

# Texas Oncology Overview



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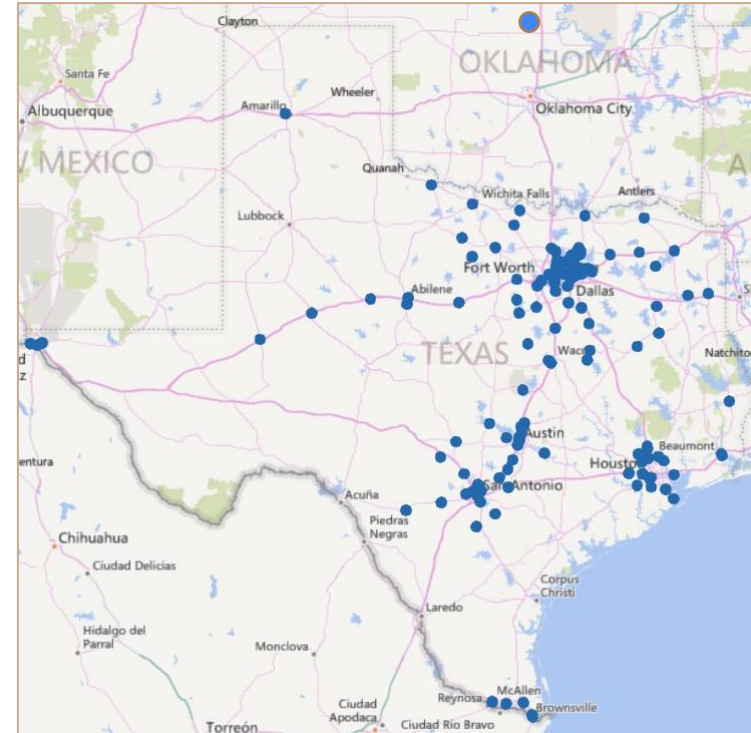
- **Texas Oncology's Vision** – To be the first choice for cancer care
- **Texas Oncology's Mission** – To provide excellent, evidence-based care for each patient we serve while advancing cancer care for tomorrow
- **Texas Oncology's Strategy** – Provide compassionate and individualized oncology care for our patients
  - Provide comprehensive and coordinated care close to our patients' homes.
  - Attract and nurture the best physicians.
  - Recognize and support the central role of clinical research in advancing cancer care
  - Leadership is efficient in care delivery and improves all aspects of cancer care.
  - Establish a financial structure to expand services to our patients



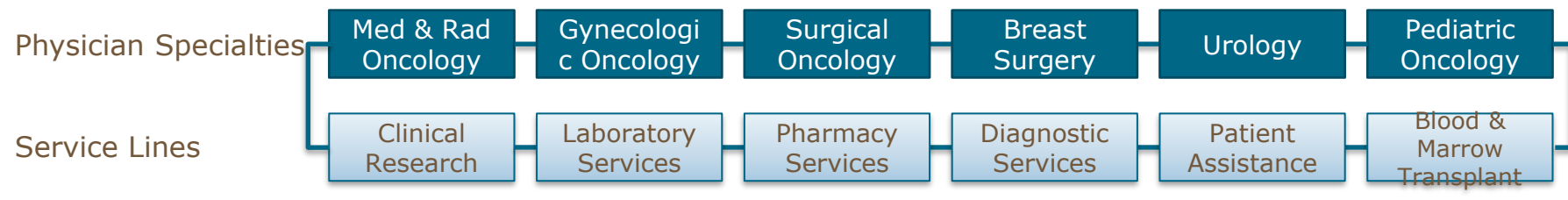
# Overview of Texas Oncology

*The largest independent physician practice in the Texas*

- Texas' largest independent physician practice:
  - 500+ physicians
  - 3,000+ clinical employees
  - 75,000+ new cancer patients annually
  - 150+ sites of service
  - 50+ comprehensive cancer centers
  - 60+ linear accelerators
  - 1 Proton Center
  - 1,800+ patients accrued to research trials annually



## Comprehensive & Integrated Oncology Platform

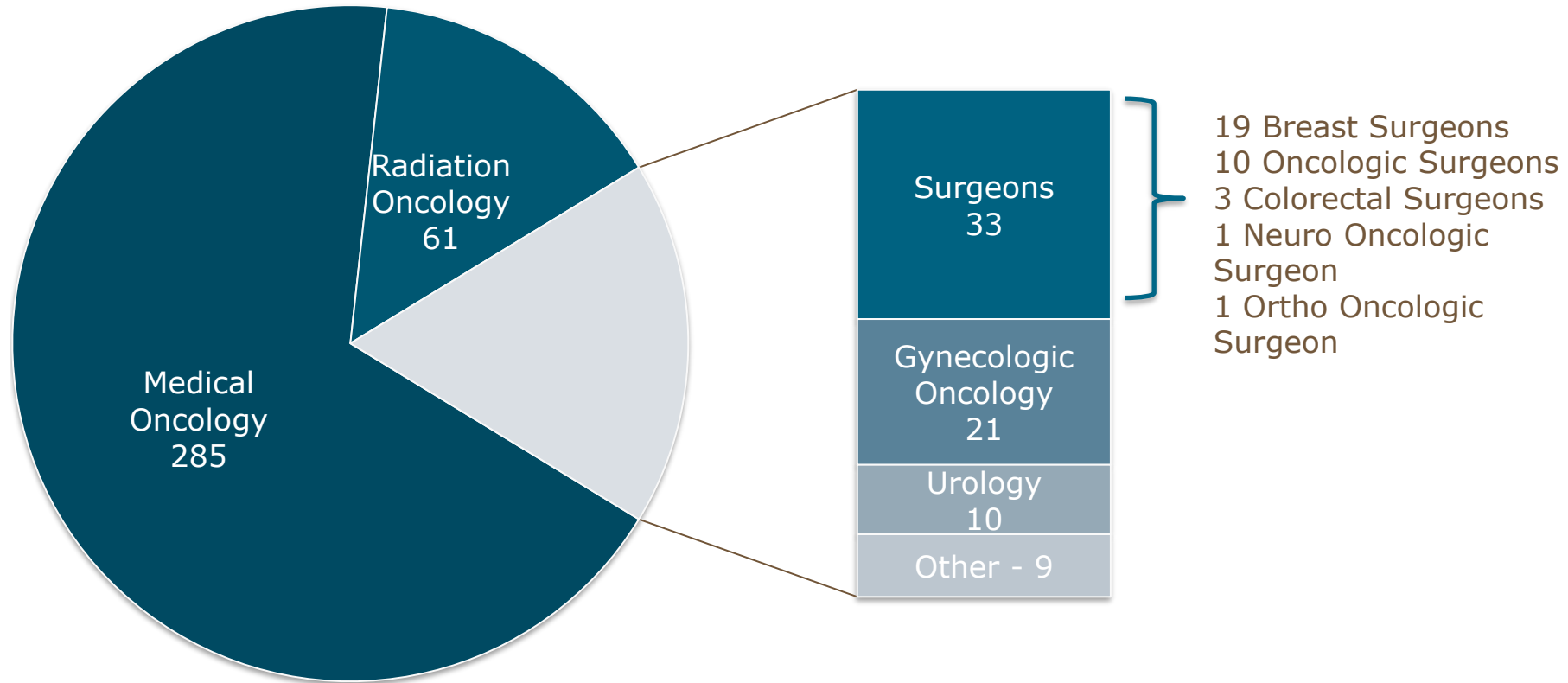


# Texas Oncology Physician Headcount


*Texas Oncology is one of the strongest and most diverse practices in The Network*



## Total TxO Physician Headcount – 419



As of June 30, 2017

A large, stylized star graphic composed of several overlapping, light blue arrow-like shapes pointing outwards from a central point, set against a dark blue background.

# **Texas Oncology Precision Medicine Program**



# How We Treat Cancer

## COMMON CANCER TREATMENTS

### PRECISION MEDICINE

This is the new future of cancer treatment: Doctors prescribe customized therapy based on factors that apply to you and only you.



### SURGERY

Exactly what you think it is: physical removal of the tumor and any affected tissue. Doctors aim for "clean margins," which means no cancer remains.



### CHEMOTHERAPY

One of the most well-known options, chemo delivers meds through an IV to wipe out cancer cells. The downside? Healthy cells are affected, too.



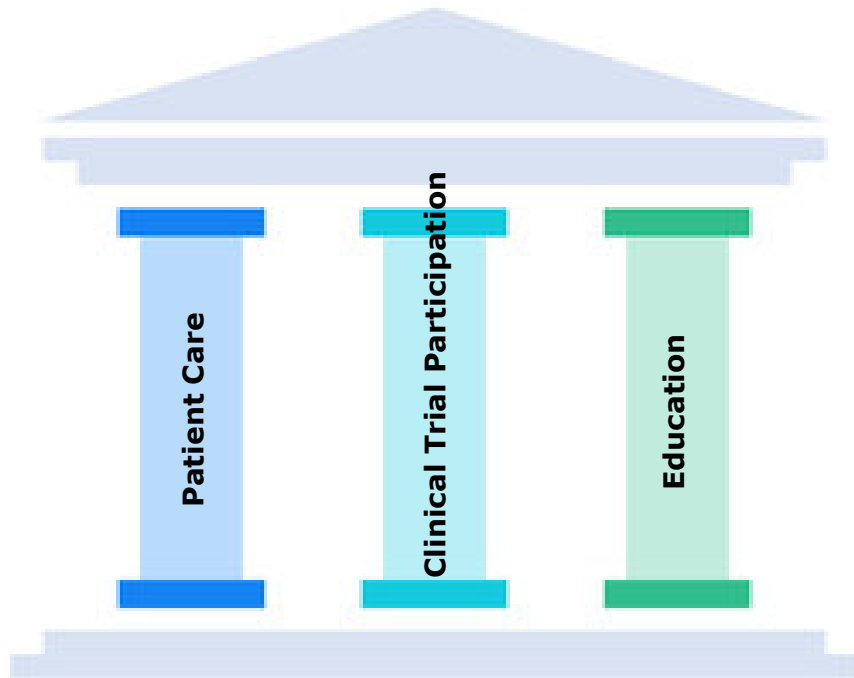
### IMMUNOTHERAPY

This treatment activates your own immune system to help recognize and kill the cancer cells. It can be effective, but it's an option only for certain types of cancer.



healthcentral

# Summary of TxO PM Program



- **Scalable, Equitable Model**
- **Consider the Patient's Journey**



# Common Barriers to PM Implementation

Which of the following best describes the primary barrier to your move into Precision Medicine?

Question presented to respondents who selected "No" or "Unsure" to establishing a Precision Medicine program within the next 2 years.

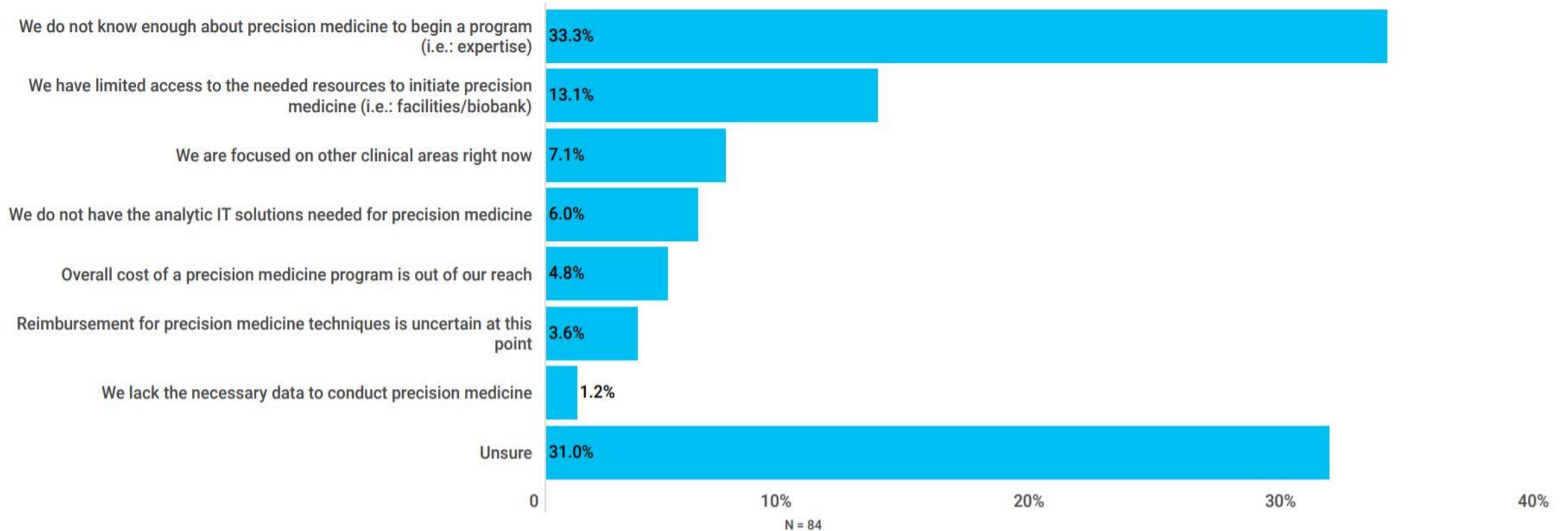


Fig 2: Definitive Healthcare Precision Medicine Study (2019), challenges



# Tools Implemented to Support PM at TxO

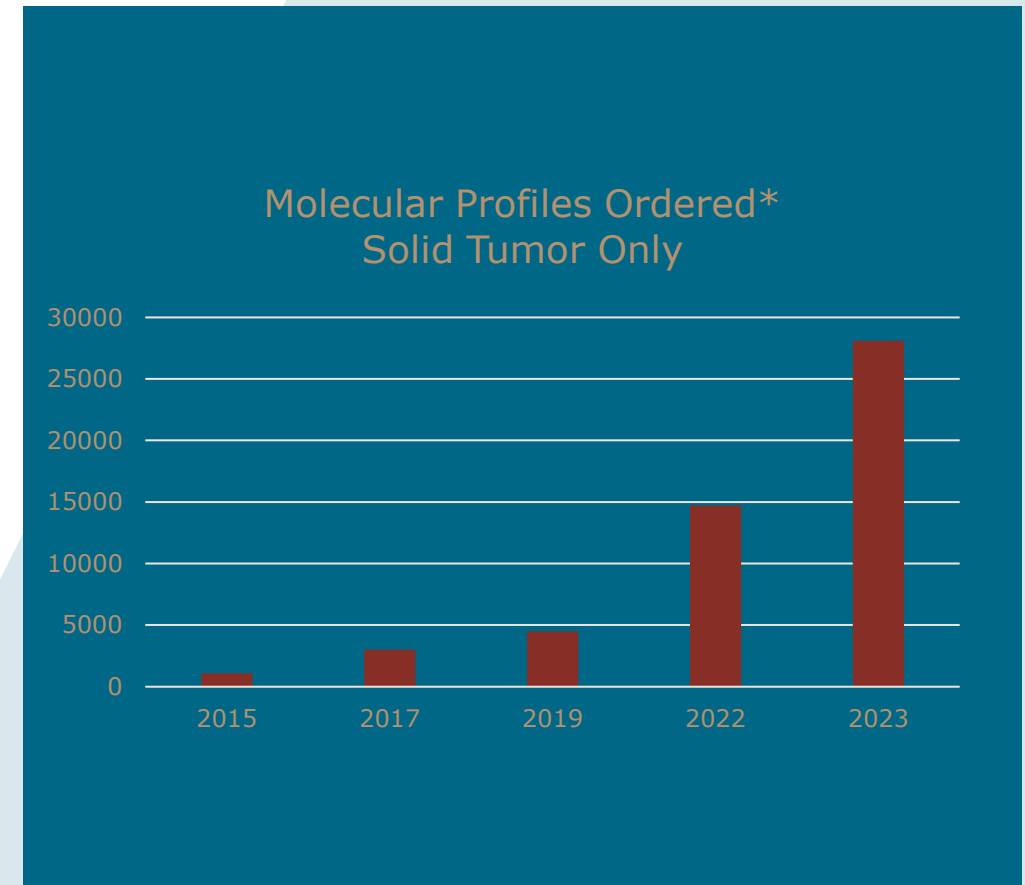


- Clinical Decision Support Test Ordering Tool (Trapelo)
- Electronic Interfaces with Collaborating Reference Labs-bi-directional (ELLKAY)
- Dedicated, searchable\* PM LIS (Orders/Results) (ELLKAY)
- Research-grade, searchable Molecular Data Warehouse (MDW)
- Molecular Virtual Tumor Board (mVTB) (Navify)



# Maximize appropriate use of NGS testing

- Implement Clinical Decision Support Tool (Trapelo)
- Collaborate with our pharmacies to guide appropriate testing before administration of chemo
- Regional Dashboards



\* Ordered directly w/Trapelo

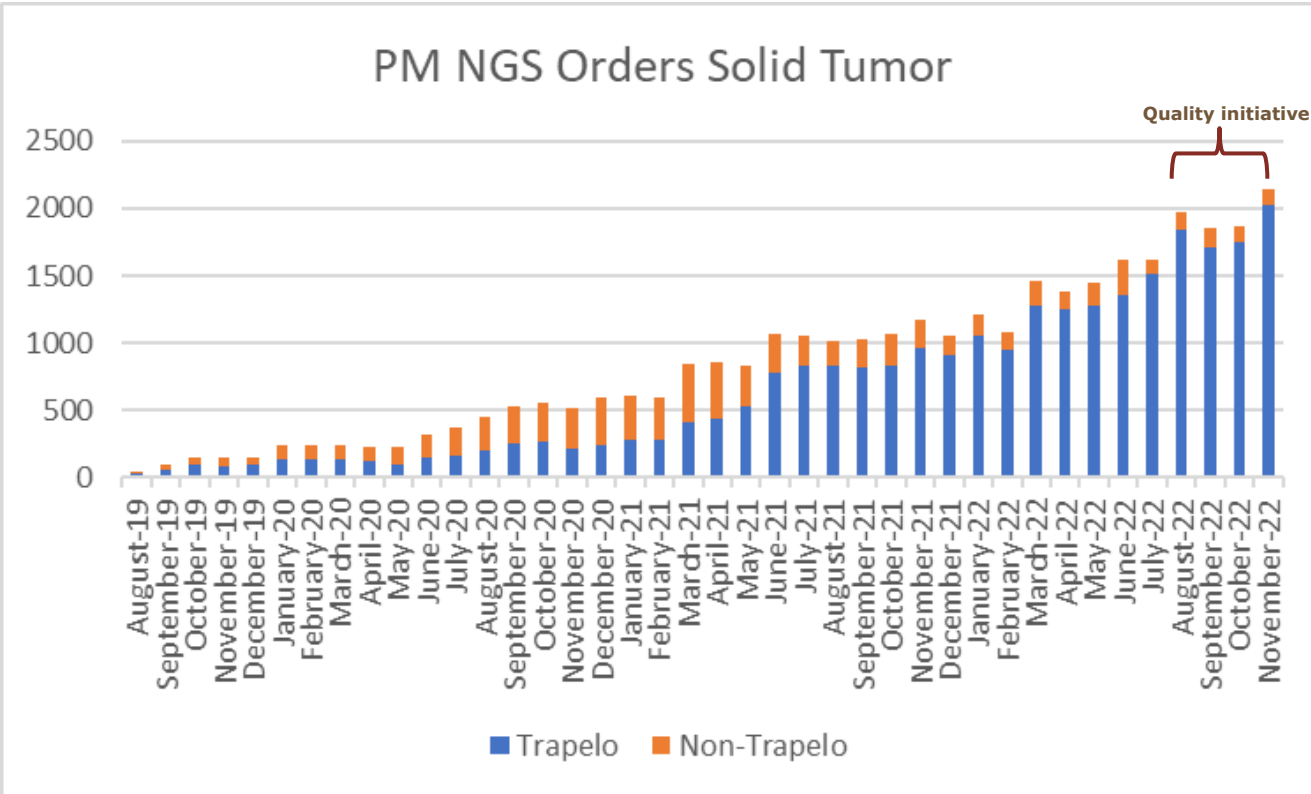
# Quality Initiative: Pharmacy Collaboration

NGS Solid Tumor Orders via Trapelo

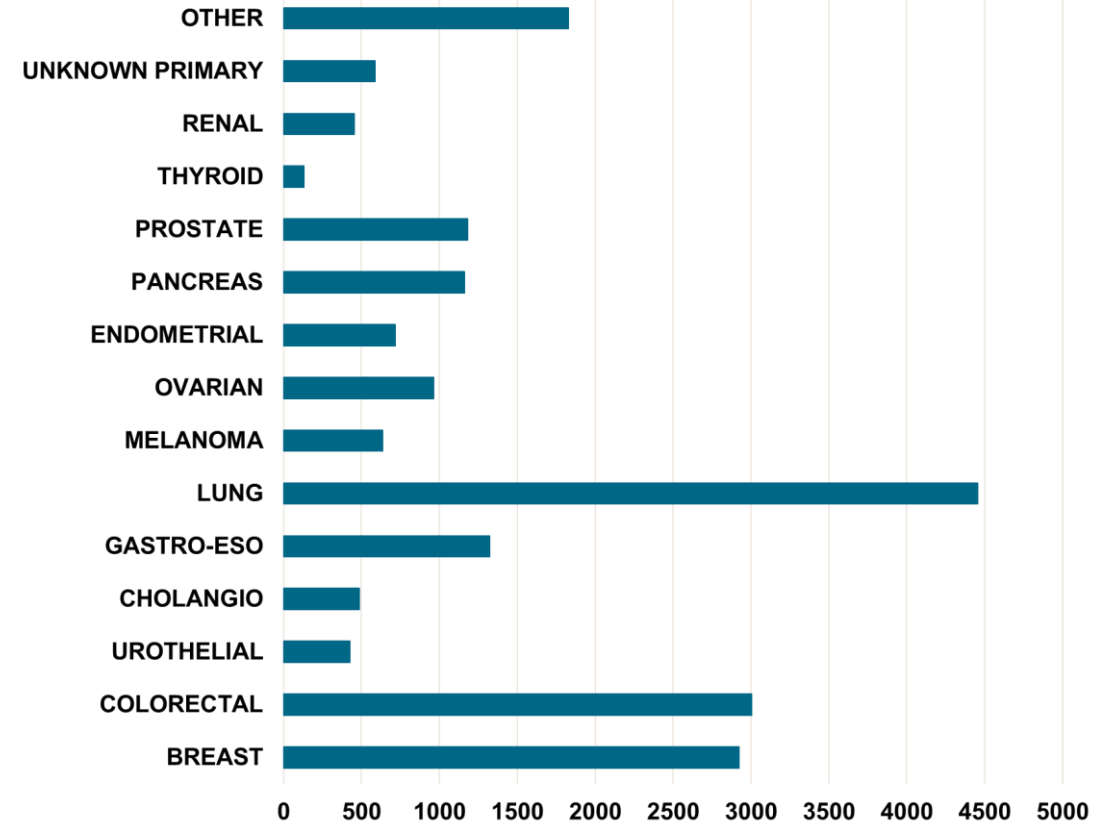


PM NGS Orders Solid Tumor

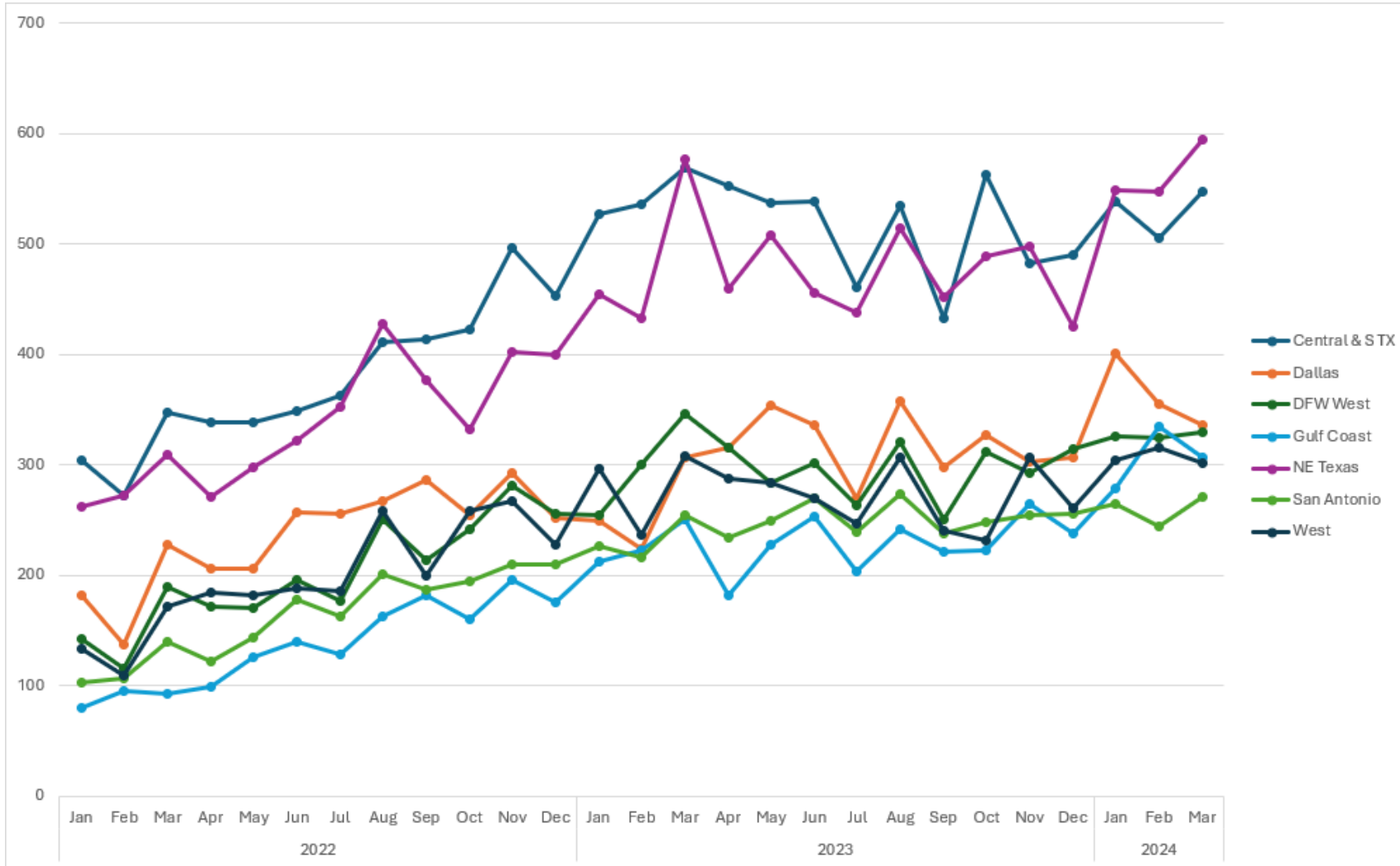
Quality initiative



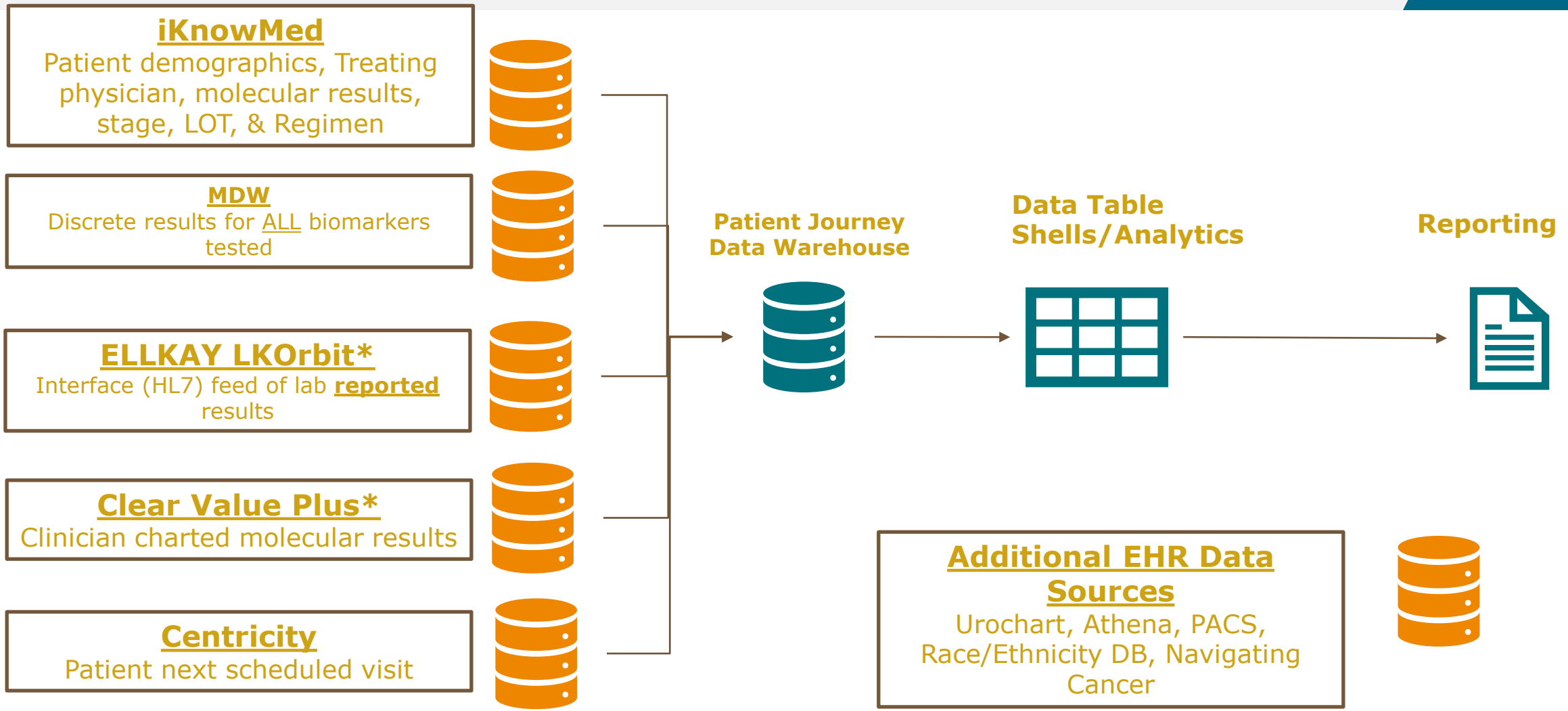
TESTS BY TUMOR TYPE



# Regional Dashboards: Use of Trapelo



# Texas Oncology Database Sources



# TxO Use of ELLKAY LKOrbit / CareEvolve



68812  
9-6D-91  
5-67-38  
00-01  
8-6D-96  
1-96-AB  
8-6D-92  
8-6D-91

OUR PROMISE  
DOING THE RIGHT THING

PATIENT-CENTERED

INTEGRITY

ACCOUNTABILITY

COLLABORATION & RESPECT

ADAPTABILITY

11:18 AM  
4/19/2024

68812  
9-6D-91  
5-67-38  
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Terminal Server  
GHz Unknown Family  
0 PM

HR Execu Join c Join c Launch Select Chron Give a Give a Gandl O Real- iKnow Join c SERVI Enher T x + -

https://texasoncology.careevolve.com

TEXAS ONCOLOGY RESULTS PATIENTS

PSC HOME | TXO All Sites Access (TXO Main - Result Repository) | Change Account

LORI BRISBIN

Lab: All Labs Location: All Locations Resulted Date Range: 03/19/2024 - 04/19/2024

Age: All Sex: All Zip Code: All

Any analyte(s) Below:

- 5000178 [NGS BRAF Fusion - BRAF Fusion]: All Values
- 5000179 [NGS BRAF Fusion - Fusion Partner]: All Values
- 5000180 [NGS BRAF Fusion - Fusion Read (%): All Values
- 5000181 [NGS BRAF Fusion - Mutation in Fused genes]: All Values
- 5000182 [NGS BRAF Fusion - Point Mutations]: All Values
- 60001259 [Molecular Gene Variant (Gene: BRAF - Variant 1)]: All Values
- 600014 [BRAF FISH - Note]: All Values
- 60002210 [BRAF Mutation Analysis by PCR - BRAF V600K]: All Values
- 60002211 [BRAF Mutation Analysis by PCR - BRAF V600M]: All Values
- 60002212 [BRAF Mutation Analysis by PCR - BRAF V600R]: All Values
- 60002213 [BRAF Mutation Analysis by PCR - Overall Result]: All Values
- 60002214 [BRAF Mutation Analysis by PCR - BRAF V600E]: All Values
- 60002215 [BRAF Mutation Analysis by PCR - BRAF V600G]: All Values
- 60002216 [BRAF Mutation Analysis by PCR - BRAF V600D]: All Values
- CMI1113 [BRAF]: All Values
- CMI1114-BRAF [BRAF]: All Values
- CMI1122-BRAF [BRAF]: All Values
- CMI1124-BRAF [BRAF]: All Values
- CMI1138-BRAF [BRAF]: All Values
- CMI1140-BRAF [BRAF]: All Values
- CMI1143-BRAF [BRAF]: All Values
- CMI1156-BRAF [BRAF]: All Values

11:18 AM  
4/19/2024

# TxO Use of ELLKAY LKOrbit / CareEvolve



Browser window showing the CareEvolve interface for Texas Oncology. The URL is https://texasoncology.careevolve.com. The page header includes the Texas Oncology logo, navigation links for RESULTS and PATIENTS, and a user profile for LORI BRISBIN.

Sample ID	Gene	Result	Test Date	Report Date	Print
	BRAF	Amplification Not Detected	04/07/2024 00:00	04/07/2024 00:00	
	BRAF	Fusion Not Detected	04/07/2024 00:00	04/07/2024 00:00	
<anonymous>	BRAF	Wild Type	03/26/2024 00:00	03/26/2024 00:00	
	BRAF	Amplification Not Detected	03/26/2024 00:00	03/26/2024 00:00	
	BRAF	Fusion Not Detected	03/26/2024 00:00	03/26/2024 00:00	
<anonymous>	BRAF	Wild Type	03/29/2024 00:00	03/29/2024 00:00	
	BRAF	Amplification Not Detected	03/29/2024 00:00	03/29/2024 00:00	
	BRAF	Fusion Not Detected	03/29/2024 00:00	03/29/2024 00:00	
<anonymous>	BRAF	Pathogenic Variant;Protein Alteration=p.V600E;Exon=15;DNA Alteration=c.1799T>A;Variant Frequency=36.00%;Transcript ID=NM_004333.5;Chromosome=chr7	03/24/2024 00:00	03/24/2024 00:00	
	BRAF	Amplification Not Detected	03/24/2024 00:00	03/24/2024 00:00	

Page navigation: 1 2 3 ... 68 69

© CareEvolve™ POWERED BY ELLKAY

# TxO Use of ELLKAY LKOrbit / LKCareEvolve



PSC HOME | TXO All Sites Access (TXO Main - Result Repository)

## Report Preview

1 of 10

### Patient

**Name:** [REDACTED]  
**Date of Birth:** [REDACTED]  
**Sex:** Female  
**Case Number:** [REDACTED]  
**Diagnosis:** Adenocarcinoma, NOS

### Specimen Information

**Primary Tumor Site:** Sigmoid colon  
**Specimen Site:** Sigmoid, NOS  
**Specimen ID:** [REDACTED]  
**Specimen Collected:** 20-Nov-2023  
**Test Report Date:** 24-Mar-2024

### Ordered By

**Rene Castillo, MD**  
**Texas Oncology - San Marcos**  
 1308 Wonder World Dr  
 San Marcos, TX 78666  
 (512) 416-5131

### Results with Therapy Associations

BIOMARKER	METHOD	ANALYTE	RESULT	THERAPY ASSOCIATION
Mismatch Repair Status	IHC	Protein	Deficient (Loss)	<b>BENEFIT</b> dostarlimab, pembrolizumab
BRAF	Seq	DNA-Tumor	Pathogenic Variant Exon 15   p.V600E	<b>BENEFIT</b> nivolumab, nivolumab/ipilimumab combination
				<b>LACK OF BENEFIT</b> cetuximab + encorafenib vemurafenib/dabrafenib monotherapy
MSI	Seq	DNA-Tumor	High	<b>BENEFIT</b> dostarlimab, nivolumab, nivolumab/ipilimumab combination, pembrolizumab
TMB	Seq	DNA-Tumor	High, 59 mut/Mb	<b>BENEFIT</b> pembrolizumab

PSC HOME | TXO All Sites Access (TXO Main - Result Repository)

## Report Preview

1 of 10

biomarker reporting classification: Level 1 = Companion diagnostic (CDx); Level 2 = Strong evidence or clinical significance or is endorsed by standard clinical guidelines; Level 3 = Potential clinical significance. Bolded benefit therapies, if present, highlight the most clinically significant findings.

**Result: DECREASED BENEFIT to FOLFOX + bevacizumab in first-line metastatic CRC**

See Page 3 for important details about clinical data regarding MI FOLFOXai

### Important Note

The FDA approval of cetuximab + encorafenib covers BRAF V600E-mutated metastatic colorectal cancer patients who have already received chemotherapy. NCCN guidelines also include panitumumab + encorafenib as a subsequent therapy for advanced or metastatic BRAF V600E mutation-positive CRC.

TMB-High status should only be used to guide pembrolizumab treatment when no satisfactory alternative treatment options are available.

Pembrolizumab monotherapy is FDA-approved for first-line treatment of patients with unresectable or metastatic MSI-H or dMMR colorectal cancer.

### Cancer-Type Relevant Biomarkers

Biomarker	Method	Analyte	Result
PIK3CA	Seq	DNA-Tumor	<b>Pathogenic Variant Exon 21   p.H1047R</b>
NTRK1/2/3	Seq	RNA-Tumor	Fusion Not Detected

Biomarker	Method	Analyte	Result
RET	Seq	RNA-Tumor	Fusion Not Detected
BRAF	Seq	RNA-Tumor	Fusion Not Detected

*(continued on next page)*

The selection of any, all, or none of the matched therapies resides solely with the discretion of the treating physician. Decisions on patient care and treatment must be based on the independent medical judgment of the treating physician, taking into consideration all available information concerning the patient's condition, the FDA prescribing information for any therapeutic, and in accordance with the applicable standard of care. Whether or not a particular patient will benefit from a selected therapy is based on many factors and can vary significantly. All trademarks and registered trademarks are the property of their respective owners.



# Clear Value Plus



Sue Smith (51 / F) x

**Clear Value Plus** powered by NCCN v2013.2009.bdas

Jump to: Value Pathways | NCCN Guideline | Other Regimens | Supportive Care | Clinical Trials

Filter regimen list: Search regimen or drug name

Medical Info | Financial Info

**Value Pathways powered by NCCN**

	Evidence Level	FN Risk	Emetic Risk	Action
▶ AC followed by T (Paclitaxel) with concurrent Trastuzumab	1	Med	High	SHOW ORDERS
▼ TCH (Invasive)	1	Unk.	Med	HIDE ORDERS
Paclitaxel D1 + Carboplatin D1 + Trastuzumab D1,8,15 (TCH) Q21D (umbrella) COMPOUND REGIMEN More Details				ORDER
Paclitaxel D1,8,15,22,29,36 + Carboplatin D1,8,15,22,29,36 + Trastuzumab D1,8,15,22,29,36 (TCH) Q56D (umbrella) COMPOUND REGIMEN More Details				ORDER

**NCCN Guideline**

	Evidence Level	FN Risk	Emetic Risk	Action
▶ FEC followed by T (Paclitaxel) followed by Trastuzumab	1	Med	High	SHOW ORDERS
▶ AC followed by Docetaxel with Trastuzumab	1	Unk.	Med	SHOW ORDERS
▶ Docetaxel with Trastuzumab followed by FEC	1	Med	High	SHOW ORDERS
▶ A followed by T followed by C followed by Trastuzumab	1	Low	Low	SHOW ORDERS
▶ AC followed by Trastuzumab	1	Med	High	SHOW ORDERS
▶ AC followed by Docetaxel Q3W followed by Trastuzumab	1	Unk.	Med	SHOW ORDERS
▶ AC followed by T (Paclitaxel) followed by Trastuzumab	1	Med	High	SHOW ORDERS
▶ CMF followed by Trastuzumab	1	Low	Med	SHOW ORDERS
▶ AC (Dose-dense) followed by Paclitaxel Q2W followed by Trastuzumab	1	Med	High	SHOW ORDERS
▶ EC followed by Trastuzumab	1	Unk.	Med	SHOW ORDERS
▶ FAC followed by Trastuzumab	1	Med	High	SHOW ORDERS
▶ CAF followed by Trastuzumab	1	Low	Med	SHOW ORDERS

SHOW Other Breast Cancer Regimens (54) SHOW ALL DX

SHOW Supportive Care (9)

SHOW Breast Cancer Clinical Trials (21)

CANCEL FEEDBACK

McKesson Specialty Health

Clear Value Plus presents Value Pathways powered by NCCN™ and NCCN Clinical Practice Guidelines in Oncology® (NCCN Guidelines®) seamlessly and intuitively at each appropriate point of the patient journey within the EHR.



# Precision Oncology:

Serving Urban, Suburban, and Rural Areas with Integrated Pathology,  
Imaging, and Precision Genomics Services

# Precision Oncology Workflow Design



**Provider**  
Decision to  
have patient  
tested



**Precision Oncology  
Liaison Team**  
(Provider – Pathology  
– Reference Lab)



**Data Capture**  
Clinical trials,  
real-time alerts



**Order Data  
Flow**

**Result Data  
Flow**



**Clinical Decision  
Support**  
Guideline-based, test  
ordering



**Biomarker  
Testing**  
Reference Lab  
Partnerships



**Treatment  
Options**  
Decision to  
treat patient

# Clinical Decision Support – Test Ordering



What cancer type does your patient have?

NSCLC

Colorectal Cancer

Breast Cancer

Ovarian (Fallopian Tube, Peritoneal) Cancer

What stage is your patient's disease?

Stage IA

Stage IB - IIIA

Stage IIIB or IIIC

Stage IV (Metastatic)

# Clinical Decision Support – Test Ordering



## Routine markers

Indicate the primary specimen type for tumor marker testing

- Tumor tissue       Liquid biopsy

- ALK rearrangement
- BRAF mutation genotyping
- EGFR mutation genotyping

## Opt-In markers

- Tumor Mutational Burden (TMB)

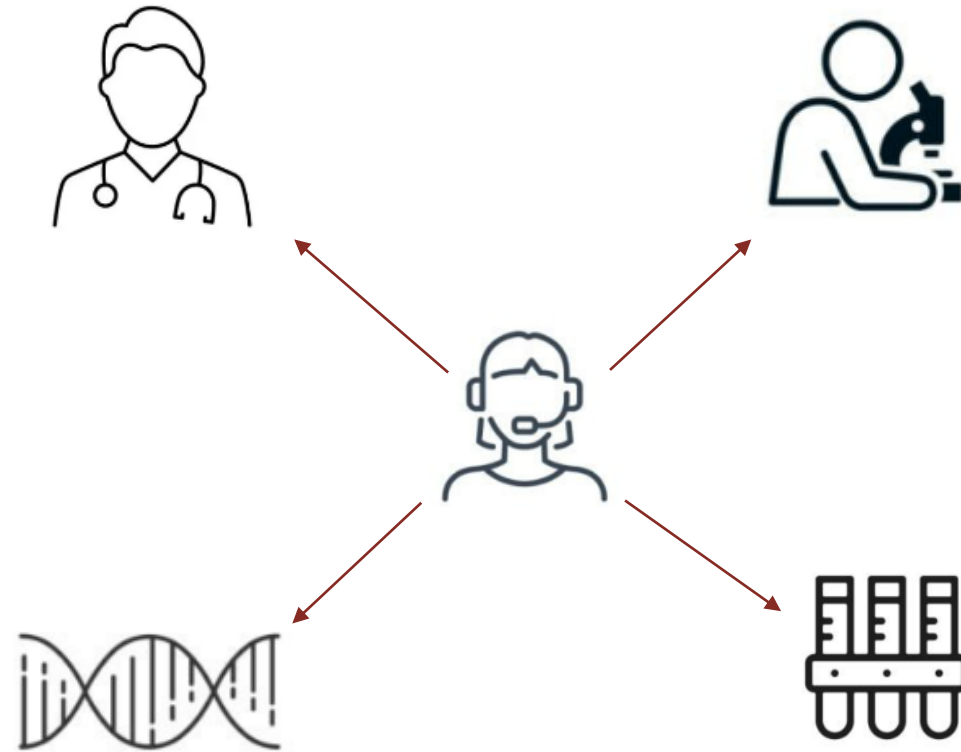
## ATTACHMENTS

 Drag files here to upload or [browse](#)

# Role of Precision Oncology Liaison



- Liaison between ordering provider, pathology lab, and genomics testing lab
  - >500 Physicians
  - >280 locations
  - >100 pathology labs
  - >10 genomic testing labs
- Order/specimen tracking
- In-depth knowledge of partnering labs
  - In-network vs. Out-of-network
  - Test menu
  - Pathology relationships
- Delays in specimen procurement



# Reference Lab Partnerships



- Longitudinal Quality Metrics
  - Utilization
  - TAT
    - *Procurement*
    - *Testing*
  - QNS Rates
  - Patient Out-of-Pocket
- Testing Options
  - Tissue vs. liquid
  - Panel size
- Integration / Data Delivery

# Creating a Reference Lab Scorecard



Ref Lab	Data Exchange	Automated PDFs	Supporting Document Delivery	Structured Data via HL7	Unsolicited Results
Ref Lab 1	HL7v2	HL7	HL7	Yes	Yes
Ref Lab 2	HL7v3	HL7	HL7	Yes	Yes
Ref Lab 3	HL7v2	HL7	HL7	Yes	Yes
Ref Lab 4	HL7v2	HL7	HL7	Yes	Yes
Ref Lab 5	HL7v3	HL7	Portal	Yes	Yes
Ref Lab 6	JSON	HL7	sFTP	Yes	Yes
Ref Lab 7	sFTP	sFTP	sFTP	No	No
Ref Lab 8	sFTP	sFTP	sFTP	No	No

sFTP = secure file transfer protocol

JSON – JavaScript Object Notation



# Constructing a Precision Oncology Database



- Data Capture
  - Real-time, structured, variant data
  - Clinically actionable vs VUS
- Storage
  - LIS, EMR, data warehouse
- Validation/Maintenance
  - Data scientists, engineers, clinical professionals
  - Structured data vs. PDF reports
- Combine Disparate Sources of Data
  - treatment, outcomes, patient demographics, etc.

Test	Result
KRAS	Pathogenic Variant;Protein Alteration=p.G12D;Exon=2;DNA Alteration=c.35G>A;Variant Frequency=15.00%;Transcript ID=NM_004985.4;Chromosome=chr12
KRAS	Amplification Not Detected
KRAS	Wild Type
KRAS	Amplified
KRAS	Pathogenic Variant;Protein Alteration=p.Q61R;Exon=3;DNA Alteration=c.182A>G;Variant Frequency=56.00%;Transcript ID=NM_004985.4;Chromosome=chr12
KRAS	Amplification Not Detected

# Our Journey



## Early Stages



- Unstructured Data
  - Manual Curation
- Biomarker Ordering
  - No standardization
- Database Design
  - Excel spreadsheets
- Lab Integration
  - Paper/Fax

## Progress



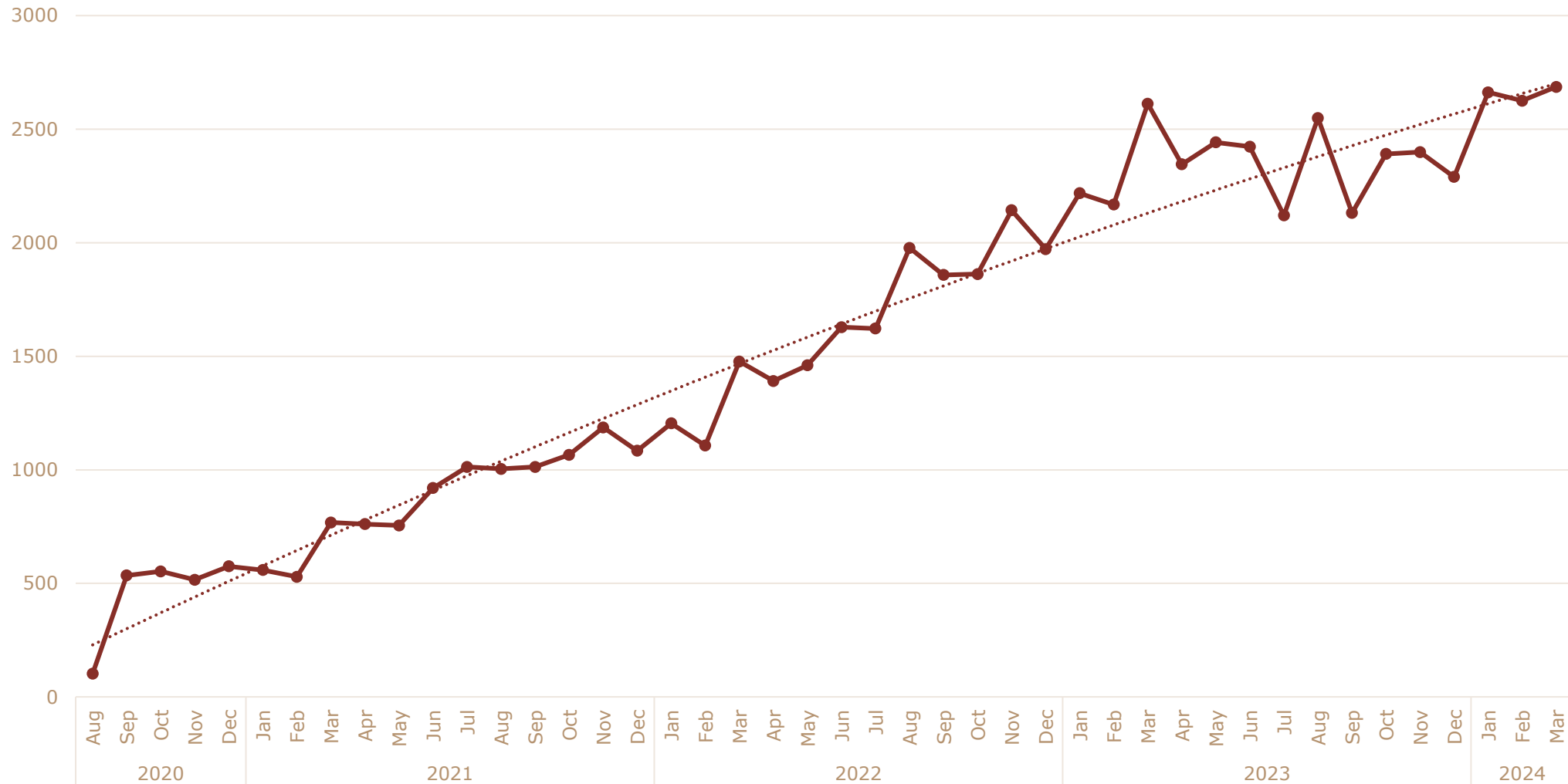
- Unstructured Data
  - NLP
- Biomarker Ordering
  - Standardized via CDS
- Database Design
  - SQL Database
  - Molecular Data Warehouse
- Lab Integration
  - HL7, sFTP

## Current State

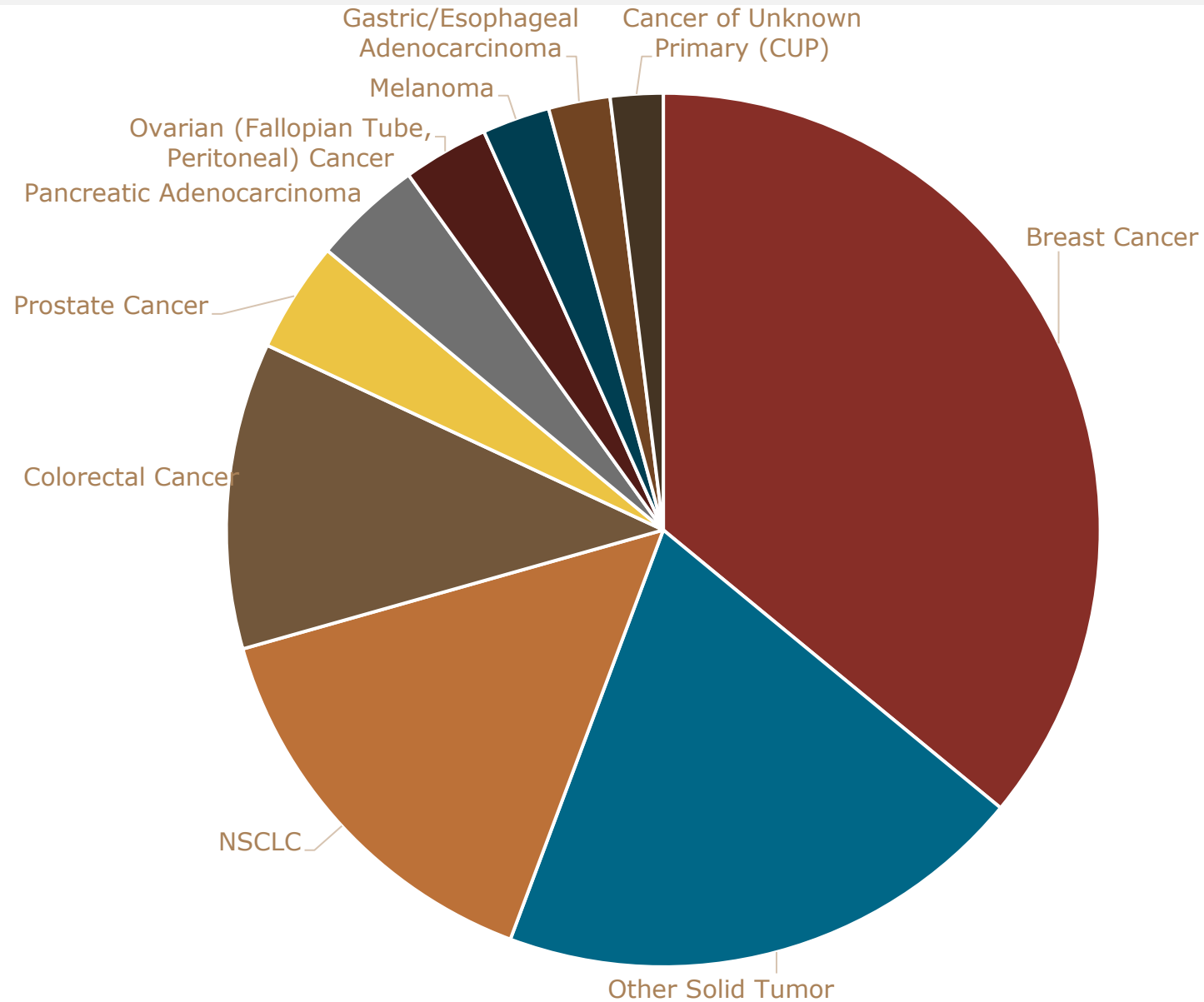


- Unstructured Data
  - AI Tools
- Biomarker Ordering
  - Increased Offerings, Liaisons
- Database Design
  - >10 Disparate Sources
- Lab Integration
  - HL7, sFTP, JSON, FHIR, XML, etc.

# Orders Submitted via Precision Oncology Workflow



# Solid Tumor Cancer Types



# Goals for the Future



- Improve CDS tools
  - Germline/Heme
  - Testing for all types of patients/diseases
  - Therapy Decisions
- Enhance Clinical Trial Database
  - Standardized genomic data via HL7
  - Diagnosis data
  - Query/Reporting Capabilities
  - User Friendly
- Increase Data integration/interoperability
  - Order Status Updates
  - Internal & External
- AI



**THANK YOU**