

BEHAVIORAL HEALTH AND EMERGING TECHNOLOGIES

Coordinated Behavioral Care (CBC)
September 2019

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EXECUTIVE SUMMARY

The Coordinated Behavioral Care (CBC) network of behavioral health community-based providers is at a challenging inflection point given recent federal and state policies regarding service redesign and the movement towards value-based care. There are many use cases for technology solutions in the mental health and substance use disorder treatment sector that can improve engagement, care delivery, and health outcomes.

Providers are inundated with options around “building” versus “buying” solutions that can transform care delivery and administration. Dedicating time to vet solutions and develop adequate frameworks to evaluate options is fundamental to strategy. Investors are funneling money towards solutions that solve payer, provider, and patient pain points across all silos of health care, including behavioral health. “Buying” solutions offers providers an opportunity to leverage products that are integrating shared learnings from multiple organizations and accessing diverse engineering resources.

Given the large number of emerging technology solutions in the health care market, CBC should serve as a central resource to explore, vet, pilot, navigate, and ultimately support and scale opportunities for providers and patients. CBC’s experience and overarching mission to positively impact the total cost of care, increase patient engagement, enhance operations, and improve provider and

patient/family-caregiver experience and health outcomes will lead to the development of a comprehensive framework for partnering with payers and providers to implement these innovative technology solutions. With a focus on the unique needs and challenges of the behavioral health population and their providers, this centralized framework will incorporate a special emphasis on interoperability, patient and family choice, provider opinion and end-user feedback.

The CBC Innovations Hub will implement this framework in tandem with the development and dissemination of community-based best practices for technology solutions. Technology solutions will address outcomes that are replicable and sustainable across different settings. The CBC Innovations Hub’s primary focus will be on emerging technologies and their ability to improve practice and care for vulnerable populations in New York.

“Primary focus will be on emerging technologies and their ability to improve practice and care for vulnerable New Yorkers.”

KEY TAKEAWAYS

There are several use cases for technology solutions in the mental health and substance use disorder treatment sector that can improve patient and family/caregiver engagement, provider satisfaction, care delivery, and health outcomes.

There is a need for interoperability between systems and new technology to avoid fragmenting data and siloed care.

Given the numerous technology solutions in the health care market, there should be a central resource to explore, vet, pilot, navigate, and ultimately support and scale opportunities for providers and patients.



INTRODUCTION



Coordinated Behavioral Care (CBC) is a member-led, not-for-profit organization dedicated to improving the quality of care for New Yorkers with serious mental illness, chronic health conditions, and/or substance use disorders. These populations are served by CBC's community-based health and human services organizations through a Medicaid Health Home and an Independent Practice Association (IPA), as well as a continuum of innovative care management programs. CBC's innovative care coordination/care transition programs have resulted in the development of an Innovations Hub aimed at emerging best-practices/practice-based evidence models and wider replication and dissemination.

CBC seeks to create a health care environment where New Yorkers negatively impacted by social determinants of health and those with behavioral health problems receive coordinated, individualized, and culturally competent community-based care that is effective in preventing and managing chronic physical and behavioral health conditions.

Technology is rapidly changing how organizations deliver services and experiences. Consumer expectations are not determined by one business segment versus another, but by a universal standard around convenience and quality. Applied to health care, technology empowers consumers and provides readily available data to influence decision making and engagement around care. Providers must consider and incorporate consumerization in health care as part of their strategic plans.

Technology Assisted Care (TAC) solutions refer to the use of emerging technology devices and applications to deliver some aspects of treatment directly to patients via interaction with phones or other web-based programs. These solutions have the power to be transformative in the health care sector; however, given the rapidly expanding prevalence of these emerging technologies, it is imperative to make judicious use of limited time, energy, and financial resources when deciding on what to engage in or purchase. This White Paper presents needed background information on emerging technologies and their impact on the behavioral health sector, provides a categorization of these technology solutions, and makes some strategic recommendations for CBC's role and future direction in the health care technology sector.

“Consumer expectations are not determined by one business segment versus another, but by a universal standard around convenience and quality.”

ENVIRONMENTAL LANDSCAPE

The vast majority of American adults now own a smartphone.¹ The rapid increase in the use of mobile technology is becoming routine across the health care sector as well, with one study showing that approximately 58% of surveyed mobile phone users in the United States have downloaded at least one health-related app on their phone.² This growth and development of smartphone technology will likely continue to expand. Similarly, the growth of social media for communication and accessing information is changing the way we interact with each other, which includes an impact on the provider-patient relationship. Patients are increasingly using online message boards, YouTube videos, blogs, and social networking sites to access peer-to-peer support. The trend is occurring among providers as well, with almost 90% of physicians reporting that they use a smartphone or a tablet in their practice.³ It is becoming more commonplace for providers to use technology as part of the clinical decision-making process and to enhance the overall role of the practitioner. These technologies can potentially serve as “clinician extenders,” whether audio, web-based, or mobile, because they are helpful for enhancing patient contacts, access to information and resources, decision support, collaborative care, etc.

Given the ubiquity of technology in our current social, professional, and personal environments, it is ever more apparent that community-based behavioral health organizations and the individuals they serve would benefit from embracing innovative technology solutions. Such solutions include web-based applications, mobile phones, social media, sensing technologies, remote patient monitoring software, video/telehealth, electronic health records, and other devices.

TAC solutions offer providers an additional set of tools to enhance operational workflows, increase patient engagement, increase medication adherence, and establish more meaningful lines of communication. With the expansion of audio, video, mobile, and other digital devices and/or multimedia programs, this technology shift is evident in all sectors of health care, including behavioral health. Organizational tools, apps, and communication systems that use innovative technology allow health care workers to be better attuned to patient needs by providing more information in real time, boosting patient engagement, leveraging support systems, and providing critical cost and time saving advantages.

“Technology resources remain disconnected to the current healthcare delivery system”

The Triple Aim framework in health care is a “three-pronged approach” for optimizing performance, which includes improving patient experience, reducing costs, and improving population health.⁴ Effective engagement of patients and family/caregivers is

critical to achieve the goals of Triple Aim and enhance the patient (and family/caregiver) experience. There has been a growing level of interest in using TAC solutions to improve access to care, patient and family/caregiver engagement, and the overall health care delivery experience. The many technologies currently available, in addition to the growing number of new technologies across the various aspects of health care, have not yet reached widespread usage. Further, technology resources remain somewhat disconnected to the current health care delivery system, especially within the behavioral health sector and population.

Furthermore, there has been recent momentum around the “Quadruple Aim,” which adds a fourth prong, “improving the experience of providing care,” to the three original goals of the Triple Aim.⁵ This fourth aim acknowledges the importance of workforce satisfaction in achieving the Triple Aim goals and ultimately a high-quality health care system. By recognizing and addressing the need for physicians, nurses, and other health care workers to find joy and meaning in their work, we can avoid “provider burnout” and improve both the experience of providing care and the delivery of care.⁵ Technology resources can be tools to improve the working conditions of physicians, nurses, case managers, and other health care staff by easing administrative burden and allowing providers to focus on delivering high-quality care to the vulnerable populations they serve. Using technology to address physician burnout was a topic at the 2019 Healthcare Information and Management Systems Society (HIMSS) conference, with a showcase of tools such as artificial intelligence (AI)-enabled software that uses natural language processing (NLP) to listen to and record a clinician-patient discussion and transcribe that data into the electronic health record (EHR), and an AI-powered virtual physician assistant platform.^{6,7}

The rising need for new resources for Medicaid beneficiaries and individuals with low income, less education, and poor self-reported health, and particularly for those with serious mental illnesses, is evident given their difficulty managing their health care needs. This marginalized population requires greater support and an array of services that are accessible, inexpensive, and effective. This population highlights the need for more intensive and innovative communication strategies to change health behaviors and manage chronic conditions, which is limited by our current system of weekly/monthly face-to-face visits. Despite its expansion in health care delivery, there is evidence that individuals do not have equal access to technology.⁸ Known as the “digital divide,” this trend is greatest among minority and low-income populations.⁹ The uninsured population has been shown to have similar rates of ownership of smart/phones and has demonstrated equal levels of interest in TAC solutions; however, in a health care context there is a lack of resources in community-based settings with sub-optimal or no EHR to provide the capabilities for implementing emerging technologies for patients and providers.¹⁰

Given increased investments in and adoption of technology and the supporting evidence around its benefits, it is important for providers to play an active role in developing, choosing, and implementing solutions for patients with behavioral health needs. Additionally, there are several forces driving the behavioral health sector to invest in innovation and adopt TAC solutions, such as:

Move to value-based payment (VBP) and/or payment reform initiatives that will focus on achieving the Triple Aim

Increased demand for integrated physical and behavioral health, inclusive of social determinants of health services

Increased use of telehealth/telepsychiatry

Incorporation and use of Big Data, AI, and NLP

Improved access, early identification, and risk stratification/predictive modeling

Workforce management and changing needs/demands as health care environment and delivery systems change

Tough budget environments that require more efficient operations

Aligning payer/provider incentives around value and quality





TAC solutions have the capacity to support, enhance, and scale behavioral health services. Mobile tools include but are not limited to: virtual care, cognitive behavioral therapy, chronic disease management, peer support, medication management, passive symptom tracking, and data collection.

A robust strategic approach to emerging technology TAC solutions have the potential for improving engagement and care coordination, cultivating provider-patient communication, increasing access to information, and streamlining the tracking of health and wellness measures. These are all critical components that support shared decision making, clearer communication, greater adherence to treatment recommendations, and ultimately improved health outcomes.

These technologies must be person-centered and focus on the needs and preferences of the patient/family-caregiver, must be meaningful to them, must drive quality outcomes, and ultimately should save money and reduce redundancies and needless workflows (See Figure 1: Benefits of Mobile Care Models).

TAC solutions have the capacity to support, enhance, and scale behavioral health services.

Figure 1: Benefits of Mobile Care Models.

ACCORDING TO THE NATIONAL INSTITUTE OF MENTAL HEALTH³³, “BENEFITS OF MOBILE CARE MODELS FOR PATIENTS AND PROVIDERS INCLUDE:

Convenience

Anonymity

Introduction/first step to care

Lower cost

Service to more people in remote areas or in times of sudden need (i.e., natural disaster)

Interest/appeal

24-hour service

Consistency

Support for and complement to traditional therapy”

CBC AS AN INNOVATIONS HUB

A recent report by the IMS Institute of Healthcare Informatics found that based on an assessment conducted of 43,000 health apps, the vast majority had limited functionality or evidence of value in improving outcomes or the provision of health care, and few were designed for those that needed them most.¹¹ Given the significant and growing number of technology resources on the market, it can be overwhelming for providers to choose the appropriate and effective tools for their populations. CBC as an Innovations Hub will serve as a central resource to research new and emerging technologies on behalf of providers and ultimately support their successful implementation. There is an opportunity for CBC to actively engage its member agencies to use these new tools considering the momentum around innovation and venture capital investments in behavioral health-focused approaches.

In New York City, there are approximately 300 venture firms investing in health care, with 79 New York City-based health care startups receiving \$703 million in funding in 2017 alone.¹² As access to capital and investments in health care continue to grow, CBC can leverage its market position to explore emerging technology innovations that are consistent with its mission and focus and aligned with the expressed needs of CBC network providers and consumers. Most technology start-up companies that CBC currently partners with, including Karuna Health, Arcadia, Wellth, and Healthify are backed by venture capital firms who invest in health care companies.

As an Innovations Hub, CBC is at the vanguard of the movement towards generating practice-based evidence that recognizes the importance of achieving impact at the provider level while considering both the perspectives of those delivering the interventions and those in receipt of the services. Community-based partnerships within the CBC network are the foundation for these programs and services that are informed by patients and practitioners. The CBC Innovations Hub is committed to the development and dissemination of community-based best practices that are focused on effectiveness and outcomes. Best practices are those that result in value but are also replicable and sustainable across different settings. The CBC Innovations Hub is focusing primarily on emerging technologies and their ability to improve practice and care for vulnerable populations in New York.

The behavioral health sector must take advantage of the growing technology trends/market in order to enhance their services and program offerings. Providers need help navigating the various options for TAC solutions. CBC is establishing a platform for providers to learn from each other's shared experiences in order to enhance technologies already in use. CBC will support the evaluation, recommendation, and scaling of the best technological, programmatic, and operational innovations. To support this process, CBC will make use of existing work done by the American Psychiatric Association (APA) App Evaluation Model, which helps mental and behavioral health providers make

informed decisions when selecting to use technology resources or apps in their practice (See Appendix II) and other publicly available sources in order to categorize these TAC solutions (See Appendix III).

“The behavioral health sector must take advantage of the growing technology trends/market in order to enhance their services and program offerings.”

CBC INNOVATION HUB: CBC'S iCHOOSE PROJECT

Based on findings from the Deloitte Center for Health Solutions 2015 Survey of U.S. Health Care Consumers, there were three areas that were critical to consumers: stronger partnership with their providers, better access to online resources, and better supportive technology.¹³

With those critical tenants in mind, CBC IPA launched a VBP Innovations Program with funding from Bronx Partners for Healthy Communities to guide the selection and adoption of technologies that may best support patients' engagement in services and treatment adherence in collaboration with The Jewish Board and Samaritan Daytop Village. For this project, CBC surveyed patients who receive New York City mental health services to obtain their input on the types of technologies they would be interested in using, to enhance the services they receive, and to participate in a technology pilot for an innovative solution. Between October and December 2018, a total of 429 consumers who received mental health and substance use disorder treatment services were surveyed across multiple program sites in the Bronx. The purpose of the survey (paper and online) was to collect information about consumers' use of technology and how technology could help them engage in behavioral health treatment.

The findings showed some variability in use of technology with overall high access to internet, smart phones, and phone apps. Among consumers who had access to the internet, the majority used the internet on their smartphone or computer multiple times per day, and 70% of consumers used applications "multiple times a day."

Consumers were asked if they would text or communicate with service providers or peers using an app. Most responded they would use an app to text and communicate with program staff and peers. Interestingly, about 45% of consumers stated they would not use an app to communicate about their health with their family and friends, but 41% responded they would consent for program staff to use an app with their family members or friends about their health.



Consumers were asked which app features they would use before, after, or between appointments to communicate with program staff: text messaging, phone call reminders, and calendar appointments were the most common features they would use to communicate with staff.

Consumers selected key features they considered helpful to use with program staff, and 86% indicated that appointment reminders would be the most helpful, followed by medication information (73%), text messages (73%), urgent alerts (72%), and an appointment scheduling app (72%).



**71% ACCESS THE INTERNET
FROM THEIR SMARTPHONE**



**68% LOOK UP HEALTH
CARE INFORMATION**



**53% REPORTED USING
HEALTH APPS**

Using novel and innovative technology is an important solution to reach more people and reduce health disparities because it increases engagement while simultaneously improving health outcomes. There remains a serious gap between consumer interest in TAC solutions and its actual use—a Markle Foundation Survey found that while 79% of the public believe that electronic personal health records could help them manage their health, only about 3% actually had any access to them.¹⁴ Additionally, electronic health technologies can allow health care workers to reduce their reaction time and distance, enabling the human touch when otherwise unavailable. These tools are not meant to replace face-to-face visits, but rather to supplement, enhance, and offer added choice in how one elects to engage with their health care providers.



93% OF STAFF ACCESS THE INTERNET



78% USE APPLICATIONS MULTIPLE TIMES A DAY

In addition to the patient survey, an online survey was administered to providers, with a total of 93 providers who completed the provider survey. Approximately 97% of provider respondents worked in an outpatient, substance use, or mental health clinic and 3% worked in a Personalized Recovery Oriented Services (PROS) program.

The majority of staff access the internet at work using their personal smartphone or cellphone:



64 (88%) STAFF USE THEIR SMARTPHONE OR COMPUTER TO LOOK UP HEALTH CARE INFORMATION



49 (67%) STAFF REPORT USING HEALTH-RELATED APPS

Survey questions were asked to understand if staff would be interested in using technology with their patients and 53% of staff who responded stated they would use a secure app to text and communicate with patients. Additionally, staff were asked about barriers that affect their patients' ability to attend programs, services, or appointments and the top three reasons were: transportation issues (75%), attitudes towards treatment (68%), and lack of childcare (52%).

Staff were asked about using specific technology features with patients and if these features may be helpful or not. The top features staff considered helpful to use with patients were appointment reminders (97%), educational materials (91%), medication reminders (95%), mindfulness apps (89%), and medication information (88%). Staff also mentioned other features such as translation support, tele-translation, and improving patients' use of practices (e.g., trauma-informed care).

The top three features staff would use with patients were appointment reminders (82%), medication reminders (32%), and appointment scheduling apps (31%). Staff indicated they would use text reminders (55%), phone call reminder apps (46%), and calendar appointments (44%) to support patients before, after, or between appointments.

82%

APPOINTMENT REMINDERS

32%

MEDICATION REMINDERS

31%

APPOINTMENT SCHEDULING

55%

TEXT REMINDERS

46%

PHONE CALL REMINDER

44%

CALENDAR APPOINTMENTS

Additionally, as part of this project CBC recently hosted an iChoose Event focused on consumer choice in the Bronx. The event, which was developed based on the above analyses of consumer and provider surveys and focus groups, aimed to gain further consumer input and incorporate it in the decision-making process for the use of innovative TAC solutions in care delivery. There were four technology companies that presented on their platforms at the event: [Sober Grid](#), [Sibly](#), [Litesprite](#), and [Marigold](#). At the end of the event, consumers were invited to vote for their favorite technology and the finalist, Litesprite, was awarded the opportunity to move to the final phase of this project and pilot their TAC solution directly with Bronx consumers over 3–6 months. During this pilot, CBC will analyze the replicability and scalability of the solution. Providing patients with a platform to take control of their own health by selecting the technologies they feel will best meet their needs may lead to better health outcomes and increased motivation to engage in care.

These technologies can better address treatment gaps, facilitate access and linkages to needed services, overcome geographic and transportation barriers, foster engagement by enabling anonymity, and decrease stigma around accessing behavioral health services. There is a growing body of evidence that these technologies offer providers more real-time access to critical information about their patients, make managing caseloads more efficient and effective, and potentially open up clinician time to better address patients with more intensive needs.

TECHNOLOGY ASSISTED CARE SOLUTIONS

TAC solutions use technology to assist with the decision-making process and/or act as “clinician extenders.” Several audio/web/mobile applications are helpful for enhancing patient contacts, providing access to information and resources, assisting with decision support, and augmenting collaborative care. The TAC solutions outlined below have the capacity to support, enhance, and scale behavioral health services to ultimately improve access to and quality of care for patients. To develop these categories, CBC

referenced the APA App Evaluation Model and work done by the New York City Department of Health to assist with organizing and assessing technology resources and apps that address mental health issues (See Appendices II–III).

MOBILE BASED CARE & TELEPSYCHIATRY

There is a growing body of literature that reinforces technology adoption in behavioral health—most predominantly in mobile based care and telepsychiatry. Mobile tools include, but are not limited to, virtual care, cognitive behavioral therapy, chronic disease management, peer support, medication management, passive symptom tracking, and data collection. In addition to the above benefits, there is substantial evidence demonstrating that mobile based care and telepsychiatry can be valuable resources for improving behavioral health outcomes and reducing total cost of care. Mobile based care allows providers to reach patients at the crucial point of care. For example, a study investigating the efficacy of a fully automated conversational agent that delivers cognitive behavioral therapy to college students who have symptoms of anxiety and depression found that the conversational agent significantly reduced students’ symptoms over the study period.¹⁵ In addition, there is evidence demonstrating that the use of technology in health care improves efficiency and reduces costs. Kaiser Permanente, the largest not-for-profit health plan in the United States, engaged in a pilot study of an SMS appointment reminder system developed by mPulse mobile that reduced “no-shows” for appointments by 73% and saved \$150 per appointment by eliminating the cost of no-shows.¹⁶



PATIENT ENGAGEMENT

The benefits of technology in health care for patients, providers, and the health care system as a whole are only realized if patients are engaged with and responsive to using telehealth/telepsychiatry and mobile health resources. Having access to care through the ease of one's device empowers patients to take control of their own health care. Several studies demonstrate high patient engagement and endorsement of using technology resources in health care. A study that evaluated the FOCUS smartphone intervention, which provides illness management support to individuals with schizophrenia, found that approximately 90% of participants rated the intervention as highly acceptable and usable and that the intervention significantly reduced psychotic symptoms, depression, and general psychopathology after one month of use.¹⁷ The Department of Veterans Affairs' investigated patient satisfaction scores for telehealth services provided to veterans and found that for those who received services, 92% of veterans were satisfied with Clinical Video Telehealth, 88% were satisfied with Home Telehealth, and 94% were satisfied with Store and Forward Telehealth.¹⁸

An environmental scan done by NCQA yielded the following types of technology functions that leverage technology to increase patient and family support/engagement³⁴:

Access and controlled sharing of health data and information;

Health and lifestyle tracking;

Management of chronic disease and outcomes;

Shared-decision making;

Social network and learning health systems; and

Behavioral healthcare management.



MEDICATION ADHERENCE

Many people do not take their medication as prescribed or at all. For example, it is estimated that fewer than 10% of people with unipolar major depression take the appropriate therapeutic dose of medication, and more than 20% fail to even fill their first prescription.¹⁹ Furthermore, people often discontinue their medication over time, long before it is advised by their medical practitioner.²⁰ Poor medication adherence is not only detrimental to the patient's health as it can also negatively impact overall health care costs. The IMS Institute of Healthcare Informatics found that the avoidable cost opportunity from medication nonadherence is \$105 billion because adherence to medication can prevent or delay the onset of complications and reduce the risk of hospitalization.²¹

Adherence to taking antipsychotic medication is particularly problematic, and a wide range of factors, including unpleasant side effects and poor communication with doctors, have been shown to contribute to this reluctance.^{22,23} Additionally, substance misuse/abuse is often associated with poorer medication adherence among psychiatric patients.²⁴

Central to adherence is the quality of the provider/patient relationship. Effective provider/patient communication is empirically linked to positive outcomes of care including patient satisfaction, health status, recall of information, and adherence.²⁵ Provider discussions help patients understand their illness and weigh the risks and benefits of treatment.

There are opportunities for technology to support provider/patient communication regarding medications. A survey of American consumers' behavior and preferences for engaging with technology for the management of their health care found that 46% of those surveyed included medication reminders as a top interest when downloading and using mobile health apps.²⁶ Tech-based tools can be used as a proactive measure to facilitate adherence to medication regimens. In addition to medication reminders, technology resources could be used to help with prescription refills and to provide various incentives for individuals to take their medications.



Medication non-adherence rates in Behavioral Health range between³⁵:

50%–69% FOR MAJOR DEPRESSION

20%–50% FOR BIPOLAR DISORDER

20%–72% FOR SCHIZOPHRENIA

57% FOR ANXIETY DISORDERS

35% ALCOHOL ABUSE/DEPENDENCE

COMMUNITY-BASED REFERRAL PLATFORMS

Apart from care-focused technology solutions, there is also an emerging market of products that inventory behavioral health care and support services and streamline referrals. Such services increase the accessibility of care for patients and optimize provider workflows so that incorporating more rounded and complex care-plans is not burdensome. The development of these products gives providers an opportunity to reap the benefits of improved quality of care without the hefty price tag of investing in advanced onsite Health Information Technology (HIT) systems. These products leverage more cost-efficient cloud computing solutions where the entire system can be hosted and managed offsite, and the cost of operation is shared between multiple subscribing providers.²⁷

An example of one such service, Healthify, was spotlighted at the California Improvement Network's Webinar on Social Needs Services and Referral Models in March 2019.²⁸ In this Webinar, CBC was profiled on how it was leveraging Healthify as the IPA Network's community-based referral platform with focus on developing a closed loop referral and tracking system. Healthify and other similar services provide networks of providers with an integrated system by which they can screen patients to determine their social determinants of health needs, search for locally accessible services meeting those needs, refer the patient to the service providers, and follow up on the referral using a centralized

system that keeps an up-to-date inventory of services. The usefulness of such platforms is being increasingly recognized. For example, the Social Interventions Research & Evaluation Network recently published a guide on how to use Software-as-a-Service (SaaS) community resource referral platforms, including Healthify, after interviewing informants at 39 different organizations who were in various stages of implementing such platforms within their practices.²⁹

The growth of this market within the greater HIT landscape is important to follow as such products, along with innovations in mobile-based-care, are recognized more widely for their value in mitigating the resource intensive nature of high-touch care coordination and management.³⁰

“The development of these products gives providers an opportunity to reap the benefits of improved quality of care without the hefty price tag of investing in advanced onsite HIT systems.”



CONCLUSIONS AND RECOMMENDATIONS

There are numerous complex and specific needs of behavioral health providers and their patients that could be addressed in part by innovative technology solutions. The behavioral health sector must take advantage of the growing technology trends/market in order to enhance their services and programs. It is essential that these providers have a central resource to explore, vet, pilot, navigate, and ultimately support and scale opportunities for providers and patients. CBC has the experience, capacity, and knowledge to act as this central innovation hub.

CBC can pursue payer and startup partnerships to fund innovation and implementation activities. Given the CBC network size and scale, the potential to impact total cost of care, improve patient engagement, and enhance operations is significant. Payers also have shared interests in pursuing technology and innovation strategies for their beneficiaries in tandem with their key provider partners. Startups are often willing to discount or subsidize early stage betas in exchange for access to knowledge and expertise. Additionally, CBC can analyze financial opportunities for interventions that are eligible for Medicaid and Medicare reimbursement such as telehealth, remote patient monitoring, and health coaching.

CBC is proposing the following framework and series of action items that will further expand the field of behavioral health technologies and the role/responsibility that CBC has to its network providers and the patients/families-caregivers served throughout New York City:

Create a comprehensive framework for CBC's role/responsibility and develop joint principles to advance the design, development, and/or implementation of TAC solutions and other technologies that help achieve the "Quadruple" Aim.

Develop an effective support model that will understand network providers and patient and family/caregiver unmet needs and interests while respecting consumers choice.

Advance the development of a unified IT/Data Analytics and Business Intelligence (DABI) platform across the CBC network.

Demonstrate and disseminate innovative use cases of HIT and TAC for patient/family-caregiver engagement.

Incorporate insights from engagement with behavioral health patients to determine interest and willingness to engage with digital technologies.

Develop a core set of CBC Consumer Principles that focus specifically on the unique challenges of the behavioral health sector and population from the Consumer Principles for Health and Care Planning in an Electronic Environment, including usability, privacy, personalization & control, and integration.³¹

NEXT STEPS

CBC hosts an annual Innovations Conference, and our first one was in the spring of 2019, bringing together network providers and vendors to showcase their innovative programs and service models and to discuss collaboration efforts. This Innovations Conference was the starting point for CBC's development into a Innovations Hub, which will be responsible for documenting, evaluating, and disseminating the widely emerging practices that have proven to be effective in behavioral health service delivery. The ultimate goal will be to turn these successful practices into scalable programs and services across the CBC Network through group purchasing.

During the fall and early winter of 2019, CBC plans to continue these efforts by hosting a series of round table discussions with providers and vendors to discuss the use of technology resources in community-based programs. These discussions will be followed by a second Innovations Conference in the spring of 2020.

ACKNOWLEDGMENTS

The development of this White Paper could not have been possible without the valuable support and input provided by our staff and partners. We would like to thank the following individuals and organizations for their valuable feedback, expertise, and hard work supporting the development of this paper:

Anita Appel – Senior Consultant, Sachs Policy Group

Bruce Feig – Senior Consultant, Sachs Policy Group

Jennifer Hajj – Head of Partnerships, Galileo

Joe Kahn – CEO, Karuna Health

Elise Kohl-Grant, Director – IT Project Management,
Coordinated Behavioral Care

Coby Kramer Golinkoff – Consultant, Sachs Policy Group

Micaela Mercado – Research Associate, Arizona State
University School of Social Work

Jaclyn Pierce – Consultant, Sachs Policy Group

Jorge R. Petit, MD – President & CEO,
Coordinated Behavioral Care

Khushboo Shah – Population Health Data Analyst,
Coordinated Behavioral Care

Lloyd Sederer, MD – Distinguished Psychiatrist Advisor,
NYS Office of Mental Health

Sara Sezer – Special Assistant to the CEO & Project
Manager, Coordinated Behavioral Care



“This Innovations Conference was the starting point for CBC’s development into a central Innovations Hub, which will be responsible for documenting, evaluating, and disseminating the widely emerging practices that have proven to be effective in behavioral health service delivery.”

PROGRAM

MEMBER VALUE & POTENTIAL DELIVERABLES

VET INNOVATIVE TECHNOLOGIES



- Define scope and agency/provider as well as patient/family-caregiver needs
 - Source solutions that address member challenges/needs and advance quality
 - Curate lists of recommended technology platforms [See Appendix III]
-

CONVENE & SUPPORT MEMBERS



- Query members on solutions that have and have not worked
 - Provide a CBC Network Member landscape tech analysis
 - Educate agencies on technology and innovation
 - Define shared process for evaluating quality of solutions
 - Coordinate marketing and communications
 - Leverage provider network for efficiencies (i.e. group purchasing)
-

PILOTS/ BETA OPPORTUNITIES



- Pursue partnerships and see opportunities with payers and start-ups
 - Apply for grants to fund pilots/betas
 - Match platforms with provider needs
 - Identify early adopters
 - Support launch activities, including project management and ongoing oversight
 - Established learning collaboratives/workgroups for best practices dissemination and scalability
 - Monitor pilot development track quality measures, and evaluate progress
-

TELEHEALTH EXPLORATION



- Determine provider network needs
- Educate agencies on policy, regulations, reimbursement, implementation, and launch
- Coordinate advocacy among providers
- Provide scale for efficiencies and implementation (i.e. shared psychiatrists)

APPENDIX II | APA App Evaluation Model³²

The American Psychiatric Association (APA) has put forth an App Evaluation Model for psychiatrists and mental health clinicians to assist in making the best decision about selecting a technology resource or app. They developed a hierarchical rating system and rubric to make practitioners aware of very important information that should be considered when picking an app, which differs from the information used to judge a medication or therapy. The foundation of the evaluation model rests in the maxims of 'do no harm' as well as a risk-benefit analysis.

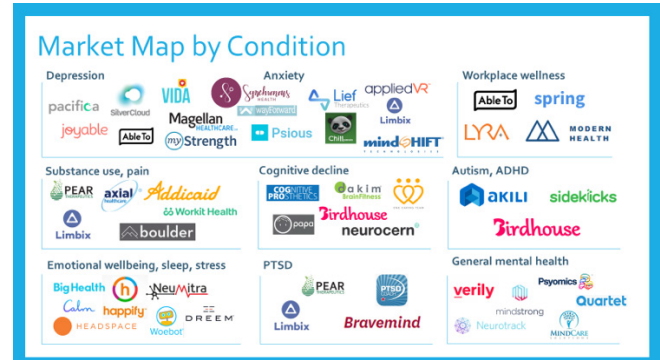
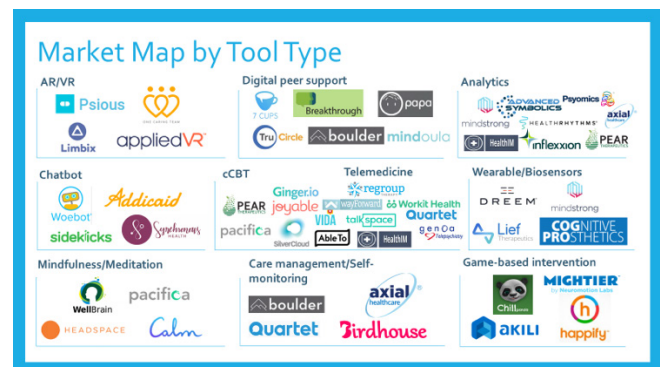
The four areas comprising the model (beyond gathering basic background information) are:

- 1 **Safety/Privacy:** Apps present some unique risks that may often be overlooked. Risks may include data costs associated with app use (i.e., depending on your data plan with your wireless provider), profiling, loss of benefits or insurability—all of which are associated with privacy and security. Digital privacy and security are not often high-level risk factors when prescribing a medication or conducting in-person therapy when deciding to use an app, however, they are extremely important and should be the first area evaluated.
- 2 **Evidence (i.e., effectiveness):** App developers often make many claims even though there is currently little clinical evidence to support such. This does not mean that apps don't work, but rather that there is much we still do not know.
- 3 **Ease of Use:** Ease of use is a more subjective category and so different people will have very different ideas about what ease of use means to them.
- 4 **Interoperability:** Finally, the last step in the model is Interoperability. This is the topmost level, as the ability to share data only matters if this is an app that you and the patient want to use (based on background information in Step 1); if it is safe and secure (Step 2); has some evidence base (Step 3), and is easy to use (Step 4). The reason why interoperability becomes important in this model is because apps should not fragment care and the patient and psychiatrist should be able to share and discuss data or feedback from the app as appropriate.

APPENDIX III | NYC DOHMH Mental Health Innovation Lab

The New York City (NYC) Department of Health and Mental Hygiene (DOHMH) is working on several projects that focus on the need for improved use of data and technology across the mental health sector. DOHMH created a database of relevant companies that focuses on products targeting different facets of mental health and different subpopulations. The goal of the work is to find alignment between technology companies and NYC-funded programs. Additionally, DOHMH aims to improve access to mental health care and mental health outcomes by facilitating the implementation of technology-enabled service delivery. The intent is to use the database to drive proposals for public-private partnerships, with the common goal of establishing efficacy and scalability of these products.

These market maps demonstrate the most promising companies by tool type based on profiles in the database. Companies included have strong evidence bases, established data infrastructure, stable funding, and potential for scale. Some companies exist in several categories based on diverse feature sets. Of note, the line between computerized-CBT and telemedicine is blurred because the companies in the middle offer both features.



APPENDIX IV | Examples of Technology Assisted Care Solutions

Below is a snapshot of some of the emerging technology companies that CBC has vetted and others that provide solutions that are complementary to CBC and member business lines:

CBC AFFILIATIONS KEY:



DISCOVERY

CBC has started efforts to research and vet the company but has not yet received a demo.



EXPLORATION

CBC has researched the company, has had initial conversations with the company, and has received a demo.



UNDER CONSIDERATION

CBC has researched the company and received a demo, and is considering a partnership/collaboration.



PARTNERSHIP

CBC has a formal contract with the company representing a partnership/collaboration.














ICHOOSE FINALIST

Company was a finalist at the recent CBC consumer iChoose event.



ICHOOSE WINNER

Company was the winner of the recent CBC consumer iChoose event.

COMPANY	DESCRIPTION	CATEGORY	AFFILIATION WITH CBC
	Artificial intelligence and advanced technology predicts which patients are at-risk for specific behaviors, and identifies the most effective intervention for each individual. The focus of the technology is driving behavioral change related to medication non-adherence.	 MEDICATION ADHERENCE	
	Telehealth platform that allows mental health care providers and collaborative care teams to stay connected to their patients with clinical workflows, patient engagement, and wraparound services. The platform keeps behavioral health access in patients' hands at all times.	 PATIENT ENGAGEMENT  TELEHEALTH	 
	Acts as a pharmacy and produces personalized rolls of pre-sorted medications, with clearly marked dates and times. The divvyCARD contains patients' current list of medications and dosages, while divvyRefills proactively contacts and authorizes refills to avoid harmful interruptions at no extra cost with free delivery.	 MEDICATION ADHERENCE	



Behavioral health screening tool that uses speech signals to provide a real-time behavioral health vital sign.



**PATIENT
ENGAGEMENT**



Largest provider of pharmacy, outpatient telepsychiatry, and medication management services for individuals with behavioral and other complex health conditions.



TELEHEALTH



**MEDICATION
ADHERENCE**



Digital therapeutics platform grounded in science that delivers a dynamic user experience. Available on the web and mobile app in both free and premium-based versions. Users develop skills through education, activities and games that lead to better mental health and meaningful behavior change.



**PATIENT
ENGAGEMENT**



Supports organizations by finding community services, tracking patient needs related to social determinants of health, and coordinating referrals with community partners.



**COMMUNITY-
BASED
REFERRAL
PLATFORM**



Licensed providers deliver cognitive behavioral therapy in real-time through written conversation online, using a secure virtual therapy room. Therapy is confidential and accessible from a computer, tablet, or smartphone. This allows flexibility, with appointments that can be scheduled for any time of the day. Individuals and providers can review their appointment transcripts at any time during and after treatment.



TELEHEALTH



Leading national telepsychiatry service provider organization with a mission to increase access to quality behavioral health care through innovative applications of technology. InSight has a diverse provider team, a robust internal infrastructure, and a history of adapting its programs to fit the needs of a variety of different settings and populations.



TELEHEALTH





Helps care management teams build deeper, more impactful relationships with patients through a multi-channel patient engagement and population health management platform.



**PATIENT
ENGAGEMENT**



Based on games that use evidence-based treatment methods, including cognitive behavioral therapy-based strategies and medication to help people manage chronic health conditions. The platform is designed to strengthen the patient-provider relationship and cost-effectively improve health outcomes for a variety of chronic conditions.



**PATIENT
ENGAGEMENT**



Artificial intelligence-powered care coordinator that is available 24/7. The platform automatically checks patients' insurance eligibility and completes checklists before diagnostic testings or procedures to ensure that patients meet all clinical and financial requirements.



**PATIENT
ENGAGEMENT**



Allows patients to access text-based support groups of 5–10 peers via an app 24/7. The app provides personalized, culturally competent support for individuals, including those at the highest risk and who are least likely to consistently engage in care. Using artificial intelligence, the technology flags clinically relevant sentiment in chats so that moderators do not read every text.



**PATIENT
ENGAGEMENT**



Self-help Behavioral Activation mobile app that delivers all Behavioral Activation treatment components. Ideal for individuals who have been feeling down, depressed, bored, and/or irritable, but are unable to enroll or are not interested in therapy at this time.



**PATIENT
ENGAGEMENT**





Empowers providers to extend evidence-based self-help wellness resources to their patients, community, and employees. myStrength complements traditional care to help manage conditions such as depression, anxiety, stress, chronic pain, substance use disorders, and more with highly-personalized and interactive web and mobile applications.



**PATIENT
ENGAGEMENT**



Technology platform that leverages artificial intelligence and data from electronic medical records to identify patients' eligibility for government benefits and community services, autofill large portions of government benefit applications, and send referrals to clinical and social service providers.



**COMMUNITY-
BASED
REFERRAL
PLATFORM**



Automates the check-in process, streamlines front-office workflows, collects patient-reported outcomes at scale, and activates patients in their care. The platform enables medical groups, health systems, and payers to leverage the intake process to achieve their strategic objectives.



**PATIENT
ENGAGEMENT**



Health care technology and services company on a mission to improve the lives of people with mental health conditions. Quartet partners with health plans and systems to connect patients to personalized care teams comprised of primary care providers and mental health providers, and leverages a HIPAA compliant technology platform to enable virtual collaboration.



**COMMUNITY-
BASED
REFERRAL
PLATFORM**



TELEHEALTH



Delivers proven referral management, patient access, and e-consult solutions that help hospitals, health systems, networks, and payers streamline the referral process, decrease leakage, and improve communication between providers and patients.



**COMMUNITY-
BASED
REFERRAL
PLATFORM**





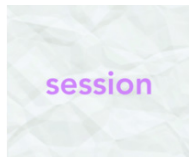
Builds and deploys dynamic, branded digital programs across a range of health care and life science initiatives. The platform helps stakeholders engage consumers in their own care plans by enabling a seamless, two-way digital connection between consumers and a coach and by deploying telehealth, messaging, and group support features across any consumer-facing website or app.



PATIENT
ENGAGEMENT



TELEHEALTH



Mental fitness plan created by doctors that is affordable, accessible, and anonymous. Participants LISTEN everyday to a real story with commentary by a leading mental health professional or TALK with others dealing with similar challenges using voice changing technology.



TELEHEALTH



Service connects members to trained human coaches live, 24/7. Through confidential secure chat, the platform offers empirically-supported tools like motivational interviewing, cognitive-behavioral skills, and problem-solving to help challenge negative thoughts and achieve goals.



PATIENT
ENGAGEMENT



Offers real time, stigma-free support for sobriety through a mobile app that provides a fun and engaging environment. Users create an avatar to ease the fear of social sharing and help increase engagement on the platform.



PATIENT
ENGAGEMENT



Platform and mobile app designed to deliver 24/7 support for drug and alcohol addiction recovery. Delivers 24/7 peer recovery coaching through the app provided by a team of trained and certified peer recovery coaches. Provides free, personalized, easy-to-access resources for tracking and sharing progress with others while also giving and receiving support.



PATIENT
ENGAGEMENT





Matches individuals, instantly and anonymously, with others who are struggling with something similar. Peers can talk about any topic, any time. Everyone who is matched connects in real-time in a small group with a moderator who keeps the live chat safe and troll-free and helps make resource recommendations and service referrals hyper-targeted.



**PATIENT
ENGAGEMENT**



Social care coordination technology that connects health and social care providers to send and receive secure electronic referrals, communicate in real-time, and track outcomes. The platform seamlessly integrates social determinants of health into patient care.



**COMMUNITY-
BASED
REFERRAL
PLATFORM**



Enables care teams to engage, monitor, and manage patients with behavioral health conditions by using robust communication tools, digital content, and care plans.



**PATIENT
ENGAGEMENT**



App-based platform leverages rewards to support individuals struggling with substance abuse, encourage adherence to treatment plan, and provide connection to care team.



**PATIENT
ENGAGEMENT**



Uses behavioral economics through scalable technology to achieve better adherence, engagement, and health. The app uses financial incentives and reminders to help patients effectively manage their own care. The model prevents avoidable costs in the highest risk populations for payers and risk-bearing providers.



**MEDICATION
ADHERENCE**



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