



Making the EMR work for you –modifications to Epic to improve management of outpatient parenteral antimicrobial (OPAT) patients

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Background

- In 2012, a distinct OPAT patient care team, ID pharmacist and physician, was established for patients on IV antimicrobials managed by ID providers.
- Managing the complex needs of OPAT patients has historically been challenging and time-consuming within the electronic medical record (EMR).
- EMR modifications became imperative to support our OPAT workflow (Table).

Table: Description of OPAT program functions in 2012

OPAT Function	Description of OPAT program in 2012
Patient Identification	Inpatient ID fellows asked to notify ID pharmacist (pager or email) of new OPAT patients Gap: Lack of electronic workflow Problem: OPAT team not notified of discharges
OPAT team Sign-On	OPAT team signed on at first outpatient visit Gap: Time from discharge to first visit could be weeks Problem: No monitoring may occur between discharge and ID clinic visit; adverse effects missed/ identified late
OPAT related orders	Discharging provider orders antimicrobial therapy, supplies for home infusions and pertinent lab tests Gap: Lack of order set to guide accurate prescribing Problem: Frequent need of clarification/additional orders
Weekly Monitoring & Case Review	ID Pharmacist chart review and weekly meeting with MD Gap: OPAT relevant patient data scattered in many section of the EMR chart Problem: Excess time spent reviewing information

Methods

- The ID physician and pharmacist identified program improvement opportunities including:
 - Expanding the multidisciplinary care team with additional staff support
 - Standardizing OPAT workflow, including care transition processes
 - Modifications to the EMR
- In 2016, a multidisciplinary team, including IT, was assembled to design and implement modifications to Epic to meet the needs of the OPAT program.

Patient Identification and Team Sign-On

Program Changes:

- Additional care team members hired: MD (2013), RN (2016), NP (2017)

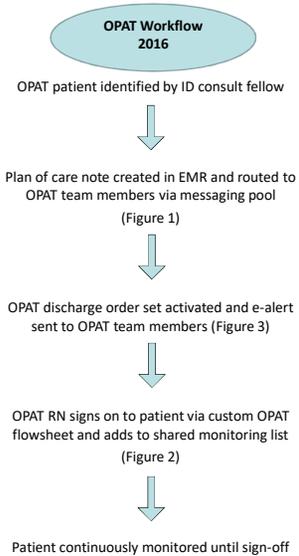


Figure 1. Template for OPAT Plan of Care Note

Infectious Diseases Plan of Care Note and Sign Off Note
It is recommended that the discharging provider use the "home IV antibiotics" order set.
Referring Service/Physician
ID Attending: (ID Adult Attendings)
ID Fellow: (ID Adult Fellows)
Primary ID Diagnosis/Diagnoses: (OPAT ID Diagnosis)
Summary: ***
Microbiology and culture source: ***
Pending Studies related to ID consultation: ***
Discharge Antibiotics and Dose: ***
Antibiotic Start Date: ***
Anticipated Antibiotic Stop Date: ***
Labs to be drawn after discharge, with frequency (preferably sent to a URMCC Lab): (ID Adult Labs Post Discharge)
Fax/Routelabs to attention of: (ID Adult Attendings) at ***
Outpatient ID Fellow (if different from above): (ID Adult Fellows 2016:1991107200)
Outpatient PCP or Referring Physician:
Follow-up ID Appointment:
If this appointment needs to be rescheduled, medical providers may call ID Clinic at ***
Patients should call ***
This plan is as of (Date, Time).
Any changes to this plan should be reflected in discharge summary, discharge AVS, and the outpatient ID providers should be notified as well.
Route notes to:
OPAT pool
Outpatient ID Attending © 2018 Epic Systems Corporation. Used with permission.

Figure 2. Smart Form to Facilitate OPAT Team Sign-on

OPAT - Sign On Note

Diagnosis:

Organisms:

Infusion Pharmacy:

Nursing Agencies:

ID Fellows:

ID Attending:

IV Access:

Antibiotics:

Weekly Labs:

Anticipated therapy and date:

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Results

OPAT related orders

- An order set was built to facilitate accurate electronic prescribing of antimicrobials, supplies for home infusions, pertinent lab tests (Figure 3).
- Pre-templat patient instructions for home IV antibiotics are triggered from the order set facilitates patient communication

Figure 3. Home IV Antibiotic Order set

Home IV Antibiotics (OPAT) © 2018 Epic Systems Corporation. Used with permission.

OPAT Discharge Notification
Notification of home antibiotics

Home Supplies
sodium chloride 0.9 % flush
Dep-600 ml, P.O. Normal Saline 0.9 % 10ml, heparin flushes. Type of IV line: 2 lumens

Medications
cefAzolin IV infusion (Outpatient Therapy)
Amoxicillin 500mg into the vein by IV each every 8 hours
Dep-21 Core, B.G. Normal Pharmacy is determine amount, concentration and rate of administration.

Labs
Basic metabolic panel
CBC and differential

Patient Instructions for Home IV infusions

Weekly Monitoring & Case Review

- A new patient report, the OPAT monitoring view (Figure 4) was designed.
- Accessible from patient list, this view displays OPAT relevant data from multiple sections of the patient chart onto one screen- antimicrobials, infusion pharmacy, home care agency, 45 days of labs, recent microbiology, access to ID inpatient and outpatient notes, care team members, upcoming appointments, etc. without directly entering the chart.
- Significantly reduced the time needed for weekly case reviews and facilitates more efficient management of 90-120 patients weekly.

Figure 4. OPAT Monitoring view in EMR

Outpatient Antimicrobials

OPAT & ID Notes (Last 90 days) 6/27/2018 to 9/25/2018

Lab results from last 45 days

Conclusion

- Modifications made to the Epic EMR at URMCC, in conjunction with other programmatic changes, have improved the efficiency of the OPAT program.
 - Patient identification is facilitated, patient monitoring is enhanced, clinician time is saved, and ordering is more accurate.
 - Physician satisfaction was improved by creating tools that were designed with workflow efficiency in mind.
- These modifications could easily be made by other Epic users.
- Future plans are to add features to the OPAT flowsheet to facilitate outpatient PK monitoring and document adverse events.
- The discrete data fields will allow creation of EMR report to track patient volume and program outcomes.

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