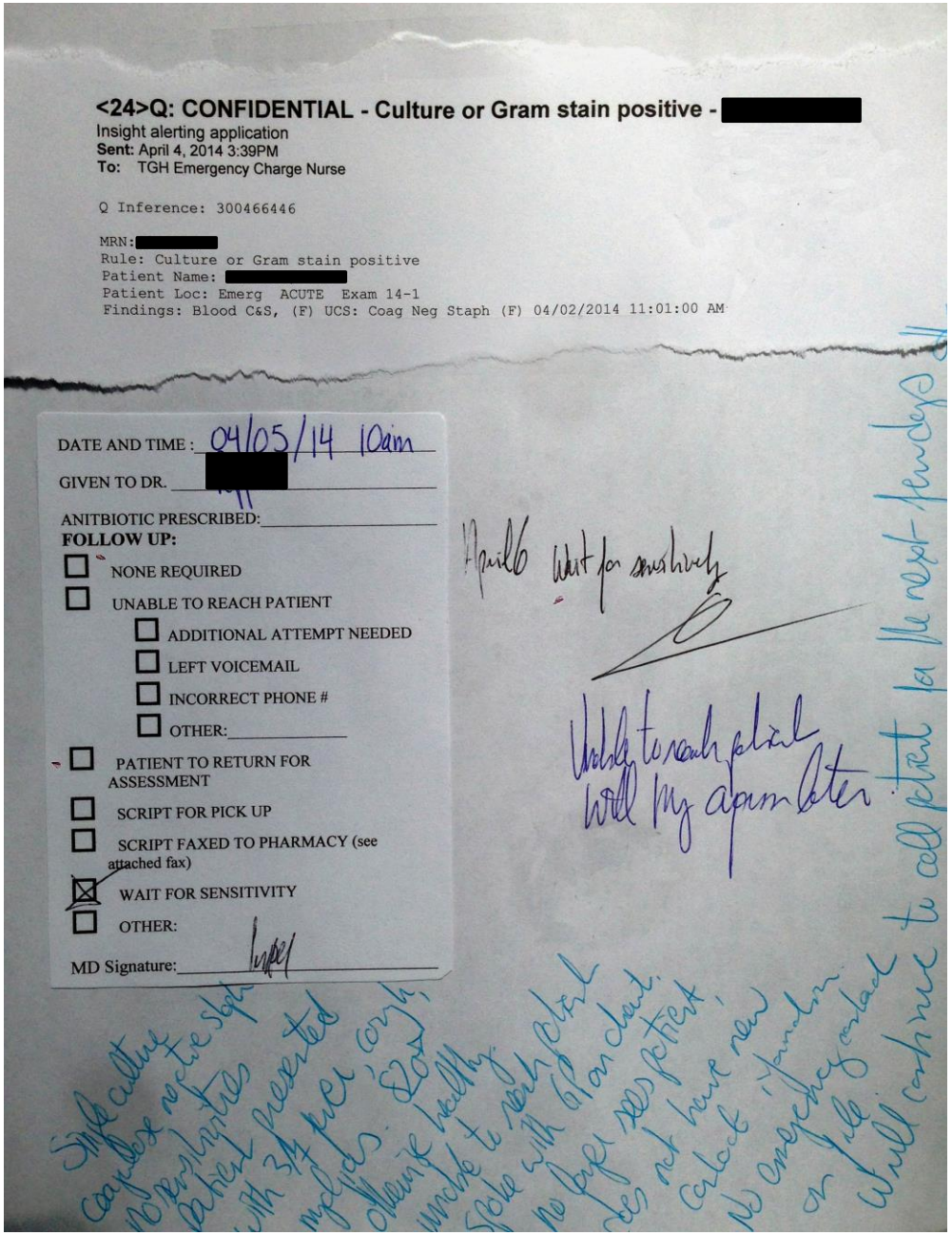
MANAGEMENT OF POSITIVE BLOOD CULTURES

MICROBIOLOGY FOLLOW-UP QI GROUP

THE FORM: BACKGROUND

- Frustration with poor documentation



<24>Q: CONFIDENTIAL - Culture or Gram stain positive - [redacted]

Insight alerting application
Sent: April 4, 2014 3:39PM
To: TGH Emergency Charge Nurse

Q Inference: 300466446

MRN: [redacted]
Rule: Culture or Gram stain positive
Patient Name: [redacted]
Patient Loc: Emerg ACUTE Exam 14-1
Findings: Blood C&S, (F) UCS: Coag Neg Staph (F) 04/02/2014 11:01:00 AM

DATE AND TIME: 04/05/14 10am

GIVEN TO DR. [redacted]

ANITBIOTIC PRESCRIBED:

FOLLOW UP:

- ☐ NONE REQUIRED
- ☐ UNABLE TO REACH PATIENT
  - ☐ ADDITIONAL ATTEMPT NEEDED
  - ☐ LEFT VOICEMAIL
  - ☐ INCORRECT PHONE #
  - ☐ OTHER:
- ☐ PATIENT TO RETURN FOR ASSESSMENT
- ☐ SCRIPT FOR PICK UP
- ☐ SCRIPT FAXED TO PHARMACY (see attached fax)
- ☒ WAIT FOR SENSITIVITY
- ☐ OTHER:

MD Signature:

April 6 wait for sensitivity

Unable to reach patient will try again later

Simple culture coagulase negative staph no significance Patient presented with 3/4 days cough, myalgias. Otherwise healthy. Unable to reach patient. Spoke with GF on chart. no longer sees patient, does not have new contact information. No emergency contact or full contact. Will continue to call patient for the next few days

THE FORM: RATIONALE & BENEFITS

- Improve documentation
  - Reduce medico-legal risk
  - Improve patient safety
  - Decrease physician workload

UHN Emergency Department Culture Results Follow-Up Sheet

Ward Clerk:_____
Today's Date/Time _____
Date of ER Visit: _____
If blood culture -were 2 sets drawn? ☐yes ☐no

Patient Name/MRN

Charge RN: _____ Signature: _____
☐ Blood ☐ Urine ☐ Throat ☐ Wound ☐ Stool ☐Other _____
☐ Preliminary ☐ Final ☐Final with sensitivities
Antibiotic prescribed in ED: _____

What Action Is Required?

1. ☐ **Case Closed** (no f/u needed, correct antibiotic)

2. ☐ **Await sensitivities** (*NEVER appropriate for positive BLOOD cultures)

3. ☐ **Call patient for reassessment by phone**

☐ Date &Time of attempted contact: _____

Outcome
☐ Patient's clinical condition does not require further action (Case Closed)
☐ Prescription for pick-up in ED
☐ Prescription for faxing to pharmacy Pharmacy info: _____
☐ Patient confirmed they will return to ED for reassessment

Unable to reach patient
☐ Voicemail left to call back at TWH ED 416-603-5190 or TGH ED 416-340-3947
☐ Continue attempts by ward clerk Q30min x2hours & notify MD if no response
☐ Incorrect phone number on EPR (tried canada411.ca)
Outcome following patient contact: Time:_____ Date:_____
Action: _____
_____
_____

4. ☐ **Other (Specify Below)**

Additional Comments: EPR ED Follow-up Note Completed? ☐ Yes ☐ No
_____
_____
_____
_____

MD completing this form: _____ Signature: _____

THE FORM: FUTURE DIRECTIONS

- Have gone through several iterations of the form
- Continue to receive feedback and implement changes

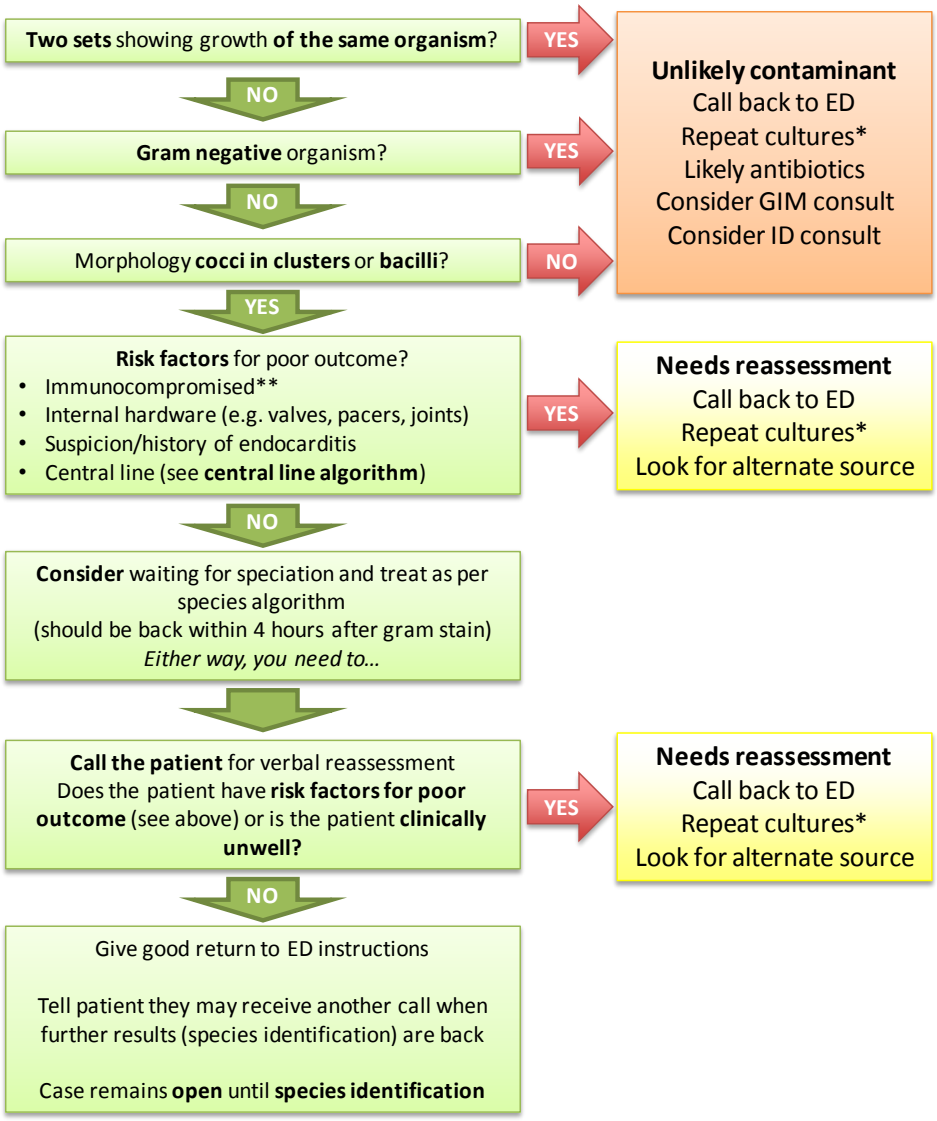
THE ALGORITHMS: BACKGROUND

- Inconsistent and inadequate follow-up and management
  - Based on physician surveys
    - 15% of physicians inappropriately managing CNS
  - A lot of doubt with how to manage preliminary gram stains
    - A dearth of ED-appropriate resources to help with this

THE ALGORITHMS: RATIONALE & BENEFITS

- Improving patient morbidity/mortality
- Reducing physician and ED burden with common contaminants
- Improving physician work flow
- Improving physician confidence

Positive Blood Culture Algorithm – by Gram Stain



* Repeat cultures should all be two sets from two peripheral sites separated by >30 minutes. If possible endocarditis or "Fever of Unknown Origin", 3 sets from 2-3 sites each separated by >30 minutes.

**Defined as HIV, active chemo, active immunosuppressants, uncontrolled DM

Last updated 2016-02-04

Species	Gram Stain	Morphology		Coagulase	Subclassification	Approx % chance of true bacteremia if single bottle positive	Risk Group	Will sensitivities be done?
Acinetobacter baumanii	Gram neg	bacilli				>80	High	YES
Aerococcus spp.	Gram pos	cocci	clusters			<10	Low	YES
Bacillus anthracis	Gram pos	bacilli				>80	High	YES
Bacillus spp. (except B. anthracis)	Gram pos	bacilli				<5	Low	NO
Bacteroides spp.	Gram neg	bacilli			anaerobe	95	High	NO
Campylobacter spp.	Gram neg	bacilli				>90	High	NO
Candida spp.	Fungi				Fungi	98	High	NO
Citrobacter spp.	Gram neg	bacilli			Enterobacteriacea	>90	High	YES
Clostiridium perfringens	Gram pos	bacilli			anaerobe	25	Intermediate	NO
Clostridium botulinum	Gram pos	bacilli			anaerobe	>80	High	NO
Clostridium difficile	Gram pos	bacilli			anaerobe	>80	High	NO
Clostridium spp. (except C. botulinum, C. difficile, C. tetani)	Gram pos	bacilli			anaerobe	64	High	NO
Clostridium tetani	Gram pos	bacilli			anaerobe	>80	High	NO
Coagulase-negative Staphylococcus spp. (except S.lugdunesis)	Gram pos	cocci	clusters	coag-neg		15	Low	NO
Corynebacterium jeikeinum	Gram pos	bacilli				>80	High	YES
Corynebacterium spp.(except C. jeikeium)	Gram pos	bacilli				<5	Low	NO
Crypotococcus neoformans	Fungi				Fungi	100	High	NO
Enterobacter cloacae	Gram neg	bacilli			Enterobacteriacea	93	High	YES
Enterobacter spp.	Gram neg	bacilli			Enterobacteriacea	90	High	YES
Enterococcus spp.	Gram pos	cocci	chains	α-hemolytic		70	Intermediate	YES
Escherichia coli	Gram neg	bacilli			Enterobacteriacea	99	High	YES
Group B *Streptococcus*	Gram pos	cocci	chains	β-hemolytic	Group B strep	>90	High	YES
Haemophilus influenza	Gram neg	coccobacilli				100	High	YES
Klebsiella pneumoniae	Gram neg	bacilli			Enterobacteriacea	95	High	YES
Klebsiella spp.	Gram neg	bacilli			Enterobacteriacea	>90	High	YES

Positive Blood Culture Action Required - based on species risk category

(see following page to find risk category)

HIGH RISK - Unlikely Contaminant

1. Call back to ED
2. Clinical reassessment
3. Repeat cultures*
4. Strongly consider antibiotics
5. Consider GIM/ID consult

INTERMEDIATE RISK - Possible Contaminant

1. Call back to ED
2. Clinical reassessment
3. Repeat cultures*
4. Consider antibiotics
5. Consider GIM/ID consult

LOW RISK - Common Contaminant

IF
1. Only one of two sets positive, AND
2. No risk factors**, AND
3. No fever of unknown origin ***, AND
4. Patient clinically well over the phone

THEN Case closed

OTHERWISE
1. Call patient back to ED
2. Clinical reassessment
3. Repeat cultures*

Notes:

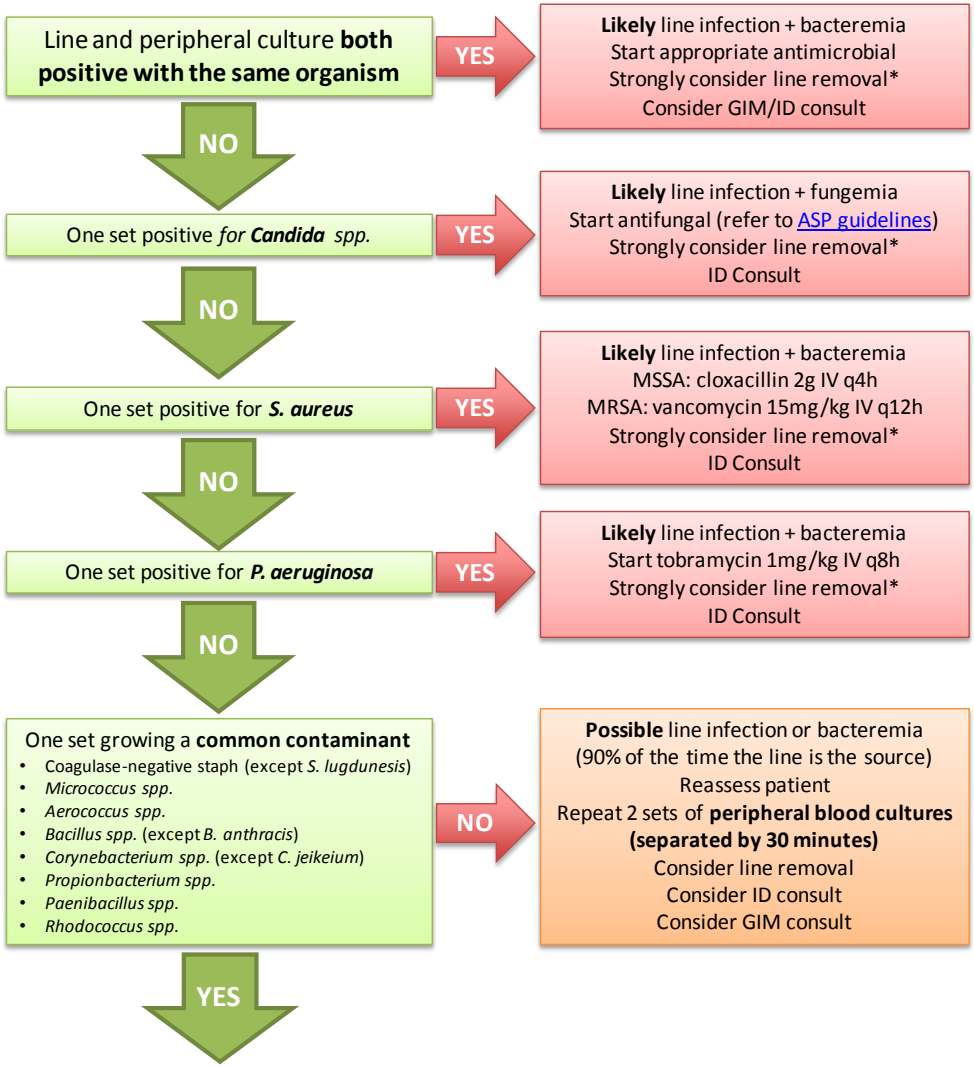
* Repeat cultures should be two sets from two peripheral sites >30 minutes apart. (If possible endocarditis or "Fever of Unknown Origin" then do 3 sets from 2-3 sites each >30 min apart)

** Risk factors include immunocompromise, internal hardware (especially valves or lines), risk of endocarditis

*** Defined as unexplained fever > 1 week or 3 outpatient visits despite appropriate investigations

Positive Blood Cultures in Patients with a Central Line

(only applies for FIRST series of cultures. If the repeat set of cultures is positive with the same organism, likely real infection)



*When deciding whether to remove a line, consider the necessity of a line and the difficulty of regaining access (e.g. PICC vs dialysis catheter)
When in doubt, consult the service that uses it the most

Last edited 2016-02-02

THE ALGORITHMS: FUTURE DIRECTIONS

- Evaluate physician confidence with help of algorithms
- Dissemination to other emergency departments
  - (some of our colleagues are already using them at other sites)