NIH CC Enterprise Scheduling System: Design, Challenges and Recommendations

Seth Carlson NIH Clinical Center, Department of Clinical Research Informatics scarlson@cc.nih.gov May 2019





Seth Carlson, MSIS

- Has no real or apparent conflicts of interest to report.
- NIH does not endorse or recommend any commercial products, processes, or services.





Objectives

- NIH CC Enterprise Scheduling Current State
- Implementation Challenges and Mitigation Strategies
- What Worked Well
- Outcomes
- Recommendations for a new Enterprise Scheduling Implementation





Vision for Enterprise Scheduling

To reap the benefits of providing real-time access to appointment information for both clinical staff and patients

												Туре		
										Tack	to all Exam	ACTIVE		
										Task Opcology	Clinic - Physical Exam	ACTIVE		
							Protocol			Pediatric Oncoregy	OFT TORSO 1 DOSE -	ACTACELLED		
							2015-C-0029			Imaging - NM - NM	Evaluation 30 Mi	CANCELLEE		
					Clinic	(FD)	2015 C-0029			Pre-Anesthesia Cli	NC - EVALUATE 1 DOSE -	ACTIVE		
			Appointment Time		CRC-OP-1H+P	ED Med-CC	2015-0-0022			Transing - NM - NM	PET BRAIN I DOGL	ACTIVE		
			017/10/02 12:00		Imaging Scien	nce-Nuclear Mee	2015-C-0029			Imaging NM - NM	PET TORSO 2 SCAN	ACTIVE		
		2	017/10/02 12:30		DOM-CC		2015-C-0029			Imaging - Net 10	DET BRAIN 2 SCAN	ACTIVE	i i	
		1	2017/10/02 12:30		DPH/CC	nce-Nudear Med-CC	2015-C-0029			Imaging - NM - NM	Treatment 30 mi	ACTIVE	1	
			2017/10/02 13:00		Imaging Scien	no Nuclear 11-1 CC	2010 -			Recreation Thera	py - frequience	O ACTIVE		
			2017/10/02 13:30		Imaging Scie	ence-Nuclear		— .	-	Padiatric Day Hos	pital - Procedure/Re-	al SCHEDULED	1	
			2017/10/02 14:00		Imaging Scie			ΝΤ		Pediautic dery	nsv & Aspirate * Spir	ACTIVE		
			2017/10/02 1		DMD-Recrea	ational Thera)	Bone Marrow bio	- Treatment 30 m	in ACTIVE		
			2017/10/02 13:00		RIVE REL IN	IW-DH				Recreation There	spy	ACTIVE	-	
			2017/10/02 15:30		CRC-DH-1N					Imaging - MRI -	*Clinical bi diriti	1 ACTIVE		
			2017/10/03 08:00		Off-Site An					Transing - MRI -	*Orbits Clinical * Pirc	ACTIVE		
			2017/10/03 09:00		RMD-Recre	eational Ther				Inaging Cocole	gy Clinic - Physical E	D ACTIVE		
			2017/10/04 15:30		Imaging Sc	ciences-MRI-CC	2015-C-0029	•		Pediatric Oncore	Testing SNEN - Ech	IOR ACTIVE		
			2017/10/04 13:30		Imaging C	ciences-MRI-CC	2015-C-0029			Cardiopulmona	Treatment 30	min ACTIVE	-	
			2017/10/04 17:00		Imaging 5	UL DED	2015-C-0029			Recreation The	rapy - fredement 30	min ACTIVE		
			2017/10/04 17:45		CRC-OP-1	1H-+ED	2013-C 0022			Decreation The	erapy - Treatment of	min ACTIVE		
			2017/10/05 09:00		TL-CRC-5	SNE CC	2015-C-0025			Recicultion Th	erapy - Treatment 30			
			2017/10/05 11:00		pMD-Red	reational Therapy-CC	2015-C-0029			Recreation				
			2017/10/03 11:0		AND Dec	creational Therapy-CC	2015-C-0029							_
			2017/10/06 15:30		RMD-RCC	a tional Therapy-CC			Worksheet W	ew .				
			2017/10/11 15:30		RMD-Red	creational	1010 Hore 2016 B		_		Turaday, 11/22/2005			
			2017/10/13 15:30				5 M T W T # 5		MRI 1	MRI 2 (01)	MRI 3 (1.51)	MRL4-OTD	MRI 5 (1.51)	
			2017111				6 7 8 9 10 11 12	67,00	PATENT CARE	PRATEINT CARE	PRATEINT CARE	PATENT CARE	PATENT CARE	
Future A	Appointments						13 14 15 16 17 18 19		PATENT CARE		· · ·	"PATENT CARE	"PATENT CARE	
Appointment							27 28 29 30	08.00	"MILE CAREGAC	IN ANY CALIFORNIA OF A	A NUMBER OF A	PATENT CARE	PATENT CARE	
Date/Time	Location	Protocol	Appointment	Appointment Status	Duration						TYN SERVE CARE		TYN 12711 CARE	
3/31/2017 10:00 AM	Imaging Sciences-Xray-CC	1000 H 0050							TARE CARCENC	TRAFF AND TRAFF	TRATING CARE	TRATING CARE	TRATING CARE	
Resource		100010000	Imaging - DX - Lumbar Puncture Diagnostic	Scheduled	60 Min		Resources	09.00	IMIE CARDIAC	TMAR ANESTHESIA	PRATENT CARE	PATENT CARE	PATENT CARE	
	FLUOROSCOPY ROOM 1	1000110000	Imaging - DX - Lumbar Puncture Diagnostic	Scheduled	60 Min		Resources	09.00	MARE CARDING	TARLANISTHESIA TARLANISTHESIA TARLANISTHESIA	PATENT CARE PATENT CARE	PATENT CARE	PRATENT CARE PRATENT CARE PRATENT CARE	
(Provider, Room)	FLUOROSCOPY ROOM 1	1000110000	Imaging - DX - Lumbar Puncture Diagnostic	Scheduled	60 Min		Resources	09.00	IMIE CAREBAC IMIE CAREBAC IMIE CAREBAC IMIE CAREBAC	1MR ANESTHESIA 1MR ANESTHESIA 1MR ANESTHESIA 1MR ANESTHESIA	PATENT CARE PATENT CARE PATENT CARE PATENT CARE	PRATENT CARE	PATENT CARE PATENT CARE PATENT CARE PATENT CARE	
(Provider, Room) 3/31/2017 8:30	FLUOROSCOPY ROOM 1	1999-H-0050	Imaging - DX - Lumbar Puncture Diagnostic	Scheduled	60 Min 45 Min		Resources	09.00	IMIE CARENAC IMIE CARENAC IMIE CARENAC IMIE CARENAC IMIE CARENAC	1MR ANESTHERA 1MR ANESTHERA 1MR ANESTHERA 1MR ANESTHERA 1MR ANESTHERA 1MR ANESTHERA	PATENT CARE PATENT CARE PATENT CARE PATENT CARE PATENT CARE	PATIENT CARE PATIENT CARE	PATENT CARE PATENT CARE PATENT CARE PATENT CARE PATENT CARE	
(Provider, Room) 3/31/2017 8:30 AM	FLUOROSCOPY ROOM 1	1998-H-0050	Imaging - DX - Lumbar Puncture Diagnostic	Scheduled Scheduled	60 Min 45 Min		Resources	09.00 10.00 11.00	IMIE CARDIAC IMIE CARDIAC IMIE CARDIAC IMIE CARDIAC IMIE CARDIAC IMIE CARDIAC	1648 ANESTNESA 1648 ANESTNESA 1648 ANESTNESA 1648 ANESTNESA 1648 ANESTNESA 1647 ANESTNESA	HATENT CARE HATENT CARE HATENT CARE HATENT CARE HATENT CARE	PATENT CARE PATENT CARE TO TO TRATENT CARE CARE	PATENT CARE PATENT CARE PATENT CARE PATENT CARE PATENT CARE PATENT CARE	1
(Provider, Room) 3/31/2017 8:30 AM Resource (Provider,	FLUOROSCOPY ROOM 1 Imaging Sciences-MRI-CC MRI 4 (3T)	1999-H-0050	Imaging - DX - Lumbar Puncture Diagnostic Imaging - MRI - "Clinical Brain MRI	Scheduled Scheduled	60 Min 45 Min		Resources	09.00 10.00 11.00	1ME CARDAC 1ME CARDAC 1ME CARDAC 1ME CARDAC 1ME CARDAC 1ME CARDAC 1ME CARDAC	THE ANEST-RESA THAT ANEST-RESA THAT ANEST-RESA THAT ANEST-RESA THAT ANEST-RESA THAT ANEST-RESA THAT ANEST-RESA	-9АТЕНТ САЛЕ -9АТЕНТ САЛЕ -9АТЕНТ САЛЕ -9АТЕНТ САЛЕ -9АТЕНТ САЛЕ	PATENT CARE PRATENT CARE	PATENT CARE PATENT CARE PATENT CARE PATENT CARE PATENT CARE PATENT CARE PATENT CARE	
(Provider, Room) 3/31/2017 8:30 AM Resource (Provider, Room)	FLUOROSCOPY ROOM 1 Imaging Sciences-MRI-CC MRI 4 (3T)	1999-H-0050	Imaging - DX - Lumbar Puncture Diagnostic	Scheduled	60 Min 45 Min		Resources Image: Control of the control	09.00 10.00 11.00 12.00	IMIE CARDIAC IMIE CARDIAC IMIE CARDIAC IMIE CARDIAC IMIE CARDIAC IMIE CARDIAC IMIE CARDIAC IMIE CARDIAC	пака алестноста пака алестноста пака алестноста пака алестноста пака алестноста пака алестноста пака алестноста пака алестноста	PATENT CARE PATENT CARE PATENT CARE PATENT CARE PATENT CARE	PARTENT CARE PRATENT CARE PRATENT CARE CARE CARE CARE CARE	PATENT CARE PATENT CARE PATENT CARE PATENT CARE PATENT CARE PATENT CARE PATENT CARE PATENT CARE	
(Provider, Room) 3/31/2017 8:30 AM Resource (Provider, Room) Patient Prep	FLUOROSCOPY ROOM 1 Imaging Sciences-MRI-CC MRI 4 (3T) PLEASE READ:	1999-H-0050	Imaging - DX - Lumbar Puncture Diagnostic	Scheduled	60 Min 45 Min		Reserves (a) (b) (b) (c)	09.00 10.00 11.00 12.00 13.00	IMIE CARDIAC IMIE CARDIAC IMIE CARDIAC IMIE CARDIAC IMIE CARDIAC IMIE CARDIAC IMIE CARDIAC IMIE CARDIAC IMIE CARDIAC IMIE CARDIAC	ная алериная ная алерина ная алерина на ная алерина ная алерина на на на на на на на на на на н	PATENT CARE PATENT CARE PATENT CARE PATENT CARE PATENT CARE	HANTENT CARE HANTENT CARE TO HANTENT CARE ARE SARE SARE SARE SARE	PATENT CARE	Ì
(Provider, Room) 3/31/2017 8:30 AM Resource (Provider, Room) Patient Prep Instructions:	ELUOROSCOPY ROCM 1 Imaging Sciences-MRI-CC MRI 4 (3T) PLEASE READ: IMPORTANT INFORMATION ABO	1998-H-0050	Imaging - DX - Lumbar Puncture Diagnostic	Scheduled	60 Min 45 Min		Reserves Image: Imag	09.00 10.00 11.00 12.00 13.00	IMARE CAREBAC IMARE CAREBAC IMARE CAREBAC IMARE CAREBAC IMARE CAREBAC IMARE CAREBAC IMARE CAREBAC IMARE CAREBAC IMARE RESEARE IMARE RESEARE IMARE RESEARE	Mark ANESTHERA HARE ANESTHERA HARE ANESTHERA HARE ANESTHERA HARE ANESTHERA HARE ANESTHERA HARE ANESTHERA	MATENT CARE MATENT CARE MATENT CARE MATENT CARE MATENT CARE	PARTENT CARE PARTENT CARE T PRATENT CARE ARE ARE ARE ARE ARE ARE ARE	PATENT CARE	
(Provider, Room) 3/31/2017 8:30 AM Resource (Provider, Room) Patient Prep Instructions:	FLUOROSCOPY ROOM 1 Imaging Sciences-MRI-CC MRI 4 (3T) PLEASE READ: IMPORTANT INFORMATION ABCO Please artive at the Clinical Center	1999-H-0050	Imaging - DX - Lumbar Puncture Diagnostic Imaging - MRI - "Clinical Brain MRI you by your research Iteam.	Scheduled Scheduled	60 Min 45 Min		Reserves (a) (b) (c) (c)<	09.00 10.00 11.00 12.00 13.00 14.00	IME CARDAC IME CARDAC IME CARDAC IME CARDAC IME CARDAC IME CARDAC IME CARDAC IME CARDAC IME CARDAC IME CARDAC IMEDIX RESLAR IMEDIX RESLAR IMEDIX RESLAR	Mark ANSTRESA MARK ANSTRESA MARK ANSTRESA MARK ANSTRESA MARK ANSTRESA MARK CARE MAYSOCH TABB	PATENT CARE PATENT CARE PATENT CARE PATENT CARE PATENT CARE PATENT CARE	PARTIN' CARE PARTIN' CARE T T PARTIN' CARE ARE ARE ARE ARE ARE ARE	9ATENT CAR 9ATENT CAR	
(Provider, Room) 3/31/2017 8:30 AM Resource (Provider, Room) Patient Prep Instructions:	FLUOROSCOPY ROOM 1 Imaging Sciences-MRI-OC MRI 4 (3T) PLEASE READ: IMPORTANT INFORMATION ABO Please anthe at the Clinical Center If you have any austines should you	1999-H-0050 UT YOUR SCHEDULE: on the date provided to	Imaging - DX - Lumbar Puncture Diagnostic Imaging - MRI - *Clinical Brain MRI you by your research Isam. Iad a member of your research Isam.	Scheduled Scheduled	60 Min 45 Min		Reserves (a) (b) (b) (c) (c)<	09:00 10:00 11:00 12:00 13:00 14:00	IME CARDAC IME CARDAC IME CARDAC IME CARDAC IME CARDAC IME CARDAC IME CARDAC IME CARDAC INDOK RESEAR INDOK RESEAR INDOK RESEAR INDOK RESEAR	Market And Street Bak Market Bak TABB	PATENT CAR PATENT CAR PATENT CAR PATENT CAR PATENT CAR IEDULE	HALTEINT CARE HALTEINT CARE HALTEINT CARE CARE CARE CARE CARE CARE CARE CARE	9ATENT CAR 9ATENT CAR	
(Provider, Room) 3/31/2017 8:30 AM Resource (Provider, Room) Patient Prep Instructions:	FLUOROSCOPY ROOM 1 Imaging Sciences-MRI-OC MRI-4 (37) PLEASE READ: IMPORTIANT INFORMATION ABO Please antive at the Clinical Center If you have any questions about yo	1999-H-0050 1999-H-0050 UT YOUR SCHEDULE: on the date provided to ur schedule, please cou	Imaging - DX - Lumbar Puncture Diagnostic Imaging - MRI - "Clinical Brain MRI - "Clinical Brain MRI Imaging - MRI - "Clinical Brain MRI - "Cli	Scheduled Scheduled	60 Min 45 Min		Reserves (a) (b) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c)	09:00 10:00 11:00 12:00 13:00 14:00	IME CARDAC IME CARDAC IME CARDAC IME CARDAC IME CARDAC IME CARDAC IME CARDAC IME CARDAC INDOX RESEAR INDOX RESEAR INDOX RESEAR INDOX RESEAR INDOX RESEAR	Marg And Stretcha Marg And Str	чителя сала чителя сала чителя сала чителя сала чителя сала нателя сала IEDULE	PARTING CARE PARTING CARE PARTING CARE CARE CARE CARE CARE CARE CARE CARE	9ATENT CAR 9ATENT CAR	-
(Provider, Room) 3/31/2017 8:30 AM Resource (Provider, Room) Patient Prep Instructions:	ELUGROSCOPY ROOM 1 Imaging Sciences-MRI-OC MRI 4 (37) PLEASE READ. IMPORTANT INFORMATION ABO Please arrive at the Clinical Center If you have any questions about yo Patieties the clinical Center If you have any performed WI	1999-H-0050 1999-H-0050 UT YOUR SCHEDULE: on the date provided to ur schedule, please con us chedule, please con ld, OR tho have Diabet	Imaging - DX - Lumbar Puncture Diagnostic Imaging - MRI - "Clinical Brain MRI you by your research Iteam. Lact a member of your research Iteam. es OR kidory problems AND who are getting MRI v an.	Scheduled Scheduled with contrast injection need to h	60 Min 45 Min 45 Min awe kidiney function		Reserves (a) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c)	09:00 10:00 11:00 12:00 13:00 13:00 15:00	IME CARDAC IME CARDAC	ная американ ная	чататы саав чататы саав чататы саав чататы саав чататы саав IEDULE	************************************	9ATENT CARE	
(Provider, Room) 3/31/2017 8:30 AM Resource (Provider, Room) Patient Prep Instructions:	FLUOROSCOPY ROOM 1 Imaging Sciences-MRI-CC MRI 4 (37) PLEASE READ: IMPORTANT INFORMATION ABD Please any questions about yoo test results available, performedit Flore available, performedit Flore available, performedit	1999-H-0050 1999-H-0050 UT YOUR SCHEDULE: on the date provided to ur schedule, please con (4, OR two have Diabet THIN 4 works of the sc	Imaging - DX - Lumbar Puncture Diagnostic Imaging - MRI - "Clinical Brain MRI you by your research team, lact a member of your research team, es CR kidney proteins AND who are getting MRI in.	Scheduled Scheduled with contrast nijection need to 7	60 Min 45 Min 45 Min ave kidney function		Reserves Image: Constraint of the constrain	09:00 10:00 11:00 12:00 13:00 13:00 15:00	IMIE CARDAC IMIE C	Hard ANDESHEDA Hard ANDESHEDA Hard ANDESHEDA Hard ANDESHEDA Hard ANDESHEDA HARD ANDESHEDA HARD ANDESHEDA HARD KOARE HARD KOARE HARD KOARE HARD KOARE	PATENT CARE PATENT CARE PATENT CARE PATENT CARE PATENT CARE PATENT CARE PATENT CARE PATENT CARE PATENT CARE PATENT CARE	*ALTEIN' CARE *ALTEIN' CARE *ALTEIN' CARE *ALTEIN' CARE ARE ARE ARE ARE ARE ARE ARE	9ATENT CAR 9ATENT CAR	
(Provider, Room) 3/31/2017 8:30 AM Resource (Provider, Room) Patient Prep Instructions:	FLUOROBSCOPY ROOM 1 Imaging Sciences-MRI-CC MRI 4 (37) PLEASE READ IMPORTANT INFORMATION ABLO Please artive at the Clinical Center If you have any questions about you facture at any event of the Clinical Center If you have any questions about you Floyour salance appointment time is in a	1998-H-0050 1998-H-0050 UT YOUR SCHEDULE: an the date provided to ur schedule, please corr is, OR who have Diabet THIN 4 weeks of the so the morring BEFORE I re so your scan will not	Imaging - DX - Lumbar Puncture Diagnostic Imaging - MRI - "Clinical Brain MRI you by your research team. Bot a member of your research team. es OR klower of your research team.	Scheduled Scheduled with contrast hijection need to h or practitioner to arrange get	60 Min		Remotes (A) (A) (A) (A) (A) (A) (A) (A) (A) (A)	00.00 10.00 11.00 12.00 13.00 14.00 15.00 16.00	IMIE CARDAC IMIE C	Hard ANESHIGAN HARE ANESHIGA HARE ANESHIGA HARE ANESHIGA HARE ANESHIGA HARE ANESHIGA HARE ANESHIGAN HARE ANESHIGAN HARE ANESHIGAN HARE ANESHIGAN HARE ANESHIGAN HARE ANESHIGAN HARE ANESHIGAN HARE ANESHIGAN	чалалт саав чалалт саав чалалт саав чалалт саав чалалт саав IEDUULE чалалт саав чалалт саав чалалт саав	чаллікі сале чаллікі сале чаллікі сале зале зале зале зале зале зале зале з	9ATENT CAR 9ATENT CAR	
(Provider, Room) 3312017.8:30 AM Resource (Provider, Room) Patient Prep Instructions:	ELUGROSCOPY ROOM 1 Imaging Sciences-MR-IOC MRI 4 (37) PLEASE READ. IMPORTIANT INFORMATION ABD Please arrive at the Clinical Center If you have any questions about yo Patients who are OVER 60 years Patients who are oVER 60 years If your scan appointment films Ia in done in advance of your appointment Flyour scan appointment films Ia in done in advance of your appointment Flyour scan appointment films Ia in done in advance of your appointment IF your scan appointment IF your scan appointment	1998-H-0050 1998-H-0050 WT YOUR SCHEDULE: on the date provided to ur schedule, please corr discover the monitory BEPORE to the monitory BEPORE to the monitory BEPORE to asse come to phelobotam	Imaging - DX - Lumbar Puncture Diagnostic Imaging - MRI - *Clinical Brain MRI you by your research Iteam. Lact a member of your research Iteam. es OR kidney problems AND who are getting MRI v m. 0 a.m. prease costed your Olivaid Corter physicia to delayed or have to be mosheduled.	Soneduled Soneduled sontrast injection need to 1 n or practitioner to arrange get for blood tests to be done.	45 Min		Remotes	09:00 10:00 11:00 12:00 13:00 14:00 15:00 15:00	MILE CARDIAC MILE	Hard AND STATES HARD AND STATES HARD AND STATES HARD AND STATES HARD AND STATES HARD AND STATES HARD AND AND AND AND HARD AND AND AND AND HARD AND AND AND AND HARD AND AND AND AND HARD AND AND AND AND AND HARD AND AND AND AND AND HARD AND AND AND AND AND AND AND HARD AND AND AND AND AND AND AND HARD AND AND AND AND AND AND AND AND AND HARD AND AND AND AND AND AND AND AND AND AN	чалтич саав чалтич саав чалтич саав чалтич саав чалтич саав IEDUULE чалтич саав чалтич саав чалтич саав	•9ATEINT CARE •9ATEINT CARE •9ATEINT CARE •9ATEINT CARE •ARE •ARE	9ATENT CARE 9ATENT CARE	





Relevant Background:

- Clinical Center patient appointments are scheduled by research teams, rather than the by patients themselves
- Every patient appointment is tied to a research protocol
- No billing of patient insurance at the Clinical Center
- NIH EHR is not encounter-based
- Complex rollout due to business process transformation of streamlining appointment requesting process for each area along with creating scheduling process
- Challenge in consolidating scheduling mechanisms patient appointment information is kept in other systems or non-electronic forms
- Challenge to research teams scheduling patients are "shooting in the dark" for available timeslots, and scheduling their "anchor appointment"





Goals:

- Create a patient itinerary which includes all of the patient's scheduled activities
- Increase system efficiency and user access to appointment resource availability
- Automate updates to the medical order based on any changes to a linked appointment (e.g. cancel order if appointment is canceled)
- Improve the research team appointment management workflow by creating tools to allow them to book and update appointments themselves, but to still limit them to approved workflows
- Improve turnaround times for appointment scheduling and automate notifications to research teams
- Integration with Outlook calendar, to allow providers to see their schedules outside of the EHR, but to protect patient PII





- 17 distinct institutes who see patients in the Clinical Center
- Over 100 Inpatient and Outpatient research teams scheduling patients for shared resources (e.g. Imaging)
- Over 1500 active research protocols that patients are seen on
- Roughly 100,000 outpatient appointments in the Clinical Center per year
- Roughly 24,000 outpatients who are seen in the Clinical Center per year





Current Process:

- Require medical order/Electronic Appointment Request to begin the scheduling process
- User selects resources (e.g. Care Provider) and desired date
 and selects "View Available" functionality
- User selects an available timeslot and submits request.
- If selected resources available, appointment is "autobooked"
- If resources unavailable, or same-day request, then request is placed in scheduler's queue for processing
- Automatic email notification to requestor once appointment is scheduled





VARIANT #1 (Verification):

For some areas, the department or service will need to review the request before it can be scheduled by a scheduler. This is true for consultant groups and Rehabilitation Medicine





VARIANT #2 (Call Center):

For routine Imaging appointments, the patient's care provider will enter the Imaging orders they want performed. Then, someone else will call the call center to schedule the patient for their Imaging appointments. The Call Center schedulers access the Imaging requests in their scheduling queue to link the scheduled appointments back to the orders.





Visibility of Schedule

				Unreviewed Allergies		
		Appointment Availability	y for C:CG CLIN GEN F/UP 30M OP3			
Inden	Outpatient Clinic Appointm					38D452
equested By	r	Event: C:CG CLIN	GEN F/UP 30M OP3 has 17 o	pen appointment time slots from 10/02/2	2017 00:00 to 10/03/2017 00:00.	
lessages:	DO NOT use this to reques	Appt Date/Time	Event	Resource	Location	
		10/02/2017 08:00	Clinical Genetics - Follow-up (30	M) OP3	CC-OP-3	
otocol Num	iber:	10/02/2017 08:30	Clinical Genetics - Follow-up (30	M) OP3	CC-OP-3	
-CC-0168		10/02/2017 09:00	Clinical Genetics - Follow-up (30	M) OP3	CC-OP-3	1
		10/02/2017 09:30	Clinical Genetics - Follow-up (30	M) OP3	CC-OP-3	
		10/02/2017 10:00	Clinical Genetics - Follow-up (30	M) OP3	CC-OP-3	1
		10/02/2017 10:30	Clinical Genetics - Follow-up (30	M) OP3	CC-OP-3	
W.		10/02/2017 11:00	Clinical Genetics - Follow-up (30	M) OP3	CC-OP-3	
		10/02/2017 11:30	Clinical Genetics - Follow-up (30	M) OP3	CC-OP-3	
abon Nan	ne: Chi	10/02/2017 12:00	Clinical Genetics - Follow-up (30	M) OP3	CC-OP-3	
3	UP	10/02/2017 12:30	Clinical Genetics - Follow-up (30	M) OP3	CC-OP-3	
pointment	Description:	10/02/2017 13:00	Clinical Genetics - Follow-up (30	M) OP3	CC-OP-3	1
ical Genet	ICS - Pollow-up (3UM) UP3	10/02/2017 13:30	Clinical Genetics - Follow-up (30	M) OP3	CC-OP-3	
		10/02/2017 14:00	Clinical Genetics - Follow-up (30	M) OP3	CC-OP-3	1
		10/02/2017 14:30	Clinical Genetics - Follow-up (30	M) OP3	CC-OP-3	
		10/02/2017 15:00	Clinical Genetics - Follow-up (30	M) OP3	CC-OP-3	1
equested A	ppointment Date: Re	10/02/2017 15:30	Clinical Genetics - Follow-up (30	M) OP3	CC-OP-3	
1/02/2017		10/02/2017 16:00	Clinical Genetics - Follow-up (30	M) OP3	CC-OP-3	
))	nge:					
referred Lar	guage for Healthcare:					
nglish						
)ifferent Poir	nt of Contact? EA 301 linc					
		Exist	ting appointments are not dis	played. Please refer to the Appointment	s tab for more information.	
special Instru	uctions.	Draviour D	n/r Ausilability	OK and Cloce Window	Check Next Davis Availability	
		Elevious D	ay s Availability	Ex and close window	Flick light pay's wallability	





CHALLENGE #1: Enterprise Scheduling is a Culture Change project

MITIGATION STRATEGIES:

- Stakeholder engagement (surface resistance)
- Executive buy-in
- Business owner role in program to meet with the impacted groups and to have high visibility
- Process issues must be managed and addressed





CHALLENGE #2: Stakeholder groups have their preferred ways of managing and storing appointments and don't give them up easily. They value having control of their scheduling tool

MITIGATION STRATEGIES:

- Develop designs which cover the basic requirements of the other system
- Don't create a workflow which incorporates the legacy system
- Offer features which are standard, but bundled into Enterprise Scheduling solution, which other system cannot meet (e.g. Outlook integration)
- Use momentum from assembling a system with most of the patient's itinerary to incentivize remaining areas to join in





CHALLENGE #3: Organizational demand for Enterprise Scheduling has increased, and team resources are limited

MITIGATION STRATEGIES:

- Established governance process through ESAG (Enterprise Scheduling Advisory Group) and Enterprise Scheduling requests
- Provides transparency around project workload and sets expectations to requesting stakeholders





What Worked Well

- Developing custom tools within the EHR to automate and streamline parts of the appointment requesting and scheduling process (e.g. Autobook, Visibility of Schedule, Outlook Push, Order to Schedule)
- Iterative enhancements to the scheduling processes for areas which schedule a high volume of appointments to reduce the number of steps
- Developing solutions in the EHR which reference scheduling events and resources and update automatically, rather than requiring maintenance each time the events are added or provider resources changed





Outcomes

- Expanded number of departments and services utilizing Enterprise Scheduling for scheduling their patient appointments
- More departments and services are using the same workflows for requesting appointments
- Reduced appointment request turnaround times and improved communication for departments and services
- Scheduling is now seen in the organization as a process improvement tool – for such efforts as improving the patient chemotherapy experience and arranging for language interpreters





Outcomes

- Adding the visibility of schedule and autobook functionality for clinic appointments allowed half of requested clinic appointments to be booked without a scheduler being involved
- Added the ability for users to manage their clinic appointments by rescheduling and canceling them without scheduler involvement, which incentivizes using Enterprise Scheduling
- Added capabilities to visualize linked orders from patient appointments tab, as well as adding "Unscheduled Activities" to more fully define the patient's itinerary
- Bundled the pre-encounter nursing forms into the clinic appointment requesting process to consolidate and secure the process and allow nursing time to plan for patient visits





RECOMMENDATION #1: Executive buy-in, engage all of the stakeholders early in the process, and document existing process flows; perform gap analysis

- This is particularly important for areas that aren't using electronic scheduling or who don't have a current scheduling process
- Plan ahead for pitfalls, try to make sure users are educated on new process that is supported by the scheduling system
- Partner with clinical champions to ease the pressure on the implementation team at Go Live





RECOMMENDATION #2: Dream big, but dream standard

- Remember that as you develop your solutions, they will also need to be maintained
- Find the right balance between usability and maintenance to give the groups what is needed for their business process, but strive to create robust designs which can be reasonably modified and maintained without a high level of effort





RECOMMENDATION #3: Think creatively when designing and problem solving

- Not every problem can be solved with an electronic solution, particularly process problems
- The solution to the problem may be to add staffing, add an ability for scheduling through a phone call, or another non-electronic solution





RECOMMENDATION #4: Partner with your EHR vendor to implement customizations as part of the supported application

 Creating customizations to support the scheduling workflows will save time during an implementation, but in the long term require more maintenance. Consider creating the customizations, but with a plan with your vendor to build them into the application roadmap to simplify maintenance





RECOMMENDATION #5: Regression and performance test at major upgrades

 Make sure to create a robust testing plan, and be prepared to identify and support any performance issues when going live with a new version of your application. Develop automatic monitoring tools to identify bottlenecks in the system if they develop





RECOMMENDATION #6: Think about user training, communication and rollout early in the process

- For implementations which will touch a major business process, communicate early to the impacted users, and schedule outreach sessions before and after the change
- Holding sessions where the user can interact with the new functionality before it is in Production can be helpful
- Busy users may not pay attention until they encounter the change, and may be easily frustrated if the change alters a business process



