Implementation of a Centralized Infectious Diseases Telehealth Service for 16 Small Community Hospitals

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ABSTRACT

STUDY OBJECTIVE

BACKGROUND

The majority of U.S. small community hospitals (SCHs) lack access to infectious diseases (ID) subspecialists. Telehealth can extend ID expertise to such facilities. We describe lessons learned implementing a new IDI program for 16 SCHs in the Intermountain Healthcare system in Utah and Idaho.

METHODS

From October 1, 2016 to April 30, 2017, we implemented an IDI service comprised of: a 24-hour ID physician advice line; an inpatient ID consult service that provided chart review and documentation (e-consults) and daytime telemedicine consultation (TC) using encrypted, synchronous, 2-way audio-visual connection; and ID pharmacist-led antimicrobial stewardship monitoring. The IDI service included a medical director, operations officer, ID pharmacist, analyst, and rotating ID physicians, and was implemented in a step-wise manner at 16 SCHs. IDI requests were received through a dedicated phone line with duplicate transcription to a monitored email inbox or generated from daily antimicrobial stewardship rounds.

RESULTS

The physician advice line was operational for the 16 SCHs on October 1, 2016. 312 advice-only calls were fielded (92 per 1000 hospital-days covered) through April 30, 2017. Common infections requiring phone advice included: bloodstream (16%), genitourinary (13%), and musculoskeletal (12%). E-consult and TC services were operational at 11 SCHs by April 30, 2017 (hospital-days: 1074). The IDI service completed 104 e-consults, 163 TCs, and 1198 stewardship reviews. Mean time (minutes [range]) spent per case was 16 (5-30) for e-consults and 55 (30-120) for TCs (on-camera time: 25 (12-46)). Common infections requiring e-consult or TC were: bloodstream (45%), musculoskeletal (16%), and skin/soft tissue (11%). 22 patients (14%) seen by TC were: 100% felt the service improved their care and was necessary at the SCH; 97% of surveyed SCH staff felt the IDI service improved patient care and 90% felt it was a necessary service (32% response from 98 providers, nurses, pharmacists).

CONCLUSION

The IDI service was well utilized and received by Intermountain SCH staff and patients, with bloodstream infections being the most common reason for consultation. Future steps include evaluation of IDI effect on clinical outcomes, financial metrics, and education on common ID conditions.

STUDY METHODS

IMPLEMENTATION PROCESS

The service was implemented as a step-wedge design. IDI requests were received through a dedicated phone line or generated from daily telehealth antimicrobial stewardship rounds. Random telephone patient satisfaction surveys on TC visits, and anonymous electronic surveys of SCH providers were conducted to assess program effectiveness.

IDI Services

1. A 24-hour ID physician telephone advice line (No EHR review/documentation)

2. An inpatient ID consult service that provided:
   a. EHR review and documentation (e-Consults)
   b. Daytime telemedicine consultation (TC) using encrypted, HIPAA-compliant, synchronous, 2-way audio-visual connection

3. An ID pharmacist-led antimicrobial stewardship program with dedicated centralized monitoring of antimicrobial use and key ID condition alerts

IDI Service Staffing

• Medical director (full-time)
• Operations officer (part-time)
• ID pharmacist (full-time)
• Analyst (part-time)
• Rotating ID physicians

RESULTS

IDI Advice Line

Physician advice line was operational for all 16 SCHs on October 1, 2016. 312 advice-only calls were fielded (92 per 1000 hospital-days covered). Common infections requiring phone advice included: bloodstream (16%), genitourinary (13%), and musculoskeletal (12%). E-consult and TC services were operational at 11 SCHs by April 30, 2017 (hospital-days: 1074). The service completed 104 e-consults, 163 TCs, and 1198 stewardship reviews during the study period.

Mean time (minutes [range]) spent per case was 16 (5-30) for e-consults and 55 (30-120) for TCs (on-camera time: 25 (12-46)). Common infections requiring e-consult or TC were: bloodstream (45%), musculoskeletal (16%), and skin/soft tissue (11%). 22 patients (14%) seen by TC were: 100% felt the service improved their care and was necessary at the SCH; 97% of surveyed SCH staff felt the IDI service improved patient care and 90% felt it was a necessary service (32% response from 98 providers, nurses, pharmacists).

e-Consults and Telemedicine Consults

E-Consult and TC services were operational at 11 SCHs by April 30, 2017 (hospital-days covered). The service completed 104 e-consults, 163 TCs, and 1198 stewardship reviews during the study period.

Mean time (minutes [range]) spent per case was 16 (5-30) for e-consults and 55 (30-120) for TCs (on-camera time: 25 (12-46)).

Common infections requiring e-consult or TC were: bloodstream (45%), musculoskeletal (16%), and skin/soft tissue (11%).

Patient/Provider Satisfaction

97% of surveyed SCH staff felt the IDI service improved patient care and 90% felt it was a necessary service (32% response from 98 providers, nurses, pharmacists).

22 TC patients (14%) were surveyed: 100% felt the service improved their care in a timely manner and was necessary at their SCH. (Figure 3)

CONCLUSIONS

A new multi-component ID telehealth service was well utilized and received by Small Community Hospital multidisciplinary staff and patients, with bloodstream infections being the most common reason for consultation. A telehealth platform successfully integrated antimicrobial stewardship efforts remotely, providing patient and population-level interventions. Future steps include evaluation of the IDI effect on specific clinical outcomes, assessing financial metrics, staff education on common inpatient ID conditions, and regional expansion of services.

No conflicts of interest to disclose.