Operations Watch List (OWL)
Accessible and actionable data

Lessons Learned

- Involve end users to help design solutions through Human Centered Design
- Leverage communications from key leaders to build project momentum
- Where possible, repurpose existing capabilities to solve problems
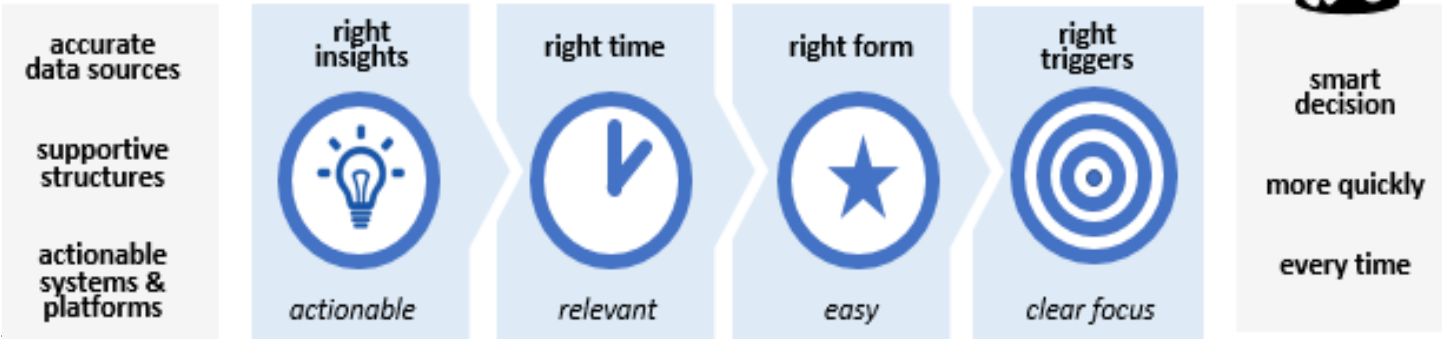
What is OWL?

Operations Watch List (OWL) is a mobile application that allows Kaiser Permanente (KP) hospital leaders to optimize the delivery of health care by making near real-time data accessible and actionable. Hospital leaders are provided access to data specific to their location, including hospital quality, safety, and capacity metrics on their mobile device. Utilizing OWL, KP hospital administrators can manage operational throughput, including hospital and emergency department census, bed capacity, discharges, patient flow, and anticipate and mitigate surge capacity issues.

It Begins with User Centered Design

The Insight Driven program supports KP's commitment to a high-tech, high-touch approach to innovation in health care. The Insight Driven program was created in 2015 to transform the way hospital leaders make decisions ensuring the best care delivery and patient experience. The aspiration was to further leverage the information generated by KP's integrated model and electronic health record system to introduce new capabilities, such as predictive analytics to support care delivery decision-making at the front-line of health care.

The Operations Watch List enables leaders to utilize accurate, timely data to better manage daily operations

accurate data sources	right insights	right time	right form	right triggers	smart decision
supportive structures					more quickly
actionable systems & platforms	actionable	relevant	easy	clear focus	every time

In 2018, the KP Insight data team, hospital decision makers, and market and technology leaders gathered at the Garfield Innovation Center in Northern California for a design workshop. This workshop focused on challenges, pain points, and creative solutions for health care administrators looking to improve hospital operations. The goal was to identify opportunities to harness and optimize data to improve care and performance outcomes while enhancing the care experience.

Using a human-centered design approach, clinical and operational leaders engaged in the design of this transformative solution. This focus group emphasized the importance of nurse manager retention and the need for a more holistic view of patient status and flow within the hospital without the manual and resource-intensive process of aggregating data to obtain this information. The outcome drove the first iteration of the OWL mobile app and dashboard designed to address these concerns.

Prior to OWL, this information was manually compiled into reports from multiple data sources, making information outdated and not actionable. In an internal
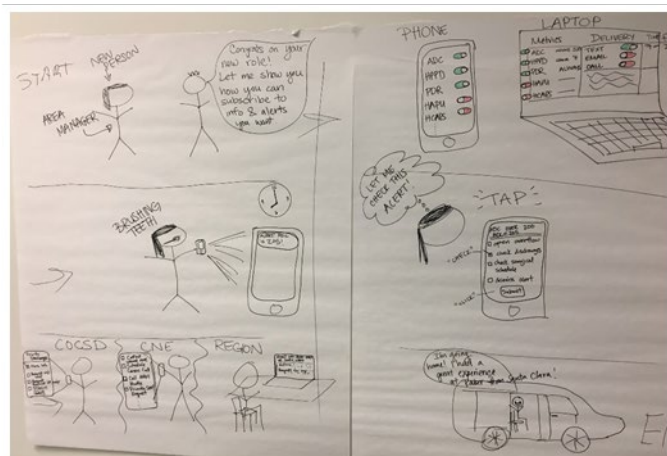
survey of medical center leaders, more than half of respondents indicated that they spent more than 30 minutes per day collecting and analyzing information for operational activities. The effort to collect and analyze information provided an opportunity for more timely, accurate information to save time and improve performance.

Early leadership support at the Northern California regional level, as well as from the CEO, provided the momentum for the development and validation of the technology.

What are the most common gaps Area Leaders have in using data to make decisions?

"We still have a *gap between using [retrospective] data to explain items and using [real time] data to make decisions* - we still think it is for the former primarily. We need it to be the latter."

"I want to talk about absolute numbers like *census, patients, admissions* because they are common operational measures. If we *focus on operations…..we get outcomes* like PDR naturally."

"I don't care if everything is ok. I care when something is not ok. *Tell me only what is not ok.*"

What are the most urgent & important insight areas to focus on first for impact?

1. **Throughput/flow optimization with quality indicators**-- to enable *right patient, right place, right amount of time* for optimized ADTs

2. **Staffing optimization**-- to enable *right staff, right place, right time* for patient acuity needs

Customized for the User

OWL provides hospital operations information to its users in an accessible visual format that can be leveraged in making informed and expedited health care delivery decisions. The OWL mobile app uses near real- time patient throughput and safety information, using KP's electronic health records, KP HealthConnect, to improve care experience. The app's user interface is intuitive and familiar enabling a quick understanding of the situation as well as response or adjustment to hospital workflows.

Get Alerted | **Open & Look** | **Drill Down** | **Take Action**

Customized data for specific hospital roles allows users to view the information at an aggregate facility level or drill down to the service line, hospital unit, or patient level of care. This allows the care team to have access to critical information to evaluate a patient's needs. Alerts in the mobile application allow users to identify critical workflow milestones that impact a patient's experience. For example, patients might be ready and waiting for a discharge. The key features and functionalities of the OWL mobile app optimize data to improve care and performance outcomes while enhancing the patient's care experience.

As with most Kaiser Permanente innovations, we start in one or two locations before scaling to more sites. OWL followed a similar process, first rolling out in Northern California over two years, then rolling out to Southern California over the third year. The preliminary feedback from both clinical and operations leaders in Southern California has been very positive. The OWL mobile app is seen as an invaluable tool for the front-line health care providers with potential for additional benefits to provide further insights on processes to effectively discharge patients.
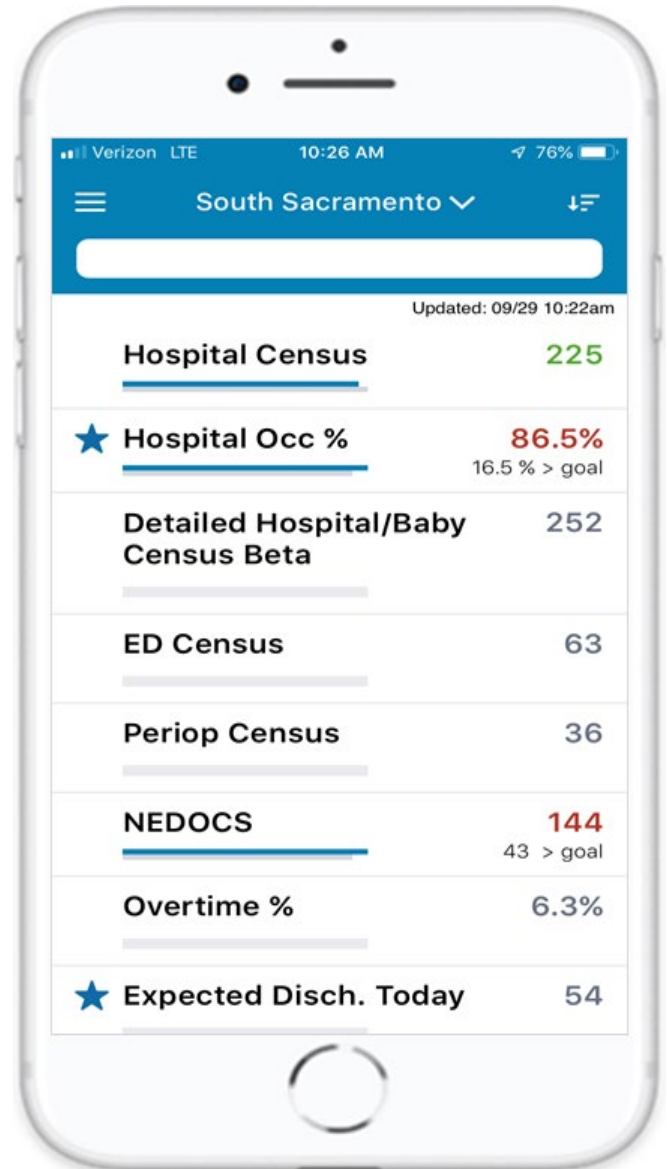
Driven by Innovative Technology

The Insight Driven program exemplifies innovation in the use of technology to transform care delivery. The OWL mobile app helps hospital leaders shift from compiling data to anticipating and addressing real-time patient care opportunities

The application utilizes an internally developed integrated system to pull disparate information from

KP's electronic health record and transform it into actionable insights for hospital leaders. Kaiser Permanente programmers and analysts helped build an analytics platform that digests the integrated data and applies proprietary algorithms, generating key information that then flows into the mobile app. The design and development of the OWL mobile app is a continuously iterative process involving our clinical and operational leaders. With user feedback, new metrics critical to care delivery operations are consistently delivered through the mobile app via the integrated system.

In addition to near real-time insights, OWL mobile app has various unit level census predictions. The predictive models are created using artificial intelligence technologies such as machine learning and deep learning, which leverages secure patient throughput information at the unit level to continually refine the projections. Predictive insights will help Kaiser Permanente hospital leaders proactively plan for patient care needs. The model lays the groundwork for opportunities to integrate more robust artificial intelligence capabilities.

Responding to COVID

When the COVID pandemic emerged, the Insight Driven OWL team developed and released a Northern California COVID mobile dashboard to all OWL users in order to support operational patient surges. The COVID dashboard within OWL displays daily Clarity data (Clarity is the data store for KP's electronic health record) for Confirmed and Persons Under Investigation (PUI) COVID cases for patients who have been admitted and are in the Emergency department. With a few taps, users can easily see and sort key COVID data for all Northern California Medical centers and the region in total. Intuitive visuals aide user decision making. At the top of the COVID mobile dashboard totals are broken out by patient level of care and with a simple swipe users can see trend graphs over time to assess trajectory of COVID related surges. This feature directly benefits those caring and providing support for our patients. Since the release of the OWL COVID Dashboard many users have provided feedback on how this tool has enabled better, faster decision making.

The Area Finance Officer in Roseville shares how the OWL mobile application and COVID dashboard facilitate getting to the right unit and level of care by explaining, "the OWL dashboard gives [him] immediate access to patient volumes wherever [he is]. [He] can see how busy [the] ED is and how many boarders [they] have.

Local hospital leaders encourage their teams to "download the KP OWL app from the KP app store so [they] have updated COVID information handy".   The OWL COVID dashboard was created based on feedback from end-users as the March 2020 pandemic surge emerged. OWL already supports real-time hospital throughput and quality data for hospital decision makers and with the release of the OWL COVID mobile dashboard, application usage has more than doubled.   The sustained increase in use is due to the value and ease of access to helpful COVID information the app provides. The Insight Driven team continues to work with leaders in the regional command centers across Northern and Southern California to support getting patients to the right place at the right time for improved patient care experience and outcomes.

View of the COVID dashboard on OWL mobile app shows view of facility level data with confirmed and PUI data

KAISER PERMANENTE®

Outcomes

Kaiser Permanente continues to be thoughtful about its commitment to providing every patient quality and timely care. Waiting for an available bed during an emergency room visit or hospital admission, or waiting for discharge, is frustrating for patients and inefficient for hospital operations. Many real-time and predictive data points are necessary to make these processes efficient, including hospital census, bed demand, room cleaning and availability, pending discharges, among many others. Previously, this information had to be manually aggregated and analyzed to be actionable for decision making, which is resource and time intensive, involving extensive communication via phone or text messages.

Since the implementation of OWL, initial survey results from the Northern California pilot sites indicate a directional reduction in patient wait time for admission from the emergency department (on average a 27-minute decrease per patient) compared to control hospitals that did not have access to the tool. Surveys also show a directional decline in the amount of time hospital leaders spent per month manually preparing data for operational activities (323-minute reduction per month per hospital manager), as well as a decrease in average phone calls and text messages per month to report out data (114 fewer calls and messages per month per hospital manager).

The decrease in admission wait time helps to ensure that patients receive care in a timely manner and improves the patient care experience. Time savings generated from efficiencies gained due to the mobile app are reallocated to patient care, leading to overall improvements in the patient experience.

OWL is the product of cross-collaboration to improve quality of care and patient experience using the vast amount of data created by Kaiser Permanente's technological leadership and early adoption of electronic health records.

Outcomes Highlights

1. Patients experienced a **27-minute decrease in wait time** for admission to the hospital from the Emergency Department. .
2. An **average of 323 minutes per month were saved** by avoiding the manual compilation of data and reports.
3. Leaders estimated an average **decrease of 114 calls** or messages each month.

OWL End-User Experience

One of the common threads of feedback from end users was the appreciation for convenience. The ease of having the data on their phone enabled them to do a quick check to assess how their day or shift would be so they could mentally and/or operationally prepare.

A great app that provides me quick information related to our ED/ hospital capacity and patient flow. Assistant Physician in Chief, Hospital Operations

I do still use the OWL application (daily) and it is an invaluable tool to keep me abreast of the hospital operations. What I appreciate about the OWL application is the convenience of having the information on my phone versus the need to log into HealthConnect on my laptop" COO, Sacramento Medical Center

I am the COO at San Leandro and the OWL APP is an absolute asset that allows our leaders to quickly assess the census of the hospital. I use it 7 days a week. [As for the new COVID features], I like all of them. I use it all the time."

What's Next

OWL will continue to evolve and deliver additional features to meet the mobile needs of front-line operations staff. Among the list of features currently being evaluated are improved predictive models (for example integrating confidence intervals), intelligent role-based notifications, mobile dashboards that enable views across a region or service area, and tighter integration with other important real-time operational tools like the Hospital Throughput Monitor (HTM). In addition, the team is investigating options to expand into regions outside of California to bring those markets some the same business benefits that have been realized in the California regions. Ultimately, the OWL mobile app will grow with Kaiser Permanente and adapt to the ever-changing healthcare landscape to deliver value for our care providers and operational decision makers.