	418162004
21			rectal route	37161004
22			intra-duodenal route	418887008
23			nasoduodenal route	420218003
24			intraileal route	447026006
25			ileostomy route	419954003
26			intrajejunal route	448491004
27			jejunostomy route	127491008
28			nasojejunal route	418730005
29			gastro-intestinal stoma route	418136008
30			esophagostomy route	420163009
31			gastrostomy route	127490009
32			intraesophageal route	445752009
33			intra-gastric route	445768003
34			nasogastric route	127492001
35			orogastric route	418441008
36				

SNOMED CT AU Routes of Administration (cont.)

- Value Accepted by the AU IG
 - Code reported to NHSN
- SNOMED CT routes included within sub-stratified route type
 - Suggested concepts to roll-up to accepted codes
- SNOMED CT_CID
 - SNOMED CT codes for suggested concepts, if applicable

Note: Antimicrobial usage is sub-stratified within the NHSN AU module based on four routes of administration: Respiratory, intramuscular, intravascular, and Digestive. The following SNOMED codes can be used by vendors to standardize AU reporting from participating facilities based on the route of administration. Other routes of administration not listed here are excluded from this module (i.e., antibiotic locks, intraperitoneal, intraventricular, irrigation, topical).

Route of Administration Values to be used for NHSN Antimicrobial Use Module (Using January 2012 SNOMED Hierarchy)	Value Accepted by the AU IG	SNOMED routes included within sub-stratified route type	SNOMED CT_CID
Respiratory tract route (includes inhaled and nebulized antimicrobials)	2523-9	none	-
Intramuscular route (IM)	78421000	none	-
Intravascular route (IV)	47625008	intravenous route intravenous central route intravenous peripheral route	47625008 418114005 419993007
Digestive tract route	2522-1	gastroenteral route enteral route intra-colonic route colostomy route rectal route intraduodenal route nasoduodenal route intraileal route ileostomy route intrajejunal route jejunostomy route nasojejunal route gastro-intestinal stoma route esophagostomy route gastrostomy route intraesophageal route intra-gastric route nasogastric route orogastric route	372454008 417985001 448492006 418162004 37161004 418887008 420218003 447026006 419954003 448491004 127491008 418730005 418136008 420163009 127490009 445752009 445768003 127492001 418441008

AR Option pathogens

Laura Blum, MPH

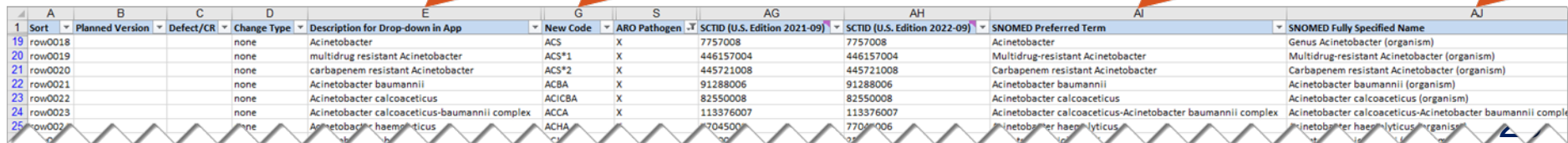
AR Option pathogens (IDM)

- All pathogen codes accepted by the NHSN application listed in the “Pathogen Codes 2024” tab in the IDM
 - Pathogens eligible for AR Option reporting have an “X” in the “ARO Pathogen” column
- “Pathogen Codes 2024-Synonym” tab is not used for AR Option reporting

Sort	Planned Version	Defect/CR	Change Type	Description for Drop-down in App	New Code	ARO Pathogen	SCTID (U.S. Edition 2021-09)	SCTID (U.S. Edition 2022-09)	SNOMED Preferred Term	SNOMED Fully Specified Name
1	row0001		none	Abiotrophia	ABISP		115161005	115161005	Abiotrophia	Genus Abiotrophia (organism)
2	row0002		none	Abiotrophia defectiva	STRDF		113714003	113714003	Abiotrophia defectiva	Abiotrophia defectiva (organism)
3	row0003		none	Acholeplasma	ACHOSP		84858009	84858009	Acholeplasma	Genus Acholeplasma (organism)
4	row0004		none	Acholeplasma laidlawii	ACHOLAID		89082003	89082003	Acholeplasma laidlawii	Acholeplasma laidlawii (organism)
5	row0005		none	Acholeplasma oculi	ACHOOCUL		86450009	86450009	Acholeplasma oculi	Acholeplasma oculi (organism)
6	row0006		none	Achromobacter	ACHSP		91620006	91620006	Achromobacter	Genus Achromobacter (organism)
7	row0007		none	Achromobacter denitrificans	ACHDENI		413414001	413414001	Achromobacter denitrificans	Achromobacter denitrificans (organism)
8	row0008		none	Achromobacter piechaudii	ACHPIEC		413420000	413420000	Achromobacter piechaudii	Achromobacter piechaudii (organism)
9	row0009		none	Achromobacter ruhlandii	ACHRUHL		413421001	413421001	Achromobacter ruhlandii	Achromobacter ruhlandii (organism)
10	row0010		none	Achromobacter xylosoxidans	ALCXYL		413424009	413424009	Achromobacter xylosoxidans	Achromobacter xylosoxidans (organism)
11	row0011		none	multidrug resistant Achromobacter xylosoxidans	ALCXYL*2		707330008	707330008	Multidrug resistant Achromobacter xylosoxidans	Multidrug resistant Achromobacter xylosoxidans (organism)
12	row0012		none	Acidaminococcus	ACISP		28207003	28207003	Acidaminococcus	Genus Acidaminococcus (organism)
13	row0013		none	Acidaminococcus fermentans	ACIFE		63005002	63005002	Acidaminococcus fermentans	Acidaminococcus fermentans (organism)
14	row0014		none	Acidovorax	ACIDSP		115153000	115153000	Acidovorax	Genus Acidovorax (organism)
15	row0015		none	Acidovorax delafieldii	ACDEL		113685003	113685003	Acidovorax delafieldii	Acidovorax delafieldii (organism)
16	row0016		none	Acidovorax facilis	ACIDFACI		113686002	113686002	Acidovorax facilis	Acidovorax facilis (organism)
17	row0017		none	Acidovorax temperans	ACIDTEMP		113687006	113687006	Acidovorax temperans	Acidovorax temperans (organism)
18	row0018		none	Acinetobacter	ACS	X	7757008	7757008	Acinetobacter	Genus Acinetobacter (organism)
19	row0019		none	multidrug resistant Acinetobacter	ACS*1	X	446157004	446157004	Multidrug-resistant Acinetobacter	Multidrug-resistant Acinetobacter (organism)
20	row0020		none	capene-resistant Acinetobacter	ACS*2		57216	4451008	capene-resistant Acinetobacter	capene-resistant Acinetobacter (organism)

Pathogen Codes tab in the IDM

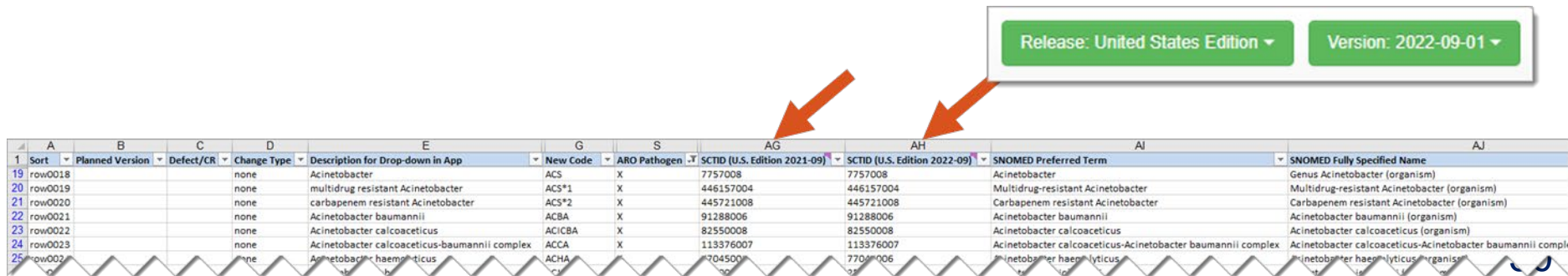
- Description for Drop-down in App
 - Name of pathogen as it appears in NHSN
- New Code
 - Local mnemonic created by NHSN, currently used in NHSN analysis reports
- SNOMED Preferred Term
- SNOMED Fully Specified Name



	A	B	C	D	E	G	S	AG	AH	AI	AJ
	Sort	Planned Version	Defect/CR	Change Type	Description for Drop-down in App	New Code	ARO Pathogen	SCTID (U.S. Edition 2021-09)	SCTID (U.S. Edition 2022-09)	SNOMED Preferred Term	SNOMED Fully Specified Name
19	row0018			none	Acinetobacter	ACS	X	7757008	7757008	Acinetobacter	Genus Acinetobacter (organism)
20	row0019			none	multidrug resistant Acinetobacter	ACS*1	X	446157004	446157004	Multidrug-resistant Acinetobacter	Multidrug-resistant Acinetobacter (organism)
21	row0020			none	carbapenem resistant Acinetobacter	ACS*2	X	445721008	445721008	Carbapenem resistant Acinetobacter	Carbapenem resistant Acinetobacter (organism)
22	row0021			none	Acinetobacter baumannii	ACBA	X	91288006	91288006	Acinetobacter baumannii	Acinetobacter baumannii (organism)
23	row0022			none	Acinetobacter calcoaceticus	ACICBA	X	82550008	82550008	Acinetobacter calcoaceticus	Acinetobacter calcoaceticus (organism)
24	row0023			none	Acinetobacter calcoaceticus-baumannii complex	ACCA	X	113376007	113376007	Acinetobacter calcoaceticus-Acinetobacter baumannii complex	Acinetobacter calcoaceticus-Acinetobacter baumannii complex (organism)
25	row0024			none	Acinetobacter haemolyticus	ACHA	X	77045000	77045000	Acinetobacter haemolyticus	Acinetobacter haemolyticus (organism)

Pathogen Codes tab in the IDM (cont.)

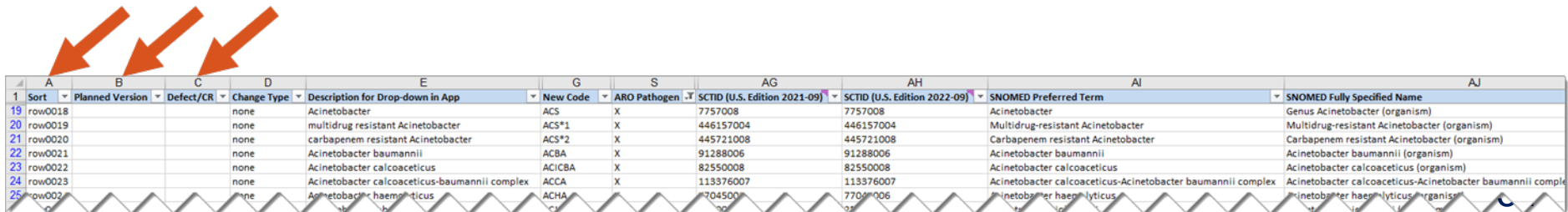
- SCTID (U.S. Edition 2021-09)
 - SNOMED CT code for pathogen from previous calendar year, for reference
- SCTID (U.S. Edition 2022-09)
 - SNOMED CT code currently accepted by NHSN application
 - Date indicates the version of SNOMED CT United States Edition used



	A	B	C	D	E	G	S	AG	AH	AI	AJ
	Sort	Planned Version	Defect/CR	Change Type	Description for Drop-down in App	New Code	ARO Pathogen	SCTID (U.S. Edition 2021-09)	SCTID (U.S. Edition 2022-09)	SNOMED Preferred Term	SNOMED Fully Specified Name
19	row0018			none	Acinetobacter	ACS	X	7757008	7757008	Acinetobacter	Genus Acinetobacter (organism)
20	row0019			none	multidrug resistant Acinetobacter	ACS*1	X	446157004	446157004	Multidrug-resistant Acinetobacter	Multidrug-resistant Acinetobacter (organism)
21	row0020			none	carbapenem resistant Acinetobacter	ACS*2	X	445721008	445721008	Carbapenem resistant Acinetobacter	Carbapenem resistant Acinetobacter (organism)
22	row0021			none	Acinetobacter baumannii	ACBA	X	91288006	91288006	Acinetobacter baumannii	Acinetobacter baumannii (organism)
23	row0022			none	Acinetobacter calcoaceticus	ACICBA	X	82550008	82550008	Acinetobacter calcoaceticus	Acinetobacter calcoaceticus (organism)
24	row0023			none	Acinetobacter calcoaceticus-baumannii complex	ACCA	X	113376007	113376007	Acinetobacter calcoaceticus-Acinetobacter baumannii complex	Acinetobacter calcoaceticus-Acinetobacter baumannii complex
25	row0024			none	Acinetobacter baumannii	ACHA	X	77045006	77045006	Acinetobacter baumannii	Acinetobacter baumannii (organism)

Pathogen Codes tab in the IDM (cont.)

- Sort
 - Column used to sort by genus, species, and subspecies
- Planned Version
 - Version of NHSN the pathogen was added in
- Defect/CR
 - Defect or Change Request that added the pathogen to the NHSN application



	A	B	C	D	E	G	S	AG	AH	AI	AJ
1	Sort	Planned Version	Defect/CR	Change Type	Description for Drop-down in App	New Code	ARO Pathogen	SCTID (U.S. Edition 2021-09)	SCTID (U.S. Edition 2022-09)	SNOMED Preferred Term	SNOMED Fully Specified Name
19	row0018			none	Acinetobacter	ACS	X	7757008	7757008	Acinetobacter	Genus Acinetobacter (organism)
20	row0019			none	multidrug resistant Acinetobacter	ACS*1	X	446157004	446157004	Multidrug-resistant Acinetobacter	Multidrug-resistant Acinetobacter (organism)
21	row0020			none	carbapenem resistant Acinetobacter	ACS*2	X	445721008	445721008	Carbapenem resistant Acinetobacter	Carbapenem resistant Acinetobacter (organism)
22	row0021			none	Acinetobacter baumannii	ACBA	X	91288006	91288006	Acinetobacter baumannii	Acinetobacter baumannii (organism)
23	row0022			none	Acinetobacter calcoaceticus	ACICBA	X	82550008	82550008	Acinetobacter calcoaceticus	Acinetobacter calcoaceticus (organism)
24	row0023			none	Acinetobacter calcoaceticus-baumannii complex	ACCA	X	113376007	113376007	Acinetobacter calcoaceticus-Acinetobacter baumannii complex	Acinetobacter calcoaceticus-Acinetobacter baumannii complex (organism)
25	row0024			none	Acinetobacter haemolyticus	ACHA	X	77045000	77045000	Acinetobacter haemolyticus	Acinetobacter haemolyticus (organism)

Pathogen Codes tab in the IDM (cont.)

- Changes since the previous version of the IDM are highlighted orange

Sort	Planned Version	Defect/CR	Change Type	Description for Drop-down in App	New Code	ARO Pathogen	SCTID (U.S. Edition 2021-09)	SCTID (U.S. Edition 2022-09)	SNOMED Preferred Term	SNOMED Fully Specified Name
row0018			none	Acinetobacter	ACS	X	7757008	7757008	Acinetobacter	Genus Acinetobacter (organism)
row0019			none	multidrug resistant Acinetobacter	ACS*1	X	446157004	446157004	Multidrug-resistant Acinetobacter	Multidrug-resistant Acinetobacter (organism)
row0020			none	carbapenem resistant Acinetobacter	ACS*2	X	445721008	445721008	Carbapenem resistant Acinetobacter	Carbapenem resistant Acinetobacter (organism)
row0021			none	Acinetobacter baumannii	ACBA	X	91288006	91288006	Acinetobacter baumannii	Acinetobacter baumannii (organism)
row0022			none	Acinetobacter calcoaceticus	ACICBA	X	82550008	82550008	Acinetobacter calcoaceticus	Acinetobacter calcoaceticus (organism)
row0023			none	Acinetobacter calcoaceticus-baumannii complex	ACCA	X	113376007	113376007	Acinetobacter calcoaceticus-Acinetobacter baumannii complex	Acinetobacter calcoaceticus-Acinetobacter baumannii complex (organism)
row0024			none	Acinetobacter haemolyticus	ACHA	X	77045006	77045006	Acinetobacter haemolyticus	Acinetobacter haemolyticus (organism)
row0025			none	Acinetobacter johnsonii	ACJH	X	252000	252000	Acinetobacter johnsonii	Acinetobacter johnsonii (organism)
row0026			none	Acinetobacter junii	ACJU	X	13879009	13879009	Acinetobacter junii	Acinetobacter junii (organism)
row0027			none	Acinetobacter lwoffii	ACLW	X	83088009	83088009	Acinetobacter lwoffii	Acinetobacter lwoffii (organism)
row0028			none	Acinetobacter nosocomialis	ACINNOSO	X	708859003	708859003	Acinetobacter nosocomialis	Acinetobacter nosocomialis (organism)
row0029			none	Acinetobacter pittii	ACINPITT	X	698244000	698244000	Acinetobacter pittii	Acinetobacter pittii (organism)
row0030			none	Acinetobacter radioresistens	ACIRADI	X	113381003	113381003	Acinetobacter radioresistens	Acinetobacter radioresistens (organism)
row0031			none	Acinetobacter schindleri	ACISCHI	X	423732001	423732001	Acinetobacter schindleri	Acinetobacter schindleri (organism)
row0032			none	Acinetobacter ursingii	ACIURSI	X	424791004	424791004	Acinetobacter ursingii	Acinetobacter ursingii (organism)
row0479			none	Citrobacter amalonaticus	CITAM	X	55744003	55744003	Citrobacter amalonaticus	Citrobacter amalonaticus (organism)
row0480	12	4160	update	Citrobacter braakii	CITBRA	X	114262000	114262000	Citrobacter braakii	Citrobacter braakii (organism)
row0482			none	Citrobacter freundii	CF	X	6265002	6265002	Citrobacter freundii	Citrobacter freundii (organism)
row0483			none	Extended spectrum beta-lactamase producing Citr*F*3	CF*3	X	721909006	721909006	ESBL Citrobacter freundii	Extended spectrum beta-lactamase producing Citrobacter freun
row0484	12	4160	add	Citrobacter freundii complex	CF*CM*PX	X	782522004	782522004	Citrobacter freundii complex	Citrobacter freundii complex (organism)
row0486			none	Citrobacter koseri	CITKO	X	114264004	114264004	Citrobacter koseri	Citrobacter koseri (organism)
row0491	12	4160	update	Citrobacter youngae	CITYOU	X	114443001	114443001	Citrobacter youngae	Citrobacter youngae (organism)
row0697			none	Enterobacter	ESP	X	583007	583007	Enterobacter	Genus Enterobacter (organism)

Pathogen Codes tab in the IDM (cont.)

Change Type

- Indicates type of change made since the previous version of the IDM
- none = no change, update = update made to cell highlighted in orange, add = new pathogen added, inactivate = pathogen removed

	A	B	C	D	E	G	S	AG	AH	AI	AJ
1	Sort	Planned Version	Defect/CR	Change Type	Description for Drop-down in App	New Code	ARO Pathogen	SCTID (U.S. Edition 2021-09)	SCTID (U.S. Edition 2022-09)	SNOMED Preferred Term	SNOMED Fully Specified Name
19	row0018			none	Acinetobacter	ACS	X	7757008	7757008	Acinetobacter	Genus Acinetobacter (organism)
20	row0019			none	multidrug resistant Acinetobacter	ACS*1	X	446157004	446157004	Multidrug-resistant Acinetobacter	Multidrug-resistant Acinetobacter (organism)
21	row0020			none	carbapenem resistant Acinetobacter	ACS*2	X	445721008	445721008	Carbapenem resistant Acinetobacter	Carbapenem resistant Acinetobacter (organism)
22	row0021			none	Acinetobacter baumannii	ACBA	X	91288006	91288006	Acinetobacter baumannii	Acinetobacter baumannii (organism)
23	row0022			none	Acinetobacter calcoaceticus	ACICBA	X	82550008	82550008	Acinetobacter calcoaceticus	Acinetobacter calcoaceticus (organism)
24	row0023			none	Acinetobacter calcoaceticus-baumannii complex	ACCA	X	113376007	113376007	Acinetobacter calcoaceticus-Acinetobacter baumannii complex	Acinetobacter calcoaceticus-Acinetobacter baumannii complex
25	row0024			none	Acinetobacter haemolyticus	ACHA	X	77045006	77045006	Acinetobacter haemolyticus	Acinetobacter haemolyticus (organism)
26	row0025			none	Acinetobacter johnsonii	ACJH	X	252000	252000	Acinetobacter johnsonii	Acinetobacter johnsonii (organism)
27	row0026			none	Acinetobacter junii	ACJU	X	13879009	13879009	Acinetobacter junii	Acinetobacter junii (organism)
28	row0027			none	Acinetobacter lwoffii	ACLW	X	83088009	83088009	Acinetobacter lwoffii	Acinetobacter lwoffii (organism)
29	row0028			none	Acinetobacter nosocomialis	ACINNOSO	X	708859003	708859003	Acinetobacter nosocomialis	Acinetobacter nosocomialis (organism)
30	row0029			none	Acinetobacter pittii	ACINPITT	X	698244000	698244000	Acinetobacter pittii	Acinetobacter pittii (organism)
31	row0030			none	Acinetobacter radioresistens	ACIRADI	X	113381003	113381003	Acinetobacter radioresistens	Acinetobacter radioresistens (organism)
32	row0031			none	Acinetobacter schindleri	ACISCHI	X	423732001	423732001	Acinetobacter schindleri	Acinetobacter schindleri (organism)
33	row0032			none	Acinetobacter ursingii	ACIURSI	X	424791004	424791004	Acinetobacter ursingii	Acinetobacter ursingii (organism)
480	row0479			none	Citrobacter amalonaticus	CITAM	X	55744003	55744003	Citrobacter amalonaticus	Citrobacter amalonaticus (organism)
481	row0480	12	4160	update	Citrobacter braakii	CITBRA	X	114262000	114262000	Citrobacter braakii	Citrobacter braakii (organism)
483	row0482			none	Citrobacter freundii	CF	X	6265002	6265002	Citrobacter freundii	Citrobacter freundii (organism)
484	row0483			none	Extended spectrum beta-lactamase producing Citr	CF*3	X	721909006	721909006	ESBL Citrobacter freundii	Extended spectrum beta-lactamase producing Citrobacter freun
485	row0484	12	4160	add	Citrobacter freundii complex	CFCMPX	X	782522004	782522004	Citrobacter freundii complex	Citrobacter freundii complex (organism)
487	row0486			none	Citrobacter koseri	CITKO	X	114264004	114264004	Citrobacter koseri	Citrobacter koseri (organism)
492	row0491	12	4160	update	Citrobacter youngae	CITYOU	X	114443001	114443001	Citrobacter youngae	Citrobacter youngae (organism)
698	row0697			none	Enterobacter	ESP	X	58683007	58683007	Enterobacter	Genus Enterobacter (organism)

AR Option Pathogens (Pathogen Roll-up Workbook)

- Advances in technology continue to allow labs to identify and classify pathogens at a more granular level and SNOMED CT continues to add new concepts
- NHSN AUR Team decided to expand the list of eligible AR Option pathogens to better capture the identification of specific pathogens
- AR Option Pathogen Roll-up Workbook included in the AR Toolkit, along with a quick reference guide (QRG)

AR Option Pathogen Roll-up Workbook

- Expanded list of pathogen codes accepted by AR Option listed in the “2024 Mapping” tab of the AR Option Pathogen Roll-up Workbook
 - Must be used to determine if a pathogen is eligible for submission to AR Option and whether that pathogen needs to be rolled up to a higher-level concept to be accepted into NHSN application

	A	B	C	D	E
	SNOMED CT Code				
1	sort	(2022-09)	SNOMED CT Fully Specified Name	map to - Code	map to - Name
2	row0001	7757008	Genus Acinetobacter (organism)	NA	NA
3	row0002	445721008	Carbapenem resistant Acinetobacter (organism)	NA	NA
4	row0003	1085501000112104	Carbapenemase-producing Acinetobacter (organism)	7757008	Genus Acinetobacter (organism)
5	row0004	446157004	Multidrug-resistant Acinetobacter (organism)	NA	NA
6	row0005	419589005	Asaccharolytic acinetobacter (organism)	7757008	Genus Acinetobacter (organism)
7	row0006	719030002	Asaccharolytic hemolytic Acinetobacter (organism)	7757008	Genus Acinetobacter (organism)
8	row0007	719027009	Asaccharolytic non-hemolytic Acinetobacter (organism)	7757008	Genus Acinetobacter (organism)
9	row0008	418688000	Saccharolytic acinetobacter (organism)	7757008	Genus Acinetobacter (organism)
10	row0009	719031003	Saccharolytic hemolytic Acinetobacter (organism)	7757008	Genus Acinetobacter (organism)
11	row0010	719032005	Saccharolytic non-hemolytic Acinetobacter (organism)	7757008	Genus Acinetobacter (organism)
12	row0011	91288006	Acinetobacter baumannii (organism)	NA	NA
13	row0012	715174007	Carbapenem resistant Acinetobacter baumannii (organism)	91288006	Acinetobacter baumannii (organism)
14	row0013	737526007	Carbapenemase-producing Acinetobacter baumannii (organism)	91288006	Acinetobacter baumannii (organism)
15	row0014	715353004	Multiple drug-resistant Acinetobacter baumannii (organism)	91288006	Acinetobacter baumannii (organism)

AR Option Pathogen Roll-up Workbook (cont.)


- SNOMED CT Code (2022-09)
 - SNOMED CT code for concepts eligible for AR Option reporting
- SNOMED CT Fully Specified Name
 - Name of concepts eligible for AR Option reporting
- Concepts listed in these columns may or may not need to be rolled up to be accepted by NHSN application



	A	B	C	D	E
		SNOMED CT Code			
1	sort	(2022-09)	SNOMED CT Fully Specified Name	map to - Code	map to - Name
2	row0001	7757008	Genus Acinetobacter (organism)	NA	NA
3	row0002	445721008	Carbapenem resistant Acinetobacter (organism)	NA	NA
4	row0003	1085501000112104	Carbapenemase-producing Acinetobacter (organism)	7757008	Genus Acinetobacter (organism)
5	row0004	446157004	Multidrug-resistant Acinetobacter (organism)	NA	NA
6	row0005	419589005	Asaccharolytic acinetobacter (organism)	7757008	Genus Acinetobacter (organism)
7	row0006	719030002	Asaccharolytic hemolytic Acinetobacter (organism)	7757008	Genus Acinetobacter (organism)
8	row0007	719027009	Asaccharolytic non-hemolytic Acinetobacter (organism)	7757008	Genus Acinetobacter (organism)

AR Option Pathogen Roll-up Workbook (cont.)

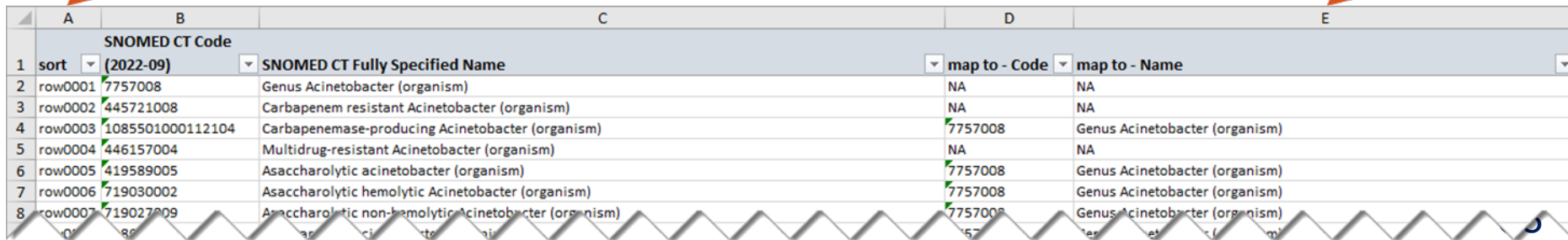
- map to - Code
 - SNOMED CT code that pathogen should be mapped to, and reported as, to NHSN
 - Code in column B should be rolled up and reported as the code in column D
 - “NA” indicates the code does not need to be rolled up and can be reported as the code in column B



	A	B	C	D	E
		SNOMED CT Code	SNOMED CT Fully Specified Name	map to - Code	map to - Name
1	sort	(2022-09)			
2	row0001	7757008	Genus Acinetobacter (organism)	NA	NA
3	row0002	445721008	Carbapenem resistant Acinetobacter (organism)	NA	NA
4	row0003	1085501000112104	Carbapenemase-producing Acinetobacter (organism)	7757008	Genus Acinetobacter (organism)
5	row0004	446157004	Multidrug-resistant Acinetobacter (organism)	NA	NA
6	row0005	419589005	Asaccharolytic acinetobacter (organism)	7757008	Genus Acinetobacter (organism)
7	row0006	719030002	Asaccharolytic hemolytic Acinetobacter (organism)	7757008	Genus Acinetobacter (organism)
8	row0007	719027009	Asaccharolytic non-hemolytic Acinetobacter (organism)	7757008	Genus Acinetobacter (organism)

AR Option Pathogen Roll-up Workbook (cont.)


- sort
 - Column used to sort by genus, species, and subspecies
- map to - Name
 - Name of the corresponding code in column D to improve human readability
 - “NA” indicates the code does not need to be rolled up



	A	B	C	D	E
		SNOMED CT Code			
1	sort	(2022-09)	SNOMED CT Fully Specified Name	map to - Code	map to - Name
2	row0001	7757008	Genus Acinetobacter (organism)	NA	NA
3	row0002	445721008	Carbapenem resistant Acinetobacter (organism)	NA	NA
4	row0003	1085501000112104	Carbapenemase-producing Acinetobacter (organism)	7757008	Genus Acinetobacter (organism)
5	row0004	446157004	Multidrug-resistant Acinetobacter (organism)	NA	NA
6	row0005	419589005	Asaccharolytic acinetobacter (organism)	7757008	Genus Acinetobacter (organism)
7	row0006	719030002	Asaccharolytic hemolytic Acinetobacter (organism)	7757008	Genus Acinetobacter (organism)
8	row0007	719027009	Asaccharolytic non-hemolytic Acinetobacter (organism)	7757008	Genus Acinetobacter (organism)

AR Option Pathogen Roll-up Workbook (cont.)

- “Revision history” tab indicates changes made to the workbook and rationale behind the changes
- Date column indicates the date the changes took effect



	A	B	C
1	Date	Revision	Reason
2	1/7/2021	Changed the code in Column D - "map to - Code" from 7757008 to 113376007 for two organisms: Acinetobacter dijkshoorniae (D23) and Acinetobacter seifertii (D50). The pathogen name in Column E "map to- Name" was already correct: Acinetobacter calcoaceticus-Acinetobacter baumannii complex. The SNOMED code and pathogen name in Columns D and E now match.	These organisms should be rolled-up to Acinetobacter calcoaceticus-Acinetobacter baumannii complex and not Genus Acinetobacter.
3	1/1/2022	Removed two rows for inactive SNOMED codes: 698175001 (Streptococcus agalactiae serotype NT/c (organism)) and 698176000 (Streptococcus agalactiae serotype NT/R (organism)).	SNOMED codes are no longer active.
4	1/1/2022	Changed pathogen name in Column C of SNOMED code 787183008 from "Acinetobacter dijkshoorniae (organism)" to "Acinetobacter lactucaae (organism)".	Acinetobacter dijkshoorniae and Acinetobacter lactucaae are heterotypic synonyms. Adjusted to use the correct SNOMED pathogen name.
	1/1/2022	Changed pathogen name in Column C of SNOMED code 83088009 from "Acinetobacter lwoffii (organism)" to "Acinetobacter baumannii (organism)".	Acinetobacter lwoffii and Acinetobacter baumannii are heterotypic synonyms. Adjusted to use the correct SNOMED pathogen name.

AR Option Pathogen Roll-up Workbook: Example 1

- Suppose we want to report antimicrobial susceptibility test results for an isolate with multidrug-resistant *Acinetobacter* identified
- Multidrug-resistant *Acinetobacter* has “NA” in the “map to - Code” and “map to - Name” columns
- SNOMED CT code for multidrug-resistant *Acinetobacter* can be reported to NHSN as-is and does not need to be rolled up

	A	B	C	D	E
	sort	(2022-09)	SNOMED CT Fully Specified Name	map to - Code	map to - Name
1	row0001	7757008	Genus Acinetobacter (organism)	NA	NA
2	row0002	445721008	Carbapenem resistant Acinetobacter (organism)	NA	NA
3	row0003	1085501000112104	Carbapenemase-producing Acinetobacter (organism)	7757008	Genus Acinetobacter (organism)
4	row0004	446157004	Multidrug-resistant Acinetobacter (organism)	NA	NA
5	row0005	419589005	Asaccharolytic acinetobacter (organism)	7757008	Genus Acinetobacter (organism)
6	row0006	719030002	Asaccharolytic hemolytic Acinetobacter (organism)	7757008	Genus Acinetobacter (organism)
7	row0007	719027009	Asaccharolytic non-hemolytic Acinetobacter (organism)	7757008	Genus Acinetobacter (organism)

Note about additional pathogen roll-ups in NHSN

- NHSN application automatically rolls up some pathogen codes for you
 - Information about additional pathogen roll-ups listed in the “AntiP” tab in the IDM, which we will go over later in this presentation
- Example: multidrug-resistant *Acinetobacter* (446157004) is accepted by NHSN; however, immediately upon upload, NHSN rolls it up to *Acinetobacter* (7757008)

	A	B	C	D	E	F	H	I	J	K
1	Planned Version	CR/Defect	ARO Pathogen Category	Preferred Term	SNOMED-CT ID	Term Type	Spec-blood	CSF	L Resp	Urine
2	9.2	2003	Acinetobacter	Acinetobacter	7757008	P	ARO_AntiP20	ARO_AntiP20	ARO_AntiP20	ARO_AntiP20Ur
	9.2	2003		carbapenem resistant Acinetobacter (NHSN code rolls up to Acinetobacter -7757008)	445721008	P				
3										
	9.2	2003		multidrug resistant Acinetobacter (NHSN code rolls up to Acinetobacter -7757008)	446157004	P				
4										
5	9.2	2003		Acinetobacter baumannii	91288006	P				
6	9.2	2003		Acinetobacter calcoaceticus	82550008	P				
7	9.2	2003		Acinetobacter calcoaceticus - Acinetobacter	111371001	P				

AR Option Pathogen Roll-up Workbook: Example 2

- Suppose we want to report antimicrobial susceptibility test results for an isolate with asaccharolytic *Acinetobacter* identified
- Asaccharolytic *Acinetobacter* has values in the “map to - Code” and “map to - Name” columns
- SNOMED CT code for asaccharolytic *Acinetobacter* is not accepted by the NHSN application and needs to be rolled up to the code for genus *Acinetobacter* to be reported to NHSN

	A	B	C	D	E
		SNOMED CT Code			
1	sort	(2022-09)	SNOMED CT Fully Specified Name	map to - Code	map to - Name
2	row0001	7757008	Genus Acinetobacter (organism)	NA	NA
3	row0002	445721008	Carbapenem resistant Acinetobacter (organism)	NA	NA
4	row0003	1085501000112104	Carbapenemase-producing Acinetobacter (organism)	7757008	Genus Acinetobacter (organism)
5	row0004	446157004	Multidrug-resistant Acinetobacter (organism)	NA	NA
6	row0005	419589005	Asaccharolytic acinetobacter (organism)	7757008	Genus Acinetobacter (organism)
7	row0006	719030002	Asaccharolytic hemolytic Acinetobacter (organism)	7757008	Genus Acinetobacter (organism)
8	row0007	719027009	Asaccharolytic non-hemolytic Acinetobacter (organism)	7757008	Genus Acinetobacter (organism)

AR Option specimens

Amy Webb, MPH, CHES


AR Option specimens (IDM)

- Four eligible groups of specimen types: blood, cerebrospinal fluid (CSF), lower respiratory (LRI) and urine
- Eligible AR Option specimen types have an “X” in the Valueset: ARSpecimenSource column of the Specimen Source tab in the IDM

Planned Version	CR/Defec	NHSN Code	Concept ID	preferred term	Valueset: ARSpecimenSource	labidSpecimenSource	LRI Specime	AR_LRI Specime	AR_Blood Specimer	AR_CSF Specimer	AR_Urine Specimer
11.1.0	C3219	24HRUR	276833005	24 hour urine sample (specimen)							
		ABSCCESS	119371008	Specimen from Abscess		X					
11.1.0	C3219	ACEBLDSPC	122592007	acellular blood (serum or plasma) specimen (specimen)							
		ADIPOSE	258414004	Adipose tissue sample (specimen)		X					
		ADRGLAND	309141004	Adrenal gland specimen (specimen)		X					
		AMNIOFLD	119373006	Amniotic fluid specimen (specimen)		X					
11.1.0	C3219	AMSERSPC	442166002	a.m. serum specimen (specimen)							
8.6	1560	ARTBLDSPC	122552005	arterial blood specimen (specimen)	X				X		
8.6	1560	ARTCRBLDspc	703430008	arterial cord blood specimen (specimen)	X				X		
		ARTERY	309479002	Artery sample (specimen)		X					
		BALFLD	258607008	Bronchoalveolar lavage fluid sample (specimen)	X	X	X	X			
		BILEDUCT	309493009	Bile duct biopsy sample (specimen)		X					
		BREASTFLD	309055005	Breast fluid sample (specimen)		X					
		BREASTMAM	110894008	Mammary cytologic material (specimen)		X					

Specimen categories


- Columns I – L separate the specimen types into their specific category/grouping: LRI, Blood, CSF and Urine
- Used for applying AR Event de-duplication rules



	A	B	C	D	E	F	I	J	K	L
1	Planned Version	CR/ Defect	NHSN Code	Concept ID	preferred term	Valueset: ARSpecimenSource	AR_LRI Specimen	AR_Blood Specimen	AR_CSF Specimen	AR_Urine Specimen
12			BALFLD	258607008	Bronchoalveolar lavage fluid sample (specimen)	X	X			
33	11.1.0	d10439	BRONCENDOBIOP	16215091000119	Specimen from bronchus obtained by endobronchial biopsy (specimen)	X	X			
34			BRONCHASP	441903006	Specimen obtained by bronchial aspiration (specimen)	X	X			
35	11.1.0	C3219	BRONCHASPBIOP	432140002	Specimen from bronchus obtained by fine needle aspiration biopsy (specimen)	X	X			
36			BRONCHBR	309176002	Bronchial brushings sample (specimen)	X	X			
37			BRONCHBX	309174004	Bronchial biopsy sample (specimen)	X	X			
38			BRONCHFLD	258446004	Bronchial fluid sample (specimen)	X	X			
39			BRONCHLAV	441917002	Specimen obtained by bronchioloalveolar lavage procedure (specimen)	X	X			

Specimen codes/names

- NHSN Code
 - Local mnemonic created by NHSN, currently used in NHSN analysis reports
- Concept ID
 - SNOMED CT code
- Preferred term
 - Full name of the specimen used in the NHSN application



	A	B	C	D	E	F	I	J	K	L
	Planned Version	CR/ Defect	NHSN Code	Concept ID	preferred term	Valueset: ARSpecimenSource	AR_LRI Specime	AR_Blood Specimer	AR_CSF Specimer	AR_Urine Specimer
1			BALFLD	258607008	Bronchoalveolar lavage fluid sample (specimen)	X	X			
12					Specimen from bronchus obtained by endobronchial biopsy (specimen)					
33	11.1.0	d10439	BRONCENDOBIOP	16215091000119	Specimen from bronchus obtained by endobronchial biopsy (specimen)	X	X			
34			BRONCHASP	441903006	Specimen obtained by bronchial aspiration (specimen)	X	X			
					Specimen from bronchus obtained by fine needle aspiration biopsy (specimen)					
35	11.1.0	C3219	BRONCHASPBIOP	432140002	Specimen from bronchus obtained by fine needle aspiration biopsy (specimen)	X	X			
36			BRONCHBR	309176002	Bronchial brushings sample (specimen)	X	X			
37			BRONCHBX	309174004	Bronchial biopsy sample (specimen)	X	X			
38			BRONCHFLD	258446004	Bronchial fluid sample (specimen)	X	X			

AR Option antimicrobial susceptibility tests (aka drug panels)

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AR Option antimicrobial susceptibility tests

- Each AR Option pathogen has a required set of antimicrobial susceptibility tests (aka drug panel) that must be included in the AR Event file
 - Some pathogens may have a specific panel for urine specimens
 - 13 panels in total
- In AUR Protocol, use Appendix F
- In IDM, use AntiP and AR AST 2024 tabs

Organism	Specimen Type	Antimicrobial Agents
<i>Acinetobacter</i> (All <i>Acinetobacter</i> species noted in the AR Option Pathogen Roll-up Workbook)	Blood, Urine, Lower Respiratory, CSF	Amikacin Ampicillin-sulbactam Cefepime Cefiderocol Cefotaxime Ceftazidime Ceftriaxone Ciprofloxacin Colistin Doripenem Doxycycline Gentamicin Imipenem Levofloxacin Meropenem Minocycline Piperacillin-tazobactam Polymyxin B Tobramycin Trimethoprim-sulfamethoxazole
	Additional Agents for Urine	Tetracycline

AR Option IDM AntiP tab pathogen information

- ARO Pathogen Category
 - Lists the genus or species level term
- Preferred Term
 - Full name of the pathogen used in the NHSN application
- SNOMED-CT ID
 - SNOMED CT code for given term
- Term Type
 - P = preferred term
 - All synonyms (S) are removed

	A	B	C	D	E	F	H	I	J	K
	Planned Version	CR/Defect	ARO Pathogen Category	Preferred Term	SNOMED-CT ID	Term Type	Spec-blood	CSF	L Resp	Urine
1	9.2	2003	Acinetobacter	Acinetobacter	7757008	P	ARO_AntiP20	ARO_AntiP20	ARO_AntiP20	ARO_AntiP20Ur
2	9.2	2003		carbapenem resistant Acinetobacter (NHSN code rolls up to Acinetobacter -7757008)	445721008	P				
3	9.2	2003		multidrug resistant Acinetobacter (NHSN code rolls up to Acinetobacter -7757008))	446157004	P				
4	9.2	2003		Acinetobacter baumannii	91288006	P				
5	9.2	2003		Acinetobacter calcoaceticus	82550008	P				
6	9.2	2003		Acinetobacter calcoaceticus - Acinetobacter	11373000	P				

AR Option IDM AntiP tab pathogen information (cont.)

- Bonus information!
 - Shows the SNOMED CT code for the preferred term that's accepted by NHSN AND
 - Shows the SNOMED CT code & pathogen name it'll be rolled up to
- Example: carbapenem resistant *Acinetobacter* (445721008) is accepted by NHSN however immediately upon upload, NHSN rolls it up to *Acinetobacter* (7757008)

	A	B	C	D	E	F	H	I	J	K
	Planned Version	CR/Defect	ARO Pathogen Category	Preferred Term	SNOMED-CT ID	Term Type	Spec-blood	CSF	L Resp	Urine
1	9.2	2003	Acinetobacter	Acinetobacter	7757008	P	ARO_AntiP20	ARO_AntiP20	ARO_AntiP20	ARO_AntiP20Ur
2	9.2	2003		carbapenem resistant Acinetobacter (NHSN code rolls up to Acinetobacter -7757008)	445721008	P				
3				multidrug resistant Acinetobacter (NHSN code rolls up to Acinetobacter -7757008))	446157004	P				
4	9.2	2003		Acinetobacter baumannii	91288006	P				
5	9.2	2003		Acinetobacter calcoaceticus	82550008	P				
6	9.2	2003		Acinetobacter calcoaceticus - Acinetobacter	111371001	P				

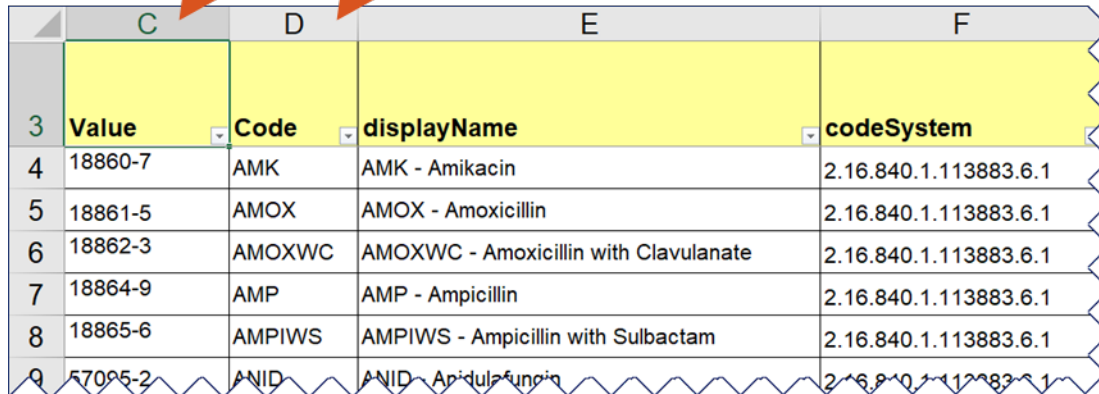
AR Option IDM AR AST 2024 tab

- Lists the antimicrobial susceptibility tests required for each panel and their LOINC codes
 - Used only for AR Option reporting (not HAI reporting)
- Each panel is associated with a column
 - An “X” in the column means the antimicrobial susceptibility test is required when reporting the given organism

	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
	Value	Code	displayName	codeSystem	Valueset ARDrugCode	ACS AntiP21	ACS AntiP20 Ur	CA AntiP2	ESP AntiP1	ESP AntiP22 Ur	ENT AntiP23	ENT AntiP23Ur	PA AntiP24	SA AntiP25	SA AntiP25Ur	STEMA AntiP26	SP AntiP27	GBS AntiP28
3	18860-7	AMK	AMK - Amikacin	2.16.840.1.113883.6.1	X	X	X		X	X			X					
4	18861-5	AMOX	AMOX - Amoxicillin	2.16.840.1.113883.6.1	X												X	
5	18862-3	AMOXWC	AMOXWC - Amoxicillin with Clavulanate	2.16.840.1.113883.6.1	X				X	X							X	
6	18864-9	AMP	AMP - Ampicillin	2.16.840.1.113883.6.1	X				X	X	X	X						X
7	18865-6	AMPIWS	AMPIWS - Ampicillin with Sulbactam	2.16.840.1.113883.6.1	X	X	X		X	X								
8	57095-2	ANID	ANID - Anidulafungin	2.16.840.1.113883.6.1	X			X										
9	18866-4	AZITH	AZITH - Azithromycin	2.16.840.1.113883.6.1	X									X		X		X
10	18868-0	AZT	AZT - Aztreonam	2.16.840.1.113883.6.1	X				X	X			X					
30	41734-5	DALBA	DALBA - Dalbavancin	2.16.840.1.113883.6.1	X						X	X		X	X			X
31	35789-7	DAPTO	DAPTO - Daptomycin	2.16.840.1.113883.6.1	X						X	X		X	X			X

AR Option IDM AR AST 2024 susceptibility tests

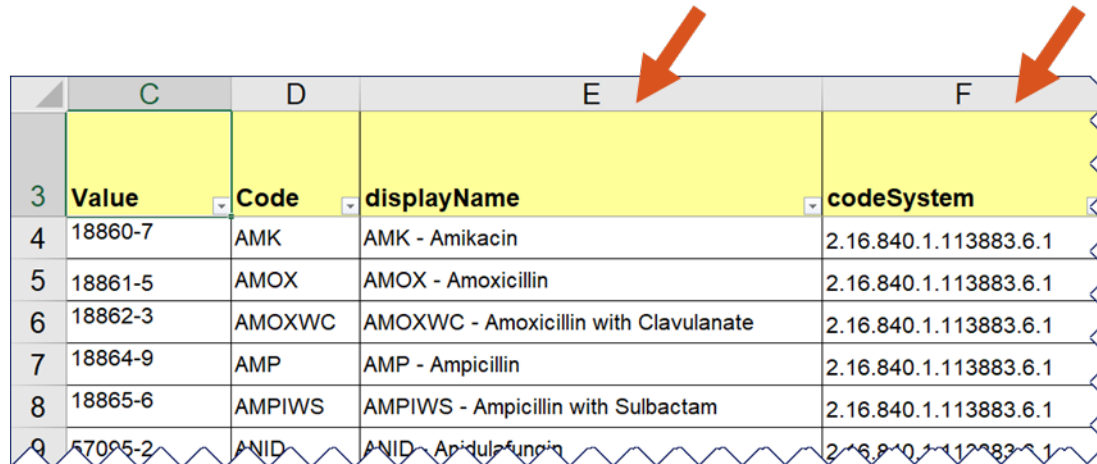
- Value
 - LOINC code for the methodless susceptibility test
- Code
 - Local mnemonic created by NHSN, currently used in NHSN analysis reports



	C	D	E	F
3	Value	Code	displayName	codeSystem
4	18860-7	AMK	AMK - Amikacin	2.16.840.1.113883.6.1
5	18861-5	AMOX	AMOX - Amoxicillin	2.16.840.1.113883.6.1
6	18862-3	AMOXWC	AMOXWC - Amoxicillin with Clavulanate	2.16.840.1.113883.6.1
7	18864-9	AMP	AMP - Ampicillin	2.16.840.1.113883.6.1
8	18865-6	AMPIWS	AMPIWS - Ampicillin with Sulbactam	2.16.840.1.113883.6.1
9	57095-2	ANID	ANID - Apidulfuncin	2.16.840.1.113883.6.1

AR Option IDM AR AST 2024 susceptibility tests (cont.)

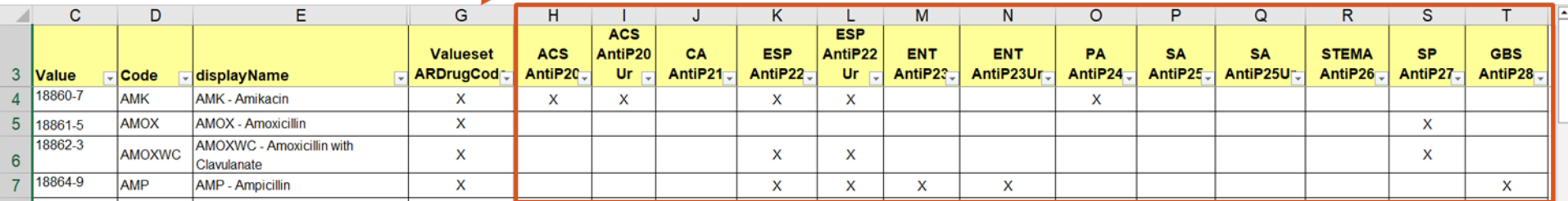
- displayName
 - Name displayed in NHSN analysis reports
- codeSystem
 - OID used for LOINC codes in the CDA file



	C	D	E	F
3	Value	Code	displayName	codeSystem
4	18860-7	AMK	AMK - Amikacin	2.16.840.1.113883.6.1
5	18861-5	AMOX	AMOX - Amoxicillin	2.16.840.1.113883.6.1
6	18862-3	AMOXWC	AMOXWC - Amoxicillin with Clavulanate	2.16.840.1.113883.6.1
7	18864-9	AMP	AMP - Ampicillin	2.16.840.1.113883.6.1
8	18865-6	AMPIWS	AMPIWS - Ampicillin with Sulbactam	2.16.840.1.113883.6.1
9	57095-2	ANID	ANID - Amidulofungin	2.16.840.1.113883.6.1

AR Option IDM AR AST panels

- Valueset ARDrugCode
 - “X” means susceptibility test is included in the panel
- Columns H – T represent the 13 panels
 - “X” means the drug susceptibility test is required for that panel




	C	D	E	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
	Value	Code	displayName	Valueset ARDrugCode	ACS AntiP20	ACS AntiP20 Ur	CA AntiP21	ESP AntiP22	ESP AntiP22 Ur	ENT AntiP23	ENT AntiP23Ur	PA AntiP24	SA AntiP25	SA AntiP25U	STEMA AntiP26	SP AntiP27	GBS AntiP28
3	18860-7	AMK	AMK - Amikacin	X	X	X		X	X			X					
4	18861-5	AMOX	AMOX - Amoxicillin	X												X	
5	18862-3	AMOXWC	AMOXWC - Amoxicillin with Clavulanate	X				X	X							X	
6	18864-9	AMP	AMP - Ampicillin	X				X	X	X	X						X

AR Option IDM AntiP & AR AST 2024

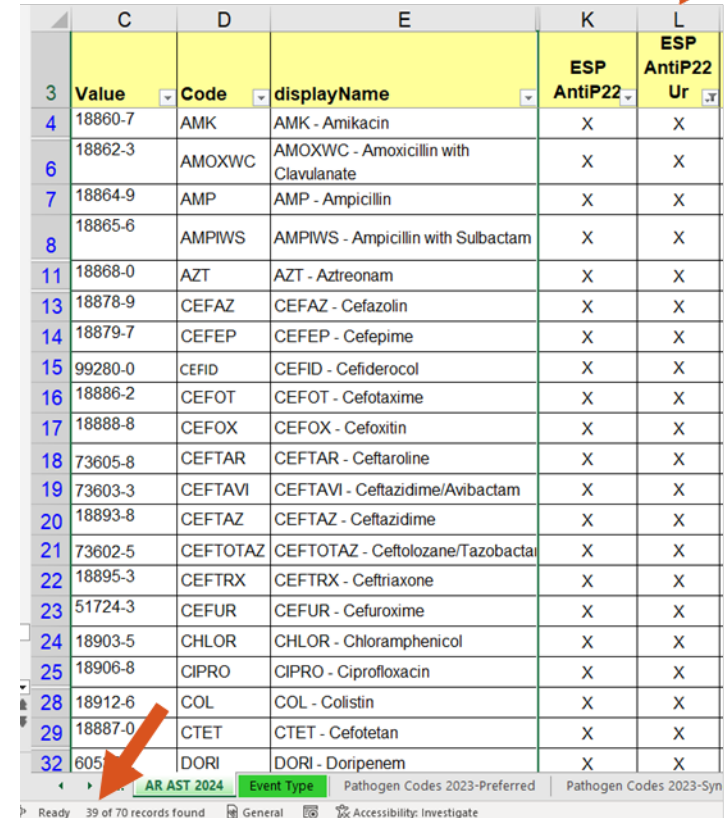
- Example: *E. coli* urine specimen
- First: Use AntiP tab to determine the panel number
 - ARO_AntiP22Ur

	C	D	E	F	H	I	J	K
1	ARO Pathogen Category	Preferred Term	SNOMED-CT ID	Term Type	Spec-blood	CSF	L Resp	Urine
127	Escherichia coli	Escherichia coli	112283007	P	ARO_AntiP22	ARO_AntiP22	ARO_AntiP22	ARO_AntiP22Ur
		ESBL Escherichia coli (NHSN code rolls up to E.coli -112283007)	409800005	P				
128		Enterohemorrhagic Escherichia coli, serotype O157:H7	103429008	P				
129		Enteropathogenic Escherichia coli	83285000	P				
130								



AR Option IDM AntiP & AR AST 2024 (cont.)

- Example: *E. coli* urine specimen
- First: Use AntiP tab to determine the panel number
 - ARO_AntiP22Ur
- Second: Use AR AST 2024 to determine the susceptibility tests that need to be included in the AR Event CDA file
 - 39 susceptibility tests need to be included (regardless of whether the tests were performed by the lab)
 - Can report “Not Tested”



	C	D	E	K	L
3	Value	Code	displayName	ESP AntiP22	ESP AntiP22 Ur
4	18860-7	AMK	AMK - Amikacin	X	X
6	18862-3	AMOXWC	AMOXWC - Amoxicillin with Clavulanate	X	X
7	18864-9	AMP	AMP - Ampicillin	X	X
8	18865-6	AMPIWS	AMPIWS - Ampicillin with Sulbactam	X	X
11	18868-0	AZT	AZT - Aztreonam	X	X
13	18878-9	CEFAZ	CEFAZ - Cefazolin	X	X
14	18879-7	CEFEP	CEFEP - Cefepime	X	X
15	99280-0	CEFID	CEFID - Cefiderocol	X	X
16	18886-2	CEFOT	CEFOT - Cefotaxime	X	X
17	18888-8	CEFOX	CEFOX - Cefoxitin	X	X
18	73605-8	CEFTAR	CEFTAR - Ceftaroline	X	X
19	73603-3	CEFTAVI	CEFTAVI - Ceftazidime/Avibactam	X	X
20	18893-8	CEFTAZ	CEFTAZ - Ceftazidime	X	X
21	73602-5	CEFTOTAZ	CEFTOTAZ - Ceftolozane/Tazobactam	X	X
22	18895-3	CEFTRX	CEFTRX - Ceftriaxone	X	X
23	51724-3	CEFUR	CEFUR - Cefuroxime	X	X
24	18903-5	CHLOR	CHLOR - Chloramphenicol	X	X
25	18906-8	CIPRO	CIPRO - Ciprofloxacin	X	X
28	18912-6	COL	COL - Colistin	X	X
29	18887-0	CTET	CTET - Cefotetan	X	X
32	605	DORI	DORI - Doripenem	X	X

Ready 39 of 70 records found General Accessibility: Investigate

Resources

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Resources

- NHSN CSSP Implementation Toolkits & Resources:
<https://www.cdc.gov/nhsn/cdaportal/toolkits.html>
- List of Antimicrobial Agents Eligible for AUR Module:
<https://www.cdc.gov/nhsn/xls/aur/aur-eligible-antimicrobial-agents.xlsx>
- AUR Module Protocol:
<https://www.cdc.gov/nhsn/pdfs/pscmanual/11pscaurcurrent.pdf>

For any questions or concerns, contact the NHSN Helpdesk using

NHSN-ServiceNow to submit questions to the NHSN Help Desk. The new portal can be accessed at <https://servicedesk.cdc.gov/nhsncsp>. Users will be authenticated using CDC's Secure Access Management Services (SAMS) the same way you access NHSN. If you do not have a SAMS login, or are unable to access ServiceNow, you can still email the NHSN Help Desk at nhsn@cdc.gov.

For more information please contact Centers for Disease Control and Prevention

1600 Clifton Road NE, Atlanta, GA 30333

Telephone, 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348

E-mail: cdcinfo@cdc.gov Web: www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

