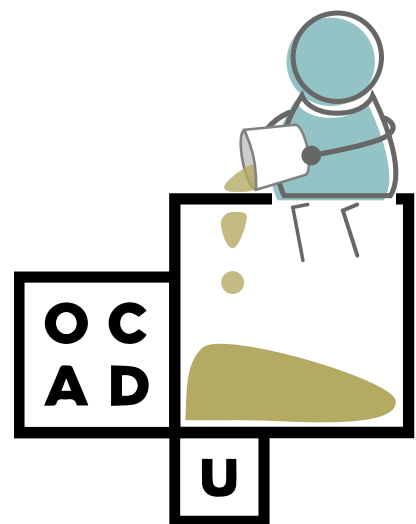# The Future of Virtual Care

Exploring The Value Of Virtual Care Through
Phenomenological Research And Design Methodologies

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Abstract

The COVID 19 pandemic necessitated a rapid implementation of virtual care within our healthcare system, generating previously unimagined levels of virtual care uptake and accessibility. The transition to virtual care revealed many benefits and rewards for both patients and providers including a reduction in cost, time saved, and greater protection from infection. However, to date, the system has focused on an urge to simply 'replace' discrete in-person 'moments' of care with digital interactions such as phone and video visits. If our healthcare system is to capitalize on the affordances of digital health and technology solutions, we must continue to change and adapt how we consider the role of virtual care and technology across the care experience.

This phenomenological research study sought to explore the experience of virtual care for both patients and primary care providers in an attempt to understand both the value and the gaps in the virtual care experience. Findings revealed an ongoing mismatch between patient needs and provider constraints. Using design research and strategic foresight methodologies, resulting design criteria pointed to the potential in extending digital health interactions across a broader spectrum of time and care modalities. Developing a more integrated care model may have the potential to ameliorate and resolve patient-provider mismatches through ongoing asynchronous connection and communication.

Table of Contents

Virtual care defined . . .

"any interaction between patients and/or members of their circle of care, **occurring remotely**, using any forms of communication or information technologies with the aim of **facilitating or maximizing the quality and effectiveness** of patient care."

This research sought to explore the experience of virtual care for both patients and primary care providers in an attempt to understand both the value and the gaps in the virtual care experience.

How might we . . .

balance **virtual and in-person care** to support the patient-provider relationship and maximize the delivery of an **equitable, continuous, and valuable care experience**?
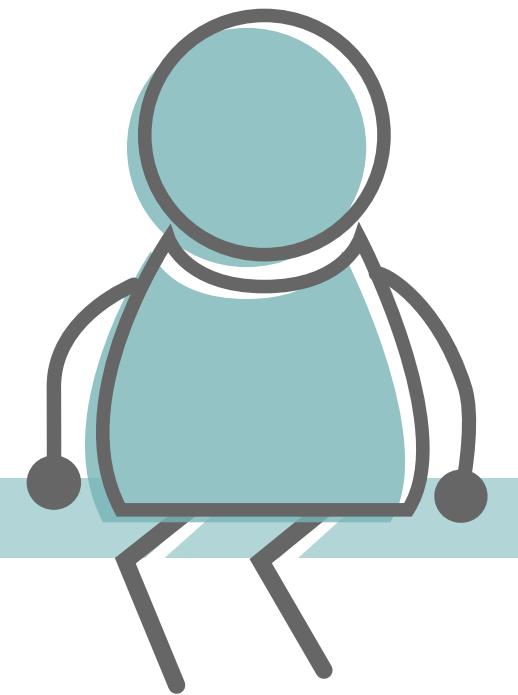
The Digital Health Landscape

In the 1970s, Canadian Dr. Maxwell House pioneered the concept of telemedicine and virtual consultations (House and Roberts, 1977). However, despite these initial auspicious beginnings, pre-pandemic Canada lagged far behind the rest of the world reporting a paltry 0.15% of care delivered virtually in 2015-16 (CMA, 2018). Pre-2020 Ontario reported just 0.7% of care being delivered via virtual modalities (Neal, 2020).

The pre-pandemic transition to digital healthcare and adoption of virtual care within the Canadian healthcare system has been fraught with a lack of interoperability, usability, and equitable access. Compounding these barriers is a lack of organizational and government will to work towards and adopt practices necessary for a comprehensive and unified goal of connected care.

In Ontario, the organization-led, regional approach to implementation of health information systems (HIS) has drawn multiple developers and vendors to the marketplace. The perpetuation of proprietary customizations and persistence of disjointed and isolated health data has led to an environment that continues to prohibit broad system-wide interoperability (Moriarty, 2018). In 2018, more than 20 electronic health record (EHR) vendors were active in the Ontario market and with the top two vendor systems, Meditech and Epic, holding 68% of the market share, the remaining 30+% was split amongst an additional 18+ vendors (as reported to the Ontario Hospital Association (OHA survey as of March 2019).
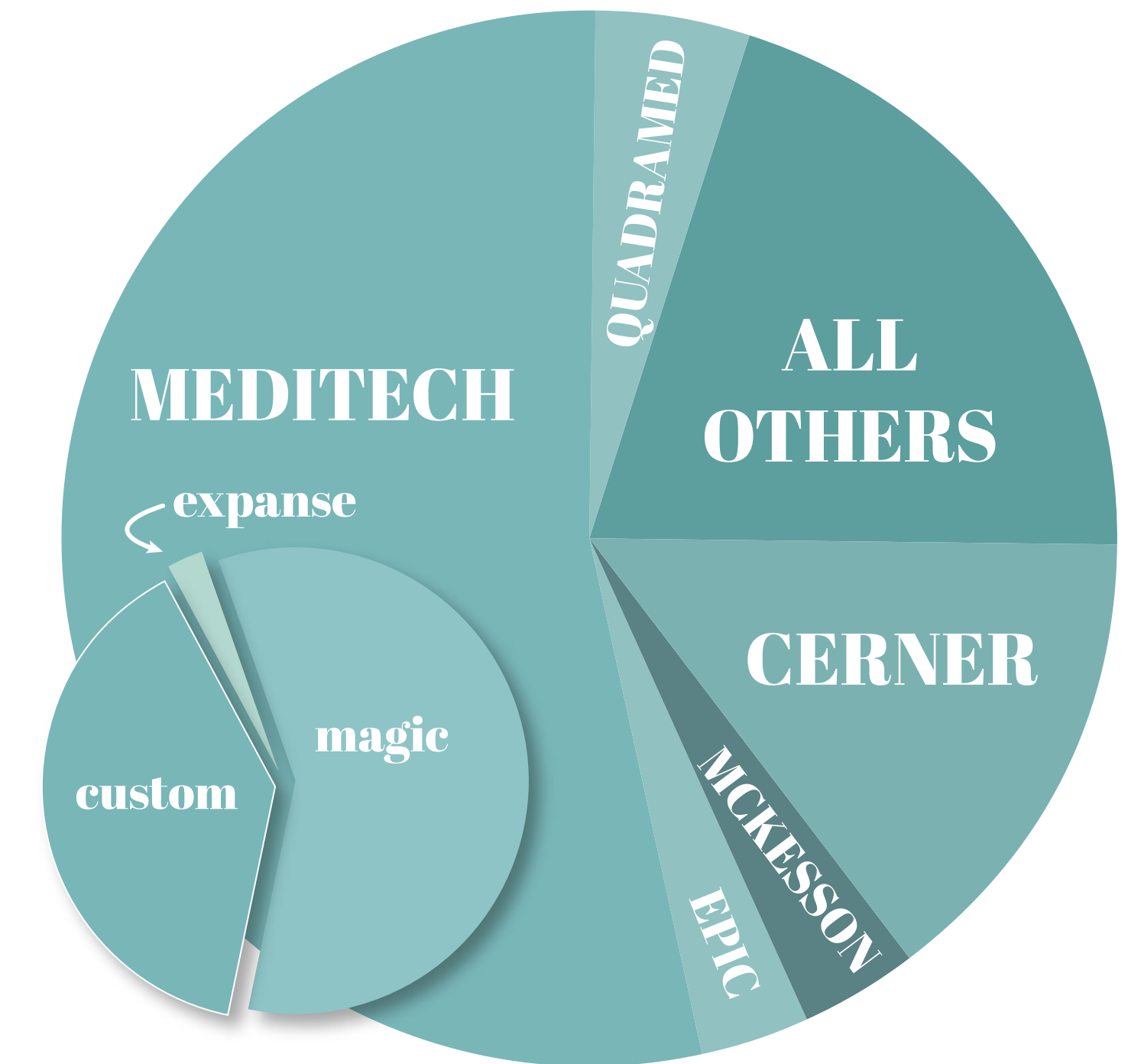
EHR system landscape, 2018

A similar landscape is playing out in Primary Care. Five electronic medical record (EMR) vendors with multiple platform offerings now dominate the marketplace holding 91% of the market share (Paré, et al., 2020). This broad and disparate market of EMR and EHR vendors have created a siloed system of health data. A 2018 physician survey showed that although nearly 80% of family physicians had implemented EMRs, only 16% were able to exchange patient information digitally with health organizations outside of their practice (Canadian Physician Survey Report, 2018).

As the need to make a case for the inclusion of virtual care and by extension digital health technologies within our healthcare system decreases, the digital health landscape will begin to look very different than pre-pandemic times. However, without a shift in approach, the absence of a strong digital foundation will continue to hinder future digital healthcare transformation.

EMR system landscape, 2020

"

The current policies are not developed for newly envisioned modern systems. Neither patient nor provider are currently happy with the experience.

~ policy expert
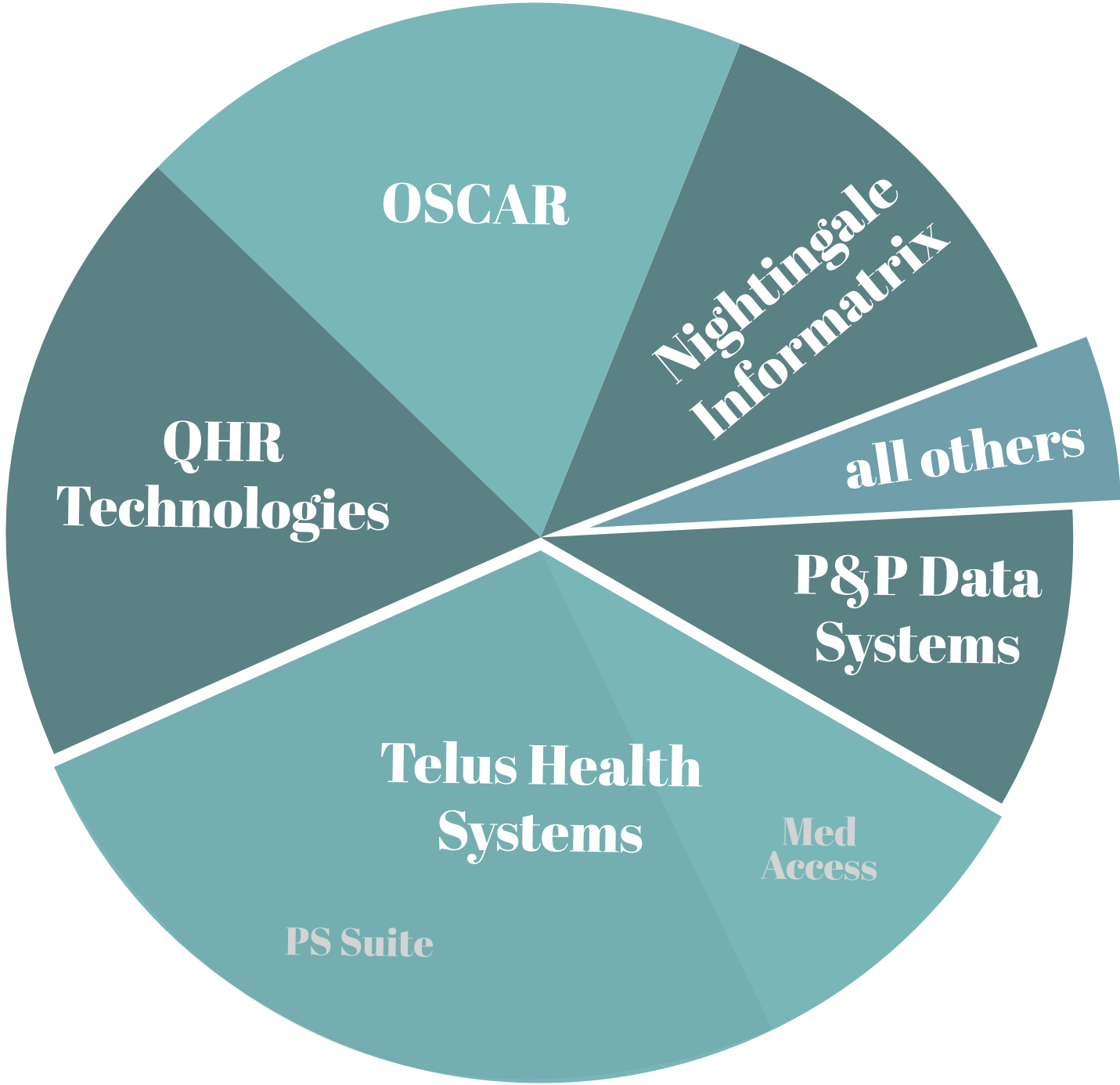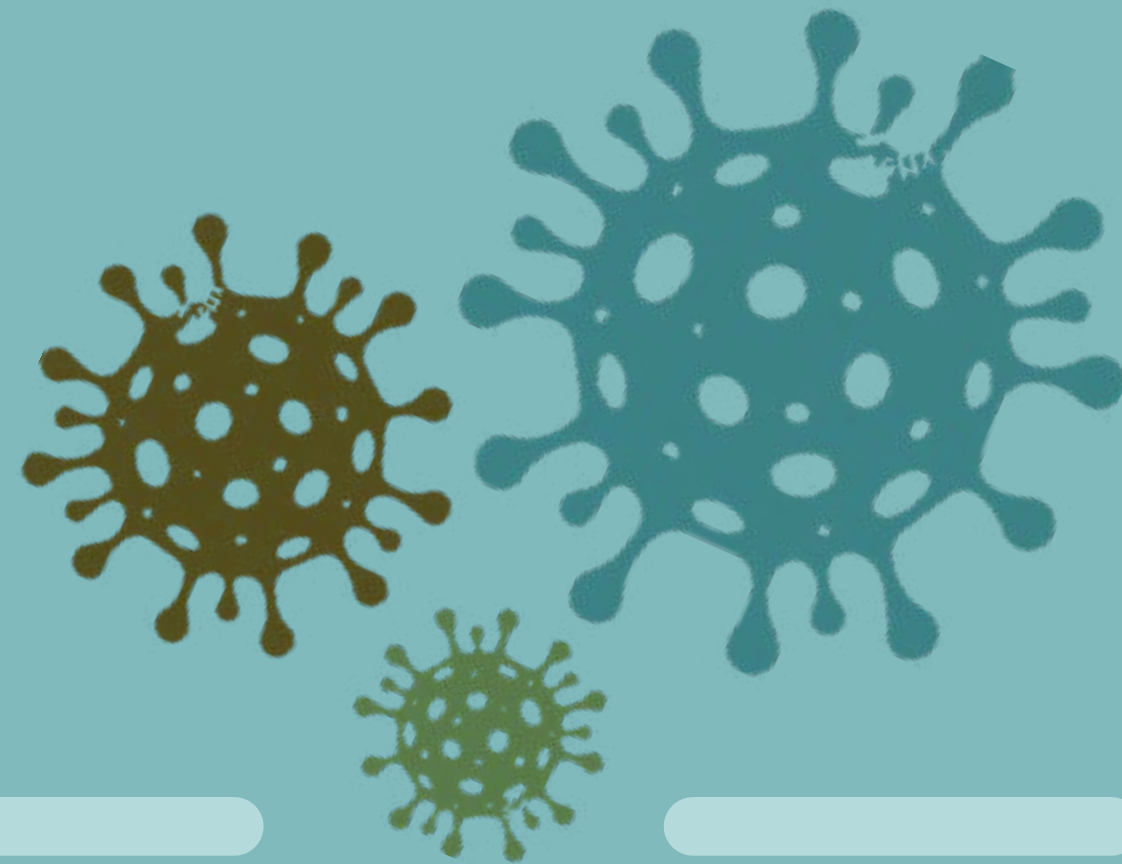
Virtual Care Adoption

The rapid implementation of virtual care forced change upon our healthcare system in the form of temporary funding and policy measures, accelerated dissemination of tools and supports, and the rapid launch of technology training and guidance programs. Evidence has emerged identifying previously unimagined levels of uptake and acceptability of virtual care by both providers and patients.

Although the rapid response to the pandemic appeared to prove that the inertia previously experienced by our system could in fact be overcome, the challenges that plagued the implementation of EMRs in the primary care sector have been repeated once again in the rapid rollout of virtual care technologies. A CMAJ report on the implementation of virtual care during the pandemic noted that Ontario once again left the choice of virtual care delivery platforms up to physicians (Glauser, 2020).
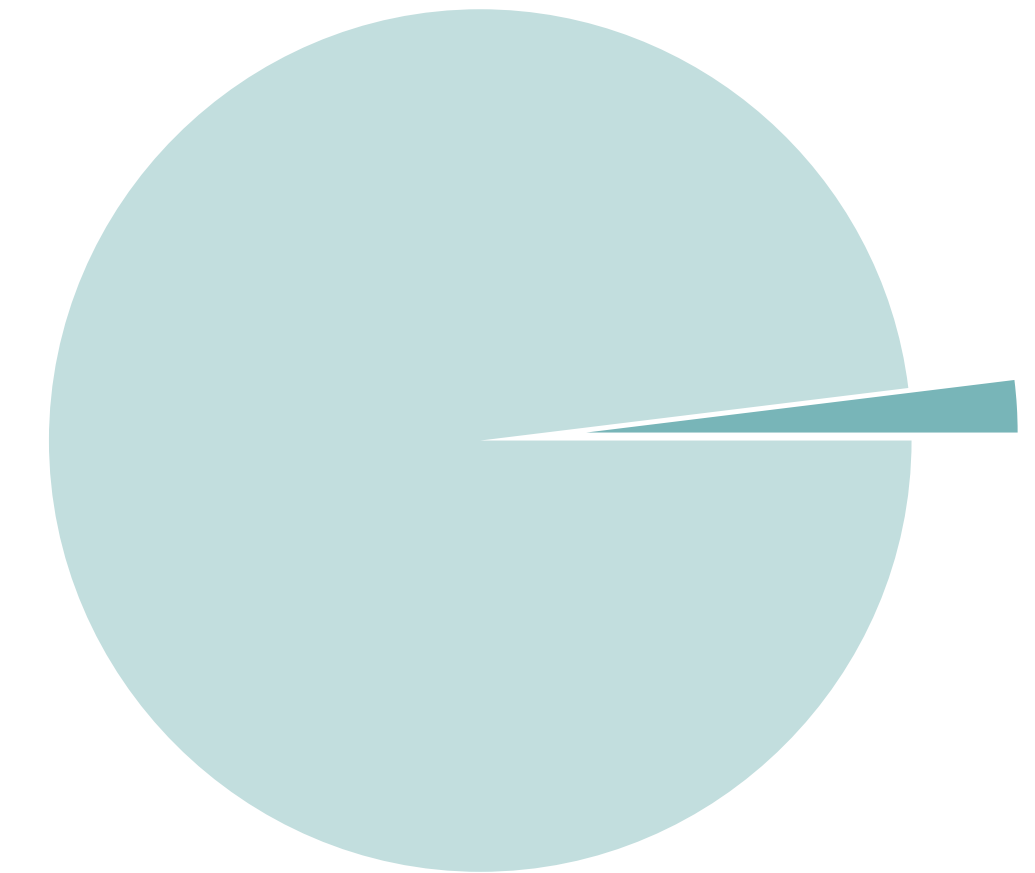
pre-2020
0.7% of care delivered virtually
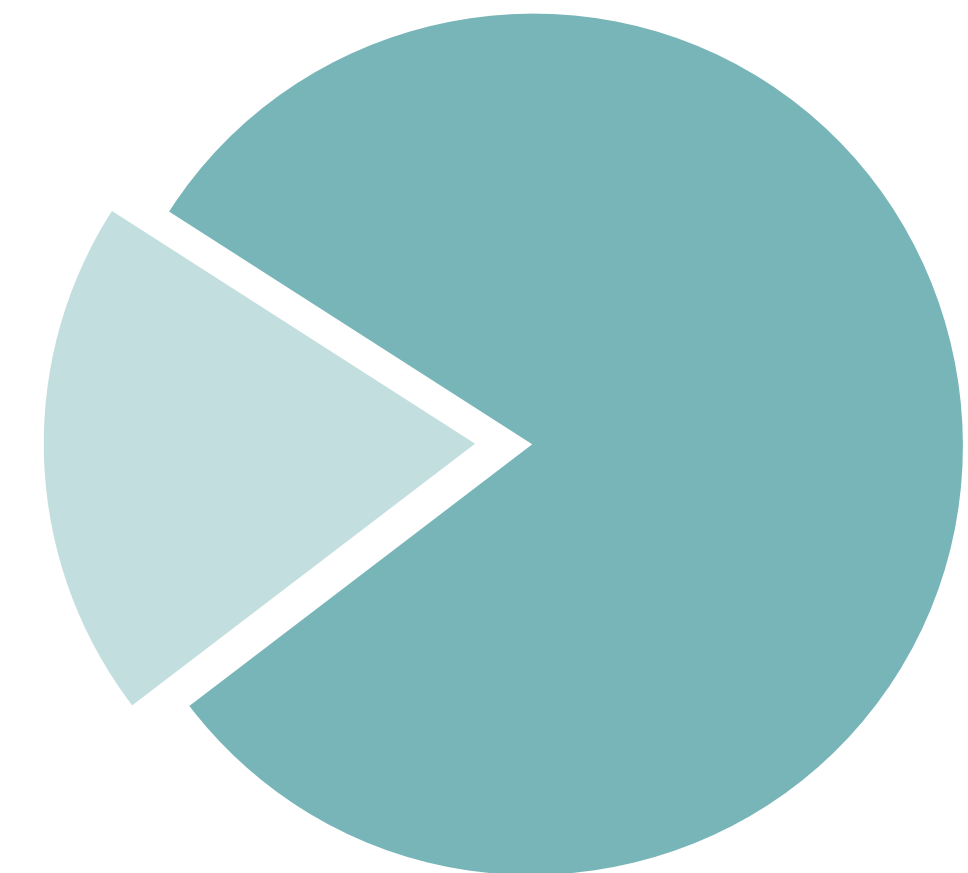
second quarter of 2020
70% of care delivered virtually
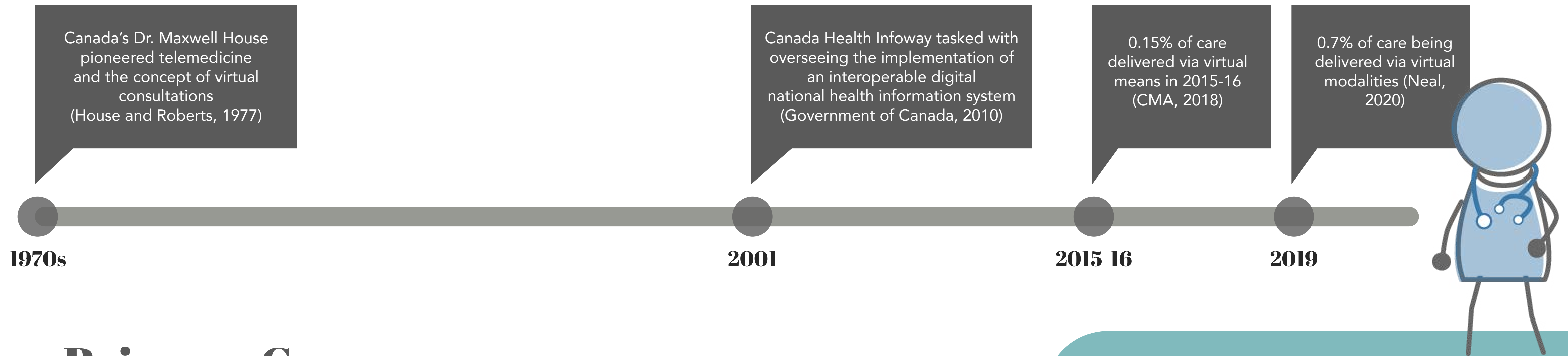
Primary Care

The rapid transition to virtual care has produced a great deal of evidence identifying previously unimagined levels of uptake and acceptability of virtual care by both providers and patients (Shahin, 2021; Stamenova, et al. 2020; Bhatia, et al., 2021). Yet, many questions remain unanswered about how virtual care might best support the patient-provider relationship over the long term. In addition, we must consider the equity of virtual care. As Derek Feeley (2017) makes note, that it is critical to tackle the disparities and inequities that are present within our system to ensure access to care and health for all (Feeley, 2017).

Evidence has shown that, in many cases, long-established primary care patient-provider relationships have eased the transition to virtual care (CMA, et al. 2020). Prior knowledge of patients' histories and stories, habits and environments allowed many primary care providers to successfully transition to virtual care delivery and continue to provide high quality care at a distance (Li, et al. 2020). For those without primary care connections, virtual care has become just one more hurdle to accessing care. Ensuring equitable access to care now also requires equity in digital access.

> ❝
> **[Virtual care] is the overnight success story that was 30 years in the making.**
>
> Dr. Rasu Shrestha
> *Atrium Health Chief Strategy Officer (Miliard, 2020)*

Process

trigger

opportunity

outcome

sensemaking

synthesizing

ideating

developing

environment scan

collaborative knowledge gathering

35
online surveys

3
interviews

4
asynchronous activities

research & synthesis

online research

data synthesis

thematic analysis

idea generation

futures prototypes

question & critique

?

future model

explore the problem

identify insights

ideate & create

deliver & share

Methods

Using a qualitative vs. quantitative approach, this research focused on an intensive exploration of the experience of virtual care. The research was conducted using a phenomenological approach to explore the lived experiences of patients and primary care providers using virtual care. Phenomenology is the study of social and psychological phenomena from the perspectives of those involved (Welman and Kruger, 1999).

The process of sensemaking included a high-level literature review, and environment and horizon scans followed by a collaborative and participatory engagement phase of research. Participants were engaged through asynchronous surveys, asynchronous workshop-style activities, and brief synchronous phone interviews with primary care providers, patients, and subject matter experts. Shared knowledge was synthesized through thematic analysis (Vaismoradi, 2016). Recurring themes were then explored through additional secondary research and translated into design principles and criteria.

The design criteria and data collected informed the development of a series of plausible and attainable future system goals inspired by strategic foresight design processes (Slaughter, 1997).

35 online surveys

15 interviews

4 asynchronous activities

Design Principles

give time

time for connection, time for trust, time to listen and be heard

incorporate flexibility
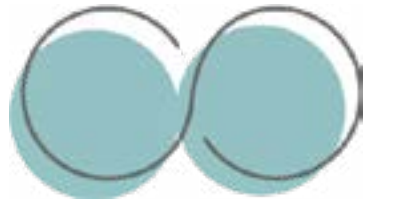
build from an inclusive lens to accommodate individual preferences, needs and capabilities

make the hidden visible

provide transparency in process, status, and results to build trust

accept incremental change

build buy-in through adaptability and scalability over time

support balance

mitigate the trade-offs between in-person and virtual care

foster the care relationship
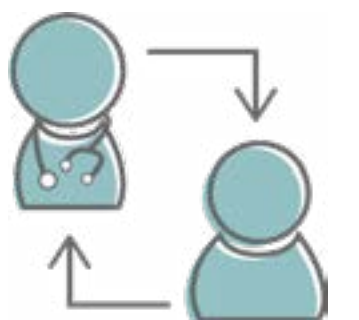
support the reciprocal bond of trust, understanding and knowledge sharing

The Ongoing Mismatch

Digital asynchronous surveys completed by both patients and providers revealed a consistent mismatch between the needs of patients and the constraints placed on providers. A sense of feeling heard and included in decision making was identified by patients as being critical to positive care experiences. Technology was identified as both a facilitator and potential barrier to connection. Many patients identified technology as convenient and "a time saver" while also noting challenges with inconsistent digital interfaces and ongoing security concerns.

Provider survey responses were reflected in and elaborated upon during interviews. Providers made note of challenges with the process of connecting including technology failures and dropped or missed connections. In addition, providers identified increased time pressures when engaging in virtual care, noting the awareness of patients waiting in limbo without visibility or oversight as to their status.

Activity submissions revealed that participants value and prefer care delivery from their own, known care provider whether through in-person or virtual care, noting the value of their care provider having awareness of their history and personal story. Activity participants echoed survey findings, noting their desire to be heard and valued as collaborators in their care experience. Lastly, participants identified the value of in-person care while consistently ranking asynchronous email and text communication as preferential.

to read the full research paper click here

"So back in the old days, people could come in, they still get annoyed, but they can clearly see [what is going on] and talk to the front desk."

~anonymous provider participant

Making a Case for Virtual Care
The Pieces and The Possibilites

How might we utilize technology to **re-imagine the care experience** and **foster a sense of 'time given'** to patients while **alleviating the burden of time constraints** for providers?

Towards a Digitally Supported Model of Care

At the core, virtual care is a human experience, a point of connection between provider and patient. Whether virtual or in person, there is an ongoing mismatch between a patients' desires and the system constraints placed on providers. Primary care has become a game of dominoes, if one appointment goes over time, the back up ripples down the line. For patients, awareness of time constraints weigh on their ability to be honest, open, forthcoming, and fully engaged in the telling of their story. The constraints put on providers impact a patient's ability to feel heard and included in their own health journey as they are rushed through a game of hurry up and wait.

We are at an incredibly opportune moment in history where the transition to virtual care has brought forth many benefits and rewards. Technology has the capacity to afford a sense of 'time given' to patients while alleviating the burden of time constraints for providers. However, our healthcare system must continue to change and adapt to best capitalize on the affordances of digital health and technology solutions. As Shahin (2021) noted in his article "The Great Uncoupling," there are many "ifs", but the potential of this moment is astounding (Shahin, 2021). The system needs to move beyond current linear healthcare models characterized by discrete moments of care and the urge to 'replace' these in-person moments of care with digital interactions.

Guided by the six design principles and inspired by strategic foresight design processes, this research study informed the development of a plausible and attainable digitally supported primary care model. The presentation of this conceptual framework is a nudge that asks primary care to consider what might be possible in the years to come.

"

Resolving this by playing the usual tug-of-war games between governments and medical associations will miss the opportunity to process the changes we've made and reach with ambition for a transformed health care system that proactively manages 'The Great Uncoupling' that is happening before us.

~Shahin, 2021

The Affordances of Technology

The digitally supported model of care illustrates ways in which technology can support interactions across a spectrum of asynchronous and synchronous care delivery while also supporting patient inclusion and self management.

Although video visits may appear to be an optimal virtual care modality, most closely resembling an in-person encounter, the phone has far surpassed video as the preferred delivery mechanism during the pandemic. In addition, 94% of virtual visits have involved some form of secure asynchronous messaging providing patients an opportunity for reflection and response, while also providing a written digital record of the information shared and received (Stamenova et al. 2020).

Technology has the ability to connect patients to care at a distance, elevate patient voices, and support patients in feeling heard, connected, and part of their own experience. Technology also allows access to high-quality primary care across a broader spectrum of time and modalities, reaching wider and more diverse patients.

asynchronous

digital interface

hybrid

synchronous

human interaction

website — knowledge sharing

text — short direct & fact based

email — digital record & time to reflect

video — one step removed
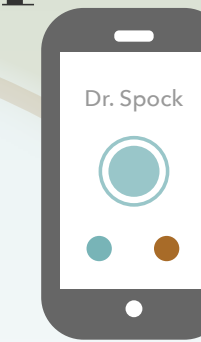
phone — tone of voice & inflection

Dr. Spock

in person — personal & intimate

your health zone

Synchronous Care

Sight, Sound, Touch; Balancing Trade-Offs

Throughout this study patients repeatedly voiced their desire to feel heard, acknowledged, and included in decision making as well as having a voice in their own care experience. This insight was echoed in a recent study which found that 90% of Canadians indicated their desire for technology that put them in greater control of their own health (Holden, 2021).

Conversely, the primary care providers engaged for this research noted being constrained within a system of strict billing codes and funding models which result in restricted appointment times, limits on availability, and the need to book patients back to back to manage caseloads and costs.

The care delivered in a synchronous face-to-face in-person encounter is the most intimate care a patient and provider will experience. In-person care is the foundation of relationship-building and provides an opportunity for physical touch and examination, visual assessment, body language, and auditory processing.

Although virtual connections lack some of the intimacy of the in-person visit, the value lies in the reduced burden and cost to patients and added time and capacity for providers. Patients experience reduced travel time, parking and childcare expenses, and reduced time away from work. Virtual visits also afford group or care team calls adding value for referrals and consults and the inclusion of multiple specialists in single appointments alongside patients, caregivers, and primary care providers. Future blended models of care should ensure a balance between the inevitable trade-offs of either in-person or virtual visits and the benefits afforded.

the care space model

a balanced care model for primary care

asynchronous

hybrid

synchronous

process transparency

care reports

booking & scheduling

preference documentation

Real Time Care Team Communication

Virtual visits afford group or care team calls inclusion of multiple specialists in single appointments alongside patients, caregivers, and primary care providers.

Supporting Synchronous In-Person Care

In-person care is the foundation of relationship-building and provides an opportunity for physical touch and examination, visual assessment, body language, and auditory processing.
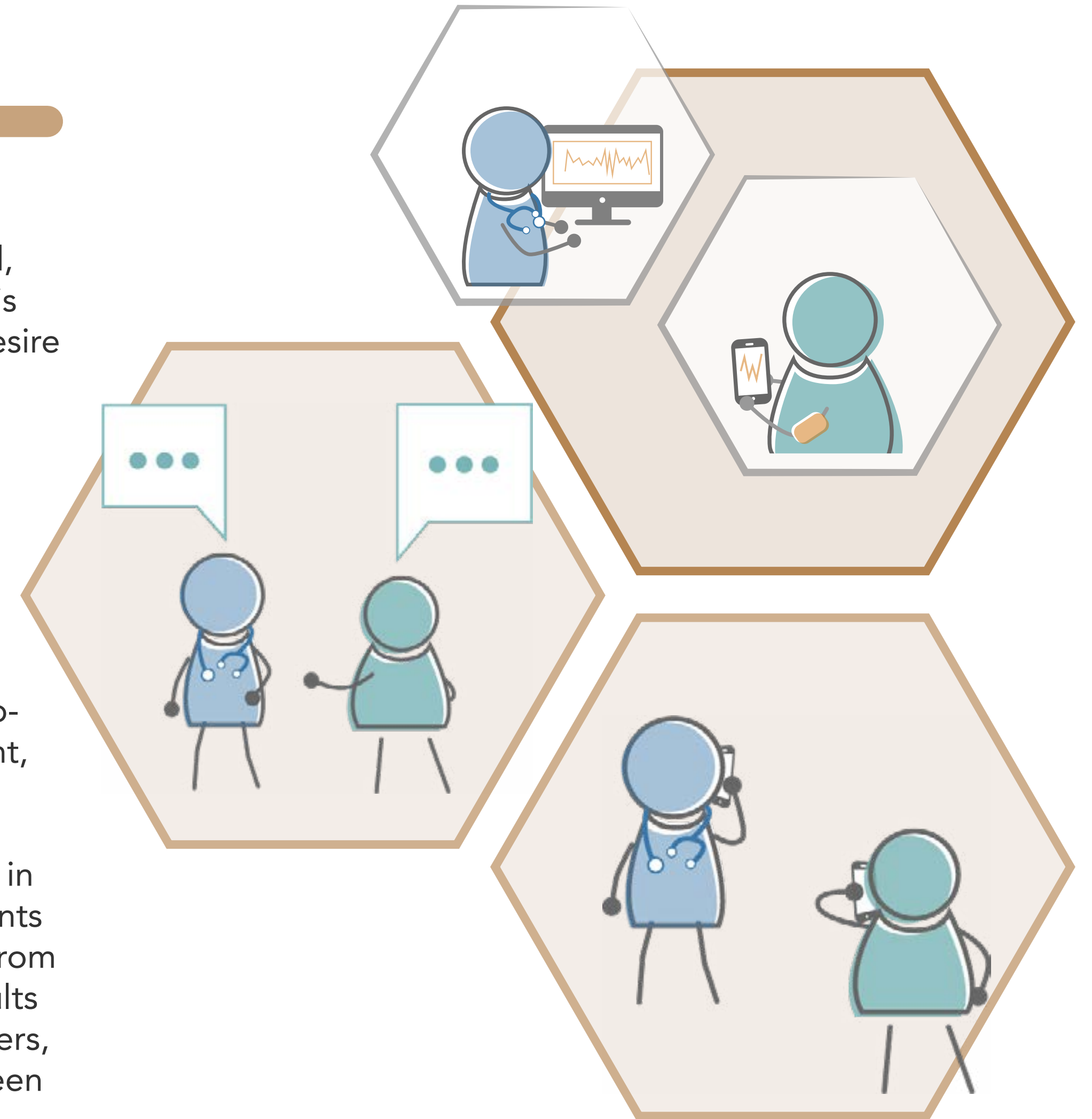
The Synchronous Zone

The core of primary care is the real-time, face-to-face care experienced in-person between a provider and a patient. The pandemic and the subsequent massive uptake of virtual care has taught us that this face-to-face care can be supported through phone and video visits.

Synchronous

care team appointment

mental health consultation

check-in & follow-ups

diagnostics & testing

physical exam

immunization

Balance Burdens and Benefits

Future blended models of care should ensure a balance between the inevitable trade offs of either in-person or virtual visits and the benefits afforded.

prescription management

screening

maintenance

virtual in per

Accessibility and Equity

Tackling the Digital Divide

A digitally supported model of care is founded on a blending of modalities across the care experience, supporting the fluidity of care through varying zones and degrees of interaction. Much of the care that occurs in 'in-between space' is equally valuable as both synchronous and asynchronous interactions and will most often be completed with some mediation through technology. In fact, the decision as to which modality and type of interaction to choose will often be dependent upon equity, access, circumstance, and preference.

For some, digital exclusion continues to exacerbate both the accessibility and the experience of healthcare. Access to technology and a space to receive virtual care are compounded by a lack of digital literacy for many patients and providers. Canada is a large country that is diverse in geography, culture, language, and digital access. Unfortunately, there remains a significant digital divide for people with lower income and education, immigrants, older adults, and those living in rural settings. Poor internet access, a lack of access to digital devices, and low digital literacy amount to digital exclusion (Li, et al. 2020; Stamenova et al. 2020; Vodafone New Zealand Foundation and Elliot, 2018).

During the pandemic, ad hoc education, device and internet lending programs have sprung up overnight in an attempt to alleviate digital illiteracy. However, as small pilots and ad hoc trials, these programs are merely a drop in the bucket of support needs.

As our publicly funded healthcare system moves forward into a post-pandemic world, it is critical that we understand and create an appropriate and equitable balance for virtual and in-person care that both supports the patient-provider relationship and those most in need.

my roadmap to inclusion

my preferred language is _____

Please circle one response for each question:

my comfort level with the internet is:
expert   advanced   intermediate   beginner

my comfort level with technology is:
expert   advanced   intermediate   beginner

cost _____
I can pay for a smartphone.   yes   sometimes   no
I can pay for internet access.   yes   sometimes   no

internet _____
I have access to internet.   yes   sometimes   no
I have a smartphone that can connect to the internet.   yes   no
I have a smartphone that can download apps.   yes   no
I have access to a device; laptop or tablet.   yes   sometimes   no

space _____
I have a safe space to access the internet.   yes   sometimes   no
I have a private space to speak freely.   yes   sometimes   no

accessibility _____
I require accessibility accomodations to access digital care.   yes   no
I am able to access the accessibility accomodations I require.   yes   no
I know how to find accessibility accomodations.
                                     yes   sometimes   no

*portions of this tool are adapted from The [Seneca Collage] Learning Portal - College Libraries Ontario Digital Assessment Tool

the care space model

*a balanced care model
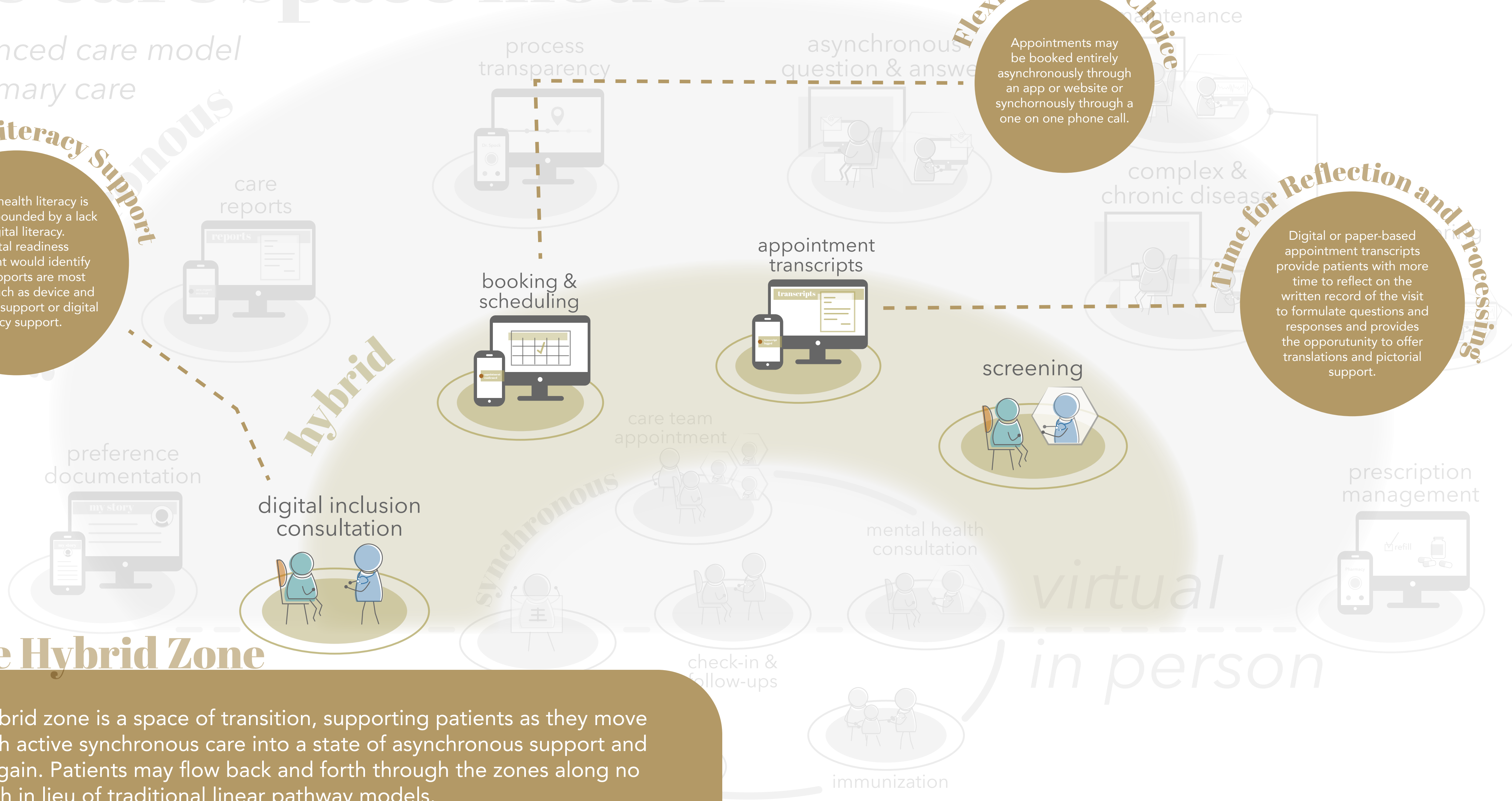for primary care*

Digital and Health Literacy Support

A lack of health literacy is often compounded by a lack of digital literacy.
A digital readiness assessment would identify which supports are most needed, such as device and connection support or digital literacy support.

Flexibility and Choice

Appointments may be booked entirely asynchronously through an app or website or synchornously through a one on one phone call.

Time for Reflection and Processing

Digital or paper-based appointment transcripts provide patients with more time to reflect on the written record of the visit to formulate questions and responses and provides the opportunity to offer translations and pictorial support.

process transparency

asynchronous question & answer

care reports

maintenance

complex & chronic disease

appointment transcripts

Transcripts

booking & scheduling

screening

care team appointment

prescription management

hybrid

synchronous

preference documentation

my story

digital inclusion consultation

mental health consultation

virtual

in person

check-in & follow-ups

immunization

The Hybrid Zone

The hybrid zone is a space of transition, supporting patients as they move through active synchronous care into a state of asynchronous support and back again. Patients may flow back and forth through the zones along no set path in lieu of traditional linear pathway models.

Patient Preferences

Technology has the ability to connect patients to care at a distance, elevate patient voices, and support patients in feeling heard, connected, and part of their own experience.

Over the course of this research, patients overwhelmingly made note of their desire to be heard and acknowledged in their personal needs and knowledge of themselves. Patients also noted a desire to be included in their own care decisions and to have greater oversight in the process and outcomes. Preference tools and care reports provide patients with oversight, ongoing opportunities for input, identifying needs, error corrections, and knowledge building. Providing transparency in processes facilitated by technology ensures patients can remain informed as to the status of referrals and test booking reducing stress, anxiety, and continual outreach for clarity and resolution. The availability of patient friendly diagnostic results with integrated time delay ensures providers can deliver complex explanations and support reflection, review, and comprehension.

Creating an ongoing mechanism for patients to identify needs, preferences, personal stories, and health history might ameliorate feelings of helplessness and frustration. However, this also requires a mechanism to ensure information is provided and accessed at appropriate moments by providers.

welcome to your

care space

my story

the care space model

Transparency and Autonomy
Providing transparency in processes facilitated by technology reduces stress, anxiety, and continued outreach for clarity and resolution. Patients remain informed about status of referrals, test booking, diagnostics and results.
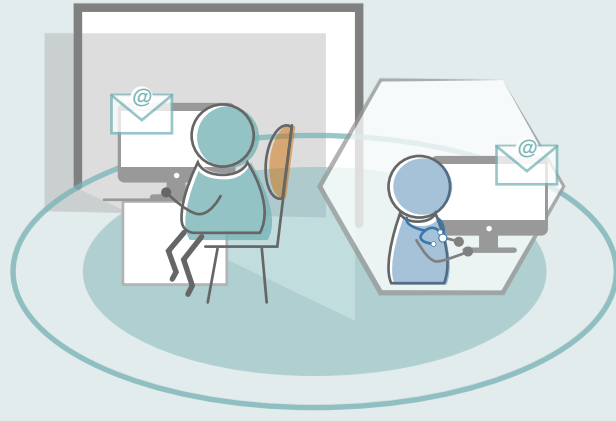
Reciprocal Respect and Support
Connecting patients with their own care provider, someone who knows their health history and personal story and supports relationship building.
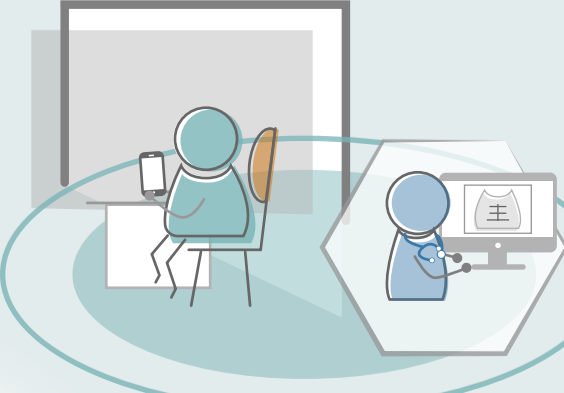
asynchronous

care reports

process transparency

asynchronous question & answer

maintenance

complex & chronic disease

monitoring

appointment transcripts

screening

prescription management

Oversight and Clarity
Care reports provide patients with the ongoing opportunity for input, oversight, error corrections, and knowledge building.

booking scheduling

team appointment

digital inclusion consultation

mental health consultation

hybrid

preference documentation

my story

Input and Voice
Providing the opportunity to manage and make note of preferences, needs, and personal health history supports the feeling of having voice and reduces retelling and repeating.

The Asynchronous Zone

Asynchronous care allows for the extension of care beyond the confines of the appointment through monitoring, patient self-management, asynchronous communication, and transparency.

Having a point of contact creates a security net and the reassurance provided through asynchronous care reduces the need to visit the ED and book appointments for each and every question and concern.

the care space model

a balanced care model for primary care

asynchronous

hybrid

synchronous

virtual

in person

process transparency

asynchronous question & answer

maintenance

complex & chronic disease

monitoring

care reports

appointment transcripts

booking & scheduling

screening

prescription management

preference documentation

digital inclusion consultation

care team appointment

mental health consultation

diagnostics & testing

check-in & follow-ups

immunization

physical exam

provider   patient   caregiver

OCAD U

The Path Forward

How do we get there?

The re-conceptualization of care delivery offered as an outcome of this research illustrates one way in which patients and providers might interact with and experience care through the benefits of a technology enabled and fluid experience.

With minor adaptations, this approach to care delivery might be accommodated within the constraints of our current healthcare system. However, the value of this work lies in offering a path forward.

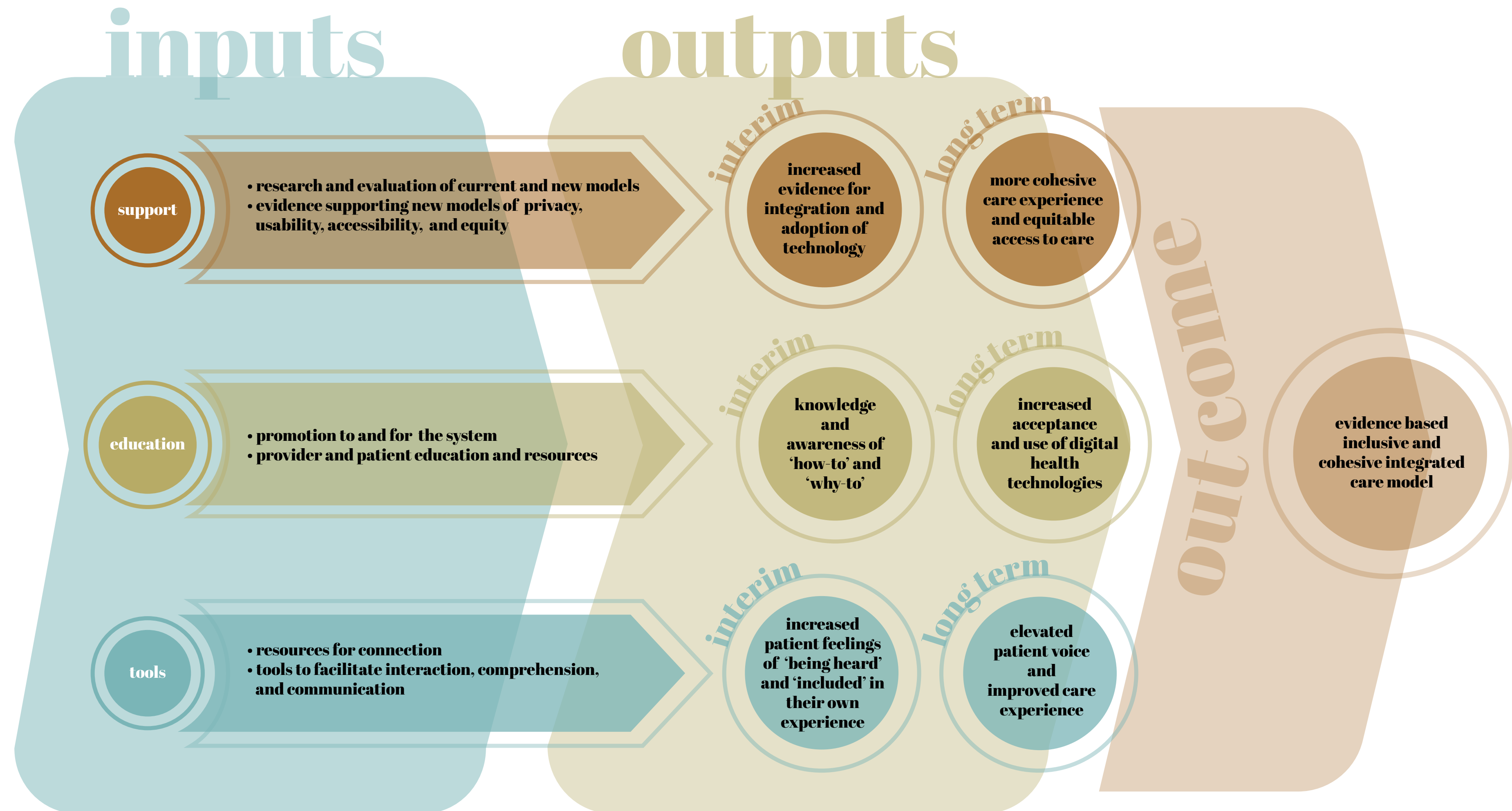Evidence, education, and tools must be developed to support broad implementation of a digitally supported care delivery model.

inputs

outputs

support
- research and evaluation of current and new models
- evidence supporting new models of privacy, usability, accessibility, and equity

education
- promotion to and for the system
- provider and patient education and resources

tools
- resources for connection
- tools to facilitate interaction, comprehension, and communication

interim

increased evidence for integration and adoption of technology

knowledge and awareness of 'how-to' and 'why-to'

increased patient feelings of 'being heard' and 'included' in their own experience

long term

more cohesive care experience and equitable access to care

increased acceptance and use of digital health technologies

elevated patient voice and improved care experience

outcome

evidence based inclusive and cohesive integrated care model

Evidence and Support

The healthcare system is built on a foundation of research evidence and evaluation. In order to inspire broad uptake and implementation of a digitally supported model of care, evidence and evaluations must be compiled to show value and safety. Three primary research streams are suggested:

1. **Privacy and security** to support integration of PHI and data.
2. **Usability impacts and guidelines** to illustrate the value of improved systems.
3. **Implementation and accessibility standards** to move towards a more equitable system

Accumulated data and evidence must also be translated into usable and accessible tools and frameworks that can then support existing innovations and proposals. For example, new privacy frameworks and models must be developed and implemented which reimagine the concept of informed consent within a virtual environment.

In addition, established norms must be implemented within digital health tools and interfaces, such as modern usability guidelines, consistent interface design criteria and established accessibility standards. Further evidence will illuminate the value of these established frameworks to support future project developments.
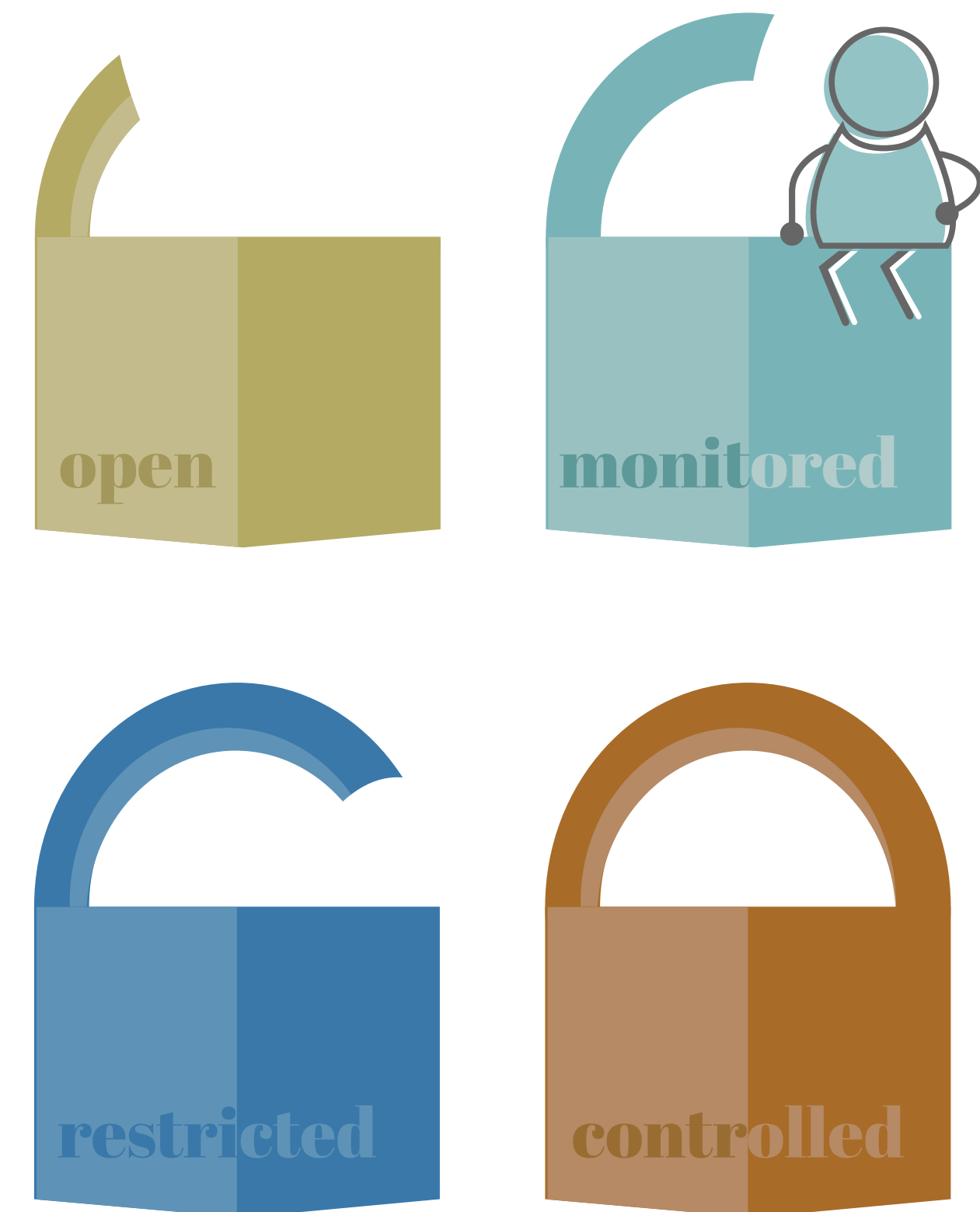
Education and Promotion

Education and promotion will ensure that existing and new providers are immersed in new processes and understand the benefit of a blended model of care. Immediately there is a need to develop plain language and engaging promotional materials for patients and providers alike answering questions such as:

1. **Privacy** - How is my privacy protected? How does it work?
2. **Value** - What is the value of digital health for me and for my doctor?
3. **Technology** - How do I set up a video visit or book a phone visit? How can I share my monitoring information with my doctor? How can I access digital health tools?
4. **Support** - Where can I go for support? How do I advocate for what I want and need?

Future education will be required to expand knowledge and acceptance of asynchronous models of care delivery. Education materials should be developed with patients and providers and delivered as part of a promotions campaign in the immediate or near future.

Medical education curriculums need to adjust now to address virtual care delivery. Beyond how to use tools and medical interfaces, future care providers must understand the subtleties of how to engage in a virtual space and within an ever-shifting model of care.

Tools and Materials

Perhaps the most important undertaking to support this reconceptualized model will be ameliorating the impact of digital exclusion. Addressing the ever-widening gap in equitable access to care will become critical as we consider the value of digitally supported care. Digital exclusion will create an insurmountable barrier to those who might benefit most from digitally supported care.

The pandemic has highlighted the need to implment and adopt policies that identify internet access as a human right. In our modern society this includes not only access to wifi or broadband internet but also a device with which to connect.

Until basic internet and connectivity becomes a publicly funded reality, a digital readiness assessment could be a first step. A readiness assessment would identify which supports are most pertinent on an individual basis, such as device and connection support or digital literacy support. However, without appropriate programs of support, the tool will have no utility. Programs such as device and hubspot lending, industry funded partnerships, and digital literacy education will need to be expanded to meet identified needs.

Supporting the assessment of individual needs and providing the needed supports is a necessity to ensure inclusive care in our new digital world.

digital equity

assessment logged
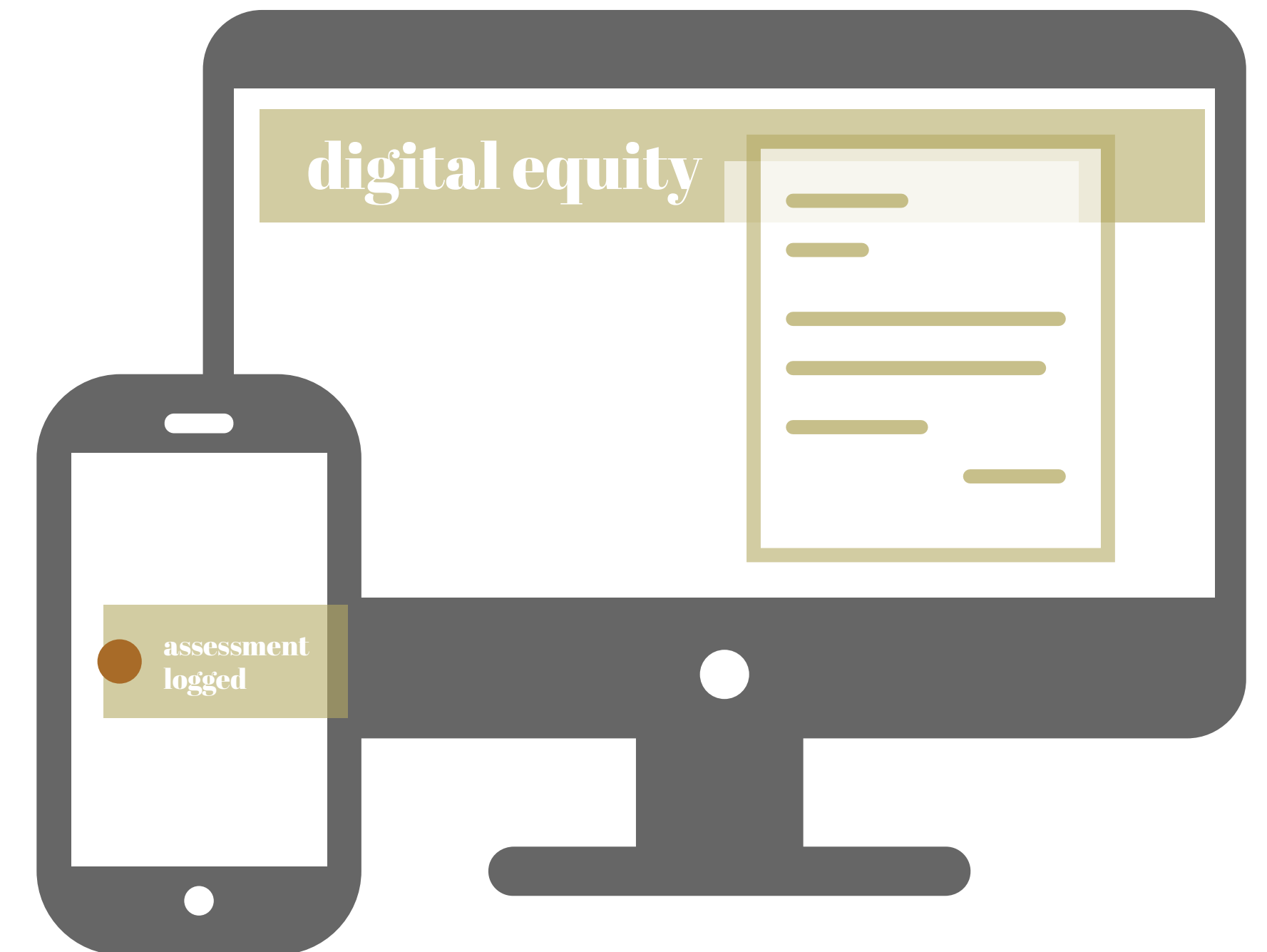
Summary

Our healthcare system is not currently capitalizing on the potential that technology affords. The challenges with integration and interoperability must be addressed to support a digitally supported healthcare delivery model. The re-conceptualization of care delivery offered as an outcome of this research illustrates how patients and providers might interact with and experience care through the benefits of a technology enabled and fluid experience.

This research is offered to the healthcare system as one potential path forward to consider, however, there are a number of assumptions that have been made to support this model of care. First, government and policy makers must continue to support virtual care delivery post-pandemic through policy and continued support for digital health innovations. Second, temporary healthcare funding models currently in place, specifically in Ontario and across Canada, must be adapted to support providers in delivering quality care within a more cohesive care model.

The system as a whole must consider a path forward that includes data interoperability and integration. The system is far beyond the point of being able to mandate a single system model, however our system can draw inspiration from across the globe to explore how data might be unlocked and utilized in safe, secure and respectful ways to facilitate improved care.

A digitally supported care model may help to mitigate current mismatches within our healthcare system including inviting patients into their own care experiences as participants and contributors and relieving the burden of our overflowing primary care system. Further to this, a digitally supported model may have the ability to solve the ongoing issue of "primary care deserts" by expanding access to existing primary care providers.

This reconceptualization of digital healthcare is provided as a nudge to the system towards an integrated and cohesive future of healthcare.
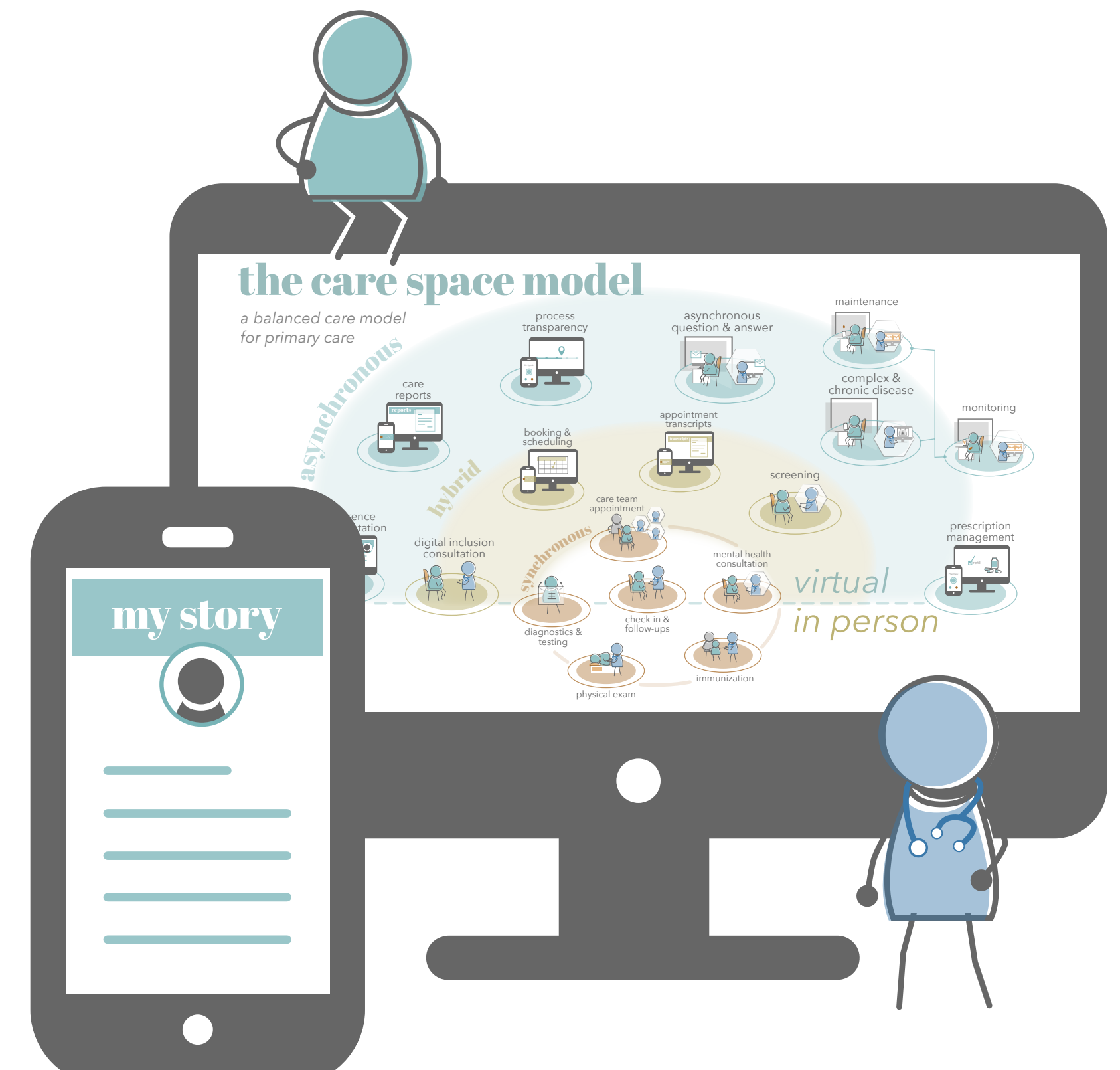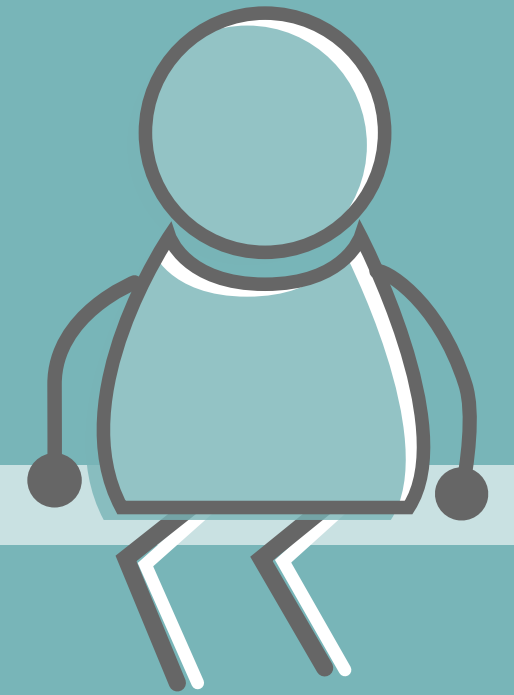
> # "
> **Unless someone like you cares a whole awful lot, nothing is going to get better … it's not.**
>
> *~The Lorax, Dr. Seuss*

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