Advantages of Utilizing Cost Benefit Analysis For The Support of Infection Prevention
St. Joseph Medical Center

Program/Project Description.
Our organization was utilizing a less accurate diagnostic methodology for Clostridium difficile, in which required the submission of two specimens twelve hours apart. As a result, patients were often isolated for up to three days while awaiting the final diagnosis. With the emergence of new technology, it was identified a cost benefit analysis (CBA) was the most valuable method for displaying and evaluating the data because it allows one to evaluate the monetary value of the cost of the intervention, along with the health outcome. The baseline data included the number of test performed over a one-year period and the cost associated with isolation and testing. This data was then utilized when comparing the annual cost of the testing methods, number of specimens required, and isolation cost. Our goal was to implement a rapid and more accurate diagnostic tool, with higher sensitivity and specificity; thus, decreasing turn around time and utilization of isolation supplies, along with reducing unnecessary empiric antibiotic treatment. Given we have the capability to perform Polymerase Chain Reaction (PCR) technology; we focused on utilizing this testing method. Due to the accuracy of this new test, only one stool specimen would be required for diagnosing or ruling out a C. difficile infection. We knew we were successful when the CBA revealed a potential savings over $215,000.00.

Process.
A cost benefit analysis (CBA) was the most valuable method for displaying and evaluating the cost of different technology, given it allows one to evaluate the monetary value of the cost of the intervention, along with the health outcome. In particular, this method can be used as a ranking system when evaluating multiple projects or products; thus, displaying those with positive net benefits first. This CBA was utilized to compare our current testing method against two proposed methods.

Solution.
Based on the CBA, the solution was to implement a two-step method, which includes testing for C. difficile antigen and toxin and confirming discrepancy with polymerase chain reaction (PCR) technology. This new testing method was validated by the microbiology department and the staff, physicians, and our outpatient services were educated on the new process.

Measurable Outcomes.
The result of implementing the solution has the potential to save the institution $215,572.82 annually. Although the new testing methods are at a higher cost than the current method, the cost savings was associated the isolation supplies due to the rapid turn around and time and requiring only one specimen for diagnosing or ruling out a C. difficile infection. See Attachment A for graphs.

Sustainability.
Continue to educate staff and physicians on the new policy and testing method; highlighting the change in number of specimens required for diagnosing or ruling out a C. difficile infection.

Role of Collaboration and Leadership.
Team work and collaboration played a significant role in developing the solution. Infection Prevention partnered with the laboratory, including the laboratory director, microbiology supervisor, microbiology team leader, and laboratory information system coordinator. The necessary stakeholders were updated throughout this process and the team received support from the VP of Support Operations and Hospitalist leadership. The leadership shared the same vision for success, which included saving money and improving accuracy of diagnostic technology.

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Estimate Annual Cost of C. difficile Testing Methods

Current Method: $21755.16
Proposed Method: $24719.4

Estimate Annual Isolation Cost

Current Method: $232949.52
Proposed Method: $19412.46

Estimate Annual Cost of C. difficile Methods

Current Method: $254704.68
Proposed Method: $39131.86

Net Benefit: $215,572.82