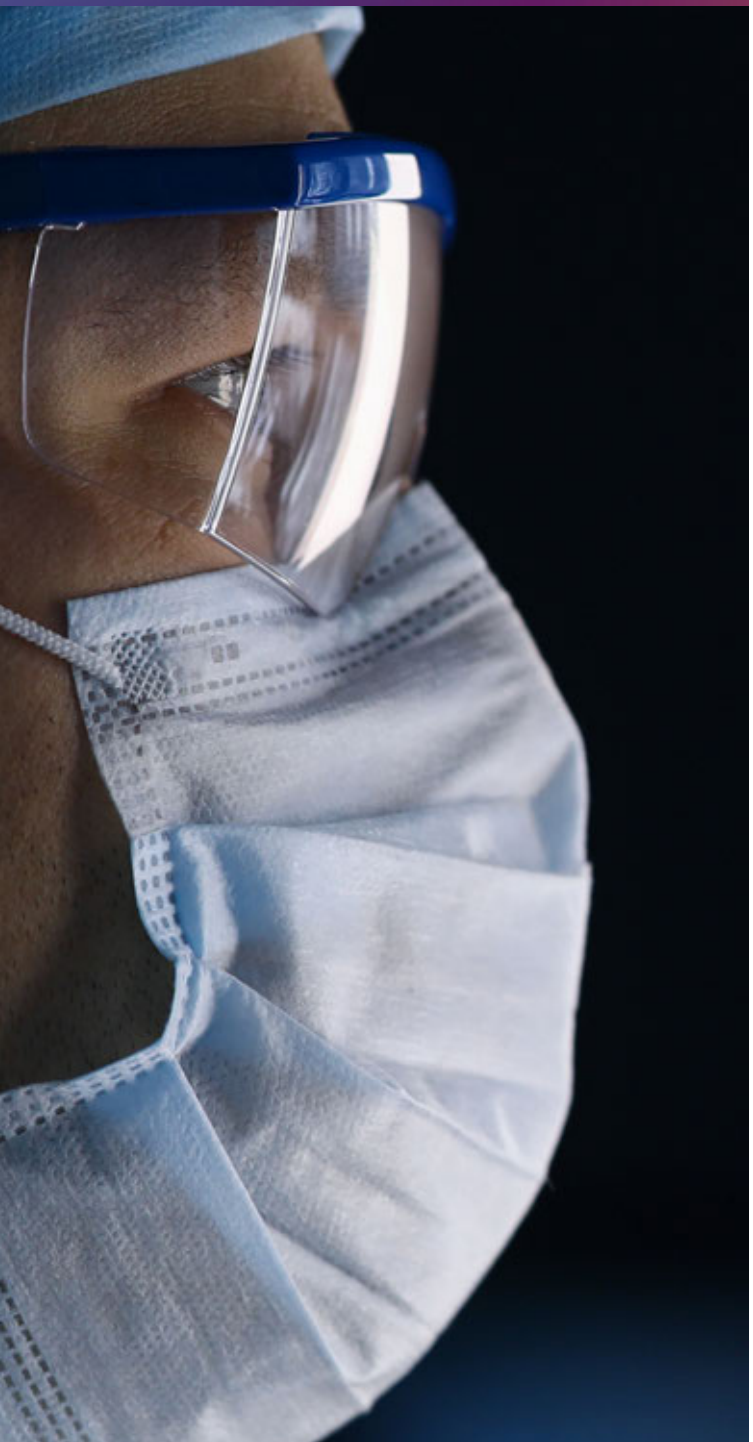

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The invisible backbone: Part 1 (oncology)

The days of dark, disconnected data are over. Connected products and spaces used to reimagine how we share and use information across blended digital and physical healthcare interactions will remove avoidable friction and simplify decision-making, giving patients and HCPs time, clarity and control.

What's going on

A fragmented technology landscape negatively impacts patient experiences and outcomes. This is especially challenging in oncology, where the patient journey is one of the most physically, emotionally and financially draining experiences of someone's life.

All too often, the experience for patients, informal caregivers and healthcare professionals (HCPs) is made measurably more difficult by healthcare ecosystem idiosyncrasies—notably, lack of data interoperability.

Unlike most industries, where there is a one-to-one service provider-to-customer relationship, healthcare is made up of disparate, siloed pods of HCPs and other stakeholders all trying to manage the health of a single patient. As a result, even the most basic communications between oncologists, nurses, lab technicians, infusion clinicians and pharmacists can be a struggle.

Lack of interoperability is exacerbated by limited incentives and market complexity, leading to tepid use of application programming interfaces (APIs) to connect different systems and technologies. In the fragmented technology landscape that results, organizations struggle to create holistic views of oncology patients, leading to poor experiences and treatment blind spots.

Most organizations only capture a fraction of a patient's digital "wake." They often miss information related to social determinants of health, lifestyle and engagement preferences—omissions that aren't trivial as they contribute to up to 80% of health outcomes.[1] This also makes it far harder for organizations to deliver the tailored experiences patients crave, from being directed to the appropriate parking spot to care and treatment regimens personalized to a patient's own value system and beliefs.

But things are changing, and for the better.

Momentum around interoperability standards adoption is growing.[2] Advances in therapeutics like immuno-oncology and the rise of new digital tools, including remote patient monitoring solutions and clinical decision support tools, are supporting new precision medicine.

The combination of these positive forces has opened the door to reimagine the oncology experience.

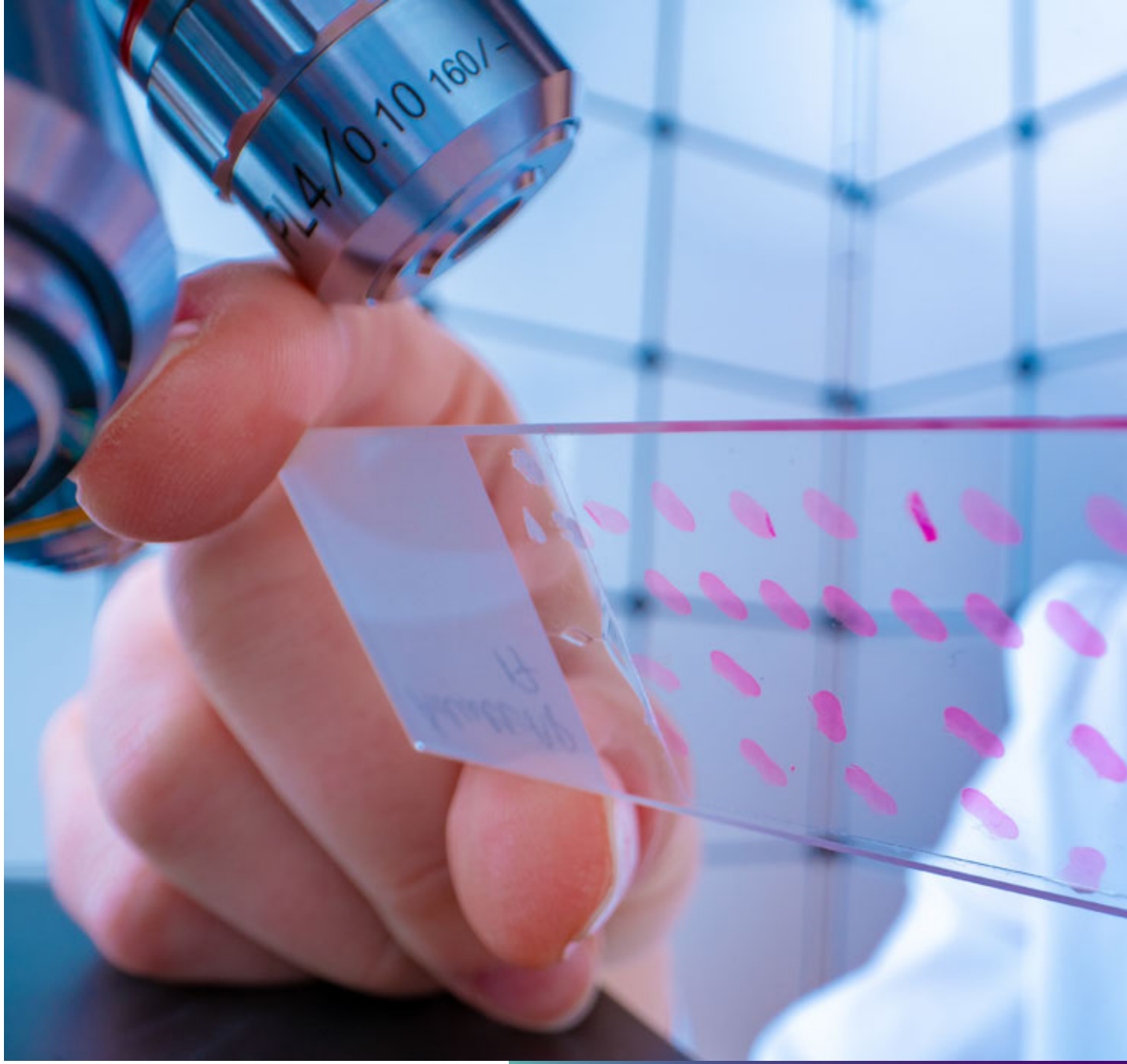
What's next

The shift in the oncology experience will usher in an era filled with brilliant basics (e.g., find a provider, scheduling), intelligent decision-making and clinical breakthroughs. An evolution of how we use data to connect products, spaces and treatments to create blended experiences will be the center of this reimagination.

Change will be driven by an invisible backbone for new ecosystems and experiences provided by traditional and non-traditional healthcare companies. No longer will data be siloed, collected haphazardly with no clear end game. Instead, data will become hyper-purposeful, action oriented and easily reusable.

This invisible backbone will be wired to do the behind-the-scenes grunt work using products, spaces and treatments as its eyes, ears and hands. It will be interwoven in our everyday lives, blending digital and physical environments into a singular curated experience.

Most importantly, it will remove clutter and friction so patients can focus on living their lives and oncologists can focus on providing the best care possible.



Opportunities for reimagination

1. Simplifying is good business

Simplification of the patient experience will deliver considerable benefits to patients and organizations.

Patients are often overwhelmed by emotions of ambiguity, anger and anxiety across the oncology journey. The severity and frequency of such feelings can be reduced by simpler, more compassionate care experiences that result from an ecosystem of sensors and connected devices.

Sensors can communicate with devices carried by patients and HCPs, making it possible to know who people are and where they are located within a facility. This data will enable new types of experience capabilities that are curated and contextually aware, accessed anywhere via a mobile app and with interactive kiosks and on-site digital signage.

A network of connected devices and spaces will provide patients with peace of mind.

A small transmitter "beacon" securely linked to a patient's identity allows them to be identified and their location precisely tracked on arriving at a medical facility, for example. This can enable care teams and staff to greet the patient by name, anticipate their transportation needs and even automatically trigger events such as their discharge summary. It can also be used to eliminate the need to repeat tedious actions, such as providing insurance information.

Ultimately, simplifying the experience is not only the right thing to do—it also has the potential to increase throughput and improve organizations' business performance.

2. Data, you cleaned up well

Successfully re-imagining the oncology experience depends on tackling current weaknesses. A key part of this will be capturing information in a clean and efficient way so it can be easily reused or represented in a more digestible, actionable manner.

Patients should no longer need to be burdened with manually reporting side effect symptoms, for example. Instead, connected products will prompt structured questions and passively capture useful indicators with feedback and advice on how to potentially adjust treatment flowing between patient and HCP in a constantly evolving conversation.[3]

Creating reusable and insightful data won't be easy as it will rely on getting several factors correct: whether products and spaces that aid in data capture can be designed to secure high adoption rates, for example; how easily and cleanly data can be captured without sacrificing quality or integrity; and whether it can be centrally stored then seamlessly redistributed through a web of APIs.

Arguably, most important will be an organization's ability to pivot from collecting and sharing data to using it to add value for patients or HCPs. As the pace of data

collection increases, the flow of information shared with patients and HCPs will have to be carefully controlled. Flooding patients and HCPs with a constant stream of new data will be overwhelming. Instead, bite-size information should be shared at the right moments.

For patients, the initial shock of diagnosis hinders the ability to process information, so it will be critical to work with HCPs to design ways to reinforce treatment option messaging.

The administrative burden can hinder HCPs' ability to consume the latest in trial and treatment research. HCPs can be selectively served easily digestible treatment trends or the ability to consult with other relevant oncology specialists instead of relying on historical treatment approaches.

3. Extending To Breakthrough

The value of using smart, actionable data to power connected products and spaces extends beyond benefits related to the basic experiences, such as scheduling. Opportunities exist to extend the reach of HCPs and researchers in how cancer is treated and studied, leading to potential treatment efficacy breakthroughs.

Consider clinical trial support. One in four cancer clinical trials failed to enroll enough patients, and 18% closed with less than half the target number of patients after three-plus years, according to one recent study.[4]

Imagine a future where a diverse set of patients can be identified, matched enrolled, and guided through the entire clinical trial journey remotely, minimizing travel and further disruption to their already disrupted lives—as Medable has done.[5] Improving clinical trial access will also yield greater health equity and increase the chances for better health outcomes.

Symptom management is another area of opportunity. An example is a future where a brand-agnostic symptom management solution provides tailored patient interactions and remote patient monitoring connected to electronic medical records. Patients would have a consistent companion for 24/7 support that adjusts when treatments are switched or combined across different brands. Additionally, as the promise of personalized medicine becomes a reality, the combination of a holistic solution can further optimize outcomes.

Imagine another future where a connected care solution is used to facilitate the transition of cell and gene therapy monitoring into the home—or one where intelligent diagnostics, algorithmic-based care and the connectivity of multisourced patient data are combined to predict and intervene before the cancer metastasizes.

What healthcare leaders can do next

1. Fix the backstage mess

It will take time to transition to the reimagined oncology experience as initiatives will need to be prioritized, experiences designed and built, and new ways of working adopted.

Taking the current state of experience as the baseline, identify the most impactful friction moments—e.g., similar paperwork filled out at the start of each appointment. Determine how to reduce the short-term administrative burden and cognitive load of such moments for patients, HCPs and staff while also building in long-term flexibility.

2. Connect the (human experience) dots

Many breakpoints in the current oncology patient experience come from poor data visibility and the impact this has on moments that matter for the patient and HCP.

Begin mapping what data is coming from where, in what form and for what purpose.

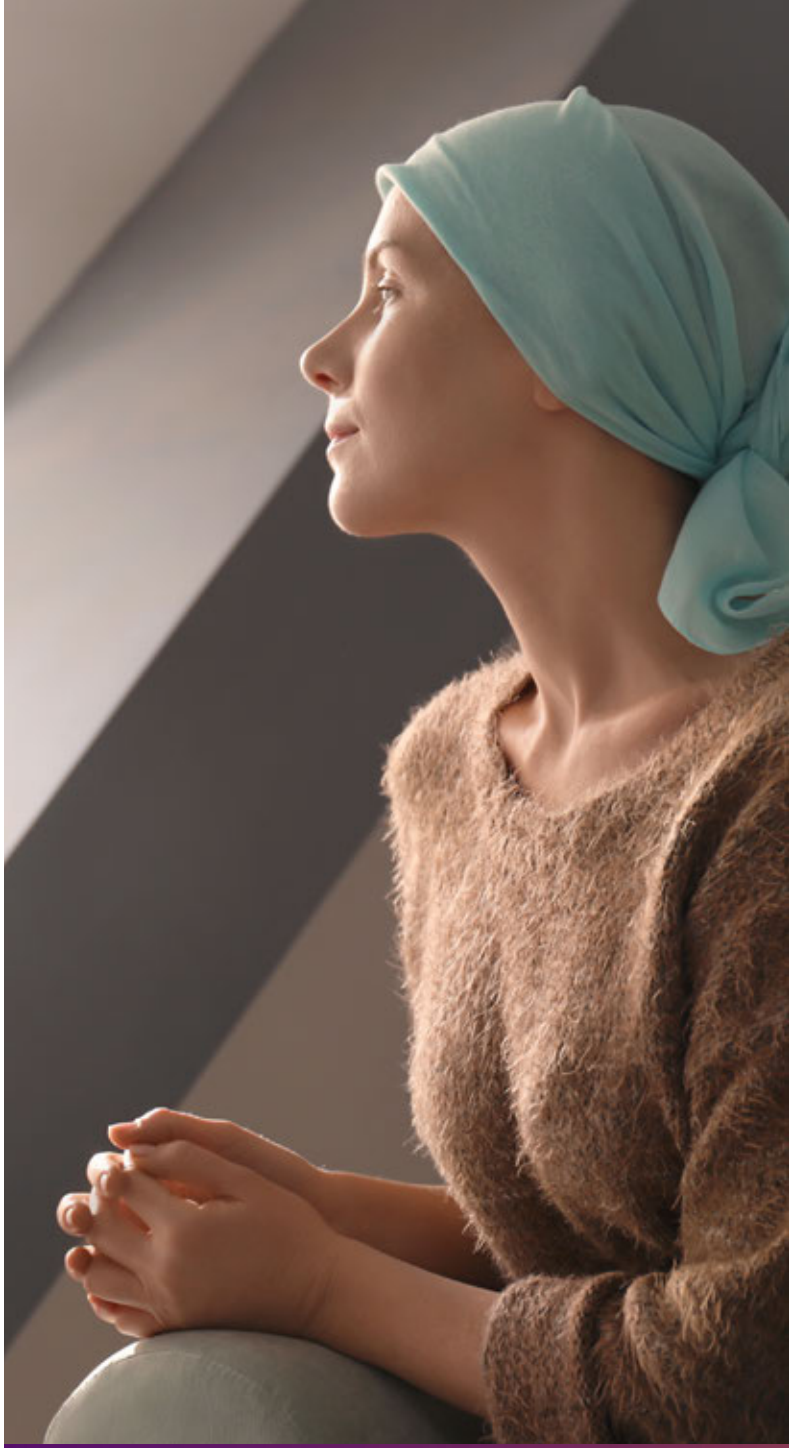
Gaining visibility into data sources, structure and quality will allow an experience-led data strategy to be crafted, including the role APIs will play.

3. Tear down that wall

Stop thinking about the digital experience and the physical experience as separate. The emergence of smart, reusable data allows a singular experience that uses multiple channels according to context, from home to facility and back.

Making this shift means creating new journey maps and experience diagrams. It will require a shift in organizational mindset: No longer can the "digital group" afford to sit siloed away from the on-site experience team. Further, it brings the facilities management team to the forefront.

Ultimately, resources need to be aligned so the end-to-end patient and HCP experience is a seamless fusion of digital and physical experiences.



Authors

Alicia Graham

Managing Director
Accenture Interactive

Brian Kalis

Managing Director
Accenture Health

Whitney Baldwin

Senior Principal – Patient Experience
Center of Excellence Lead

Jeremy Marcus

Senior Manager
Accenture Interactive

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