Evaluation of First and Second-line DST Methods for *Mycobacterium tuberculosis* ("Expanded MPEP Study")

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Project Purpose and Approach

- Approach was expanded MPEP-like evaluation for first and second-line antituberculosis drugs
- Evaluated DST methods
  - BD BACTEC MGIT
  - indirect agar proportion
  - TREK Sensititre MYCOTB (Sub-study examined inoculum preparation from liquid media)
- Purpose to assess inter-laboratory agreement and identify potential discrepancies based on methodology, drug tested, and concentration(s) tested
- Data to guide future discussions regarding standardization and identify potential avenues for additional research.

Project Purpose and Approach

- Request for Applications through APHL
  - Competitive process
  - One-time funding
  - APHL member or local PHL, or clinical laboratory enrolled in CDC's MPEP
  - Willing to sign biosafety compliance letter
  - Willing to accept drug resistant MTBC
  - Established first- and second-line DST for at least one of the methods
  - Performs DST to at least RIF, INF, EMB, PZA, and at least one fluoroquinolone and at least 2 injectable drugs (AMI, KAN, CAP)
- Awards distributed through contract administered through APHL
- Term of project was Dec 1, 2013 through June 30, 2014.

Participants

Participant	MGIT	AP	TREK
Alabama Bureau of Clinical Laboratories		X	
California Department of Public Health	X		
Centers for Disease Control and Prevention	X	X	X
Florida Bureau of Public Health			X*
Johns Hopkins			X*
Mayo Clinic			X*
National Jewish Health	X	X	
New York State Department of Health	X	X	
Tennessee Department of Health			X
Texas Department of State Health Services		X	X
Virginia Division of Consolidated Laboratory Services	X		
Washington State Department of Health			X*

*Sensititre sub-study participants

Test Panel

- Consisted of 30 *M. tuberculosis* isolates (EM001–EM030)
- 22 unique isolates; 8 isolates were duplicated
- Included drug susceptible and drug resistant isolates, including MDR isolates, with resistances to second-line drugs
  - Selected from isolates referred for MDDR
- Isolates were characterized by indirect agar proportion and DNA sequencing (MDDR)

CDC Growth-based Results (Pre-shipment)

Isolate	Dup	RMP	INH (0.2)	INH (1.0)	EMB	PZA	STR	KAN	CAP	AMK	OFL	PAS	ETO	RBT
EM001		R	R	R	R	R	S	S	S	S	R	S	R	S
EM002	EM010	R	R	R	R	R	R	R	R	R	S	R	R	S *
EM003		S	S	S	S	S	S	S	S	S	R	S	S	S
EM004		R	R	R	R	R	S	R	S	S	S	S	R	R
EM005		S	R	S	S	S	S	S	S	S	S	S	R	S
EM006		R	S	S	S	S	S	S	S	S	S	S	S	R
EM007	EM016	R	R	R	R	S	R	S	S	S	S	R	S	R
EM008		R	S	S	S	S	S	S	S	S	R	S	S	R
EM009	EM011	S *	R	R	R	S	S	S	S	S	S	S	R	S *
EM012	EM017	R	R	S	S	S	S	S	S	S	S	S	R	R
EM013	EM028	S *	R	R	R	R	R	S	S	S	R	S	R	S *
EM014	EM018	S *	R	R	R	R	R	R	S *	R	S	S	S	S *
EM015	EM029	R	R	R	R	R	R	S	R	S	S	R	R	R
EM019		S	R	R	S	S	R	S	S	S	R	S	S	S
EM020		S	R	R	S	S	S	S	S	S	R	S	S	S
EM021		S	S	S	S	S	R	R	R	R	S	S	S	S
EM022		R	S	S	R	R	R	R	S	S	R	S	R	R
EM023	EM030	R	R	S	S *	R	S	S	S	S	S	S	R	R
EM024		R	R	R	R	R	R	S	S	S	S	S	S	S
EM025		R	R	R	R	R	R	S	S	S	S	R	R	S *
EM026		S *	R	R	R	R	R	S	S	S	R	S	S	S *
EM027		S	S	S	S	S	S	S	S	S	S	S	S	S

*—Growth-based results indicated susceptibility; however, molecular results indicate mutation consistent with resistance.

CDC Molecular Results (Pre-shipment)*

Isolate	rpoB	inhA	katG	embB	rrs	eis	tlyA	gyrA	pncA
EM001	Ser531Leu	WT	Ser315Thr	Met306Val	T1239C	WT	WT	Asp94Asn	A(-11)G
EM002	Asp516Val	WT	Ser315Thr	WT	A1401G	WT	WT	WT	A(-11)G
EM003	Phe514Phe	WT	WT	WT	WT	WT	WT	Asp94Asn	WT
EM004	Ser531Leu	WT	Ser315Thr	Met306Ile	WT	C(-14)T	WT	WT	Ala146Glu
EM005	WT	C(-15)T	WT	Glu378Ala	WT	WT	WT	WT	WT
EM006	His526Tyr	WT	WT	WT	T1239C	WT	WT	WT	WT
EM007	Ser531Leu	WT	Ser315Thr	WT	WT	WT	WT	WT	Tyr103Cys
EM008	His526Asp	WT	WT	WT	WT	WT	WT	Asp94Gly	WT
EM009	Asp516Tyr	C(-15)T	WT	Leu355Leu, Glu378Ala	WT	WT	WT	WT	WT
EM012	His526Tyr	C(-15)T	WT	Leu355Leu, Glu378Ala	WT	WT	WT	WT	WT
EM013	Ile572Phe	C(-15)T	Ser315Thr	Met306Ile, Asp328Gly	WT	WT	WT	Asp94Gly	A-11G
EM014	Ser531Cys	WT	Ser315Asn	Met306Val	A1401G	WT	WT	WT	Trp119Arg
EM015	Ser531Trp	C(-15)T	Ser315Thr	Met306Ile	WT	WT	Frameshift	WT	Trp68Arg
EM019	WT	WT	Ser315Thr	Glu378Ala	WT	WT	WT	Ala90Val	WT
EM020	WT	WT	Thr394Pro	Glu378Ala	WT	WT	WT	Ala90Val	WT
EM021	WT	WT	WT	WT	A1401G	WT	WT	WT	WT
EM022	Ser531Leu	WT	WT	Met306Ile	WT	G(-37)T	WT	Asp94Gly	Frameshift
EM023	Ser531Leu	C(-15)T	WT	Met306Ile	WT	WT	WT	WT	Frameshift
EM024	Ser531Leu	WT	Ser315Thr	Met306Leu	WT	WT	WT	WT	Asp12Ala
EM025	Ser531Leu	WT	Ser315Thr	Met306Val	WT	WT	WT	WT	Leu151Ser
EM026	Leu511Pro	WT	Ser315Thr	Met306Val	WT	WT	WT	WT (Asp94Gly)^	Ala102Val
EM027	WT	WT	WT	WT	WT	WT	WT	WT	WT

* Eight sent in duplicate

CDC Growth-based Results (Pre-shipment)

Isolate	Dup	RMP	INH (0.2)	INH (1.0)	EMB	PZA	STR	KAN	CAP	AMK	OFL	PAS	ETO	RBT
EM001		R	R	R	R	R	S	S	S	S	R	S	R	S
EM002	EM010	R	R	R	R	R	R	R	R	R	S	R	R	S *
EM003		S	S	S	S	S	S	S	S	S	R	S	S	S
EM004		R	R	R	R	R	S	R	S	S	S	S	R	R
EM005		S	R	S	S	S	S	S	S	S	S	S	R	S
EM006		R	S	S	S	S	S	S	S	S	S	S	S	R
EM007	EM016	R	R	R	R	S	R	S	S	S	S	R	S	R
EM008		R	S	S	S	S	S	S	S	S	R	S	S	R
EM009	EM011	S *	R	R	R	S	S	S	S	S	S	S	R	S *
EM012	EM017	R	R	S	S	S	S	S	S	S	S	S	R	R
EM013	EM028	S *	R	R	R	R	R	S	S	S	R	S	R	S *
EM014	EM018	S *	R	R	R	R	R	R	S *	R	S	S	S	S *
EM015	EM029	R	R	R	R	R	R	S	R	S	S	R	R	R
EM019		S	R	R	S	S	R	S	S	S	R	S	S	S
EM020		S	R	R	S	S	S	S	S	S	R	S	S	S
EM021		S	S	S	S	S	R	R	R	R	S	S	S	S
EM022		R	S	S	R	R	R	R	S	S	R	S	R	R
EM023	EM030	R	R	S	S *	R	S	S	S	S	S	S	R	R
EM024		R	R	R	R	R	R	S	S	S	S	S	S	S
EM025		R	R	R	R	R	R	S	S	S	S	R	R	S *
EM026		S *	R	R	R	R	R	S	S	S	R	S	S	S *
EM027		S	S	S	S	S	S	S	S	S	S	S	S	S

*—Growth-based results indicated susceptibility; however, molecular results indicate mutation consistent with resistance.

CDC Growth-based Results (Pre-shipment)
Rifamycin issues

Isolate	Dup	RMP	INH (0.2)	INH (1.0)	EMB	PZA	STR	KAN	CAP	AMK	OFL	PAS	ETO	RBT
EM001		R	R	R	R	R	S	S	S	S	R	S	R	S
EM002	EM010	R	R	R	R	R	R	R	R	R	S	R	R	S *
EM003		S	S	S	S	S	S	S	S	S	R	S	S	S
EM004		R	R	R	R	R	S	R	S	S	S	S	R	R
EM005		S	R	S	S	S	S	S	S	S	S	S	R	S
EM006		R	S	S	S	S	S	S	S	S	S	S	S	R
EM007	EM016	R	R	R	R	S	R	S	S	S	S	R	S	R
EM008		R	S	S	S	S	S	S	S	S	R	S	S	R
EM009	EM011	S *	R	R	R	S	S	S	S	S	S	S	R	S *
EM012	EM017	R	R	S	S	S	S	S	S	S	S	S	R	R
EM013	EM028	S *	R	R	R	R	R	S	S	S	R	S	R	S *
EM014	EM018	S *	R	R	R	R	R	R	S *	R	S	S	S	S *
EM015	EM029	R	R	R	R	R	R	S	R	S	S	R	R	R
EM019		S	R	R	S	S	R	S	S	S	R	S	S	S
EM020		S	R	R	S	S	S	S	S	S	R	S	S	S
EM021		S	S	S	S	S	R	R	R	R	S	S	S	S
EM022		R	S	S	R	R	R	R	S	S	R	S	R	R
EM023	EM030	R	R	S	S *	R	S	S	S	S	S	S	R	R
EM024		R	R	R	R	R	R	S	S	S	S	S	S	S
EM025		R	R	R	R	R	R	S	S	S	S	R	R	S *
EM026		S *	R	R	R	R	R	S	S	S	R	S	S	S *
EM027		S	S	S	S	S	S	S	S	S	S	S	S	S

*—Growth-based results indicated susceptibility; however, molecular results indicate mutation consistent with resistance.

CDC Growth-based Results (Pre-shipment)
Ethambutol issues

Isolate	Dup	RMP	INH (0.2)	INH (1.0)	EMB	PZA	STR	KAN	CAP	AMK	OFL	PAS	ETO	RBT
EM001		R	R	R	R	R	S	S	S	S	R	S	R	S
EM002	EM010	R	R	R	R	R	R	R	R	R	S	R	R	S *
EM003		S	S	S	S	S	S	S	S	S	R	S	S	S
EM004		R	R	R	R	R	S	R	S	S	S	S	R	R
EM005		S	R	S	S	S	S	S	S	S	S	S	R	S
EM006		R	S	S	S	S	S	S	S	S	S	S	S	R
EM007	EM016	R	R	R	R	S	R	S	S	S	S	R	S	R
EM008		R	S	S	S	S	S	S	S	S	R	S	S	R
EM009	EM011	S *	R	R	R	S	S	S	S	S	S	S	R	S *
EM012	EM017	R	R	S	S	S	S	S	S	S	S	S	R	R
EM013	EM028	S *	R	R	R	R	R	S	S	S	R	S	R	S *
EM014	EM018	S *	R	R	R	R	R	R	S *	R	S	S	S	S *
EM015	EM029	R	R	R	R	R	R	S	R	S	S	R	R	R
EM019		S	R	R	S	S	R	S	S	S	R	S	S	S
EM020		S	R	R	S	S	S	S	S	S	R	S	S	S
EM021		S	S	S	S	S	R	R	R	R	S	S	S	S
EM022		R	S	S	R	R	R	R	S	S	R	S	R	R
EM023	EM030	R	R	S	S *	R	S	S	S	S	S	S	R	R
EM024		R	R	R	R	R	R	S	S	S	S	S	S	S
EM025		R	R	R	R	R	R	S	S	S	S	R	R	S *
EM026		S *	R	R	R	R	R	S	S	S	R	S	S	S *
EM027		S	S	S	S	S	S	S	S	S	S	S	S	S

*—Growth-based results indicated susceptibility; however, molecular results indicate mutation consistent with resistance.

CDC Molecular Results (Pre-shipment)

Isolate	rpoB	inhA	katG	embB	rrs	eis	tlyA	gyrA	pncA
EM001	Ser531Leu	WT	Ser315Thr	Met306Val	T1239C	WT	WT	Asp94Asn	A(-11)G
EM002	Asp516Val	WT	Ser315Thr	WT	A1401G	WT	WT	WT	A(-11)G
EM003	Phe514Phe	WT	WT	WT	WT	WT	WT	Asp94Asn	WT
EM004	Ser531Leu	WT	Ser315Thr	Met306Ile	WT	C(-14)T	WT	WT	Ala146Glu
EM005	WT	C(-15)T	WT	Glu378Ala	WT	WT	WT	WT	WT
EM006	His526Tyr	WT	WT	WT	T1239C	WT	WT	WT	WT
EM007	Ser531Leu	WT	Ser315Thr	WT	WT	WT	WT	WT	Tyr103Cys
EM008	His526Asp	WT	WT	WT	WT	WT	WT	Asp94Gly	WT
EM009	Asp516Tyr	C(-15)T	WT	Leu355Leu, Glu378Ala	WT	WT	WT	WT	WT
EM012	His526Tyr	C(-15)T	WT	Leu355Leu, Glu378Ala	WT	WT	WT	WT	WT
EM013	Ile572Phe	C(-15)T	Ser315Thr	Met306Ile, Asp328Gly	WT	WT	WT	Asp94Gly	A-11G
EM014	Ser531Cys	WT	Ser315Asn	Met306Val	A1401G	WT	WT	WT	Trp119Arg
EM015	Ser531Trp	C(-15)T	Ser315Thr	Met306Ile	WT	WT	Frameshift	WT	Trp68Arg
EM019	WT	WT	Ser315Thr	Glu378Ala	WT	WT	WT	Ala90Val	WT
EM020	WT	WT	Thr394Pro	Glu378Ala	WT	WT	WT	Ala90Val	WT
EM021	WT	WT	WT	WT	A1401G	WT	WT	WT	WT
EM022	Ser531Leu	WT	WT	Met306Ile	WT	G(-37)T	WT	Asp94Gly	Frameshift
EM023	Ser531Leu	C(-15)T	WT	Met306Ile	WT	WT	WT	WT	Frameshift
EM024	Ser531Leu	WT	Ser315Thr	Met306Leu	WT	WT	WT	WT	Asp12Ala
EM025	Ser531Leu	WT	Ser315Thr	Met306Val	WT	WT	WT	WT	Leu151Ser
EM026	Leu511Pro	WT	Ser315Thr	Met306Val	WT	WT	WT	WT (Asp94Gly)^	Ala102Val
EM027	WT	WT	WT	WT	WT	WT	WT	WT	WT

* Eight sent in duplicate

CDC Molecular Results (Pre-shipment)*

Isolate	rpoB	inhA	katG	embB	rrs	eis	tlyA	gyrA	pncA
EM001	Ser531Leu	WT	Ser315Thr	Met306Val	T1239C	WT	WT	Asp94Asn	A(-11)G
EM002	Asp516Val	WT	Ser315Thr	WT	A1401G	WT	WT	WT	A(-11)G
EM003	Phe514Phe	WT	WT	WT	WT	WT	WT	Asp94Asn	WT
EM004	Ser531Leu	WT	Ser315Thr	Met306Ile	WT	C(-14)T	WT	WT	Ala146Glu
EM005	WT	C(-15)T	WT	Glu378Ala	WT	WT	WT	WT	WT
EM006	His526Tyr	WT	WT	WT	T1239C	WT	WT	WT	WT
EM007	Ser531Leu	WT	Ser315Thr	WT	WT	WT	WT	WT	Tyr103Cys
EM008	His526Asp	WT	WT	WT	WT	WT	WT	Asp94Gly	WT
EM009	Asp516Tyr	C(-15)T	WT	Leu355Leu, Glu378Ala	WT	WT	WT	WT	WT
EM012	His526Tyr	C(-15)T	WT	Leu355Leu, Glu378Ala	WT	WT	WT	WT	WT
EM013	Ile572Phe	C(-15)T	Ser315Thr	Met306Ile, Asp328Gly	WT	WT	WT	Asp94Gly	A-11G
EM014	Ser531Cys	WT	Ser315Asn	Met306Val	A1401G	WT	WT	WT	Trp119Arg
EM015	Ser531Trp	C(-15)T	Ser315Thr	Met306Ile	WT	WT	Frameshift	WT	Trp68Arg
EM019	WT	WT	Ser315Thr	Glu378Ala	WT	WT	WT	Ala90Val	WT
EM020	WT	WT	Thr394Pro	Glu378Ala	WT	WT	WT	Ala90Val	WT
EM021	WT	WT	WT	WT	A1401G	WT	WT	WT	WT
EM022	Ser531Leu	WT	WT	Met306Ile	WT	G(-37)T	WT	Asp94Gly	Frameshift
EM023	Ser531Leu	C(-15)T	WT	Met306Ile	WT	WT	WT	WT	Frameshift
EM024	Ser531Leu	WT	Ser315Thr	Met306Leu	WT	WT	WT	WT	Asp12Ala
EM025	Ser531Leu	WT	Ser315Thr	Met306Val	WT	WT	WT	WT	Leu151Ser
EM026	Leu511Pro	WT	Ser315Thr	Met306Val	WT	WT	WT	WT (Asp94Gly)	Ala102Val
EM027	WT	WT	WT	WT	WT	WT	WT	WT	WT

* Eight sent in duplicate

Results for EM027

Reported as Susceptible to all drugs tested by

- Agar proportion
- MGIT
- TREK

Results for EM027

Reported as Susceptible to all drugs tested by

- Agar proportion
- MGIT
- TREK

Concordance—Rifampin (22 unique isolates)

- Agar Proportion (5 laboratories)
  - 18/22 (82%) agreement
- MGIT (5 laboratories)
  - 22/22 (100%) agreement
- TREK (7 laboratories)
  - 20/22 (91%) agreement (MIC >1 µg/mL = R)

BUT, agreement between laboratories does not mean results are correct!

Concordance—Rifampin (22 unique isolates)

Isolate #	Pre-shipment	Percent Agreement		
		AP (5)	MGIT (5)	TREK (7)*
EM001	R	100 R	100 R	100 R
EM002	R	100 R	100 R	100 R
EM003	S	100 S	100 S	100 S
EM004	R	100 R	100 R	100 R
EM005	S	100 S	100 S	100 S
EM006	R	100 R	100 R	100 R
EM007	R	100 R	100 R	100 R
EM008	R	100 R	100 R	100 R
EM009	S*	40 R, 40 S, 20 B	100 S	100 R
EM012	R	100 R	100 R	100 R
EM013	S*	100 S	100 S	86 S, 14 R
EM014	S*	100 S	100 S	100 S
EM015	R	80 R, 20 NG	80 R, 20 NG	100 R
EM019	S	100 S	100 S	100 S
EM020	S	100 S	80 S, 20 NG	100 S
EM021	S	100 S	100 S	100 S
EM022	R	100 R	100 R	100 R
EM023	R	80 R, 20 NG	100 R	100R
EM024	R	100 R	100 R	100 R
EM025	R	100 R	100 R	100 R
EM026	S*	80 S, 20 R	100 S	86 S, 14 R
EM027	S	100 S	80 S, 20 ND	100 S

* MIC > 1 µg/mL = R

Concordance—Rifampin (22 unique isolates)

		Percent Agreement		
Isolate #	Pre-shipment	AP (5)	MGIT (5)	TREK (7)*
EM001	R	100 R	100 R	100 R
EM002	R	100 R	100 R	100 R
EM003	S	100 S	100 S	100 S
EM004	R	100 R	100 R	100 R
EM005	S	100 S	100 S	100 S
EM006	R	100 R	100 R	100 R
EM007	R	100 R	100 R	100 R
EM008	R	100 R	100 R	100 R
EM009	S*	40 R, 40 S, 20 B	100 S	100 R
EM012	R	100 R	100 R	100 R
EM013	S*	100 S	100 S	86 S, 14 R
EM014	S*	100 S	100 S	100 S
EM015	R	80 R, 20 NG	80 R, 20 NG	100 R
EM019	S	100 S	100 S	100 S
EM020	S	100 S	80 R, 20 NG	100 S
EM021	S	100 S	100 S	100 S
EM022	R	100 R	100 R	100 R
EM023	R	80 R, 20 NG	100 R	100R
EM024	R	100 R	100 R	100 R
EM025	R	100 R	100 R	100 R
EM026	S*	80 S, 20 R	100 S	86 S, 14 R
EM027	S	100 S	80 S, 20 ND	100 S

* MIC > 1 µg/mL = R

Concordance—Rifampin (duplicate isolates)

		Percent Agreement		
Isolate #	Pre-shipment	AP (5)	MGIT (5)	TREK (7)*
EM002	R	100 R	100 R	100 R
EM010		100 R	100 R	100 R
EM006	R	100 R	100 R	100 R
EM016		100 R	100 R	100 R
EM009	S*	40 R, 40 S, 20 B	100 S	100 R
EM011		20 R, 60 S, 20B	100 S	100 R
EM012	R	100 R	100 R	100 R
EM017		100 R	100 R	100 R
EM013	S*	100 S	100 S	86 S; 14 R
EM028		100 S	100 S	86 S, 14 R
EM014	S*	100 S	100 S	100 S
EM018		100S	100 S	100 S
EM015	R	80 R, 20 NG	80 R, 20 NG	100 R
EM029		100 R	100 R	100 R
EM023	R	80 R, 20 NG	100 R	100R
EM030		80 R, 20 NG	100 R	100 R

* MIC > 1 µg/mL = R

Concordance—Ofloxacin (22 unique isolates)

		Percent Agreement		
Isolate #	Pre-shipment	AP (5)	MGIT (2)	TREK (7)*
EM001	R	100 R	100 R	100 R
EM002	S	60 S, 20 R, 20 NCR	100 S	100 R
EM003	R	100 R	50 R, 50 S	100 R
EM004	S	100 S	100 S	100 S
EM005	S	100 S	100 S	71 S, 29 R
EM006	S	100 S	100 S	86 S, 14 R
EM007	S	100 S	100 S	100 S
EM008	R	100 R	100 R	100 R
EM009	S	100 S	100 S	100 S
EM012	S	100 S	100 S	100 S
EM013	R	80 R, 20 NCR	100 R	100 R
EM014	S	100 S	100 S	100 S
EM015	S	80 S, 20 NG	100 S	100 S
EM019	R	60 R, 20 NCR, 20 ND	50 R, 50 ND	100 R
EM020	R	100 R	100 R	100 R
EM021	S	100 S	100 S	86 S, 14 R
EM022	R	100 R	100 R	100 R
EM023	S	80 S, 20 NG	100 S	86 S, 14 R
EM024	S	100 S	100 S	100 S
EM025	S	100 S	100 S	100 S
EM026	R	80 S, 20 R	100 S	86 S , 14 R
EM027	S	100 S	100 S	100 S

* MIC > 2 µg/mL = R

Concordance—Ofloxacin (22 unique isolates)

		Percent Agreement		
Isolate #	Pre-shipment	AP (5)	MGIT (2)	TREK (7)*
EM001	R	100 R	100 R	100 R
EM002	S	60 S, 20 R, 20 NCR	100 S	100 R
EM003	R	100 R	50 R, 50 S	100 R
EM004	S	100 S	100 S	100 S
EM005	S	100 S	100 S	71 S, 29 R
EM006	S	100 S	100 S	86 S, 14 R
EM007	S	100 S	100 S	100 S
EM008	R	100 R	100 R	100 R
EM009	S	100 S	100 S	100 S
EM012	S	100 S	100 S	100 S
EM013	R	80 R, 20 NCR	100 R	100 R
EM014	S	100 S	100 S	100 S
EM015	S	80 S, 20 NG	100 S	100 S
EM019	R	60 R, 20 NCR, 20 ND	50 R , 50 ND	100 R
EM020	R	100 R	100 R	100 R
EM021	S	100 S	100 S	86 S, 14 R
EM022	R	100 R	100 R	100 R
EM023	S	80 S, 20 NG	100 S	86 S, 14 R
EM024	S	100 S	100 S	100 S
EM025	S	100 S	100 S	100 S
EM026	R	80 S, 20 R	100 S	86 S , 14 R
EM027	S	100 S	100 S	100 S

* MIC > 2 µg/mL = R

Concordance—Ofloxacin (duplicate isolates)

		Percent Agreement		
Isolate #	Pre-shipment	AP (5)	MGIT (2)	TREK (7)*
EM002	S	60 S, 20 R, 20 NCR	100 S	100 R
EM010		60 S, 20 R, 20 NCR	100 S	100 R
EM006	S	100 S	100 S	86 S, 14 R
EM016		80 S, 20 R	100 S	100 S
EM009	S	100 S	100 S	100 S
EM011		100 S	100 S	100 S
EM012	S	100 S	100 S	100 S
EM017		100 S	100 S	100 S
EM013	R	80 R, 20 NG	100 R	100 R
EM028		100 R	100 R	100 R
EM014	S	100 S	100 S	100 S
EM018		100 S	100 S	100 S
EM015	S	80 S, 20 NG	100 S	100 S
EM029		100 S	100 S	86 S, 14 R
EM023	S	80 S, 20 NG	100 S	86 S, 14 R
EM030		80 S, 20 NG	100 S	86 S, 14 R

* MIC > 2 µg/mL = R

Next Steps

- Complete data cleaning and verification
- Additional data to analyze
  - Concentrations of drugs tested for AP and MGIT
  - MGIT growth units
  - TREK – time of reads; tentative interpretive criteria
  - Within lab concordance between methods
- Formation of writing group
- Formulate next questions

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