African Union

AFRICA CDC
Centres for Disease Control and Prevention
Safeguarding Africa's Health

AMR
TECHNICAL SCORECARD

HUMAN

Bacterial Culture, Detection, Identification and Antimicrobial Susceptibility Testing of Fecal Samples

Faeces

Version 4.4 – August 2021

IN PARTNERSHIP WITH

FIND
Diagnosis for all

ASLM
AFRICAN SOCIETY FOR LABORATORY MEDICINE

Score

Section	Sum of maximum points[1]	Current Audit		Previous audit	
		Date:		Date:	
		Current audit score		Previous audit score	
1. Documents and Records			%		%
2. Management Reviews			%		%
3. Organization and Personnel			%		%
4. Client Management and Customer Service			%		%
5. Equipment			%		%
6. Evaluation and Audits			%		%
7. Purchasing and Inventory			%		%
8. Process Control and Internal and External Quality Assessment			%		%
9. Information Management			%		%
10. Corrective Action			%		%
11. Occurrence Management and Process Improvement			%		%
12. Facilities and Safety			%		%
Feces Module Total			**%**		**%**
Feces Module Stars[2]					

[1] Total number of points of all questions minus points for questions answered with NA.
[2] No Stars < 55%
1 Star 55% - 64%
2 Stars 65% - 74%
3 Stars 75% - 84%
4 Stars 85% - 94%
5 Stars ≥95%

A. General Information

Name of Assessor(s)			
Title & organization of Assessor			
Name of laboratory being assessed			
Date, type and scope of last assessment?	Date	Type	Score
Internal			
External			
Did the last assessment include assessment of bacterial culture of feces?	Y / N		

B. Technical Information

F.A How many feces culture and molecular tests were performed last year[3,4]?

	Faeces culture				Molecular[5]			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Hospital-acquired[6]								
• *Salmonella sp.*								
• *Shigella sp.*								
• *Other isolates*								
Community-acquired[7]								
• *Salmonella sp.*								
• *Shigella sp.*								
• *Other isolates*								
Unknown/ referred[8]								
• *Salmonella sp.*								
• *Shigella sp.*								
• Other isolates								
TOTAL ISOLATES								
TOTAL NUMBER OF FECES CULTURES PERFORMED								
TOTAL NUMBER OF NEGATIVE FECES CULTURES								

Q = Quarter

F.B Are there any significant variations (> 20%) in the number of bacterial feces cultures performed or organisms isolated each quarter? If 'Yes', please explain[9]

[3] http://www.who.int/glass/en/ and other frequently isolated pathogens.
[4] It is highly recommended that assessors obtain the necessary permission to review the laboratory data. However, if assessors are unable to review the laboratory data this question is NOT compulsory for completion of the assessment.
[5] Molecular tests performed on feces for the detection of bacterial fecal pathogens.
[6] Hospital-acquired infections are defined as bacterial infections in hospitalized patients (i.e. pathogenic bacterial isolated from a sample collected more than 48 hours after admission).
[7] Community-acquired infections are defined as ambulatory patients and hospitalized patients from which a sample was collected less than 48 hours after admission.
[8] If the laboratory can't distinguish between hospital & community acquired infections, the number of organisms isolated should be recorded as "Unknown/referred".
[9] It is highly recommended that assessors obtain the necessary permission to review the laboratory data. However, if assessors are unable to review the laboratory data this question is NOT compulsory for completion of the assessment.

Section 1: Documents & Records

All generic requirements apply, see SLIPTA Section 1. In addition, assessors should review the following:

SLIPTA			NA	Y	P	N	Comments	Score
1.5	F1.1	Does the laboratory have documentation covering the following processes?						
		a) Production of Salmonella Shigella (SS) Agar, Selenite F broth or other media for fecal pathogen isolation?						
		b) Microscopic examination of feces [raw]						
		c) Processing of feces culture and molecular tests						2
		d) Detection, identification and AST of fecal pathogens						
		e) Reporting of feces culture and molecular test results						
		f) Interlaboratory comparison or proficiency testing (PT)						
		g) Laboratory safety						
1.5	F1.2	Are the documents complete, in-date and witnessed by all staff performing feces culture and molecular tests[10]?						2
1.5	F1.3	Are the following processes documented?						
		a) How to identify potential pathogens on all primary media? (SOP should describe colony appearance of potential pathogens and define how to proceed when a						3

[10] See ISO15189:2012 Clause 5.5.3 for minimum requirements for a technical Standard Operating Procedure (SOP)

		potential pathogen is encountered)						
		b) Instructions for referral of feces culture and molecular tests not performed at the laboratory?						
		c) Instructions for handling samples received after hours?						
		d) Instructions for referral of bacterial isolates for identification and AST?						
		e) Instructions on how to perform AST conversions for automated, disk diffusion, Etest / Gradient and microdilution AST?						
		f) Turnaround time for feces culture or molecular tests[11]?						
Section 1: Documents & Records Subtotal								7

Section 2: Management Reviews

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Section 3: Organization & Personnel

All generic requirements apply, see SLIPTA Section 3. In addition, assessors should review the following:

SLIPTA			NA	Y	P	N	Comments	Score
3.6	F3.1	Is there evidence that laboratory staff have been trained in the following[12]:						3
		a) Processing of feces culture and molecular tests						

[11] From sample collection to reporting
[12] Review training records, competency assessment forms and duty rosters. Pay attention to date of training and scope of training compared with techniques being performed.

		b) Detection / identification and AST of fecal pathogens						
		c) Interpretation of feces culture and molecular test results						
		d) Reporting of feces culture and molecular test results						
		e) QC for feces culture and molecular tests						
		f) Laboratory safety						
3.7	F3.2	Is there evidence that laboratory staff are following the procedures described in the laboratory documentation?[13]:						3
		a) Processing of feces culture and molecular tests						
		b) Interpretation of feces culture and molecular test results						
		c) Identification and AST of feces pathogens						
		d) Reporting of feces culture and molecular test results						
Section 3: Organization & Personnel Subtotal								6

Section 4: Client Management & Customer Service

All generic requirements apply, see SLIPTA Section 4. In addition, assessors should review the following:

SLIPTA			NA	Y	P	N	Comments	Score
4.1	F4.1	Is there evidence that the laboratory has provided clients information / instructions on feces collection, storage and						3

[13] Directly observe procedures being performed compared to the SOP.

		transportation to the laboratory?						
4.1	F4.2	Is there evidence that the laboratory has provided clients information / instructions on interpretation of feces culture test results and AST?						2
Section 4: Client Management & Customer Service Subtotal								5

Section 5: Equipment

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Section 6: Evaluation and Audits

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Section 7: Purchasing & Inventory

All generic requirements apply, see SLIPTA Section 7. In addition, assessors should review the following:

SLIPTA			NA	Y	P	N	Comments	Score
7.10	F7.1	Is all media for bacterial culture isolation, identification and AST stored correctly and in date (from date of manufacture media must be stored at 2-8 °C)[14]?						2
		• SS Agar or equivalent						
		• Selenite F broth or equivalent						
		• XLD or equivalent						
		• Mueller Hinton						
Section 7: Purchasing & Inventory Subtotal								2

[14] According to manufacturer's requirements.

Section 8: Process Control

All generic requirements apply, see SLIPTA Section 8. In addition, assessors should review the following:

SLIPTA			NA	Y	P	N	Comments	Score
MEDIA QUALITY CONTROL								
8.8	F8.1	Does the laboratory perform QC testing on all media before use[15]?						
		SS / XLD Agar or equivalent						
		Do QC records demonstrate that they are checked for their ability to suppress growth of Enterobacteriaceae while allowing the growth of *Salmonella* & *Shigella*?						
		Selenite F broth or equivalent						
		Do QC records demonstrate that Selenite F is checked for their ability to suppress growth of Enterobacteriaceae while allowing the growth of *Salmonella* & *Shigella*?						3
		Mueller Hinton (MHA)						
		Do QC records demonstrate that MHA plates are checked for their ability to grow *S. aureus* & *E. coli*?						
8.8	F8.2	Does the laboratory:						
		a) Perform sterility and performance tests for every batch of culture media using certified reference strains as controls?						
		b) Are reference strains sourced from an authorized supplier (e.g. ATCC)?						3
		c) Are the reference strains stored, cultured and sub-cultured in						

[15] This includes in-house made or purchased from commercial sources.

		accordance with the specification from the supplier?						
8.10	F8.3	Does the laboratory determine the cause of failed QC (root cause analysis), perform corrective actions and measure the effectiveness thereof?						2
BACTERIAL FAECES CULTURE PROCEDURE								
8.5	F8.4	Does the laboratory perform a microscopic examination [wet prep & concentrated] for parasites on all feces specimens?						2
8.7	F8.5	Are reference materials, such as permanent mounts, photomicrographs, NCCLS documents M15-A and M28-A2, or printed atlases available at the work bench to assist with identification of parasites?						2
8.7	F8.6	Does the laboratory procedure include rechecking microscopic observations/ interpretations among all personnel performing microscopy (wet prep and concentrated)?						2
8.7	F8.7	Are the following media used for primary culture of feces[16]?						2
		• SS Agar or equivalent						
		• Selenite F broth or equivalent						
		• XLD agar or equivalent						
8.7	F8.8	In cholera endemic areas, does the laboratory perform an isolation procedure for *Vibrio* using TCBS and alkaline peptone water?						2

[16] Either SS agar or XLD agar or equivalent and Selenite F broth or equivalent.

8.7	F8.9	Does the feces processing procedure include plating from Selenite F broth or equivalent to SS / XLD agar or equivalent?							2
8.7	F8.10	Are media used for primary culture of feces incubated at 35-37°C for at least 18 hours?							2
8.7	F8.11	Are media used for primary culture of feces incubated aerobically?							2
***SALMONELLA* & *SHIGELLA* IDENTIFCATION AND AST BY CONVENTIONAL METHODS**									
8.7	F8.12	Does the laboratory perform identification tests (ID) for at least the following enteric pathogens? • *Salmonella sp.* • *Shigella sp.*							2
8.7	F8.13	Does the laboratory perform AST on at least the following enteric pathogens using an approved test method? • *Salmonella sp.* • *Shigella sp.*							2
8.7	F8.14	Is the following testing performed for *Salmonella* & *Shigella* identification: • Oxidase • Indole • Methyl Red • Voges Proskauer • Citrate • Triple Sugar Iron or Kligler Iron • Urease • Motility • *Shigella* serology • *Salmonella* serology							2
8.7	F8.15	Is *Salmonella* AST done as per current CLSI/EUCAST guidelines?[17]							2
8.7	F8.16	Is *Shigella* AST done as per current							2

[17] www.clsi.org / www.eucast.org/)

		CLSI/EUCAST guidelines?[18]						
8.7	F8.17	Does the laboratory use Combination Disk Test or another equivalent method for Extended Spectrum Beta-Lactamase (ESBL) screening[19]?						2
8.7	F8.18	Does the laboratory use Combination Disk Test or another equivalent method for carbapenemase screening?						2
INTERLABORATORY COMPARISON, PT AND EXTERNAL QUALITY ASSESSMENT (EQA)								
8.14	F8.19	Is the laboratory enrolled in an interlaboratory comparison or PT program for feces culture and molecular tests for organism identification, and AST?						2
8.14	F8.20	Did the laboratory pass the last 3 rounds of interlaboratory comparison or PT program testing?						2
8.14	F8.21	Does the laboratory receive onsite supervision visits as part of the EQA program for feces culture and molecular tests?						2
Section 8: Process Control Subtotal								44

[18] www.clsi.org / www.eucast.org/)
[19] J Clin Microbiol. 2013 Sep; 51(9): 2986–2990.

Section 9: Information Management

All generic requirements apply, see SLIPTA Section 9. In addition, assessors should review the following:

SLIPTA			NA	Y	P	N	Comments	Score
9.3	F9.1	Does the final report for feces culture list the organisms for which the specimen was and was not cultured[20]?						2
9.3	F9.2	Does the laboratory report alert organisms which include at least[21]? • ESBL producing organisms • Carbapenem resistant *Salmonella & Shigella*						2
Section 9: Information Management Subtotal								4

Section 10: Identification of Non-conformities, Corrective and Preventive Actions

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Section 11: Occurrence/Incident Management & Process Improvement

All generic requirements apply, see SLIPTA Section 11. In addition, assessors should review the following:

SLIPTA			NA	Y	P	N	Comments	Score
11.4 / 11.5	F11.1	Are the following performance indicators collected[22]?						3
		• Number of feces culture and molecular tests performed (disaggregated by type)						
		○ Hospital-acquired[23]						
		○ Community-acquired[24]						

[20] The laboratory should inform the clinician on the report what organisms were excluded during the culture process. This may be either by choice of media or incubation conditions (e.g. anaerobic organisms). Assessors should review a number of laboratory reports to determine how results are reported. Procedures should be consistent with the laboratory's SOPs.
[21] Alert organisms are organisms with significant public health threat and / or organisms that are notifiable.
[22] It may not be possible for laboratories to distinguish between community and hospital acquired infection if this is not collected on the laboratory requisition form.
[23] Hospital-acquired infections are defined as bacterial infections in hospitalized patients (i.e. pathogenic bacterial isolated from a sample collected more than 48 hours after admission).

SLIPTA			NA	Y	P	N	Comments	Score
		○ Unknown/ referred[25]						
		• Number and percentage of feces culture tests rejected (disaggregated by reason e.g. leaked, insufficient volume) (target <1%)						
		• Number and percentage of feces culture tests where parasites were observed						
		• Number of feces culture tests where pathogens were isolated or identified (disaggregated by type)						
		○ *Salmonella sp.*						
		○ *Shigella sp.*						
		○ *V. cholerae*						
		• Feces culture and molecular test TAT[26] (disaggregated by in-patient & out-patient and by type)						
Section 11: Occurrence/Incident Management & Process Improvement Subtotal								3

Section 12: Facilities and Biosafety

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The Antimicrobial Resistance (AMR) Laboratory Quality Scorecard was developed in collaboration with and support from Becton Dickinson and Company (BD)

[24] Community-acquired infections are defined as ambulatory patients and hospitalized patients from which a sample was collected less than 48 hours after admission.
[25] If the laboratory can't distinguish between hospital & community acquired infections, the number of organisms isolated should be recorded as "Unknown/referred".
[26] From sample collection to reporting.

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