

HIMSS Davies – Therapy Plan Ordering Optimization

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Case Study: Therapy Plan Ordering Optimization

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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

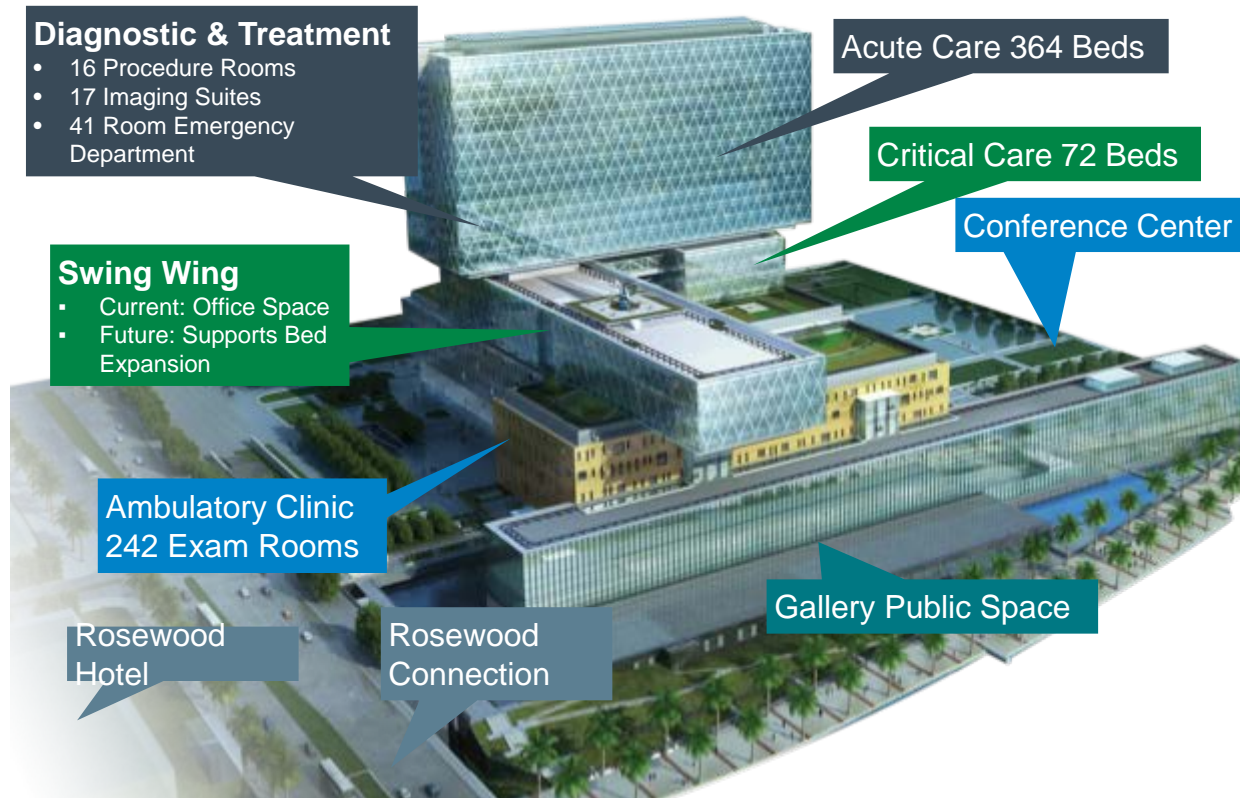
The mission of Cleveland Clinic Abu Dhabi is to provide better care of the sick, investigation into their problems, and further education of those who serve

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



- ✓ 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 INCLUDING **5** CENTERS OF EXCELLENCE

MEDICAL SPECIALTIES
 **+30** MEDICAL & SURGICAL SPECIALTIES
 **+60** SUB SPECIALTIES



Heart & Vascular Institute



Digestive Disease Institute



Respiratory & Critical Care Institute



Surgical Sub-specialties Institute



Anesthesiology Institute



Pathology & Laboratory Medicine Institute



Neurological Institute



Eye Institute



Medical Sub-specialties 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

373
Physicians

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

Patient-Centered Institute Model Offering coordinated, multidisciplinary care
Specialist Physicians Available 24/7 at the hospital
Integration with Cleveland Clinic Main Campus Promoting knowledge transfer across all hospital functions
Office of Patient Experience Monitoring every step of the patient journey
Electronic Medical Records Supporting a seamless and integrated recovery plan
Cleveland Clinic's Globally-Recognized Standard of Care Adapted to cater to regional and cultural expectations

- 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



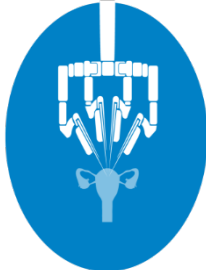
Cardioband
Mitral Valve Repair



UAE's
1st Liver
Transplant



UAE's 1st Robotic
Hysterectomy



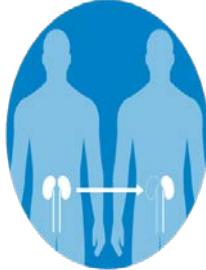
UAE's
1st Lung
Transplant



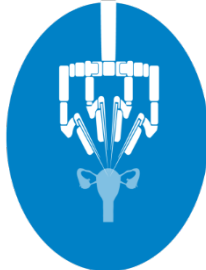
1st Endoscopic Sleeve
Gastroplasty



11 Kidney
Transplants



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

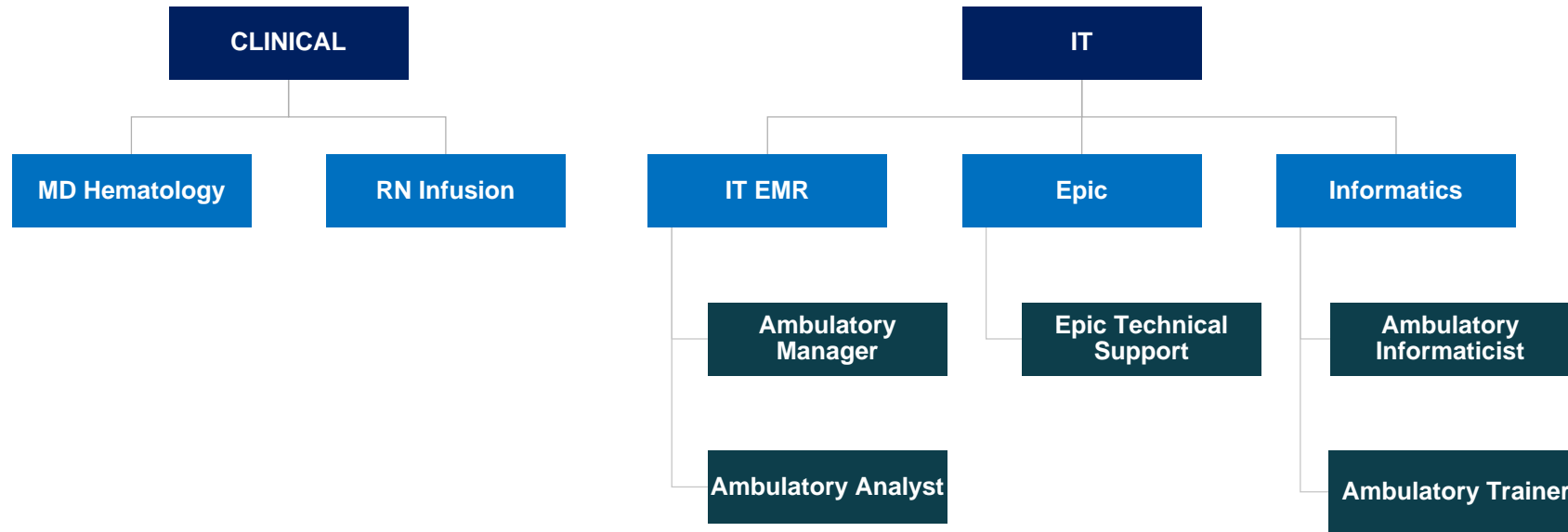
Impact:

- 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



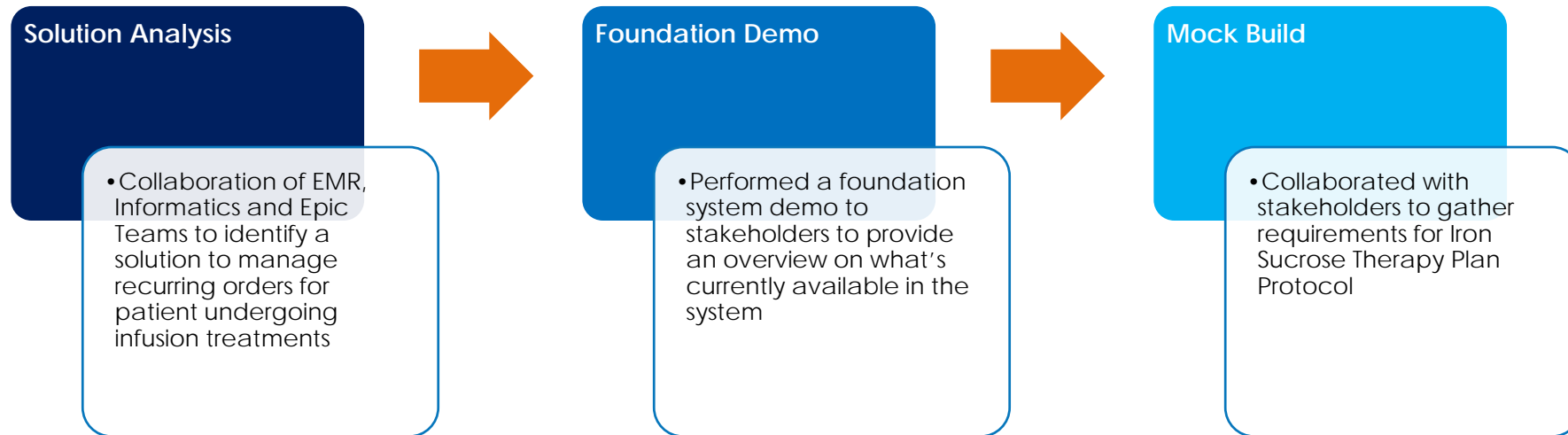
Identification of IT Solution

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



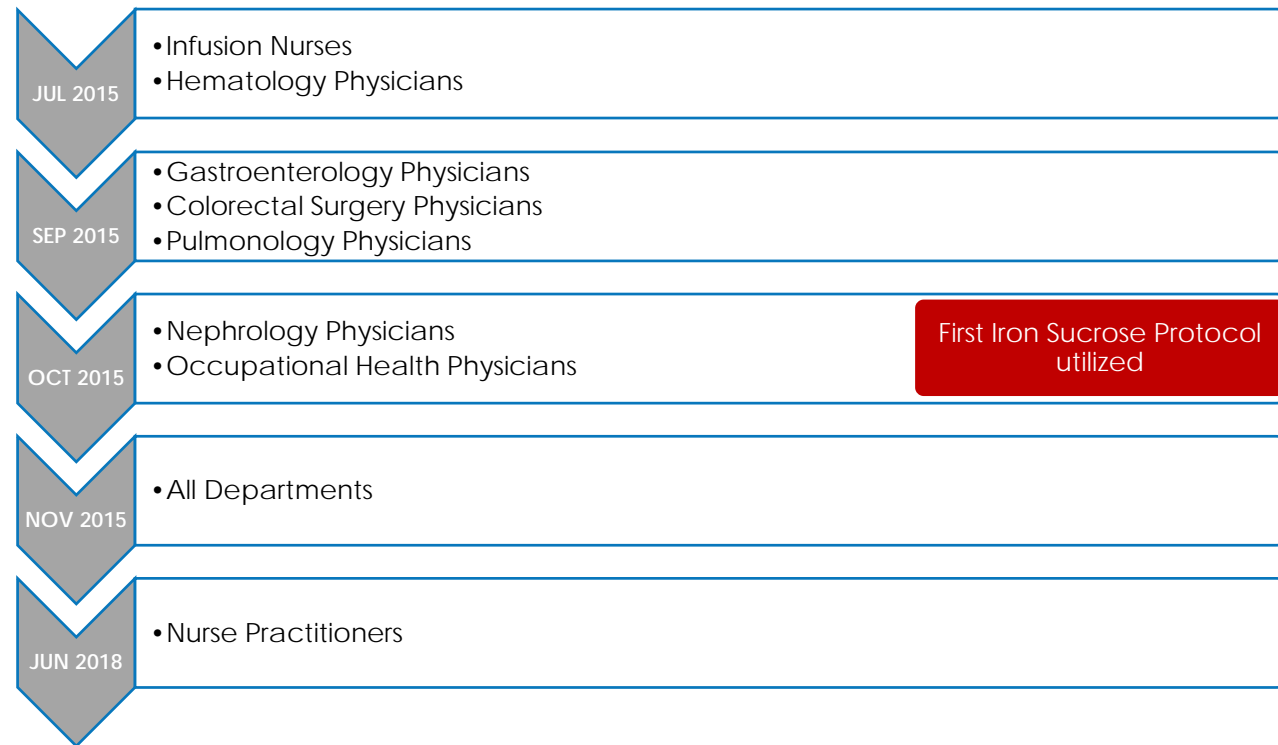
Solution Design and Implementation – Design Process



Solution Development and Roll-out



Timeline for Solution Implementation



Solution Design – Templates for Requirements Gathering (1)

Therapy Plan Protocol Template:

- Used for requirements gathering for new Therapy Plan Protocols

Basic Information	
Therapy Protocol Name	CCAD XXX
Description	If applicable
Abbreviation	If applicable
Review Scheme	
Scheme	
Due every	If Scheme = During certain months - Indicate the months when review is due If Scheme = Days - Indicate number of days when review is due If Scheme = Visits - Indicate number of visits when review is due
Late after	If Scheme = During certain months - Indicate the months when review is late If Scheme = Days - Indicate number of days when review is late If Scheme = Visits - Indicate number of visits when review is late
Block new treatments while review is late?	Disables new treatment until the protocol is reviewed
Review Scheme Message Reminder	
While due	If blank, this will set a default message: This plan is due for review.
While late	If blank, this will set a default message: Review for this plan is late.



Solution Design – Templates for Requirements Gathering (2)

Therapy Plan Protocol Template:

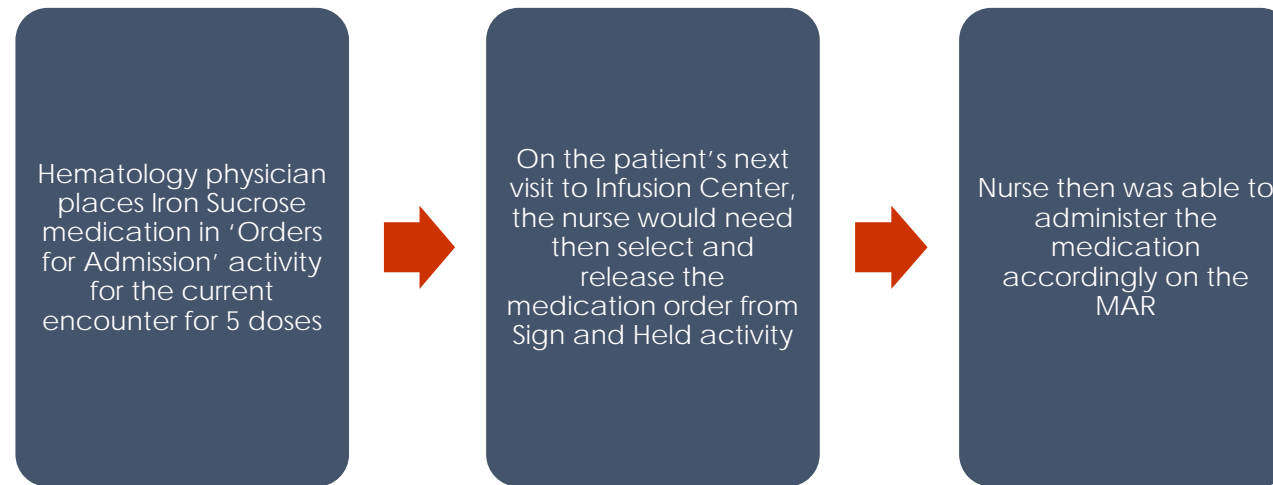
Orders	
	Category 1 This is to classify the orders
	Order 1 Details
	Order Schedule
	Order Name Name of Order or Order ID
	Interval
	Minimum separation in days If applicable
	Defer Until (in days) If applicable
	Duration
	Order Details for LAB ORDERS
	Status
	Priority
	Class
	Order Details for MED ORDERS
	Dose including units
	Route
	Frequency If applicable



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:



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 [Details](#)

↑ 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 **Intravenous**

Frequency: Weekly **Weekly** Daily 2x Weekly 3x Weekly

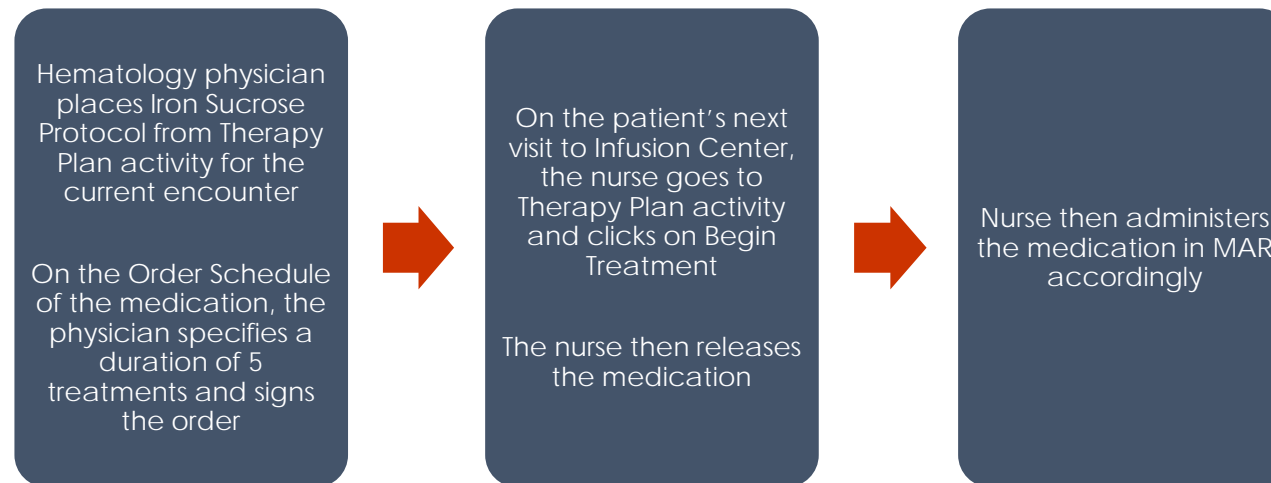
For: 5 Doses Hours Days

Starting: 27/9/2018 **Today** Tomorrow At: 17:00 [Show Additional Options](#)

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:



Therapy Plan Ordering Workflow

Therapy Plan

Images SmartSets Dictations Media Manager Preview AVS Print AVS Request Outside Records

Therapy Plan
Plan Summary
Therapy Plan - Inf
Therapy Plan - FAM
Therapy Plan - Di...

Plan Summary

No active plans

Therapy Plan - Infusion

No assigned therapy plan

Search [+ Assign](#)

Available [^](#)

CCAD ABATACEPT	☆	CCAD OCRELIZUMAB	☆
CCAD AMIKACIN	☆	CCAD OCRELIZUMAB DOSE 1	☆
CCAD BEVACIZUMAB	☆	CCAD OCRELIZUMAB DOSE 2 ONWARD	☆
CCAD CEFAZOLIN	☆	CCAD RITUXIMAB	☆
CCAD CEFTRIAXONE	☆	CCAD THERAPEUTIC PHEBOTOMY	☆
CCAD DAPTOMYCIN	☆	CCAD TOCILIZUMAB	☆
CCAD ERTAPENEM	☆	CCAD TYSABRI	☆
CCAD FERRIC CARBOXYMALTOSE	☆	CCAD VEDOLIZUMAB	☆
CCAD INFlixIMAB	☆	CCAD VITAMIN B12 FOR INFUSION	☆
CCAD IRON SUCROSE	☆	CCAD WILATE	☆
CCAD IMG	☆		
CCAD METHYLPREDNISOLONE	☆		

1. Physician selects a Therapy Plan Protocol

Therapy Plan Ordering Workflow

Therapy Plan Properties - CCAD IRON SUCROSE

Plan name: CCAD IRON SUCROSE

Plan start date: 17/9/2018

Lead provider:

Treatment department: INFUSION CENTER HAD

Problems Preview Plan

CCAD IRON SUCROSE

Review: Every 180 days

Orders

	Interval	Defer Until	Duration
Intravenous Medications			
IRON SUCROSE IV INFUSION ORDERABLE IV infusion 200 mg	Every visit		Until discontinued

Add to favorites

Assign Plan Cancel

2. Physician reviews the content of the protocol and assign it to the patient

Therapy Plan Ordering Workflow

Therapy Plan - Infusion ↑ ↓

CCAD IRON SUCROSE Plan start: 17/9/2018 Not assigned – Properties

Treatment Edit Plan

Add a new order

Select Unsigned Sign (0) Remove (0) Edit Interval (0) Next Actions ▾

Show: Order Details

	Interval	Duration	Due	Last Released	
<input type="checkbox"/>	CCAD IRON SUCROSE	Unsigned: 1 order is not signed			Remove Protocol
<input type="checkbox"/>	Intravenous Medications				
<input type="checkbox"/>	iron sucrose (FEROSAC) 200 mg in 0.9% NaCl 100 mL IV infusion	Every visit	Every visit		Sign <input type="checkbox"/>
200 mg, Intravenous, Administer over 30 Minutes, Starting when released, For 1 dose					

Review Plan Never reviewed

Select Unsigned Sign (0) Remove (0) Edit Interval (0)

Close

3. Now, the Iron Sucrose protocol is assigned to the patient

Therapy Plan Ordering Workflow

iron sucrose (FEROSAC) 200 mg in 0.9% NaCl 100 mL IV infusion

Order Schedule

Group with protocol: CCAD IRON SUCROSE

Category: Intravenous Medication

Interval: Every visit **Every visit**

Minimum separation: days

Defer until:

Duration: Until discontinued
 5 treatments
 Until

4. Physician has the ability to modify the order, if needed

Order Details *How should the order be given on those days?*

Order Maximum recommended cumulative dose is 1000 mg: - 100 mg for 10 doses - 200 mg ...

Inst:

Reference 1. Lexi-Comp Drug Reference

Links:

Dose: mg

Administer Dose: 200 mg
Administer Amount: 200 mg

Route: **Intravenous**

Frequency:

For: Doses Hours Days



Therapy Plan Ordering Workflow

Therapy Plan - Infusion ↑ ↓

CCAD IRON SUCROSE Plan start: 27/9/2018 Not assigned – Properties Treatment **Edit Plan**

Add a new order **+ Order** Clear Unsigned Sign (1) Remove (1) Edit Interval (1) Next Actions ▾

Show: Order Details

	Interval	Duration	Due	Last Released	
<input checked="" type="checkbox"/>	CCAD IRON SUCROSE	Unsigned: 1 order is not signed			Remove Protocol
<input checked="" type="checkbox"/>	Intravenous Medications				
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> iron sucrose (FEROSAC) 200 mg in 0.9% NaCl 100 mL IV infusion 200 mg, Intravenous, Administer over 30 Minutes, Weekly, Starting when released, For 1 dose	Every visit	5/5 remaining	Every visit	Sign

Review Plan Never reviewed Clear Unsigned Sign (1) Remove (1) Edit Interval (1)

Close Previous Next

5. Physician signs the Therapy Plan



Therapy Plan Ordering Workflow

Therapy Plan - Infusion ↑ ↓

CCAD IRON SUCROSE Plan start: 27/9/2018 Not assigned – Properties **Treatment** Edit Plan

Begin Treatment 1 **Actions** ▼

Order Filters: All Due PRN Future Show: Order Details

	Interval	Duration	Due	Last Released
CCAD IRON SUCROSE ⌵ Due: 1 due order has not been released				
Intravenous Medications ⌵				
	iron sucrose (FEROSAC) 200 mg in 0.9% NaCl	Every visit	5/5 remaining	Every visit
100 mL IV infusion 200 mg, Intravenous, Administer over 30 Minutes, Weekly, Starting when released, For 1 dose				

Begin Treatment 1

Close

↑ Previous ↓ Next

6. Nurse begins treatment



Therapy Plan Ordering Workflow

Therapy Plan - Infusion

CCAD IRON SUCROSE Plan start: 27/9/2018 Not assigned – Properties **Treatment 1** Edit Plan

Begin Treatment 1 Select Orders Release Started on Thu 27/9/2018 Next Actions

Order Filters: All Due PRN Future Show: Order Details

	Interval	Duration	Due	Last Released
CCAD IRON SUCROSE Complete: All due orders have been released				
Intravenous Medications				
iron sucrose (FEROSAC) 200 mg in 0.9% NaCl 100 mL IV infusion 200 mg, Intravenous, Administer over 30 Minutes, Weekly, First Dose Today at 17:00, For 1 dose	Every visit	4/5 remaining	Every visit Thu 27/9/2018	


Begin Treatment 1 Select Orders Release **Treatment 1**

Close Previous Next


7. Nurse releases the order

Therapy Plan Ordering Workflow

iron sucrose (FEROSAC) 200 mg in 0.9% NaCl 100 mL IV infusion : Dose 200 mg : Intravenous : Once



Ordered Admin
Amount: 200 mg

Click to see more details 

8. Nurse administers the medication on the MAR



Therapy Plan Ordering Workflow

Therapy Plan - Infusion

CCAD IRON SUCROSE Plan start: 27/9/2018 Not assigned – Properties

Treatment 1 Edit Plan

Begin Treatment 1 Started on Thu 27/9/2018 Actions

Order Filters: All Due PRN Future Show: Order Details

	Interval	Duration	Due	Last Released
CCAD IRON SUCROSE				
Complete: All due orders have been released				
Intravenous Medications				
iron sucrose (FEROSAC) 200 mg in 0.9% NaCl	Every visit	4/5 remaining	Every visit	Thu 27/9/2018
100 mL IV infusion				
200 mg, Intravenous, Administer over 30 Minutes, Weekly, First Dose Today at 17:00, For 1 dose				

Begin Treatment 1

Treatment 1: Completed

Close

Previous Next

9. Nurse marks the treatment as complete

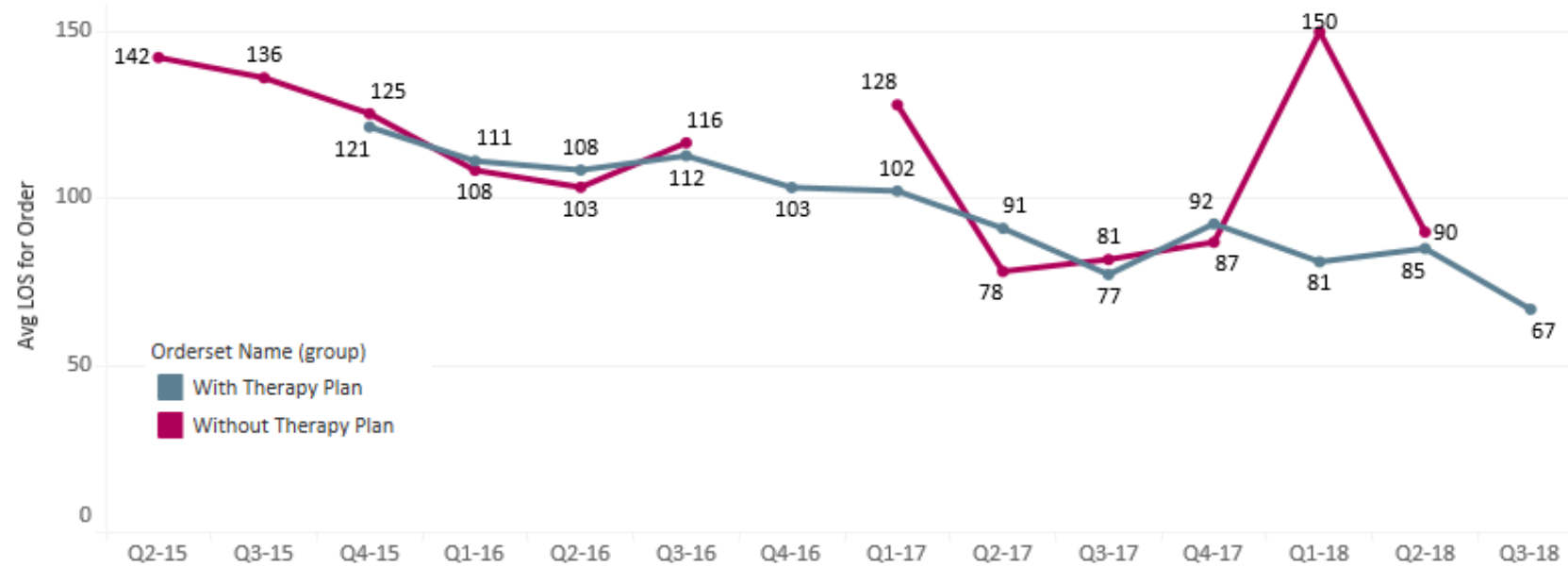
Value Derived

- 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

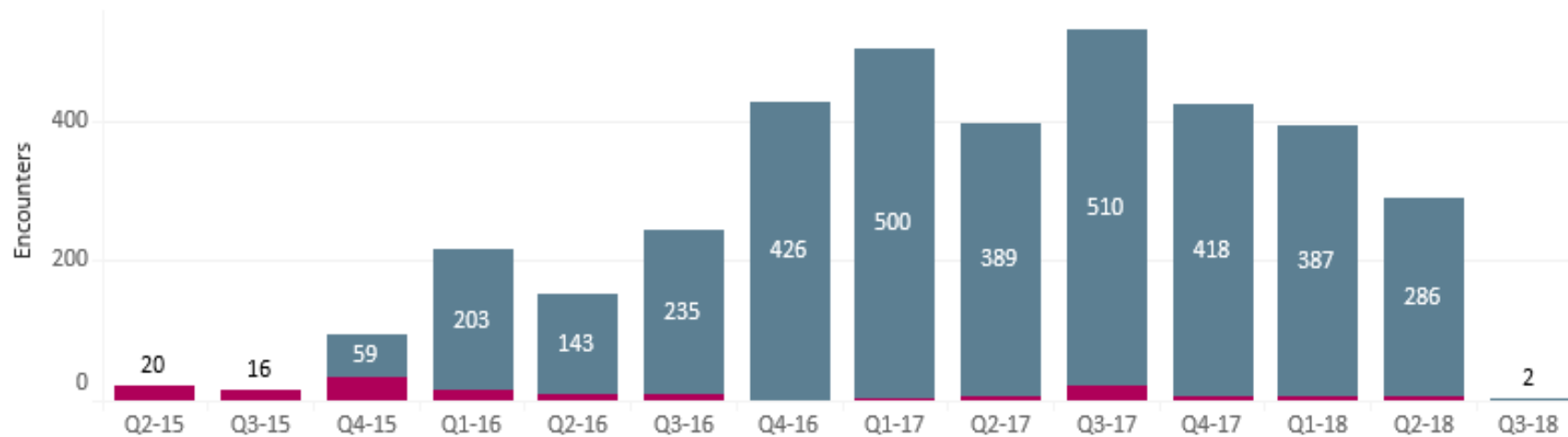
Average LOS



- 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

Value Derived – Patient Volume with Iron Sucrose

Patient Volume

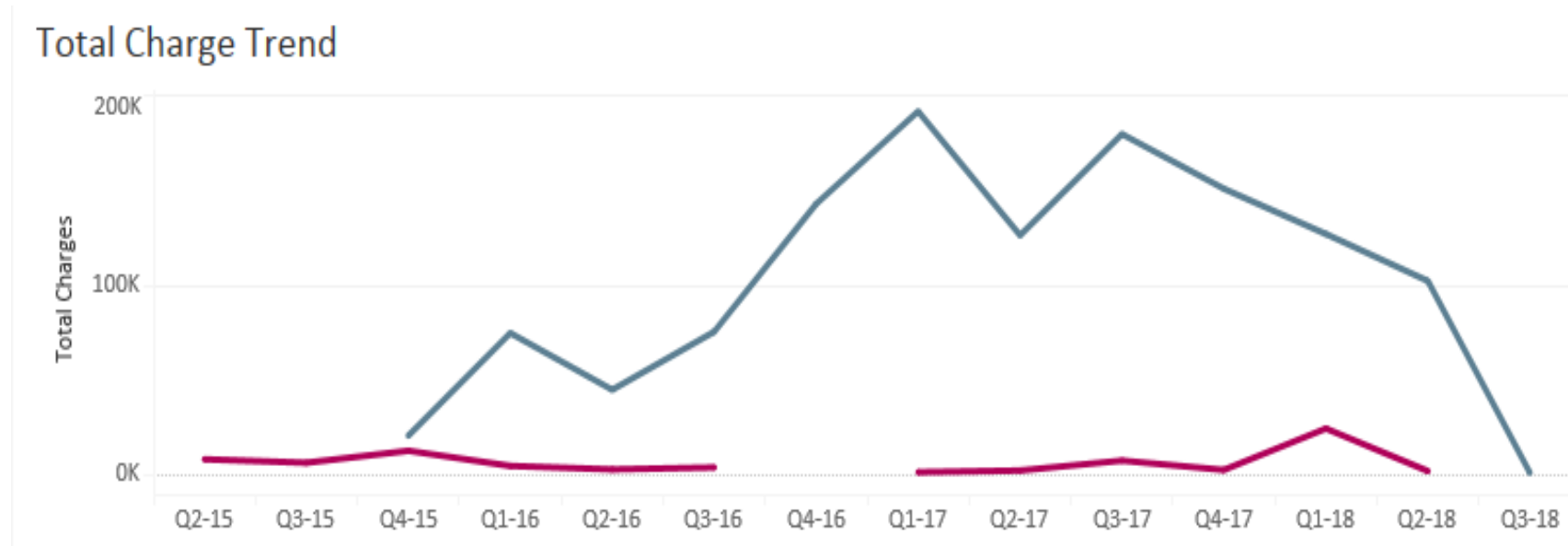


Orderset Name (group)
■ With Therapy Plan
■ Without Therapy Plan

Patient volume has grown exponentially since clinic activation with most Iron Sucrose patients having the Therapy Plan present.



Value Derived – Financials with Iron Sucrose



Orderset Name (group)
■ With Therapy Plan
■ Without Therapy Plan

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


Available 

CCAD ABATACEPT	 	CCAD OCRELIZUMAB	 
CCAD AMIKACIN	 	CCAD OCRELIZUMAB DOSE 1	 
CCAD BEVACIZUMAB	 	CCAD OCRELIZUMAB DOSE 2 ONWARD	 
CCAD CEFAZOLIN	 	CCAD RITUXIMAB	 
CCAD CEFTRIAZONE	 	CCAD THERAPEUTIC PHLEBOTOMY	 
CCAD DAPTOMYCIN	 	CCAD TOCILIZUMAB	 
CCAD ERTAPENEM	 	CCAD TYSABRI	 
CCAD FERRIC CARBOXYMALTOSE	 	CCAD VEDOLIZUMAB	 
CCAD INFLIXIMAB	 	CCAD VITAMIN B12 FOR INFUSION	 
CCAD IRON SUCROSE	 	CCAD WILATE	 
CCAD IVIG	 		 
CCAD METHYLPREDNISOLONE	 		



Current Therapy Plans for Clinic Administered Medications

Available 

CCAD ANTI-TB PLAN	 	CCAD POLIO	 
CCAD BCG	 	CCAD RABIES	 
CCAD BLADDER CENTER INSTALLATION COCKTAIL	 	CCAD RETARPEN	 
CCAD DMSO	 	CCAD SANDOSTATIN	 
CCAD ENBREL	 	CCAD SIMPONI	 
CCAD HEP B	 	CCAD TESTOSTERONE	 
CCAD HEPATITIS A	 	CCAD THYROGEN	 
CCAD HPV VACCINE	 	CCAD TWINRIX	 
CCAD HUMIRA	 	CCAD VITAMIN B12	 
CCAD MITOMYCIN	 	CCAD VITAMIN D	 
CCAD MMR	 		



Current Therapy Plans for Dialysis

Available 
CCAD AMB OUTPATIENT 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



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