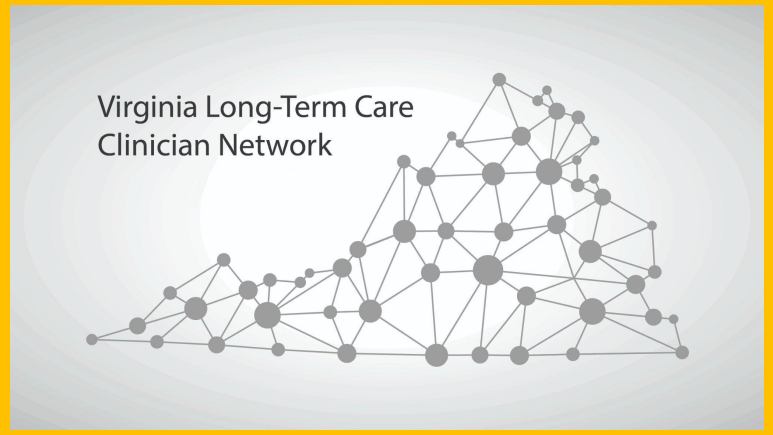
Virginia Long-Term Care Clinician Network

Monthly Forum
September 17, 2025



VCU College of Health Professions
Gerontology and the Virginia Center on Aging

VCU School of Medicine

WE ARE THE UNCOMMON.

The Virginia Long-Term Care Clinician Network is managed by VCU's Division of Geriatric Medicine, Virginia Center on Aging, and Department of Gerontology.

VCU College of Health Professions
Gerontology and the Virginia Center on Aging

VCU School of Medicine

WE ARE THE UNCOMMON.

Welcome!

As you join, please turn on cameras and mic or unmute your phone and say hello to your Virginia colleagues.

Thank you for answering the QI question sent out Friday afternoon. We had over 20 responses over the weekend. Your attention and care to residents of nursing homes is clear.

Silver Award!

VCU College of Health Professions
Gerontology and the Virginia Center on Aging

VCU School of Medicine

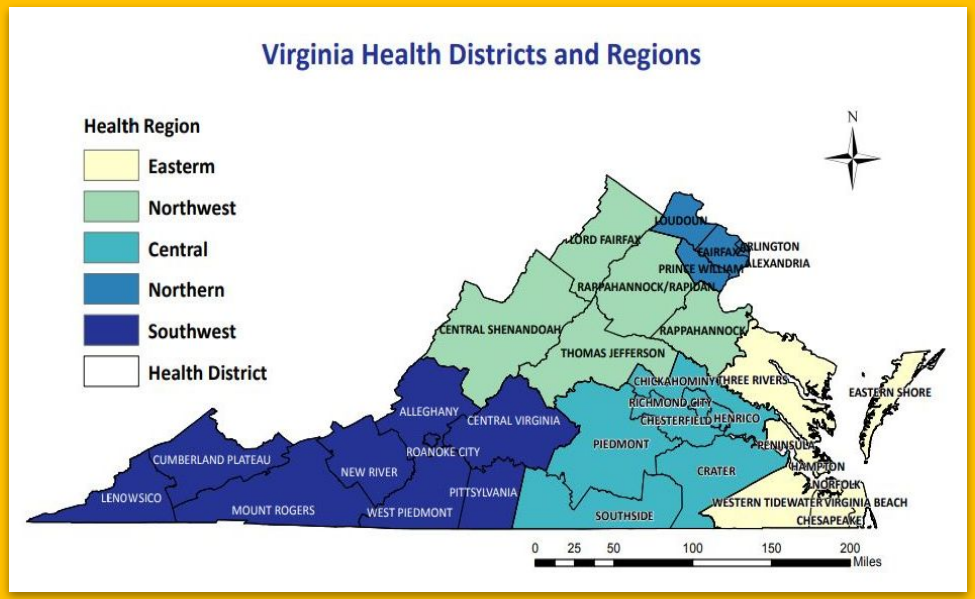
WE ARE THE UNCOMMON.

Accreditation

	In support of improving patient care, VCU Health Continuing Education is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC), to provide continuing education for the healthcare team.
	VCU Health designates this live activity for a maximum of ***1.00 AMA PRA Category 1 Credits***^{TM}. Physicians should claim only the credit commensurate with the extent of their participation in the activity.
	VCU Health Continuing Education designates this activity for a maximum of ***1.00 ANCC*** contact hours. Nurses should claim only the credit commensurate with the extent of their participation in the activity.
	VCU Health Continuing Education has been authorized by the American Academy of PAs (AAPA) to award AAPA Category 1 CME credit for activities planned in accordance with AAPA CME Criteria. This activity is designated for ***1.00 AAPA Category 1 CME credits***. PAs should only claim credit commensurate with the extent of their participation.

Welcome new members!

Brandy Stevens - Eastern
Benjamin Cahill - Northwest
Melanie De Jesus - Eastern
Crystal Ton - Eastern
Stephanie Johnson - Northern
Marisa Christensen - Central



There are approximately 287 nursing homes and 580 assisted living facilities operating in Virginia. Within these, there are over 33,000 nursing home beds and 500 clinicians providing care. **We have 317 network members.** The Network provides ongoing learning and communication.

Remind your work colleagues to attend so they can get education, support and CME!

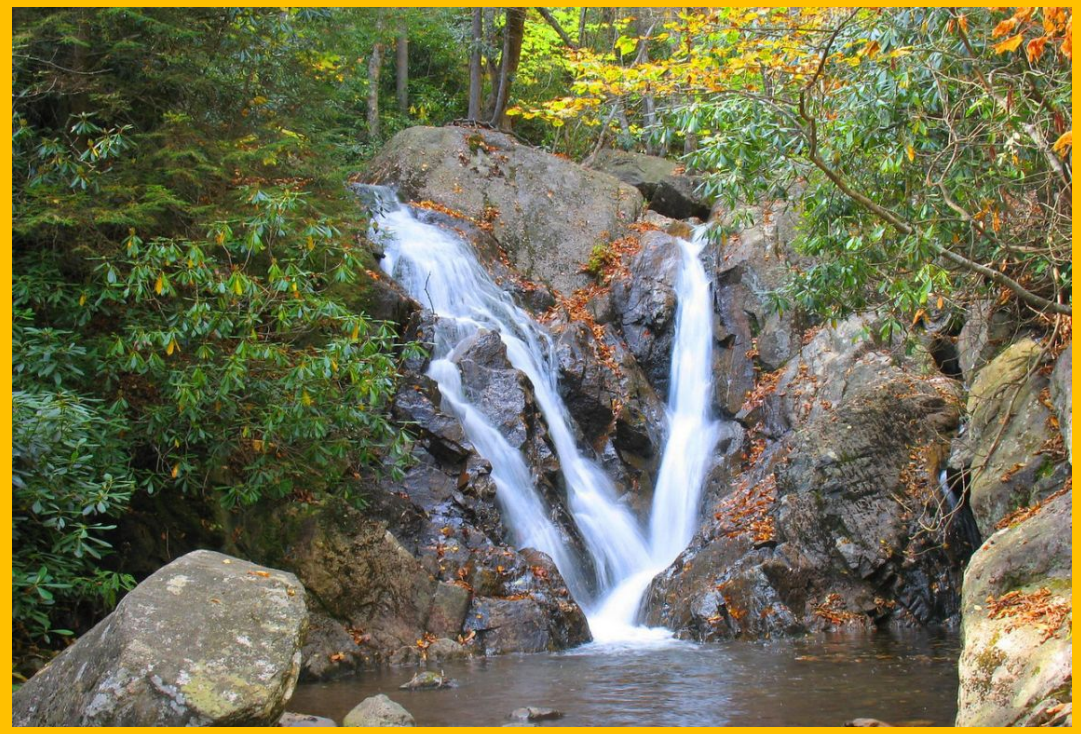
VCU College of Health Professions
Gerontology and the Virginia Center on Aging

VCU School of Medicine

WE ARE THE UNCOMMON.

Waterfall Question

When the inspectors visit your facilities do you make it a practice to talk with them? If you are the medical director are you brought in to the process?

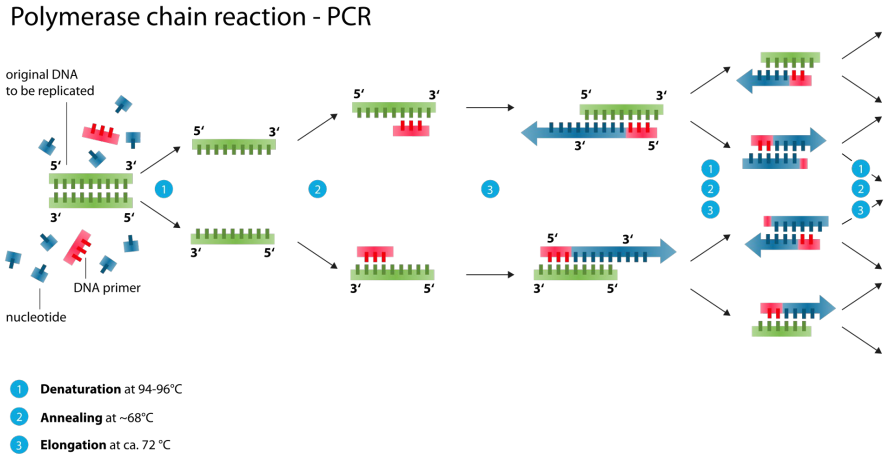


Cabin Creek Falls, Grayson County
https://www.dwhike.com/Waterfalls/Virginia-Waterfalls/i-MWqHnpk/A

Disclosure of Financial Relationships

Disclosure of Commercial Support:

We acknowledge that no commercial or in-kind support was provided for this activity.



Wound, Urine, Blood PCR - What to do?

Christian Bergman, MD, CMD

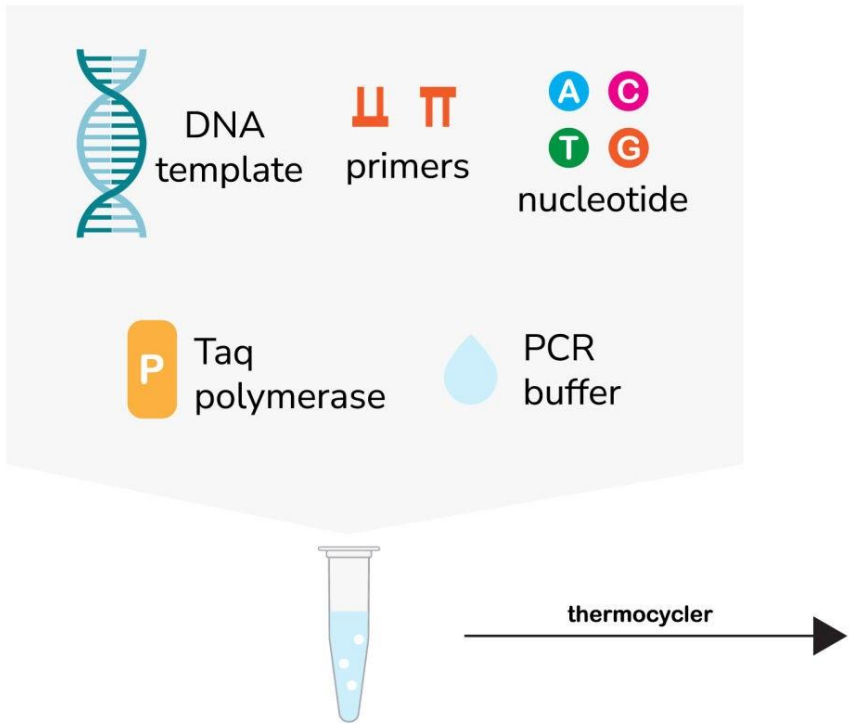
Associate Professor, Division of Geriatric Medicine, VCU, Richmond, VA

September 17, 2025

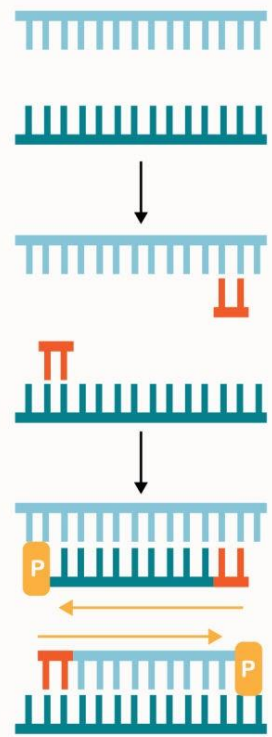
MOLECULAR BIOLOGY

Polymerase Chain Reaction (PCR)

The components of PCR reaction



Steps of PCR reaction



1 Denaturation

The heat breaks the hydrogen bonds of DNA template and separates into single strands

2 Annealing

DNA primers bind to the individual single strands

3 Extension

Taq polymerase insert nucleotides and extend the newly strand

Diagnostic PCR

PCR (polymerase chain reaction) is a highly accurate diagnostic method used to test for infections in wounds, blood, and urine.

PCR is **faster and more sensitive** than traditional lab cultures and can detect the genetic material of pathogens, including bacteria, viruses, and fungi, even in low concentrations.

Pros/Cons of PCR-based diagnostic testing

Pros

- Faster
- Cheaper
- Highly sensitive
- Direct information regarding abx-resistance genes
- Can be utilized in samples with high bio-film burden

Cons

- Highly sensitive (is the bacteria alive and/or pathogenic?)
- Need to interpret results in clinical context
- PCR not in clinical practice guidelines yet (can’t diagnosis UTI)
- Can lead to increased Abx use

Wound PCR

Traditional wound cultures can be slow

In contrast, PCR wound panels offer a rapid and comprehensive assessment.

Been proven to be useful in chronic wounds or surgical wounds (deep tissue biopsy)

Interpretation and Abx selection are main problems.

Increasingly popular and in-use currently across the country.

Leg wound

POSITIVE

RESULT SUMMARY

Pathogens Detected - Microbial Load:

- **Staphylococcus aureus** >100,000 CFU/mL
- **Proteus mirabilis** >100,000 CFU/mL
- **Acinetobacter baumannii** 50,000-100,000 CFU/mL
- **Providencia stuartii** 50,000-100,000 CFU/mL
- **Stenotrophomonas maltophilia** 50,000-100,000 CFU/mL
- **Enterococcus faecalis** 50,000-100,000 CFU/mL
- **Escherichia coli** 10,000-50,000 CFU/mL

Antibiotic Resistance Genes (ABR) Detected:

- **Methicillin**
- **Trimethoprim / Sulfamethoxazole**

SUGGESTED TREATMENT			
Drug of Choice:	**Route:**	**Dosage Recommendation:**	**Remarks and Warnings:**
Doxycycline	PO	100mg PO q12hrs	IV form may cause phlebitis. Tetracyclines cross the placenta. Therapeutic doses of doxycycline during pregnancy are unlikely to produce substantial teratogenic risk, but data are insufficient to say that there is no risk.
Susceptible Pathogens: Staphylococcus aureus			
Alternative / Combination:	**Route:**	**Dosage Recommendation:**	**Remarks and Warnings:**
Levofloxacin	PO	750mg PO once daily. Proteus sp and Enterobacter Cloacae Complex: 750 mg IV once daily *Requires renal adjustment if applicable.	Duration of therapy varies depending on type and severity of infection. More severe infections require IV administration.
Susceptible Pathogens: Acinetobacter baumannii, Enterococcus faecalis, Escherichia coli, Proteus mirabilis, Stenotrophomonas maltophilia.			
Ciprofloxacin	PO	500-750mg PO BID. Proteus sp and Enterobacter Cloacae Complex: 400 mg IV q12h. Providencia sp: 750mg q12hrs *Requires renal adjustment if applicable.	Dose varies depending on type of wound. IV preferred for more severe infections. Duration of therapy varies depending on type of wound. Use higher dose for Pseudomonas Aeruginosa.
Susceptible Pathogens: Acinetobacter baumannii, Escherichia coli, Proteus mirabilis, Providencia stuartii.			
Not Tested For ABR:	**Route:**	**Dosage Recommendation:**	**Remarks and Warnings:**
Cefepime	IV	Typical dose: 1-2g IV q8-12hr traditional dosing, 2g IV q8h over 3-4h extended infusion dosing. Diabetic foot infection: 2g IV q8-12h. Osteomyelitis: 2g IV q8-12h. SSTI: 2g IV q8-12h. Acinetobacter Complex and Proteus infection: 2g IV q8hr. Enterobacter Cloacae Complex: 1-2 gm IV q8-12h. Providencia spp: 1-2g IV q8-12hrs. Pseudomonas aeruginosa 2g q8h. *Requires renal adjustment if applicable.	Duration of therapy varies depending on severity of wound (ie osteomyelitis duration of therapy is up to 6 weeks)
Susceptible Pathogens: Acinetobacter baumannii, Escherichia coli, Proteus mirabilis, Providencia stuartii.			
Ceftriaxone	IV	Typical dose: 1-2g IV once daily. Bite wound: 2g IV daily or 1g IV q12h. Diabetic foot infection: 1-2 g IV daily. Osteomyelitis: 2g IV daily. SSTI: 1-2 g IV daily	Duration of therapy varies depending on type of wound. Can also be given IM depending on type of infection.
Susceptible Pathogens: Escherichia coli, Proteus mirabilis, Providencia stuartii.			

Blood PCR

Traditional blood cultures take 24-48 hours to turn positive.

Very labor intensive

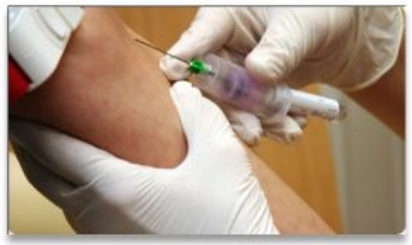
Can detect Abx-resistant genes much faster, within 6 hours

Most useful for treating severe sepsis, ICU patient with high risk of MDR bacteremia.

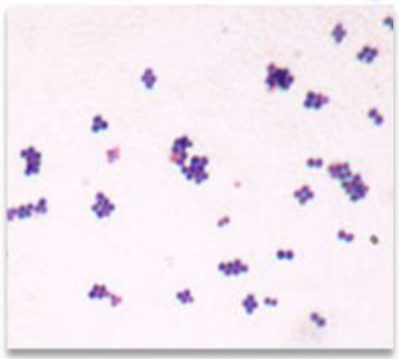
Increasingly popular with clinical laboratories (acute care).

Currently in-use with both sets (PCR AND CX) of data being collected

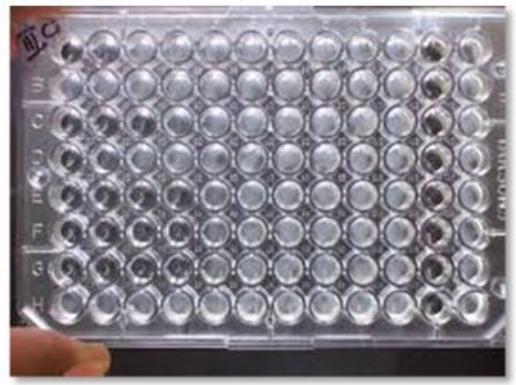
New Blood Culture Workflow:
Blood culture PCR (BCID) Implemented May 2023

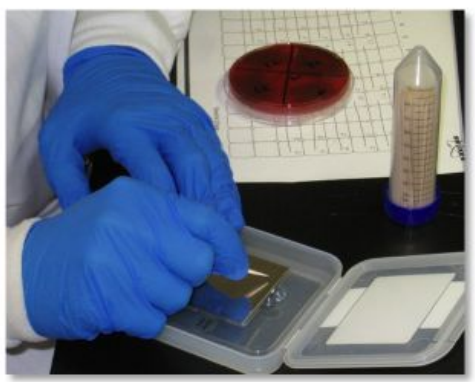


- BCID and Gram stain performed simultaneously
- Critical result called with BCID result
- ASP alert for BCID review



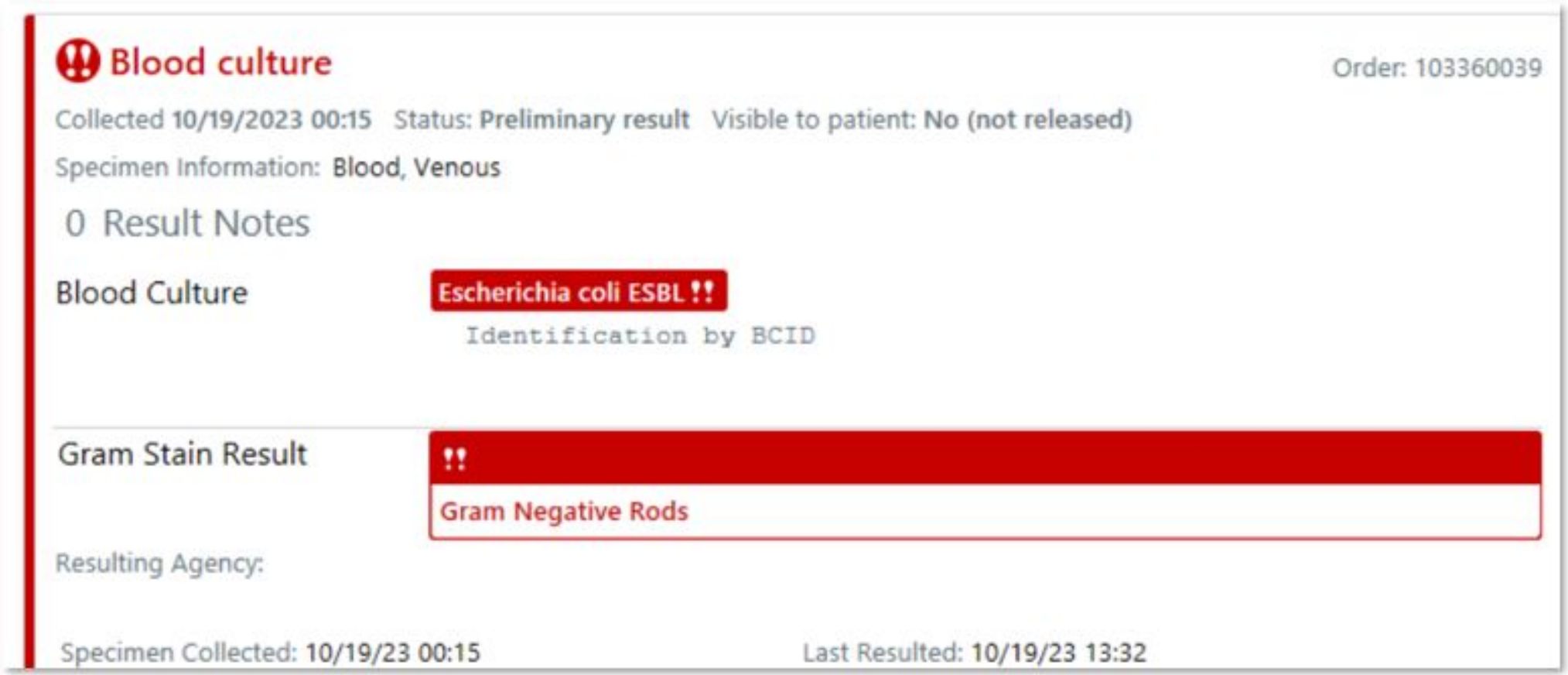
Final AST Results





- Definitive ID with MALDI-TOF MS
- AST set up

What you see.


Blood culture
Order: 103360039
Collected 10/19/2023 00:15 Status: Preliminary result Visible to patient: No (not released)
Specimen Information: Blood, Venous
0 Result Notes
Blood Culture
Escherichia coli ESBL !!
Identification by BCID
Gram Stain Result
!!
Gram Negative Rods
Resulting Agency:
Specimen Collected: 10/19/23 00:15
Last Resulted: 10/19/23 13:32

Gram-positive Bacteria	
Staphylococcus spp.	*Staphylococcus aureus*
Staphylococcus epidermidis	*Staphylococcus lugdunensis*
Streptococcus spp.	*Streptococcus pneumoniae*
Streptococcus pyogenes (Group A)	*Streptococcus agalactiae (Group B)*
Enterococcus faecalis	*Enterococcus faecium*
Listeria monocytogenes	
Gram-negative Bacteria	
Enterobacterales	*Escherichia coli*
Klebsiella pneumoniae group	*Klebsiella aerogenes*
Klebsiella oxytoca	*Serratia marcescens*
Proteus spp.	*Salmonella spp.*
Enterobacter cloacae complex	*Pseudomonas aeruginosa*
Acinetobacter calcoaceticus-baumannii complex	*Stenotrophomonas maltophilia*
Haemophilus influenzae	*Neisseria meningitidis*
Bacteroides fragilis	
Yeast	
Candida albicans	*Candida glabrata*
Candida krusei	*Candida parapsilosis*
Candida auris	
Cryptococcus neoformans/gattii	
Genetic Resistance Markers	
mecA/C and MREJ (MRSA)	*KPC (carbapenemase)*
mecA/C (MRSE)	*NDM (carbapenemase)*
vanA/B (VRE)	*IMP (carbapenemase)*
CTX-M (ESBL)	*VIM (carbapenemase)*

Influence of Multiplex PCR in the Management of Antibiotic Treatment in Patients with Bacteremia

by Alina-Ioana Andrei [1,2], Daniela Tălăpan [1,2,*], Alexandru Rafila [1,2] and Gabriel Adrian Popescu [1,2]

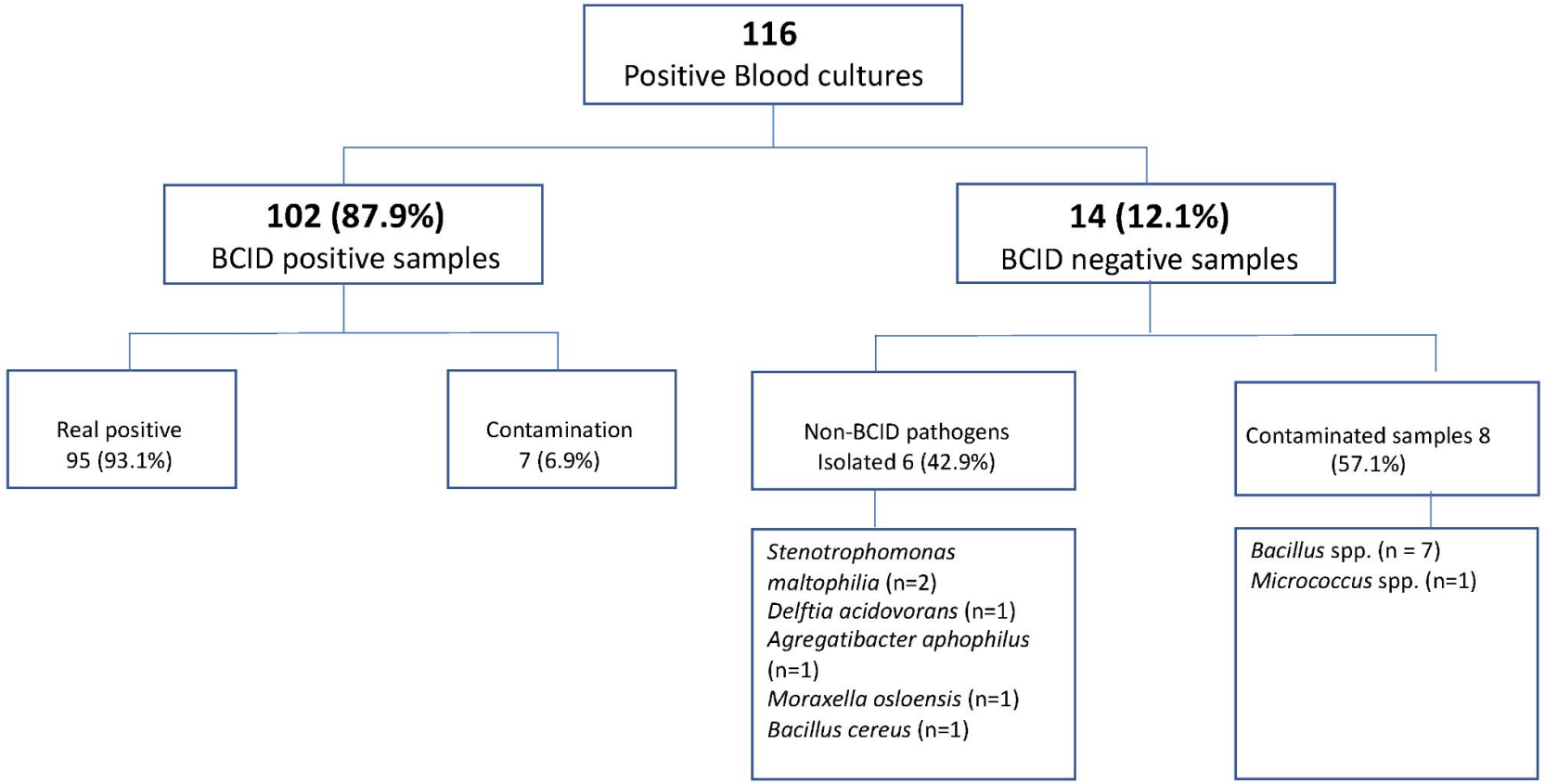
[1] Faculty of Medicine, "Carol Davila" University of Medicine and Pharmacy, 050474 Bucharest, Romania
[2] "Prof. Dr. Matei Balș" National Institute of Infectious Diseases, 021105 Bucharest, Romania
* Author to whom correspondence should be addressed.

Antibiotics **2023**, *12*(6), 1038; https://doi.org/10.3390/antibiotics12061038

Submission received: 25 April 2023 / Revised: 8 June 2023 / Accepted: 9 June 2023 / Published: 10 June 2023

(This article belongs to the Special Issue Bacterial Detectio Testing)

BCID detected the pathogen in 102 (87.9%) samples out of the 116 positive blood cultures tested. The **average time from the blood culture collection to the communication of the molecular test result was 23.93 h (range: 10.67–69.27 h)**. The main pathogen detected was ***Klebsiella pneumoniae* (17.6%)**. The antimicrobial therapy was changed in accordance with the BCID results in 28 (40.6%) out of the 69 cases, wherein the treatment could have been theoretically adjusted



Urine PCR

Being proposed by several companies to replace urine cultures

Background in PALTC

- high prevalence of Asx bacteriuria
- clinical practice guidelines (McGeer) rely on CFU/mL
-

Can detect abx -resistant genes faster

NOT FDA approved for dx of UTI

Urine PCR

Potential Issues:

- Diagnosis of UTI?
- Pathogenic vs. colonization?
- High rate of false positives
- Lacks data on correlation with CFU/mL
- Unable to detect abx sensitivities - only screens for abx-resistant genes
- Can lead to rapid increase in Abx use

Indiana Department of Health

Update for Post-Acute Care Clinicians

July 2023

Testing for Urinary Tract Infections in nursing homes

Summary:
Urine dip, urinalysis, and culture remain the standard of care for diagnosing and treating urinary tract infections. There are new urine PCR tests on the market that have specific narrow uses and should not be used to replace traditional standard tests such as urinalysis and culture for standard testing and treatment. More studies are needed before adopting urine PCR as an initial test.

Newer diagnostic tests, such as urine Polymerase Chain Reaction (PCR), can yield results much faster than urine culture. PCR identifies bacterial DNA and can test for antibiotic resistance genes, but sensitivity information cannot be obtained from this test. However, the presence of antibiotic resistance genes was shown to have significant discordance from sensitivity results.[12] The urine PCR test has higher sensitivity than urine culture but lower specificity in diagnosing UTI.[2,13] Additionally, PCR could be substantially more expensive than standard urine tests. Like urine culture, urine PCR cannot differentiate asymptomatic bacteriuria from symptomatic infection.[14]

Urine PCR is not approved by the U.S. FDA for diagnosis of UTI.

Implications:

- PCR might identify organisms that may or may not necessarily be responsible for the symptoms.
- PCR detects DNA, but does not mean the presence of live organisms.[14]
- PCR test could stay positive after an infection was treated recently as non-viable DNA can continue to be detected.[14]

The urine PCR might have utility in select clinical scenarios. Even in these conditions, urine culture likely is still needed for sensitivity information.

Recommendations:

- Use traditional urine tests most of the time.
- Avoid using urine PCR routinely for diagnosing a UTI.
- Do not order this test in asymptomatic individuals.
- More studies are needed comparing the outcomes of using urine culture vs urine PCR before PCR can be used as a starting test.
- Urine PCR may be used in specific circumstances in consultation with specialists

Wound, Blood, Urine PCR Summary

- Wound PCR
  - Currently being utilized in PALTC
  - Be aware of need to correlate with clinical picture
  - Avoid overuse of Abx. Use narrow spectrum Abx. Avoid IV Abx
  - *Recommendation: use with caution in PALTC*
- Blood PCR
  - Not currently being used in PALTC
  - Increasingly being tested in acute care.
  - *Recommendation: Do not use in PALTC*
- Urine PCR
  - Being proposed by many vendors
  - Not ready for full adoption in in PALTC
  - Many concerns with abx overuse
  - Recommend to not utilize or order
  - *Recommendation: Do not use in PALTC*

References

1. https://www.cdc.gov/antibiotic-use/uti.html.

2. Xu R, Deebel N, Casals R, Dutta R, Mirzazadeh M. A New Gold Rush: A Review of Current and Developing Diagnostic Tools for Urinary Tract Infections. Diagnostics (Basel). 2021;11(3).

3. Eliakim-Raz N, Yahav D, Paul M, Leibovici L. Duration of antibiotic treatment for acute pyelonephritis and septic urinary tract in-fection-- 7 days or less versus longer treatment: systematic review and meta-analysis of randomized controlled trials. J Antimicrob Chemother. 2013;68(10):2183-2191.

4. Vogel T, Verreault R, Gourdeau M, Morin M, Grenier-Gosselin L, Rochette L. Optimal duration of antibiotic therapy for uncompli-cated urinary tract infection in older women: a double-blind randomized controlled trial. CMAJ. 2004;170(4):469-473.

5. https://www.rochesterpatientsafety.com/Images_Content/Site1/Files/Pages/Nursing%20Homes/UTI%20Treatment%20Guidelines.pdf.

6. https://bmcgeriatr.biomedcentral.com/articles/10.1186/s12877-019-1049-7#citeas.

7. https://mi-hms.org/sites/default/files/UTI%20Guideline-6.9.21.pdf

8. Rowe TA, Juthani-Mehta M. Diagnosis and management of urinary tract infection in older adults. Infect Dis Clin North Am. 2014;28(1):75-89.

9. https://www.idsociety.org/news--publications-new/articles/2019/BACTERIA-IN-URINE-DOESNT-ALWAYS-INDICATE-INFECTION/.

10. https://www.idsociety.org/practice-guideline/asymptomatic-bacteriuria/.

11. https://www.cdc.gov/antibiotic-use/core-elements/nursing-homes.html.

12. Baunoch D, Luke N, Wang D, et al. Concordance Between Antibiotic Resistance Genes and Susceptibility in Symptomatic Urinary Tract Infections. Infect Drug Resist. 2021;14:3275-3286.

13. Szlachta-McGinn A, Douglass KM, Chung UYR, Jackson NJ, Nickel JC, Ackerman AL. Molecular Diagnostic Methods Versus Con-ventional Urine Culture for Diagnosis and Treatment of Urinary Tract Infection: A Systematic Review and Meta-analysis. Eur Urol Open Sci. 2022;44:113-124.

14. https://clpmag.com/diagnostic-technologies/urinalysis-toxicology/urine-analyzers/diagnosing-utis-with-urine-pcr/.

Questions

Claiming CE Credit Through VCU

VCU Health
Continuing Education

NEW ACCOUNT NEEDED

Go to vcu.cloud-cme.com to create an account – make sure to add your cell phone number

EXISTING ACCOUNT MEMBERS

Text ##### to (804) 625-4041 within 5 days

If you are driving during the Forum email lfinch@vcu.edu after the meeting for the code.

TEXT CODE 34866
to 804-625-4041

You will receive a text message and an email.

Complete Evaluation & Claim Credit,

within 60 days of the event and download your certificate of completion

Need help? ceinfo@vcuhealth.org

VCU College of Health Professions
Gerontology and the Virginia Center on Aging

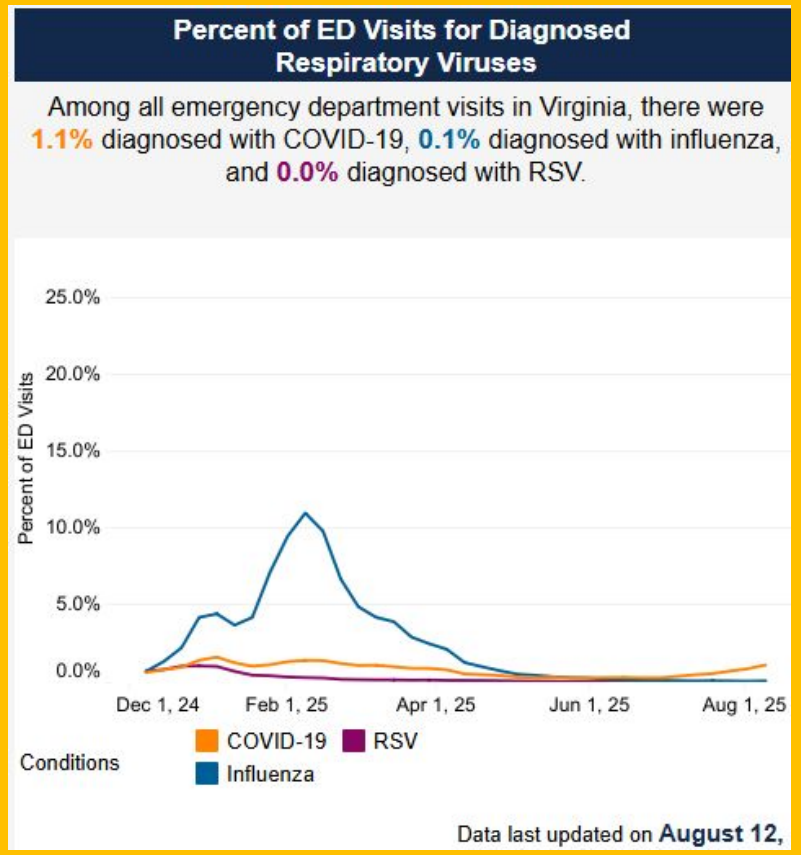
VCU School of Medicine

WE ARE THE UNCOMMON.

Open Forum

Any questions or ideas from the talk?

Resources & Education Opportunitites



Thank you for joining us!

Updates and News - See News Updates via email and newsletter

Next Monthly Forum:

- **Wednesday, October 15, 4-5 pm**
- **Dr. John Gilstad will present, “Rheumatoid ”**

Your Calendar Link - In the Zoom Registration Confirmation email you received today, there’s a calendar link to update your calendar for future meetings.

On your way out of our meeting today, kindly answer a brief feedback survey.

Stay in touch! Email us at lfinch@vcu.edu

Invite your colleagues! They can register at ltccn.vcu.edu