Cultures Pending at Discharge: Systematically Closing the Loop to Improve Patient Safety

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Background

- Delayed reviews of cultures pending at time of discharge have potential negative consequences.
- Prior research demonstrated that up to 4% of cultures pending at discharge could lead to untreated infections in the absence of response to final results. 2.4% of these results required modification of the previously prescribed therapy[1].

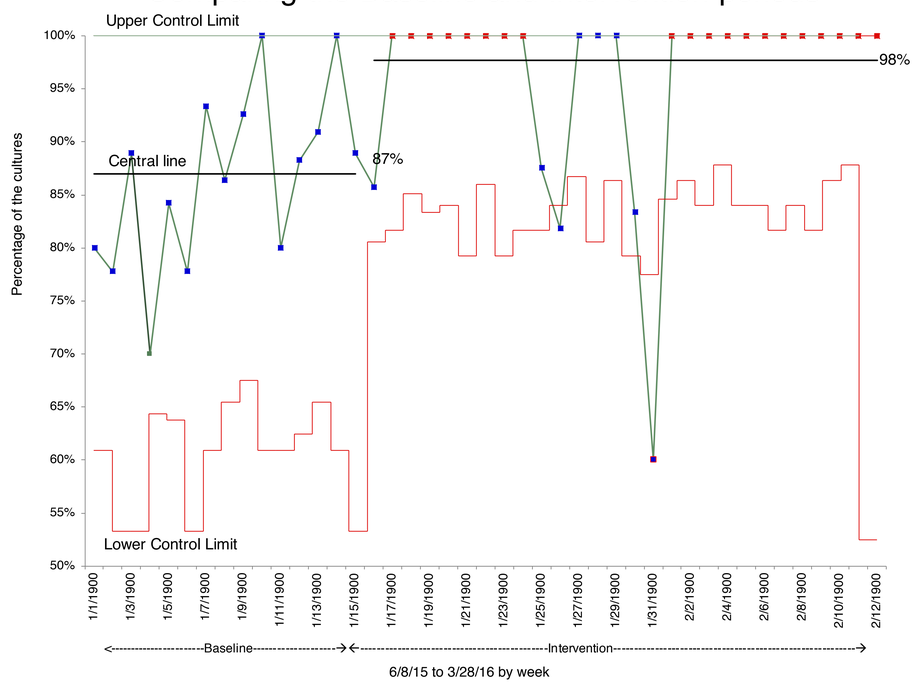
Aim

- To have 100 % of the cultures pending at time of patient discharge reviewed and acted upon within 72 hours of laboratory confirmed finalization.

Interventions

- We assembled a Quality Improvement team that included Antibiotics Stewardship Program members.
- Microbiology personnel generated a daily electronic report containing the demographic data of the patients who were discharged with pending cultures finalized in the preceding 24 hours
- A team member conducted a review of the inpatient electronic record within 72 hours of finalization
- The primary service team responsible of the patient was contacted if clinical action was deemed necessary.

Proportion of Cultures' Results Pending at time of Discharge Reviewed in Less than 72 Hours, by Week Comparing the Baseline and Intervention periods



6/8/15 to 3/28/16 by week

Examples of cases with resultant change of management

Patient	Culture site	Organism	Comment	Time between finalization and notification in hours	Service
60 y F	Urine	E.coli	Patient was discharged home on ciprofloxacin, the culture result showed ciprofloxacin resistance.	52.2	General surgery
74 y F	Urine	Klebsiella	Patient was discharged home on Nitrofurantoin to which the culture revealed resistance.	47.94	Cardiology
52 y M	Bone from the second right toe distal phalanx	Methicillin resistant staphylococcus aureus (MRSA) and Bacteroids	Patient was discharged on Cephalexin, switched to anti MRSA and metronidazole after finalization.	43.31	Orthopedics
72 y M	Anaerobic culture from left first toe	Bacteroids fragilis group	He was discharged on oral ciprofloxacin only treating Known Enterobacter cloacae with additional untreated organism in the final culture.	49.52	Hospital Medicine
81 y M	Wound culture from a flap	Aeromonas	He was discharged without antibiotics as cultures were showing no growth at time of discharge.	72.00	Ear, nose and throat surgery
74 years M	Anaerobic culture from	Peptostreptococcus	He was started on Nafcillin for staphylococcus osteomyelitis with final culture showing additional organism.	44.74	Hospital Medicine

Results

- Following implementation of our intervention, the percentage of cultures from recently discharged patients reviewed improved from 87% to 98%.
- Active intervention by a QI team member was only only employed if there were clinically meaningful results.
- Urine cultures with less than 50 K colonies or with multiple organisms, sputum cultures with squamous cells or with upper respiratory flora; Broncho-alveolar lavage with candida and cultures belonging to comfort measures only (CMO) patients were excluded from the intervention.
- In 3.5% of the finalized cultures, intervention led to antibiotic changes.

Conclusion

- Implementing a systematic review of cultures pending at time of discharge improved the percentage of cultures reviewed within 72 hours of finalization.
- Integrating the review within an existing antibiotics stewardship programs provided a sustainable solution that did not require additional resources and can be replicated by other healthcare systems.

References:

1. El-Kareh R, Roy C, Brodsky G, Perencevich M, M, Poon EG. Incidence and predictors of microbiology results returning post discharge and requiring follow-up. Journal of hospital medicine 2011;6:291-6.

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