



# COMMON GROUND

A collaborative co-created solution for care management of patients with chronic conditions

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Contents

EXECUTIVE SUMMARY ..... 2

BACKGROUND: COMMUNITY HEALTHCARE TECHNOLOGY..... 2

OUR PROPOSAL..... 3

    POTENTIAL BARRIERS..... 7

IMPLEMENTATION STRATEGY..... 9

REVENUE MODEL AND SCALING PLAN ..... 10

EXHIBITS ..... 12

    Exhibit 1: CMS 30-Day Medicare Readmissions for Chronic Conditions ..... 12

    Exhibit 2: Medicare Prevalence of Comorbid Chronic Conditions..... 13

    Exhibit 3: Mobile phone and other device ownership..... 14

    Exhibit 4: Coproduced healthcare service ..... 15

    Exhibit 5: HCUP 2016 Average Readmission Costs by Index Diagnosis ..... 16

REFERENCES ..... 17

## EXECUTIVE SUMMARY

Common Ground is a cloud-hosted software platform that aspires to improve health outcomes and reduce the overall cost of healthcare delivery for patients with multiple chronic conditions in major metropolitan ambulatory healthcare systems.

Chronic diseases - conditions which are long-lasting and incurable - affect more than 40% of the United States population, or 133 million Americans. These illnesses account for 75% of all health care expenditures each year in the U.S. In a recent survey, 91% of patients who have chronic diseases indicated that they need more help managing their conditions.

Current chronic care management tools are healthcare industry-centric – designed to support provider organizations, regulatory agencies, and payers as stakeholders rather than focusing on patients. We at Common Ground understand that chronic care management requires a more comprehensive long-term approach than acute illness care. Applications which seek to aid in managing chronic disease need to be designed based on shared needs and behaviors. Common Ground will engage patients and providers in the creation of modules and content to help better manage chronic conditions. This platform, through engaging patients and considering their priorities from inception, aims to ameliorate the asymmetry of information between patients and providers while activating patients to take part in their own care. A core component of Common Ground will be collaborative goal-setting in-clinic between patients and providers. Patients will then provide data on their goals between visits. Common Ground will keep patients engaged in tracking with gamification and customization features.

Common Ground's collaborative, comprehensive platform design will allow for better care coordination and decrease the burden of illness for chronically ill patients who are high utilizers of healthcare services. In arming patients who have multiple chronic conditions with tools for better health management, Common Ground will reduce the per capita cost of care for this large patient population and ease the economic pressure caring for these patients puts on healthcare systems.

We will pilot Common Ground in a Bronx, New York diabetes ambulatory clinic. This pilot will serve as our proof of concept and allow us to develop a standard protocol for how to co-create a meaningful solution with patients and providers. While we pilot the diabetes package, we will develop modules for co-management of additional chronic conditions. As we create new modules, we will also seek to expand Common Ground across New York City and then New York State. We expect to be profitable by 2024 and, at that time, will seek venture capital funding for further national expansion to really move the needle in improving outcomes for chronically ill patients and reducing costs for both patients and providers.

## BACKGROUND: COMMUNITY HEALTHCARE TECHNOLOGY

As internet access and internet-enabled mobile devices have become more ubiquitous among U.S. consumers, health care organizations have sought ways to better interact with patients outside of the hospital/clinic setting. Electronic health records (EHRs) promised to make healthcare safer and higher quality while saving money. EHRs intended to provide patients with truly portable health records they could tote with them and share with any and all of their

providers. \$36 billion has gone into the effort of implementing digital health records across the United States since 2009, but the results have not lived up to the promise of an integrated electronic network of health information.<sup>5</sup> There are more than half a dozen EHR vendors with thousands of customized and disparate EHR implementations across the US, each proprietary and disconnected from one another.

Patient portals on top of EHRs aimed to provide seamless communication between providers and patients, but these portals failed to actively engage patients. According to a 2018 poll from the Medical Group Management Association, over 90% of healthcare organizations offer some type of online patient portal; however, less than 30% of patients utilize this technology.<sup>6</sup> The more vulnerable Medicaid patient population is 70% less likely to use a patient portal compared to those with commercialized insurance.<sup>7</sup> Patients list lack of internet access, concerns about privacy, and a preference for face-to-face or telephone contact as reasons for not utilizing patient portals.

The disconnect in healthcare IT has left patients in the most vulnerable populations, as well as physicians and caregivers who want to help these populations, with limited options. Healthcare institutions across the United States are investing heavily in IT and IT solutions to try and bridge this gap. According to a report from Allied Market Research, the global mobile health (mHealth) market is expected to reach \$58.8 billion dollars by 2024.<sup>8</sup> Shortages of skilled workers, increasing labor costs and a shift in focus from treatment towards prevention are leading healthcare systems to seek alternative care models and invest in technology to aid in effectiveness and efficiency of care - with the patient at the center.<sup>9</sup> In contrast to much of the healthcare information technology space, which is largely designed to track information, Common Ground will, from the beginning, be designed to engage users and influence patient health outcomes.

## OUR PROPOSAL

Common Ground will be a cloud-hosted software platform designed collaboratively by patients and providers for chronic care co-management. We are developing Common Ground in partnership with an independent, nonprofit organization focusing on effective health care for vulnerable populations and a major urban academic health care institution. Below is an overview of some key features we intend to include in the final Common Ground platform package:

### COMMON GROUND KEY FEATURES

- ◆ Co-created by patients and providers
- ◆ Modular and customizable
- ◆ Gamification for better patient engagement
- ◆ Cloud-hosted interoperable & secure data platform
- ◆ Communication via text, voice, chat and email
- ◆ Available in multiple languages
- ◆ Automated push alerts to patients and care teams

Common Ground aims to demonstrate how a platform designed through active patient and provider collaboration which focuses on concerns most relevant to vulnerable patient populations, can make more of an impact on important chronic care health outcome measures such as avoidable readmissions and length of stay than traditional reporting which relies heavily on impersonal administrative data such as hospital charge codes.

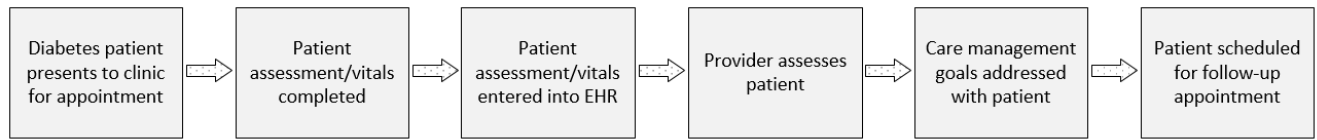
Common Ground will offer its clients increased interoperability and access to data via implementation of HL7 FHIR (Fast Healthcare Interoperability Resources) and API (application programming interface) functionality. HL7 FHIR specification technology, a common standard by which healthcare data can be integrated across systems, will allow for seamless integration capability with clients' existing EHRs, patient portals and appointment systems - essentially adding a Common Ground chronic care management and engagement layer on top of existing healthcare IT infrastructure. API functionality can retrieve and deliver data and facilitate connectivity between platforms and devices, which will enable Common Ground to ingest information from other patient-facing applications such as glucose monitors and fitness tracker wearables. Common Ground platform will integrate patient-provided information and provide this valuable dataset back to its clients' EHRs, allowing for more advanced analytics and a 360-degree view of the patient as consumers of healthcare services.

The Common ground team will pilot the project in a in a large, densely populated urban area with an abundance of clinics, and a high level of chronic disease incidence amongst its population. District one of the south Bronx meets the necessary criteria, and as such will be the target market for rollout. Patients from clinics in this area will actively take part as members of the workgroup in designing the platform to ensure it addresses patients' wishes, goals and concerns. In this manner, Common Ground is on trend to move toward patient-centered measurement by recognizing that the patient is not only a consumer, but just as importantly, a producer of healthcare.

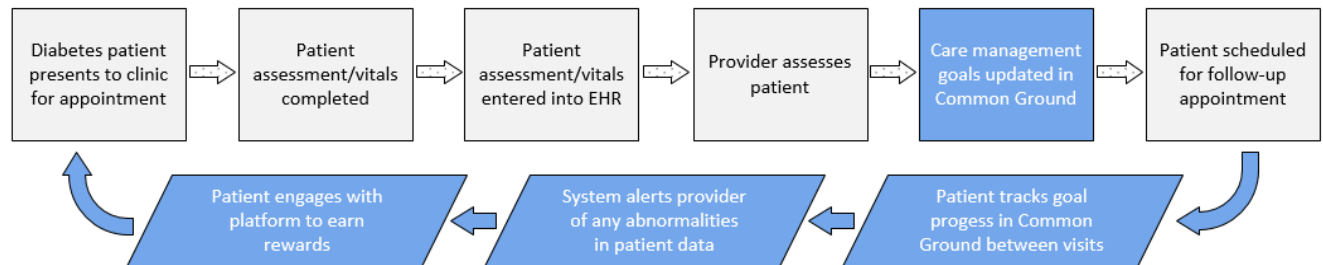
Standardized patient-reported outcomes surveys will be an integral tool for understanding and quantifying patient status. Most of the common questionnaires for patients related to function or quality of life are readily available in English, but as English proficiency rates in the Bronx are only 31% on average, in the development phase, we will employ translation services to make all aspects of communication delivery included in the tool available in both English and Spanish.<sup>10</sup>

To increase tool usage and motivate patients to actively engage with Common Ground, the platform will include a gaming interface where patients will progress along a board and earn points as they report designated data related to established health goals selected collaboratively by patient and provider. Every time a patient reports a measure, for example an A1C value, the patient will be rewarded with stars. Patients will also have additional opportunities to earn more stars by reading educational materials or reporting additional measures, such as food intake or number of steps taken. Once patients reach the end of the board and arrives at their goal, they will be able to cash in their stars for a tangible reward, such as a gift card. If a patient fails to check into the gaming system or reports declining health status, Common Ground will alert the patient's care team so they can reach out to the patient and offer assistance.

### Traditional diabetes patient workflow (before Common Ground):



### Diabetes patient workflow with Common Ground platform:



## TARGET POPULATION AND DEMOGRAPHICS

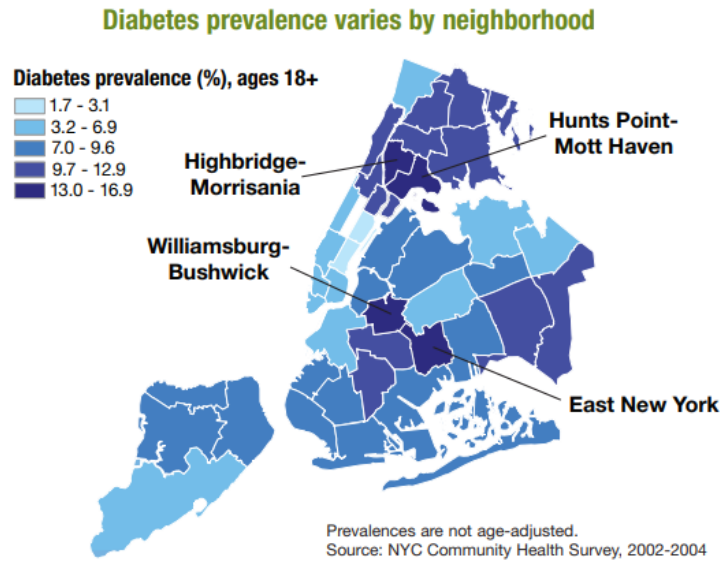
People with multiple chronic conditions account for a disproportionately large share of total health care spending in the United States due in large part to frequent hospital admissions. Some of the most common chronic conditions include hypertension, heart failure, chronic obstructive pulmonary disease, obesity and diabetes. Diabetes is extremely prevalent and has a projected total annual economic impact of \$4.2 trillion by 2023.<sup>1</sup>

Diabetes is a population health crisis in New York City. Data indicates that almost one million people in the city are living with type 2 diabetes, and roughly 19% of those who have the disease are unaware that they have it.<sup>11</sup> Diabetes is most prevalent in underserved and vulnerable populations of color, with more than half of those living with type 2 diabetes in New York City being Black or Hispanic.<sup>12</sup>

The South Bronx, an area home to over 1.4 million people, is comprised predominantly of low-income Black and Hispanic minorities. This area was chosen to be the pilot site, as over 71% of the population (almost a million individuals) were enrolled in Medicaid for at least one month in 2016, making it an ideal candidate for implementation of the tool.<sup>13</sup>

Community District One in the South Bronx is comprised of the Hunts Point-Mott Haven neighborhoods and is 96.2% Black (non-Hispanic) or Hispanic.<sup>10</sup> This district is comprised of a population that is already in need of chronic care management. As such, when Common Ground is rolled out it will have access to the 37 hospitals and clinics located within the borders of Community District One, bringing benefit to these clinics and the patients they serve.<sup>10</sup> Effective chronic disease management can help patients and hospitals avoid unnecessary and costly hospital admissions. Common Ground will help reduce readmission and reimbursement penalties and to the hospitals and clinics that serve this area and will prevent patient readmissions by keeping the population healthy.

The map below of New York City shows diabetes prevalence by neighborhood. Two neighborhoods with the highest rates of diabetes, Highbridge-Morrisania and Hunt's Point-Mott Haven are communities in the borough of the Bronx.



## COMPETITIVE ANALYSIS

Common Ground is the only healthcare platform in the market co-created and designed as a collaborative effort between providers, patients, and administrators. (Exhibit 4) While there are many healthcare applications and tools in the mobile health market that are intended to be patient-facing, these solutions are really designed by and for providers and do not engage patients.

Patient portals, provided as part of electronic health records, are clunky and outdated. Patient utilization of these portals is still at less than 30%.<sup>6</sup> These systems only display data and fail to engage. Patients can view lab results, schedule appointments, and send messages to physicians, but these systems require users, both patient-side and provider-side, to make extra effort without actively engaging either side.

Doctor-on-demand applications allow patients to seek remote medical advice for acute and non-emergent illness, but these apps are not intended for nor provide support for ongoing chronic care management. Care management apps focus only on hospital-based inpatient or post-discharge care and do not support ongoing collaboration between physicians and patients. As such, care management has not demonstrated noticeable, lasting reductions in readmissions.<sup>14</sup> Additionally, these applications only focus on quality measures important to healthcare institutions, not to patients.

Common Ground actively engages chronically ill patients in the design process to ensure the application is designed with patient concerns in mind for ongoing care management and will incorporate gamification and allow for customization to keep patients engaged.

While other chronic condition/lifestyle management options exist in the digital health market, these were not developed in collaboration with patients like Common Ground. Care



Coach, for example, is an application designed to provide psychosocial support and assistance to aid in management of chronic conditions but targets only the elderly population.<sup>9</sup> HealthCrowd, another competitor, offers a solution to unify and optimize communication avenues between patients and providers, and employs analytics to learn from patients' responses to personalize and improve health behaviors. HealthCrowd is currently deployed in healthcare organizations across 26 states in the US.<sup>18</sup> Like HealthCrowd, the Common Ground platform will offer and integrate multiple modes of communication, but additionally Common Ground will offer collaborative goal setting between patient and provider, something HealthCrowd fails to do.

One of Common Grounds closes competitors is eCareCompanion. Developed by Philips, eCareCompanion is a cloud-hosted tablet-based patient portal application designed to help patients manage their care by completing questionnaires, communicating with care teams, and integrating data from connected medical devices aimed at reducing readmissions.<sup>19</sup> In the end, however, eCareCompanion is simply another patient portal designed by providers and administrators and does not address the patient-driven, co-creation and holistic principles central to true patient-centered measurement.<sup>20</sup>

In developing Common Ground, we are keenly aware of the need for integration and interoperability between our system and existing systems to help us stand out in the disparate healthcare IT market. HL7 FHIR will help Common Ground connect with EHR systems while API will enable Common Ground to ingest data from other patient-facing applications such as glucose monitors and fitness tracker wearables. Both HL7 FHIR and API will allow Common Ground to then seamlessly provide data back to clients to incorporate into datasets for decision support and advanced analytics.

Common Ground will achieve a competitive advantage in the digital healthcare market for chronic disease management, thanks to its innovative patient provider co-design, as well as the customization and gamification features that will ensure the highest possible levels of patient engagement. Additionally, Common Grounds interoperability features to allow data to be shared with a patient's full care team, another key feature that will put it ahead of its competitors.

## POTENTIAL BARRIERS

The process of having patients as advisors on the creation and implementation of Common Ground will aid in the identification of potential barriers as well as provide the opportunity to suggest solutions or workarounds to these barriers. Because the patient is the target user of Common Ground, involving them in the creation of the platform will help our design team immediately address issues related to usability and accessibility of the system. During workgroup meetings, we will demonstrate the available technologies to both patients and providers, determine what works or doesn't work and incorporate findings and suggestions into the tool.

Patient engagement and use of online healthcare tools is extremely low despite new developments in technology. Empowering and engaging patients to actively participate in their own healthcare goals and outcomes is one of the driving forces behind the development of Common Ground. One strategy Common Ground aims to employ to ensure active patient participation is gamification. Gamification involves motivating a person to complete a task by turning it into a game with a set of rewards associated. The gamification of healthcare technology is increasingly recognized as an important tool to empower and motivate patients to be



active participants in their care. The chart below shows innate human desires and how various game mechanics tap into these desires. The green smiley faces represent the optimal mix of mechanics.

**Human Desires**

Game Mechanics	Reward	Status	Achievement	Self Expression	Competition	Altruism
Points	😊	😊	😊		😊	😊
Levels		😊	😊		😊	
Challenges	😊	😊	😊	😊	😊	😊
Virtual Goods	😊	😊	😊	😊	😊	
Leaderboards		😊	😊		😊	😊
Gifts & Charity		😊	😊		😊	😊

Source: <https://healthprize.com/blog/gamification-to-improve-patient-engagement-adherence/>

Common Ground will offer multiple modes of communication depending on patient access and preference. Any device that can connect to the internet or make a phone call can be used to access the Common Ground platform. Roughly 81% of Americans own an internet-enabled smartphone while 75% own a desktop or laptop computer and 50% own a tablet. (Exhibit 3) 95% of low-income households, making less than \$30,000 per year, own a cell phone.<sup>21</sup> In addition, 86% of households in the United States have internet access.<sup>22</sup> For patients who do not have access to a web-enabled device or prefer audio communication, Common Ground will implement an interactive voice response system which will employ the same prompts as the web-based tool. Common Ground will record verbal patient responses and store these responses to the cloud to be shared with providers.

Another concern for patient consumers of healthcare technology is privacy and cybersecurity. Common Ground plans to utilize Microsoft Azure cloud computing system as the host for our software. Microsoft Azure is HIPAA and HITECH Act compliant and meets Cloud Security Alliance (CSA) as well as Governance, Risk and Compliance (GRC) criteria.<sup>23</sup>

While patients appreciate online communication and availability from their doctors, providers are wary of these tools due to reduction in or lack of reimbursement. Some states, including New York, have passed telehealth parity laws which require commercial insurers and Medicaid to reimburse for services delivered via telehealth. If a provider in New York needs to reach out to a patient with video and audio communication at the same time via the Common Ground platform, the visit could be submitted for reimbursement.<sup>24</sup> Outside of telemedicine functionality and in-clinic coordination and goal-setting with patients, providers do not need to spend much time directly in the platform. Providers will benefit from patient-provided data integration into EHR datasets while care managers or medical assistants, who are more likely to be compensated for their time spent in web-based tools, can manage communications directly in the platform and escalate to providers as needed.

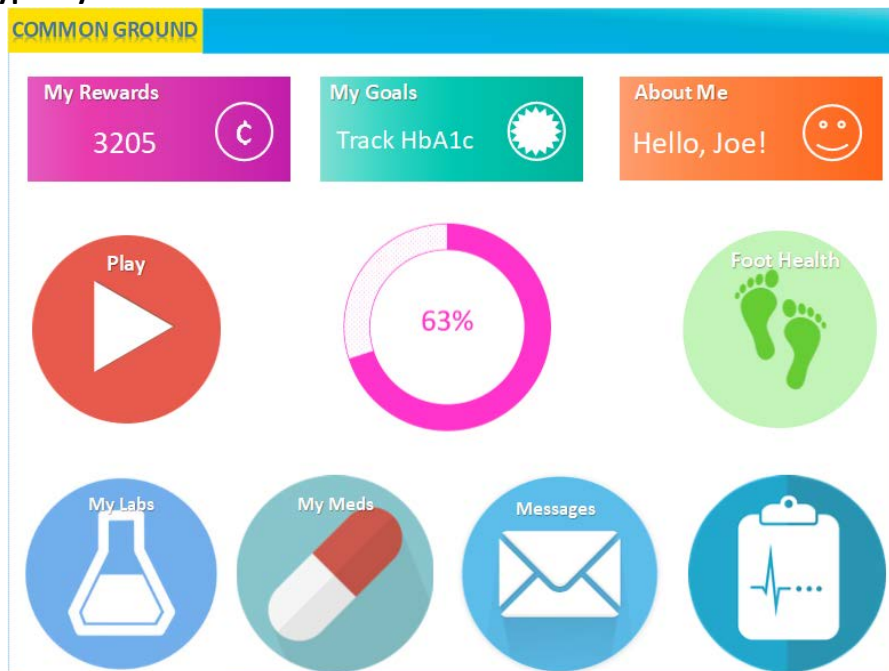
## IMPLEMENTATION STRATEGY

Common ground's 18-month design phase begins in Q3 2019. The expected deliverables from this initial phase are:

1. A detailed blueprint on how to develop a patient-centered quality dashboard
2. A working prototype of the patient-centered quality dashboard to be piloted in real-time by patients and their healthcare team at the Bronx clinic.
3. How to integrate the co-creation principles into healthcare system operations
4. The results of our findings to share with patients, quality measurement community, providers, and payers

The collaborative design process revolves around a central workgroup comprised of representatives from a population health non-profit organization, physicians, administrators and clinical data experts from a major metropolitan healthcare system, and two diabetic patients who are recruited directly from the clinic in the Bronx which will pilot the resulting Common Ground platform. The patients will help determine what modules will be made available for diabetes management in the tool – such as quality of life, tracking glucose levels, or food/activity tracking. Patients can then, with their provider, decide which modules best address their own concerns and goals and customize their platform view to best meet their care management needs. The easily customizable view can be revised as goals and needs change.

### Prototype layout for Common Ground home screen:



Ultimately, the tool, once designed, will be built as a web-based, cloud-hosted Software as a Service (SaaS) solution which will be mobile and tablet friendly and will allow patients and caregivers to access the platform from various web-enabled devices. We chose a cloud-hosted

model as it is cost-effective and offers easy scalability and flexibility to allow Common Ground to expand to meet demand as we grow. Offering Common Ground in a SaaS model is a selling point to potential clients as well as clients will not require additional staff on their end for ongoing support or on-site hardware.

## REVENUE MODEL AND SCALING PLAN

The pilot and initial development will be grant-funded and are estimated to cost \$200,000. The result of the pilot will be a functional tool for diabetes chronic disease co-management which will be piloted with diabetic patients at the Bronx clinic. Early growth stage sales will market diabetes-focused modules to target major metropolitan healthcare delivery systems. The ongoing cost for cloud-hosting services as well as cost for development of new features and modules will be passed to clients as annual subscription maintenance fees. At the enterprise level, where we initially target the larger clients, the annual fee will be \$90,000. To allow for expansion in cloud-hosting as well as employee time spent in ensuring successful setup for new clients, first-year contracts will include a one-time start-up cost of \$10,000. This pricing model will allow us to be competitive in the market and is comparable to the cost of similar cloud-hosted healthcare software solutions at an enterprise scale.

Our initial target clients will be major ambulatory care networks across New York City. Looking at Medicaid data for chronic conditions in New York state, we estimate that New York city accounts for 30% of chronic condition inpatient admissions in New York State.<sup>25</sup> The average readmission rate in New York state is 15.8% which approximates to 274,000 readmissions.<sup>26</sup> Applying the 30% rate to these readmissions, we estimate New York City to have 82,200 readmissions.

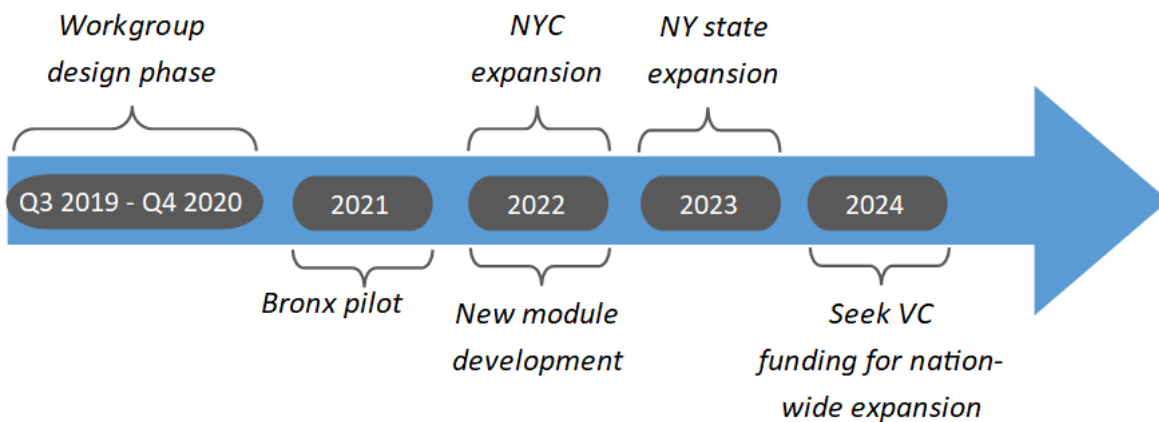
The diabetes-related readmissions rate in New York City is approximately 42% which approximates to 34,500 diabetes-related readmissions in New York City. According to HCUP (Healthcare Cost and Utilization Project), each endocrine/metabolic disease readmission costs approximately \$13,500. (Exhibit 5) With this, we estimate that diabetes-related readmissions cost New York City over \$465 million in a given year. According to Kaiser Permanente, “A minimal investment in medical assistants and analytic software can generate savings (in the form of fewer emergency room visits and days in the hospital) that are a multiple of the dollars spent.”<sup>14</sup>

Thanks to the Kaiser Permanente (KP) leveraged primary-care model, one of their primary care centers, ChenMed, sees readmission rates at 16% less than the national average.<sup>14</sup> While drastically changing care models to achieve this level of improvement, Common Ground can offer its clients an electronic approximation of KP’s collaborative care model to reduce length of stay and readmissions. Common ground’s target readmission reduction is 15% in New York City, or 13,000 of the approximately 82,000 diabetes-related readmissions the city sees annually. At a cost of \$90,000 per year, if the use of Common Ground platform can reduce readmissions by seven events which cost approximately \$13,500 per patient, the client saves money.

Once we have several New York City healthcare networks on board, we will work with our clients using the patient-provider co-creation model to develop additional modules addressing 5 of the chronic disease drivers for readmissions - diabetes, hypertension, heart failure, COPD, obesity.<sup>24</sup> Expanding our module offerings to address some of the most prevalent chronic diseases will help us ensure further reductions in readmissions and more cost savings to

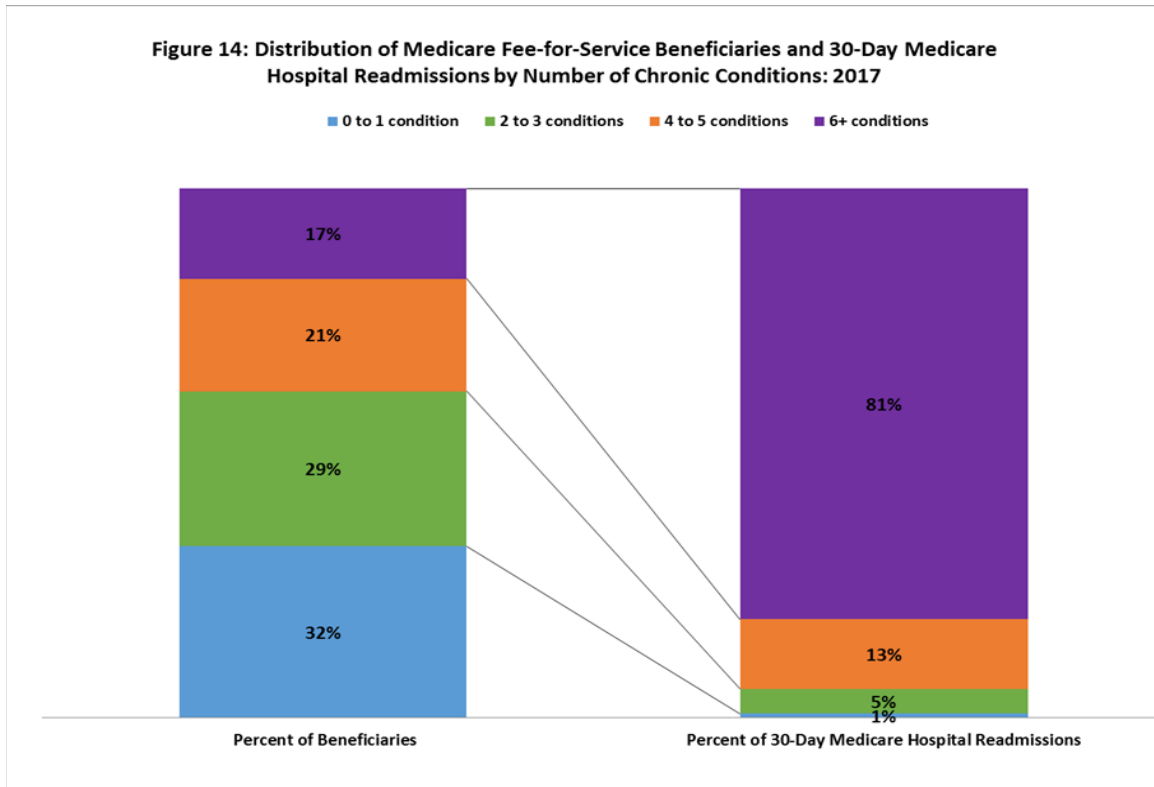
both facilities and patients. Clients who offer patients and providers to participate in workgroups to develop additional modules will be offered the module with no additional annual fee. For other clients, additional modules will add a \$10,000 annual maintenance fee to their contract.

At the point when we have a suite of modules addressing the top chronic disease drivers for avoidable admissions/readmissions, we will look to expand outside of New York City. In the expansion phase, Common Ground will develop pricing models to allow smaller clinics and even home health agencies or nonprofit healthcare management organizations to buy in as well. We will first look to expand to other healthcare systems in New York State. As we offer data interoperability, we believe New York state to be a good starting point for our product thanks to the statewide health information exchange (HIE).<sup>25</sup> We estimate that by 2024, Common Ground will become profitable. At that point, will seek venture capital funding as we look to expand beyond New York state. In future phases of expansion, we will consider pharmacy reward programs and health insurance incentive programs as potential partners and resources to offer further incentives to patients such as CVS gift cards or discounts on premiums for demonstrated patient engagement in Common Ground.



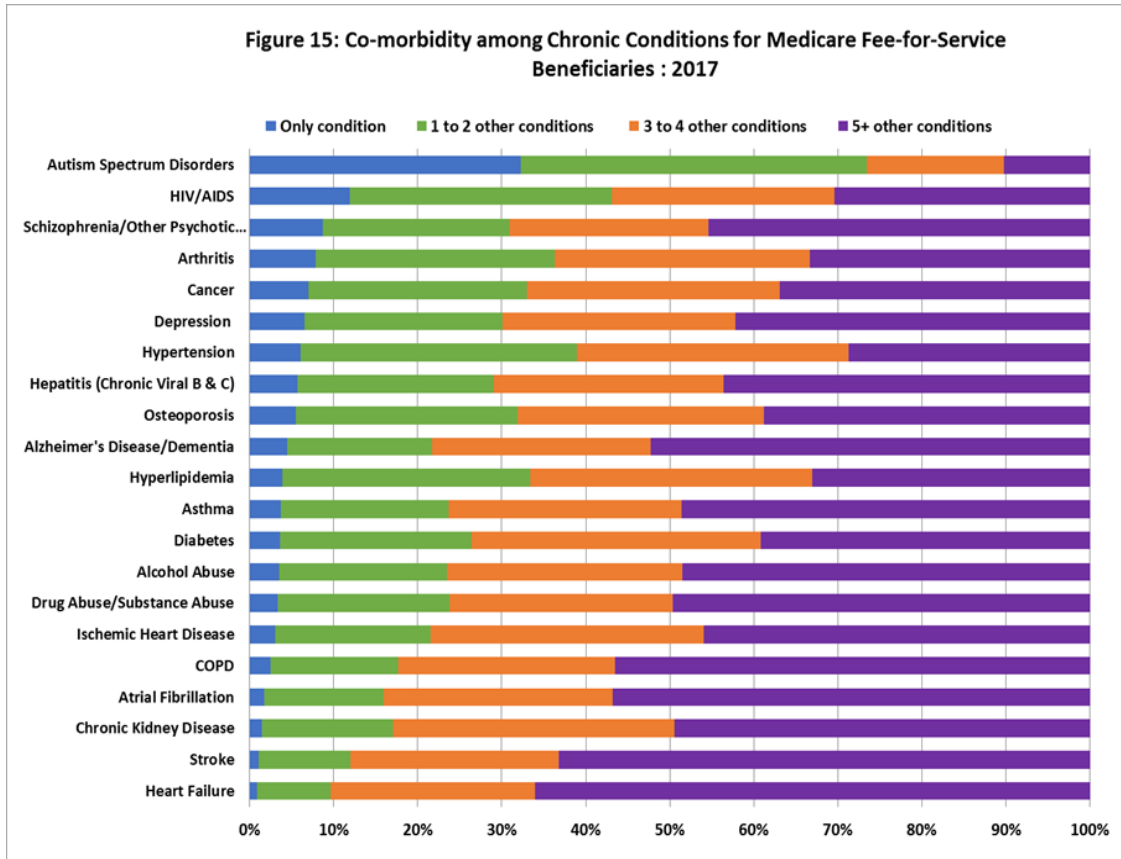
## EXHIBITS

### Exhibit 1: CMS 30-Day Medicare Readmissions for Chronic Conditions



Source: [https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Chronic-Conditions/Chartbook\\_Charts](https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Chronic-Conditions/Chartbook_Charts)

## Exhibit 2: Medicare Prevalence of Comorbid Chronic Conditions

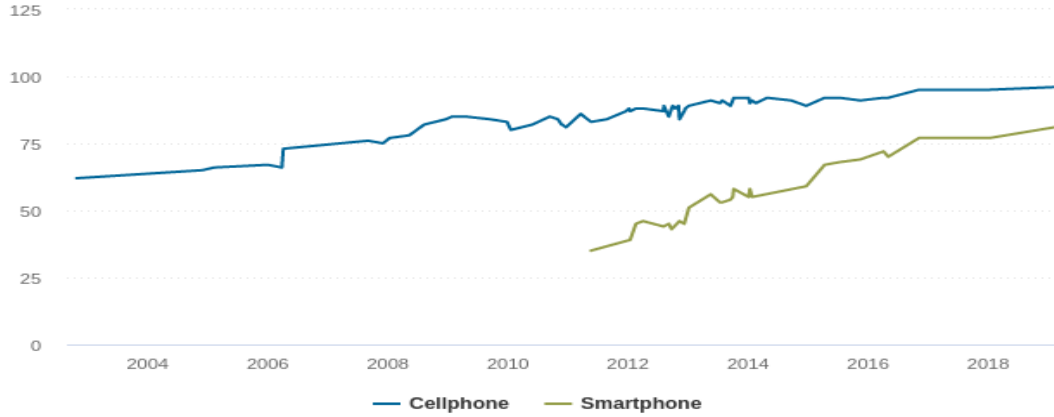


Source: [https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Chronic-Conditions/Chartbook\\_Charts](https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Chronic-Conditions/Chartbook_Charts)

### Exhibit 3: Mobile phone and other device ownership

## Mobile phone ownership

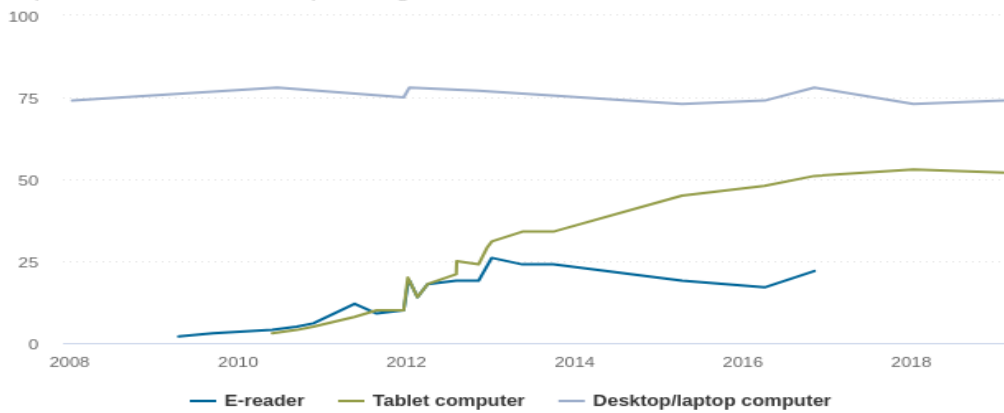
*% of U.S. adults who own the following devices*



Source: Surveys conducted 2002-2019.

## Ownership of other devices

*% of U.S. adults who own the following devices*

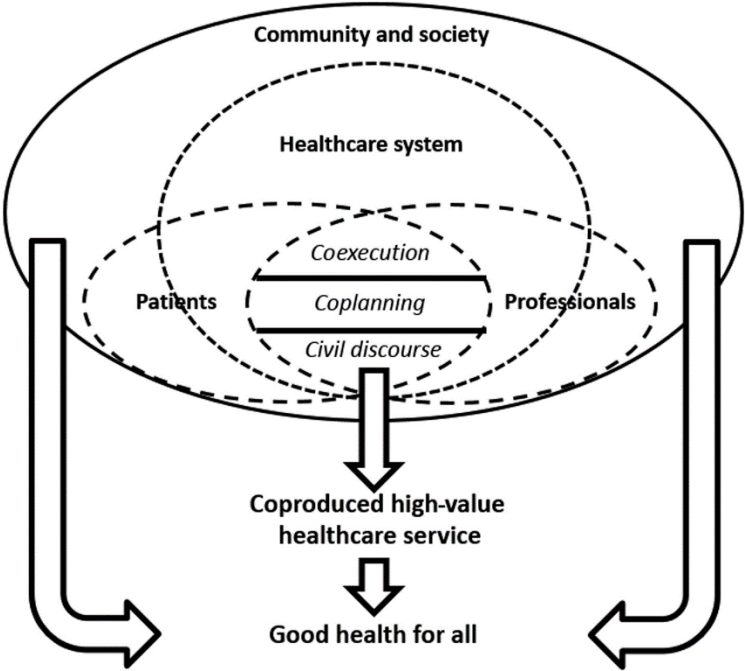


Source: Surveys conducted 2008-2019.

Source: <https://www.pewresearch.org/internet/fact-sheet/mobile/>

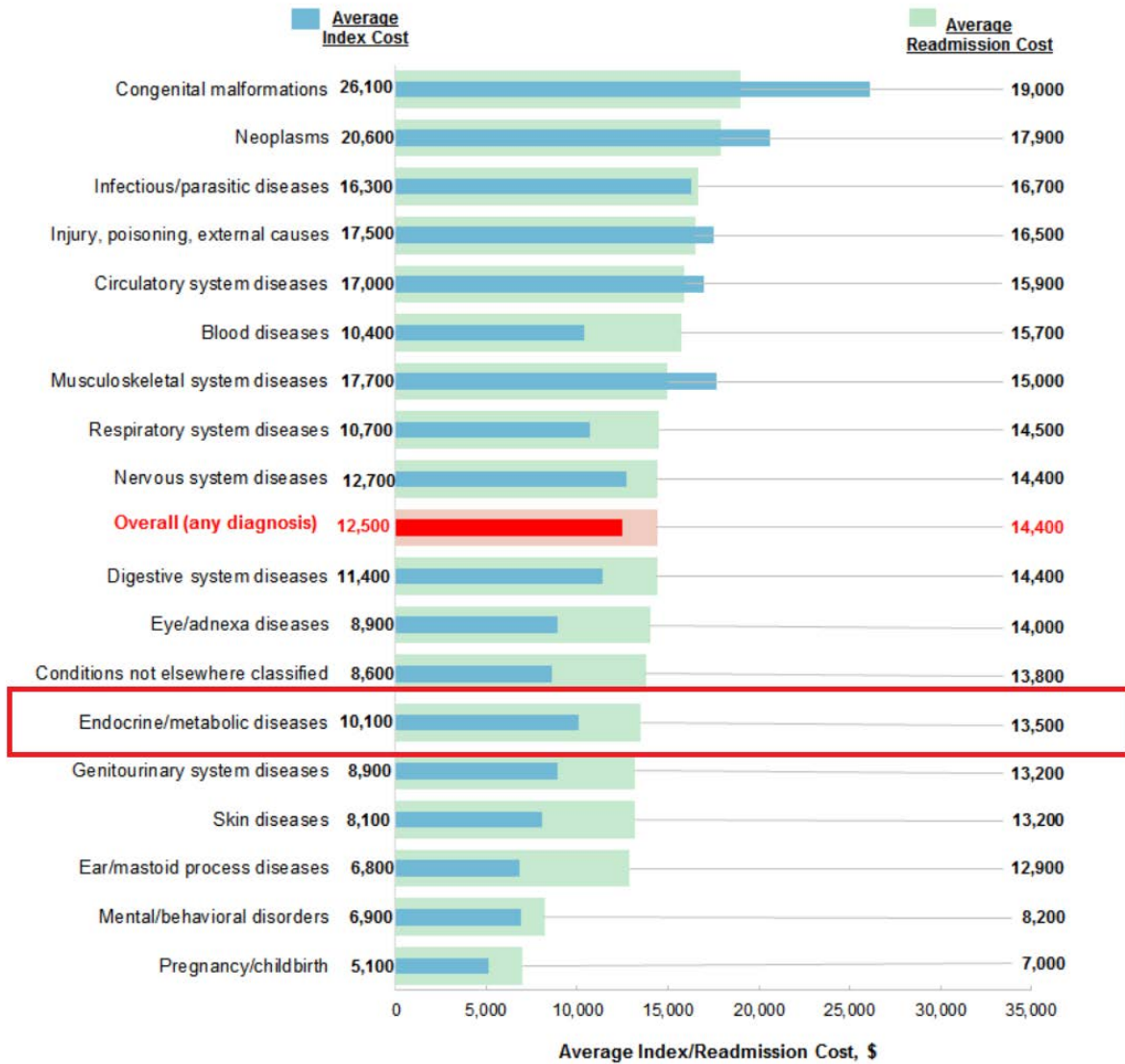


**Exhibit 4: Coproduced healthcare service**



Source: Batalden, Maren, Paul Batalden, Peter Margolis, Michael Seid, Gail Armstrong, Lisa Opirari-Arrigan, and Hans Hartung. 2015. "Coproduct of Healthcare Service." *BMJ Qual Saf*, September, bmjqs-2015-004315. <https://doi.org/10.1136/bmjqs-2015-004315>.

### Exhibit 5: HCUP 2016 Average Readmission Costs by Index Diagnosis



Source: <https://www.hcup-us.ahrq.gov/reports/statbriefs/sb248-Hospital-Readmissions-2010-2016.jsp>

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