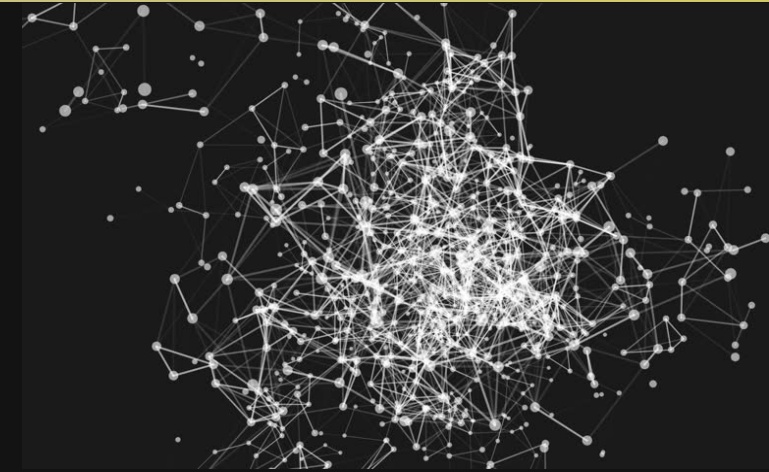


IMPROVING ADVANCED LIVER DISEASE OUTCOMES USING PATIENT REGISTRIES



CALIFORNIA CORRECTIONAL HEALTH CARE SERVICES HIMSS DAVIES AWARD PRESENTATION

PRESENTED BY:

JOHN DUNLAP, DO

DEPUTY MEDICAL EXECUTIVE

MICHAEL SELBY

HEALTH PROGRAM MANAGER III

AGENDA



- LOCAL PROBLEM
- DESIGN & IMPLEMENTATION
- HOW IT SOLUTION WAS UTILIZED
- VALUE DERIVED



LOCAL PROBLEM

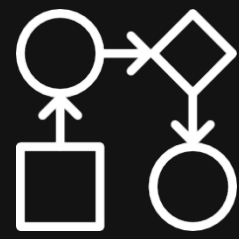
LOCAL PROBLEM



LIVER DISEASE IN CALIFORNIA PRISONS

- Two thirds with history of substance use disorder (Alcohol and Drug)
- 15% of population known to have chronic HCV infection
- 1.6% (almost 2,000) identified Cirrhosis/ESLD
- Advanced Liver Disease is a major contributor of morbidity and mortality to California's incarcerated population;
 - Second- or third-leading cause of death among the adult offender population every year for the past decade.

PRIOR TO NEW SOLUTION...



Providers not well versed in Advanced Liver Disease Management



Organization did not have Clinical Guidelines or Decision Support for Providers



No Way to Identify, Track, and Monitor Patients Throughout Our System



No EHR

MORTALITY TRENDS



Figure 1. Modelled rates of mortality of men under the care of CCHCS, age to the CCHCS 2011 population

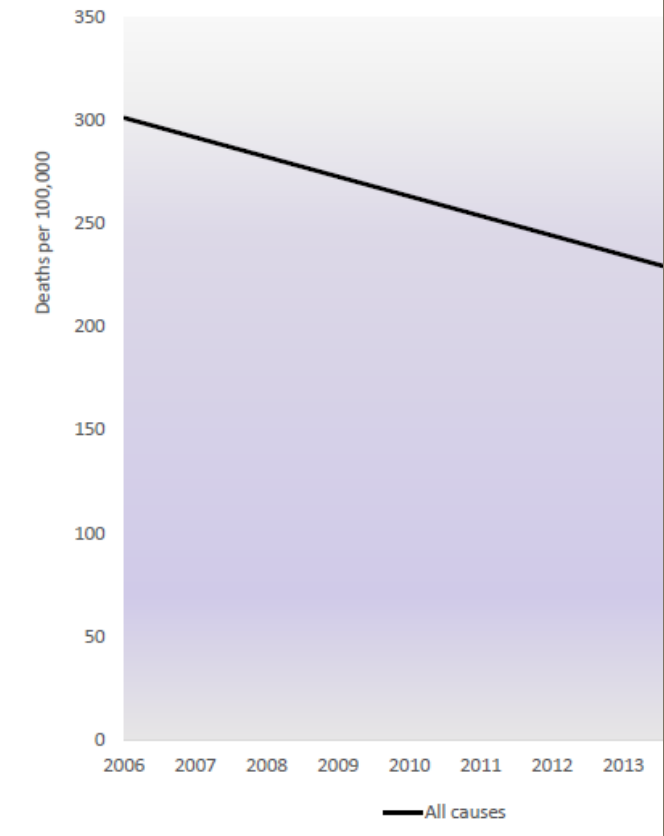
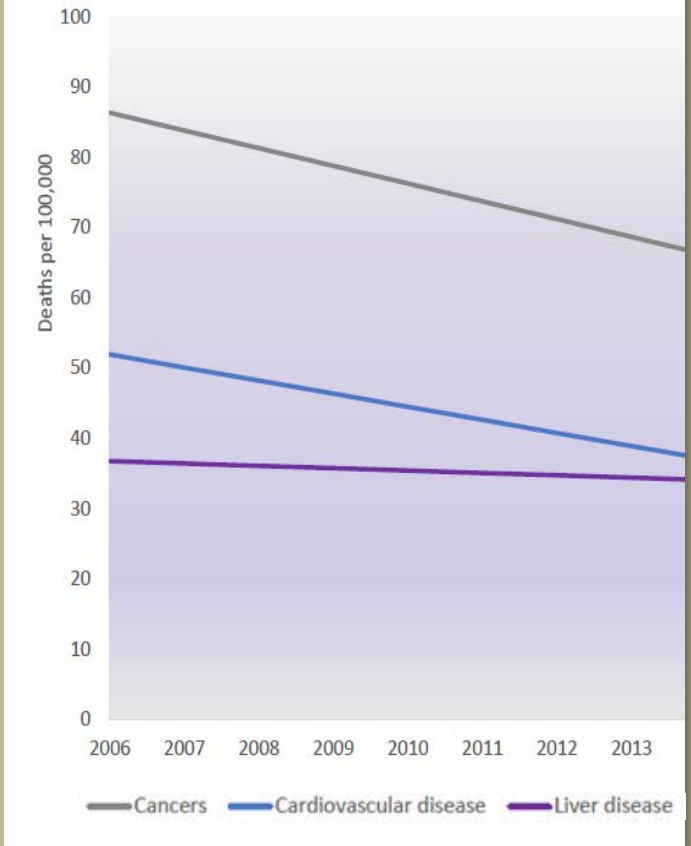
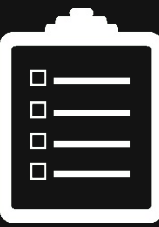


Figure 2. Modelled rates of mortality of men under the care of CCHCS by cause of death, age to the CCHCS 2011 population



EXPECTED PROJECT OUTCOMES



IMPROVE CARE & REDUCE COSTS

CLINICAL

- Identify/Diagnose Early
- Evidence-Based Guidelines Followed
- Reduce Preventable Morbidity & Mortality through Improved Continuity of Care

LEVERAGE IT & DATA

ADMINISTRATIVE

- Track Patients Throughout Incarceration
- Provide Timely, Actionable Information
- Provide Near Real-Time Performance Reports



**DESIGN &
IMPLEMENTATION**

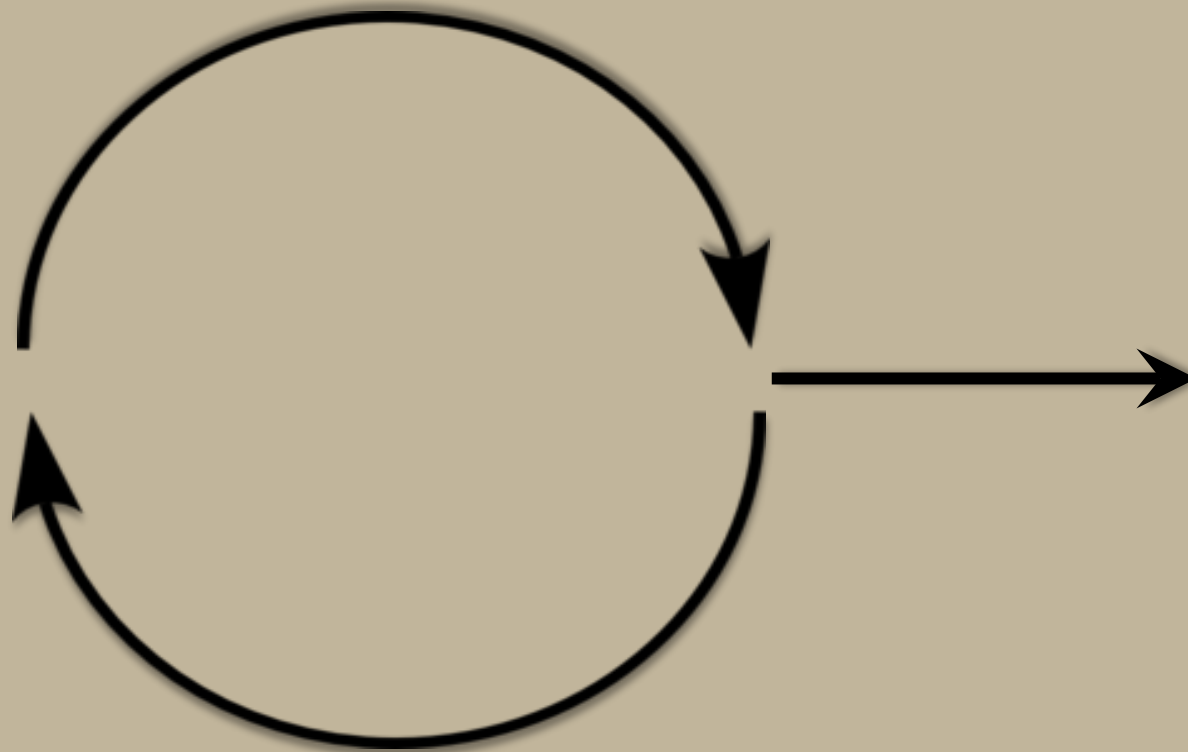
EVALUATING IT SOLUTION ALTERNATIVES

- COTS solutions were not available
- EHRs was not yet available
- Existing Resources
 - Healthcare Data Warehouse – SQL
 - In-House Talent (Clinical and Technical)

PARTNERING BUSINESS OWNER WITH IT DEVELOPERS



PROGRAMMERS



CLINICAL SMEs

Institution: ASP,CAC,CAL,CCC,CCI,CCWF,CEN,CHC Care Team: All
Filters: Show All Patients

ESLD Patient Registry
Patient Count: 1941

Inst	CDOC#	Identification & Care Team			Screening				ESLD Condition Management								
		Last Name	Care Team	Date of Birth	Ultrasound Date	US Ordered Date	Last US Refound Date	EGD Date	EGD Ordered Date	Last EGD Refound Date	Ascites Dx	Splen Dx	Fibros Dx	Eno Var Dx	β-hbr Dx	SBP Dx	Abn C
SOL			Annex MD1		03/11/18			06/14/17						v		Yes	v
CIM			Clinic A 20-39		04/25/18			04/13/16									
SATF			Facility F		04/02/18	07/05/18		12/27/17									v
CMC			East 51-75		01/23/18			12/13/17					v	v	Yes	v	
CMC			West 76-00		04/03/18			06/27/17									
CHCF			Fac C 1A		02/17/18			06/08/18			Yes	v	v	Yes	v		
CHCF			Work Crew A4		05/31/18			05/15/17	07/05/18								
CHCF			Fac C 4A		04/12/18			03/09/18					v	v			v
CMF			Inpatient - G3		05/04/18			03/11/15									v
SQ			GP 4		06/11/18			01/16/18							Yes		v
VSP			Clinic D		04/27/18				07/30/18								
LAC			Clinic B		06/27/18			08/12/16									v
CHCF			Fac C 1B		03/05/18			08/02/17					v	v			v
CMF			Care Team 7		02/28/18	07/26/18		05/15/17							v		v
SOL			Annex MD1		07/08/18			07/20/16			Yes	v	v	Yes	v		

CLINICAL SMEs: ESTABLISH EVIDENCE-BASED CLINICAL GUIDELINES



August 2015 **CCHCS Care Guide: End Stage Liver Disease (Cirrhosis)**

SUMMARY	DECISION SUPPORT	PATIENT EDUCATION/SELF MANAGEMENT
---------	------------------	-----------------------------------

GOALS

- ✓ Diagnose Cirrhosis Early
- ✓ Diagnose Complications
- ✓ Delay Decompensation

ALERTS

- Abdominal Pain: Consider Spontaneous Bacterial Peritonitis (SBP)
- Mental Status Changes/Coma
- Hematemesis/Melena
- Fever
- Oliguria/Anuria
- Rapid Weight Gain or Loss

DIAGNOSTIC CRITERIA

Cirrhosis is best predicted by these findings¹

- Ascites (likelihood ratio for cirrhosis [LR] 7.2)
- Platelet count <160,000/mm³ (LR 6.3)
- *severe thrombocytopenia often precedes other manifestations
- Spider angioma on physical exam (LR 4.3)
- Bonacini cirrhosis discriminant score greater than 7 (LR 9.4) (see page 2)

Cirrhosis (liver fibrosis stage 4) is diagnosed with one or more of the following:

- Imaging: hepatic ultrasound, CT, MRI
- Calculations: FIB4, Bonacini Cirrhosis Discriminant Score
- Procedure: liver biopsy, transient elastography (FibroScan™)
- Physical exam

Decompensated cirrhosis is defined by the presence of:

- Ascites
- Hepatic encephalopathy (HE)
- Hepatocellular carcinoma (HCC)
- Hepatorenal syndrome
- Hepatopulmonary syndrome
- Child-Pugh class C (see page 2)
- Spontaneous bacterial peritonitis (SBP)
- Variceal bleeding

EVALUATION

Complete clinical history and physical exam

- HX: Especially risk factors for hepatitis; symptoms of significant liver disease: hematochezia, melena, hematemesis, edema, weight gain
- PE: Particularly mental status changes, skin changes, hepatosplenomegaly, spider angioma

Lab/Diagnostics

- CBC, CMP, PT/INR, hepatitis serologies, HIV testing
- EGD (baseline) to screen for esophageal varices
- Ultrasound to screen for HCC (AFP not recommended for HCC screening)

TREATMENT (SEE PAGES 3-5)

Vaccinations: influenza, HAV, pneumococcal vaccines

Review medication list: avoid hepatotoxins and chronic NSAIDs

Medications or other therapies based on specific patient findings (see below and pages 3-5)

- Ascites: optimize diuretics
- Esophageal varices: determine if nonselective beta-blocker indicated and EGD follow-up interval
- Hepatocellular carcinoma: obtain consultation
- Hepatic encephalopathy: optimize lactulose
- Hepatitis C: determine treatment eligibility
- Liver transplantation: consult with the CME or regional DME for potential transplant candidates
- Spontaneous bacterial peritonitis: antibiotic prophylaxis

MONITORING (SEE PAGES 3-5)

Follow-up visit

- Every 90 days if stable, more frequently if indicated
- Monitor: mental status, weight, VS, abdominal girth, skin changes

Labs

- CMP every 1-2 months for ascites patients on diuretics
- Consider CBC, CMP, PT/INR annually or more frequently as indicated

Ultrasound

- Every 6 months (HCC screening)

EGD

- EGD at baseline, then as recommended by GI, generally within 2-3 years (see page 3 for more details)

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- Child-Pugh Classification of Cirrhosis Severity 2
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- Ascites 3
- Esophageal Varices 3
- Hepatic Encephalopathy (HE) 4
- Hepatocellular Carcinoma (HCC) 4
- Hepatopulmonary Syndrome 4
- Hepatorenal Syndrome 5
- Liver Mass Evaluation 5
- Spontaneous Bacterial Peritonitis 5
- Medications 6-9
- Ascites, HE, HCC 6
- Pain 7-8
- Portal HTN (Esophageal Varices) 9
- Patient Education PE-1
- Patient Education (Spanish) PE-2

1. Ueda JJ, et al. Does this patient with liver disease have cirrhosis? JAMA. 2012 Feb 22;307(8):832-42.

Information contained in the Care Guide is not a substitute for a health care professional's clinical judgment. Evaluation and treatment should be tailored to the individual patient and the clinical circumstances. Furthermore, using this information will not guarantee a specific outcome for each patient. Refer to "Disclaimer Regarding Care Guide" for further clarification.

August 2015 **CCHCS Care Guide: End Stage Liver Disease (Cirrhosis)**

SUMMARY	DECISION SUPPORT	PATIENT EDUCATION/SELF MANAGEMENT
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NONINVASIVE CALCULATORS TO DIAGNOSE CIRRHOSIS

BONACINI CIRRHOSIS DISCRIMINANT SCORE (CDS)¹

	BONACINI CIRRHOSIS CDS POINTS						
	0	1	2	3	4	5	6
PLT	>340	280 to 339	220 to 279	160 to 219	100 to 159	40 to 99	<40
ALT/AST ratio	>1.7	1.2 to 1.7	0.6 to 1.19	<0.6			
INR	<1.1	1.1 to 1.4	>1.4				

Based on platelets (PLT), ALT/AST ratio, INR

Possible score = between 0 and 11. Higher score increases the likelihood of cirrhosis

- Bonacini CDS < 3: cirrhosis unlikely
- Bonacini CDS > 7: cirrhosis likely (LR 9.4)*

*Likelihood ratio: LR >1 indicates that a test is associated with disease

FIBROSIS-4 (FIB-4) CALCULATOR²

$$FIB4 = [Age(y) \times AST(U/L)] / [PLT(10^9/L) \times ALT(U/L)^{1/2}]$$

FIB4	Interpretation
<1.45	unlikely to have significant fibrosis
1.45-3.25	not accurate at this range; other staging method required
>3.25	likely to have advanced fibrosis/cirrhosis (Fibrosis stage 3-4)

Based on age, AST, ALT, platelets

Online calculator: <http://www.hepatitisc.uw.edu/page/clinical-calculators/fib-4>

CHILD PUGH CLASSIFICATION OF SEVERITY OF CIRRHOSIS

	CHILD-PUGH POINTS		
	1	2	3
Encephalopathy	None	Grade 1-2	Grade 3-4 (or chronic)
Ascites	None	Mild/Moderate (diuretic-responsive)	Severe (diuretic-refractory)
Bilirubin (mg/dl)	< 2	2-3	> 3
Albumin (g/dl)	> 3.5	2.8-3.5	< 2.8
PT (seconds prolonged)	< 4	4-6	> 6
INR	< 1.7	1.7-2.3	> 2.3

CHILD-PUGH CIRRHOSIS SCORING			
Class	Points	One year survival (%)	Two year survival (%)
Class A	5-6	95	90
Class B	7-9	80	70
Class C	10-15	45	38

Child-Pugh is a tool used to help assess prognosis in patients with liver disease. Variations in the timing and subjectivity inherent in the scoring (e.g., in grading ascites or encephalopathy) are its major limitations.

1. Bonacini M, et al. Utility of a discriminant score for diagnosing advanced fibrosis or cirrhosis in patients with chronic hepatitis C virus infection. Am J Gastroenterol. 1997 Aug;92(8):1302-4.

2. Viallet-Pichard, A et al. FIB-4: an Inexpensive and Accurate Marker of Fibrosis in HCV Infection. Comparison with Liver Biopsy and FibroTest. Hepatology 2007;46:32-38.

August 2015 **CCHCS Care Guide: End Stage Liver Disease (Cirrhosis)**

SUMMARY	DECISION SUPPORT	PATIENT EDUCATION/SELF MANAGEMENT
---------	------------------	-----------------------------------

ESLD COMPLICATIONS—DIAGNOSIS / MANAGEMENT

ASCITES¹

DIAGNOSIS

- Diagnose with appropriate imaging study or physical exam
- Differential diagnosis: ascites may be caused by conditions other than liver disease; about 15% are due to heart failure, nephrotic syndrome, cancer, tuberculosis, or other conditions
- Paracentesis for diagnosis may be indicated (especially with clinically apparent new onset ascites if etiology is unclear)
- Evaluation of ascitic fluid²:

Routine tests on ascitic fluid	Optional tests	Unusual tests
Cell count and differential	Glucose level	Tuberculosis smear and culture
Albumin level	LDH level	Cytology
Total protein level	Gram stain	Triglyceride level
Culture in blood culture bottles	Amylase level	Bilirubin level

TREATMENT / PROPHYLAXIS

- Serum to Ascitic Albumin Fluid Gradient (SAAG) > 1.1 indicates portal hypertension with 97% accuracy; SAAG < 1.1 suggests ascites from other causes
- Patient may require large volume paracentesis
- Diuretics: Start at low dose and titrate up. Optimal ratio spironolactone to furosemide is 100 mg to 40 mg;
- Spironolactone: 100 mg/day or 50 mg/day for patients < 50kg WITH
- Furosemide: 40 mg/day or 20 mg/day for patients ≤ 50 kg
- Increase doses of both agents every 3-5 days if tolerated, up to 400 mg spironolactone with 160 mg furosemide
- Alternative agents: amiloride starting at 5-10 mg/day can be used as substitute for spironolactone if side effects (e.g., gynecomastia) noted
- Dietary sodium restriction: 2 gm/day (consider dietary consult or handout)
- Avoid: alcohol, ACE inhibitors, ARBs, NSAIDs
- Refractory ascites: discontinue beta blockers, serial paracentesis; TIPS (may precipitate encephalopathy)

MONITORING

Monitor patient weight and abdominal girth.

Obtain CMP every one to two months or as indicated for patients on diuretics.

ESOPHAGEAL VARICES³

DIAGNOSIS

Baseline EGD to screen for varices indicated when cirrhosis is first diagnosed

EGD to diagnose when varices suspected

No varices seen on EGD: beta blockers are not recommended for "pre-primary prophylaxis"

Primary prophylaxis:

- Small varices that haven't bled: if Child Pugh class A and no red wales on EGD - can use surveillance EGD in place of beta blockers; if Child Pugh B/C or red wales on EGD - consider nonselective beta blockers (propranolol, nadolol). With beta-blockers: Do not lower systolic BP < 90 or heart rate < 55.
- Medium/large varices that haven't bled: non selective beta blockers or esophageal variceal ligation (EVL). If bleeding risk is not high, beta blockers preferred over EVL. With large varices, EVL preferred.
- These agents are not recommended for primary prophylaxis: nitrates, combination beta blockers and EVL, shunt therapy, or sclerotherapy.

Secondary prophylaxis:

- Patients who survive an EVL bleed should receive both beta blockers and EVL. Repeat EGD every 1-2 weeks until varices obliterated, then every 1-3 months, then every 6-12 months for surveillance.
- Consider TIPS if bleeding recurs despite combination beta blockers and EVL.
- Sclerotherapy is not recommended for secondary prophylaxis.
- Consider TIPS in Child class A/B patients with recurrent bleeding despite beta blockers and EVL.

TREATMENT / PROPHYLAXIS

MONITORING

- Cirrhosis without varices on EGD → repeat EGD within 3 years
- Small varices and no beta blocker used → repeat EGD within 2 years
- Small/medium/large and beta blockers maximized (see page 9): consider EGD within 2-3 years
- Medium/large and EVL used → repeat EGD every 1-2 weeks until varices obliterated, then every 1-3 months, then every 6-12 months
- Decompensated cirrhosis: → repeat EGD at time of diagnosis and annually or more often as indicated

1. Runyon, BA et al. Management of adult patients with ascites due to cirrhosis. Update 2012. Hepatology. 2013 Apr;57(4):1198-1206.

2. From UpToDate: Runyon, BA et al. Evaluation of the adult with ascites. April 2015.

3. Garcia-Tsao G et al. Prevention and management of gastroesophageal varices and variceal hemorrhage in cirrhosis. Am J Gastroenterol. 2007 Sep;102(9):2086-102.

CLINICAL SMEs: DEFINING WORKFLOWS & TRAINING END-USERS



Step 1: Create a new pending expectation

Click on the "+ Add" to create a new pending expectation

Step 2: Pop-up box will appear, then select "Free Text" tab

Step 3: Add "ESLD - HCC Ultrasound Screening" under Recommendation box and add frequency

Frequency to be set to every 6 months and select "Add"

Step 4: ESLD-HCC Ultrasound Screening shown on Scratch Pad

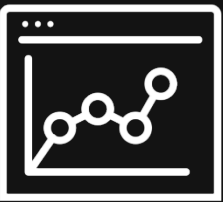
Step 5: Pending expectation has been added successfully

ESLD-HCC Ultrasound Screening has been successfully added to Pending Expectations list.

Step 6: Refusal Documentation

Documenting the refusal for ESLD-HCC Ultrasound Screening by clicking "Refuse" link. A pop-up box will appear to select "Patient Refuses" for Reason.

CLINICAL SMEs: MAPPING EHR DATA POINTS



Menu

- PCP Workflow
- Quick Orders
- Results Review**
- Orders + Add
- Task List
- Diagnosis & Problems
- Documentation + Add
- Allergies + Add
- Appointments
- Form Browser
- Histories
- Health Maintenance
- Immunization Schedule
- Interactive View and I&O
- MAR Summary
- MultiMedia Manager + Add
- Medication List + Add
- Notes
- Patient Information
- eUHR
- Encounter Summary

propranolol (PROPRANOLOL 10 MG TABLET)

Pharmacy

Details Additional Info History Comments Validation Results Ingredients

Dose: 10
Dose Unit: mg
Volume: 1
Volume Unit: tab
Route of administration: Oral
Drug Form: Tab
Frequency: BIDAM+PRN
PRN: No
Administration Type: NA
Automatic Refill: No
PCN: 002
Duration: 90
Duration unit: day
First Dose Date/Time: 06/18/18 09:59 PDT
Stop Date/Time: 09/16/18 06:59 PDT
Stop type: Physician Stop
Next dose date and time: 06/18/18 19:00 PDT
Dispense category: Specify Amount NA/DOT
Number of bags in IV seq: 0
Pharmacy order type: 1
Total dispense doses: 0
Dispense from location: CMF Pharmacy
Initial dose override:
Dispense schedule: Standard
Order price: 0
Order cost: 0.28
Diagnosis: End-stage liver disease
Instructions Replace Required Details: No
Use Patient Supply: No

Microbiology Diagnostics Vitals - 7 Days Vitals - 18 Months Assessments - Provider View

Diagnostics View Table Group List

July 22, 2013 9:22 PDT - July 22, 2019 9:22 PDT (Clinical Range)

07 - 06/22/18) Show more results

	06/22/18 0:00 PDT	04/03/18 0:00 PDT	10/04/17 0:00 PDT	06/19/17 0:00 PDT	05/09/17 0:00 PDT	04/27/17 0:00 PDT
EGD	Esophagogastroscopy-EGD			Esophagogastr		
TRST					CT THREE PHASE	
	US LIVER	US LIVER				US LIVER

Problems

+ Add Modify Convert No Chronic Problems Display: All

	Condition Name	Onset Date	Code
<input checked="" type="checkbox"/>	Alcoholic cirrhosis		2576981019
<input checked="" type="checkbox"/>	Anemia of chronic disease		351078012
<input checked="" type="checkbox"/>	CKD (chronic kidney disease), stage III		2773184015
<input checked="" type="checkbox"/>	Chronic low back pain		415888015
<input checked="" type="checkbox"/>	Hip fracture, right		10843018
<input checked="" type="checkbox"/>	History of pancytopenia		2987053012
<input checked="" type="checkbox"/>	End-stage liver disease	...	498583014



HOW **IT SOLUTION**
WAS UTILIZED

IT SOLUTION FUNCTIONALITY:

ESLD Patient Registry



Institution: CIW Care Team: CTC/MHCB, Main Clinic 1, Main C View Report

Filters: Show All Patients

1 of 1 100% Find | Next

ESLD Patient Registry CA Institution for Women [Registry Definition](#) [Condition Specifications](#)
Patient Count: 26

Identification & Care Team				Screening			ESLD Condition Management													Other Meds	Laboratory	
CDCR#	Last Name	Care Team	Date of Birth	Ultrasound Date	EGD Date	Last Refused Date	Ascites Dx	Spiro	Furos	Eso Var Dx	β-bkr	SBP Dx	Abx	Enceph Dx	Lact	Rifx	HCC Dx	Snfib	NSAID	PLT	CR	
		Main Clinic 1		06/14/18	04/27/16																174	0.94
		Main Clinic 2		04/19/18	10/19/16																158	0.61
		SCU Clinic		12/12/18	06/03/15																168	0.91
		Main Clinic 4		N/A HCC Dx	12/08/17					Yes	√						Yes				160	0.79
		Main Clinic 4		05/07/18	05/17/17						Exp										99	1.24
		SPHU Clinic		07/12/18		01/12/17															130	0.64
		Main Clinic 2		07/12/18	01/25/18					Yes	√										91	0.70
		Main Clinic 4		04/05/18	08/16/17																139	1.56
		Main Clinic 2		07/12/18	02/23/18														√		228	0.67
		Main Clinic 3		02/22/18	02/15/17						√										122	0.97
		Main Clinic 4		05/03/18	02/23/18																278	0.94
		Main Clinic 3		03/02/18																	155	0.70
		Main Clinic 1		N/A HCC Dx	04/11/18												Yes				140	1.04
		Main Clinic 3		06/14/18	10/13/17						√										183	0.81
		Main Clinic 2		04/19/18	06/03/15	12/22/16					√										86	0.71
		Main Clinic 2		07/26/18	04/07/16	03/23/17															87	0.78
		OPHU		06/29/16	07/01/16						√										79	1.69
		Main Clinic 3		02/22/18	05/13/16																89	0.55
		Main Clinic 1		07/12/18	09/21/16																146	0.90
		Main Clinic 3		03/22/18	07/29/17																213	0.73
		OPHU		03/04/18	03/16/17						√										78	0.76
		Main Clinic 2		07/26/18	06/15/18														√		439	0.72
		Main Clinic 3				06/10/18															267	0.78
		Main Clinic 2*			06/20/18	07/13/18															263	0.48
		Main Clinic 4		06/28/18	06/15/18	05/27/18															184	0.87


IT SOLUTION FUNCTIONALITY: ESLD Patient Registry



Institution: Care Team:

Filters:

1 of 1 100% Find | Next



ESLD Patient Registry

CA Institution for Women

Patient Count: 26

[Registry Definition](#)

[Condition Specifications](#)

Identification & Care Team			Screening			ESLD Condition Management													Other Meds	Laboratory		
CDCR#	Last Name	Care Team	Date of Birth	Ultrasound Date	EGD Date	Last Refused Date	Ascites Dx	Spiro	Furos	Eso Var Dx	β-bkr	SBP Dx	Abx	Enceph Dx	Lact	Rifx	HCC Dx	Snfib	NSAID	PLT	CR	
		Main Clinic 1		06/14/18	04/27/16																174	0.94
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		SCU Clinic		12/12/18	06/03/15																168	0.91
		Main Clinic 4		N/A HCC Dx	12/08/17					Yes	√						Yes				160	0.79

IT SOLUTION FUNCTIONALITY: ESLD Patient Registry



Institution: CIW Care Team: CTC/MHCB, Main Clinic 1, Main C Filters: Show All Patients View Report

1 of 1 100% Find | Next

ESLD Patient Registry CA Institution for Women Registry Definition Condition Specifications Patient Count: 26

Identification & Care Team				Screening			ESLD Condition Management														Other Meds	Laboratory	
CDCCR#	Last Name	Care Team	Date of Birth	Ultrasound Date	EGD Date	Last Refused Date	Ascites Dx	Spiro	Furos	Eso Var Dx	β-bkr	SBP Dx	Abx	Enceph Dx	Lact	Rifx	HCC Dx	Srnfib	NSAID	PLT	CR		
		Main Clinic 1		06/14/18	04/27/16																174	0.94	
		Main Clinic 2		04/19/18	10/19/16																158	0.61	
		SCU Clinic		12/12/18	06/03/15																168	0.91	
		Main Clinic 4		N/A HCC Dx	12/08/17				Yes	√							Yes				160	0.79	
		Main Clinic 4		05/07/18	05/17/17					Exp											99	1.24	
		SPHU Clinic		07/12/18		01/12/17															130	0.64	
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		Main Clinic 2		07/12/18	02/23/18														√		228	0.67	
		Main Clinic 3		02/22/18	02/15/17					√											122	0.97	
		Main Clinic 4		05/03/18	02/23/18																278	0.94	
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		Main Clinic 3		06/14/18	10/13/17					√											183	0.81	
		Main Clinic 2		04/19/18	06/03/15	12/22/16				√											86	0.71	
		Main Clinic 2		07/26/18	04/07/16	03/23/17															87	0.78	
		OPHU		06/29/16	07/01/16					√											79	1.69	
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		Main Clinic 3		03/22/18	07/29/17																213	0.73	
		OPHU		03/04/18	03/16/17					√											78	0.76	
		Main Clinic 2		07/26/18	06/15/18														√		439	0.72	
		Main Clinic 3				06/10/18															267	0.78	
		Main Clinic 2*			06/20/18	07/13/18															263	0.48	
		Main Clinic 4		06/28/18	06/15/18	05/27/18															184	0.87	

IT SOLUTION FUNCTIONALITY: ESLD Patient Registry



Institution: CIW Care Team: CTC/MHCB, Main Clinic 1, Main Clinic 2 View Report

Filters: Show All Patients

1 of 1 100% Find | Next

Registry Definition
Condition Specifications
CA Institution for Women
Patient Count: 26

Identification & Care Team				Screening			ESLD Condition Management													Other Meds	Laboratory	
CDCR#	Last Name	Care Team	Date of Birth	Ultrasound Date	EGD Date	Last Refused Date	Ascites Dx	Spiro	Furos	Eso Var Dx	β-bkr	SBP Dx	Abx	Enceph Dx	Lact	Rifx	HCC Dx	Srnfib	NSAID	PLT	CR	
		Main Clinic 1		06/14/18	04/27/16															174	0.94	
		Main Clinic 2		04/19/18	10/19/16															158	0.61	
		SCU Clinic		12/12/18	06/03/15															168	0.91	
		Main Clinic 4		N/A HCC Dx	12/08/17					Yes	√						Yes			160	0.79	
		Main Clinic 4		05/07/18	05/17/17						Exp									99	1.24	
		SPHU Clinic		07/12/18		01/12/17														130	0.64	
		Main Clinic 2		07/12/18	01/25/18					Yes	√									91	0.70	
		Main Clinic 4		04/05/18	08/16/17															139	1.56	
		Main Clinic 2		07/12/18	02/23/18														√	228	0.67	
		Main Clinic 3		02/22/18	02/15/17						√									122	0.97	
		Main Clinic 4		05/03/18	02/23/18															278	0.94	
		Main Clinic 3		03/02/18																155	0.70	
		Main Clinic 1		N/A HCC Dx	04/11/18												Yes			140	1.04	
		Main Clinic 3		06/14/18	10/13/17						√									183	0.81	
		Main Clinic 2		04/19/18	06/03/15	12/22/16					√									86	0.71	
		Main Clinic 2		07/26/18	04/07/16	03/23/17														87	0.78	
		OPHU		06/29/16	07/01/16						√									79	1.69	
		Main Clinic 3		02/22/18	05/13/16															89	0.55	
		Main Clinic 1		07/12/18	09/21/16															146	0.90	
		Main Clinic 3		03/22/18	07/29/17															213	0.73	
		OPHU		03/04/18	03/16/17						√									78	0.76	
		Main Clinic 2		07/26/18	06/15/18														√	439	0.72	
		Main Clinic 3				06/10/18														267	0.78	
		Main Clinic 2*			06/20/18	07/13/18														263	0.48	
		Main Clinic 4		06/28/18	06/15/18	05/27/18														184	0.87	

IT SOLUTION FUNCTIONALITY: ESLD Patient Registry



Institution: CIW Care Team: CTC/MHCB, Main Clinic 1, Main C View Report

Filters: Show All Patients

1 of 1 100% Find | Next

ESLD Patient Registry CA Institution for Women Registry Definition Condition Specifications Patient Count: 26

Identification & Care Team				Screening			ESLD Condition Management													Other Meds	Laboratory	
CDCR#	Last Name	Care Team	Date of Birth	Ultrasound Date	EGD Date	Last Refused Date	Ascites Dx	Spiro	Furos	Eso Var Dx	β-bkr	SBP Dx	Abx	Enceph Dx	Lact	Rifx	HCC Dx	Srnfib	NSAID	PLT	CR	
		Main Clinic 1		06/14/18	04/27/16																174	0.94
		Main Clinic 2		04/19/18	10/19/16																158	0.61
		SCU Clinic		12/12/18	06/03/15																168	0.91
		Main Clinic 4		N/A HCC Dx	12/08/17					Yes	v						Yes				160	0.79
		Main Clinic 4		05/07/18	05/17/17						Exp										99	1.24
		SPHU Clinic		07/12/18		01/12/17															130	0.64
		Main Clinic 2		07/12/18	01/25/18					Yes	v										91	0.70
		Main Clinic 4		04/05/18	08/16/17																139	1.56
		Main Clinic 2		07/12/18	02/23/18														v		228	0.67
		Main Clinic 3		02/22/18	02/15/17					v											122	0.97
		Main Clinic 4		05/03/18	02/23/18																278	0.94
		Main Clinic 3		03/02/18																	155	0.70
		Main Clinic 1		N/A HCC Dx	04/11/18												Yes				140	1.04
		Main Clinic 3		06/14/18	10/13/17						v										183	0.81
		Main Clinic 2		04/19/18	06/03/15	12/22/16					v										86	0.71
		Main Clinic 2		07/26/18	04/07/16	03/23/17															87	0.78
		OPHU		06/29/16	07/01/16						v										79	1.69
		Main Clinic 3		02/22/18	05/13/16																89	0.55
		Main Clinic 1		07/12/18	09/21/16																146	0.90
		Main Clinic 3		03/22/18	07/29/17																213	0.73
		OPHU		03/04/18	03/16/17					v											78	0.76
		Main Clinic 2		07/26/18	06/15/18														v		439	0.72
		Main Clinic 3				06/10/18															267	0.78
		Main Clinic 2*			06/20/18	07/13/18															263	0.48
		Main Clinic 4		06/28/18	06/15/18	05/27/18															184	0.87

IT SOLUTION FUNCTIONALITY: ESLD Patient Registry



Institution: CIW Care Team: CTC/MHCB, Main Clinic 1, Main C View Report

Filters: Show All Patients

1 of 1 100% Find | Next

ESLD Patient Registry CA Institution for Women *Patient Count: 20*

Registry Definition
Condition Specifications

Identification & Care Team				Screening			ESLD Condition Management													Other Meds	Laboratory	
CDCR#	Last Name	Care Team	Date of Birth	Ultrasound Date	EGD Date	Last Refused Date	Ascites Dx	Spiro	Furos	Eso Var Dx	β-bkr	SBP Dx	Abx	Enceph Dx	Lact	Rifx	HCC Dx	Srnfib	NSAID	PLT	CR	
		Main Clinic 1		06/14/18	04/27/16																174	0.94
		Main Clinic 2		04/19/18	10/19/16																158	0.61
		SCU Clinic		12/12/18	06/03/15																168	0.91
		Main Clinic 4		N/A HCC Dx	12/08/17					Yes	√						Yes				160	0.79
		Main Clinic 4		05/07/18	05/17/17						Exp										99	1.24
		SPHU Clinic		07/12/18		01/12/17															130	0.64
		Main Clinic 2		07/12/18	01/25/18					Yes	√										91	0.70
		Main Clinic 4		04/05/18	08/16/17																139	1.56
		Main Clinic 2		07/12/18	02/23/18														√		228	0.67
		Main Clinic 3		02/22/18	02/15/17						√										122	0.97
		Main Clinic 4		05/03/18	02/23/18																278	0.94
		Main Clinic 3		03/02/18																	155	0.70
		Main Clinic 1		N/A HCC Dx	04/11/18												Yes				140	1.04
		Main Clinic 3		06/14/18	10/13/17						√										183	0.81
		Main Clinic 2		04/19/18	06/03/15	12/22/16					√										86	0.71
		Main Clinic 2		07/26/18	04/07/16	03/23/17															87	0.78
		OPHU		06/29/16	07/01/16						√										79	1.69
		Main Clinic 3		02/22/18	05/13/16																89	0.55
		Main Clinic 1		07/12/18	09/21/16																146	0.90
		Main Clinic 3		03/22/18	07/29/17																213	0.73
		OPHU		03/04/18	03/16/17						√										78	0.76
		Main Clinic 2		07/26/18	06/15/18														√		439	0.72
		Main Clinic 3				06/10/18															267	0.78
		Main Clinic 2*			06/20/18	07/13/18															263	0.48
		Main Clinic 4		06/28/18	06/15/18	05/27/18															184	0.87

IT SOLUTION FUNCTIONALITY:

ELSD Registry Filtering



Institution: CIW Care Team: CTC/MHCB, Main Clinic 1, Main Clinic 2 View Report

Filters: Institution: CIW

- (Select All)
- ASP
- CAC
- CAL
- CCC
- CCI
- CCWF
- CEN
- CHCF
- CIM
- CIW
- CMC
- CMF
- COR
- CRC
- CTF
- CVSP
- DVI
- FSP
- HDSP
- ISP
- KVSP
- LAC
- MCSP
- NKSP
- PBSP
- PVSP
- RJD
- SAC
- SATF
- SCC
- SOL
- SQ
- SVSP
- VSP
- WSP
- COCF - FLO
- COCF - LAP
- COCF - NFC
- COCF - TAL
- DSH - ASH
- DSH - COAL
- DSH - PAT
- FCRF - MAC
- PRCCF - CEV

Care Team: CTC/MHCB, Main Clinic 1, Main Clinic 2

- (Select All)
- CTC/MHCB
- Main Clinic 1
- Main Clinic 2
- Main Clinic 3
- Main Clinic 4
- OPHU
- Other
- PIP Beds
- SCU Clinic
- SPHU Clinic

ESLD Patient Registry

Registry Definition
Condition Specifications
Patient Count: 26

Screening	Other Meds	Laboratory							
Ultrasound Date	EGD Date	Last Date	Lact	Rifx	HCC Dx	Snfib	NSAID	PLT	CR
06/14/18	04/27/16							174	0.94
04/19/18	10/19/16							158	0.61
12/12/18	06/03/15							168	0.91
N/A HCC Dx	12/08/17		Yes	v		Yes		160	0.79
05/07/18	05/17/17					Exp		99	1.24
07/12/18		01/12/17						130	0.64
07/12/18	01/25/18		Yes	v				91	0.70
04/05/18	08/16/17							139	1.56
07/12/18	02/23/18						v	228	0.67
02/22/18	02/15/17							122	0.97
05/03/18	02/23/18							278	0.94
03/02/18								155	0.70
N/A HCC Dx	04/11/18				Yes			140	1.04
06/14/18	10/13/17							183	0.81
04/19/18	06/03/15	12/22/16						86	0.71
07/26/18	04/07/16	03/23/17						87	0.78

IT SOLUTION FUNCTIONALITY:

ESLD Registry Color Coding



[Registry Definition](#)
[Condition Specifications](#)

CA Institution for Women


Patient Count: 26

Identification & Care Team				Screening			ESLD Condition Management											Other Meds	Laboratory			
CDCR#	Last Name	Care Team	Date of Birth	Ultrasound Date	EGD Date	Last Refused Date	Ascites Dx	Spiro	Furos	Eso Var Dx	β-bkr	SBP Dx	Abx	Enceph Dx	Lact	Rifx	HCC Dx	Snfb	NSAID	PLT	CR	
		Main Clinic 1		06/14/18	04/27/16																174	0.94
		Main Clinic 2		04/19/18	10/19/16																158	0.61
		SCU Clinic		12/12/18	06/03/15																168	0.91
		Main Clinic 4		N/A HCC Dx	12/08/17				Yes	√							Yes				160	0.79
		Main Clinic 4		05/07/18	05/17/17					Exp											99	1.24
		SPHU Clinic		07/12/18		01/12/17															130	0.64
		Main Clinic 2		07/12/18	01/25/18					Yes	√										91	0.70
		Main Clinic 4		04/05/18	08/16/17																139	1.56
		Main Clinic 2		07/12/18	02/23/18														√		228	0.67
		Main Clinic 3		02/22/18	02/15/17					√											122	0.97
		Main Clinic 4		05/03/18	02/23/18																278	0.94
		Main Clinic 3		03/02/18																	155	0.70
		Main Clinic 1		N/A HCC Dx	04/11/18												Yes				140	1.04
		Main Clinic 3		06/14/18	10/13/17					√											183	0.81
		Main Clinic 2		04/19/18	06/03/15	12/22/16				√											86	0.71
		Main Clinic 2		07/26/18	04/07/16	03/23/17															87	0.78
		OPHU		06/29/16	07/01/16					√											79	1.69
		Main Clinic 3		02/22/18	05/13/16																89	0.55
		Main Clinic 1		07/12/18	09/21/16																146	0.90
		Main Clinic 3		03/22/18	07/29/17																213	0.73
		OPHU		03/04/18	03/16/17					√											78	0.76
		Main Clinic 2		07/26/18	06/15/18														√		439	0.72
		Main Clinic 3				06/10/18															267	0.78
		Main Clinic 2*			06/20/18	07/13/18															263	0.48
		Main Clinic 4		06/28/18	06/15/18	05/27/18															184	0.87

IT SOLUTION FUNCTIONALITY:

ESLD Registry Sorting





ESLD
Patient Registry

[Registry Definition](#)

[Condition Specifications](#)

CA Institution for Women

Patient Count: 26

Identification & Care Team				Screening			ESLD Condition Management												Other Meds	Laboratory		
CDCR#	Last Name	Care Team	Date of Birth	Ultrasound Date	EGD Date	Last Refused Date	Ascites Dx	Spiro	Furos	Eso Var Dx	β-bkr	SBP Dx	Abx	Enceph Dx	Lact	Rifx	HCC Dx	Srffb	NSAID	PLT	CR	
		Main Clinic 3				06/10/18															267	0.78
		Main Clinic 2*			06/20/18	07/13/18															263	0.48
		Main Clinic 2																			113	0.67
		OPHU		06/29/16	07/01/16						√										79	1.69
		Main Clinic 3		02/22/18	02/15/17						√										122	0.97
		Main Clinic 3		02/22/18	05/13/16																89	0.55
		Main Clinic 3		03/02/18																	155	0.70
		OPHU		03/04/18	03/16/17						√										78	0.76
		Main Clinic 3		03/22/18	07/29/17																213	0.73
		Main Clinic 4		04/05/18	08/16/17																139	1.56
		Main Clinic 2		04/19/18	10/19/16																158	0.61
		Main Clinic 2		04/19/18	06/03/15	12/22/16					√										86	0.71
		Main Clinic 4		05/03/18	02/23/18																278	0.94
		Main Clinic 4		05/07/18	05/17/17						Exp										99	1.24
		Main Clinic 1		06/14/18	04/27/16																174	0.94
		Main Clinic 3		06/14/18	10/13/17						√										183	0.81
		Main Clinic 4		06/28/18	06/15/18	05/27/18															184	0.87
		SPHU Clinic		07/12/18		01/12/17															130	0.64
		Main Clinic 2		07/12/18	01/25/18					Yes	√										91	0.70
		Main Clinic 2		07/12/18	02/23/18														√		228	0.67
		Main Clinic 1		07/12/18	09/21/16																146	0.90
		Main Clinic 2		07/26/18	04/07/16	03/23/17															87	0.78
		Main Clinic 2		07/26/18	06/15/18														√		439	0.72
		SCU Clinic		12/12/18	06/03/15																168	0.91
		Main Clinic 4		N/A HCC Dx	12/08/17					Yes	√						Yes				160	0.79
		Main Clinic 1		N/A HCC Dx	04/11/18												Yes				140	1.04

IT SOLUTION FUNCTIONALITY:

ESLD Registry Filtering



Institution: Care Team:

Filters:

Filters:

- Show All Patients
- New Institution Arrival
- New Care Team Arrival
- Ascites
- Esophageal Varices
- Spontaneous Bacterial Peritonitis or TIPS Procedure
- Hepatic Encephalopathy
- Hepatocellular Carcinoma
- Ultrasound Past Due / Due Soon
- EGD Past Due / Due Soon
- Antibiotics
- Lactulose
- Rifaximin
- Spironolactone
- Furosemide
- Beta-Blocker
- NSAID
- Sorafenib Tosylate

[Registry Definition](#)
[Condition Specifications](#)

CA Institution for Women

Patient Count: 26

Refused Date	ESLD Condition Management												Other Meds		Laboratory	
	Ascites Dx	Spiro	Furos	Eso Var Dx	β-bkr	SBP Dx	Abx	Enceph Dx	Lact	Rifx	HCC Dx	Snfib	NSAID	PLT	CR	
														174	0.94	
														158	0.61	
														168	0.91	
				Yes	√						Yes			160	0.79	
					Exp									99	1.24	
12/17														130	0.64	
				Yes	√									91	0.70	
														139	1.56	
													√	228	0.67	
					√									122	0.97	
														278	0.94	
														155	0.70	
				N/A HCC Dx							Yes			140	1.04	
														183	0.81	
														86	0.71	
														87	0.78	
														79	1.69	
														89	0.55	
														146	0.90	
														213	0.73	
														78	0.76	
														439	0.72	
													√	267	0.78	
														263	0.48	
														184	0.87	

IT SOLUTION FUNCTIONALITY:

ESLD Registry Patient Profile



CDCR Number: View Report

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ESLD Patient History

Patient Registry

DCR#:	██████████	EPRD:	██████████	HCV Ab:	REACTIVE	HBV sAg:	NON-REACTIVE	Pneu Vac.:	04/20/16
First Name:	██████████	Mental Health:	██████████	HCV VL:	<15 NOT DETECTED	HBV cAb:	██████████	Advance Dir.:	██████████
Location:	██████████	Tabc Score:	██████████	HIV Ab:	NON-REACTIVE	HBV sAb:	REACTIVE	FIB4:	3.14

Current ESLD Medications

Agent	Medication Name	Provider	Start	End	Label Text
PROPRANOLOL	+1-propranolol 10 mg Tab	Hodges	07/26/18	08/18/18	Rx Instructions: Take 1 tablet by mouth 2 times a day

Other Medications

Laboratory History

Date	Bili Total	AST	ALT	PLT	Albumin	Na	K	INR	Cr	AFP
06/11/18	0.80	26	19	114	4.2	145	4.1	1.1	1.04	
12/11/17	0.80	41	25	108	3.9					
10/05/17										6
09/12/17	0.70	26	13	116	3.9	139	4.1		1.08	
08/15/17	0.80	25	13	112	3.8	143	4.0		1.05	
07/17/17	0.70	24	13	110	3.7	142	4.1		0.98	
07/05/17	0.60	28	17	111	3.5	143	4.7		1.05	
06/15/17	1.00	106	100	126	3.4	140	4.4		1.14	
04/20/17	1.00	138	141	117	3.5	141	4.5	1.2	1.12	
04/05/17										13

Active/Recent Diagnoses

Source	Date	Diagnosis Code
EHR	06/15/18	Esophageal varices
EHR	06/08/18	Cirrhosis of liver
PHIP	03/28/17	Fibrosis and cirrhosis of liver
Claims	03/22/17	Alcoholic cirrhosis of liver without ascites

Recent Procedures

Type	Source	Date	Procedure
US	PHIP	06/08/18	US Liver
EGD	PHIP	06/04/18	Upper gastrointestinal endoscopy including esophagus, stomach, and either the duodenum and/or jejunum
EGD	PHIP	06/04/18	Esophagogastroduodenoscopy-EGD
US	PHIP	10/12/17	Hepatocellular Carcinoma Screening- Ultrasound: Li
US	Claims	10/12/17	Ultrasnd exam of abdomen limited
US	PHIP	10/12/17	Ultrasound, abdominal, B-scan and/or real time with image documentation; limited (eg, single organ,
US	Claims	04/27/17	Ultrasnd abdomen complete
EGD	PHIP	02/23/17	Upper gastrointestinal endoscopy including esophagus, stomach, and either the duodenum and/or jejunum
EGD	Claims	02/23/17	Upper GI endoscopy w/biopsy
US	PHIP	02/03/17	Hepatocellular Carcinoma Screening- Ultrasound: Li

Report Run Date: 8/6/2018

IT SOLUTION FUNCTIONALITY:

ESLD Registry Patient Profile



CDCR Number: View Report

ESLD Patient History

ESLD Patient Registry

DCR#: [REDACTED]	EPRD: [REDACTED]	HCV Ab: REACTIVE	HBV sAg: NON-REACTIVE	Pneu Vac.: 04/20/16
Last Name: [REDACTED]	Mental Health: [REDACTED]	HCV VL: <15 NOT DETECTED	HBV cAb: [REDACTED]	Advance Dir.: [REDACTED]
Location: [REDACTED]	Tabc Score: [REDACTED]	HIV Ab: NON-REACTIVE	HBV sAb: REACTIVE	FIB4: 3.14

Current ESLD Medications

Agent	Medication Name	Provider	Start	End	Label Text
PROPRANOLOL	+1-propranolol 10 mg Tab	Hodges	07/26/18	08/18/18	Rx Instructions: Take 1 tablet by mouth 2 times a day

Other Medications

Laboratory History

Date	Bili Total	AST	ALT	PLT	Albumin	Na	K	INR	Cr	AFP
06/11/18	0.80	26	19	114	4.2	145	4.1	1.1	1.04	
12/11/17	0.80	41	25	108	3.9					
10/05/17										6
09/12/17	0.70	26	13	116	3.9	139	4.1		1.08	
08/15/17	0.80	25	13	112	3.8	143	4.0		1.05	
07/17/17	0.70	24	13	110	3.7	142	4.1		0.98	
07/05/17	0.60	28	17	111	3.5	143	4.7		1.05	
06/15/17	1.00	106	100	126	3.4	140	4.4		1.14	
04/20/17	1.00	138	141	117	3.5	141	4.5	1.2	1.12	
04/05/17										13

Active/Recent Diagnoses

Source	Date	Diagnosis Code
EHR	06/15/18	Esophageal varices
EHR	06/08/18	Cirrhosis of liver
PHIP	03/28/17	Fibrosis and cirrhosis of liver
Claims	03/22/17	Alcoholic cirrhosis of liver without ascites

Recent Procedures

Type	Source	Date	Procedure
US	PHIP	06/08/18	US Liver
EGD	PHIP	06/04/18	Upper gastrointestinal endoscopy including esophagus, stomach, and either the duodenum and/or jejunum
EGD	PHIP	06/04/18	Esophagogastroduodenoscopy-EGD
US	PHIP	10/12/17	Hepatocellular Carcinoma Screening- Ultrasound: Li
US	Claims	10/12/17	Ultrasnd exam of abdomen limited
US	PHIP	10/12/17	Ultrasound, abdominal, B-scan and/or real time with image documentation; limited (eg, single organ,
US	Claims	04/27/17	Ultrasnd abdomen complete
EGD	PHIP	02/23/17	Upper gastrointestinal endoscopy including esophagus, stomach, and either the duodenum and/or jejunum
EGD	Claims	02/23/17	Upper GI endoscopy w/biopsy
US	PHIP	02/03/17	Hepatocellular Carcinoma Screening- Ultrasound: Li

Report Run Date: 8/6/2018

IT SOLUTION FUNCTIONALITY: ESLD Registry Patient Profile



CDCR Number: View Report

1 of 1 Whole Page Find | Next

ESLD Patient History

Patient Registry

DCR#: [REDACTED]	EPRD: [REDACTED]	HCV Ab: REACTIVE	HBV sAg: NON-REACTIVE	Pneu Vac.: 04/20/16
Last Name: [REDACTED]	Mental Health: [REDACTED]	HCV VL: <15 NOT DETECTED	HBV cAb: [REDACTED]	Advance Dir.: [REDACTED]
Location: [REDACTED]	Tabc Score: [REDACTED]	HIV Ab: NON-REACTIVE	HBV sAb: REACTIVE	FIB4: 3.14

Current ESLD Medications

Agent	Medication Name	Provider	Start	End	Label Text
PROPRANOLOL	+1-propranolol 10 mg Tab	Hodges	07/26/18	08/18/18	Rx Instructions: Take 1 tablet by mouth 2 times a day

Other Medications

Laboratory History

Date	Bili Total	AST	ALT	PLT	Albumin	Na	K	INR	Cr	AFP
06/11/18	0.80	26	19	114	4.2	145	4.1	1.1	1.04	
12/11/17	0.80	41	25	108	3.9					
10/05/17										6
09/12/17	0.70	26	13	116	3.9	139	4.1		1.08	
08/15/17	0.80	25	13	112	3.8	143	4.0		1.05	
07/17/17	0.70	24	13	110	3.7	142	4.1		0.98	
07/05/17	0.60	28	17	111	3.5	143	4.7		1.05	
06/15/17	1.00	106	100	126	3.4	140	4.4		1.14	
04/20/17	1.00	138	141	117	3.5	141	4.5	1.2	1.12	
04/05/17										13

Active/Recent Diagnoses

Source	Date	Diagnosis Code
EHR	06/15/18	Esophageal varices
EHR	06/08/18	Cirrhosis of liver
PHIP	03/28/17	Fibrosis and cirrhosis of liver
Claims	03/22/17	Alcoholic cirrhosis of liver without ascites

Recent Procedures


Type	Source	Date	Procedure
US	PHIP	06/08/18	US Liver
EGD	PHIP	06/04/18	Upper gastrointestinal endoscopy including esophagus, stomach, and either the duodenum and/or jejunum
EGD	PHIP	06/04/18	Esophagogastroduodenoscopy-EGD
US	PHIP	10/12/17	Hepatocellular Carcinoma Screening- Ultrasound: Li
US	Claims	10/12/17	Ultrasnd exam of abdomen limited
US	PHIP	10/12/17	Ultrasound, abdominal, B-scan and/or real time with image documentation; limited (eg, single organ,
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EGD	PHIP	02/23/17	Upper gastrointestinal endoscopy including esophagus, stomach, and either the duodenum and/or jejunum
EGD	Claims	02/23/17	Upper GI endoscopy w/biopsy
US	PHIP	02/03/17	Hepatocellular Carcinoma Screening- Ultrasound: Li

Report Run Date: 8/6/2018

IT SOLUTION FUNCTIONALITY: ESLD Registry Patient Profile



CDCR Number: View Report


ESLD Patient History

DCR#: [REDACTED] EPRD: [REDACTED] HCV Ab: **REACTIVE** HBV sAg: **NON-REACTIVE** Pneu Vac.: **04/20/16**
 Last Name: [REDACTED] Mental Health: [REDACTED] HCV VL: **<15 NOT DETECTED** HBV cAb: [REDACTED] Advance Dir.: [REDACTED]
 Location: [REDACTED] Tabc Score: [REDACTED] HIV Ab: **NON-REACTIVE** HBV sAb: **REACTIVE** FIB4: **3.14**

Current ESLD Medications

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Report Run Date: 8/6/2018

IT SOLUTION FUNCTIONALITY:

ESLD Registry Patient Profile



CDCR Number: View Report

ESLD
ESLD Patient History
Patient Registry

DCR#: ████████ EPRD: ████████ HCV Ab: **REACTIVE** HBV sAg: **NON-REACTIVE** Pneu Vac.: **04/20/16**
 Last Name: ████████ Mental Health: ████████ HCV VL: **<15 NOT DETECTED** HBV cAb: ████████ Advance Dir.: ████████
 Location: ████████ Tabc Score: ████████ HIV Ab: **NON-REACTIVE** HBV sAb: **REACTIVE** FIB4: **3.14**

Current ESLD Medications

Agent	Medication Name	Provider	Start	End	Label Text
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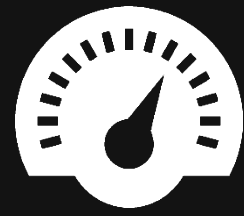
Recent Procedures

Type	Source	Date	Procedure
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EGD	PHIP	06/04/18	Upper gastrointestinal endoscopy including esophagus, stomach, and either the duodenum and/or jejunum
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US	PHIP	02/03/17	Hepatocellular Carcinoma Screening- Ultrasound: Li

Report Run Date: 8/6/2018

NEAR-REAL TIME PERFORMANCE MONITORING

STATEWIDE, INSTITUTIONAL, AND CARE TEAM LEVEL REPORTING



HEALTHCARE SERVICES DASHBOARD

Statewide
May 2018

Dashboard Scorecard Institution Dashboard Statewide Comparison Trended View Dashboard Glossary

SCHEDULING & ACCESS TO CARE

6 Mo. Trend SW

ACCESS

- Medical Services: 88%
- Dental Services: 97%
- Mental Health Services: 91%

APPTS COMPLETED AS SCHEDULED

- Cancelled Due to Custody: 1.1%
- Seen as Scheduled: 90%

EFFECTIVE COMMUNICATION

- Effective Communication Provided: 98%
- Sign Language Interpreter (SLI) Provided: 77%

MEDICATION MANAGEMENT

6 Mo. Trend SW

POPULATION HEALTH MANAGEMENT

6 Mo. Trend SW

- Asthma Care: 92%
- Therapeutic Anticoagulation: 85%
- Diabetes Care: 86%
- End Stage Liver Disease Care: 87%
- Colon Cancer Screening: 79%
- Women's Care: 86%
- Diagnostic Monitoring: 94%
- Utilization Specialty Services: 85%
- Polypharmacy Medication Review: 97%

AVAILABILITY OF HEALTH INFORMATION

6 Mo. Trend SW

- All Documents: 92%
- Specialty Teleservice: 69%
- Specialty Teleservice: 85%

POPULATION HEALTH MANAGEMENT

6 Mo. Trend SW

- Asthma Care: 92%
- Therapeutic Anticoagulation: 87%
- Diabetes Care: 87%
- End Stage Liver Disease Care: 85%
- Colon Cancer Screening: 79%

SW	CIW	CTC/MHCB	Main Clinic 1	Main Clinic 2	Main Clinic 3	Main Clinic 4
87%	93%	100%	95%	96%	99%	97%
86%	89%	100%	97%	91%	98%	94%
87%	96%	-	94%	100%	100%	100%
85%	71%	-	100%	50%	100%	-
86%	88%	75%	84%	89%	86%	89%
77%	83%	0%	81%	72%	91%	79%
83%	85%	100%	88%	94%	68%	79%
96%	96%	100%	92%	100%	95%	100%
89%	86%	100%	74%	88%	88%	100%
87%	89%	-	100%	94%	93%	74%
81%	93%	-	100%	100%	100%	67%
92%	94%	-	100%	100%	100%	75%
96%	81%	-	100%	83%	80%	80%

6 Mo. Trend SW

- 8.1
- 4.6
- 4.1
- 3.2

OTHER TRENDS

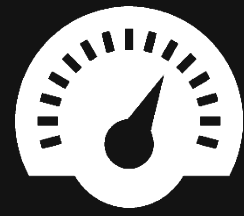
6 Mo. Trend SW

- 5.8
- 6
- 64
- 2.7
- 0.9
- 29
- 132%

Dashboard Version: 5.0 Beta
Report run: 7/22/2018 12:41:22 PM

End Stage Liver Disease Care	63%	66%	65%	66%	69%	72%	77%	84%	86%	87%	88%	89%
EGD for Esophageal Varices	62%	44%	43%	41%	45%	52%	58%	74%	79%	80%	79%	84%
HCC Screening	67%	68%	68%	71%	78%	80%	85%	92%	93%	94%	94%	96%
NSAID	66%	90%	90%	90%	92%	92%	95%	95%	96%	96%	97%	97%
Diagnosis Medication Match	58%	61%	61%	60%	62%	64%	71%	77%	75%	79%	83%	79%
SBP or TIPS with Cipro. or Sulfa.	36%	39%	37%	44%	48%	48%	52%	64%	59%	62%	67%	54%
Ascites with Spironolactone and Furosemide	58%	67%	69%	60%	65%	68%	73%	82%	76%	86%	91%	87%
Hepatic Enceph. w/ Lactulose and/or Rifaximin	71%	77%	77%	77%	73%	75%	89%	84%	90%	88%	91%	95%

NEAR-REAL TIME PERFORMANCE MONITORING STATEWIDE, INSTITUTIONAL, AND CARE TEAM LEVEL REPORTING



HEALTHCARE SERVICES DASHBOARD

Statewide
May 2018

Dashboard Scorecard | Institution Dashboard | Statewide Comparison | Trended View | Dashboard Glossary

SCHEDULING & ACCESS TO CARE

ACCESS

Medical Services: 88%

Dental Services: 97%

Mental Health Services: 91%

APPTS COMPLETED AS SCHEDULED

Cancelled Due to Custody: 1.1%

Seen as Scheduled: 90%

EFFECTIVE COMMUNICATION

Effective Communication Provided: 98%

POPULATION HEALTH MANAGEMENT

Asthma Care: 92%

Therapeutic Anticoagulation: 85%

Diabetes Care: 86%

End Stage Liver Disease Care: 87%

Colon Cancer Screening: 79%

Women's Care: 86%

Diagnostic Monitoring: 94%

Utilization Specialty Services: 85%

Polypharmacy Medication Review: 97%

POPULATION HEALTH MANAGEMENT

Asthma Care: 92%

Therapeutic Anticoagulation: 87%

Diabetes Care: 87%

End Stage Liver Disease Care: 85%

Colon Cancer Screening: 79%

Care Team	Ultrasound/CT /MRI Date	Compliance Met
3A Clinic	03/12/18	Yes
3B Clinic	05/07/18	Yes
3B Clinic	05/07/18	Yes
INF-B	04/30/18	Yes
4A Clinic	03/26/18	Yes
INF-D	02/12/18	Yes
3B Clinic	05/21/18	Yes
3B Clinic		No
ASU	03/26/18	Yes
3A Clinic	04/09/18	Yes
4B Clinic	03/26/18	Yes
INF-D	02/26/18	Yes

POPULATION HEALTH MANAGEMENT

Asthma Care: 92%

Therapeutic Anticoagulation: 87%

Diabetes Care: 87%

End Stage Liver Disease Care: 85%

Colon Cancer Screening: 79%

Category	6 Mo. Trend	SW
End Stage Liver Disease Care	63%	66%
EGD for Esophageal Varices	43%	41%
HCC Screening	67%	68%
NSAID	66%	90%
Diagnosis Medication Match	58%	61%
SBP or TIPS with Cipro. or Sulfa.	36%	39%
Ascites with Spironolactone and Furosemide	58%	67%
Hepatic Enceph. w/ Lactulose and/or Rifaximin	71%	77%

OTHER TRENDS

Hospital Admissions*: 5.8

Emergency Department Visits*: 6

Specialty Care Referrals*: 64

Prescriptions Per Inmate: 2.7

Diagnostics Per Inmate: 0.9

Grievances Received*: 29

Prison Population Capacity: 132%

Dashboard Version: 5.0 Beta
Report run: 7/22/2018 12:41:22 PM

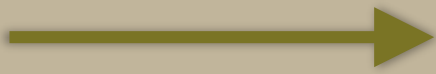
POPULATION MANAGEMENT WORKING SESSIONS



Care Teams come together to focus on population health priorities

- Review Patient Registries
- Discuss intervention strategies
- Order recommended diagnostics, review medications, as appropriate
- All members of the care team have a role in providing care to their assigned patient panel

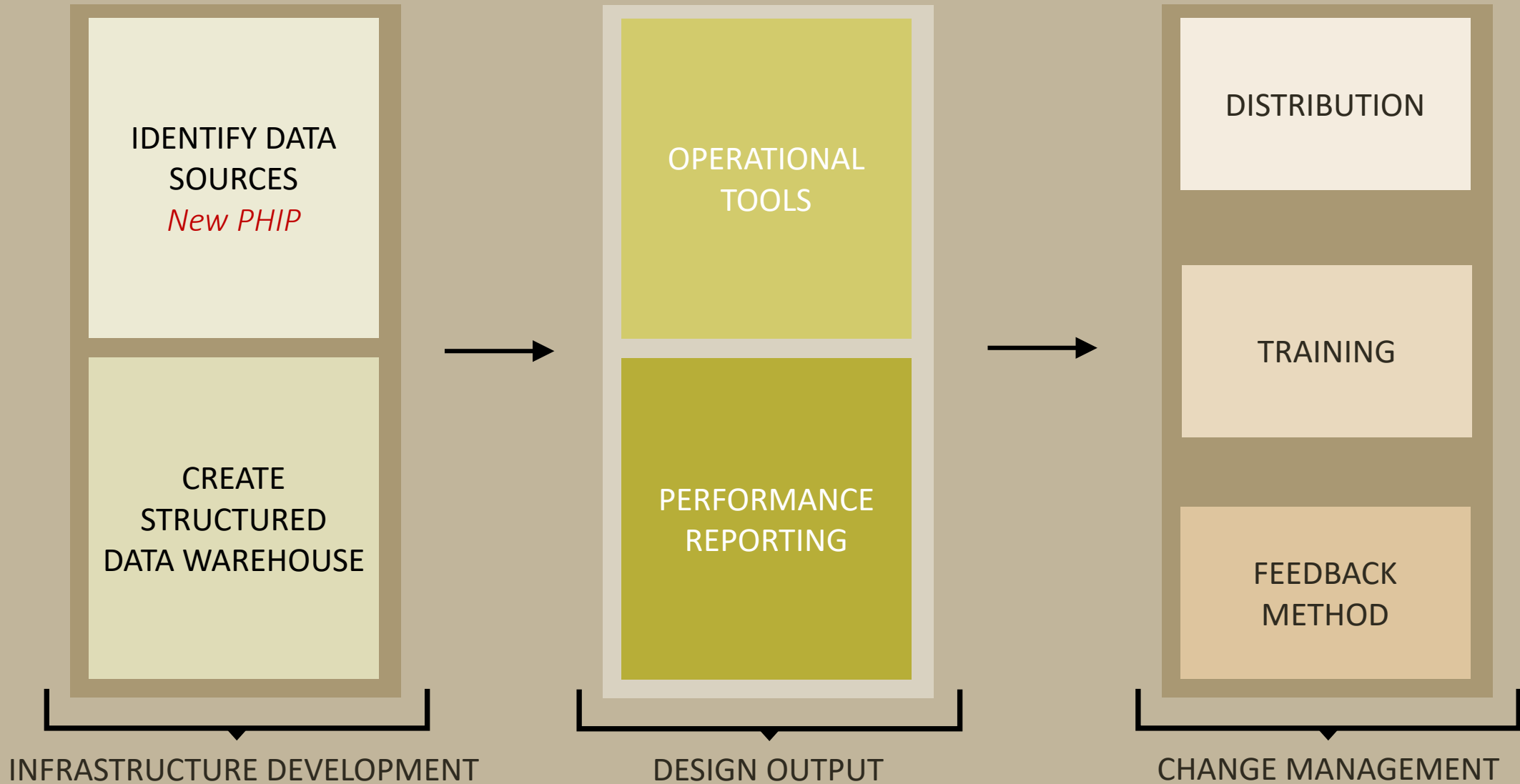
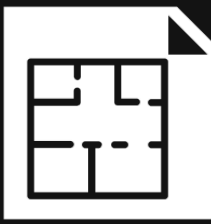
Show All Patients
New Institution Arrival
New Care Team Arrival
Ascites
Esophageal Varices
Spontaneous Bacterial Peritonitis or TIPS Procedure
Hepatic Encephalopathy
Hepatocellular Carcinoma
Ultrasound Past Due / Due Soon
EGD Past Due / Due Soon
Antibiotics
Lactulose
Rifaximin
Spironolactone
Furosemide
Beta-Blocker
NSAID
Sorafenib Tosylate



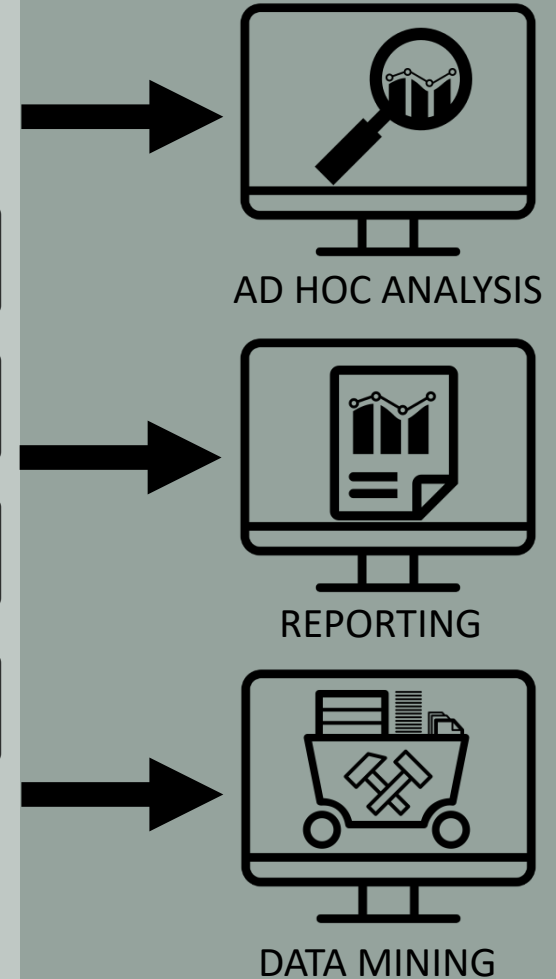
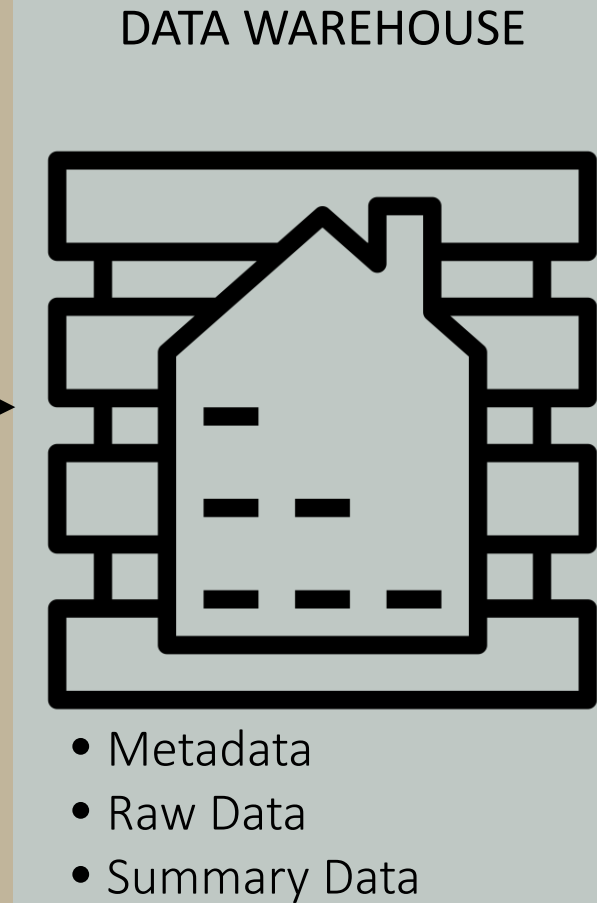
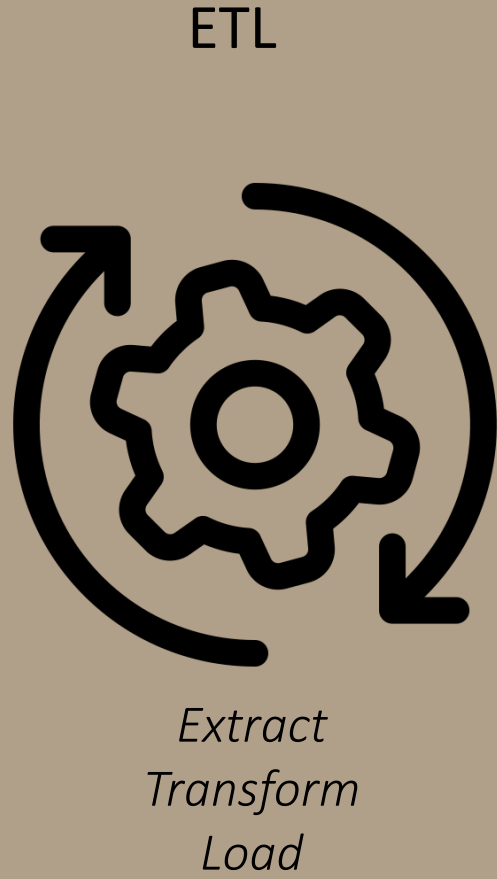
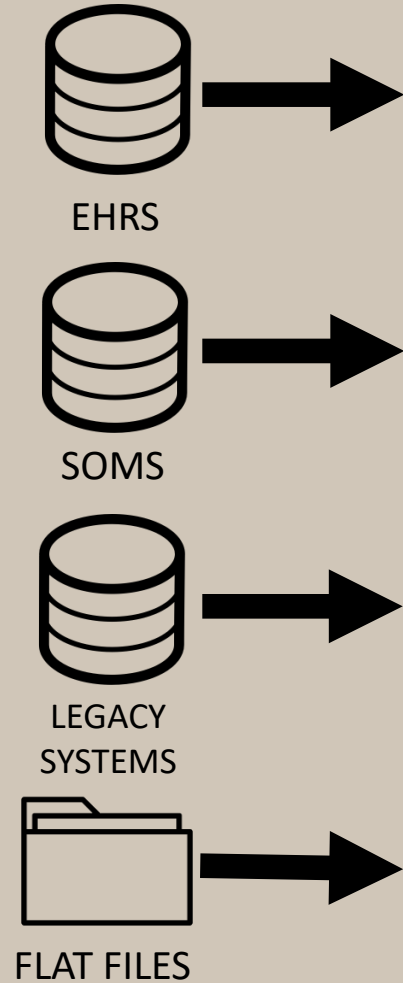
Identification & Care Team				Screening				ESLD Condition Management															
Inst	CDCR#	Last Name	Care Team	Date of Birth	Ultrasound Date	US Ordered Date	Last US Refused Date	EGD Date	EGD Ordered Date	Last EGD Refused Date	Ascites Dx	Spiro	Furos	Eso Var Dx	β-bkr	SBP Dx	Abx	Enceph Dx	Lact	Rfx	HCC Dx	Snfib	
RJD			Team B Odd		05/20/17			10/26/15															
CIM			Clinic D 91-24		04/11/18			12/01/17							Exp								
CIM			Clinic A 20-39		05/09/17			10/11/16							Exp								
RJD			Team C Even		12/16/17			11/06/17															
RJD			Team D Even		11/12/17			05/09/17							-v								
MCSP			A Yard MD2		01/23/18			05/09/18															
CHCF			Fac C 4A		04/12/18			03/09/18				v	v		v				v	v			
CHCF			Fac C 4A		04/05/18			03/21/17							v								
MCSP			D Yard MD2		03/07/18	07/30/18		06/21/18												v			
RJD			Team D Even		02/03/18			06/14/18							v								
SQ			H Unit		04/30/18			10/28/16															
CIM			Clinic C 68-99		04/11/18			10/19/16							Exp								
PVSP			D Yard																				

Patient Count: 1039

IT SOLUTION BLUEPRINT



CCHCS HEALTHCARE DATA WAREHOUSE



CHANGE MANAGEMENT STRATEGY



- Organizational memorandum from leadership
- Executive forums at all levels of the organization to communicate this change
- Refine existing policy and procedures
 - Define process workflows
 - Override process
- Focus groups – stakeholder and clinical feedback loops, and ongoing data validation
- Decision support
 - Training materials

CALIFORNIA CORRECTIONAL HEALTH CARE SERVICES

MEMORANDUM

Date: December 16, 2014

To: Regional Medical Executives
Regional Nurse Executives

From: Regional Health Care Executives

CALIFORNIA PRISON HEALTH CARE SERVICES

End Stage past 5 year care teams number of

CIRRHOSIS AND END STAGE LIVER DISEASE

ESL diag with Clic

ESL team clin alor

ESL Ser mod rele nur

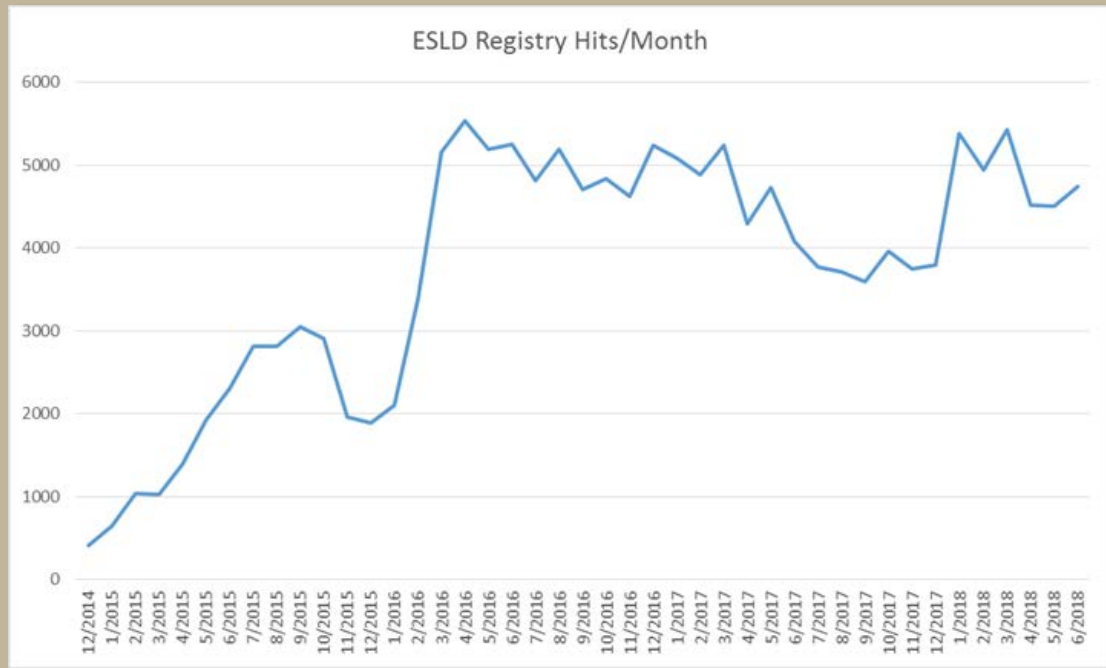
ESLD Registry Hits/Month

Selected Chronic Conditions										
MH LOC	Asthma	DM (A1c)	CVD	HCV	ESLD	HIV (CD4)	War (INR)	SZ	Chronic Pain	Accom
CCCMS	4 : 4		NOS		ESLD				ADJ	
EOP					ESLD					TABE
		6.0	Multi-		ESLD				OPI	
ACUTE			HTN		ESLD				PainDx	Multi
					ESLD				OPI	
CCCMS	2 : 2		Multi-		ESLD	523				DNM
EOP				ESLD	ESLD	442				TABE
CCCMS			HTN		ESLD				OPI	
		6.1			ESLD					Multi



VALUE DERIVED

DASHBOARD & USAGE REPORTS



HEALTHCARE SERVICES DASHBOARD

Statewide
May 2018

Dashboard Scorecard Institution Dashboard Statewide

SCHEDULING & ACCESS TO CARE

	6 Mo. Trend	SW
ACCESS		
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Dental Services		97%
Mental Health Services		91%
APPTS COMPLETED AS SCHEDULED		
Cancelled Due to Custody		1.1%
Seen as Scheduled		90%
EFFECTIVE COMMUNICATION		
Effective Communication Provided		98%
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MEDICATION MANAGEMENT

POPULATION HEALTH MANAGEMENT

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Asthma Care		87%
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Colon Cancer Screening		79%
Women's Care		86%
Diagnostic Monitoring		94%
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Polypharmacy Medication Review		97%

AVAILABILITY OF HEALTH INFORMATION

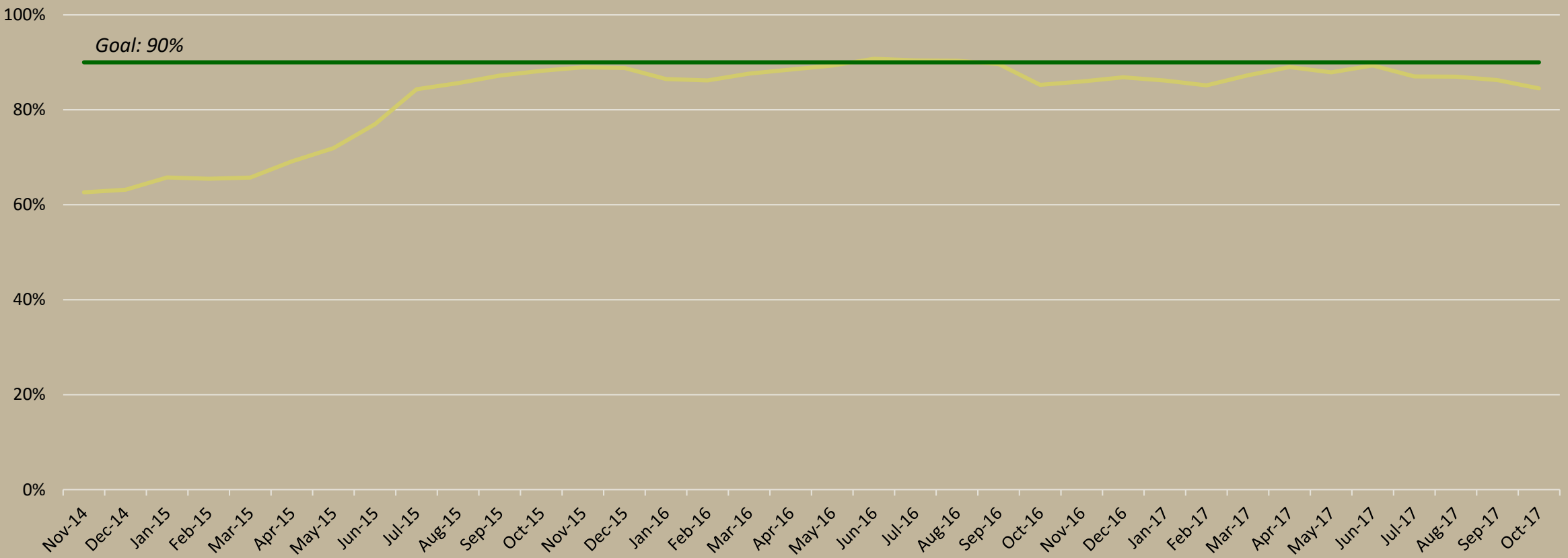
6 Mo. Trend SW

PERFORMANCE

NOV.2014 THROUGH OCT.2017



End Stage Liver Disease Care
Nov 2014 - Oct 2017



PERFORMANCE

NOV.2014 THROUGH OCT.2017



- In Mid 2016, CCHCS met it's statewide goal of 90%.
- However, we began to experience a dip in performance which we attribute to the mass implementation of the EHRS.
- 32 institutions were activated between 8/2016 and 10/31/2017, which aligns with the slip in performance.

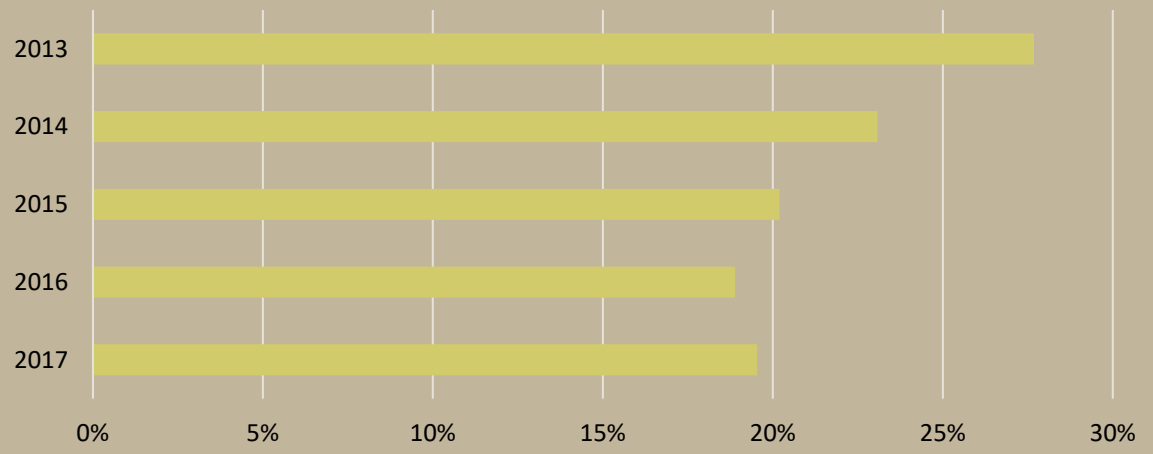
POST IMPLEMENTATION OUTCOME

2013 - 2017



Hospital Admissions and Costs for ESLD Patients 2013 - 2017			
Year	Total Patient Admissions	Unique Patients	Total Cost
2013	112	87	\$1,880,556
2014	104	82	\$1,740,974
2015	104	85	\$2,164,261
2016	180	132	\$3,372,380
2017	174	115	\$3,075,362

30-Day Readmission Rates for ESLD Patients
2013 - 2017



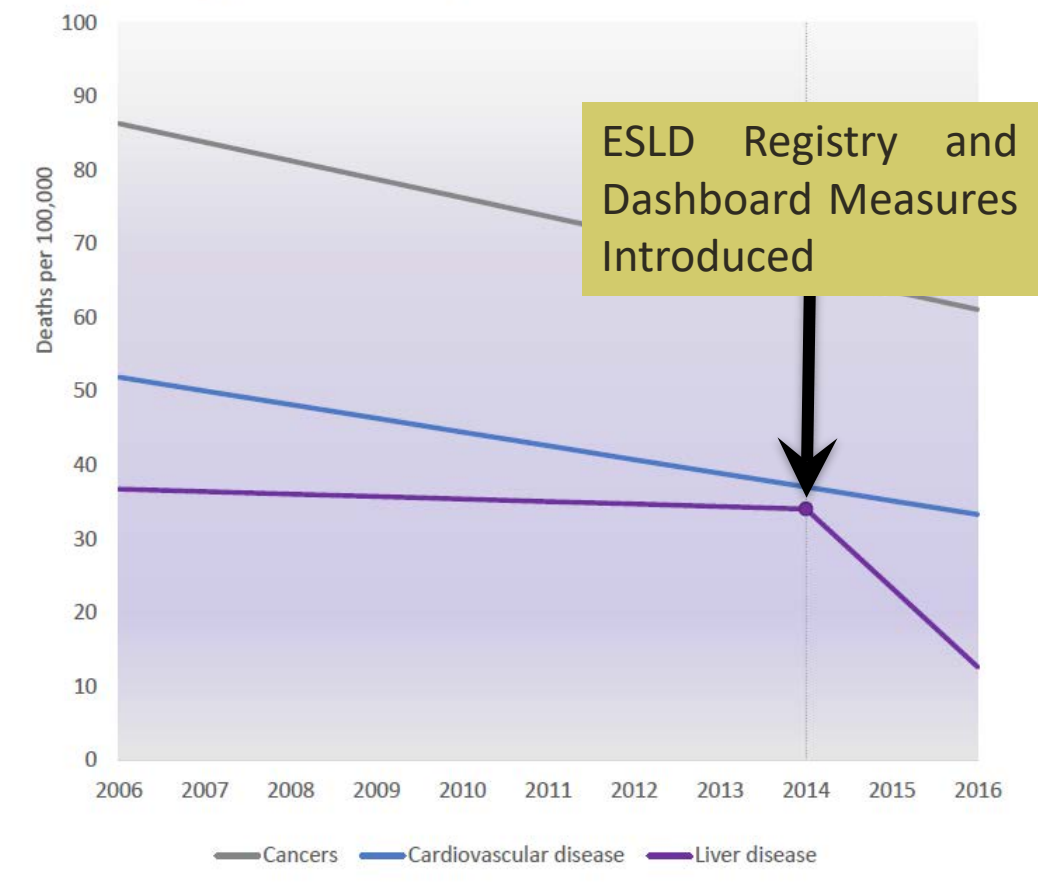
Hospitalizations Increased
Costs Increased

30 Day Readmission Rates Decreased

ROI: DEATHS ASSOCIATED WITH LIVER DISEASE



Figure 2. Modelled rates of mortality of men under the care of CCHCS by cause and by year, 2006–2016, adjusted by age to the CCHCS 2011 population



Age-adjusted mortality from liver-related causes (liver cancer, chronic viral hepatitis, and other chronic liver diseases) has two distinct relationships with time ($P < 0.01$).

From 2006-2014, liver-related mortality neither increased nor decreased ($slope = -0.34$, $p = 0.67$).

From 2014-2016, liver-related mortality decreased to 10.7 deaths per 100,000 men per year ($p = 0.09$).

MORTALITY RATE CLOSELY ALIGNING CALIFORNIA RATE



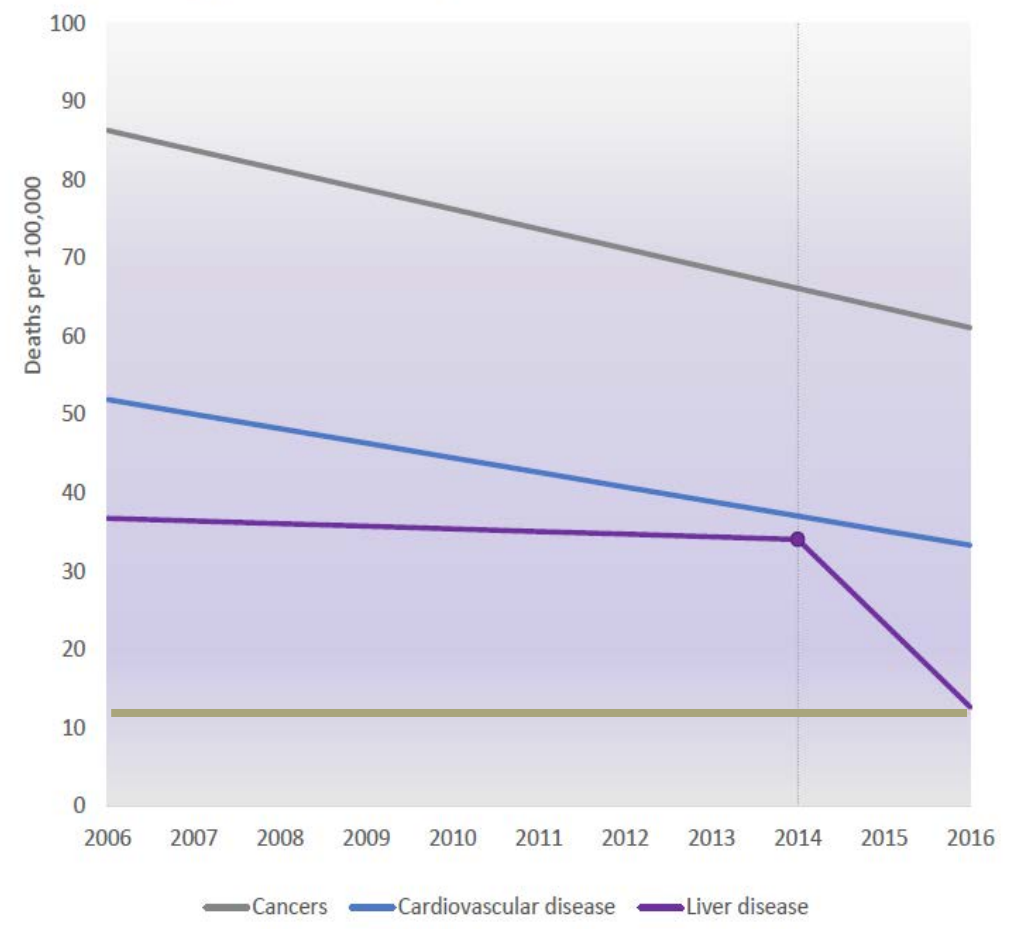
CDC Centers for Disease Control and Prevention
 CDC 24/7: Saving Lives, Protecting People™

National Center for Health Statistics

CA Leading Causes of Death, 2016	Deaths	Rate***	State Rank*	U.S. Rate**
1. Heart Disease	61,573	143.1	40th	165.5
2. Cancer	59,515	139.7	45th	155.8
3. Stroke	15,680	36.9	13th	37.3
4. Alzheimer's Disease	15,570	36.2	31st	30.3
5. Chronic Lower Respiratory Diseases	13,710	32.6	43rd	40.6
6. Accidents	13,213	32.0	50th	47.4
7. Diabetes	9,124	21.4	22nd	21.0
8. Influenza/Pneumonia	5,981	14.0	25th	13.5
9. Chronic Liver Disease/Cirrhosis	5,287	12.2	15th (tie)	10.7
10. Hypertension	5,100	11.8	2nd (tie)	8.6

*** Death rates are age-adjusted.

Figure 2. Modelled rates of mortality of men under the care of CCHCS by cause and by year, 2006–2016, adjusted by age to the CCHCS 2011 population



COST SAVINGS



2

FULL MONTHS
TO CREATE
ESLD REGISTRY

ANALYST:

300 hrs. X \$35/hr. =
\$10,500

CLINICIAN:

300 hrs. X \$110/hr.
= \$33,000

TOTAL COST:
\$43,500

ADMINISTRATIVE COSTS





- Reduced time doing chart review to identify who has Advanced Liver Disease

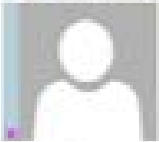
\$100 dollars an hour x 1 hr/pt/per
year x est. 2000 ESLD patient =
\$200,000/YEAR


USER FEEDBACK




QM Staff Inbox allows end-users to alert us to errors in data to be resolved.

 Reply  Reply All  Forward  IM

 Wed 7/25/2018 9:52 AM

To:  CDCR-QHCSaff@CDCR

Cc: |

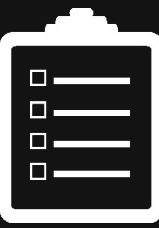
 You forwarded this message on 7/25/2018 4:24 PM.

Patient [redacted] has been added to the ESKD registry due to a lab error showing a platelet count of 35 which raised his Fib 4 score. Repeat CBC showed a platelet count of 285. A fibroscan also confirmed that the patient does not have cirrhosis.

Would you please remove him from the ESKD registry.

Thank You,

PROJECT OUTCOMES



IMPROVE CARE & REDUCE COSTS

- Diagnosed Early
- Evidence-Based Guidelines Followed
- Reduce Preventable Morbidity & Mortality through Improved Continuity of Care

LEVERAGE IT & DATA

- Identify and Track Patients
- Provide Timely, Actionable Information
- Provide Near Real-Time Performance Reports

LESSONS LEARNED



- Population Management Tools are:
 - Value-Added Tools, guiding evidence-based decision making
 - Reduce non-value added administrative/chart review time for clinicians
 - Complimentary to Point of Care Decision Support
- Don't need a full EHR to start building Population Management Tools
- Leverage EXISTING Data, Applications, and Resources
- Need resources allocated for Maintenance & Operations of Tools
 - IT breaks & clinical care recommendations change.
- Need a system for feedback so that “erroneous” data can be flagged