2024

Precision Medicine: Germline Testing

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Disclosures

- Speaker/Advisor for Tempus, Natera, Grail

Mercy

- Founded 200 years ago by the Sisters of Mercy
- Mission to continue to bring low cost high quality care to the people we serve
- 3 million patients over 4 states in the mid west
- Investments in proactive, personalized care
  - Massive primary care network of providers (4000 physicians, 2000 advanced practice professionals, rural and city locations)
    - Ensure patient's get the right care in the right setting at the right time
  - Single instance of epic throughout the entire system
  - Intelligent data platform
  - Mayo Platform Founding Member
    - Over 12 petabytes of longitudinal sorted clinical data over 20 years
  - Over 13 active AI clinical tools being utilized developed internally.
  - Partnerships to help bring genomic testing to our patients.

Precision Medicine

- Leverages Next Gen Sequencing and the knowledge gained from the Human Genome project to detect, diagnose and treat in a manner that is personalized to a patient's DNA.

Right diagnosis for the right patient at the right time.

Somatic Testing

- Testing on known cancer tissue
- Drives therapeutic interventions
- Testing can be done on tissue and/or blood

Germline Testing

- Do you have an inherited risk for cancer?
- Based on NCCN guidelines

Case

- 62 year old male presented with high risk prostate cancer
  - Underwent prostatectomy and node dissection found to have very aggressive cancer with positive lymph nodes
  - Germline testing performed – found to have an ATM mutation
    - Higher risks of prostate, breast and pancreatic cancer
  - Cascade testing performed on his 4 children
    - Two daughters found to also have ATM mutation
    - Screening mammography performed and one of the daughters found to have an early stage breast cancer and is now cured.
  - We followed NCCN guidelines and had no issues with coverage from his insurance company. The lab provider through our agreement provided free cascade testing.

Germline Testing Overview

- Germline mutations are associated with 10% of cancer cases and identification would allow the patient and provider to be proactive about mitigating risk.
- 2020 review: Mercy was using 6 different NGS vendors for germline testing

Mercy

Germline Testing Overview

Mercy worked with Tempus/CancerIQ to discern qualifying patient that meet NCCN guidelines for germline testing.

- Samples are mailed to patient's home for self collection.
- Passive utilization of Mercy.net interface to CancerIQ questionnaire
- Active outreach via SMS Text to select Primary Care and Women's Health clinics
- Epic Order/referral is also available

Mercy

National Comprehensive Cancer Network®

NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®)

Genetic/Familial High-Risk Assessment: Breast, Ovarian, and Pancreatic

Version 1.2025 — September 11, 2024

NCCN.org

NCCN recognizes the importance of clinical trials and encourages participation when applicable and available. Trials should be designed to maximize inclusiveness and broad representative enrollment.

National Comprehensive Cancer Network®

NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®)

Genetic/Familial High-Risk Assessment: Colorectal, Endometrial, and Gastric

Version 2.2024 — October 3, 2024

NCCN.org

NCCN recognizes the importance of clinical trials and encourages participation when applicable and available. Trials should be designed to maximize inclusiveness and broad representative enrollment.

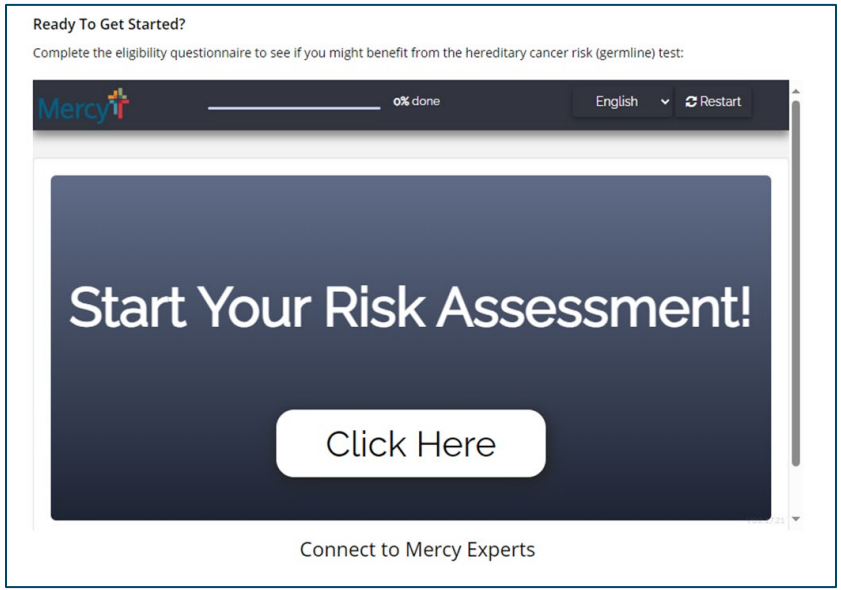
Benefits of Integrated Germline Testing

- ✓ EPIC Integration: providers can easily place orders in EPIC and view results
- ✓ All Epic orders result in discrete data going to genomics module – allowing for clinical decision support to assist in follow-up
- ✓ Seamless patient experience using familiar mercy.net pathway and Mercy branding throughout
- ✓ Improved management with mitigation of patients' personal and familial (cascade testing) cancer risk

Mercy

Germline Testing

- Target Audience: anyone > 18 y/o
- Usually covered by insurance when NCCN criteria are met ($249 self pay)
- Precision Medicine team will support patient through evaluation and care plan development
- Germline testing company provides cascade testing (testing out to third degree relatives) at no cost, for 90 days of initial test.



[Cancer Genetics & Germline Testing | Mercy]

Germline Testing

Posters and rack cards with QR codes that link back to Mercy.net workflow were developed for waiting rooms/exam rooms

✔ Eligible for Hereditary Cancer Risk (Germline) Testing

Thank you for completing the questionnaire. Your risk assessment suggests you may be at **elevated risk for a hereditary mutation** that would increase your risk for some types of cancer.

As a next step, please complete the registration form on the next screen to have a Mercy care team member contact you with information on getting the hereditary cancer risk test.

Next: Complete Registration ›

Somatic testing Case

- 80 year cattle farmer in southwest Missouri – very aggressive form of bladder cancer
  - Underwent cystectomy and ileal conduit with pelvic node dissection
  - Adjuvant immunotherapy
  - Progression of disease, underwent chemotherapy with continued progression
  - Discussions of palliative care and hospice
  - NGS testing performed, found to have ERBB mutation (HER2+) bladder cancer
  - Started on targeted therapy and now 8 months later is cancer free

- Insurance Medicare – no issues with coverage for his stage IV bladder cancer NGS testing
- No issues with coverage for his targeted therapy

Lung cancer

- There are now 16 FDA approved drugs for lung cancer
- Accelerate treatment by having NGS testing done prior to patient seeing oncology
- In 2022 we have 55% of patients with lung cancer getting NGS testing
- Implemented nurse navigator program to have NGS testing done after biopsy shows lung cancer, now in 2023 100% of patients get NGS testing who have lung cancer
- No coverage issues as this is guideline based

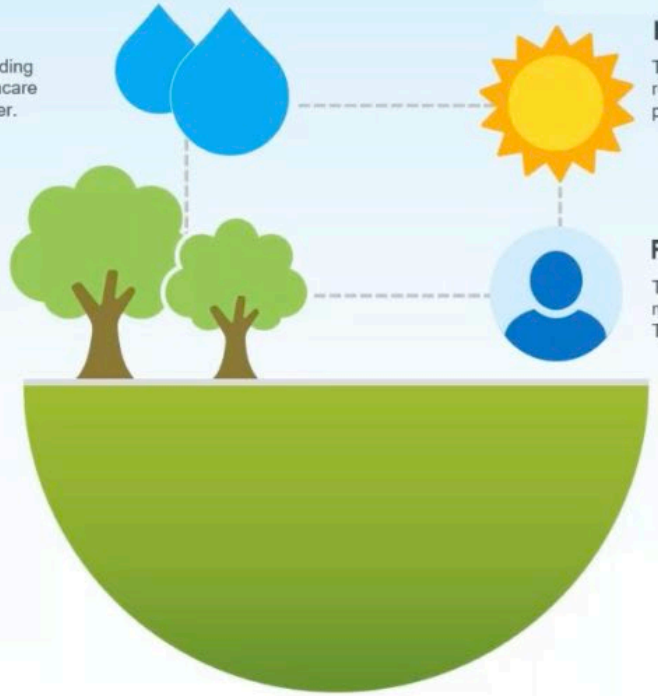
The Healthy Healthcare Ecosystem

Laboratory

The "rendering provider" providing services ordered by the healthcare provider for the patient/member.

Ordering Provider

The medical professional providing care and supporting the patient's healthcare decisions.



Insurance Company

The entity that receives the member's payments and in return covers healthcare services when needed by the patient/member.

Patient/Member

The patient/member is insured by the health plan, and may be responsible for paying premiums, co-pays, etc. They are funding the insurance system.

Goal = patient coverage

Current state of Genomics Companies

Annual Losses at Genomic Testing Lab Companies

Company	2021	2020	2019	2018	2017	Accumulated Losses Since Inception
Exact Sciences	-$595,625,000	-$823,605,000	-$213,090,000	-$175,149,000	-$114,397,000	-$2,641,520,000
Natera	-471,716,000	-229,743,000	-124,827,000	-128,154,000	-137,628,000	-1,394,836,000
Guardant Health	-405,670,000	-253,783,000	-75,651,000	-85,063,000	-83,221,000	-1,007,825,000
Invitae Corp.	-379,006,000	-602,170,000	-241,965,000	-129,355,000	-123,380,000	-1,722,848,000
Sema4 Holdings	-245,390,000	-241,340,000	-29,704,000	NA	NA	-575,441,000
DermTech	-78,335,000	-36,477,000	-20,130,000	-10,004,000	NA	-206,364,000
Veracyte	-75,563,000	-34,909,000	-12,599,000	-22,999,000	-31,003,000	-357,157,000
Biodesix	-43,159,000	-31,350,000	-30,726,000	NA	NA	-301,973,000
Castle Biosciences	-31,292,000	-10,284,000	2,991,000	-10,162,875	-15,307,427	-93,767,000
Myriad Genetics	-27,200,000	-199,500,000	4,600,000	133,300,000	17,400,000	-254,200,000
Interpace Biosciences	-14,943,000	-29,484,000	-27,169,000	-12,189,000	-12,216,000	-227,059,000
Biocept Inc.	-2,824,000	-17,810,000	-25,259,611	-25,207,971	-21,613,737	-263,527,000
Total for 12 cos.	-$2,370,723,000	-$2,510,455,000	-$793,529,611	-$464,983,846	-$521,366,164	-$9,046,517,000

Source: *Laboratory Economics* from Securities & Exchange 10K filings

July 2022

Coverage

- Medicare –
  - Follows NCCN guidelines
  - Patients must be affected
- Medicaid –
  - Covered by most states (panels are variable)
  - Medical necessity criteria vary
- Commercial –
  - Most follow NCCN to close degree
  - Medical necessity criteria vary
  - Discrepancies exist

Summary

- Currently we manage risk for 700,000 lives
- By 2030 this will be 1.9 million lives
- By layering in genomic information and AI we can predict better and get right patient's care at the right time in the right setting
- Precision Pathways
- Care model vs the payment model
- Create innovative care models for genomic testing
  - Pick the best models to proliferate
  - Some models may cost more and other less
  - Innovative purchasers that are looking beyond 1 year

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