Stacktrace

Diabetes - Continuous Care Proof-of-concept

Background

Stacktrace is a Brisbane-based software development company formed in April 2018 by founders Dan Sowter and Chris Horwill, employing 10 senior software engineers.

Our mission is to amplify human potential in the healthcare and non-profit sectors.

We have spent the last few months researching ways to improve **patient-centred** care in chronic disease, beginning with diabetes (T1D and GDM).

Work thus far

We have conducted over 60 patient and healthcare-provider interviews so far in 2018, of which the last 35 have been specific to the diabetes ecosystem.

In late October, we put initial research to the test by running a design sprint, which saw us produce and test our first prototype.

The feedback from our test-patients led us here - a 3 month proof of concept to vet our new model in the real world.

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What our research tells us about the needs of people with T1D and GDM.

Interviews

- I want to feel supported - clinically and emotionally from health providers and peers
- I want be able to quickly reach my care team if I have a problem
- I often have smaller questions regarding daily situations
- I want personalised information
- I want to understand how people like me approach similar issues
- I want to know what options are available to me

Design Sprint & Prototype

We saw broad acceptance of the concepts under test -

- Group chatting with care team, supplemented by AI-backed auto-responses of previously-vetted content.
- Interaction with peer-groups directly and around content that is rated/endorsed by clinicians and community
- Personalised and curated information
- Gamified learning pathways

Co-location of these features increased perceived value.

The problems we want to address

The Problems

The average person with diabetes sees a healthcare professional for 6 hours a year. They are left to manage the disease themselves for the other 8,754.

"I wish I had the support to give me more confidence in managing my diabetes" - 23yo female with T1D.

Current care structures and funding mechanisms are based around point-in-time transactional approach.

The Problems

The increase in clinical knowledge and resources is exponential. There is a huge variety of health providers, resources, technology, diets and management-strategies with varying quality, safety, suitability and relevance to each individual. These characteristics also vary over time.

Providers have limited time, funding and resources to cater for every patient's needs, and each aspect of a person's care becomes isolated and opaque from other carers.

We propose a new, continuous model of care

Our Conceptual Service

Could we provide people a new, continuous model of care for people with diabetes, by -

- Augmenting and reducing (but not replacing) traditional face-to-face visits and thus allowing an endocrinologist and / or CDE to have greater patient capacity
- Implement a "subscription" based funding model with "on-demand" premium appointments and provider workflow redesign to facilitate the new model

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Our Conceptual Service

- Providing a "one-stop shop" for structured, vetted information, from all authors and origins.
- Answering queries from a patient utilising their healthcare team, peers and vetted information to support them on a continuous basis.
- Facilitating the creation of modules of content to both educate and drive personalisation.

Our Conceptual Service

- Utilise the power of a large number of provider and peer contributors to ensure awareness of best practice and enable ongoing provider and patient education.
- The UX and AI required to reduce the burden on healthcare providers, extending their reach.

We'd like to test, before we build

What We Want to Test

Stacktrace would like to do a 3-month "proof-of-concept" trial with 2 Credentialed Diabetes Educators, 2 Endocrinologists and a small number of people with either type-1 or gestational diabetes.

The goal is to assess each patient's support requirements over a 3-month period, if we markedly reduced the current financial and logistical barriers to access.

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Trial Outcomes

"What might we need to provide to patients, to make them feel they are receiving continuous care?"

Outcomes measured -
- Exhaustive list of patient needs from the period
- Patient satisfaction and engagement measurements before, during and after the test.
- At patients' discretion - 2-week ambulatory glucose profile and HbA1c

Starting a 3-month Trial

Stacktrace will supply:

- **Software resources** and tools
- **Stacktrace employees** for work on communications, logistics, research and content generation
- Stacktrace will **fund any patient** or **provider costs** incurred to undertake the trial, including the cost of any appointments, communications and other time spent on the proof-of-concept trial

Trial Software

Before building custom software, we'll test our concepts with off-the-shelf applications.

Intercom - help desk communication and information repository software - this will connect patients with their care team as well as the Stacktrace team which will look to mimic database and AI functionality through manual work.

Appear.in - video conferencing tool

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Additional Feature-Candidates

- **Community Support** - Aggregation of community forums and tools for patients through a singular point
- **Diabetes Coursework** - [Kahn Academy](#) for Diabetes
- **Community** vs **Provider Rating System** - [Rotten Tomatoes](#) for diabetes
- **Platform Integration** - interoperability with BSL platforms, logistics around appointments, scripts etc.

Proposed Logistics

People with diabetes who are invited to participate will be given access to an app which allows them to browse existing content, and direct questions to their care-team.

At all times, a patient's messages will be visible to their care team and to Stacktrace, but not to other patients.

Proposed Logistics

In order to reduce provider burden and encourage content re-use across patients and providers, Stacktrace will endeavor to research and pre-prepare suitable responses for each patient question.

These proposed-responses will then be made available for vetting by the patient's educator and/or endocrinologist, who will ultimately respond to all queries from their own patients.

Proposed Logistics

Over time, it is our expectation that a knowledge-base of content will be developed, driving down the effort required by providers to respond to each query.

By addressing incrementally more of a patient's needs over chat/article-sharing, we expect that the demand for in-person appointments will decrease. We're hoping to facilitate shorter video-conferencing appointments for additional convenience and efficiency.

The Diversity of Patient Needs

At present, it's common for patients to present only a small subset of their needs to their educator, and an even smaller subset to their endocrinologist.

Outside their care teams, people with diabetes told us they're getting diabetes advice from Reddit, Instagram, Youtube, Facebook and internet forums, in addition to the more conservative advice available on government and non-profit diabetes-association websites.

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The Diversity of Patient Needs

Over time, we hope to change the information-seeking and authoring habits of the patient population, such that their care teams can retain greater oversight.

We believe that if we're able to free-up provider-time by reducing appointments, and drive re-use of vetted content between providers, we'll be able to lower the thresholds at which a patient seeks medical rather than social advice, amplifying provider-reach, and improving adherence.

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We have some outstanding logistical questions

Undecided trial logistics

- How do we structure provider schedules and workflows to account for the ability to provide feedback?
- What is the best way to ensure patients detail any need they have in a way that is not burdensome?
- How can we incorporate flexibility, in order to adapt our processes for novel questions or provider preferences?
- What are the ideal patient and provider user interfaces? Which initial features deserve prioritisation?

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Undecided trial logistics

- What is the appropriate commercial payment structure for providers?
- What are the legal and ethical requirements?
- What triage-process needs to be put in place in order to safely escalate patients to emergency services where appropriate?
- Is the PAH UQ diabetes research team interested in participating?

Next steps

Next Steps

- Strong patient and provider engagement are the keys success of the trial. We anticipate that the workflows and other requirements will need to vary throughout the trial as we absorb feedback from all participants.
- We'd like to work with all potential patients and their care-teams to understand the most convenient and effective way to put this model into trial.