Improving time to first dose antibiotics in the ICU

The Problem

Timely administration of initial antibiotic therapy in the Intensive Care Unit (ICU) setting improves survival. In patients with severe sepsis, for example, every hour that antibiotics are delayed decreases the chance of leaving the hospital alive by 7.6%. Shortening the time between ordering an antibiotic and administration to a patient presents an opportunity for improvement.

Aim/Goal

By making a targeted group of antibiotics available in the automated drug dispensing cabinets in the ICU, we aim to reduce the time from initial antibiotic therapy ordering to administration in the ICU's.

The Team

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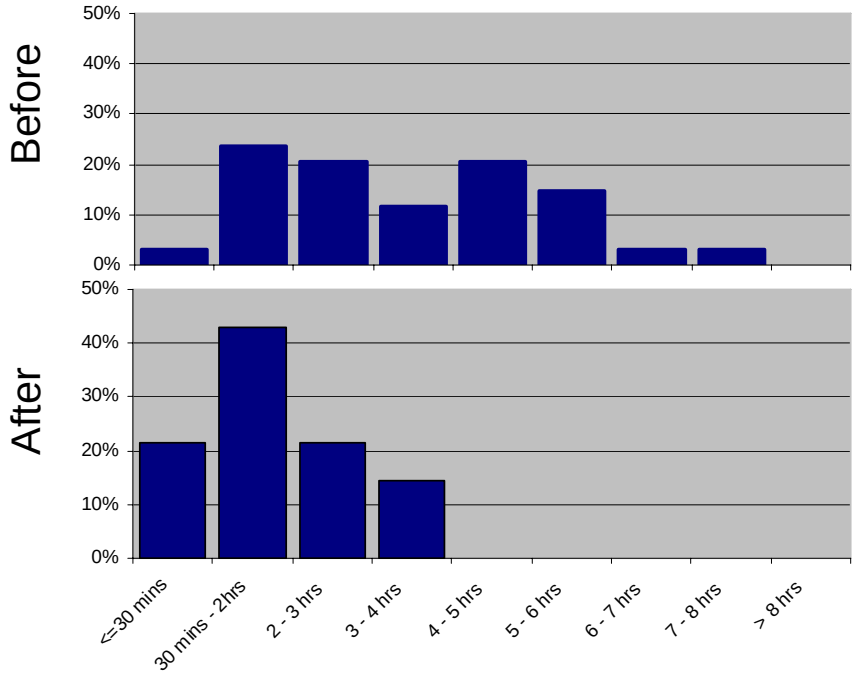
The Interventions

- Performing a Failure Modes Effects Analysis to determine the most appropriate intervention
- Reviewing antibiotic utilization and common pathogens in the ICU
- Defining appropriate treatments and optimizing dosages according to guidelines, resistance and packaging
- Assigning space for the first dose of antibiotics in the ICU
- Developing provider order entry screens, an interface with the pharmacy system and labels for the Medication Administration Record
- Designing a protocol including "need to know" information and educating pharmacy staff, nurses and prescribers

The Results to Date

The median time to first-dose administration of antibiotics went from 3hrs 8min before the intervention to 1hr 13min after the intervention, representing a 61% improvement in antibiotic administration time.



Lessons Learned

The time involved from "brain to vein" in the antibiotic ordering, dispensing and administration process is impacted by multiple variables. Successful initiatives to improve the time to first dose antibiotic administration in the critical care setting must involve a multidisciplinary approach to ensure that all clinical and operational constraints are addressed. Additionally, with clinical staff continually rotating through the various critical care settings, the educational component of this initiative extends beyond the walls of the ICU's, and must be ongoing to sustain the desired outcomes.

Next Steps

Collect more data on the impact of first dose antibiotic storage on the units and the interface with provider order entry and potential over prescribing. Identify any gaps or flaws in the protocol design. Work on improving the communication to Critical Care, Nursing and Pharmacy Staff.

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