Ada Health: AI-powered Symptom Assessment Platform leads to improved patient experience, improved care outcomes, and clinician efficiencies

Dr. Vishaal Virani and Dr. Stephen Miller

Background

Access to primary and urgent care services is becoming increasingly challenging[1], leading to deterioration in care outcomes, physician burnout[2] and patient dissatisfaction. This is partly driven by inappropriate utilization of urgent / primary care by individuals that understandably struggle to correctly interpret their symptoms and the care they require[3]. This leads many individuals to seek medical care when they could have treated themselves at home / the local pharmacy[4], and others to underestimate the severity of their illness hence delaying vital treatment.

To address these issues we have developed an app-based AI-powered symptom assessment technology (Ada Health) that enables individuals to enter their initial presenting complaint as a free text, and then subsequently answer several multiple choice questions about their symptom/s generated by our proprietary AI engine. The symptom assessment technology leverages a proprietary content database of thousands of diseases and symptoms that cover the vast majority of complaints addressed in a primary care / urgent care setting. Every individual is shown a personalized assessment report which suggests the most likely conditions causing their symptoms, and a triage suggestion. The eight triage suggestions are as follows - Self-care, Self-care with pharmacy, Primary care within 2-3 weeks, Primary care within 2-3 days, Primary care same day, Primary care within 4 hours, Urgent / emergency care, Call an ambulance

Method

In order to test the usability and clinical effectiveness of our symptom assessment technology we tested it in an urgent primary care setting. The test site was a primary care clinic with a catchment area of c. 20,000 patients which offers an urgent care walk-in service every weekday morning for patients that feel they need to see a physician that same day. The clinic is located in a semi-urban setting catering to a range to individuals from different socio-economic backgrounds and ethnicities. We chose this test site as it would give access to a range of currently unwell patients in a controlled setting.

Over a three month period a team of researchers sat in the clinic waiting room every morning, and approached patients after they checked in. The typical wait time in the clinic to see a physician is one hour, which gave ample time for patients to complete a symptom assessment without delaying their care. Eligible patients were those that had come in for a new-onset acute health issue. Eligible patients were approached and asked for consent to take part in the research. If they consented they were asked to complete a symptom assessment via a phone app. After they viewed the assessment they were asked to fill in a short feedback survey to determine the usability and effectiveness of the technology. The assessment report was then also shared with the physician they were about to consult with. 15 physicians were then surveyed on the value of assessment report. The outcome of the symptom assessment did not impact on their place in the queue for the purposes of this research study. In total 520 patients participated in the study.

Results

The symptom assessment technology was accessible to a wide range of age groups:
- ❏ Average patient age = 40
- ❏ 15% of participants were 60+ year olds
- ❏ 10% were under 16 year olds

Across age groups participants found the symptom assessment technology easy to use:
- ❏ 97% found it easy to use
- ❏ 83% would recommend it to a friend / relative and 86% would use again
- ❏ 81% thought the symptom assessment tool provided helpful advice

The symptom assessment technology has the potential to safely reduce demand for urgent / primary care - based on the assessment report advice here is what participants would have done differently next time:
- ❏ 10% of participant patients would have self-cared and / or visited the local pharmacy instead of attending the clinic, if they had used the app beforehand
- ❏ 4% of participants would have delayed their care visit by a few days
- ❏ 6 participants would have attended an emergency care facility instead
- ❏ 85% would still have attended the urgent care clinic

Physicians found the assessment report led to improved care outcomes and efficiencies:
- ❏ In 14% of consults viewing the assessment report led to time savings, with an average of 2 minutes saved per consultation
- ❏ In 8% of cases the symptom assessment tool suggested relevant possible causes that the physician had not thought of

Implications

This study highlights pertinent and tangible benefits of using AI-powered symptom assessment technologies in a clinical setting in order to improve patient experience, improve care outcomes, reduce unnecessary demand and create efficiencies for physicians.

The physicians and patients involved in this study identified the single most valuable outcome of the technology tested was in helping to appropriately reduce patient demand by empowering self care before patients attend a clinic. This is made possible because patients were willing to trust the symptom assessment technology based on the high quality advice provided, and the intuitive user interface. Symptom assessment technologies such as this one can significantly contribute to the trend towards value-based care. This technology can be used as a "digital front door" for patients, helping guide them to the most appropriate care, and thereby reducing spend on wasted / incorrect care[5]. Empowering patients with technologies like this also help incentivise and motivate patients to take control of their own health, thereby leading to a healthier population focused on staying well.

The other key benefit of this symptom assessment technology is in helping create efficiencies for physicians. Using AI for information gathering can reduce the time spent on each consultation, and also prioritize the sickest patients earlier. The implication of this is an overall reduction in healthcare spend.

References

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