ChristianaCare

# Department of Pathology & Laboratory Medicine

## LabScope

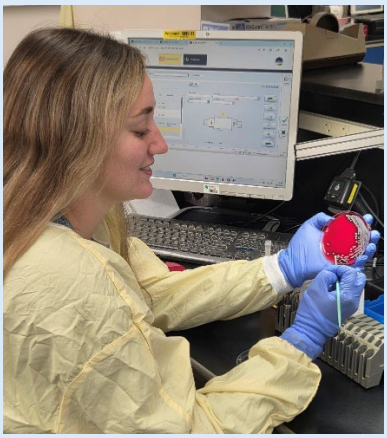
December 1st, 2025

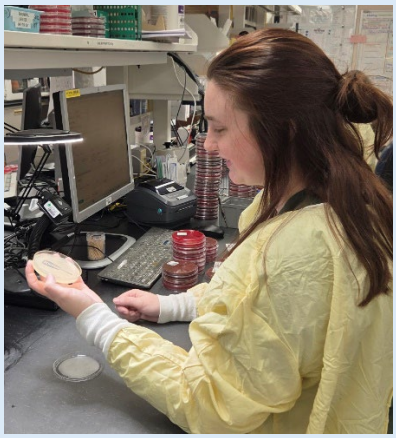
## Updates on Antimicrobial Susceptibility Testing

As the incidence of antimicrobial resistance continues to climb, updates in susceptibility testing are continually made in the Microbiology laboratory. Each year, the Clinical and Laboratory Standards Institute (CLSI) publishes updated interpretive breakpoints for various antimicrobials. These are adopted within the laboratory to ensure treatment guidance is as accurate and targeted as possible. By using more precise treatment options and less broad-spectrum drugs, selective pressure on bacterial and fungal microbes to develop resistance is decreased. ChristianaCare has also now introduced the Cepheid Xpert® Carba-R cartridge to detect the most common genetic carbapenemase markers. Organisms that possess these genes are often multi-drug resistant, very difficult to treat, and are associated with higher mortality rates. Knowing which genes a carbapenem-resistant organism harbors allows providers to select the most appropriate antimicrobial therapies as quickly as possible. Many times, these resistant bacteria require newer antimicrobials or a combination of various antimicrobials. In 2025, the Microbiology laboratory introduced a new Gram-negative susceptibility panel tested on the Vitek instrument for Enterobacterales that incorporated 15 new antibiotics, an updated fungal susceptibility panel for yeast that included 2 new antifungal therapies, and a manual MIC (Minimum Inhibitory Concentration) test for the brand-new combination antimicrobial, aztreonam-avibactam.


Cepheid Xpert® Carba-R cartridge

Below are pictures of ChristianaCare Clinical Microbiology Laboratory Scientists: Erin setting up Vitek Susceptibility panels, Patty placing the Vitek card on the instrument, and Leeanne reading a manual MIC strip.





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# Updates from our Laboratories……

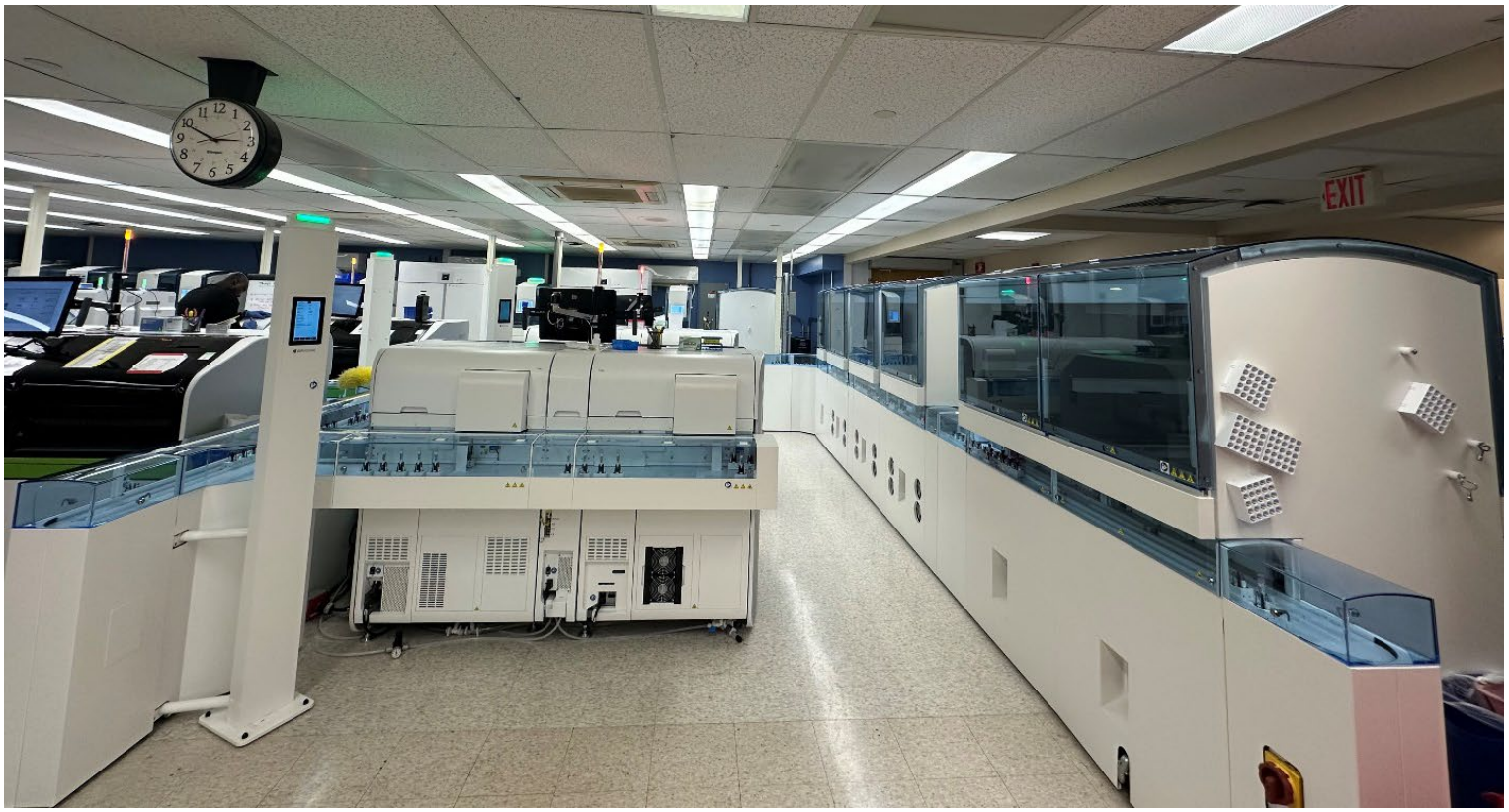
## General Laboratories….

### Laboratory Automation Line Now Live at Newark Campus

As of October 2025, the laboratory automation line at Newark Campus is fully operational. The Chemistry Upgrade project consisted of 22 analyzers and 2 automation lines at 5 sites. The new Abbott Alinity analyzers have standardized chemistry testing across all Christiana laboratories making patient test results easier to interpret and maintain standard of care throughout the health system. The Newark lab has also doubled the amount of testing capacity making it easier to absorb higher volumes as ChristianaCare expands.

The lab automation line will help Newark campus with workflow and efficiency in testing over 5,000 specimens daily. The line will receive, centrifuge, store and bring specimens to individual analyzers for testing allowing staff to focus on the resulting of patient samples and improve throughput and consistency.

This project has taken over a year to implement. Several phases of construction as well as instrument movements to get them in the exact location for line placement. A huge shout out to the lab staff for continuing to maintain the highest of result quality and meaningful turnaround times while going through the transformation.



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## Q & A: Erythrocyte Sedimentation Rate (ESR): Is it Time to Move Away from ESR Test?

### What is an ESR test?

An ESR is a laboratory test that measures the rate at which erythrocytes (Red Blood Cells) fall to the bottom of a test apparatus in a whole blood sample. This process of falling is called "sedimentation" which is faster in individuals with inflammatory conditions due to elevated levels of plasma protein.

### When is the ESR test ordered?

The ESR test is generally ordered to aid in the diagnosis of inflammatory conditions, such as infections, cancer, or autoimmune disorders. During inflammation, ESR increases slowly and remains elevated for a long period.[1]

### How is the ESR test performed?

Traditionally, the ESR test was performed manually using Wintrobe or Westergreen tube. However, many laboratories including ChristianaCare laboratories currently perform ESR test on dedicated automated analyzers.

### What are the pitfalls of the ESR test?

The ESR is a nonspecific laboratory marker of acute and chronic inflammation. ESR values can be influenced by many patient-specific and laboratory factors other than inflammation, such as the size, shape, and number of red blood cells; levels of serum fibrinogen and immunoglobulins; renal function; age and sex; pregnancy; and use of medications' Therefore, in 2014, the Choosing Wisely campaign recommended against ordering an ESR test to look for inflammation in patients with undiagnosed conditions.

### What is an alternate to the ESR test?

C-reactive protein (CRP) test is recommended over ESR in the assessment of early inflammation since the CRP test measures the level of a plasma protein produced by liver cells in response to acute inflammation or infection. CRP rises within hours of onset of an infection or inflammatory condition and returns to normal within three to seven days if the acute process is resolved.[2]

### What is the verdict regarding the ESR test at ChristianaCare?

Current literature shows that the ESR test lacks the sensitivity and specificity as a biomarker to detect inflammation or infectious condition. Given the considerable number of the ESR tests ordered on inpatients, ChristianaCare has an opportunity to reduce the number of ESR tests ordered in acute care setting through clinician education and implementation of clinical decision support tools in the electronic health record. Furthermore, clinicians should be aware that CRP test is available throughout ChristianaCare on automated chemistry analyzer and the cost of these tests are comparable.

***References:***

1. *Cho HJ, Talledo J, Alaiev D, Israilov S, Chandra K, Tsega S, Garcia M, Shin DW, Zaurova M, Alarcon Manchego P, Krouss M. Choosing Wisely and reducing the simultaneous ordering of erythrocyte sedimentation rate and C-reactive protein testing in a large safety net system. Am J Clin Pathol. 2023 Dec 1;160(6):585-592.*
2. *Assasi N, Blackhouse G, Campbell K, et al. Comparative Value of Erythrocyte Sedimentation Rate (ESR) and C-Reactive Protein (CRP) Testing in Combination Versus Individually for the Diagnosis of Undifferentiated Patients With Suspected Inflammatory Disease or Serious Infection: A Systematic Review and Economic Analysis [Internet]. Ottawa (ON): Canadian Agency for Drugs and Technologies in Health; 2015 Nov. (Cadth Health Technology Assessment, No. 140.) 1, Introduction.*

If you have any laboratory questions or suggestions for future LabScope Q&A sections, you can submit it here:

Laboratory Q&A Submission Form