HIMSS Davies – Therapy Plan
Ordering Optimization

02 October 2018

Cleveland Clinic Abu Dhabi

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Case Study: Therapy Plan Ordering Optimization

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Clinical Informaticist, Informatics
Who We Are

• Set up the first US Multispecialty Hospital Outside North America
• Cultivating a Sustainable Healthcare System
• Supporting the Development of Emiratis in Healthcare
Our Mission and Vision Statements

**Mission**
The mission of Cleveland Clinic Abu Dhabi is to provide better care of the sick, investigation into their problems, and further education of those who serve.

**Vision**
Striving to be the world’s leader in patient experience, clinical outcomes, research and education in a fiscally responsible manner.
A Purpose-Built Medical Campus

- **Diagnostic & Treatment**
  - 16 Procedure Rooms
  - 17 Imaging Suites
  - 41 Room Emergency Department

- **Swing Wing**
  - Current: Office Space
  - Future: Supports Bed Expansion

- **Ambulatory Clinic**
  - 242 Exam Rooms

- **Rosewood Hotel**

- **Rosewood Connection**

- **Acute Care 364 Beds**

- **Critical Care 72 Beds**

- **Conference Center**

- **Gallery Public Space**

- **409,234 m² total gross area on a 23 acre site**
- **364 beds scalable to 496 beds**
- **26 Operating Rooms**
- **1st LEED Gold certified hospital in the GCC**
Complex & Critical Care

13 INSTITUTES
13 INSTITUTES
Heart & Vascular Institute
Digestive Disease Institute
Neurological Institute
Eye Institute
Medical Sub-specialties Institute
Surgical Sub-specialties Institute
Anesthesiology Institute
Emergency Medicine Institute
Imaging Institute
Quality & Patient Safety Institute

5 CENTERS OF EXCELLENCE
5 CENTERS OF EXCELLENCE

+30 MEDICAL & SURGICAL SPECIALTIES
+60 SUB SPECIALTIES

IMAGING INSTITUTE
HEART & VASCULAR INSTITUTE
NEUROLOGICAL INSTITUTE
DIGESTIVE DISEASE INSTITUTE
EYE INSTITUTE
MEDICAL SUB-SPECIALTIES INSTITUTE
SURGICAL SUB-SPECIALTIES INSTITUTE
ANESTHESIOLOGY INSTITUTE
EMERGENCY MEDICINE INSTITUTE
IMAGING INSTITUTE
QUALITY & PATIENT SAFETY INSTITUTE
Our Caregiver Diversity

- 77 Nationalities Represented
- 35+ Languages Spoken
- 618 UAE Nationals (18% Emiratization)
- 3,459+ Clinical & Non Clinical Caregivers
- 1,834 Nurses & Allied Health Professionals
- 1,252 Non Clinical Caregivers
Our Unique Offerings

- Patient Experience
- Outcomes & Performance Metrics
- Innovative Model of Care
- State-of-the-Art Technology
Patients First

- The Patients First philosophy is the core of CCAD
- Patient Experience levels continuously measured
- DOH ‘People’s Choice Award’ winner.
Clinical Firsts

- UAE’s 1st Heart Transplant
- UAE’s 1st Liver Transplant
- UAE’s 1st Lung Transplant
- 11 Kidney Transplants
- Cardioband Mitral Valve Repair
- UAE’s 1st Robotic Hysterectomy
- 1st Endoscopic Sleeve Gastroplasty
- UAE’s 1st Robotic Myomectomy
CCAD Accomplishments (1)

- DoH designated Teaching and Research Hospital
- Performing the UAE’s first and second double lung transplants, and third liver transplant
  - 11 total kidney transplants; 6 living related and 5 cadaveric
- Leading the way in the Department of Health (DoH) survey:
  - CCAD ranked first for overall patient satisfaction in the outpatient and ED
  - ED received the highest score in the most recent DoH audit and is the only ED in Abu Dhabi with 0 deficiencies
- Offering new services in Al Ain:
  - Al Ain achieved licensure to provide Neurology, Pulmonology, Urology and Sleep Medicine
- Distribution of the 2017 State of Clinic report
- Performing the 300th Bariatric operation
CCAD Accomplishments (2)

• Attaining Arab Board accreditation to begin physician residency programs:
  • Offering physician residency programs in Internal Medicine, General Surgery and Ophthalmology

• Regionally novel remote heart monitoring system installed in the Heart and Vascular Institute:
  • CCAD to become the first hospital in the region to adopt this technology
Local Problem

Problem Statement:

• Upon clinic activation, there was no effective computerized order process for patients requiring recurring therapy treatments in the Infusion Center. This then negatively affected the clinician workflows – as well as caregiver and patient satisfaction.

• The current agreed upon process between the Infusion Center and Pharmacy is that the medication should be received and able to begin administration within 1 hour
  • The initial Length of Stay (LOS) was 142 minutes, which when reduced by administration time, leaves 112 minutes of waiting for medication arrival

Goals Set:

• Through IT innovation, Clinicians would then be able to plan, release and administer medications efficiently for patients that require recurring treatments in the Infusion Center

• Orders would be readily available when patient checks-in to the clinic

• Medications would be previously signed by the ordering physician for administration
Local Problem

**Issues:**

- No efficient ordering mechanism was in place for patients requiring recurring treatments at the Infusion Center
- Time spent by the RN waiting for an active order to release was lengthy

**Impact:**

- Patient dissatisfaction due to increased LOS
- Caregiver dissatisfaction due to unavailability of active orders upon patient check-in to the Infusion Center

**Why is it important to solve the problem?**

- In order to provide the CCAD standard of quality and innovative health care, it was necessary to create a more efficient method of ordering medications for recurring treatments to reduce visit times that will positively transform service quality, continuum of care and improve overall patient/caregiver satisfaction
Design and Implementation - Stakeholder Group

CLINICAL
- MD Hematology
- RN Infusion

IT
- IT EMR
- Epic
- Informatics
  - Epic Technical Support
  - Ambulatory Informaticist
  - Ambulatory Trainer
- Ambulatory Analyst
  - Ambulatory Manager
Identification of IT Solution

Solution Identified:

- To implement Therapy Plan functionality
  - Therapy Plans are pre-defined sets of orders that are administered to a patient during multiple encounters at specified intervals
Solution Design and Implementation – Design Process

Solution Analysis
- Collaboration of EMR, Informatics, and Epic Teams to identify a solution to manage recurring orders for patients undergoing infusion treatments

Foundation Demo
- Performed a foundation system demo to stakeholders to provide an overview on what’s currently available in the system

Mock Build
- Collaborated with stakeholders to gather requirements for Iron Sucrose Therapy Plan Protocol
Solution Development and Roll-out

Requirements Gathering

- Multiple meetings were conducted between EMR, EPIC Team, Hematology physicians and Infusion nurses for requirements gathering starting late 2014 through implementation.

User Acceptance and Training

- Prior to Production implementation a final demo and training has been conducted to physicians, nurses, Informatics, trainers and Site Support Specialist
- Used PLY environment
- Sign-off - July 5, 2015

Pilot Implementation

- Implemented the first Infusion Therapy Plan to Hematology Physicians and Infusion Nurses
- Tip sheet was circulated to pilot caregivers for reference
Timeline for Solution Implementation

- **JUL 2015**
  - Infusion Nurses
  - Hematology Physicians

- **SEP 2015**
  - Gastroenterology Physicians
  - Colorectal Surgery Physicians
  - Pulmonology Physicians

- **OCT 2015**
  - Nephrology Physicians
  - Occupational Health Physicians
  - First Iron Sucrose Protocol utilized

- **NOV 2015**
  - All Departments

- **JUN 2018**
  - Nurse Practitioners
Solution Design – Templates for Requirements Gathering (1)

Therapy Plan Protocol Template:

- Used for requirements gathering for new Therapy Plan Protocols

<table>
<thead>
<tr>
<th>Basic Information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Therapy Protocol Name</td>
<td>CCAD XXX</td>
</tr>
<tr>
<td>Description</td>
<td>If applicable</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>If applicable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Review Scheme</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheme</td>
<td>If Scheme = During certain months - indicate the months when review is due</td>
</tr>
<tr>
<td></td>
<td>If Scheme = Days - indicate number of days when review is due</td>
</tr>
<tr>
<td></td>
<td>If Scheme = Visits - indicate number of visits when review is due</td>
</tr>
<tr>
<td>Due every</td>
<td>If Scheme = During certain months - indicate the months when review is late</td>
</tr>
<tr>
<td></td>
<td>If Scheme = Days - indicate number of days when review is late</td>
</tr>
<tr>
<td></td>
<td>If Scheme = Visits - indicate number of visits when review is late</td>
</tr>
<tr>
<td>Late after</td>
<td>If Scheme = During certain months - indicate the months when review is late</td>
</tr>
<tr>
<td></td>
<td>If Scheme = Days - indicate number of days when review is late</td>
</tr>
<tr>
<td></td>
<td>If Scheme = Visits - indicate number of visits when review is late</td>
</tr>
<tr>
<td></td>
<td>Block new treatments while review is late? Enables new treatment until the protocol is reviewed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Review Scheme Message Reminder</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>While due</td>
<td>If blank, this will set a default message: This plan is due for review.</td>
</tr>
<tr>
<td>While late</td>
<td>If blank, this will set a default message: Review for this plan is late.</td>
</tr>
</tbody>
</table>
Solution Design – Templates for Requirements Gathering (2)

Therapy Plan Protocol Template:

<table>
<thead>
<tr>
<th>Category 1</th>
<th>This is to classify the orders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order 1 Details</td>
<td></td>
</tr>
<tr>
<td>Order Schedule</td>
<td></td>
</tr>
<tr>
<td>Order Name</td>
<td>Name of Order or Order ID</td>
</tr>
<tr>
<td>Interval</td>
<td></td>
</tr>
<tr>
<td>Minimum separation in days</td>
<td>If applicable</td>
</tr>
<tr>
<td>Defeit Until (in days)</td>
<td>If applicable</td>
</tr>
<tr>
<td>Duration</td>
<td></td>
</tr>
<tr>
<td>Order Details for LAB ORDERS</td>
<td></td>
</tr>
<tr>
<td>Status</td>
<td></td>
</tr>
<tr>
<td>Priority</td>
<td></td>
</tr>
<tr>
<td>Class</td>
<td></td>
</tr>
<tr>
<td>Order Details for MED ORDERS</td>
<td></td>
</tr>
<tr>
<td>Dose including units</td>
<td></td>
</tr>
<tr>
<td>Route</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>If applicable</td>
</tr>
</tbody>
</table>
Pre-existing workflow prior to IT intervention

**Scenario:** Patient requires a recurring administration of Iron Sucrose in the Infusion Center and the physician has identified that the patient needs 5 treatment sessions

- **Workflow:**

  - Hematology physician places Iron Sucrose medication in ‘Orders for Admission’ activity for the current encounter for 5 doses.
  - On the patient’s next visit to Infusion Center, the nurse would need then select and release the medication order from Sign and Held activity.
  - Nurse then was able to administer the medication accordingly on the MAR.
**Previous Ordering Workflow**

**iron sucrose (FEROSAC) 100 mg in 0.9% NaCl 100 mL IV infusion**

**Order Inst.:**
Maximum recommended cumulative dose is 1000 mg: 100 mg for 10 doses - 200 mg for 5 doses - 300 mg for 3 doses

**Reference Links:**
1. Lexi-Comp Drug Reference

**Dose:**
- 100 mg
- 100 mg
- 200 mg
- 300 mg

**Iron sucrose (FEROSAC) 100 mg in 0.9% NaCl 100 mL IV infusion**

- Duration of 29 days exceeds recommended maximum of 28 days

**Override Reason/Comment:**
Dose Appropriate

**Administer Dose:**
- 100 mg
**Administer Amount:**
- 100 mg

**Route:**
- Intravenous

**Frequency:**
- Weekly

**For:**
- 5 Doses

**Starting:**
- 27/9/2018
- Today

**At:**
- 17:00

Cleveland Clinic Abu Dhabi

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Process Changes based on IT Interventions

**Scenario:** Patient requires a recurring administration of Iron Sucrose and the physician has identified that the patient needs 5 treatment sessions

- **Workflow:**
  
  Hematology physician places Iron Sucrose Protocol from Therapy Plan activity for the current encounter. On the Order Schedule of the medication, the physician specifies a duration of 5 treatments and signs the order.

  On the patient’s next visit to Infusion Center, the nurse goes to Therapy Plan activity and clicks on Begin Treatment. The nurse then releases the medication.

  Nurse then administers the medication in MAR accordingly.
Therapy Plan Ordering Workflow

1. Physician selects a Therapy Plan Protocol
Therapy Plan Ordering Workflow

2. Physician reviews the content of the protocol and assign it to the patient.
3. Now, the Iron Sucrose protocol is assigned to the patient
Therapy Plan Ordering Workflow

4. Physician has the ability to modify the order, if needed
Therapy Plan Ordering Workflow

5. Physician signs the Therapy Plan
Therapy Plan Ordering Workflow

6. Nurse begins treatment
Therapy Plan Ordering Workflow

7. Nurse releases the order
Therapy Plan Ordering Workflow

8. Nurse administers the medication on the MAR
Therapy Plan Ordering Workflow

9. Nurse marks the treatment as complete.
Value Derived

- Patient satisfaction improved due to reduced LOS in the Infusion Center
- Efficiency of recurrent order entering improved
- Time from patient check-in to medication completion has significantly decreased
- Relationships amongst caregivers were enhanced as practices became more clinical vs task driven
  - Physician- due to less ordering time/documentation/redundant phone calls from nursing staff
  - Nursing- due to availability of a releasable order upon patient check-in to Infusion Center
  - Pharmacy- due to lesser call volume to verify medication processing time
Value Derived – Reduction of Length of Stay with Iron Sucrose

- 53% reduction in LOS since opening of the Infusion Center with the aid of Therapy Plans
- The current agreed upon process between the Infusion Center and Pharmacy is that the medication should be received and able to begin administration within 1 hour
- The current length of stay of 67 minutes from patient check in to medication completion significantly exceeds this goal
Patient volume has grown exponentially since clinic activation with most Iron Sucrose patients having the Therapy Plan present.
Value Derived – Financials with Iron Sucrose

With the efficiency of Therapy Plan functionality, more patients are able to be seen resulting in more revenue being generated.
Lessons Learned

• We learned the importance of working collaboratively and having transparent communication amongst multidisciplinary teams

• We learned how crucial it is to communicate effectively to drive positive and successful outcomes

• We learned how vital the CCAD “speak up” philosophy is to effectively identify, troubleshoot and problem solve issues

• We learned the value of sharing information and promoting awareness of your own successes

• This is demonstrated by the extensive replication efforts in the outpatient clinic settings
## Current Therapy Plans for Infusion

<table>
<thead>
<tr>
<th>Available</th>
<th>CCAD ABATACEPT</th>
<th>CCAD ABATACEPT Dose 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCAD AMIKACIN</td>
<td>CCAD CEPHALOSPORIN</td>
<td>CCAD CEPHALOSPORIN Dose 1</td>
</tr>
<tr>
<td>CCAD BEVACIZUMAB</td>
<td>CCAD CEPHALOSPORIN Dose 2 Onward</td>
<td></td>
</tr>
<tr>
<td>CCAD CEFAZOLIN</td>
<td>CCAD CEPHALOSPORIN Dose 3 Onward</td>
<td></td>
</tr>
<tr>
<td>CCAD CEFTRIAXONE</td>
<td>CCAD CEPHALOSPORIN Dose 4 Onward</td>
<td></td>
</tr>
<tr>
<td>CCAD DAPTOMYCIN</td>
<td>CCAD CEPHALOSPORIN Dose 5 Onward</td>
<td></td>
</tr>
<tr>
<td>CCAD ERTAPENEM</td>
<td>CCAD CEPHALOSPORIN Dose 6 Onward</td>
<td></td>
</tr>
<tr>
<td>CCAD FERRIC CARBOXYMALTOSE</td>
<td>CCAD CEPHALOSPORIN Dose 7 Onward</td>
<td></td>
</tr>
<tr>
<td>CCAD INFLIXIMAB</td>
<td>CCAD CEPHALOSPORIN Dose 8 Onward</td>
<td></td>
</tr>
<tr>
<td>CCAD IRON SUCROSE</td>
<td>CCAD CEPHALOSPORIN Dose 9 Onward</td>
<td></td>
</tr>
<tr>
<td>CCAD IVIG</td>
<td>CCAD CEPHALOSPORIN Dose 10 Onward</td>
<td></td>
</tr>
<tr>
<td>CCAD Methylprednisolone</td>
<td>CCAD CEPHALOSPORIN Dose 11 Onward</td>
<td></td>
</tr>
</tbody>
</table>
Current Therapy Plans for Clinic Administered Medications

<table>
<thead>
<tr>
<th>Available</th>
<th>CCAD ANTI-TB PLAN</th>
<th>CCAD BCG</th>
<th>CCAD BLADDER CENTER INSTALLATION COCKTAIL</th>
<th>CCAD DMISO</th>
<th>CCAD ENBREL</th>
<th>CCAD HEP B</th>
<th>CCAD HEPATITIS A</th>
<th>CCAD HPV VACCINE</th>
<th>CCAD HUMIRA</th>
<th>CCAD MITOMYCIN</th>
<th>CCAD MMR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
</tr>
</tbody>
</table>
Current Therapy Plans for Dialysis
Action Plan for Continuous Improvement

• Continue developing therapy plans based on voiced need from the Clinics

• Work to automate charges for Simple Therapy Plans administration
  • Once again, Iron Sucrose will be the pioneer of this initiative

• Develop a detailed automated pre-authorization management process in which any changes to Therapy Plans drive a notification to the PAVE team

• Changes may include increase in dosing, adding or removing certain drugs/labs, combining therapy plans or adjusting intervals
Summary Recap

Problem Statement: It was identified soon after clinic activation that there was no effective computerized ordering process for recurring infusion treatments.

Solution Design and Implementation: Therapy plan functionality was identified as a solution to the problem, which was successfully researched, designed, tested, validated and implemented.

Result:

- Reduced patient Length of Stay
- Improved opportunity for revenue growth
- Due to the Therapy Plan functionality, the relationships amongst caregivers subsequently improved.
No small effort goes without a big reward…
Therapy Plan Ordering Optimization

Case Speaker Profiles

Jennifer Schroeder
Title: Assistant Nurse Manager, Infusion Center
Role: Responsible for managing the new Oncology service line in CCAD. Care coordination for oncology patients is managed in healthcare systems (both internally and externally), ensuring prompt scheduling, referrals and drug administration. Also support patient education and is an Epic super user for the Oncology module ‘Beacon’

Jayesh Janardhanan
Title: Application Analyst, EMR IT
Role: Responsible for providing system build solutions (workflow analysis, build and test) and troubleshoot support related to the Epic modules ‘Ambulatory’, ‘Kaleidoscope (Ophthalmology)’ and ‘Phoenix (Transplant), in collaboration with multi-disciplinary teams

Aileen Federico
Title: Clinical Informaticist, Informatics
Role: Responsible for assisting with planning, design, development, implementation and maintenance of EMR Epic systems and functions, in collaboration with Clinical leadership and technical teams to continuously develop and upgrade the quality and effectiveness of Epic technologies