Clinical Microsystems Approach to Antimicrobial Stewardship (ASP) at A Large Tertiary Care Hospital

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Introduction

There are many quality improvement "tools in the QA toolbox" available to medical organizations to improve the quality of care provided to their patients. Our institution has a history of employing Six Sigma approaches with many successes. We concluded that the Six Sigma approach, although very useful, was not the right "tool" for our Antimicrobial Stewardship Program(ASP) goals. We recognized that ASP was a clinical microsystem by definition as it was a place where "care is made; quality, safety, reliability, efficiency, and innovation are made; and staff morale and patient satisfaction are made."[1] Our institution chose to employ a Clinical Microsystems approach in creation of our Antimicrobial Stewardship Program.

[1]Microsystem Academy, The Dartmouth Institute, Geisel School of Medicine, DHMC.

Figure 1: Players in ASP Microsystem

Methods

We began this approach with an in depth study of the present ASP clinical microsystem. We identified that the purpose of ASP came down to: "Right drug for the right bug, at the right dose, for the right duration and correct indication." We identified all inpatients on antimicrobials as our target population. Any users or prescribers of antimicrobials were our microsystem professionals (Figure 1). We did note on the first pass of process mapping that there were many processes with many different patterns of prescribing antimicrobials. We attempted to simplify the process mapping to it's core (Figures 2 and 3). We continued to study the microsystem until we were able to focus on the ASP patient care fractal: Unit Pharmacist – Patient – Prescribing Healthcare Provider (MD/DO/PA/NP)(Figure 4). We began with educating the Pharmacist/Medical Professionals of the role and purpose of the ASP. We started with small tests of change that extended to our goal "end user", utilizing a clinical surveillance tool (TheraDoc™) to enable, empower, and make these changes a part of the fabric of the workflow. Additionally, the tests of change included order set development, drug utilization, and microbiology and lab testing.
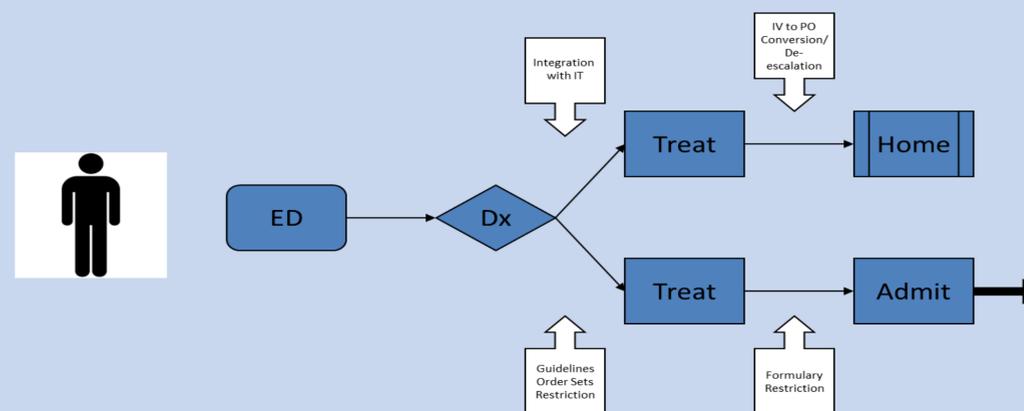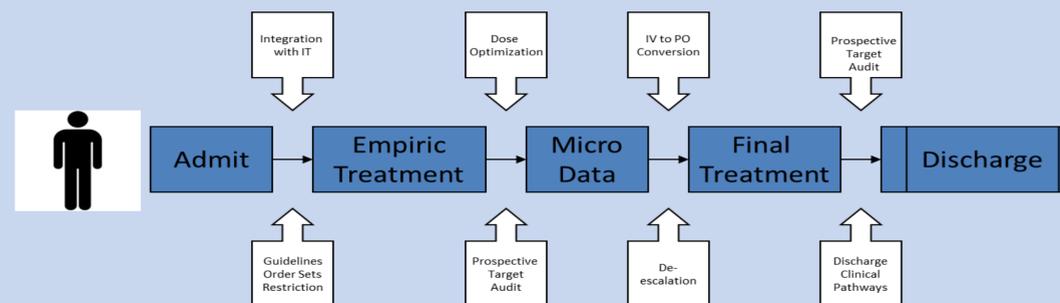

Figure 2: Process Map of ASP on ED presentation

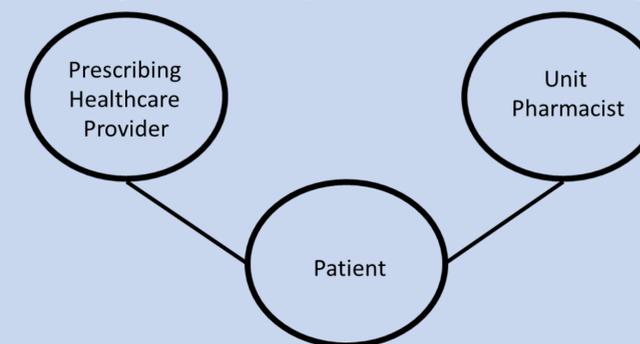Figure 3: Process Map of ASP on Admission to Discharge

Figure 4: SDP Microsystem Fractal

Results

• Average monthly Pharmacy interventions: PRE ASP: 760, and POST ASP: 845.
• Additional intervention with use of TheraDoc™: 210/month with 84% response rate.
• Average cost avoidance per month since ASP started: $150,000.
• Decreased cost > 35% for SFMC Pharmacy for antibiotics per month.
• Improved pharmacy/health professional satisfaction survey scores.

Conclusions

The use of a Clinical Microsystem approach for ASP has been successful at our institution. We continue to work to improve the processes at our institution. We eliminated waste (de-escalation), improved workflow and optimized time (decentralized ASP to end users), changed the work environment of ASP to one that assists without dictating choices, and managed variation by standardizing the responses to the TheraDoc™ clinical surveillance tool alerts.

Acknowledgements