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)

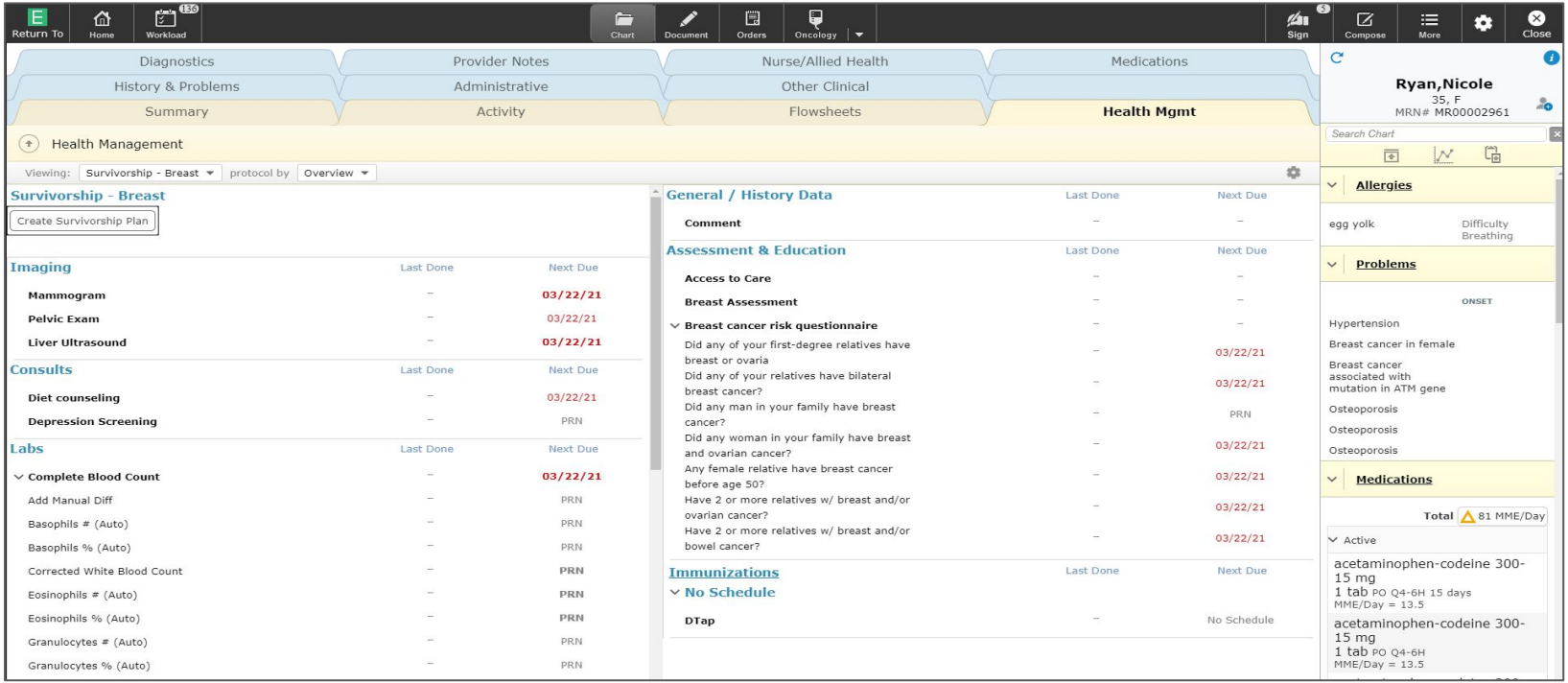
- Feedback from the Staff:
  - “This has greatly improved my workflow, making me more efficient.” - Dr. Rachana Yendala
  - “The new integration provides all information we need at a glance.” - Lindsey Massey, NP

Survivorship

Steve Beninati, Analyst

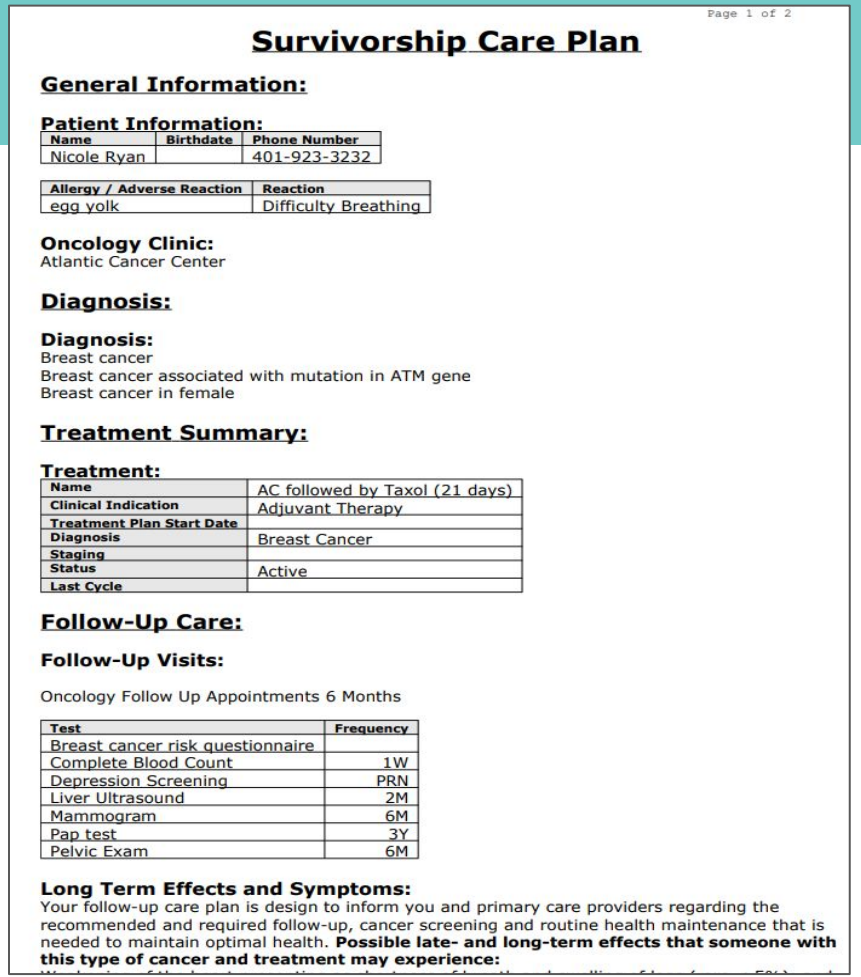
Survivorship

Health Management: Survivorship Planning and Maintenance



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:

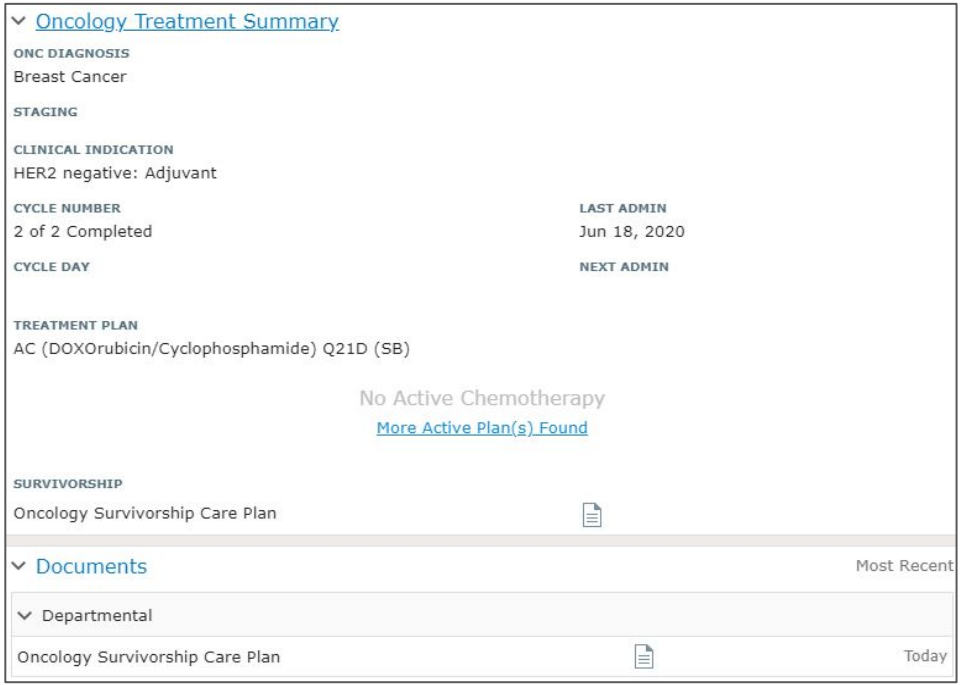
Oncology Follow Up Appointments 6 Months

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



Discussion: How are your facilities tracking Survivorship currently?

Pharmacy Integration Poll

Sandy Kerfien, Supervisor

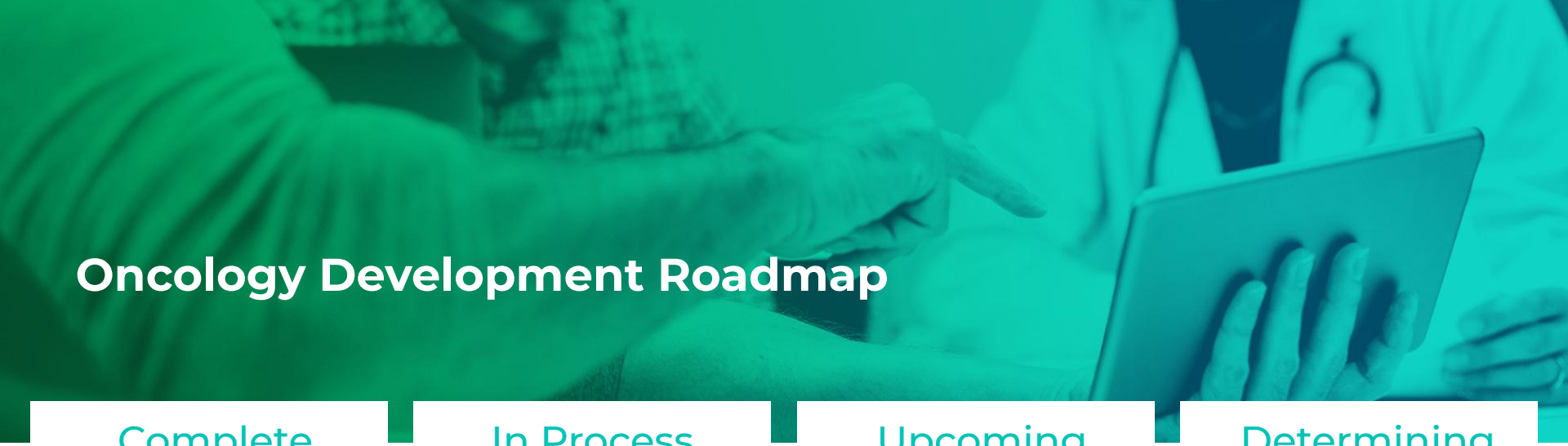
Integration points within an EHR can make or break a solution in the eye of customers.

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

Your input is invaluable!

Development Corner

Nate Mettille, 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

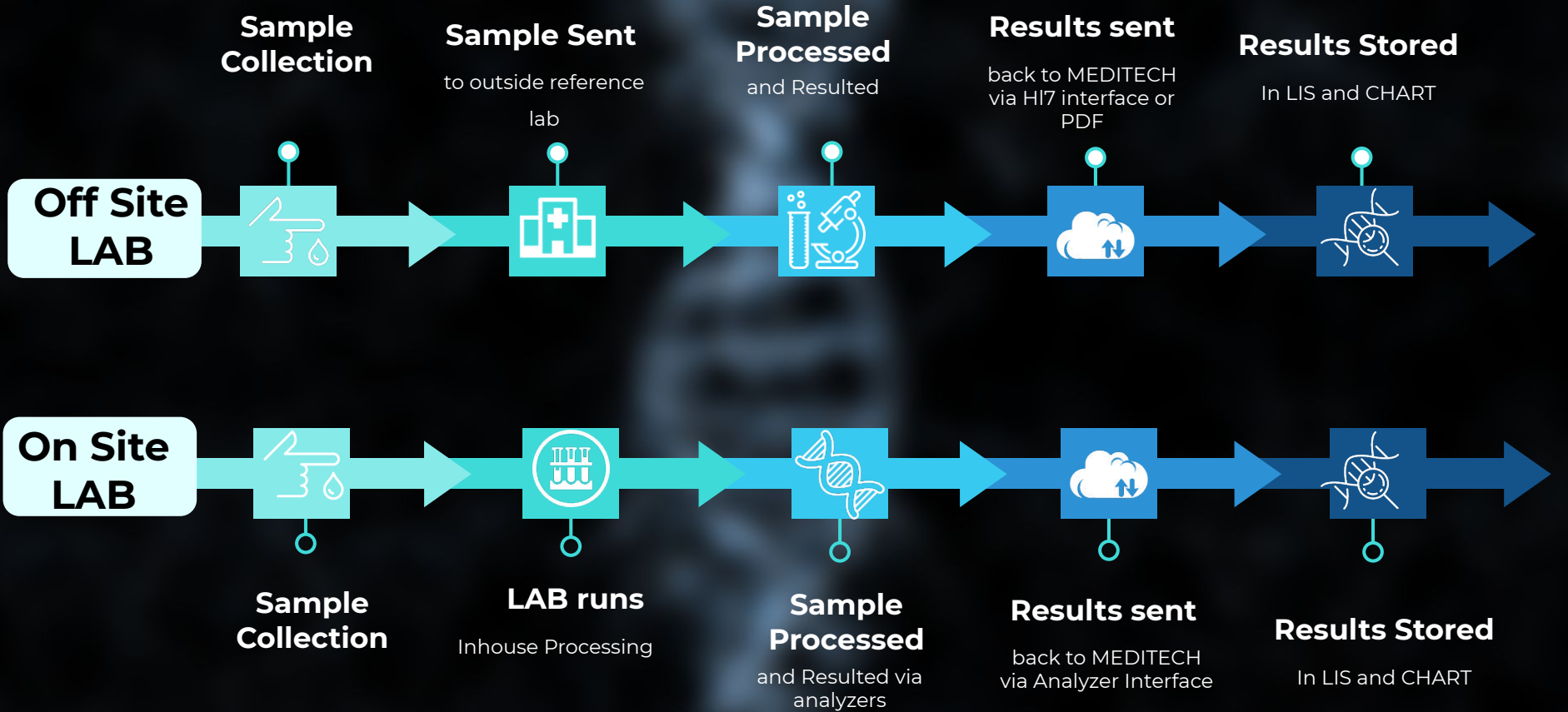
Standard Interfaces: To manage sending orders and receiving results of complicated genetics data and PDF reports

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



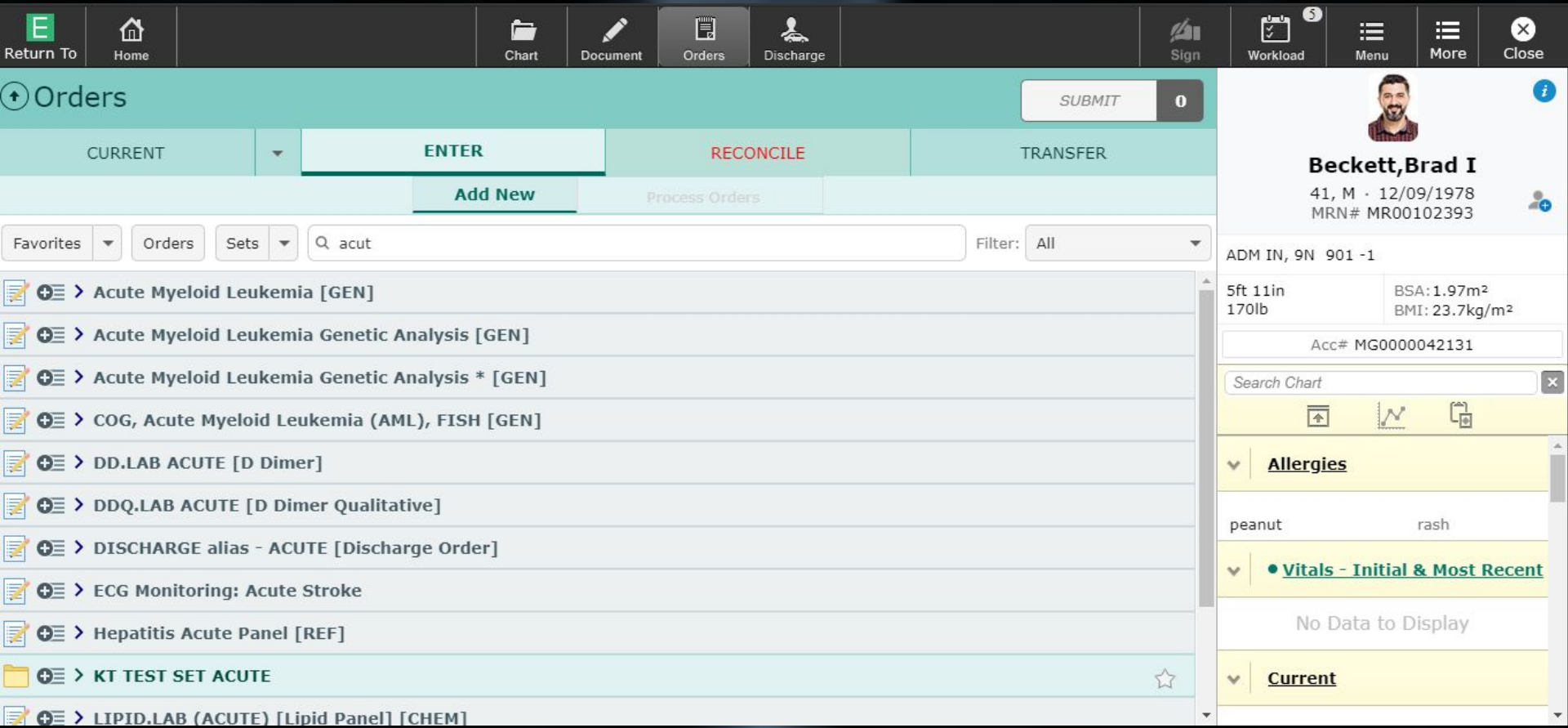
Genetic Variables by Testing Type

	Germline Testing	Microbe Testing	Tumor/Somatic Testing	Recurrent/Somatic Testing
Use Case Example	• Pharmacogenomics • Diagnostic Testing • Carrier • Prenatal/Newborn • Paternity • Clinical Trials • Forensic	• Positive culture run panel to identify strain of MRSA • Kits for viral testing (flu kits, strep kits)	• Tumor sample is sent for genetic testing to determine precise cancer diagnosis • Genetic testing on tumor utilized to determine best treatment option	• CML Monitoring for response to drugs • Tracking and charting the changes of genetics through treatment
Individuals Affected	• Molecular Tech • Geneticist • ED Physician • OB/GYN • General Physician/Pediatrician • Behavioral Health	• LAB/MIC Tech • General Practitioner • ED Physician	• Molecular Tech • Pathologist • Oncologist	• 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
170lb
BSA:1.97m²
BMI:23.7kg/m²
Acc# MG0000042131
Search Chart
Allergies
peanut
rash
Vitals - Initial & Most Recent
No Data to Display
Current

Genetics

Genetics Features

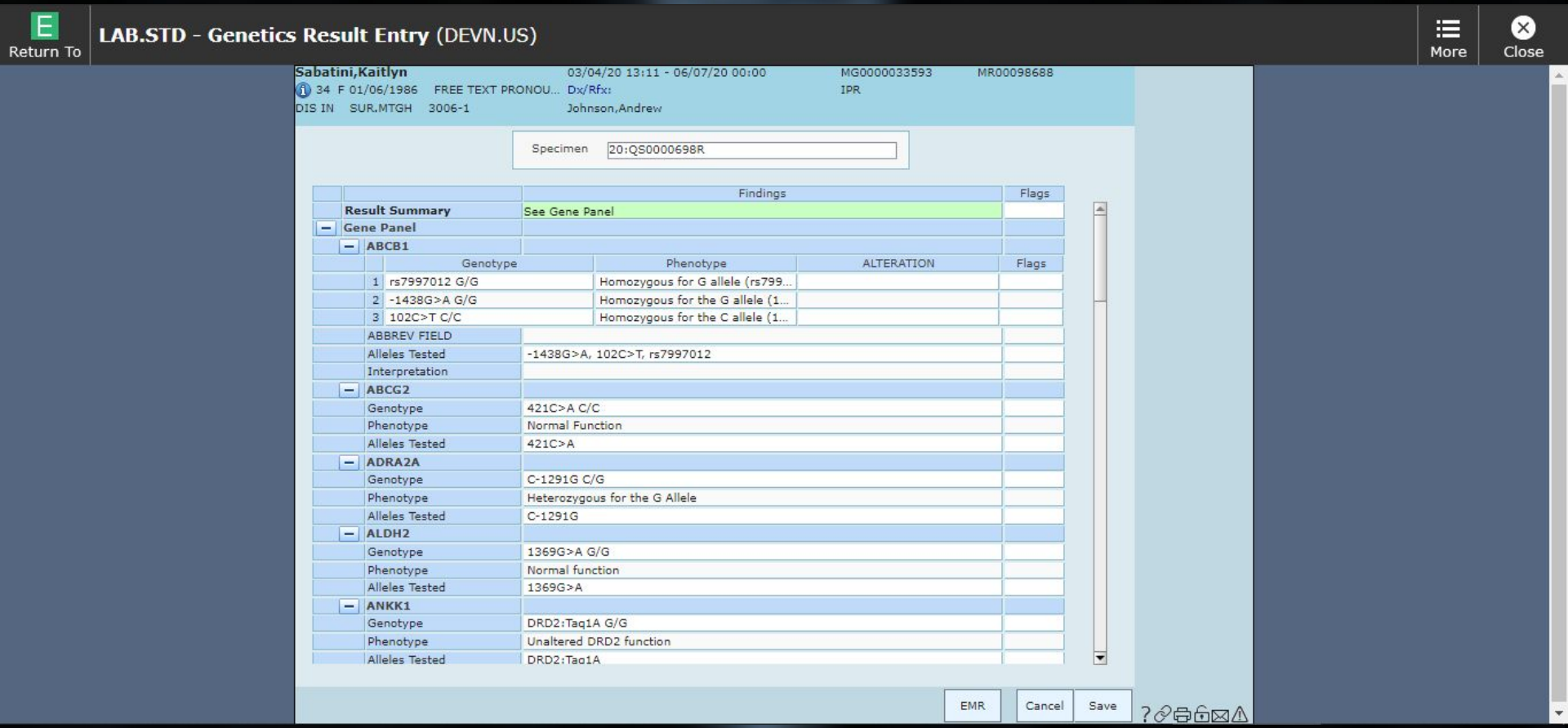
Genetics

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

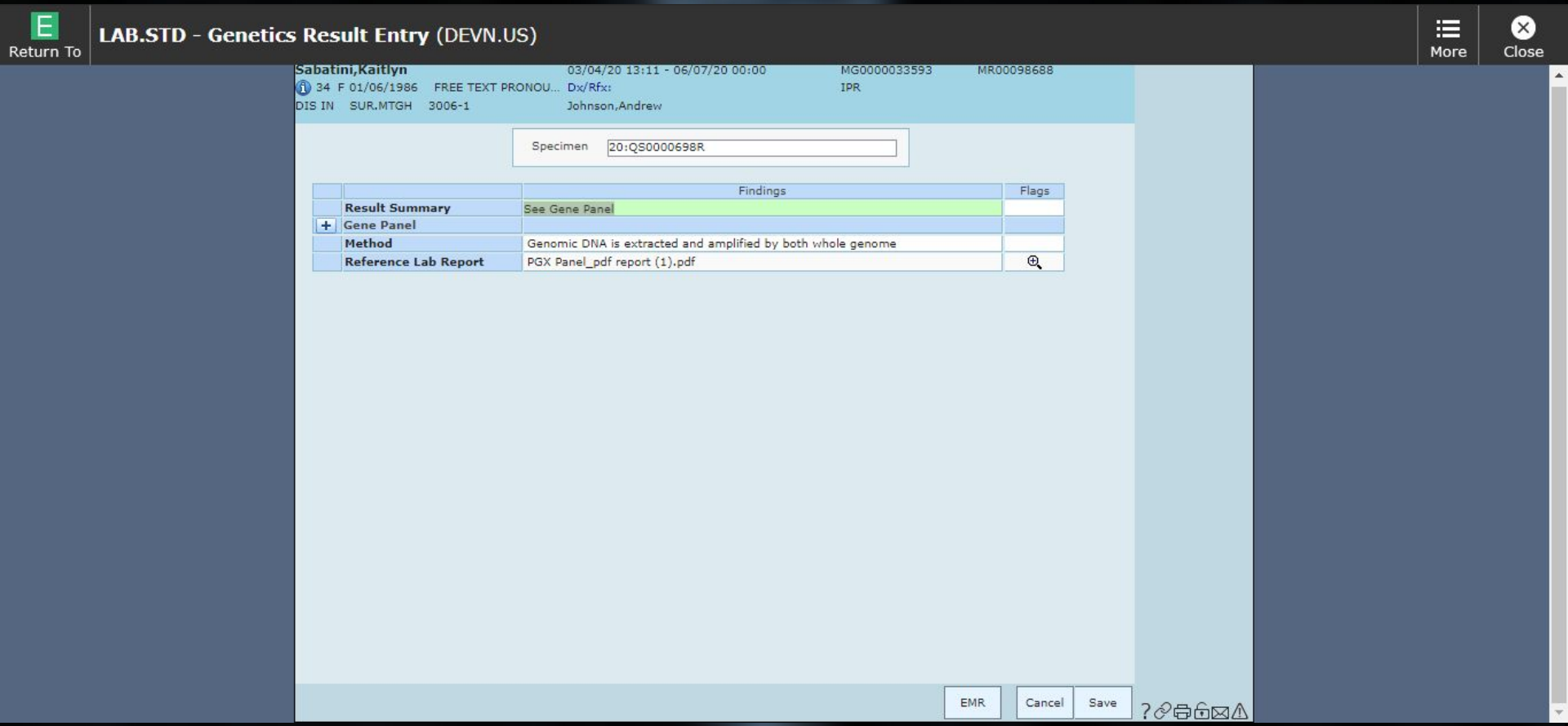
LIS

- 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



Result Entry



Result Entry

devmtx-web01.meditech.com/us/s0000120314777132/preview/?file=/us/s0000120314777132/pdf/MEDITECH%20Report%3f%40%3d17828%26fid%3dea87347695f84336a10f116879328a20%26title%3dMEDITEC...

COMMENTS: TEST PATIENT, EXAMPLE ACCESSION

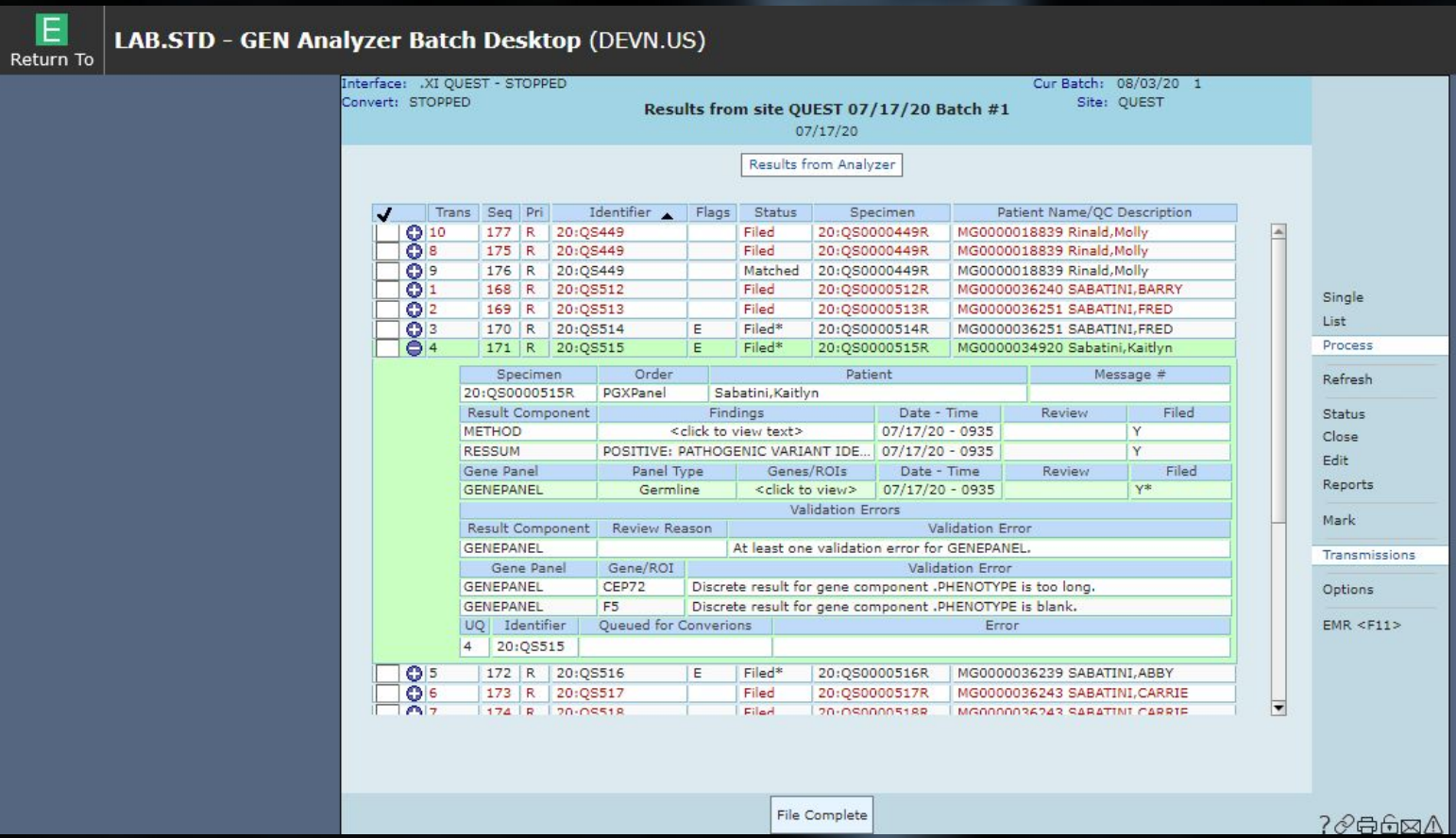
PHARMACOGENOMICS PANEL

*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, SLCO1B1, 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.*

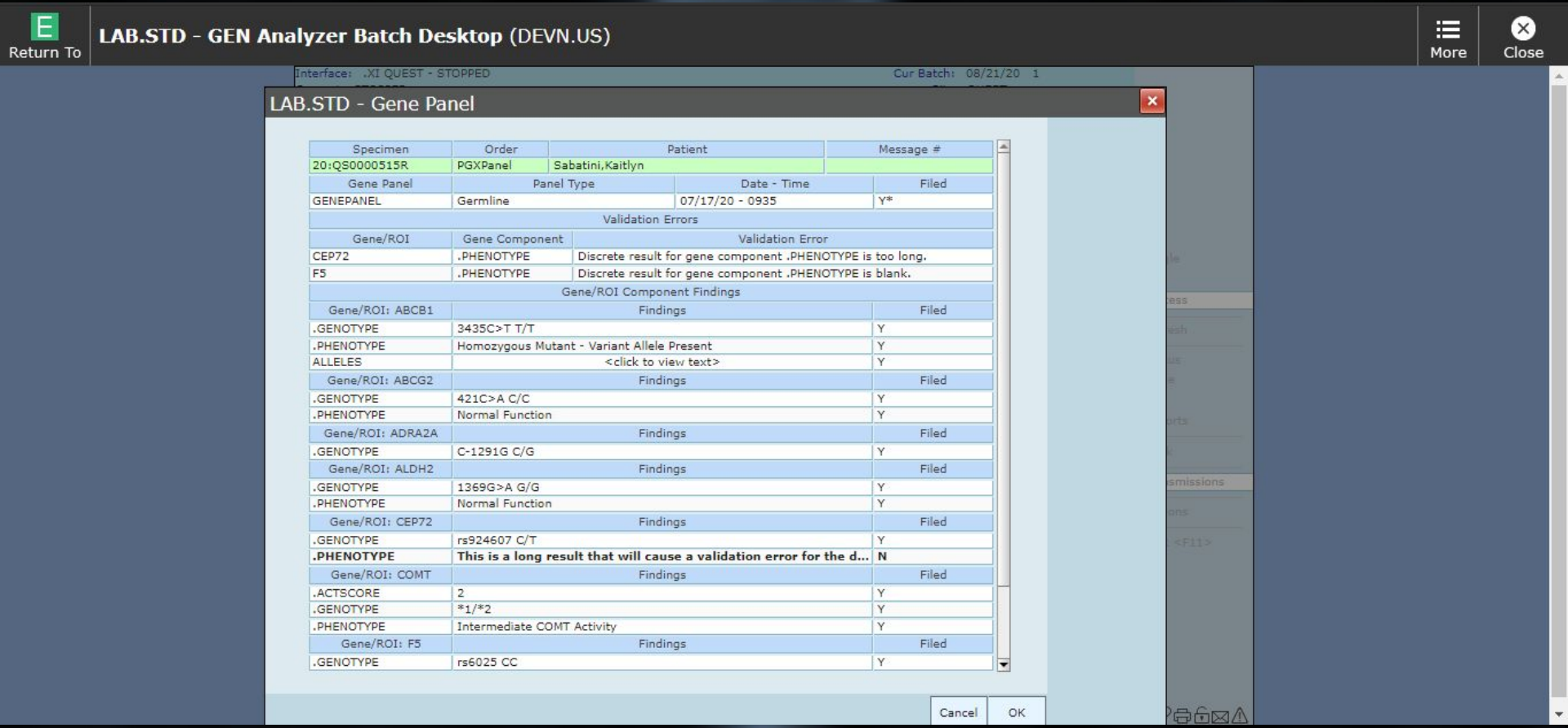
Test Results

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, *16, *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



Analyzer Desktop



Specimen	Order	Patient	Message #
20:QS0000515R	PGXPanel	Sabatini,Kaitlyn	

Gene Panel	Panel Type	Date - Time	Filed
GENEPANEL	Germline	07/17/20 - 0935	Y*

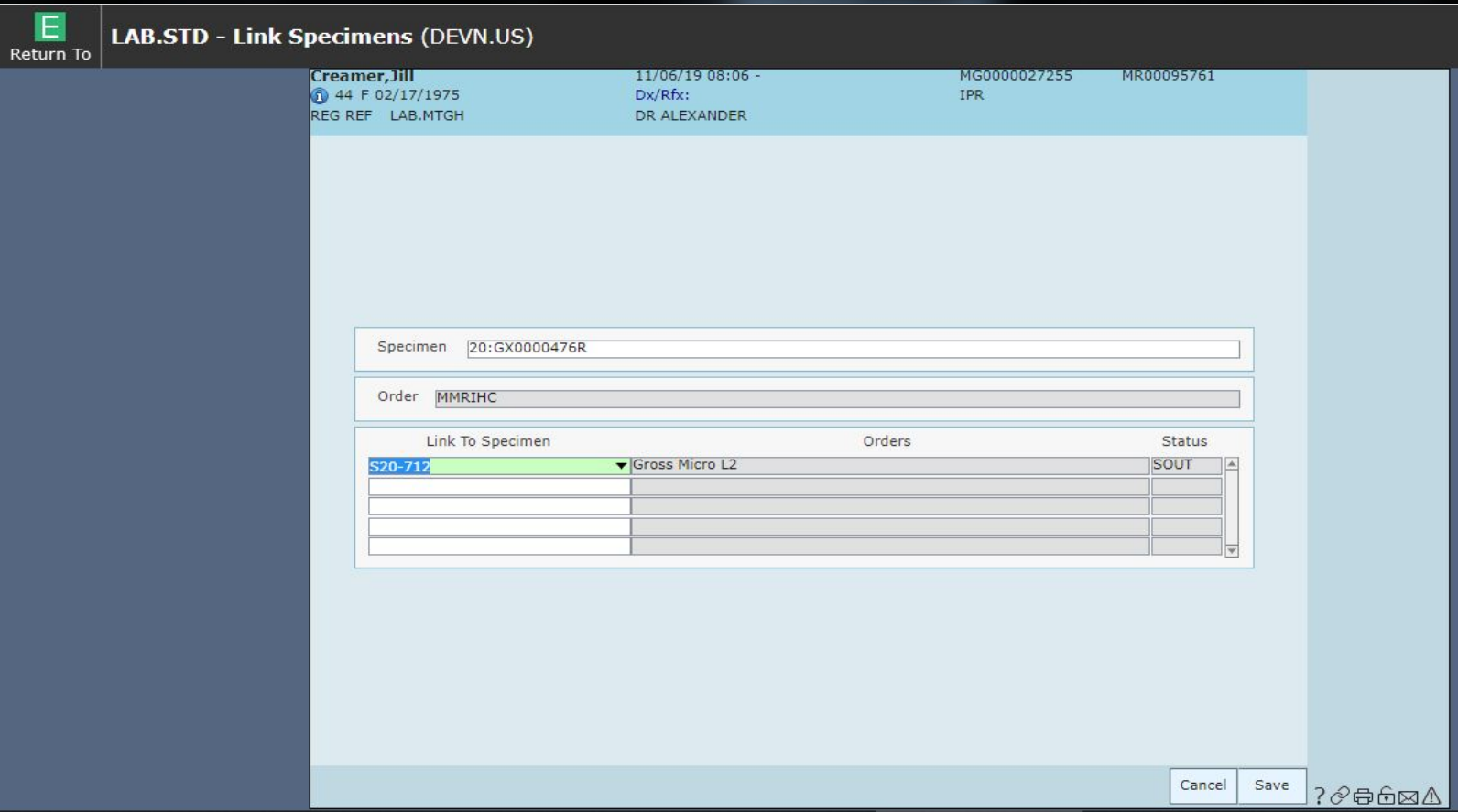
Validation Errors

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

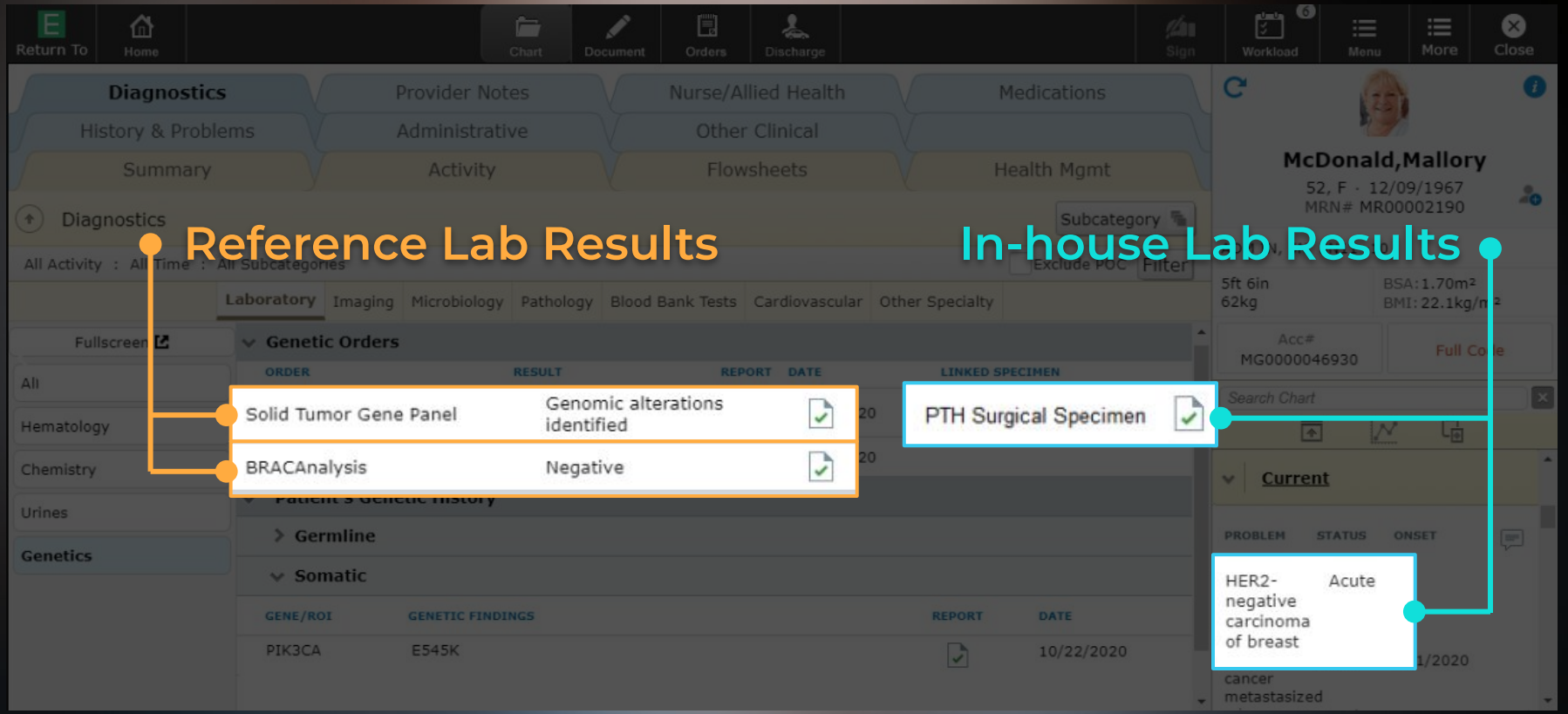
Gene/ROI: ABCB1	Findings	Filed
.GENOTYPE	3435C>T T/T	Y
.PHENOTYPE	Homozygous Mutant - Variant Allele Present	Y
ALLELES	<click to view text>	Y
Gene/ROI: ABCG2	**Findings**	**Filed**
.GENOTYPE	421C>A C/C	Y
.PHENOTYPE	Normal Function	Y
Gene/ROI: ADRA2A	**Findings**	**Filed**
.GENOTYPE	C-1291G C/G	Y
Gene/ROI: 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

Link Specimen



Chart

Genomics Chart



Clinical Decision Support

What is Pharmacogenomics?

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

US National Library of Medicine, 1 Oct 2019

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

Drug	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

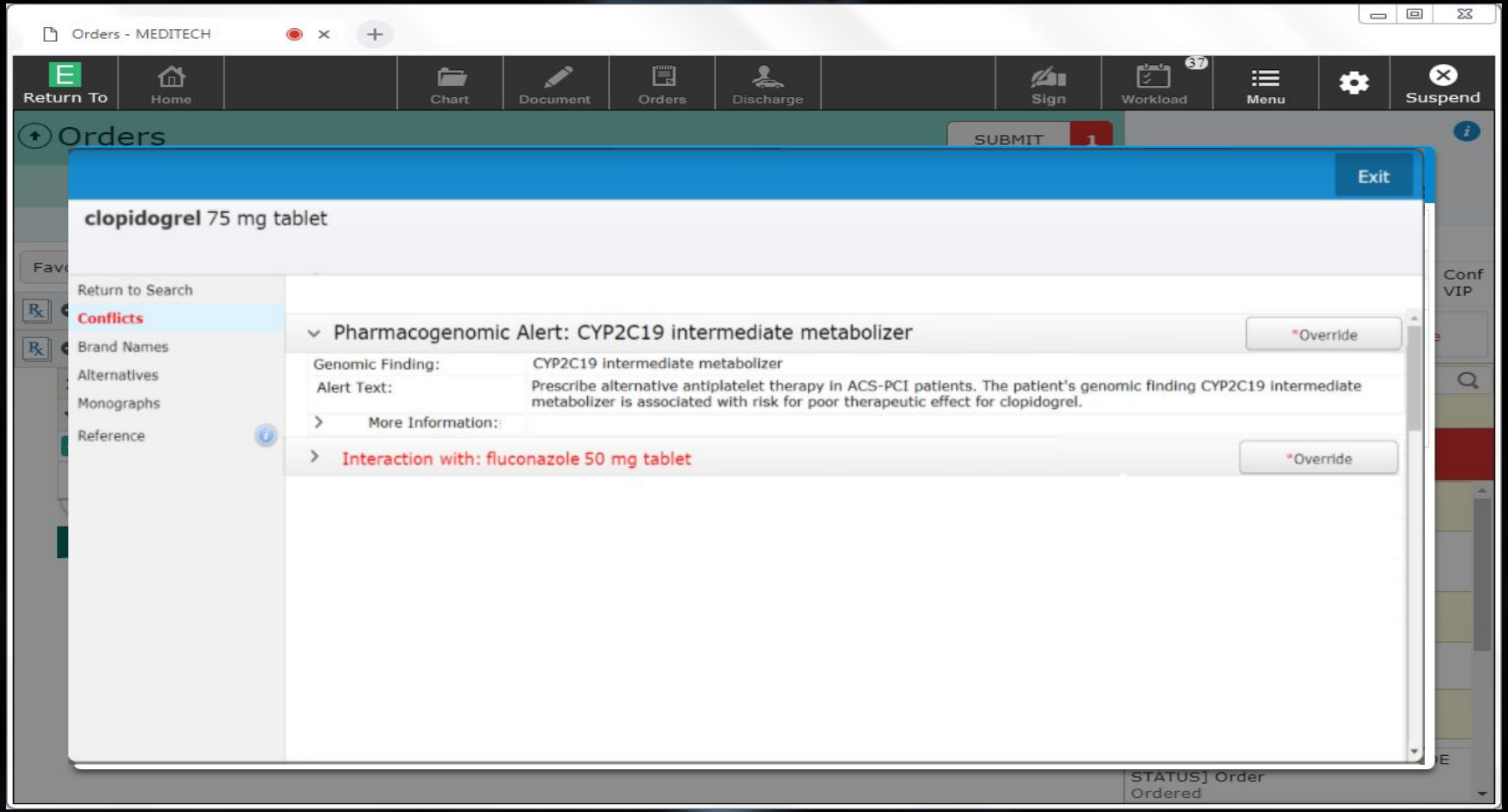
Physician places order

Check LIS/Chart

Result Exists — Provide Clinical Decision Guidance

Result Does Not Exist — Provide Additional Ordering Guidance

Order Entry PGX



PHARMACOGENOMICS BENEFITS

- Up to date clinical decision support
- Minimal hospital upkeep
- Assistance for all physicians with shorter learning curve
- Works with any testing program

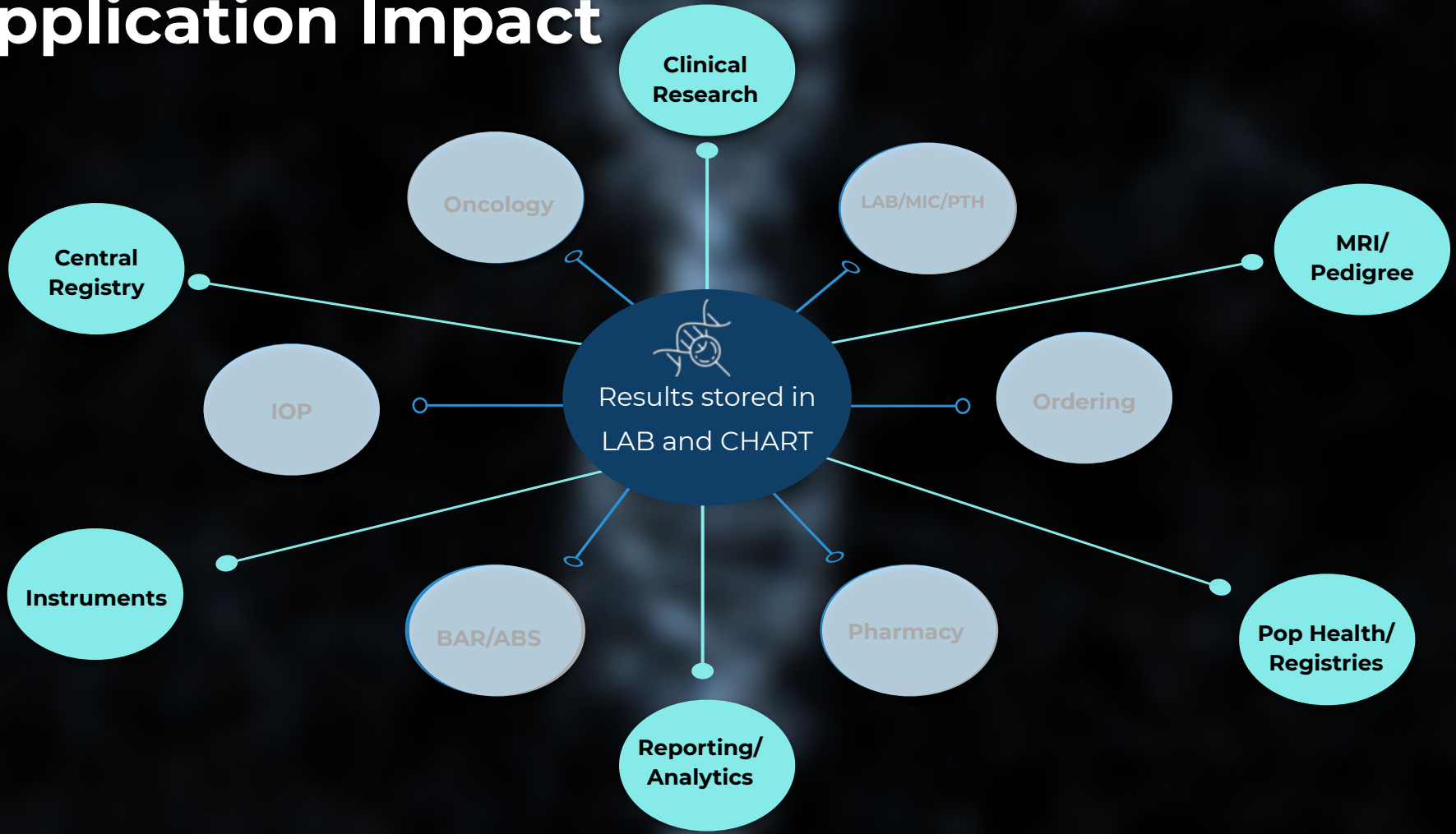
Up Next

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
  - *Designer: Michelle Spurr - mspurr@meditech.com*

General Oncology Development contacts:

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Michelle Nabors
Supervisor Development, Oncology
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Questions?

Next ONCAC meeting

July 2021

Oncology Resources

- MEDITECH On Demand
- Oncology Featured Knowledge Base Articles
- Product Resource Pages
    - **All Product Lines available**
- Expanse End-User Based Roles Resources

Thank You!

MEDITECH