ASSOCIATION OF CANCER CARE CENTERS

Executive Summary:

ACCC Working Summit on Biomarker Testing Solutions for EHR Integration

Advances in precision medicine are leading to more patients receiving biomarker-driven therapies, but complex testing workflows still make it difficult for oncologists to efficiently order cancer biomarker tests. To address these challenges, the Association of Cancer Care Centers (ACCC)—with its program partner LUNGevity—launched an initiative to understand the current challenges and explore effective practices that cancer programs have implemented to improve the biomarker testing processes through electronic health record (EHR) integrations and workarounds. On October 4, 2023, ACCC leadership convened a multistakeholder summit to discuss how cancer centers can use EHRs to optimize biomarker testing processes for precision oncology.

Cancer programs that build integrations between EHRs and reference laboratories are improving test ordering and, as a result, streamlining workflows, enhancing documentation, and facilitating communication. The summit allowed stakeholders to exchange ideas and best practices from cancer programs that have successfully implemented EHR integrations. These strategies include using data, evidence, and advocacy to prioritize information technology (IT) projects; using computerized provider order entry (CPOE) to reduce errors and track orders; and using discrete data fields and structured formats to enable data extraction and analysis. Small group discussions focused on identifying ways to prioritize IT projects, enacting integrations that facilitate biomarker test ordering, and optimizing storage of test results and their appearance in the EHR. Anticipating future needs, summit participants also shared insights and recommendations such as developing a toolkit/resource library, sharing vendor evaluation criteria, and following updates on standard terminologies for genomic reporting.

This report provides a thematic analysis of those discussions and highlights emerging opportunities to guide stakeholders in cancer programs as they initiate and build EHR integrations to deliver more effective and equitable cancer care.

Introduction

Biomarker testing is an essential component of precision oncology, as it helps to identify patients who may benefit from targeted treatments or immunotherapies. However, the process of ordering, performing, and reporting biomarker tests is often complex and inefficient, and it often involves multiple stakeholders and systems. One major challenge is the lack of integration between EHRs and the reference laboratories performing biomarker tests. This often leads to the need for manual workflows (eg, faxing orders, scanning results) that are prone to errors.

To address these issues, ACCC and its program partner LUNGevity convened a multistakeholder summit entitled "ACCC Working Summit: Biomarker Testing – Solutions for EHR Integration" in Austin, Texas, to explore how cancer centers can use EHRs to optimize biomarker testing processes.

In preparation for the meeting, participants reviewed a landscape analysis that summarized current challenges faced by cancer program staff when ordering biomarker tests and described EHR integration solutions and workarounds to streamline test ordering and reporting.

The summit aimed to facilitate a discussion around real-world EHR integration issues such as interoperability, clinical workflows, and working with various reference laboratories. Over 40 cancer program clinicians, operational champions, reference laboratory and EHR platform representatives, and other stakeholders convened to discuss effective practices/workaround solutions to overcome barriers to integrating cancer biomarker testing into EHR systems. Their goal was to identify opportunities for immediate actions in high-priority areas.

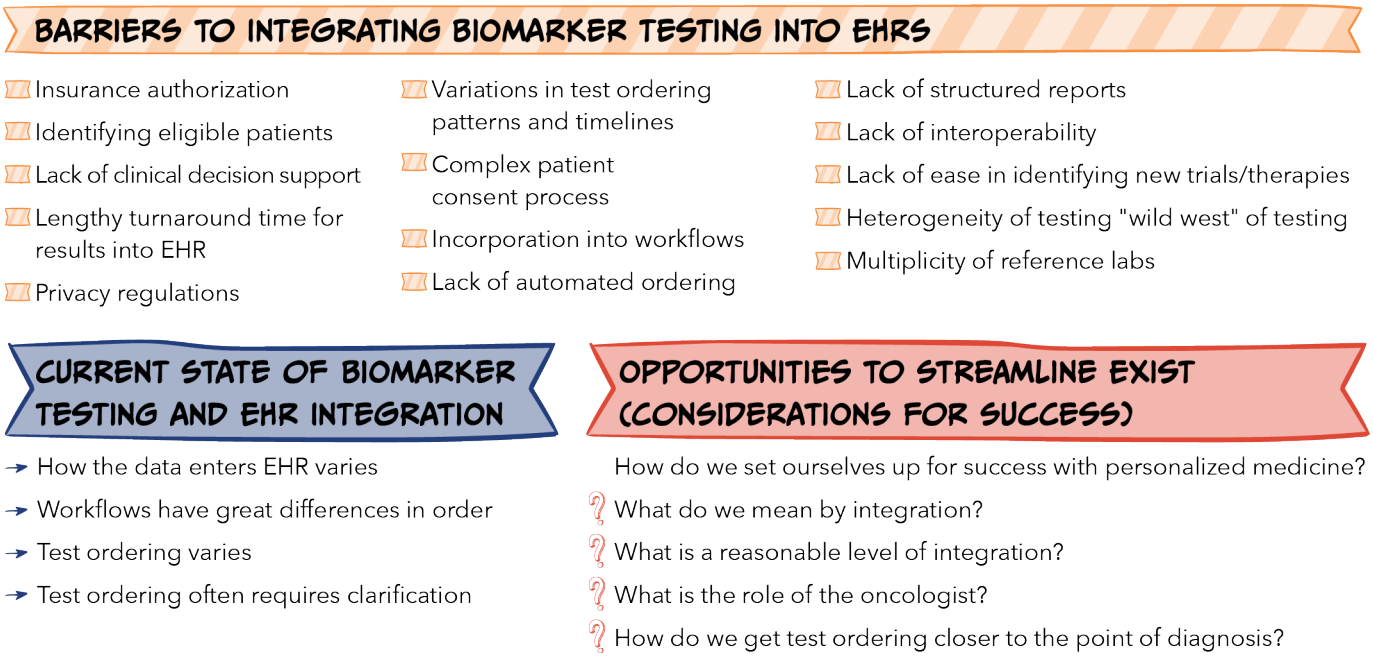
Reflecting on the Current State

To underscore the current state of readiness and implementation of EHR solutions, participants were invited to rate the progress of their cancer programs in integrating biomarker testing into EHRs. Each of 23 cancer program representatives placed a sticker on a door entry chart at the start of the summit (**Figure 1**). About half believed their cancer programs were front runners in this area, whereas most of the remaining participants indicated they were making some progress. Summit participants were asked to consider, "What single barrier, if removed, would enable the effective use of EHRs for comprehensive biomarker testing?" In response, several key themes emerged (**Figure 2**), which guided breakout group discussions and action planning (**Figure 3**).

FIGURE 1. Summit Door Entry Chart

● Red circles represent a cancer program's vote
EHR, electronic health record.

FIGURE 2. Opening Roundtable Key Themes



EHR, electronic health record

FIGURE 3. Action Planning Summary

INITIATING IT PROCESSES

- Establish a business case for EHR integration focused on improving patient care (eg, create an ROI guide)
- Establish precision medicine infrastructure at all levels
- Create workflows for IT, clinicians, and other stakeholders (eg, an EHR Process Roadmap)
- Create a vendor analysis checklist (eg, include vendor reviews)
- Broaden EHR strategy to include clinical trials, institutional strategic goals, and medical science

ORDERING BIOMARKER TESTS

- Standardize testing (ie, standardization of who gets tested, what tests are ordered, up-to-date list of biomarker tests)
- Standardize ordering process for outgoing orders and data entry into EHR

MANAGING TEST RESULTS

- Create automated alerts for new clinical trials
- Designate role to manage outgoing test orders (eg, biomarker testing navigator, precision medicine steward)
- Standardize and expand information fields to capture more data
- Standardize language (eg, open-source content)
- Standardize method for entering information into EHR
- Customize letters to patients with results for improved communication

Illustration by Lisa Arora.
EHR, electronic health record; IT, information technology; ROI, return on investment.

Summit Activities

After welcoming participants to the summit, a panel presentation highlighted several examples of effective EHR integrations. Case examples were presented by representatives of TriHealth Cancer and Blood Institute, the Southern Ohio Medical Center (SOMC), and the University of Arizona Cancer Center.

- At TriHealth, the team incorporated the EPIC genomics module (EPIC Systems) and integrated it with a reference laboratory. Customizations and enhancements included tools like a genomics order filter, which enables teams to pull up genomic orders in EPIC rather than rely only on the media tab to view scanned PDF files. In addition, the team suggested using smart phrases rather than copying and pasting or manually entering data.

- SOMC staff shared their experience working with a navigator who was responsible for coordinating and overseeing biomarker testing processes. Much of the work to track and incorporate test results remains manual, but the team is exploring ways to integrate technology to streamline the process.

- At the University of Arizona Cancer Center, the team has completed several EHR transitions and integrations. Team members recognize the critical importance of having a champion who understands both the clinical and IT aspects of achieving integrations and who can lead a collaborative approach that effectively meets the needs of clinicians.

Following case presentations, participants joined topic-based breakout groups to explore barriers and brainstorm actionable steps and solutions that program leaders can take to advance EHR integrations. The breakouts focused on: 1) prioritizing IT projects, 2) following the test ordering process, and 3) storing and viewing test results. Each breakout session included a summary of key points as participants identified key steps to move the cancer community forward with EHR integration initiatives.

Prioritizing IT Projects

A key theme emerging from the summit was the need for clinicians and cancer program administrators to work together to prioritize IT projects that enable more efficient workflows directed at improving patient care.

Building integrations with reference laboratories requires time, resources, and coordination among multiple parties including IT staff, vendors, and laboratory personnel. Therefore, it is important to demonstrate and communicate the value and impact of such integrations on clinical outcomes, quality measures, and operational efficiency.

Summit participants described ways that they use data, evidence, and advocacy to justify and prioritize EHR integration projects at their cancer programs/centers that included the following:

- Data from the cancer center's tumor registries, molecular tumor boards, or quality improvement initiatives may be used to show gaps and opportunities in biomarker testing; further, summarized published data can explain ways that integrations can streamline workflows and save time for clinicians.
- Evidence from the literature may be used to support the clinical utility and necessity of cancer biomarker testing and ways that integrations could help clinicians adhere to guide recommendations. Strong clinical leadership is required to align stakeholders and establish buy-in for IT projects that will improve cancer care delivery.
- Precision medicine steering committees can identify key strategic initiatives, evaluate and prioritize IT projects, and establish criteria for vetting reference laboratories.

Key opportunities and recommendations for improvement include:

- **Provide a clinical rationale, prioritize adjustments needed,** and build a business case that aligns with institutional priorities
- **Aim for a multidisciplinary/interdisciplinary approach** and gain buy-in from the stakeholders who will be most impacted by changes
- **Establish a vendor analysis checklist to measure value** and identify target requirements that align with institution's strategic goals
- **Determine the level of project management support required to achieve the changes** with the understanding that the first EHR integration will require the greatest effort and subsequent integrations will get easier
- **Collaborate with selected EHR vendor and/or reference laboratory** considering that EHR companies and reference laboratories often have project plans, templates, checklists, and other documents to help guide teams through the planning and implementation process.

Biomarker Test Ordering

Another key theme emerging from the summit was the marked improvements in test ordering that occur after EHR integrations are built with reference laboratories.

While some level of Computer Provider Order Entry (CPOE) may occur for tests that are performed in-house by the pathology department, CPOE is often not available for send-out tests without an EHR integration. Test ordering becomes more efficient and trackable when orders are entered and transmitted electronically through the EHR rather than manually via fax or phone.

Summit participants highlighted the key benefits of CPOE, such as:

- **Reducing errors** by providing standardized order sets, clinical decision support, and alerts for appropriate test selection and indications
- **Streamlining workflows** by eliminating the need for paper forms, fax machines, and phone calls and enabling electronic tracking of order status, specimen collection, and shipping
- **Enhancing documentation** by capturing relevant clinical information (eg, diagnosis, staging, and patient consent)
- **Facilitating communication when ordering biomarker tests** by notifying providers of results and allowing providers to share this information with other members of the treatment team.

Once CPOE is implemented, cancer programs may find it easier to build standard workflows for biomarker testing so that the right patient receives the right test at the right time. These efforts can help close gaps in testing disparities and facilitate the identification of patients who may be eligible for clinical trials.

Key opportunities and recommendations for improvement include:

- **Implement software/solutions that expedite integration.** EPIC users may consider implementing a framework for application development such as orders and results anywhere (known as ORA or AURA), since this expedites the integration process. This option is more efficient than the building of traditional point-to-point interfaces with each reference laboratory.
- **Establish changes in the clinical workflow** with CPOE for biomarker test ordering. Key considerations include the following:
  - How will providers place orders for send-out tests?
  - How will the results be displayed in the EHR?
  - How will the use of CPOE reduce the time clinicians spend entering orders?
  - How will test results feed into research and quality initiatives?
- **Work with oncologists who will champion the effort** and help other clinicians understand the value of EHR integrations.

Recognize that advanced practice providers, nurses, and other clinical staff may be responsible for entering the order; therefore, they also need to be aware of the integration efforts. Some cancer programs may have biomarker navigators or team members with other similar roles (eg, precision medicine steward) who are responsible for entering and tracking test orders and results.

Storing and Viewing Biomarker Test Results

A third key theme emerging from the summit was improvement in result reporting that occurs after integrations are built with reference laboratories.

Biomarker test results are easier to review and track when integrated directly into the EHR rather than being scanned as PDF reports or entered manually. Summit participants emphasized the advantages of having results in discrete fields or structured to enable data extraction, analysis, and reporting.

Having results in discrete fields may allow cancer centers to query, aggregate, and visualize data on biomarker testing rates, turnaround times, and treatment decisions. Discrete test data can also enable clinical decision support (eg, targeted treatment recommendations, clinical trial eligibility) and identify opportunities for quality improvement. Cancer biomarker test results should be clearly labeled so that clinicians can easily identify the type of test performed (eg, somatic tissue vs plasma, germline, DNA vs RNA).

It may be ideal to have all test results available as discrete data. However, some summit participants believed that a PDF report that is easy to find also has tremendous value, since it may be formatted to be easier to read and understand (eg, color coded sections, detailed explanations). EHR integration can make those PDF reports much easier to find in the EHR. Some cancer programs have customized their integrations to receive test results as discrete data and a PDF report.

Key opportunities and recommendations for improvement include:

- **Build discrete data fields and track results in the EHR.** This enables efficient reporting and tracking for quality initiatives and clinical trial eligibility. Certain add-on modules (eg, EPIC genomics module) may facilitate how test results are stored and displayed in the EHR.
- **Ensure that reports are clearly labeled and easy to find in the EHR.** Some clinicians may prefer to see PDF reports that may be easier to read and understand.
- **Consider proactive patient and caregiver education around biomarker testing.** Some patients view their test results via a patient portal before they have a chance to speak with a provider.

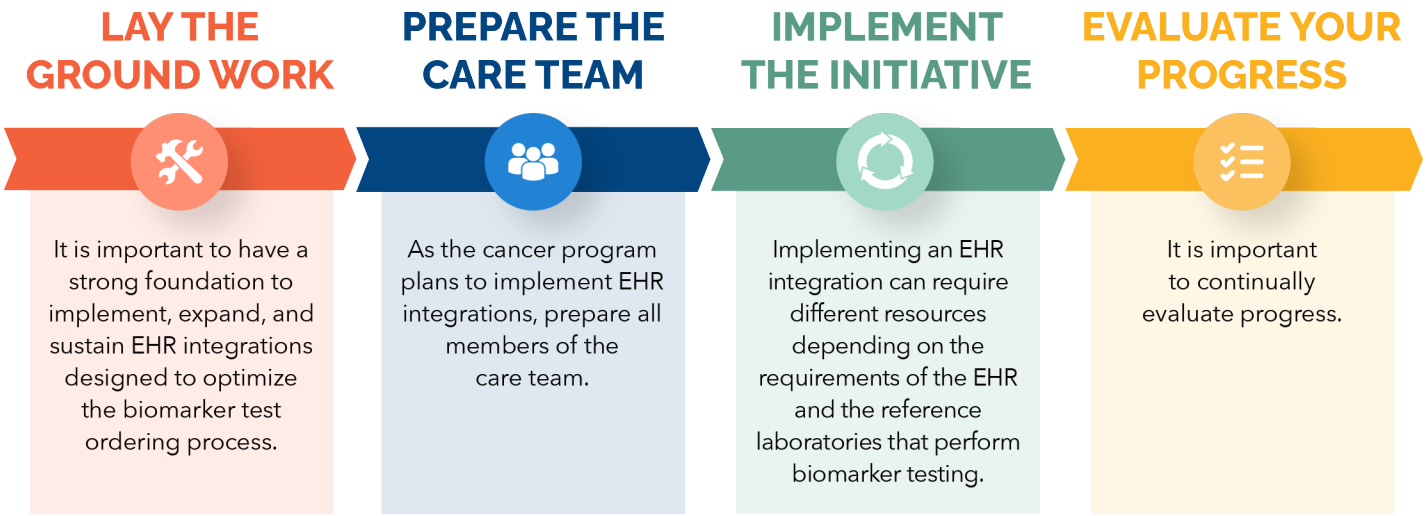
Ideally, patients would receive a patient-friendly customized report that explains why certain tests were performed and how their results may impact cancer care. This may be an aspirational goal, but participants acknowledged that artificial intelligence may enable this in the near future.

Path Moving Forward

As the summit came to a close, participants reflected on various discussion themes and proposed actionable ideas and opportunities to guide cancer programs through EHR integration. Among these was an immediate call for a toolkit or resource library, inclusive of templates and documents from cancer programs that have successfully implemented EHR integrations. In the spring of 2024, ACCC delivered with the release of its **EHR Integrations for Biomarker Testing Roadmap**, an interactive learning tool designed to help multidisciplinary cancer care team with essentials associated with initiating, preparing for, implementing, and evaluating EHR biomarker testing integrations (**Figure 4**) as well as its comprehensive **Resource Library**, complete with tools, checklists, and publications to inform and guide processes. Beyond these initial resources, other emerging opportunities include:

- **Educational content and support tools:** Development of additional resources tailored to guide cancer programs through EHR integration for biomarker testing, such as:
  - a business plan for buy-in to help leadership understand the how and why of integration, including return on investment to influence decision-makers;
  - crowd sourcing of common information around data and implementation resources; and
  - ways to evaluate reference laboratories and select vendors based on the type of tests offered.
- **Interoperability and standardization of data/metrics:** Imagining a single, universal EHR system remains aspirational, but ongoing interoperability improvements are being made through Health Level 7 International (HL7) Fast Healthcare Interoperability Resources. The HL7 Clinical Genomics Work Group provides recommendations on the use of standard terminologies for genomic reporting and has developed a **genomics reporting implementation guide** and continues to work on publications to disseminate updated recommendations. The goals are to:
  - incorporate standardized nomenclature and communication protocols across different EHR platforms/reference laboratories; and
  - to create structured data/discrete fields in reports.
- **Establishment of key roles to define and gain buy-in from required champions/stakeholders:** Many programs have limited budgets, and staff may not prioritize EHR integrations for biomarker testing. Participants emphasized specific roles that helped support integrations and/or workaround solutions, including:
  - champions;
  - IT support;
  - biomarker or precision medicine navigators; and
  - colleagues in leadership and senior executive roles.

FIGURE 4. EHR Integrations for Biomarker Testing Roadmap



Conclusion

The ACCC multistakeholder summit provided a valuable opportunity for cancer programs to share their experiences and challenges with EHRs to optimize biomarker testing processes. These important conversations revealed that building integrations with reference laboratories can have significant benefits for test ordering and result reporting as well as for IT project prioritization. However, these stakeholders also highlighted the technical, operational, financial, and regulatory barriers and complexities that cancer centers face in implementing such integrations. Summit participants recommended that staff at cancer centers collaborate with each other and with reference laboratories, EHR vendors, and other stakeholders to share best practices, lessons learned, and resources to overcome these challenges and advance the field of precision oncology.

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