SUMMARY
OF RESULTS

PROVIDE
Antibacterial Resistance Leadership Group

The Antibacterial Resistance Leadership Group (ARLG) seeks to prioritize, design, and execute clinical research that will reduce the public health threat of antibacterial resistance. The ARLG, along with the team of doctors, scientists, and study coordinators, are pleased to describe the results from the **Prospective Observational Evaluation of the Association between Initial Vancomycin Exposure and Failure Rates among Adult Hospitalized Patients with MRSA Bloodstream Infections (PROVIDE)** study.

This was a prospective, multi-center, observational study of hospitalized adults treated for infections caused by the bacteria, methicillin-resistant *Staphylococcus aureus* (MRSA). Researchers evaluated the relationship between vancomycin administered over time (exposure) and outcomes in patients with MRSA bacteremia.

FOR THIS STUDY, PATIENTS WERE OBSERVED AND CERTAIN RESULTS WERE MEASURED.

Researchers did not determine the treatment the patients received. All treatment decisions were made by the patient's doctor.

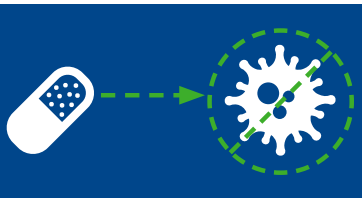
METHICILLIN-RESISTANT *STAPHYLOCOCCUS AUREUS* (MRSA) IS A BACTERIUM THAT CAUSES INFECTIONS.

It can be more difficult to treat than most strains of *Staphylococcus aureus* because it is resistant to some commonly used antibiotics.

WHY IS THE RESEARCH IMPORTANT?

Vancomycin is the most commonly administered antibiotic in hospitalized patients. It is used to treat patients infected with MRSA, but the optimal dosing remains uncertain. This study will provide additional information to determine the best dose of vancomycin that will stop the growth of MRSA while also reducing the risk of harmful side effects.

AN ANTIBIOTIC IS A DRUG TO TREAT INFECTIONS BY STOPPING THE GROWTH OF OR KILLING BACTERIA.



Changes to your healthcare should not be made based on information in this summary without first consulting a doctor. If you have questions about this results, speak with your doctor.

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WHAT WAS THE PURPOSE OF THIS RESEARCH?

The purpose was to determine the best dose of vancomycin to treat MRSA blood infections in hospitalized adults. Researchers studied the impact of different levels (high versus low) of vancomycin administered over time on a patient's outcome. Researchers looked at treatment failure, which was defined as:

- Death within 30 days after the initial blood culture showed MRSA, or
- Growth of MRSA from a blood culture obtained seven or more days after starting vancomycin therapy. This growth would mean that the infection was ongoing and did not respond to treatment.

Researchers also looked at blood tests that monitor kidney function to determine if a patient's kidneys had been impaired by the vancomycin therapy.

WHEN DID THE RESEARCH TAKE PLACE?

2014

November 2014 – December 2015

WHO WAS INVOLVED?

The study took place in 14 hospitals across the United States. A total of 310 patients were enrolled in the study. Of that group, 265 patients were eligible. In addition, researchers had the following information available from each patient:

- An initial blood culture that was positive for MRSA.
- At least two blood samples that showed the level of vancomycin during the first 5 days of treatment.
- Information about whether they were living or dead at 30 days after the initial blood culture sample.

PATIENTS OBSERVED WERE:

- Male (more than 60%)
- White (more than 60%)
- Average age of 60 years old

About 30% had a possible or definite heart infection that complicated their illness

WHAT HAPPENED DURING THE STUDY?

- Patients were monitored by their own doctor, who decided what vancomycin dose to administer.
- Researchers collected all antibiotic treatment information and levels of vancomycin in the blood during the first 5 days of therapy.
- Researchers calculated each patient's vancomycin exposure level.
- Researchers analyzed differences in how patients responded to treatment by high versus low exposure to vancomycin.

WHAT DID RESEARCHERS LEARN FROM THE STUDY?

Treatment failure (death or continued infection) did not differ between patients with high versus low vancomycin exposures.

Higher vancomycin levels were associated with an increased risk of kidney injury.

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HOW HAS THIS STUDY HELPED PATIENTS AND DOCTORS?

These results may change the guidelines doctors use to treat patients with MRSA infections.

From this study, researchers identified the ideal vancomycin range that doctors should target at day two of therapy to both maximize the effectiveness of vancomycin while reducing the risk of kidney injury.

WHAT'S NEXT?

In future studies, researchers would like to:

- Determine the lowest level of vancomycin that would still be effective in patients hospitalized with MRSA infections.
- Study vancomycin dosing in patients who have infections in addition to other medical issues such as cancer or who are receiving dialysis.
- Consider other factors such as dosing frequency, duration of therapy and changes in antibiotic therapy.

WHERE CAN I LEARN MORE?

Visit the ARLG website.

Read the published paper.

This summary was completed on September 2019. Newer information generated since this summary was written may now exist.

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