Use Case Title: Multimodality Care Transition Optimization

Short Description: Our patient, Donnie Boyd, is a 75-year-old morbidly obese man with a history of type II diabetes, chronic obstructive pulmonary disease (COPD), high blood pressure and hyperlipidemia with a 100-pack year smoking history. He had consistently refused COVID-19 vaccination until he was recently hospitalized, intubated and admitted to the ICU with complications from COVID-19. Prior to this hospitalization he had been living alone independently, however, he had received weekly home health services for assistance managing his multiple medical conditions. Unfortunately for Donnie, not only did his long hospitalization leave him very debilitated, but he also developed several long COVID sequelae: a rash, major depressive disorder and COVID headaches.

Our demo begins with Donnie being discharged home from the hospital. As Donnie transitions across multiple healthcare facilities including home health, primary and specialty care, and admission to a skilled nursing facility his care is optimized as his providers use the latest multi-modality protocols, technology, and standards of interoperability. The patient's trajectory to recovery is optimized through: IHE 360X enabled care transitions, Condition of Participation Admission Discharge and Transfer (ADT) alerting, FHIR and 360X Scheduling, DaVinci payer prior authorization and SMART on FHIR patient cost transparency. The standards used and demonstrated include C-CDA, HL7®, Direct, and HL7® FHIR®.

Value: Despite major advances in Health Information Technology (HIT) and adoption thereof, the process of patient transitions of care (TOC), both transfers and referrals, continues to be fraught with risks of adverse events for the patient due to insufficient information and excessive steps and manpower required for providers and staff to track TOC and ensure that the transition loop is closed. The additional challenge of ensuring that patients receive their necessary care and do not fall through the cracks, requires the ability to track transitions until the referral or transfer loop is closed.

This demonstration highlights the specific technology that best serves each transition and patient care use case in our patient's healthcare journey:

- CoP ADT alerting to inform caregivers of patient care transitions, eliminating missed home visits if the patient has been hospitalized or ensuring home visits as required at discharge.
- 360X for providers to receive necessary patient information for care and to be informed of every step of patient care transitions until the referral and transfer loops are closed. Eliminating the costs of duplicate testing, transcription errors and greatly reducing provider burden.
- 360X and FHIR scheduling enhancing patient satisfaction, decreasing provider burden and increasing referral follow through and completion
- DaVinci payer prior authorization in the clinician's EHR workflow to decrease provider burden.
- SMART on FHIR patient cost transparency enabling patients to make informed care decisions with their providers.

Participating Vendors: Bamboo, eCW, Epic, Kno2, MatrixCare, MedAllies, Mettle, Netsmart, Nextgen

Scenario	Vendor	Products	Standards
Ambulatory			
Patient discharged from Acute to Home after a long and complicated hospitalization for COVID-19 Acute uses Bamboo to send discharge CoP alert to eCW PCP (not demoed) and MatrixCare Home Health (demoed)	Hospital EHR vendor Bamboo eCW MatrixCare	MedAllies Direct Network eCW EHR eCW HISP Matrix Home Health	Direct
CoP discharge alert travels over the MedAllies Direct Network	MedAllies	MedAllies Direct Network	Direct
CoP discharge alert received by Matrixcare Home Health	Matrixcare	Home Health	Direct

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Patient is added back to the Home Health schedule for regular home health visits			
eCW PCP discharge follow up encounter with patient

PCP requests referral to NextGen Dermatology includes a PDF photo of the rash referral request travels across eCW HISP to NextGen HISP to Nextgen | eCW

eCW, eCW HISP, NextGen HISP, NextGen | eCW EHR

NextGen EHR | Direct |
NextGen Dermatology accepts referral	NextGen	NextGen Enterprise EHR	Direct
Referral accept travels across NextGen HISP to eCW HISP to eCW	NextGen Hisp, eCW HISP, eCW	NextGen HISP eCW EHR	Direct 360X
eCW PCP requests referral to Netsmart Psychiatry, along with C-CDA PDF of PHQ9 is sent	eCW	eCW HISP	Direct 360X
referral request travels across eCW HISP to MedAllies Direct Network to Netsmart	eCW HISP, MedAllies Direct Network, Netsmart	eCW EHR Netsmart MyAvatar	Direct 360X
Netsmart Psychiatry accepts referral and creates a new patient chart from discrete C-CDA data. Referral accept from Netsmart to the MedAllies Direct Network to the eCW HISP to eCW	Netsmart, MedAllies Direct Network, eCW HISP, eCW	MyAvatar eCW EHR	Direct 360X
eCW PCP requests referral to Epic Neurology

Referral travels across the eCW HISP to the MedAllies Direct Network to Epic | eCW

eCW HISP, MedAllies Direct Network, Epic | eCW EHR EPIC EHR | Direct 360X |

Epic Neurology accepts referral Referral travels across the MedAllies Direct Network to the eCW HISP to eCW	Epic Epic, MedAllies Direct Network, eCW HISP, eCW	MyAvatar eCW	Direct 360X
eCW shows 3 accepted referrals	eCW	eCW EHR	Direct 360X
+/- Epic-eCW FHIR scheduling (Vassil, Trey, or Azim remove this row if you don't want it included. HM is including in the slides)	Epic/eCW	EPIC EHR eCW EHR	FHIR
NextGen Dermatology creates a new patient chart from discrete C-CDA data, opens PDF showing rash Patient encounter with NextGen Dermatology Rx meds adds dx	NextGen	Nextgen Enterprise EHR	360X Direct
NextGen Dermatologist sends a patient cost transparency request to the payer via Mettles	NextGen, Mettles	Nextgen Enterprise EHR	SMART on FHIR
Mettles SMART on FHIR patient cost transparency request to payer	Mettles		FHIR
NextGen Dermatologist receives the advanced explanation of benefits (AEB) from the payer via Mettles	Mettles, NextGen	NextGen EHR	
NextGen Dermatology encounter C-CDA to PCP Travels over the Nextgen HISP to the eCW HISP to eCW PCP	NextGen, NextGen HISP, eCW HISP, eCW	Nextgen Enterprise EHR NextGen HISP	360X Direct C-CDA
eCW PCP receives dermatology consult, reconciles chart, loop closed	eCW	eCW EHR	Direct
Patient encounter with Netsmart Psychiatry. Psychiatry reviews PDF of PHQ9 score and performs psychiatric evaluation	Netsmart	MyAvatar	Direct

Netsmart Psychiatry encounter C-CDA to PCP over the MedAllies Direct Network to the eCW HISP to eCW	Netsmart, MedAllies Direct Network, eCW HISP, eCW	MyAvatar eCW EHR	Direct 360X
eCW PCP receives Netsmart psychiatry consult, reconciles chart, loop closed	eCW	eCW EHR	Direct
Epic Neurology creates new patient chart from discrete C-CDA data, has an encounter with the patient	Epic	EPIC EHR	
Epic Neurologist orders CT invokes Mettles enabled DaVinci Prior Authorization	Epic/Mettles		
Mettles delivers Payer authorization to Epic	Mettles/Epic		
CT performed and results reviewed by Epic Neurologist. Epic Neurologist makes an additional recommendation to eCW PCP to include with the consultation: Recommendation: Patient should be transferred to SNF for re-conditioning as deemed unable to currently function alone in his home environment	Epic		
Epic Neurology consult C-CDA back to eCW PCP with negative CT, recommends admission to SNF consult C-CDA to eCW PCP over the MedAllies Direct Network, then eCW HISP to eCW	Epic, MedAllies Direct Network, eCW HISP, eCW		Direct 360X
eCW PCP receives consult, reconciles chart, reviews recommendation and loop closed	eCW		
LTPAC			
eCW PCP has received neurology recommendation to admit patient to a SNF	eCW		

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PCP refers patient to the Netsmart SNF referral travel over the eCW HISP to the MedAllies Direct Network to the Netsmart SNF	eCW, eCW HISP, MedAllies Direct Network, Netsmart		Direct 360X
PCP refers patient to the Kno2 SNF referral travel over the eCW HISP to Kno2	eCW, eCW HISP, Kno2		
Netsmart SNF accepts the referral accept referral travels over the MedAllies Direct Network to the eCW HISP to eCW	Netsmart, MedAllies Direct Network, eCW HISP, eCW		Direct 360X
Kno2 SNF accepts the referral. Referral travels from Kno2 to eCW HISP to eCW	Kno2, eCW HISP, eCW		Direct 360X
Patient selects the Netsmart SNF PCP sends Netsmart SNF a confirm accept notification this travels from eCW to the eCW HISP to the MedAllies Direct Network to Netsmart	eCW, eCW HISP, MedAllies Direct Network, Netsmart		Direct 360X
eCW sends Kno2 SNF a discontinue request message from eCW to the eCW HISP to Kno2	eCW, eCW HISP, Kno2		Direct 360X
Kno2 SNF receives the discontinue request message (Loop closed)	Kno2		Direct 360X
Netsmart SNF shows confirm accept notification and creates new patient chart from C-CDA	Netsmart		Direct 360X
Patient transferred to Netsmart SNF for rehab reconditioning	Netsmart		Direct
Bamboo Health for Netsmart SNF sends SNF admit notification to Matrixcare Home Health Notification from Bamboo Health over the MedAllies Direct Network to Matrixcare Home Health	Bamboo Health, MedAllies Direct Network, Matrixcare		Direct

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Bamboo Health for Netsmart SNF sends SNF admit notification to the PCP over the MedAllies Direct Network to the eCW HISP to eCW (this step is not demoed)	Bamboo Health, MedAllies Direct Network, eCW HISP, eCW		Direct
Matrixcare Home Health reviews admit notification and removes patient from the home health visit schedule	Matrixcare		Direct

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Data exchange standards:

Vendor	Product	Category	Protocol	Interop Body	Interop Profile	Interop Actor	Interop Message	Send or Receive	Transaction Description
Bamboo Health	Direct Messaging/ Pings	Care Coordination Network	Direct	JSON	HTTP	Alert Communicator	Direct	Send and Receive	Direct message sent to an HISP
			HL7/ HTTP/ FTP	HTML/ JSON	HTTP/SMTP/ SMS/ CSV/ HL7	Alert Communicator	e-notification	Send and Receive	SMTP message sent to HHA
			HL7/ HTTP/ FTP	HTML/ JSON	HTTP/SMTP/ SMS/ CSV/ HL7	Alert Communicator	e-notification	Send and Receive	SMTP message sent to Provider
Epic	EpicCare	Electronic Health Record	WCTP	IHE ITI	ACM	Alert Communicator	PCD-06	Receive	Disseminate Alarm
			HL7	IHE ITI	DEC	Device Observation Consumer	PCD-01	Receive	Communicate PCD Data
			HL7	IHE ITI	PIV	Infusion Order Programmer	PCD-03	Send	Communicate Infusion Order
			HL7	IHE ITI	IPEC	Device Observation Consumer	PCD-10	Send and Receive	Communicate Infusion Event Data
eCW			Direct, 360X	SMTP XML HL7	XDR XDM HL7		Direct	Receive	
Kno2	Kno2	Network	Direct, 360X	SMTP/XML/HL7	XDR/XDM/HL7		Direct	Receive	Communicate cancelation
MatrixCare			Direct, 360X	SMTP XML HL7	XDR XDM HL7		Direct	Receive	
MedAllies	MedAllies Direct Network	HISP	SOAP	IHE ITI	XDR/XDM CCDA		XD/XDR	Send and Receive	Direct messages sent or received to a connected Edge System

			Direct	XDM, CCDA, PDF, etc	SMIME/SMTP		Direct	Send and Receive	Direct messages sent or received from MedAllies HISP to other HISP
Mettle			Direct, 360X	SMTP XML HL7	XDR XDM HL7		Direct	Receive	
Netsmart	myAvatar CC Inbox	EHR	Direct	XCA, XCPD				Send and Receive	Direct messages sent or receive via MedAllies
Nextgen	NextGen Enterprise EHR, NextGen HISP	EHR, HISP	SOAP , Direct, FHIR, SMART on FHIR, 360X	IHE ITI,IHI PCC, HL7	XDR/XDM CCDA, SMIME/SMTP, FHIR, SMART on FHIR		XD/XDR, Direct, FHIR	Send and Receive	Direct messages sent or received to a connected Edge System

References:

IHE 360 Exchange Closed Loop Referral
https://www.ihe.net/uploadedFiles/Documents/PCC/IHE_PCC_Suppl_360X.pdf

IHE Device Enterprise Communication (DEC) Profile pg. 14
https://www.ihe.net/uploadedFiles/Documents/PCD/IHE_PCD_TF_Vol1.pdf

Point-of-Care Infusion Verification (PIV) Profile pg. 21
https://www.ihe.net/uploadedFiles/Documents/PCD/IHE_PCD_TF_Vol1.pdf

Infusion Pump Event Communication (IPEC) Integration Profile pg. 52
https://www.ihe.net/uploadedFiles/Documents/PCD/IHE_PCD_TF_Vol1.pdf