CIDT: Tennessee's experience

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LOVE
HATE

LOVE

- Clinical
  - Faster results
  - Faster patient care
- Public Health
  - Less culture work
    - Know what you are looking for
  - Faster identification of pathogens in an outbreak
  - TN has purchased a BioMérieux (formerly BioFire) Film Array instruments in anticipation of the gastric panel release

- Accurate results?
- Are jurisdictional regs up to this new paradigm?
- Can public health laboratories handle the additional testing placed on them?

TN as a Case Study

- Can public health laboratories handle the additional testing placed on them?
- OR
- How is TN doing in the new world of CIDT?

TN as a Case Study

- TN regulations
  - What we are asking from providers
  - What are we getting from providers
- Scope - Is this a big burden
  - Current look at CIDT workload at SPHL
- Discrepant data
  - Are we finding what we “should” from CIDT
  - How does that compare to discrepant isolates

TN as a Case Study

- Who are the Enteric Culture customers in TN?
  - Notified of Luminex implementation
    - Vanderbilt hospital, Nashville
    - Le Bonheur Children's Hospital, Memphis
  - Notified by provider
    - Genetic Assays, Nashville
  - Notified by Diatherix
    - Diatherix, Huntsville AL
  - Public Health clinics or outbreak investigations

TN REGULATIONS

What we are asking from providers

- TCA 1200-06-03-.12 Reportable Diseases
- (3) It shall be the responsibility of the director of a medical laboratory to submit cultures of designated microorganisms for confirmation, typing and/or antibiotic sensitivity. All cultures shall be accompanied by the following information: (a) Patient's full name, address, age, and sex. (b) Physician's name and address. (c) Anatomic source of culture. Refer to the Tennessee Department of Health Laboratory Services' Directory of Services website for specimens needed for testing (http://health.state.tn.us/lab/directory.htm).

Tennessee Department of Health
Reportable Diseases and Events Matrix

The diseases and events listed below are declared to be communicable and/or dangerous to the public and are to be reported to the local health department by all hospitals, physicians, laboratories, and others persons knowing of or suspecting a case in accordance with the provision of the statutes and regulations governing the control of communicable diseases in Tennessee (T.C.A. §68 Rule 1200-14-01-.02).

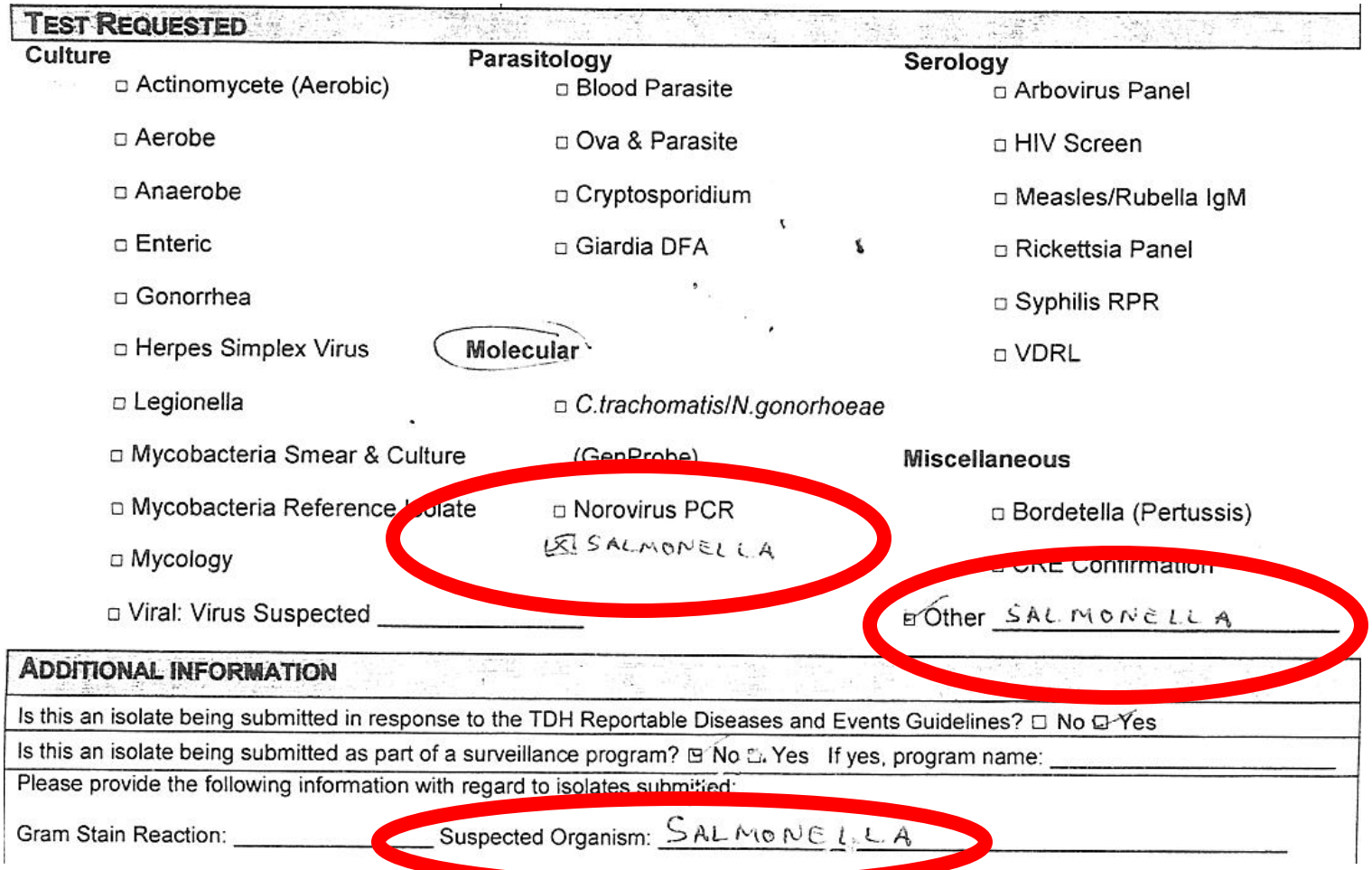
(Effective January 01, 2013)

Code	Disease or Event	Pathogen	Category[1]	Specimen Source(s)[2]	Send Isolate/Specimen[3]	Reporter[1,2]	EIP	NHSN	Indicator
528	*Acinetobacter* species, Carbapenem-resistant[10, 13]	*Acinetobacter* species, Carbapenem-resistant	2	Sterile Sites, Urine	Required	L & P	Y	–	–
500	Acquired Immunodeficiency Syndrome (AIDS)[7]	Human Immunodeficiency Virus (HIV)[7]	3		–	P	–	–	–
525	All CD4+ T-cell and HIV Viral Load testing results from those laboratories performing these tests	Human Immunodeficiency Virus (HIV)	3		–	L	–	–	–
002	Anthrax	*Bacillus anthracis*	1A	All	Required	L & P	–	–	Y
501	Babesiosis	*Babesia* species	2	All	–	L & P	–	–	–
005	Botulism-Foodborne	*Clostridium botulinum*	1A	All	Required	L & P	–	–	Y
003	Botulism-Infant	*Clostridium botulinum*	2		Required	L & P	–	–	–
004	Botulism-Wound	*Clostridium botulinum*	1A	All	Required	L & P	–	–	–
006	Brucellosis	*Brucella* species	1B	All	Required	L & P	–	–	Y
502	*Burkholderia mallei* infection	*Burkholderia mallei*	1B		Required			–	Y
121	California/LaCrosse Serogroup Virus Infection	LaCrosse Encephalitis Virus, Jamestown Canyon Virus, Snoeshoe Hare Virus, Trivittatus Virus, Keystone Virus and California Encephalitis Virus	2	All	–	& P	–	–	–
007	Campylobacteriosis (including EIA or PCR positive stools)	*Campylobacter* species	2		*Requested*	& P	Y	–	–
526	Carbon Monoxide Poisoning	–	2	–		P	–	–	–

What we are asking from providers

- Please tell us what you identified with your CIDT
  - Seems obvious and trivial
    - PH needs to know what to look for!
    - May be multiple organisms
- Vanderbilt
  - To date we have not received any specimens from their CIDT

Le Bonheur Children's Hospital



TEST REQUESTED

Culture

- ☐ Actinomycete (Aerobic)
- ☐ Aerobe
- ☐ Anaerobe
- ☐ Enteric
- ☐ Gonorrhea
- ☐ Herpes Simplex Virus
- ☐ Legionella
- ☐ Mycobacteria Smear & Culture
- ☐ Mycobacteria Reference Isolate
- ☐ Mycology
- ☐ Viral: Virus Suspected _____

Parasitology

- ☐ Blood Parasite
- ☐ Ova & Parasite
- ☐ Cryptosporidium
- ☐ Giardia DFA

Molecular

- ☐ *C.trachomatis/N.gonorhoeae* (GenProbe)
- ☐ Norovirus PCR
- ☒ SALMONELLA

Serology

- ☐ Arbovirus Panel
- ☐ HIV Screen
- ☐ Measles/Rubella IgM
- ☐ Rickettsia Panel
- ☐ Syphilis RPR
- ☐ VDRL

Miscellaneous

- ☐ Bordetella (Pertussis)
- ☐ CRE Confirmation
- ☒ Other SALMONELLA

ADDITIONAL INFORMATION

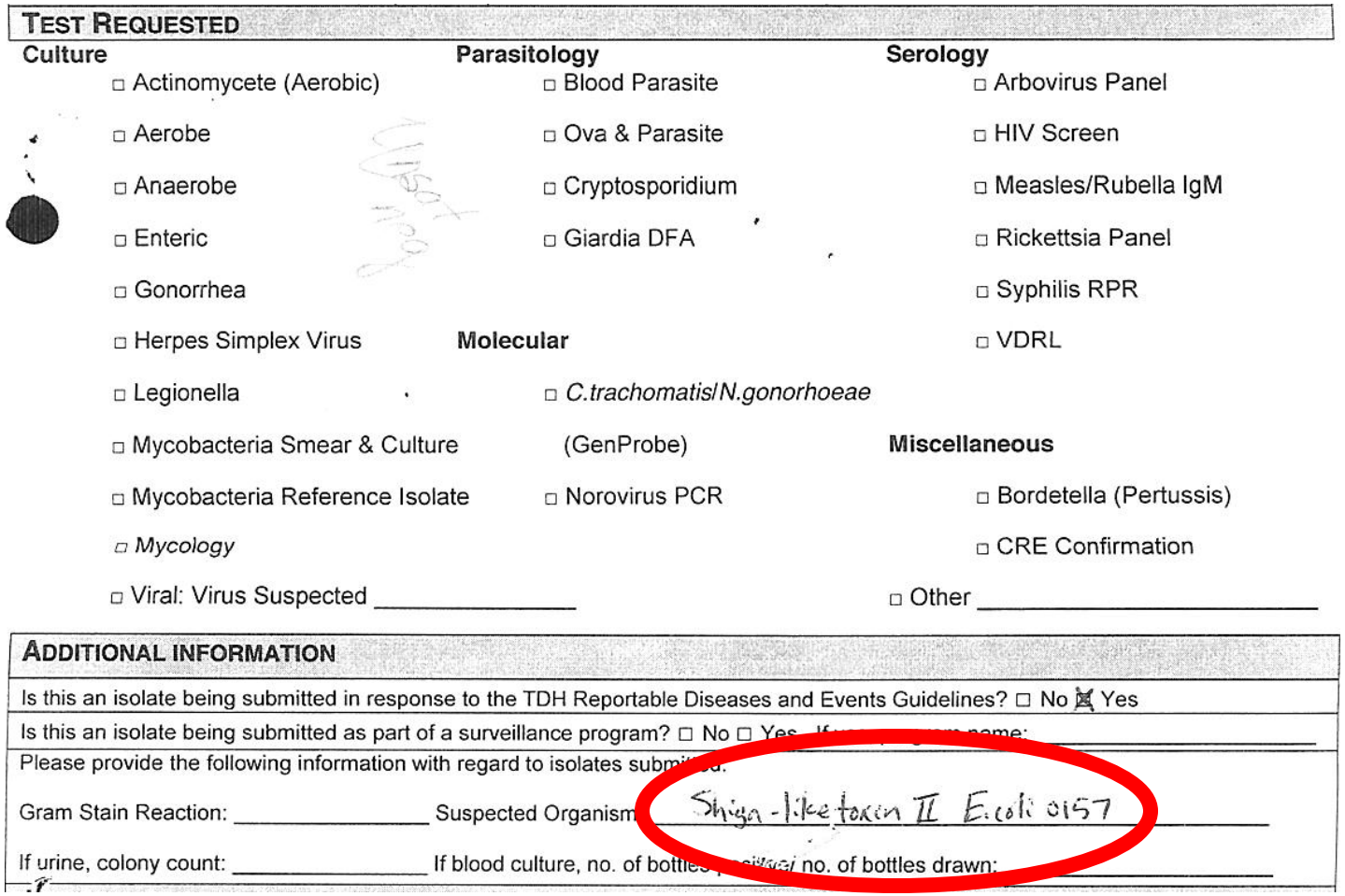
Is this an isolate being submitted in response to the TDH Reportable Diseases and Events Guidelines? ☐ No ☒ Yes

Is this an isolate being submitted as part of a surveillance program? ☒ No ☐ Yes If yes, program name: _____

Please provide the following information with regard to isolates submitted:

Gram Stain Reaction: _____ Suspected Organism: SALMONELLA

Genetic Assays



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Please provide the following information with regard to isolates submitted:

Gram Stain Reaction: _____ Suspected Organism: Shiga-like toxin II E.coli 0157

If urine, colony count: _____ If blood culture, no. of bottles positive/ no. of bottles drawn: _____

Diatherix

Client Address:
5073 COLUMBIA AVE,SPRING HILL, TN 37174

This is the provider address, not the patients

Date/Time Collected:
9/9/2013 9:30 AM

Date Received:
9/10/2013

Date/Time Reported:
9/10/2013 1:51 PM

Accession ID:
1213320239

Specimen Type:
SWAB

Specimen Source:
STOOL

GASTROINTESTINAL PANEL		
	DETECTED	NOT DETECTED
Clostridium difficile Toxin B gene		X
Campylobacter jejuni		X
Escherichia coli strain O157		X
Listeria monocytogenes		X
Salmonella enterica	X-SEE NOTE[1]	
Shigella flexneri		X
Shigella sonnei		X
Vibrio parahaemolyticus		X
Giardia lamblia		X
Cryptosporidium parvum		X
Adenovirus 40, 41		X

LAB NOTES:
[1]If specimen is culturable, specimen will be submitted to the state Department of Public Health laboratory for Salmonella serogrouping and serotyping along with public health epidemiological reporting.

What are we receiving from providers

- LeBonheur Children's Hospital
  - Salmonella, **unpreserved stool**
  - Shigella, **unspecified broth**
- Genetic Assays (working on xport media)
  - E. coli O157, **unpreserved stool**
- Diatherix
  - Sal, Shig, E. coli O157, **Aimes liquid media**
- County health departments / outbreaks
  - Sal, Shig, E. coli O157, Campy, **Para-Pak**

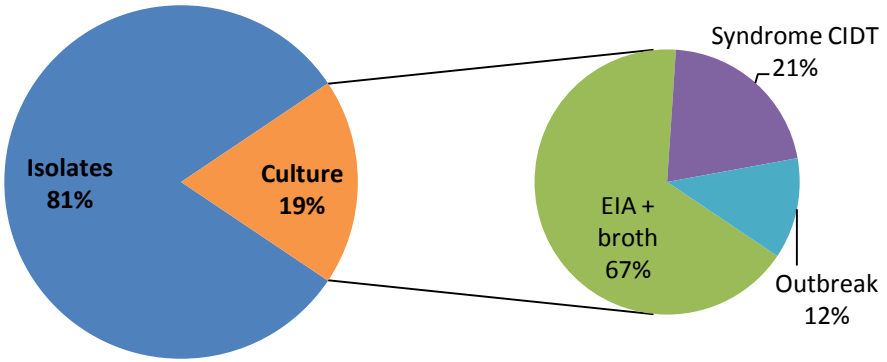
SCOPE - IS THIS A BIG BURDEN

Burden 6/15/13 – 9/15/13

- Le Bonheur
  - Of 48 samples submitted 5 were from CIDT
  - 10.4%
- Genetic Assays
  - Of 2 samples submitted, both were from CIDT
  - 100%
- Diatherix
  - Of 17 samples submitted, all were from CIDT
  - 100%

Burden 6/15/13 – 9/15/13

- 616 isolates / specimens received for SSSC
- 10 unsat (unpreserved, leaked, mislabeled) 606
- 492 Isolates
- 76 STEC or Campy broth from + EIA
- 24 Syndrome CIDT
- 14 O/B



An isolate is NOT the same as a Cx

Isolate

Iso# 0

Test	Read Result
OriginalObs	
Result	TSA slant
Media	
BAP	Pure Isolate
MAC	Non-lactose fermenting colonies present (Clear)
FinalSample	
Conclusion - 1	Shigella sonnei

Iso# 1

Test	Read Result
Isolates	
Preliminary Name	Shigella species
Serology	
Shigella Gp D	Positive
Shigella Saline	Negative
BioChemical	
API 20E #	1104102
API 20E ID	shigella sonnei 98.3%
Oxidase Test	Negative
Motility	Non-motile
Iso.Final	
Final Identification Isolate	Shigella sonnei

Syndrome CIDT

Iso# 0

Test	Read Result
OriginalObs	
Result	Misc. liquid media
Media	
XLD	?clear
MAC	Lf
SubMedia	
LIA	K+/A
TSI	A+/A(G)
MAC	Non-lactose fermenting colonies present (Clear)
MAC	Non-lactose fermenting colonies present (Clear)
LIA	K=/K
TSI	A=/AG
LIA	K=/K
TSI	A=/AG
LIA	K=/K
TSI	A=/AG
FinalSample	
Conclusion - 1	No Shigella isolated.

Iso# 1

Test	Read Result
Isolates	
Preliminary Name	x6
BioChemical	
TSI	A=/AG
LIA	K=/K
Iso.Final	
Final Identification Isolate	No further work-up

x6

DISCREPANT DATA

Le Bonheur

- 3 submitted for Shigella
  - 2 confirmed [med TT 10d]
  - 1 not isolated [TT 8d]

D

- 2 submitted for Salmonella
  - 1 confirmed [TT 17d]
  - 1 not isolated [TT 12d]

F

Genetic Assays

- 2 submitted for STEC
  - 1 confirmed [TT 25d]
  - 1 not isolated [TT 11d]

Diatherix

- 9 submitted for Shigella
  - 5 confirmed [med TT 7d]
  - 4 not isolated [med TT 3d]
- 7 submitted for Salmonella
  - 5 confirmed [med TT 3d]
  - 2 not isolated [med TT 3d]
- 1 submitted for STEC
  - 1 not isolated [TT 8d]

F

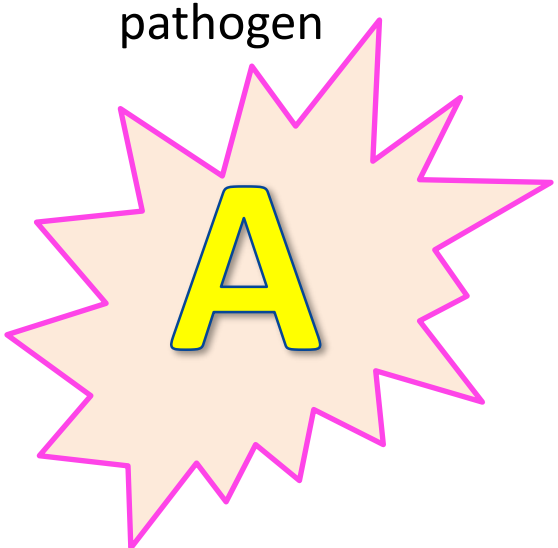
C

F

Overall

Isolate

- 479 correct / 492
- 97%
  - 11 not isolated
  - 2 identified different pathogen



Syndrome CIDT

- 14 correct / 24
- 58%

F

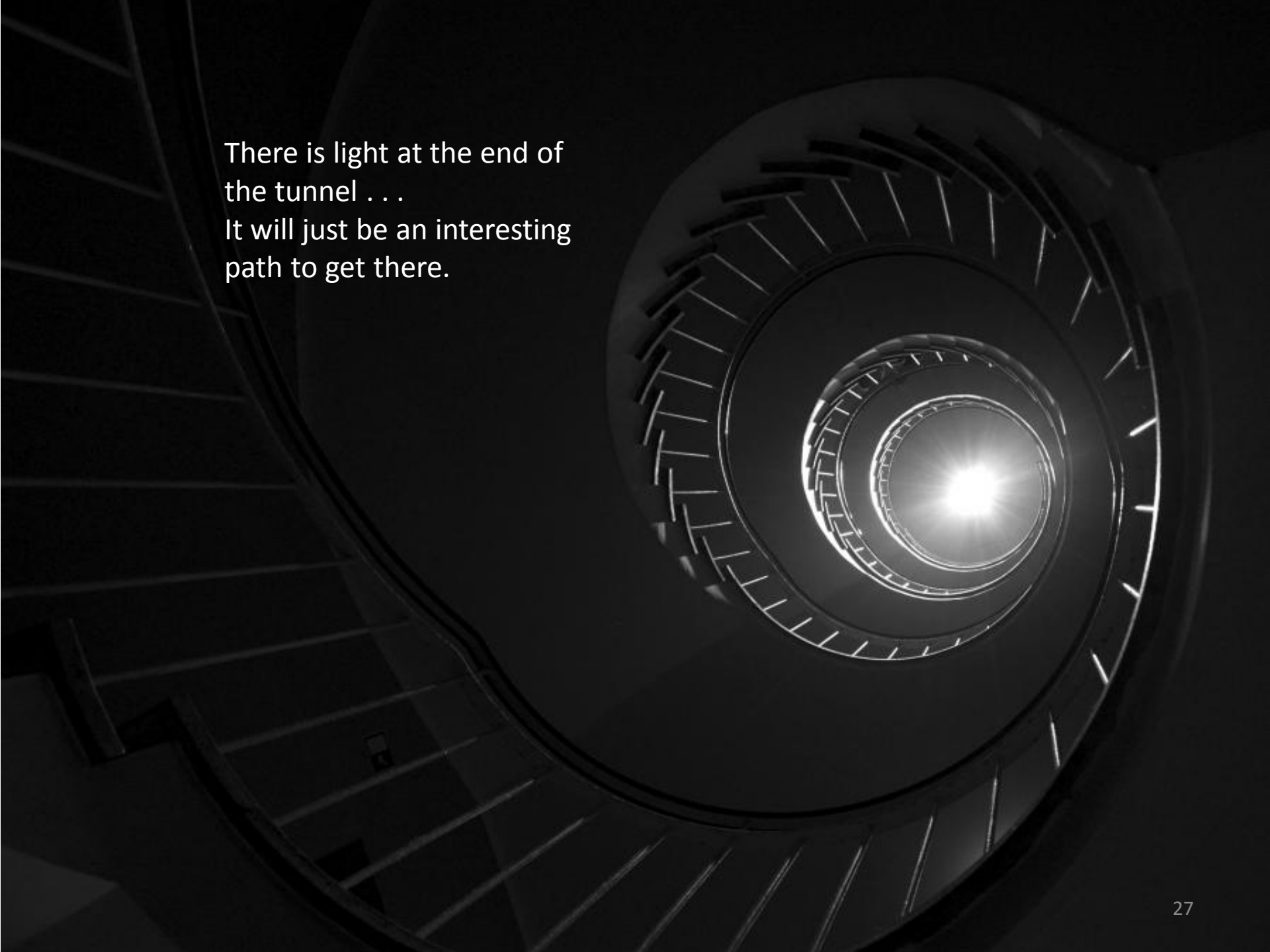
What do the grades mean?

- I have no idea.
- False positives from syndrome CID test
- CIDT detected dead target
- CIDT more sensitive than culture
- Died in transit
- False negative culture at SPHL

UPDATE

Update . . .

- 137 in last 2 weeks
  - 11 clinical stool (HD) all neg
  - 4 Campy EIA + (1 pos)
  - 2 STEC EIA + (1 pos)
  - 22 Diatherix swab in AIMES (in progress)
    - Rec'd as 3 batches of 9, 4, 9
    - From 2 a week to 2 a day . . .


There is light at the end of the tunnel . . .
It will just be an interesting path to get there.


Due to recent budget cuts, the light at the end of the tunnel has been turned off.

Acknowledgements

- TN DOH Lab
  - Sheri Roberts
  - Jeannette Dill
  - Tracey Woodard
  - RuthAnn Spence
  - Zach Perry
- TN DOH Epi
  - John Dunn
  - Katie Garman
  - Amanda Ingram
- Envir. Health
  - Local Health Depts
  - State Health Depts