



Use Case Title: Value Based Care

Overview: Tim Jones – a 54 year old male police officer has Diabetes and presents at his Primary Care Provider with an abnormal lab result. Follow his journey through Primary Care, Consultations, and Home-Based care as his care pathway is defined and implemented. Through sharing of data and utilization of a centralized repository of information accessed by disparate providers, Mr. Jones receives the appropriate care and equipment in low-cost settings that improve both his nutritional intake, health and quality of life.

Value: Good outcomes for diabetics require a lot of education, patient engagement and good proactive choices by the individual about their daily health behaviors. Recognizing an individual as part of this population helps make sure she receives all the support shown to be helpful for people living with his condition. Interoperability drives STEPS to value through enabling patient centric treatments.

Scenario	Vendor	Products	Standards
<p>Tim Jones, a 54 year old white male police officer in the village of Anytown, OH, has had well-controlled diabetes mellitus for the past five years. He has an appointment with his primary care clinician for routine six month follow-up and had laboratory tests performed last week which included a HbA1c. The result was 8.8%, a level higher than his target level of 7%.</p>			
<p>Primary Care – Clinical:</p> <p>He checks in to the clinic. His insurance and job have not changed in the past six months. His pulse is 80, BP 130/80, Height 5’11”, weight 230 lbs. When he meets with his clinician, he reports that in the past six months he has gained 15 pounds and is having difficulty sleeping. He takes metformin 1000 mg twice a day.</p> <p>Because of poor control of diabetes, the clinician is prompted by the EHR to ask five questions about work:</p>	Alliance of Chicago	GE Centricity Qvera	HW/ODH XDR CDS

<p>Does your job involve ANY of the following job characteristics?</p> <ul style="list-style-type: none"> Shiftwork Temperature extremes Heavy physical activity Difficulty taking medications or eating regularly Safety sensitive activity <p>Mr. Jones reports that the force in his small city has lost a number of officers to retirement and he now works rotating shifts, 12 hours long, two days on, two days off, three days on, then two days off, then two nights on, three days off - repeating in two week increments.</p> <table border="1" data-bbox="96 477 1339 672"> <thead> <tr> <th></th> <th>Mon</th> <th>Tue</th> <th>Wed</th> <th>Thu</th> <th>Fri</th> <th>Sat</th> <th>Sun</th> </tr> </thead> <tbody> <tr> <td>Week 1, days</td> <td>6a-6p</td> <td>6a-6p</td> <td>Off</td> <td>Off</td> <td>6a-6p</td> <td>6a-6p</td> <td>6a-6p</td> </tr> <tr> <td>Week 2, nights</td> <td>Off</td> <td>Off</td> <td>6p-6a</td> <td>6p-6a</td> <td>Off</td> <td>Off</td> <td>Off</td> </tr> </tbody> </table> <p>He spends nearly all of his work time in a patrol car, and eats many meals from fast food sources. He kept his medication schedule intact, as he takes metformin twice daily for his diabetes. As a police officer, it is imperative that he remain alert on the job, but he is concerned that in the past two months he has had episodes of sleepiness at work, both in the days and nights, which he fights off with coffee and diet soda.</p>		Mon	Tue	Wed	Thu	Fri	Sat	Sun	Week 1, days	6a-6p	6a-6p	Off	Off	6a-6p	6a-6p	6a-6p	Week 2, nights	Off	Off	6p-6a	6p-6a	Off	Off	Off			
	Mon	Tue	Wed	Thu	Fri	Sat	Sun																				
Week 1, days	6a-6p	6a-6p	Off	Off	6a-6p	6a-6p	6a-6p																				
Week 2, nights	Off	Off	6p-6a	6p-6a	Off	Off	Off																				
<p>Knowledge Repository:</p> <p>The EMR leverages a clinical decision support and a knowledge repository to identify work related considerations that can help Tim better manage his condition. The provider gives him job-related education materials that offer ways that Tim can make better nutrition choices.</p>	AHRQ	CDS Connect	CDS																								
<p>CDC National Institute for Occupational Safety and Health:</p> <p>The Clinical Decision Support rules leveraged by the Knowledge Repository are specified by CDC/NIOSH. These rules identify the interplay between work and health, and correlate relative educational materials that may be available that may assist in better managing health at work.</p>	CDC		CQL																								

<p>Primary Care – Payor/Provider:</p> <p>The clinician identifies obesity, possible sleep disorder, and poorly controlled diabetes as problems. She orders a consultation with a Registered Dietitian/Nutritionist (RDN) and a sleep study, and also schedules the patient to return in one month. The EHR alerts her that his insurance provides a bundled care package to support these consultations and tests and will support treatment, if indicated.</p>	GE Healthcare	Payer Connect	CCDA FHIR
<p>Referral Broker:</p> <p>The post-acute referral provider receives the referral for Home Health from the PCP into their referral management solution. In doing so, the system runs an intelligence layer on top of the CCD they have received that shows that although the person is not right for Home Health, they do qualify for a Private Duty program. In addition, the system suggests some other areas of treatment based on the diagnoses and conditions found within the CCD. Therefore they are accepted into the PD program and admitted, but also referred out to a sleep study, as well as a nutritionist based on system recommendations through analysis of the diagnoses.</p>	Netsmart	Netsmart Vision	HW CCDA XDR XDS.b
<p>Registered Dietitian:</p> <p>The referral summary document for the community-based Registered Dietitian/Nutritionist (RDN) is posted to the infrastructure repository’s FHIR server. The community dietitian uses a nutrition outcomes management system application with a FHIR subscription for referral notifications. The dietitian receives the new referral request notification in her system which queries the FHIR server to pull in pertinent information about the Tim’s conditions and data from his recent primary care visit. This saves time for both the patient and dietitian over today’s typical referrals where the dietitian would not have any information until the patient arrives for his visit. The RDN completes nutrition visit documentation (nutrition diagnosis and intervention goals/plan for the patient using the ANDHII application. A nutrition diagnosis of excess energy intake and inconsistent carbohydrate intake related to meal planning challenges and reliance on fast food during shift work was recorded. Mr. Jones is motivated and ready to begin lifestyle changes. He agrees to the goal to lose 10 lbs over next 3 months. Priority modifications recommended through nutrition education include: Mr. Jones will pack lunch and two snacks for extended shifts replacing daily fast food /sweets. He will substitute fresh fruit for dessert and high-calorie bakery choices. He will consume a consistent amount of carbohydrate aiming for 65 gm/meal along with low-fat</p>	Academy of Nutrition and Dietetics	ANDHII (Academy of Nutrition and Dietetics Health Informatics Infrastructure--Dietetics Outcomes Registry application)	FHIR

<p>protein during 12 hour work shifts. This Nutrition Care Plan is posted back to the FHIR server where it can be available to both the patient and the collaborating care team.</p>			
<p>Sleep Study Center:</p> <p>The sleep lab receives the incoming referral for Mr. Jones and reaches out to schedule a visit. The pulmonologist evaluates him and places an order for a polysomnography. Tim comes in for his test the next night. When he returns for a follow-up visit, the pulmonologist reviews the study results and discusses a plan for long-term CPAP therapy with Tim. He places an order for the CPAP machine which gets sent to the DME supplier to review and fulfill. He then signs and completes the visit, which automatically generates and sends a Summary of Care back to the PCP for additional follow up.</p> <p>The sleep study demonstrates sleep apnea. The report is sent to the primary care clinician, and she orders a CPAP (Continuous Positive Airflow Pressure) machine for the patient. She requests a home health nurse visit to provide training on use of the CPAP machine. She also orders a glucometer for the patient to use at home.</p>	Epic		XDR CCDA
<p>Home Medical Equipment (HME):</p> <p>The Brightree system receives the order for a CPAP device from the Epic system. The C-CDA that serves as the basis for the order includes patient demographics, insurance and clinical information including relevant diagnosis codes. In addition, the C-CDA also includes the physician notes with the findings from the sleep study. The Brightree system parses the discrete data from this document and allows the HM# company to efficiently create the patient and create the sales order needed to fulfill the order. The human readable version of the C-CDA, including the notes, are stored in the patient chart within the Brightree system.</p>	Brightree	eReferral	XDR CCDA
<p>Health Information Exchange:</p> <p>The patient information exchange infrastructure connects community providers using Document Exchange and FHIR, and allows the dietician to subscribe to referrals and to share care plans. The care manager is also able to leverage the HIE portal to review patient care activity.</p>	Infor		XDS.b FHIR

Data exchange standards:

Vendor	Product	Category	Protocol	Interop Body	Interop Profile	Interop Actor	Interop Message	Send or Receive	Transaction Description
Alliance Chicago	GE Centricity Practice Solution QVERA Interface Engine (QIE)	Ambulatory Healthcare Provider	HL7 CDA	IHE -QRPH	HW	Content Creator	NA	Create	Create Healthy Weight Summary With Occupational Data for Health Option
Alliance Chicago	GE Centricity Practice Solution QVERA Interface Engine (QIE)	Ambulatory Healthcare Provider	ebXML	IHE-ITI	XDR	Document Source	ITI-41	Send	Provide and Register Document Set.b
Alliance Chicago	GE Centricity Practice Solution QVERA Interface Engine (QIE)	Ambulatory Healthcare Provider	FHIR	HL7	CQL		FHIR Get	Get	Clinical Quality Language
GE Healthcare	Payer Connect	Ambulatory Healthcare Provider Insurance Interface	HL7 CDA	HL7	CCDA	Content Creator	NA	Create	Create Continuity of Care Document
GE Healthcare	Payer Connect	Ambulatory Healthcare Provider Insurance Interface	FHIR	HL7	CQL		FHIR Get	Get	Clinical Quality Language

AHRQ	CDS Connect	Knowledge Repository	FHIR	HL7	CQL		FHIR Get	Respond	Clinical Quality Language
CDC/NIOSH	NA	Knowledge Repository Rules		HL7	CDS				Obtain Clinical Decision Support Guidance (rules content)
Netsmart	Netsmart Vision	Referral Broker	HL7 CDA	IHE -QRPH	HW	Content Consumer	NA	Consume	Consume Healthy Weight Summary With Occupational Data for Health Option
Netsmart	Netsmart Vision	Referral Broker	HL7 CDA	HL7	CCDA	Content Creator	NA	Create	Create Continuity of Care Document (Referral)
Netsmart	Netsmart Vision	Referral Broker	ebXML	IHE ITI	XDS.b	Document Source	ITI-41	Send	Provide and Register Document Set.b
Netsmart		Referral Broker	ebXML	IHE-ITI	XDR	Document Source	ITI-41	Send	Provide and Register Document Set.b
Academy of Nutrition and Dietetics	ANDHII (Academy of Nutrition and Dietetics Health Informatics Infrastructure)	Dietetics Outcomes Registry	FHIR	HL7	CDS	Subscriber	FHIR	Receive	Subscription for Referrals
Academy of Nutrition and Dietetics	ANDHII (Academy of Nutrition and Dietetics Health Informatics Infrastructure)	Dietetics Outcomes Registry	FHIR	HL7	CDS	Requestor	FHIR	Get	Query for observations
Epic		Sleep Center EMR	HL7 CDA	HL7	CCDA	Content Consumer	NA	Consume	Consume Continuity of Care Document (Referral)
Epic		Sleep Center EMR	ebXML	IHE-ITI	XDR	Document Recipient	ITI-41	Receive	Provide and Register Document Set.b

Epic		Sleep Center EMR	ebXML	IHE-ITI	XDR	Document Recipient	ITI-41	Send	Provide and Register Document Set.b
Epic		Sleep Center EMR	HL7 CDA	HL7	CCDA	Content Creator	NA	Create	Create Continuity of Care Document (Referral)
Brightree	eReferral	Home Medical Equipment	ebXML	IHE-ITI	XDR	Document Recipient	ITI-41	Receive	Provide and Register Document Set.b
Brightree	eReferral	Home Medical Equipment	HL7 CDA	HL7	CCDA	Content Consumer	NA	Consume	Consume Continuity of Care Document (Referral)
Infor		HIE	ebXML	IHEITI	XDS.b	Document Registry	ITI-18	Respond	Registry Stored Query
Infor		HIE	ebXML	IHEITI	XDS.b	Document Repository	ITI-43	Respond	Retrieve Document Set
Infor		HIE	FHIR	HL7	CDS	Subscription Service	FHIR	Send	Subscription for Referrals
Infor		HIE	FHIR	HL7	CDS	Resource	FHIR	Respond	Query for observations

HIMSS Value STEPS Framework:

Step	Description	Point of View	Point of View	Point of View
S: Satisfaction	<p>This type of value focuses on people, process and technology use cases that increases stakeholders' satisfaction with the delivery of care. Satisfaction includes types of value such as:</p> <ul style="list-style-type: none"> Patient satisfaction Provider satisfaction Staff satisfaction Other satisfaction 	<p>When patients feel better, and get better, their satisfaction goes up. And, when patients are engaged and responding well to their care, providers' satisfaction goes up. When healthcare works better, we all feel better!</p>	<p>Digital health enables tech to address issues important to the patient and care providers while factoring in insurance coverage. Ensuring the care plan addresses the health concern and financial implications will help it be more successful.</p>	<p>Decision support systems help improve the treatment plans and thus patient satisfaction.</p>
T: Treatment/ Clinical	<p>This type of value focuses on effective and improved treatment of patients, reduction in medical errors, inappropriate/duplicate care, increase in safety, quality of care and overall clinical efficiencies. Treatment/Clinical includes types of value such as:</p> <ul style="list-style-type: none"> Efficiencies Quality of Care Safety Other treatment/clinical 	<p>When data and systems can be used to spot abnormal lab results, it reduces treatment delays. Improved communication and faster access to needed information increases efficiency of care providers, improves safety for patients, and raises the quality of the outcomes resulting from the patient's care.</p>		<p>Having access to a resource based on a large amount of data points allows clinicians to better focus their treatment using information that may not be in their area of expertise.</p>

E: Electronic Secure Data	This type of value focuses on improved data capture, data sharing, reporting, use of evidence-based medicine, and improved communication by and between physicians, staff and patients. Electronic Secure Data includes types of value such as: Privacy & Security Data sharing Data reporting Enhanced communication	Tim has a whole care team supporting him. They need to share information about Tim's health and care in an efficient and effective way. Data sharing improves their communication and that means better care for Tim.	Patient and insurance information is readily available and can be shared across the care team, thereby increasing quality of care and efficient care delivery.	Information gathered during the use case is made available to the next provider in each step.
P: Patient Engagement & Population Management	This type of value focuses on improved population health and reduction in disease due to improved surveillance/screening, immunizations and increased patient engagement due to improved patient education and access to information. Patient Engagement & Population Management includes type of value such as: Patient education Patient engagement Prevention Population Health	Good outcomes for diabetics require a lot of education, patient engagement and good proactive choices by the individual about their daily health behaviors. Recognizing Tim as part of this population helps make sure he receives all the support shown to be helpful for people living with his condition.	Because the care is entirely dependent on the patient participating and doing self care. Making this transparent and access to information can help the patient stay adherent in care plans.	Keeping the patient engaged in their own care is paramount to success. With the aid of a dietician and home medical equipment, they are providing the best environment to foster this new lifestyle change.
S: Savings	This type of value focuses on documented financial,	Receiving care in the lowest-cost		Insurance aside, patients will see

	operational and efficiency savings resulting from factors such as improved charge capture, use of staff resources and workflow and increased patient volume and more efficient use of space .	appropriate setting saves Tim Jones money. It also better aligns the skill-level of the provider with the need of the patient. This savings accrues to patient and provider alike.		reduced costs as repeated tests and imaging are no longer needed. However, it could be argued that the medical facility may lose revenue by not doing these tests.
Other		Taking good care of Tim means reducing the amount of sick-time he has to take off from his job. Healthier individuals means a healthier workforce and that helps our economy thrive.		