Engaging Targeted End-Users using Clinical Surveillance Software (TheraDoc™) for Antimicrobial Stewardship (ASP)

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Introduction/Background

There are many quality improvement "tools in the QA toolbox" available to medical organizations to improve the quality of care provided to their patients. We recognized that the Antimicrobial Stewardship Program (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 ASP. In developing this program, we identified a patient care fractal: Unit Pharmacist – Patient – Prescribing Healthcare Provider(Figure 1). Historically, ASP has been a centralized process at our institution with an infectious disease physician and infectious diseases pharmacist reviewing and responding to ASP issues. We concluded that the best leverage for achieving our goal of insuring that the "right drug for the right bug, at the right dose, for the right duration and correct indication" was accomplished with the engagement of our end-users by employing a Clinical Surveillance Software Tool (TheraDoc ™). We targeted this effort on the OSF SFMC (Order of St. Francis: St. Francis Medical Center, Peoria, IL) Unit Pharmacists' end user group. [1]Microsystem Academy, The Dartmouth Institute, Geisel School of Medicine, DHMC.

Methods

We developed a series of ASP clinical alerts in concert with our stated purpose, (See Figure 2). We obtained access to and trained our individual unit pharmacists on the use of TheraDoc™, including the origin of the defined alerts and the proper ASP consistent corrections. (Figure 3 and Figure 4).

Results

- Average monthly Pharmacy interventions:
  - PRE ASP : 760
  - With ASP : 845.
- Additional intervention with use of TheraDoc™:
  - 210/month with 84% response rate.
  - Average cost avoidance per month since ASP started: $150,000.
  - Cost avoidance since starting ASP to date: $2,259,724.
- Decreased SFMC Pharmacy Cost of antibiotics per month > 35%.
- Improved pharmacy/health professional satisfaction survey scores.

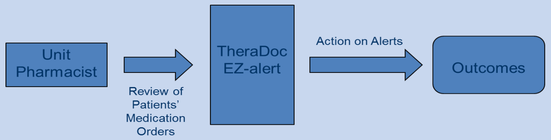

Figure 3: EZ-alert as part of Unit Pharmacist Work Flow.

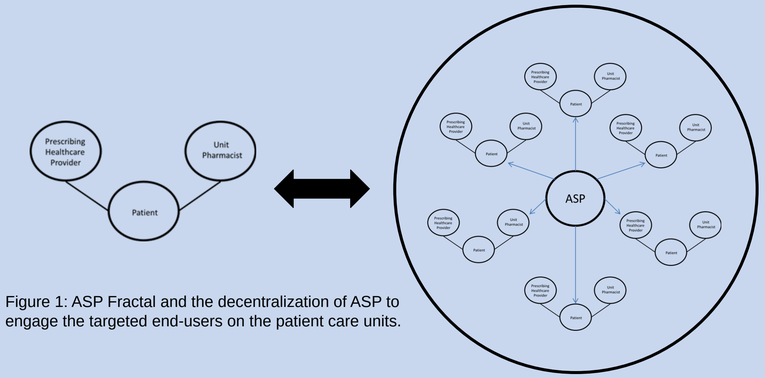

Figure 1: ASP Fractal and the decentralization of ASP to engage the targeted end-users on the patient care units.

- Candida in Sputum and on Fluconazole
- Flagyl and double coverage
- On Cefepime and enterobacter or pseudomonas with MIC >= 4
- On Levaquin and Ciprofloxacin MIC >=1 for e. coli, pseudomonas, or strep pneumonia
- On Vancomycin and MRSA with MIC >= 2
- On Zosyn with enterobacter or pseudomonas with MIC >= 32
- Strep pneumonia Urine Ag positive
- Urine LE neg and pos urine culture on antibiotics

- Targeted Drugs:
  - Ampho B
  - Acyclovir IV
  - Aztreonam
  - Cefepime
  - Daptomycin
  - Ertapenem,
  - Levofloxacin
  - Linezolid
  - Meropenem
  - Pip/tazo
  - Tigecycline
  - Vancomycin
  - Voriconazole.

Therapeutic mismatches:
- Susceptibility known
- De-escalation
- No positive Bacterial cultures
- No Positive Fungal cultures
- Redundant Anaerobic spectrum therapy
- Redundant Antifungal spectrum therapy
- Redundant Beta-lactam therapy
- Redundant Staphylococcal therapy

Figure 2: TheraDoc™ EZ-alerts

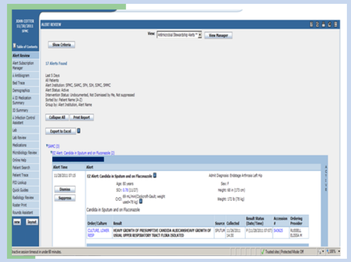

Figure 4: Example of TheraDoc™ Alert

Conclusions

Our institution's experience with engaging one of our ASP end-users, Unit Pharmacists, has been successful to date. We have demonstrated improved quality of care with prompt and appropriate responses to our designed ASP alerts. We have been able to achieve this by not disrupting the flow of work of our unit pharmacists. This new process design has eliminated waste (de-escalation alerts), improved workflow (engaging end-users; thus, removing previously employed steps), and changed the unit work environments by encouraging partnerships among the ASP fractals members.

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