M39-A5 WG

Co-Chairs: Janet Hindler & Trish Simner

Recording Secretary: April Abbott

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Our Team & Tasks

Team #1	Team #2	Team #3
Review current M39 Expand specific ways to use local antibiogram for ASP and include guidance for LTCF	Antimicrobial Resistance Surveillance Program Design	IT – Data extraction & presentation
Erdman, Sharon - LEAD	Redell, Mark - LEAD	Das, Sanchita - LEAD
Hindler, Janet - Coordinator	Simner, Patricia - Coordinator	Abbott, April - Coordinator
Johnson, Kristie	Benahmed, Faiza	Ferrell, Andrea
Master, Ron	Morrissey, Ian	Mehta, Jimish
Neuhauser, Melinda	Sader, Helio	Nowak, Michael
Bhowmick, Tanaya	Sievert, Dawn	Stelling, John
	Snippes-Vignone, Paula	

Format

- Part 1: The routine cumulative antibiogram
- Part 2: Enhanced “Special” antibiogram
- Part 3: Antimicrobial Resistance Surveillance Programs
- Part 4: Use of Local Antibiogram and Surveillance Data
  - Infection control
  - Antimicrobial Stewardship
  - Clinical Microbiology
  - Public Health

M39-A5 Workgroup Meeting

Team 1: Review & Expand Current M39

Janet A. Hindler
Sharon M. Erdman
Tanaya Bhowmick
Kristie Johnson
Ron Master
Melinda Neuhauser

Team 1 Summary

- Updates to:
  - Define syndromic antibiogram
  - Renaming Enhanced Antibiogram to “Specialty Antibiogram”
    - Combination therapy antibiograms
  - More advice on presentation of electronic antibiogram
  - Benefit of rapid diagnostics + antibiogram for stewardship for empiric therapy
    - Companion article

- Addition of sections on:
  - Rolling antibiograms
  - Education – “How to” educate? What is it? Where to find it? How to use it?
  - Cumulative antibiograms and stewardship practices
    - Conducted a survey of ID clinicians and stewardship pharmacists
    - 288 replies
    - Gram-negative rods susceptibility for in-patients, ICUs, etc.
  - Format / Use of antibiograms in LTCF
    - Best practice recommendations

Team 2: Antimicrobial Resistance Surveillance Program (ARSP)

Trish Simner
Mark Redell
Faiza Benahmed
Ian Morrissey
Helio Sader
Dawn Sievert
Paula Snippes-Vignone

Team 2 Summary

- Defining ARSP & Defining the goals of an ARSP
- Provide details on design considerations
  - Propose 3 different approaches:
    - Basic AR Surveillance Approach
    - Intermediate “Cumulative Antibiogram” Approach
    - Advanced AR Surveillance Approach – “Gold Standard”
- Use of ARSP – combined in Part 4 with how to use the local antibiogram

3 Approaches

Basic AR Surveillance Approach	Intermediate - "Combined antibiogram" Approach	Advanced AR Surveillance Approach
Take all comers (regardless of duplicate isolates per patient) over a defined time period	The first isolate per patient over a defined period of time	Defined # of consecutive isolates per specimen type (i.e., 50 consecutive, non-duplicate BSI isolates)
Collect AST data (+/- AMR data) from every isolate tested	Collect local antibiograms or data used to collate antibiogram data	Collect and test isolates using a standard method

Quality hierarchy (example):
Basic ARSP << Intermediate Combined ARSP << Advanced ARSP

Pros & cons exist for each method

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Team 3: IT

Sanchita Das

April Abbott

Andrea Ferrell

Jimish Mehta

Michael Nowak

John Stelling

Feature	AST Instrument	LIS	EHR
Data generation	Easy, well standardized	Variable, depends on software used	Potentially available, requires customization and validation to ensure completeness
Maintenance and support	Easy, well standardized	Variable, depends on software used	Easy but requires a dedicated IT team
Inclusion of antimicrobials	Yes, unless tested offline	Variable, depends on suppression rules	Requires customization
Manual input needed	To some extent	Yes	No but potential for errors
Stratification	Needs manual validation	Needs manual validation	Can be automated
Real-time availability	Yes/requires significant effort	Requires effort	Can be automated
Interactive component	No	Possible	Yes
Utility to end-users	Variable	Variable	High
Impact on stewardship	Has been demonstrated	Has been demonstrated	Unknown*

* Early studies are promising provided data generation can be customized to hospital

Team 3 Summary

- Advantages/disadvantages of pulling data from the AST instrument, LIS or EHR
- Defined the sections and organization where IT updates can be made
- Provide some new fun ways to breakdown the antibiogram data
  - Display the patient pop. used to generate the data
    - Stratify data by location, gender, age, etc.
  - Subtraction antibiograms
    - Comparison between 2 time periods or outpatient vs. inpatient

Stratification of Antibiogram Data

Patients studied by location type 2011-2017

	All locations	Location type			
		Outpatient	Emergency	Inpatient	Long-term care
Number of patients	112,644	86,480	32,854	14,604	740
Percent of patients	100%	77%	29%	13%	0.7%

Note: Row totals exceed 100% since many patients appear in more than one location type over time.

Example of a Subtraction Antibiogram

Gram-negative organisms susceptibility trends
%Susceptible Changes from 2011-2012 through 2016-2017, Inpatients only

	Penicillins				Cephalosporins						Carbapenems			Aminoglycosides		Other			
Organism	AMP	AMC	ATM	TZP	CZO	CXM	FOX	CAZ	CRO	FEP	ETP	IPM	MEM	GEN	AMK	LVX	TCY	SXT	NIT
Acinetobacter baumannii	0	0	0	-40	0	0	0	-38	-12			-32		-26		-32	0	-25	0
Citrobacter freundii		4	9	-3	2	0	23	2	-2	0	0	-3	0	-7	0	0	0	-9	-7
Enterobacter cloacae		4	2	-2	3	18	2	-4	-7	5	5	-6	0	-5	0	-3	17	-1	-26
Escherichia coli	6	0	7	4	6	5	2	2	5	3	0	-1	0	2	0	6	6	-2	-5
Klebsiella pneumoniae	1	5	4	3	6	-7	5	2	4	2	-1	0	0	0	2	6	14	3	-15
Morganella morganii	6	-18			1		33	8	0	0	0		0	5	0	-6	-25	-6	0
Pseudomonas aeruginosa	0	4		-4	0	0	-1	-1	1	-3		-4	-5	-9	-1	-9	0	-1	0
Proteus mirabilis	8	0	0	0	-2	0	-2	0	1	0	0		0	9	0	17	-7	2	0
Serratia marcescens		-5	0	0	0	0	39	0	6	0	0	-30	0	0	0	-5	-50	0	0

Decreases ≥10% are highlighted in red.
Increases ≥10% are highlighted in green.

Next Steps

- The teams have started to draft their sections
- A completed draft will be submitted for the January, 2019 meeting
- Companion articles for each section will be drafted following the completion of M39