



Impact Brief

Create a Ripple

Lancaster General Health implements leading-edge technology and automation using a GeneXpert® Infinity system to consolidate molecular testing and improve patient care.

- Consolidated eight molecular tests to one platform
- Improved time to optimal antibiotics (ABX) by combining on-demand diagnostics and antimicrobial stewardship intervention
- Decreased total hospital costs
- Lowered post-operative infections through improved identification and pre-operative eradication of *Staphylococcus aureus* (SA)
- Reduced infection rates from 0.48% to 0.2%.
- Implemented patient-driven workflow with the GeneXpert Infinity system's on-demand technology

Impact

▶ Xpert® MRSA/SA Blood Culture helped reduce median time to optimum ABX from 15 hours to 15 minutes*¹

	Pre-intervention n = 73* [IQR]	Post-intervention n = 80* [IQR]	p-value
Median time to optimal ABX	15 hours [0-32.5]	15 minutes [0-13.75]	0.019

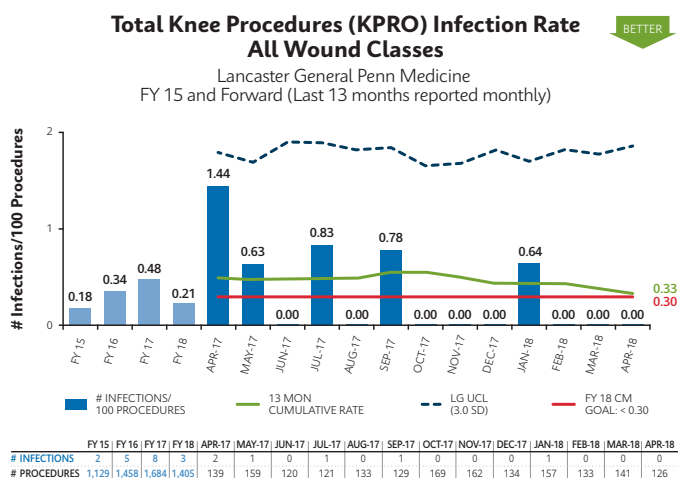


* After receipt of result
[^] 10 patients in pre-intervention and 2 in post-intervention excluded for mixed bloodstream infection, quantitative blood cultures obtained, or admission from outside facility with bloodstream infection

Optimal ABX were defined as following:¹

- MSSA: Cefazolin or nafcillin
- MRSA: Vancomycin or daptomycin (if history of MRSA with MIC ≥2 or VRE in last 90 days)

▶ Steady and substantial reduction in MRSA/SA post-operative infections in prosthetic joint recipients²



Profile

Lancaster General Hospital (LGH), a 590-bed not-for-profit hospital, is part of Penn Medicine Lancaster General Health, a member of the University of Pennsylvania Health System (Penn Medicine). Designated a Magnet hospital for nursing excellence four consecutive times, LGH has been recognized regionally and nationally for clinical excellence and patient safety; has the county's only level 2 trauma center, and is consistently ranked nationally by U.S. News & World Report for its quality clinical programs.

Summary

Lancaster General Health saw the need to integrate automation into the microbiology laboratory. While other areas of the laboratory moved towards automation, the microbiology laboratory continued to rely on manual processes which limited operational efficiency. Implementing Cepheid's GeneXpert® Infinity system and consolidating over eight Xpert® tests allowed them to diagnose infections in as little as a few hours, compared to processes that took days in the past.



Challenges

- Long turn-around-time (TAT) on infectious disease tests challenged clinicians to correctly care for patients
- On-demand diagnosis without process change did not result in quicker therapy
- ED patients with fractures needed rapid tests to optimize treatment
- Patients were lost to follow up because Chlamydia/ Gonorrhea results had a TAT of 24–48 hours

Projections and realized results are specific to the institution where they were obtained and may not reflect the results achievable at other institutions. US-IVD. *In Vitro* Diagnostic Medical Device. Not available in all countries.

References

- 1 Casias M, et al. Impact of Cepheid Blood PCR Combined with Antimicrobial Stewardship Intervention on Staphylococcus aureus Bacteremia: A Community Hospital Approach. Poster presented at ECCMID. 2017 Apr 22-25. Vienna, Austria.
- 2 Data Provided by Penn Medicine Lancaster General Health

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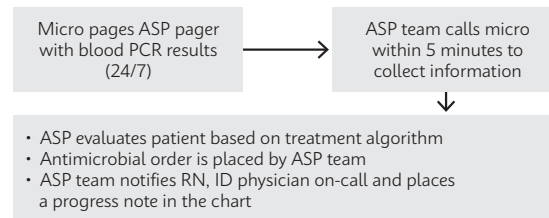


Vision

Implementation of Xpert® MRSA/SA Blood Culture, Xpert® SA Nasal Complete, Xpert® CT/NG, Xpert® *C. difficile*/Epi, Xpert® GBS LB, Xpert® MRSA/SA SSTI, Xpert® **Xpress** Flu/RSV, Xpert® **Xpress** Strep A

- Offer Xpert MRSA/SA Blood Culture test 24/7
- Immediately run on all positive blood culture bottles, with gram positive cocci, on GeneXpert Infinity system
- Launch new clinical initiative called Rapid Administration of Antibiotics by Infectious Disease Specialist (RAIDS)¹

RAIDS Workflow¹



ASP: Antimicrobial stewardship program

- Implement pre-surgical screening of orthopedic patients to identify SA carriers



Implementation

- Decreased post-operative infections in prosthetic joint recipients
- Lowered total hospital costs by acting faster on Xpert MRSA/SA Blood Culture results
- Reduced cost of sending out CT/NG testing
- Improved ABX by using on-demand diagnostics and antimicrobial stewardship intervention
- Expanded pre-surgical screening to other disciplines (thoracic surgery and cardiac pacemaker/defibrillator implantation)
- Utilized laboratory assistants to perform Xpert tests freeing up technicians to work on more complex tasks
- Implemented 24/7 testing as a result of streamlined workflow
- Consolidated running eight pathogens to one GeneXpert system

