Improving Outpatient Parenteral Antimicrobial Therapy (OPAT) for Solid Tumor Patients at A Cancer Center

Emma Dishner MD MPH, Patrick McDaneld PharmD, Meagan Rowan MPAS PA-C, Jalen Bartek RN, and Natalie Dailey Garnes MD MPH

Department of Infectious Diseases, Infection Control & Employee Health, University of Texas MD Anderson Cancer Center

Background

- Antimicrobial resistance is increasing in the USA healthcare environment,[1] leading to more intravenous/parenteral (IV) antimicrobial therapy use.
- Outpatient parenteral antimicrobial therapy (OPAT) improves patient quality of life and is cost-effective.[2]
- Adverse events causing discontinuation of therapy can occur up to 10% of the time.[3]
- Guidelines outline safe delivery of OPAT.[3]

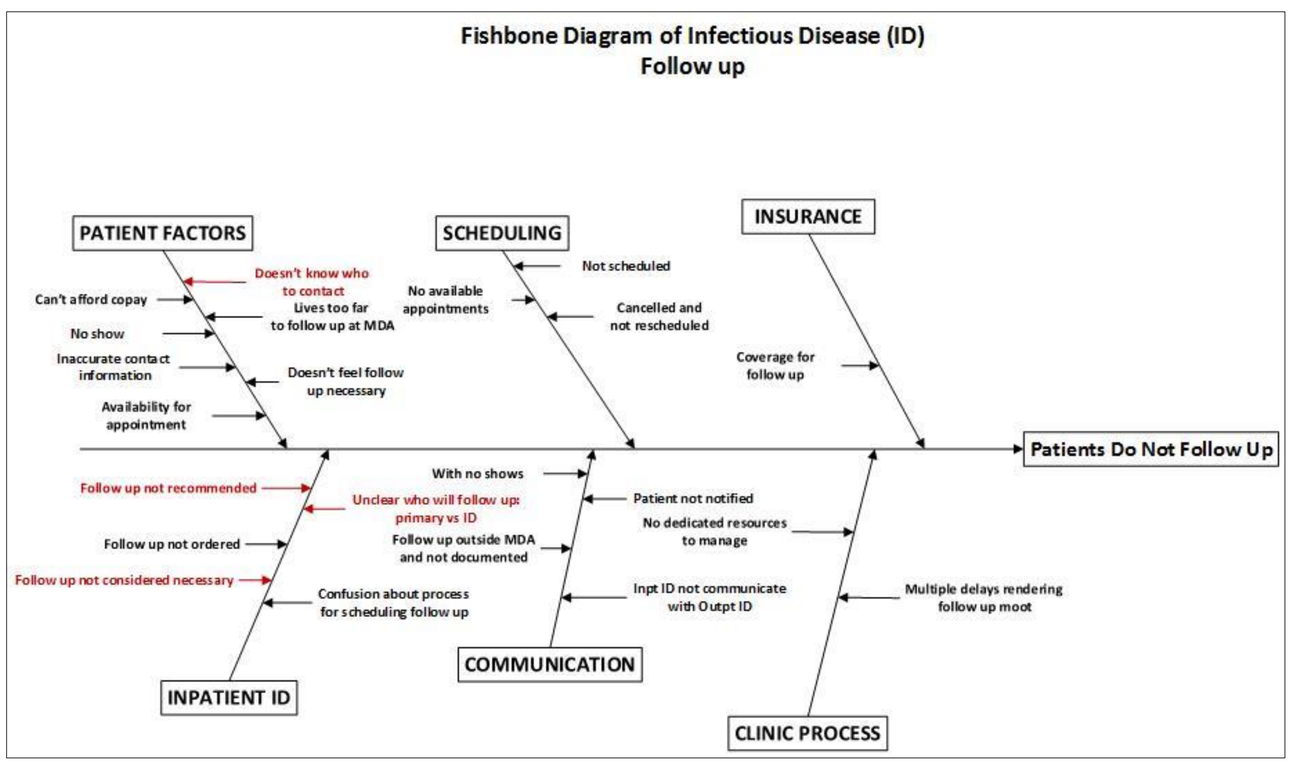
Aim

To improve monitoring of solid tumor patients followed by infectious diseases (ID) and recommended for OPAT as measured by increasing the percentage of patients with follow up (baseline 47%) and laboratory monitoring (baseline 42%) to 75%, respectively, by August 3, 2018.

Process Analysis

We examined a subset of patients recommended for OPAT upon discharge. Using a fishbone diagram, we identified obstacles to follow up (see Figure 1) and laboratory monitoring.
We found that many obstacles could be attributed to unclear ID recommendations (See Figure 1).

Figure 1: Fishbone diagram of Infectious Diseases outpatient parenteral antimicrobial therapy follow up process. Red text denotes obstacles that our intervention intended to address.



Methods

We created a "SmartPhrase" to be used within our electronic medical record software (see Figure 2) at the end of Infectious Diseases final recommendations. Infectious disease providers were reminded weekly of the new process during the intervention phase.

Figure 2 (Left): "SmartPhrase" used to standardize complete ID recommendations for OPAT.
Figure 3 (Right): Timeline of process analysis and implementation.

Outpatient Parenteral Antibiotic Therapy (OPAT) Recommendations

Indication for IV Antibiotics: ***
Line Access:

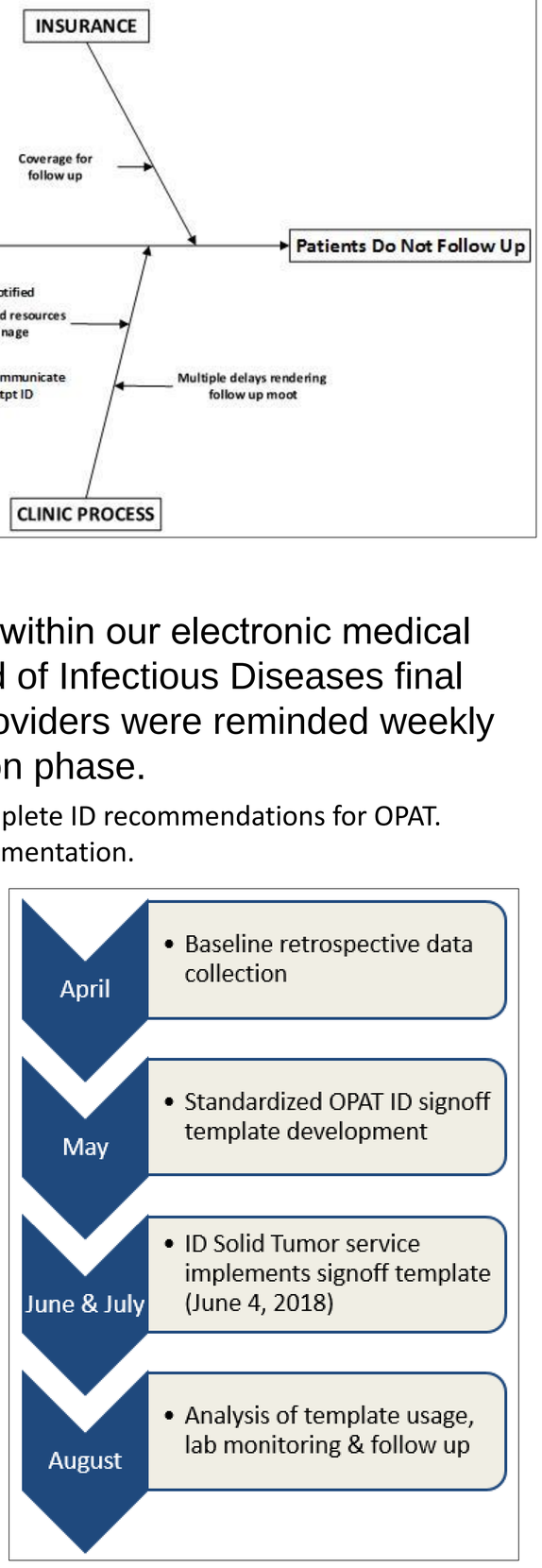
Intravenous Antibiotics
Antibiotic 1: Name *** Dosage *** Frequency ***
Anticipated stop date: ***

Concomitant Oral Antibiotics
Antibiotic 1: Name *** Dosage *** Frequency ***
Anticipated stop date: ***

Follow Up Labs:
Weekly Labs: Anticipated: {Rx AMS labs:408400272}
For labs collected outside MDA, Fax to ID office: 713-792-, please specify "ATTN: ID CLINIC OPAT"

For ID MDA follow up:
We will arrange for follow up with Dr *** in *** {Blank single:19197::"weeks","days","months"} with preclinic labs {Rx AMS labs:408400272} and preclinic imaging of ***.

ID Clinic number: 713-792
ID Clinic Fax number: 713-792-
Further questions please call ID clinic, or email provider for outpatient follow up



Contact Information
Emma Dishner MD MPH
Infectious Diseases Fellow
edishner@mdanderson.org

Results

Quality of Notes and 30-day Hospital Criteria Results	Pre-intervention (n=28)	Post-intervention (n=22)	P- value
Complete antibiotic recommendations (%), including dosage, frequency, and duration	Yes – 93% Partial – 4% No – 4%	Yes – 100% Partial – 0% No – 0%	1
Recommended follow up (%), including provider and time frame	Yes – 64% Specifically stated no follow up – 11% Not discussed – 25%	Yes – 82% Specifically stated no follow up – 18% Not discussed – 0%	**0.042**
Recommended labs (%), including lab(s), frequency and who to send to	Yes – 7% Partial – 36% No – 54% No monitoring per ID – 4%	Yes – 86% Partial – 0% No – 9% No monitoring per ID – 5%	**<0.001**
Confirmed completion of antibiotics (%)	Yes – 46% Partial – 4% No – 14% Not documented – 36%	Yes – 73% Partial – 9% No – 0% Not documented – 18%	0.077
Infection-related 30 day readmission (%)	18%	0%	0.059
Infection-related 30 day ER visits (%)	21%	0%	**0.028**
Follow Up Results	**Pre-intervention (n=19)**	**Post-intervention (n=18)**	**P-value**
Follow up in Infectious disease clinic if recommended	Yes – 47% Partial – 16% No – 37%	Yes – 78% Partial – 0% No – 22%	0.098
Laboratory Monitoring Results	**Pre-intervention (n=12)**	**Post-intervention (n=19)**	**P-value**
Completion of laboratory monitoring (%) if recommended	Yes – 42% Partial – 33% No – 25%	Yes – 26% Partial – 42% No – 32%	0.72

Conclusions

- By standardizing our department recommendations, we achieved:
  - Improvement in the quality of our notes
  - Decreased ID-related 30-day readmission and ID-related 30-day ER visit rates
  - Increased outpatient follow up rate to 78%
- We did not effect change regarding laboratory monitoring, likely because of an increased rate of recommending laboratory monitoring without affecting the process of completion through improved coordination with other disciplines.

Lessons Learned

- **Have an open mind about where a quality improvement intervention is needed.** Prior to analyzing the baseline data we hypothesized that other departments were not following our recommendations. However, through process analysis, we found our recommendations were being followed but were often incomplete.
- **A simple intervention can have an impact.** We were surprised to see that a uniform "SmartPhrase" could improve 30-day readmission and ER visit rates.
- **Buy-in from stakeholders is important.** This process improvement required commitment from many disciplines, including physicians, advanced practice providers, and clinical nursing staff. A potential obstacle is lack of buy-in from case management, a likely contributor to poor lab monitoring.

Next Steps

- Process analysis and intervention for improving lab monitoring with greater case management involvement.
- Sustaining current intervention over time—automation of OPAT data collection with dashboards (unavailable in our current electronic medical record version) will greatly enhance sustainability.
- Expand to other patients over time (i.e., General Internal Medicine, Lymphoma service, eventually throughout the institution).

References

1. P T. 2015 Apr; 40(4): 277–283.PMID 25859123
2. Int J Antimicrob Agents. 2018 Jan;51(1):26-32. doi: 10.1016/j.ijantimicag.2017.03.016. Epub 2017 Jun 30. PMID 28673610
3. Clin Infect Dis. 2004 Jun 15;38(12):1651-72. Epub 2004 May 26. PMID: 15227610