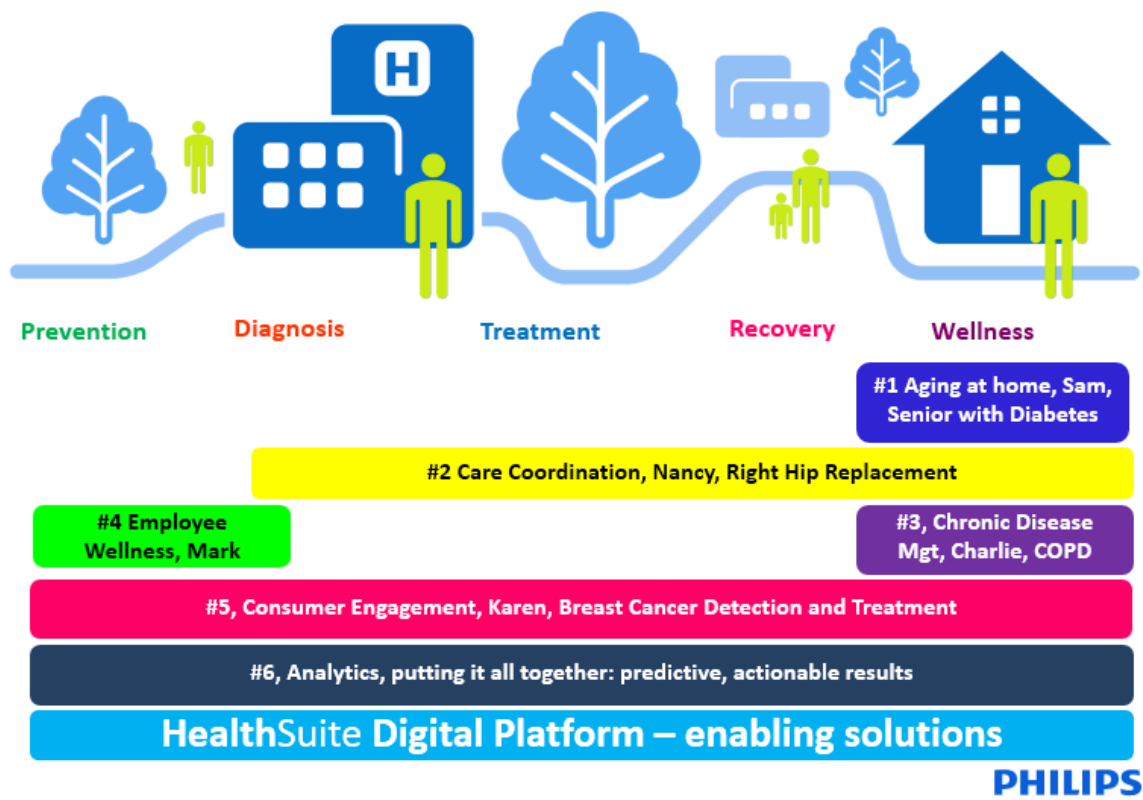


Hackathon Personas

To help you get started, we have created personas. These are fictitious characters that are representative of typical patients/consumers. Instead of just looking at thousands of patients/consumers records, we have come up with 5 different personas/cases so you can concentrate on creating the app rather than spending time standardizing and formatting. This is not a public health global application competition with 10,000 patient records. Think instead of how your app could help the individual, whether it's the consumer/patient, HCP (Health Care Provider), ACO (Accountable Care Organization) or employer for your solution.

Solutions for the health continuum



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Case #1: Helping Sam Age at Home

Senior with Diabetes

Sam, a 78 year old African American male, is overweight, has type 2 diabetes, and takes oral medications (metformin 2x/day and glyburide 2x/day, both with breakfast and dinner) for his condition. He lives alone in his condo. Lately, he has been falling and forgetting to take his meds. His adult son is worried about him, but lives 3000 miles away and can't be there. Sam wants to stay independent and does not want to go to a long term care facility.

Data sources that can be used in this case:

- Pain level (scale of 0 to 10, 0 no pain, 10 worst ever), mood (5 point scale)(via sensor and subjective entries)
- Blood pressure (<120/80), heart rate (pulse) (60 – 100 bpm), respiratory rate (12 to 20 bpm), weight
- Glucose reading (taken before each meal) (70 – 130 mg/dL)
- GPS/Altimeter readings (to detect geolocation and falls)
- Number of steps taken/day (via sensor)
- Telehealth encounters via a mobile device with the case manager
- Visits with HCP every 6 months
- Medication management (pill reminders, blood glucose reminder, and recording it in a log)
- Exercise management (encourage him to go walk or exercise daily)
- Alert system (when blood glucose reading is abnormal, alerts HCP and adult son)
- A1C level (7% or less for someone diagnosed with diabetes, otherwise it is 4.5 to 6%) (This measurement is obtained from a blood test via a lab, done every 3 to 6 months)
- Social feeds/friend network

By taking his glucose readings regularly before each meal, and using some medication reminders and sensors, Sam can manage his diabetes. If there is an abnormal reading, his HCP and adult son can be notified. This gives his son peace of mind, knowing that a HCP can immediately follow-up if needed.

Case #2: Helping Nancy after her hip replacement surgery

Care Coordination (Right Hip Replacement – Acute Care)

Nancy, a 69 year old Caucasian female, recently had her right hip replaced after several falls and a fracture hip. Post-discharge from the hospital to home, she requires care coordination which includes the following:

- a) Visits to her physical therapist 3 to 4 times/wk (PT can be performed in the home if needed)
- b) Transportation to her appointments (for 6 weeks)
- c) Services of a home health aide to give her ADLs (Activities of Daily Living) (getting dressed, assistance taking a shower and using the toilet (on an elevated seat), and moving safely in and out of chairs or bed)
- d) Pain management (taking the appropriate pain meds as needed)

- e) Swelling of the operative leg (elevate the legs and take blood thinners like aspirin or Coumadin to reduce the risk of DVT (deep vein thrombosis) for 4 to 6 weeks)
- f) Reduce risk of infection by taking antibiotics (watch for signs of fever over 101 degrees F, new redness, drainage from incision)
- g) Mobility assists by using a walker, crutches or a cane as needed. Bear as much weight on the operative leg as possible
- h) Follow up appointment with the primary care provider
- i) Case management by having daily contact with a case manager or social worker to encourage and follow the progress of the patient

Data sources that can be used in this case:

- Temperature (97.8F to 99.6 F), pain level (scale of 0 to 10, 0 no pain, 10 worst ever), mood (5 point scale)(via sensor and subjective entries)
- Blood pressure (<120/80), heart rate (pulse) (60 – 100 bpm), respiratory rate (12 to 20 bpm), weight
- Number of steps taken/day (via sensor)
- EHR encounters at the PT (Physical Therapist) (either via a mobile laptop or on a hand held device to record the patient's progress)
- Telehealth encounters via a mobile device with the case manager
- Medication management (pill reminders and recording it in a log)
- Rehab and exercise management (reminders to go to appointments, to do exercises at home by self)
- Social feeds/friend network

By creating a care coordination plan that transitions treatment and follow up care from the hospital to the home, the patient will have a smooth recovery and can have an improved quality of life with her new hip.

Case #3: Helping Charlie Breathe Easier

Chronic Disease Management (COPD – Chronic Care)

Charlie, a 45 year old Caucasian male, has COPD (Chronic Obstructive Pulmonary Disease). In the past, he was a smoker for 20 years, but stopped after he was diagnosed with the disease 5 years ago. He is slightly overweight, but does walk daily for exercise. He carries an oxygen tank with him. He has high blood pressure and takes a BP med as well as bronchodilator meds (short acting (albuterol) (as needed) and long acting (salmeterol) 2x/daily).

Data sources that can be used in this case:

- Pain level (scale of 0 to 10, 0 no pain, 10 worst ever), mood (5 point scale)(via sensor and subjective entries)
- Blood pressure (<120/80), heart rate (pulse) (60 – 100 bpm), respiratory rate (12 to 20 bpm),
- Oxygen saturation level (SpO2), weight, sleep (# of hours/night)
- Number of steps taken/day (via sensor)
- EHR encounters (regular checkups 2x/year with primary care provider)

- Telehealth encounters via a mobile device (to talk to nurse if needed)
- Medication management (reminders and record taking them)
- Exercise management (reminders to do exercises and obtain encouragement)
- Airfilter levels (quality of air, time used, on/off)
- Use of smart patches (HealthPatch) on his chest (to continuously monitor heart rate, heart rhythm, respiration, physical activity and inactivity, stress, fall detection/severity, and sleep)
- Social feeds/friend network

By managing his care via sensors (like HealthPatch) or other devices, the patient is able to continuously monitor himself. The information is transmitted up to the cloud and the HCP can review it and make recommendations in the treatment plan if there are signals or trends outside the norm for the patient. By being proactive, the patient's health is improved. The patient feels empowered, taking control of his health.

Case #4: Keeping Mark Healthy at Work

Employee Wellness

Mark, a 28 year old white male, is customer service agent for Walmart. He lives with his 2 roommates, who also work with him. He enjoys being with his friends and doesn't know if he is healthy, or how to be healthy. However, due to his sedentary desk job, he and his friends have put on 15 lbs after the recent Christmas season, as a combination of work pressures and family events.

His employer has recently given everybody Fitbit devices and an application to track his activity, sleep, and eating habits. And he uses the included app to get customized feedback on his progress and his roommate's progress too. He competes with his roommates and is sometimes seen walking at night to "get extra steps in." He is interested in other apps/devices that his employer is offering that fit easily into his daily life, e.g. a smart Philips toothbrush.

From the employee wellness program at work, Mark and his roommates discover they can earn prizes by setting healthy goals as a team (and achieving them). Their latest goal: they want to replace their old TV with a large LED flatpanel.

By using this application, Mark has noticed that he has lost 7 lbs in the last month, but more importantly, he has lost more weight than the rest of his roommates. He begins to see how health awareness goals can improve his health. Now, he is becoming more interested to try other sensor devices, provided his roommates will do it with him.

Data sources that can be used in this case:

- Number of steps taken/day (via sensor)
- Weight (via sensor)
- Sleep habits (via sensor)
- Social feeds/updates from roommates
- Prizes and Contents with roommates
- Other connected devices: Toothbrush, Recipe Apps
- Reminders for healthy checkups
- General health education and tips

Case #5: Helping Karen Manage her Breast Cancer

Consumer Engagement (Breast Cancer Detection)

Karen, a 35 year old Asian American female, was considered healthy. She exercised regularly, ate a pretty healthy diet and got about 7 hours of sleep/night. However, one day, she felt a lump in her left breast. Upon visiting her HCP and getting a mammogram, she found out it was breast cancer. She decided to get a double mastectomy with reconstructive surgery.

Karen has always been an exercise buff and uses Fitbit data to manage her exercise and sleep patterns; she has other apps on her smart phone or iPad to record her dietary intake. She also owned a Withings device to record her weight. Her consumer data is easily stored in the cloud.

Because Karen was proactive in her health, she discovered the lump in her breast during her monthly self-breast exams. She conferred with her HCP and had a mammogram and subsequent biopsy done. The HCP was able to catch it early at Stage 1. She researched her surgical options by looking using educational tools in the HSDP, looking on different forums for breast cancer patients and communicating with her circle of friends on Facebook.

After she spoke with her HCP, she decided to get a double mastectomy with reconstructive surgery. She kept in touch with her family and friends by sending out updates about her mood and surgical status. She also set up other alerts that could go out to her tight circle of family and HCPs from her sensor data. She also has kept in touch with the people in a breast cancer forum and they have reached out to support her. Being able to talk via a telehealth portal with people on her care team made her feel self-assured and cared for during this stressful time in her life. She felt empowered being able to make her own decision with the help of others' feedback and support.

Data sources that can be used in this case:

- Pain level (scale of 0 to 10, 0 no pain, 10 worst ever), mood (5 point scale)(via sensor and subjective entries), stress level (take the mood level to measure this)
- Blood pressure (<120/80), heart rate (pulse) (60 – 100 bpm), respiratory rate (12 to 20 bpm),
- weight, sleep (# of hours/night)
- Number of steps taken/day (via sensor)
- EHR encounters (regular checkups 2x/year with primary care provider)
- Telehealth encounters via a mobile device (to talk to the nurse or other HCP for support and consultation)
- Exercise management (reminders to do exercises and obtain encouragement)
- X-ray (Mammogram) results (the radiologist's notes would be in a file in her EHR)
- Social media/friends network/forums

Case #6: Dashboard with Actionable Data

Putting it all Together

For any of these cases, come up with a dashboard or analytics that does the following:

1. Be easy to read
2. Show actionable data
3. Show some sort of dashboard
4. Be able to show trends over time
5. Give an element of predictive analytics (e.g. if you continue doing X, the result is Y, etc.)