

Oncology Advisory Committee

March 25th, 2021

MEDITECH



Our Mission

The ONCAC mission is to **advance oncology informatics** throughout healthcare organizations and to **enhance safety and efficiency of oncology practices**. The ONCAC committee members will serve as subject matter experts and provide guidance, recommendations, and conceptualization on Oncology Best Practices through the use of MEDITECH software and provide feedback for the future design of the Oncology application.



External Members

- Gary Anderson, MN
- Dr. Trevor Bayliss, MA
- Colleen Beres, VA
- Jill Blankinship, IN
- Lauren Cox, MO
- Robbie Espejo, OH
- Alli Evert, OH
- Stacey Francis, MA
- Joo Hyun Greenwood, OH
- Amanda Gutshall, IA
- Kaiser Luebke, AR
- Wendy McIntyre, IL
- Christine Mitry, ON
- Dana Morrison, MA
- Tami Morsching, MN
- Paula Patton, AR
- Travis Reeves, IN
- Dawn Scott, ON
- Dr. Gautam Sudan, ON
- David Thompson, MA
- Joshua Vestal, KY
- Jodi Wieczorek, MN
- Suzanne Woodbury, MA



Agenda

- The Future is Now
- Survivorship
- Tell us your opinion
 - Pharmacy Integration
- Development Corner
 - Genomics
- Open Forum (time permitting)



The Future is Now: Journey to 2.2

Michael Ricardi, Supervisor

Major Health Partners - Shelbyville, IN

- First went LIVE with Expanse Oncology in July 2019
- Signed on as an early adopter for both Expanse Patient Care and Oncology in Expanse 2.2 - LIVE Date is April 6, 2021
- Significant shift in Oncology workflows
 - Provider Visits: Web Ambulatory
 - Treatment/Infusion: Patient Care
- New Tools Being Introduced for Oncologists
 - TNM Version 8 Staging Forms
 - Customizable Survivorship Care Plans

Major Health Partners (continued)

- Implementation worked with Major to develop and vet new workflows and processes for both practice and infusion visits
- Team provided feedback on the agendas as we finalize our implementation plans for both new sites and existing (2.1 to 2.2)
- Some initial feedback thus far
 - “The new web tools look like a chart; this is very intuitive and will simplify training”
 - “Moving to this model is a no-brainer”
 - Travis Reeves, Director of Oncology, Major Health Partners

Conway Regional - Conway, AR

- Conway successfully deployed the Oncology/Ambulatory integration model in Expanse on 9/1/2020
 - The process of further integration with Expanse Patient Care is set to go LIVE on 9/22/2021
- It was a collaborative effort amongst many disciplines at the organization, which made the effort seamless:
 - Pharmacy
 - Laboratory
 - Ambulatory Departments
 - Information Technology

Conway Regional (continued)

- Feedback from the Staff:
 - “This has greatly improved my workflow, making me more efficient.” - Dr. Rachana Yendala
 - “The new integration provides all information we need at a glance.” - Lindsey Massey, NP



Survivorship

Steve Beninati, Analyst

Survivorship

Health Management: Survivorship Planning and Maintenance

The screenshot displays a clinical software interface for a patient named Ryan, Nicole (35, F, MRN# MR00002961). The interface is organized into several sections:

- Navigation Bar:** Includes icons for Return To, Home, Workload, Chart, Document, Orders, Oncology, Sign, Compose, More, and Close.
- Tabbed Interface:**
 - Diagnostics:** History & Problems, Summary
 - Provider Notes:** Administrative, Activity
 - Nurse/Allied Health:** Other Clinical, Flowsheets
 - Medications:** Health Mgmt
- Health Management Section:**
 - Viewing: Survivorship - Breast, protocol by Overview
 - Buttons: Create Survivorship Plan
- Survivorship - Breast Data:**

	Last Done	Next Due
Imaging		
Mammogram	-	03/22/21
Pelvic Exam	-	03/22/21
Liver Ultrasound	-	03/22/21
Consults		
Diet counseling	-	03/22/21
Depression Screening	-	PRN
Labs		
Complete Blood Count	-	03/22/21
Add Manual Diff	-	PRN
Basophils # (Auto)	-	PRN
Basophils % (Auto)	-	PRN
Corrected White Blood Count	-	PRN
Eosinophils # (Auto)	-	PRN
Eosinophils % (Auto)	-	PRN
Granulocytes # (Auto)	-	PRN
Granulocytes % (Auto)	-	PRN
- General / History Data:**
 - Comment:** -
 - Assessment & Education:**
 - Access to Care:** -
 - Breast Assessment:** -
 - Breast cancer risk questionnaire:**
 - Did any of your first-degree relatives have breast or ovaria: - (Next Due: 03/22/21)
 - Did any of your relatives have bilateral breast cancer?: - (Next Due: 03/22/21)
 - Did any man in your family have breast cancer?: - (Next Due: PRN)
 - Did any woman in your family have breast and ovarian cancer?: - (Next Due: 03/22/21)
 - Any female relative have breast cancer before age 50?: - (Next Due: 03/22/21)
 - Have 2 or more relatives w/ breast and/or ovarian cancer?: - (Next Due: 03/22/21)
 - Have 2 or more relatives w/ breast and/or bowel cancer?: - (Next Due: 03/22/21)
 - Immunizations:**
 - No Schedule:** -
 - DTap:** - (Next Due: No Schedule)
- Right Panel (Patient Summary):**
 - Allergies:** egg yolk (Difficulty Breathing)
 - Problems:** Hypertension (ONSET), Breast cancer in female (Breast cancer associated with mutation in ATM gene), Osteoporosis
 - Medications:**
 - Total: 81 MME/Day
 - Active:
 - acetaminophen-codaine 300-15 mg (1 tab PO Q4-6H 15 days, MME/Day = 13.5)
 - acetaminophen-codaine 300-15 mg (1 tab PO Q4-6H, MME/Day = 13.5)

Survivorship

- ❑ Patient Information
- ❑ Care Team
- ❑ Clinic Information
- ❑ Diagnosis
- ❑ Treatment Plan(s)
- ❑ Follow Up Visits/Procedures
- ❑ Additional Notes

Survivorship Care Plan

General Information:

Patient Information:

Name	Birthdate	Phone Number
Nicole Ryan		401-923-3232

Allergy / Adverse Reaction	Reaction
egg yolk	Difficulty Breathing

Oncology Clinic:
Atlantic Cancer Center

Diagnosis:

Diagnosis:

Breast cancer
Breast cancer associated with mutation in ATM gene
Breast cancer in female

Treatment Summary:

Treatment:

Name	AC followed by Taxol (21 days)
Clinical Indication	Adjuvant Therapy
Treatment Plan Start Date	
Diagnosis	Breast Cancer
Staging	
Status	Active
Last Cycle	

Follow-Up Care:

Follow-Up Visits:

Oncology Follow Up Appointments 6 Months

Test	Frequency
Breast cancer risk questionnaire	
Complete Blood Count	1W
Depression Screening	PRN
Liver Ultrasound	2M
Mammogram	6M
Pap test	3Y
Pelvic Exam	6M

Long Term Effects and Symptoms:

Your follow-up care plan is design to inform you and primary care providers regarding the recommended and required follow-up, cancer screening and routine health maintenance that is needed to maintain optimal health. **Possible late- and long-term effects that someone with this type of cancer and treatment may experience:**

Survivorship

- Survivorship is available for Expanse customers at 2.1.14 and above
- Future MEDITECH initiative: Content Development

▼ [Oncology Treatment Summary](#)

ONC DIAGNOSIS
Breast Cancer

STAGING

CLINICAL INDICATION
HER2 negative: Adjuvant

CYCLE NUMBER
2 of 2 Completed


CYCLE DAY

TREATMENT PLAN
AC (DOXOrubicin/Cyclophosphamide) Q21D (SB)

LAST ADMIN
Jun 18, 2020


NEXT ADMIN

No Active Chemotherapy
[More Active Plan\(s\) Found](#)

SURVIVORSHIP
Oncology Survivorship Care Plan 

▼ [Documents](#) Most Recent

▼ Departmental

Oncology Survivorship Care Plan  Today

Discussion: How are your facilities tracking Survivorship currently?



Pharmacy Integration Poll

Sandy Kerfien, Supervisor



Integration points within an EHR can make or break a solution in the eye of customers.

MEDITECH is always looking for ways to improve our end-user experience.

Your input is invaluable!



Development Corner

Nate Mettill, Manager, Oncology Development

Oncology Development Roadmap

Complete

- Patient Care Home Screen (Infusions)
- UI refresh for Chemotherapy Ordering and Management
- Launch from Exp Pt Care to Pharmacy
- Editable status event on Home screen
- Chart Viewer
- Departure (and Pt Calendar)

In Process

- Inpatient Chemo Administration improvements
- AMB Registry Integration
- 21st Century Cures interoperability advancements
- ONC Review Notifications
- Pharmacy / Oncology integration improvements

Upcoming

- Staging integration with PTH
- Expanse Patient Care Development involvement
- PoC w/ ONC
- Survivorship Improvements
- Genomics Integration and Decision Support (Genomics)

Determining

- Oral Chemo improvements
- Tx Plan Dict maintenance improvements
- More Flexibility to Transition Orders
- Regimen Ordering
- QOPI measures
- mCODE

Genomics

Jennifer Ford, Product Manager

MEDITECH



CURRENT STATE

GENOMICS INDUSTRY

No Discrete Data- Genetic results are stored in PDFs and linked to the patient's chart

Minimal Industry Standardization and integration with Other Vendors

LIS applications not equipped for genomics data

Rapidly changing science leads to quickly outdated clinical decision support and significant rule build and upkeep

GENOMIC GOALS UNDER DEVELOPMENT

New Genetics Application - LIS application to assist with specialized workflow including consuming and storing genetic data discretely

Standard Interfaces: To manage sending orders and receiving results of complicated genetics data and PDF reports

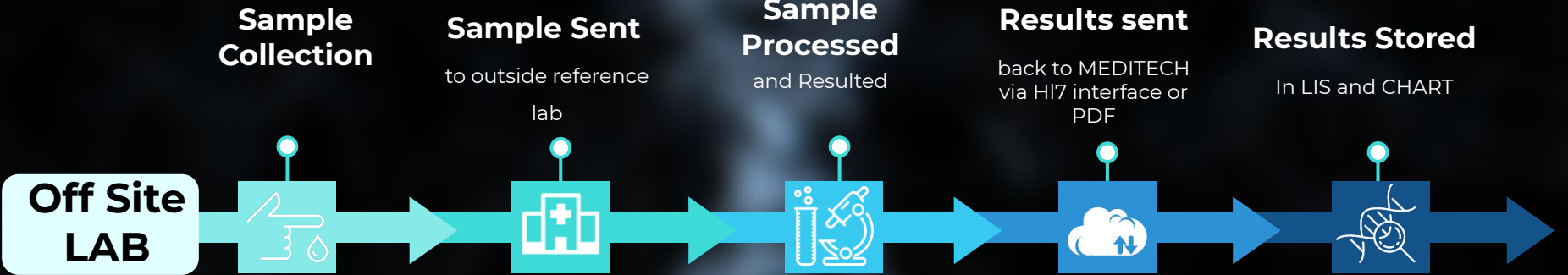
Identify Genetic Markers- Storing selective genetic markers as part of patient record with enhanced display in the Chart

Clinical Decision Support- Using data for clinical decision pharmacogenomics support at the point of ordering

MEDITECH's Genomics Solution



Genomics Workflow



Genetic Variables by Testing Type

	Germline Testing	Microbe Testing	Tumor/Somatic Testing	Recurrent/Somatic Testing
Use Case Example	<ul style="list-style-type: none">• Pharmacogenomics• Diagnostic Testing• Carrier• Prenatal/Newborn• Paternity• Clinical Trials• Forensic	<ul style="list-style-type: none">• Positive culture run panel to identify strain of MRSA • Kits for viral testing (flu kits, strep kits)	<ul style="list-style-type: none">• Tumor sample is sent for genetic testing to determine precise cancer diagnosis• Genetic testing on tumor utilized to determine best treatment option	<ul style="list-style-type: none">• CML Monitoring for response to drugs • Tracking and charting the changes of genetics through treatment
Individuals Affected	<ul style="list-style-type: none">• Molecular Tech• Geneticist• ED Physician• OB/GYN• General Physician/Pediatrician• Behavioral Health	<ul style="list-style-type: none">• LAB/MIC Tech• General Practitioner• ED Physician	<ul style="list-style-type: none">• Molecular Tech• Pathologist• Oncologist	<ul style="list-style-type: none">• Molecular Tech• Oncologist

Genomics Features

- Ordering (Order Management, Web Acute, Web Ambulatory, Oncology)
- Collection
- Resulting
- Chart View
- Interoperability Interfaces and routines
- Pharmacogenomic decision support

Order Entry

Return To Home Chart Document Orders Discharge Sign Workload 5 Menu More Close

Orders SUBMIT 0

CURRENT **ENTER** RECONCILE TRANSFER

Add New Process Orders

Favorites Orders Sets acut Filter: All

- Acute Myeloid Leukemia [GEN]
- Acute Myeloid Leukemia Genetic Analysis [GEN]
- Acute Myeloid Leukemia Genetic Analysis * [GEN]
- COG, Acute Myeloid Leukemia (AML), FISH [GEN]
- DD.LAB ACUTE [D Dimer]
- DDQ.LAB ACUTE [D Dimer Qualitative]
- DISCHARGE alias - ACUTE [Discharge Order]
- ECG Monitoring: Acute Stroke
- Hepatitis Acute Panel [REF]
- KT TEST SET ACUTE
- LIPID.LAB (ACUTE) [Lipid Panel] [CHEM]

Beckett, Brad I
41, M · 12/09/1978
MRN# MR00102393

ADM IN, 9N 901 -1

5ft 11in BSA: 1.97m²
170lb BMI: 23.7kg/m²

Acc# MG0000042131

Search Chart

Allergies

peanut rash

Vitals - Initial & Most Recent

No Data to Display

Current

Genetics



Genetics Features

Genetics

- Cancel GEN Specimen
- Edit GEN Specimen
- Link Specimens
(Pathology)
- GEN Result Entry
- GEN Analyzer Desktop

LIS

- Enter/Edit Requisition
- Standard Specimen Labels
- Receive Routines
- Unreceive
- Edit Collection Date
- Cancel Requisition
- Uncancel Requisition/Specimen
- Site Batching
- Requeue Specimens for EMR by Date
- Requeue Specimens for EMR by Number

Result Entry



Return To

LAB.STD - Genetics Result Entry (DEVN.US)



More



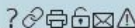
Close

Sabatini, Kaitlyn 03/04/20 13:11 - 06/07/20 00:00 MG0000033593 MR00098688
 34 F 01/06/1986 FREE TEXT PRONOU... Dx/Rfx: IPR
 DIS IN SUR.MTGH 3006-1 Johnson, Andrew

Specimen

		Findings		Flags
Result Summary		See Gene Panel		
- Gene Panel				
- ABCB1				
	Genotype	Phenotype	ALTERATION	Flags
1	rs7997012 G/G	Homozygous for G allele (rs799...		
2	-1438G>A G/G	Homozygous for the G allele (1...		
3	102C>T C/C	Homozygous for the C allele (1...		
ABBREV FIELD				
Alleles Tested		-1438G>A, 102C>T, rs7997012		
Interpretation				
- ABCG2				
Genotype		421C>A C/C		
Phenotype		Normal Function		
Alleles Tested		421C>A		
- ADRA2A				
Genotype		C-1291G C/G		
Phenotype		Heterozygous for the G Allele		
Alleles Tested		C-1291G		
- ALDH2				
Genotype		1369G>A G/G		
Phenotype		Normal function		
Alleles Tested		1369G>A		
- ANKK1				
Genotype		DRD2:Taq1A G/G		
Phenotype		Unaltered DRD2 function		
Alleles Tested		DRD2:Tao1A		

EMR Cancel Save



Result Entry



Return To

LAB.STD - Genetics Result Entry (DEVN.US)



More



Close

Sabatini, Kaitlyn 03/04/20 13:11 - 06/07/20 00:00 MG0000033593 MR00098688
34 F 01/06/1986 FREE TEXT PRONOU... Dx/Rfx: IPR
DIS IN SUR.MTGH 3006-1 Johnson, Andrew

Specimen

	Findings	Flags
Result Summary	See Gene Panel	
+ Gene Panel		
Method	Genomic DNA is extracted and amplified by both whole genome	
Reference Lab Report	PGX Panel_pdf report (1).pdf	

EMR Cancel Save



Result Entry



COMMENTS: TEST PATIENT, EXAMPLE ACCESSION

PHARMACOGENOMICS PANEL

This assay includes testing of the following genes/loci: 12q15 (rs7297610), ABCB1, ABCG2, ADRA2A, ALDH2, ANKK1, BDNF, C11orf65, CEP72, COMT, CYP1A2, CYP2B6, CYP2C8, CYP2C9, CYP2C19, CYP2D6, CYP3A4, CYP3A5, CYP4F2, DBH, DPYD, DRD2, F5, G6PD, GRIK1, GRIK4, GRIN2B, HLA-A*31:01, HLA-B*15:02, HLA-B*57:01, HLA-B*58:01, HTR2A, HTR2C, IFNL3, MTHFR, NUDT15, OPRM1, SLC6A4, SLC47A2, SLC01B1, TPMT, UGT1A1, UGT2B15, and VKORC1. This report summarizes generally applicable genomic information. It is not a substitute for physician advice or clinical judgment and does not take into account all possible variables that may have an effect on various drug responses. No clinical decisions should be made based solely on the information contained in this report.

Test Results

Gene	Genotype	Phenotype	Alleles Tested
12q15	rs7297610 C/C	Homozygous for the C allele (rs7297610)	rs7297610
ABCB1	3435C>T T/T	Homozygous Mutant - Variant Allele Present	3435C>T
ABCG2	421C>A C/C	Normal Function	421C>A
ADRA2A	C-1291G C/G	Heterozygous for the G Allele	C-1291G
ALDH2	1369G>A G/G	Normal function	1369G>A
ANKK1	DRD2:Taq1A G/G	Unaltered DRD2 function	DRD2:Taq1A
BDNF	434C>T C/C	Homozygous for rs6265 C allele	434C>T
C11orf65	rs11212617 C/A	Heterozygous for the A allele (rs11212617)	rs11212617
CEP72	rs924607 C/T	Altered CEP72 expression	rs924607
COMT	Val158Met A/G	Intermediate COMT Activity	Val158Met
CYP1A2	*1F/*1F	Normal Metabolizer - Higher Inducibility	*10, *1C, *1D, *1F, *1K, *1L, *1V, *1W, *13, *14, *17, *19, *3, *9, *15, *16, *20, *21
CYP2B6	*1/*1	Normal Metabolizer	*4, *6, *9, *11, *16, *18
CYP2C8	*1A/*4	Intermediate Metabolizer	*2, *3, *4
CYP2C9	*1/*1	Normal Metabolizer	*2, *3, *4, *5, *6, *9, *10, *11, *12, *13, *15, *18, *27, *31
CYP2C19	*1/*1	Normal Metabolizer	*2, *3, *4, *4B, *5, *6, *7, *8, *9, *10, *11, *17, *19, *22, *24, *25, *26, *35
CYP2D6	*1/*1	Normal Metabolizer	*2, *3, *4, *4M, *6, *7, *8, *9, *10, *11, *12, *14A, *14B, *15, *17, *18, *19, *20, *21, *22, *29, *31, *33, *35, *38, *41, *42, *43, *44, *45, *46, *47, *49, *51, *54, *56A, *56B, *62, *72, *100, *101, *5 (gene deletion), XN (gene duplication)
CYP3A4	*1/*1	Normal Metabolizer	*2, *3, *12, *17, *22
CYP3A5	*3/*3	Poor Metabolizer	*3, *3C, *6, *7
CYP4F2	1347G>A A/G	Reduced Activity	1347G>A
DBH	-1021C>T C/C	Normal Dopamine Beta-Hydroxylase Activity	-1021C>T
DPYD	Activity Score: 2	Normal Metabolizer	557A>G, 1601C>T, 1627T>C, 85T>C, 703C>T, 2657G>A, 2983G>T, 496A>G, 1905+1G>A, 1679T>G, 1236G>A, 2846A>T, 1897delG, 1003C>A, 302delTinsTCAT, c.61C>T, c.1129-5923C>G, c.1156G>T, c.62G>A
DRD2	-241A>G A/A	Homozygous for rs1799978 A allele	-241A>G
F5	rs6025 CC	Normal Thrombosis Risk	rs6025



Analyzer Desktop



Return To

LAB.STD - GEN Analyzer Batch Desktop (DEVN.US)



More



Close

Interface: .XI QUEST - STOPPED
Convert: STOPPED

Cur Batch: 08/03/20 1
Site: QUEST

Results from site QUEST 07/17/20 Batch #1

07/17/20

Results from Analyzer

✓	Trans	Seq	Pri	Identifier ▲	Flags	Status	Specimen	Patient Name/QC Description
	10	177	R	20:QS449		Filed	20:QS0000449R	MG0000018839 Rinald,Molly
	8	175	R	20:QS449		Filed	20:QS0000449R	MG0000018839 Rinald,Molly
	9	176	R	20:QS449		Matched	20:QS0000449R	MG0000018839 Rinald,Molly
	1	168	R	20:QSS12		Filed	20:QS0000512R	MG0000036240 SABATINI,BARRY
	2	169	R	20:QSS13		Filed	20:QS0000513R	MG0000036251 SABATINI,FRED
	3	170	R	20:QSS14	E	Filed*	20:QS0000514R	MG0000036251 SABATINI,FRED
	4	171	R	20:QSS15	E	Filed*	20:QS0000515R	MG0000034920 Sabatini,Kaitlyn

Specimen	Order	Patient	Message #
20:QS0000515R	PGXPanel	Sabatini,Kaitlyn	
Result Component	Findings	Date - Time	Review
METHOD	<click to view text>	07/17/20 - 0935	Y
RESSUM	POSITIVE: PATHOGENIC VARIANT IDE...	07/17/20 - 0935	Y
Gene Panel	Panel Type	Genes/ROIs	Date - Time
GENEPANEL	Germline	<click to view>	07/17/20 - 0935
Validation Errors	Review Reason	Validation Error	
GENEPANEL		At least one validation error for GENEPANEL.	
Gene Panel	Gene/ROI	Validation Error	
GENEPANEL	CEP72	Discrete result for gene component .PHENOTYPE is too long.	
GENEPANEL	F5	Discrete result for gene component .PHENOTYPE is blank.	
UQ	Identifier	Queued for Conversions	Error
4	20:QSS15		

	5	172	R	20:QSS16	E	Filed*	20:QS0000516R	MG0000036239 SABATINI,ABBY
	6	173	R	20:QSS17		Filed	20:QS0000517R	MG0000036243 SABATINI,CARRIE
	7	174	R	20:QSS18		Filed	20:QS0000518R	MG0000036243 SABATINI,CARRIE

- Single
- List
- Process
- Refresh
- Status
- Close
- Edit
- Reports
- Mark
- Transmissions
- Options
- EMR <F11>

File Complete



Analyzer Desktop



Return To

LAB.STD - GEN Analyzer Batch Desktop (DEVN.US)



More



Close

Interface: .XI QUEST - STOPPED

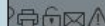
Cur Batch: 08/21/20 1

LAB.STD - Gene Panel

Specimen	Order	Patient	Message #
20:QS0000515R	PGXPanel	Sabatini,Kaitlyn	
Gene Panel	Panel Type	Date - Time	Filed
GENEPANEL	Germline	07/17/20 - 0935	Y*
Validation Errors			
Gene/ROI	Gene Component	Validation Error	
CEP72	.PHENOTYPE	Discrete result for gene component .PHENOTYPE is too long.	
F5	.PHENOTYPE	Discrete result for gene component .PHENOTYPE is blank.	
Gene/ROI Component Findings			
Gene/ROI: ABCB1	Findings		Filed
.GENOTYPE	3435C>T T/T		Y
.PHENOTYPE	Homozygous Mutant - Variant Allele Present		Y
ALLELES	<click to view text>		Y
Gene/ROI: ABCG2	Findings		Filed
.GENOTYPE	421C>A C/C		Y
.PHENOTYPE	Normal Function		Y
Gene/ROI: ADRA2A	Findings		Filed
.GENOTYPE	C-1291G C/G		Y
Gene/ROI: ALDH2	Findings		Filed
.GENOTYPE	1369G>A G/G		Y
.PHENOTYPE	Normal Function		Y
Gene/ROI: CEP72	Findings		Filed
.GENOTYPE	rs924607 C/T		Y
.PHENOTYPE	This is a long result that will cause a validation error for the d...		N
Gene/ROI: COMT	Findings		Filed
.ACTSCORE	2		Y
.GENOTYPE	*1/*2		Y
.PHENOTYPE	Intermediate COMT Activity		Y
Gene/ROI: F5	Findings		Filed
.GENOTYPE	rs6025 CC		Y

Cancel

OK



Link Specimen



Return To

LAB.STD - Link Specimens (DEVN.US)



More



Close

Creamer, Jill

11/06/19 08:06 -

MG0000027255

MR00095761

44 F 02/17/1975

Dx/Rfx:

IPR

REG REF LAB.MTGH

DR ALEXANDER

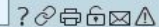
Specimen 20:GX0000476R

Order MMRIHC

Link To Specimen	Orders	Status
S20-712	Gross Micro L2	SOUT

Cancel

Save



Chart



Genomics Chart

The screenshot shows a clinical interface with a top navigation bar containing icons for Return To, Home, Chart, Document, Orders, Discharge, Sign, Workload, Menu, More, and Close. Below this is a grid of tabs for Diagnostics, Provider Notes, Nurse/Allied Health, Medications, History & Problems, Administrative, Other Clinical, Summary, Activity, Flowsheets, and Health Mgmt. The main content area is titled 'Diagnostics' and includes a filter for 'All Activity'. A 'Laboratory' tab is selected, showing 'Genetic Orders' with columns for ORDER, RESULT, REPORT, DATE, and LINKED SPECIMEN. Two rows are highlighted with orange boxes: 'Solid Tumor Gene Panel' with result 'Genomic alterations identified' and 'BRACAnalysis' with result 'Negative'. A 'PTH Surgical Specimen' is also highlighted with a blue box. On the right, a patient profile for 'McDonald, Mallory' is visible, including height, weight, BSA, BMI, and account number. A 'Current' section shows a problem: 'HER2-negative carcinoma of breast' with status 'Acute'. A 'Patient's Genetic History' section is partially visible at the bottom.

Reference Lab Results

ORDER	RESULT	REPORT	DATE	LINKED SPECIMEN
Solid Tumor Gene Panel	Genomic alterations identified	✓	20	PTH Surgical Specimen
BRACAnalysis	Negative	✓	20	

In-house Lab Results

PROBLEM	STATUS	ONSET
HER2-negative carcinoma of breast	Acute	1/2020

Genetic Findings

GENE/ROI	GENETIC FINDINGS	REPORT	DATE
PIK3CA	E545K	✓	10/22/2020

Clinical Decision Support



What is Pharmacogenomics?

The background of the slide features a blurred orange pill bottle and several white pills scattered on a light surface. The pills are in sharp focus in the foreground, while the bottle is out of focus in the background.

The study of how genes affect a person's response to drugs.

Why Pharmacogenomics?



In General, less than 50 percent of prescribed drugs actually help the patient they are prescribed for.

Pieter Cullis, *The Personalized Medicine Revolution: How Diagnosing and Treating Disease Are About to Change Forever*

<u>Drug</u>	Therapeutic Area*	Biomarker†
Abacavir	Infectious Diseases	HLA-B
Abemaciclib (1)	Oncology	ESR (Hormone Receptor)
Abemaciclib (2)	Oncology	ERBB2 (HER2)
Ado-Trastuzumab Emtansine	Oncology	ERBB2 (HER2)
Afatinib	Oncology	EGFR
Alectinib	Oncology	ALK
Amifampridine	Neurology	NAT2
Amitriptyline	Psychiatry	CYP2D6
Amoxapine	Psychiatry	CYP2D6
Amphetamine	Psychiatry	CYP2D6
Anastrozole	Oncology	ESR, PGR (Hormone Receptor)

Table of Pharmacogenomic Biomarkers in Drug Labeling
US Food and Drug Administration, 2019

Pharmacogenomics Use Case

1

A Physician determines a patient is a candidate for cardiac stent

2

The Physician determined they must place an order for Clopidogrel (Plavix)

3

The patient's history holds the information:
CYP2C19:
Genotype:*2/*2
Phenotype: Intermediate
Metabolizer
(Mutation Identified)

4

The patient has been identified as an intermediate metabolizer of Clopidogrel (Plavix)

Physician chooses to treat with a different drug instead:
Prasugrel 60 mg orally once as loading dose

CURRENT PGX CHALLENGES

Rapidly changing science leads to quickly outdated clinical decision support and significant rule build and upkeep

Physicians do not have time to commit to learning the constant stream of new information

Not built into current physician workflows

Genetic results stored in PDFs linked to chart with no discrete data

PGX Workflow



Physician places order



Check LIS/Chart

Result Exists



Provide Clinical Decision Guidance

Result Does Not Exist



Provide Additional Ordering Guidance

Order Entry PGX

The screenshot shows a web-based medical order entry system. At the top, there is a navigation bar with icons for 'Return To', 'Home', 'Chart', 'Document', 'Orders', 'Discharge', 'Sign', 'Workload', 'Menu', and 'Suspend'. Below this is a header area with 'Orders' and a 'SUBMIT' button. A modal window is open, displaying details for 'clopidogrel 75 mg tablet'. On the left side of the modal, there is a sidebar menu with options: 'Return to Search', 'Conflicts', 'Brand Names', 'Alternatives', 'Monographs', and 'Reference'. The 'Conflicts' option is selected. The main content of the modal shows a 'Pharmacogenomic Alert: CYP2C19 intermediate metabolizer' with an 'Override' button. Below this, there is a 'Genomic Finding' section with the text 'CYP2C19 Intermediate metabolizer' and an 'Alert Text' section with the text 'Prescribe alternative antiplatelet therapy in ACS-PCI patients. The patient's genomic finding CYP2C19 intermediate metabolizer is associated with risk for poor therapeutic effect for clopidogrel.' There is also a 'More Information' section and an 'Interaction with: fluconazole 50 mg tablet' section, both with 'Override' buttons. At the bottom right of the modal, the status 'STATUS] Order Ordered' is visible.

Orders - MEDITECH

Return To Home Chart Document Orders Discharge Sign Workload Menu Suspend

Orders SUBMIT

clopidogrel 75 mg tablet Exit

Return to Search

Conflicts

Brand Names

Alternatives

Monographs

Reference

Pharmacogenomic Alert: CYP2C19 intermediate metabolizer *Override

Genomic Finding: CYP2C19 Intermediate metabolizer

Alert Text: Prescribe alternative antiplatelet therapy in ACS-PCI patients. The patient's genomic finding CYP2C19 intermediate metabolizer is associated with risk for poor therapeutic effect for clopidogrel.

More Information:

Interaction with: fluconazole 50 mg tablet *Override

STATUS] Order Ordered

PHARMACOGENOMICS BENEFITS

Up to date clinical decision support

Minimal hospital upkeep

Assistance for all physicians with shorter learning curve

Works with any testing program

Up Next

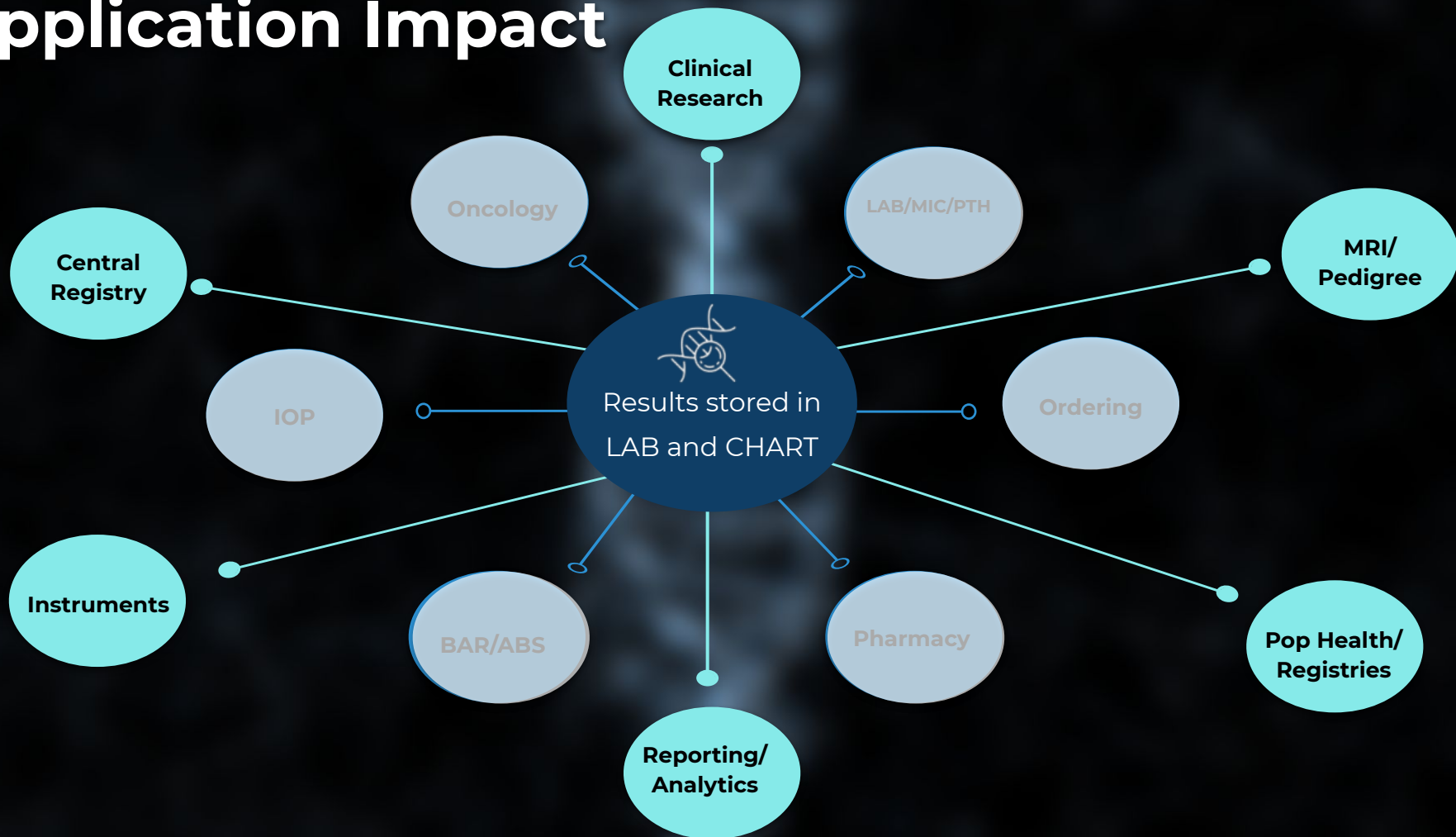


Genomics Next 12-18 Months

(Subject to change based on development timeline needs)

- BCA
 - Genetic/LIS Management/Statistics
- Pathology Integration
 - Ability to manage ordering and results
 - Enhanced linking of Genetic specimens from Findings Entry
 - Enhanced Integration
- Oncology
 - Clinical Decision support and weaving of genetic data through the Oncologist workflow
- Ambulatory
 - Result entry completion, review of interfaces
- Familial Tracking
- Review of Enhanced FHIR interfaces and Integration opportunities

Application Impact



Development Corner: Upcoming Research

- Genomics
 - Designer: Pati Hibbard - phibbard@meditech.com
 - Product Manager: Jennifer Ford - jjford@meditech.com
- Oncology Pharmacist workflows
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Questions?

Next ONCAC meeting
July 2021



Oncology Resources

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Thank You!

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