

CHALLENGE SUMMARY



AHRQ Step Up App Challenge

Advancing Care Through
Patient Self-Assessments



CHALLENGE SUMMARY

AHRQ Step Up App Challenge

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EXECUTIVE SUMMARY

The AHRQ Step Up App Challenge encouraged participants to create an application (app) that used technical specifications provided by the Agency for Healthcare Research and Quality (AHRQ) to digitize the collection of standardized patient-reported outcome (PRO) data in ambulatory care settings. Specifically, participants were asked to incorporate HL7 Fast Healthcare Interoperability Resources (FHIR) technical specifications when developing apps. The FHIR standard increases the liquidity of granular patient data. The FHIR technical specifications allow standardized PRO data to move between electronic health record (EHR) or health information technology (IT) systems both within and across different health systems. The challenge was designed with a multi-phase format where the top 10 Phase 1 winners were selected to build a mobile app prototype and compete in Phase 2. The grand prize winner from Phase 2 proceeded to pilot test their app in Phase 3. Over 55 applications were received in Phase 1. A multi-disciplinary expert judging panel scored the applications and apps in Phases 1 and 2. The grand prize winner, PRISM, is pilot testing their app in nine ambulatory care practices affiliated with MedStar Health. The AHRQ Step Up App challenge successfully engaged the software developers, health IT professionals, and clinical care community to advance the state of PRO data collection and use via user-friendly mobile apps.

BACKGROUND ON PATIENT-REPORTED OUTCOMES

A patient-reported outcome (PRO) refers to any report of the status of a patient's health condition that comes directly from the patient. PRO data come from patient self-assessments and look beyond clinical data to assess how a patient feels about his or her health, which is vital to understanding the complex needs of individual patients. The patient's perspective on domains across conditions complements clinical assessments, providing a holistic view of the care received. Use of PROs for guiding and improving care is especially important for patients with multiple chronic conditions, older adults, and people with disabilities, as PROs can reflect outcomes of care for multiple conditions treated by multiple providers across multiple settings of care. The data are useful for providers, as well as patients and researchers, as they provide a deeper understanding of the patient's physical, mental, and social well-being.

CONTEXT

Today, patients, researchers, and providers are not fully satisfied with the current state of PRO data collection. While PRO data have proven useful to healthcare providers, they are not widely used in clinical settings. Most PRO data are collected via pen and paper, which is inconvenient and difficult for patients and providers to access and use. Researchers who want to analyze PRO data across different practices or health systems would benefit from a more standardized approach to collecting data. Recently, some digital tools have been developed to streamline the collection of PRO data. However, those digital tools are not widely adopted due to problems related to workflow integration and a lack of data standards. This challenge was designed to help advance the use of valuable PRO data by digitizing the process of collecting, aggregating, and sharing standardized PRO data.

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CHALLENGE OBJECTIVE

The Agency for Healthcare Research and Quality (AHRQ) launched the AHRQ Step Up App Challenge to spur the creation of innovative digital solutions capable of advancing the collection of standardized PRO data in ambulatory care settings. The goal of this challenge is to create a user-friendly app that can efficiently collect and share standardized PRO data for clinical and research purposes to improve the quality of care and health outcomes of patients around the Nation.





FHIR applications are designed to provide a standardized path for electronic health record systems to interact with third party applications through a set of data models used to structure and access medical data.

UNDERSTANDING FHIR APPS

Fast Healthcare Interoperability Resources (FHIR) have been described as the foundation for healthcare data interoperability and consistency. FHIR-based applications are designed to facilitate data exchange via application programming interfaces (APIs). FHIR-based apps have gained traction following alignment with the SMART (Substitutable Medical Apps, Reusable Technologies) project, which has helped define some of the commonly used FHIR profiles and extensions, as well as the use of OAuth for API authentication and authorization. The synergies developed from the SMART on FHIR alliance has generated consistency in software for healthcare through an internet-based health-data exchange, allowing healthcare providers to utilize more apps and exchange data to improve patient care and drive down bottom line costs.

OAuth: open standard for token-based authentication and authorization that allows an end user's account information to be used by third-party services, such as Facebook, without exposing the user's password.

RESEARCH AND DESIGN

To effectively design the challenge, AHRQ and challenge partner Sensis interviewed experts in the fields of clinical care, PROs, software development, and open innovation regarding information that should be included in the challenge description. The challenge team also conducted research to understand the intellectual property landscape and overarching competitive landscape in the PRO domain. The environmental scan of key industry and government resources illuminated three major insights for improving collection and use of PRO data:

1. Clarifying benefits immediately

2. Making the process fast and engaging

3. Making data actionable

This research provided valuable perspectives to the challenge team that were used to identify risks, opportunities, and limitations of existing challenges.

The findings were instrumental in the development of a successful challenge and focused on four actions: **clarifying, simplifying, adding, and preparing**

1. Clarifying language regarding technical requirements, specifications, and participant expectations

2. Simplifying requirements and evaluation criteria to streamline the end-to-end process for judges and participants

3. Actively capturing and adding ideas and perspectives of the participants to increase the probability of a successful challenge execution

4. Preparing for likely scenarios that may arise and developing an approach that successfully mitigates risk

INNOVATOR OUTREACH AND COMMUNICATIONS

The success of a challenge relies heavily on the sponsors' ability to reach, inform, and activate the right solvers who have the passion and potential to invent and develop ground-breaking solutions. For the AHRQ Step Up App Challenge, target innovators or potential solvers included experts in technology, healthcare, research, and information technology (IT). A robust communications strategy was implemented to publicize the AHRQ challenge launch and engage interested solvers from the target innovator groups. In order to promote organic team building of health IT professionals, developers, innovators, and researchers, challenge content was published using a variety of outlets. These included traditional media, key partner and network outreach, AHRQ internal and external social media, webinars, and the challenge microsite linked through the parent challenges website, challenges.gov.

During Phase 1, a total of 19 coverage pieces were published on traditional media outlets, **resulting in an estimated number of 98.2K views. Including:**

POLITICO

69.3M

ESTIMATED MONTHLY VISITS

80K

ESTIMATED COVERAGE VIEWS

BECKER'S

HEALTH IT & CIO REPORT

1.14M

ESTIMATED MONTHLY VISITS

4.66K

ESTIMATED COVERAGE VIEWS

HealthcareITNews

412K

ESTIMATED MONTHLY VISITS

1.52K

ESTIMATED COVERAGE VIEWS



FedHealthIT
.com

13.8K

ESTIMATED MONTHLY VISITS

2.32K

ESTIMATED COVERAGE VIEWS

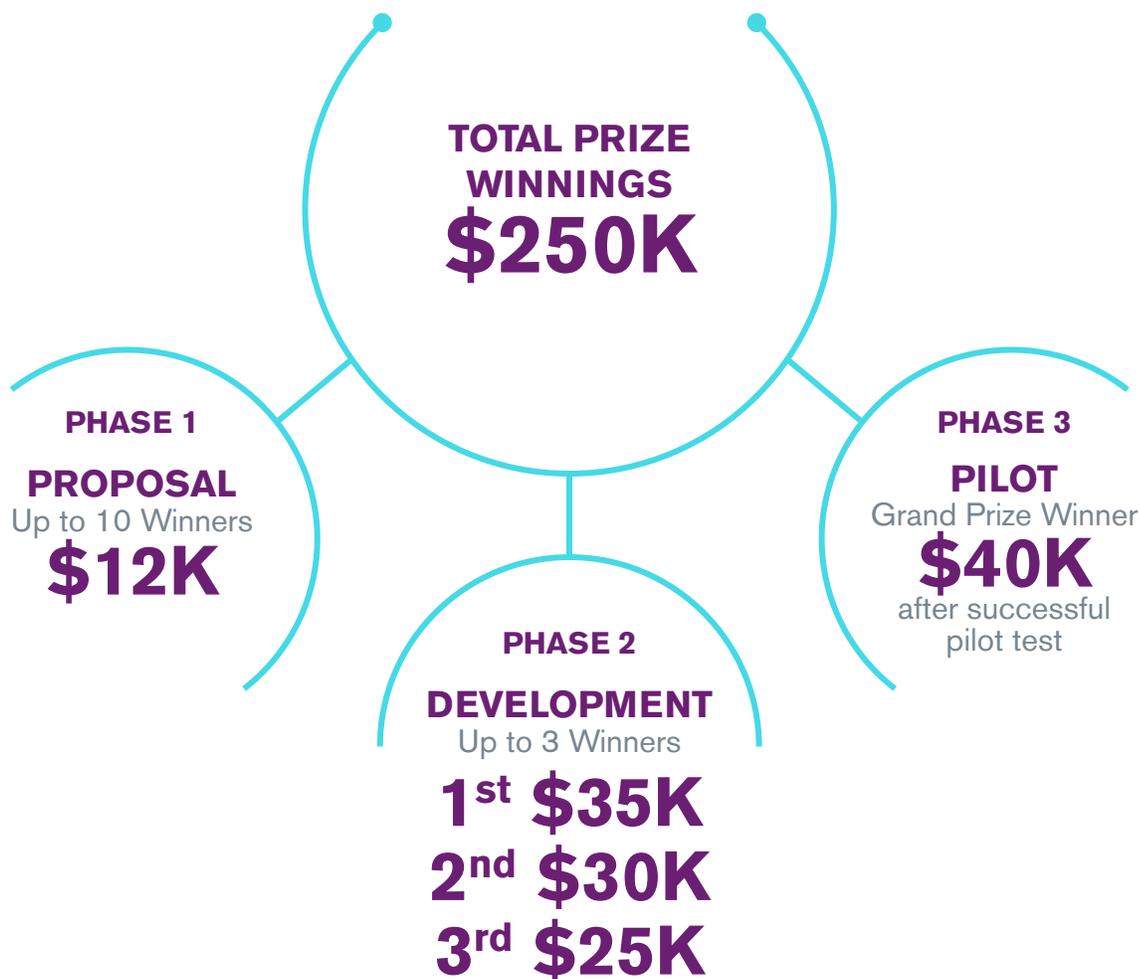
ESTIMATED MONTHLY VISITS: the estimated number of total visits an outlet receives in a given month

ESTIMATED COVERAGE VIEWS: the estimated views AHRQ Step Up App Challenge content received in a given month

ESTIMATIONS SOURCED FROM CoverageBook

MULTI-PHASE COMPETITION

AHRQ implemented a multi-phase competition. This approach empowers participants to assemble and develop their solutions over the course of 6 months, after which the final winner is then able to implement and pilot-test in nine practices affiliated with MedStar Health in the DC/Maryland/Virginia area. The down-selected format is based on a formal review process, whereby only the best proposals and products that satisfy the evaluation criteria progress through the challenge phases. It is a pay-for-performance model that increases incentives for awardees, as the final proposed concept is validated through prototyping.



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MULTI-PHASE COMPETITION CON'T

The challenge was organized into three phases:

PHASE 1: PROPOSAL

54 Submissions - 10 Winners - up to \$12K each

The proposal phase allowed participants to present plans and frameworks that demonstrate how they planned to carry out the app development. Participants submitted a business case (5 pages maximum) and a brief deck (10 slides maximum) demonstrating an approach to developing a technically sound PRO data app. In this phase, participants described the technical, operational, and financial aspects of their proposed approaches. The main goal of Phase 1 was for participants to show the originality, feasibility, and executability of their app development approaches. The 10 Phase 1 winners were awarded \$12,000 each based on the merits of their proposals. Phase 1 winners then continued to Phase 2: Development.

PHASE 2: DEVELOPMENT

7 Submissions - 3 Winners -

1st place (\$35K), 2nd place (\$30K), 3rd place (\$25K)

In the development phase, winning participants used their Phase 1 prize funds to develop and demo a PRO app. Finalists were required to showcase a patient-facing app compliant with technical specifications and PROMIS® physical functioning measures provided by AHRQ to encourage patients to enter PRO data. Additionally, the app was required to perform computer adaptive tests on various devices, such as mobile phones, tablets, and kiosks. The apps developed in Phase 2 were to be pilot-test-ready and able to export and integrate data into an EHR or another IT system for clinical and research purposes. After presenting their applications and submitting an implementation plan, three semi-finalists were selected based on the performance of their apps and the viability of their implementation plans. The grand prize winner was awarded \$35,000 and invited to pilot their app in a healthcare system. Second- and third-place winners received \$30,000 and \$25,000, respectively.

PHASE 3: PILOT TEST

Grand Prize Winner

In Phase 3, the grand prize winner from Phase 2 is required to collaborate with a contractor selected by AHRQ to pilot test the app in nine practice settings in the DC/Maryland/Virginia area over the course of 6 months. There are a mix of primary care and specialty care practices. The goal of Phase 3 is to assess the usability of the app. This phase also tests the feasibility of implementation, the scalability of the app, and acceptance by stakeholders. In order to receive the final prize funds, the grand prize winner must successfully meet pilot test milestones. After the milestones are reached, the final \$40,000 of prize awards will be distributed to the grand prize winner, who will receive \$87,000 in total.

EVALUATION CRITERIA

Submissions were evaluated by a multi-disciplinary panel of expert judges based on:

PHASE 1

20%

Team/Participant Capabilities

30%

Impact

20%

Feasibility

30%

Originality

PHASE 2

40%

Technical Merit

30%

Usability

30%

Deployability

PHASE 3

Feasibility
of implementation

Scalability
of the app

Acceptance
by stakeholders

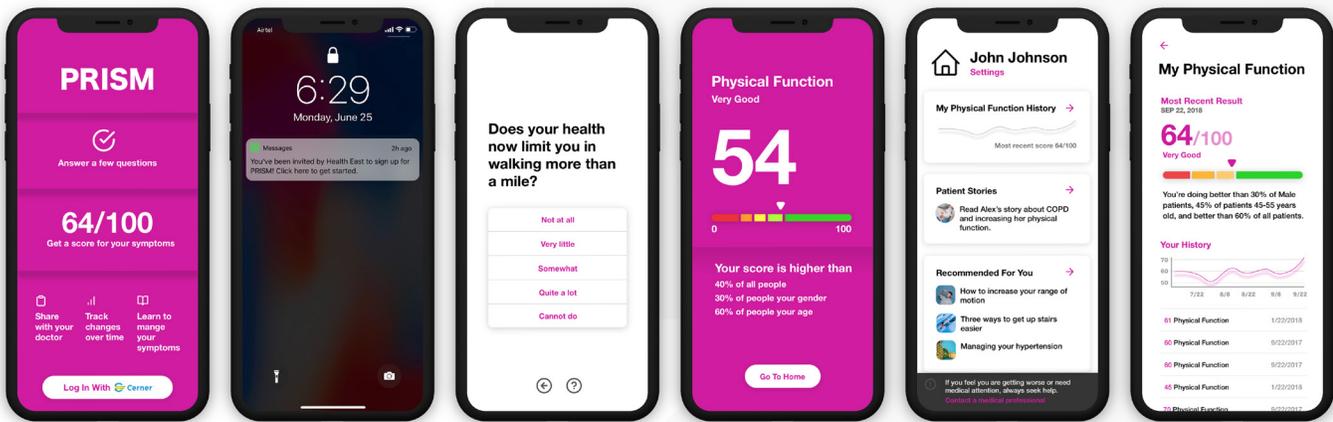
WINNERS' SPOTLIGHT

PRISM

Grand Prize Winner: PRISM

\$35,000 | Advance to Pilot

PRISM™, PROMIS Reporting and Insight System from Minnesota, is an application that enhances the quality of clinical discussion between healthcare providers and patients by allowing for continued patient engagement outside of the clinical setting.

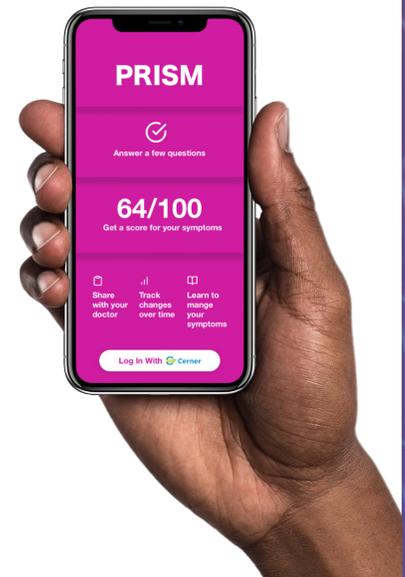
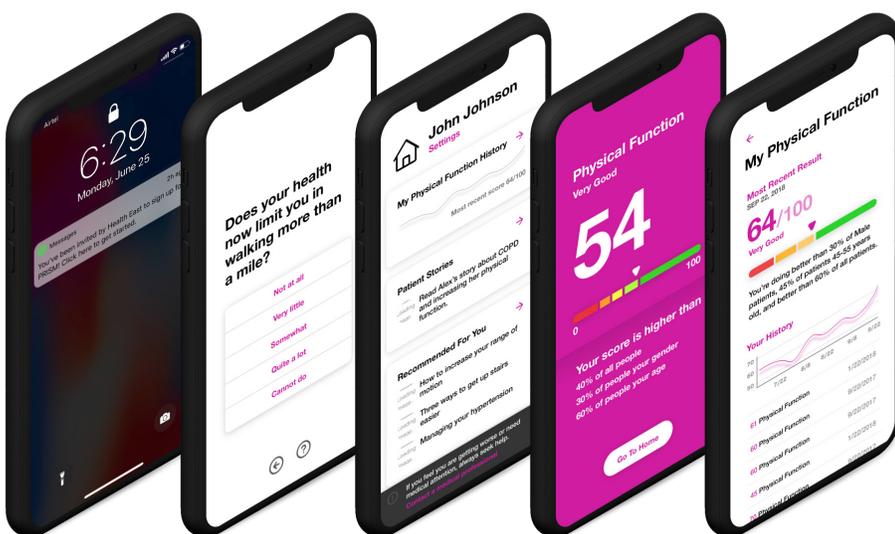


Key Features:

- Score trending
- Peer group comparisons
- Personalized recommendations
- Educational materials

To contact PRISM, please visit <https://z.umn.edu/prism>

“Our vision is to become the digital platform that facilitates the implementation of the wide spectrum of these measures, engages patients in their own care, and integrates the patient voice within care delivery to drive improved health outcomes.”



WINNERS' SPOTLIGHT



2nd Place Winner: PEER Technologies

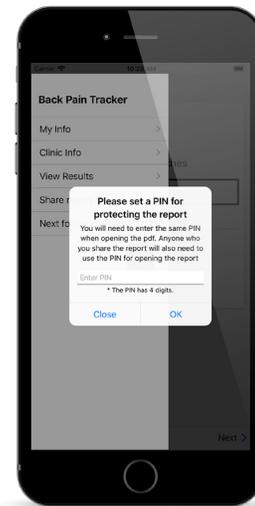
\$30,000

PEER Technologies' application "Back Pain Tracker" is a smart-phone app based on the NIH Research Standards for Chronic Back Pain and PROMIS Computer Adaptive Tests.

Key Features:

- Time-trended PROs
- Personalized estimates of outcomes
- Tailored suggestions based on patient characteristics

To contact PEER Technologies, please go to: <https://www.backpaintracker.com/>



PEER aims to "...be the instrument with which to introduce the End Result Idea into the hospitals; in other words to standardize them on a basis of service to the individual patient, as demonstrated by available records."



3rd Place Winner: cliexa

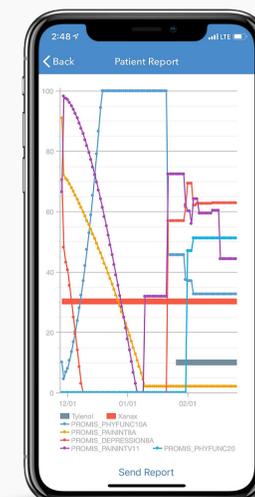
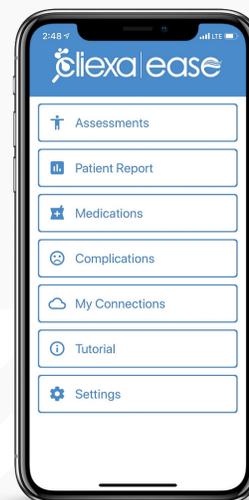
\$25,000

cliexa-EASE mobile application collects PRO data regarding pain, anxiety, depression, and physical functioning.

Key Features:

- Leverages cliexa's exclusive library of clinically validated assessments, connected device and claims data
- Remote monitoring

To contact cliexa, please go to: <http://www.cliexa.com>



cliexa's vision is to be the state-of-the-art patient-reported outcomes and remote patient monitoring platform for multiple comorbidities and real-time data provider for future medicine by increasing patient-provider engagement and compliance.



These solutions significantly increase data reporting frequency, accuracy, and also ensure the standardized data are accessible to both providers and researchers.

PROMOTING PATIENT-CENTERED OUTCOMES RESEARCH

As healthcare becomes digitally-enabled and patient-centric, using mobile applications to collect standardized PRO data can advance the field of patient-centered outcomes research. Digital applications like the winners of the AHRO Step Up App Challenge are transformative for PRO data collection and integration. These user-friendly applications have the potential to significantly increase data reporting frequency and accuracy so that longitudinal data are available for clinical care and shared decision making. Standardized PRO data collected via these applications can enable data sharing and compiling across providers. Researchers can use these data to answer questions that would not have been able to be answered.

LESSONS LEARNED

- 1.** Identify all key technical requirements for each phase before launch to decrease participants' confusion and frustration over the course of the challenge.
- 2.** Use an event, conference, or in-person working session to launch the challenge to ensure the target innovator community becomes aware of the challenge.
- 3.** Be adaptable and flexible to the ideas and perspectives of the challenge participants.
- 4.** Be prepared for some challenge dropouts in later phases as some companies take on a high level of risk to compete and in some circumstances are unable to continue based on their unique business dynamics and the opportunity costs the firms incur to build out solutions.

