Nicholas E. Davies Enterprise Award of Excellence

Improving Patient Access

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Executive Summary

Hawai‘i Pacific Health (HPH) is a not-for-profit health care network of hospitals, clinics, physicians, and care providers dedicated to the mission of improving the health and well-being of the people of Hawai‘i and the Pacific Region. HPH has responded to the transformation in health care by using IT data analytics, data transparency, and technological automation to improve access to primary care services.

Faced with a growing population and a limited supply of Primary Care Physicians (PCPs), HPH created a data warehouse, integrated ancillary technology to its EHR, and optimized EHR functionality to drive metrics, engage patients in their health care, and take control of population health management. This resulted in a 20% increase of attributed lives with no net PCP additions, improvement of ambulatory quality metrics to the 90\textsuperscript{th} percentile nationally, reduction in Medical Cost Trends, and an addition of six million dollars in monthly downstream net patient revenue.

Background Knowledge

After successfully signing a multi-year contract following a highly contentious negotiation with our largest commercial payer in 2008, HPH was determined to change direction. Our goal was to build a stronger partnership with our payers to avoid a future of contentious win-lose contract negotiations that would ultimately be financially unsustainable for all parties.

In an effort to move forward, we approached our largest commercial payer and suggested that our enterprise-wide, highly integrated EHR could be used to drive improvements in care outcome measures and reduce care costs. Our proposal was to ask payers to fund our start-up costs in developing a robust population health program, and we would be accountable to an agreed-to set of outcome performance measures to improve quality and reduce costs. With aligned incentives, it would be a win-win for both parties. Our initial focus would be in chronic disease management and diagnostic screenings. We reached agreement in 2009 and began to develop disease registries, improved order sets, best practice alerts, and a patient outreach program. We achieved rapid success; by the end of the first year, we improved our performance in many areas to 90\textsuperscript{th} percentile benchmarks – remarkable given we had started at
or below the 50th percentile in most of these metrics. The results demonstrated we could be successful with a more comprehensive and aggressive goal toward true accountable care.

After further commercial payer negotiations, HPH formed an accountable care organization, Hawai‘i Health Partners (HHP), and developed it into a wide network of HPH hospitals and clinics, employed and contracted physicians, including independent specialists and primary care physicians. Today, the network serves 87,000 commercially insured lives.

**Local Problem**

We recognized early on the new ACO would be faced with the daunting challenge of improving care outcomes with limited primary care capacity. Like most health care systems, we faced a significant PCP shortfall. Even if HPH could afford to hire them and build more clinics, PCPs were not available. A 2010 Hawai‘i study [Figure 1] demonstrated the shortfall, and projected the problem would worsen over the next few decades. We decided that instead of focusing on hiring PCPs, we would focus on improving efficiencies so that our PCPs would be able to see more patients.

![Workforce Projections 2010-2030](image)

To maintain current rates of utilization, Hawaii will need an additional 318 primary care physicians by 2030, a 27% increase compared to the state’s current (as of 2010) 1,136 PCP workforce.

Figure 1. Hawaii Projected PCPs Needed
We knew that technology could play a big role in improving physician capacity. However, we needed actionable data to help us identify the opportunities. We didn't have it. We had no meaningful information on patient panel size much less analytics to evaluate panel behaviors, assess patient populations, and improve physician practice management.

It would also be important to understand patient-to-PCP attribution. We knew that the number of attributed patient lives in our network was shrinking in 2011 [Figure 2] and to maintain financial viability with an ACO, it would be important to have a network of at least 85,000 lives. This would provide sufficient economies of scale to offset the population health related expenses and revenue losses from reduced utilization.

![SCH Primary Care 2008 - 2012](image)

Figure 2. Attributed Lives in Hawai'i Pacific Health Network

To complicate matters, our payer’s view of our network performance was different than what we measured in our EHR. The payer was attributing many more patients to our PCPs than they were actually managing and, having only claims information, had an incomplete picture of true clinical outcomes.

The initial ACO focus had to be on improving patient access, reconciling patient attribution with the payer, and developing broad analytics that could be used to reliably report outcomes that could be accepted or reconciled with the payer. Given that nearly all HHP physicians were using HPH’s EHR, there was high confidence IT could help provide a solution.
**Design and Implementation**

Our goal was to implement analytics using our EHR and its associated relational data tables to effectively influence physician and patient behavior. Un-blinded physician dashboards with summaries and capability of drill-down to patient level detail would be used to identify gaps in care and support focused patient outreach. An integrated patient reminder system was also built to improve both access and efficiency by reducing appointment no-shows. All of this would be used to support a new Contact Center for patient outreach.

To determine the best workflows and supporting technologies, clinical governance and physician engagement were critical. This was accomplished by creating two key committees: 1) Primary Care Redesign Steering Committee and 2) Primary Care IT Clinical Workgroup.

The Primary Care Redesign Steering Committee consisted of formal physician leaders, informal physician leaders, our Chief Medical Officer, clinic executives, directors, managers, and IT analytics. This committee had three areas of focus. First, review all national benchmarks and patient-access research, and determine if we would adopt an access benchmark, or create our own metric. Second, mine our own physician and patient data to determine where we compared against established benchmarks and communicate this data to all PCPs. Finally, recommend technological and automated ways to drive towards these benchmarks.

Physician and IT input was vital to ensure the new workflows were sustainable, automated, undisruptive to patient care, and aligned with HPH’s overall Clinical Guidance and Quality programs. Figure 3 shows the structure used for clinician engagement and overall clinical decision making. The Primary Care IT Clinical Workgroup is a Specialty Workgroup within the governance structure and consisted of IT Physician Trainers, IT Physician liaisons, IT EHR Analysts, and Clinical Directors/Managers. Attendance was open to all PCPs who were interested in being a part of the IT build process. The purpose of this workgroup was to define IT build parameters based on the Steering Committee’s decisions.
The outcome of this effort would be to achieve four goals:

1. Increase patient access to the HHP network, thereby increasing the number of attributed lives and associated health management revenue.
2. Improved ambulatory quality metrics by clearly defining each PCP’s patient population and holding them accountable to HEDIS quality measures for their panel.
3. Reduction in avoidable emergency department visits by providing same day availability slots for a PCP’s panel.
4. Reduction of manual scheduling tasks by automating many scheduling procedures.

How Health IT Was Used

Information technology tools were heavily utilized to drive the 4 major outcomes.

1. Increase patient access to the HHP network, thereby increasing the number of attributed lives and associated health management revenue.

To open PCP access to our community, panel sizes were attributed and risk adjusted in 5 steps [Figure 4]. Relational databases and data processing tools were built, called the
Quality Management Aggregator (QMA) to automate patient attribution and panel calculations [Figure 5]. Dashboard technologies were used to display the information to physicians and staff in real time, in the EHR. Once we defined the physician’s panel, we were able to analyze important data elements of a PCP’s panel such as payer mix, acuity scores, patient portal activations, Same Day access rates, and other important metrics [Figure 6].

Figure 4. Attribution and Risk Adjustments
Figure 5. Quality Management Aggregator

Figure 6. Patient Access Dashboard
2. Improved ambulatory quality metrics by clearly defining each PCP’s patient population and holding them accountable to HEDIS quality measures for their panel.

With a defined panel size, PCPs were able to focus on HEDIS quality measures for patients that were attributed to them. With the incorporation of a dashboard and real time data, PCPs were able to extract lists of patients who were overdue for a specific health maintenance due. PCPs were also able to view upcoming appointments in other specialty departments to determine best times to encourage visits to address outstanding overdue items affecting quality scores (called clinical “dues”). [Figure 7]

![Ambulatory Quality Patient Outreach List](image)

Figure 7. Patient Outreach Dashboard

Automated outbound calling campaigns for patients with overdue health maintenance was made possible by implementing an out-dialer integrated with our EHR. This system takes our outreach lists, and throttles calls to our patients to remind them of their past due care. This allows the patient to be routed back to our contact center to schedule the appointment [Figure 8].

![Automated Patient Outreach Infrastructure](image)

Figure 8. Automated Patient Outreach
3. Reduction in avoidable emergency department visits by providing same day availability slots for a PCP’s panel.

In addition to HEDIS quality metrics, we are also responsible for a patient’s total cost of care. Our data warehouse is able to show a contributing factor to cost is avoidable Emergency Department visits. We use claims data for each attributed patient to upload into a NYU Algorithm to predict potentially avoidable ED visits based on diagnosis codes and discharge dispositions. In other words, what percent of our ED visits could have been seen in an outpatient clinic setting? With this information, HPH was able to update PCP scheduling templates to reserve the appropriate amount of same day appointment slots, and promote and expand our Urgent Access facilities, which accepts Same-Day, Walk-in visits. Two different templates were created, one for those PCPs who had full panels and closed to new patients, and another for PCPs accepting new patients into their practice [Figures 9, 10].

![Figure 9. Scheduling Template for PCPs with Full Patient Panels](image1)

![Figure 10. Scheduling Template for PCPs with Open Patient Panels](image2)

4. Reduction of manual scheduling tasks by automating many scheduling procedures.

Opening access to new patients and growing our population base meant HPH needed to find efficiencies in our scheduling processes, by maximizing EHR functionality. Many tasks involved manual maintenance to a provider’s schedule and HPH knew that these tasks
would be magnified with an influx of new patients. Working with our steering committee and IT workgroups, the following automation was setup in the EHR to reduce time spent on maintenance:

- **Visit Type Modifiers** – For every visit type, and for each PCP, we built into the EHR the scheduling instructions and default slot length times. This allowed us to remove paper instructions on scheduling, reduce hundreds of visit types, and automate the ability to find the next appropriate slot when scheduling a specific type of visit [Figure 11].

![Visit Type Modifiers](image1)

**Figure 11. Visit Type Modifiers Used to Better Automate Scheduling**

- **Patient Modifiers** – Knowing that each patient may have specific needs due to disabilities, language services, etc., we also built scheduling modifiers at the patient level to auto search for an appropriate slot length based on the patient’s needs [Figure 12].

![Patient Modifiers](image2)

**Figure 12. Using Patient Modifiers to Better Search Scheduling Slots**
Block Release Days – To ensure all slots of the PCP were scheduled, we wanted to ensure that New Patient blocks, as seen in Figure 13, would be utilized by established patients if no new patient selected that time. To do this, we automated the release of that block to open to a blank slot 2 days prior if no patient was scheduled into that block. This ensures that acute patients are able to be seen within 2 days and completely automates the ability to ensure slots are reserved for both New and Established patients [Figure 13].

Figure 13. Automating the Release of New Patient Blocks for Established Patients

Appointment Reminders
Another manual process we needed to eliminate was appointment reminder phone calls. We realized this step was important to patients and critical for patient care and quality metrics. However, the time it took to call all patients, with the increase demand of new patients, was time-consuming. We implemented an automated appointment reminder system that would automatically pull data from our EHR, 2 days in advance, and call the patient. Responses from the patients would then be uploaded back into the EHR to allow us to see if the patient confirmed their appointment or wished to reschedule. Many different status updates were available to us including, left message, hung up, listened to entire message but no response, busy tone, confirmed, etc. This eliminated manual calling and tracking of appointment confirmations.

Value Derived
Prior to this patient access work, our organization faced challenges in making business and practice management decisions without necessary analytics and data processing capabilities. At the time, our EHR was capturing valuable data but the data was not being aggregated, analyzed, and trended to understand physician and patient behavior. With the implementation of our data warehouses, dashboards, and optimization of our EHR, we were able to compare our data against national benchmarks, define access metrics for our PCPs, and gain efficiencies by automating scheduling tasks.

To measure our success, each metric was clearly defined by our Primary Care Steering Committee and programmed into our Quality Management Aggregator to monitor in real-time and trend over time. Below are examples of process and clinical results provided by our QMA.

Our panel attribution process allowed us to increase attributed lives by 20% in 2 years, whereas previously, our attributed lives were declining [Figure 14].
We are able to monitor and maintain Same Day availability of 23% by updating physician scheduling templates to strategically reserve slots for acute patients. Historical same day slots are studied by day of week and by hour of day to ensure these slots are reserved at a time most likely to be used. [Figure 15]
Figure 15. Maintenance of our Same Day Availability to care for acute patients and reduce avoidable ED visits
Figure 16. No show rates have declined and remain consistent since the implementation of an automated appointment reminder system.

Avoidable ED visits, as a percentage of all ED visits, began to decline as we understood our patient behaviors and outreached to them to engage in their health care. Our data allowed us to make data-driven decisions around our acute care services. For example, in addition to reserving same day slots for established patients, we were able to promote and build various urgent access locations, as well as modify location hours and coverage. This resulted in a decline in our avoidable ED percentages to just under our goal of 36% [Figure 17].
Figure 17. Avoidable ED visits decline after implementing Same Day Appointment slots, opening Urgent Access locations, and outreaching to patients

Quality compliance metrics began to improve as we used heavy data analytics to better understand our attribution. The PCP attribution in the payer’s quality database, differed from HPH’s attribution model. Understanding which patients were not seeing their PCPs, who did not have a PCP, and who did not see their PCP regularly, was important for us to be able to connect back with patients and engage them in their health. To do this, we began to use automated outreach reminders to engage patients in their preventative health measures and year-over-year we improved the attribution variances between payer attribution and our EHR attribution. Simultaneously, we improved our patient engagement and ambulatory quality measures [Figure 18 a,b].
Figure 18a. As attribution became more aligned between the payer's database and our EHR, ambulatory quality metrics improved

Lessons Learned

A critical lesson learned is to clearly define the data infrastructure that is needed to support the metrics and surveillance of our initiatives in the beginning of the process. Initially when
reviewing patient experience comments, it was evident to the steering committee we needed to improve our access but there was no data to understand our metrics, and we did not know how we were performing at the time. Frequent ad hoc reporting and constant modifications to the reports occurred regularly with little return, and increased frustration. The steering committee was eager to drive change but there was no data to support their decisions. The process was not sustainable until we standardized the use of discrete fields in our EHR and used those fields to build our databases. Only then did reporting and monitoring become effective and efficient. At that point, a clearer picture of our business was understood and the steering committee was able to make educated decisions regarding how to proceed with improving access.

The second critical lesson is to prepare for downstream demand. The process seemed cyclic as patient comments regarding difficult access to care for specialties began to arise. Our increase in new patient business was so successful, the referrals to downstream specialties were affected significantly. Internal referral orders increased and access to specialists began to suffer. The rapid growth and collateral impact of improved access forced our operations team to expand our access initiatives to specialty areas. This also resulted in expanded data infrastructure needs and defining specialty benchmarks and access metrics. Our Bone and Joint Center, which includes Orthopedics, Physiatry, Rheumatology, and Physical and Occupational Therapy, was the most impacted and we quickly began the access work in these areas.

Finally, awareness of the pertinent metrics and initiatives, along with supporting data, is vital. In many instances when access metrics were implemented, the operational changes took longer to implement than expected. Frequently, physicians and their staff were unaware of the metrics and more importantly, unaware of why the changes were implemented. It became a standard process for the steering committee to go on “Road Shows” to build the case for change with supporting data and provider-specific data. Once this was done, implementation of operational changes became smoother.

**Financial Considerations**

Initial investment costs for this project, aside from the EHR itself, were:

1. Labor hours that helped us create a home-grown data processing warehouse, maximize our EHR functionality for automation, and design our dashboard
2. Licenses for integrated software such as our automated appointment reminder system, dashboards, and databases. Our Return On Investment (ROI) has been significant.

Our increase of 20% in attributed lives over two years has netted a gain of over $1.3 million dollars per year in per-member-per-month patient management fees for our ACO attributed lives. In addition, PCMH Level 3 quality dollars for each member nets over $400,000 per year with our increase in attributed lives. Our quality scores have also improved and resulted in higher payouts overall.

Finally, downstream revenue is a large contributing factor to ROI. As patients are able to access health care services through a PCP, they have an easier and more efficient way of navigating the health care system with the use of referrals. PCPs refer to specialty areas that lead to surgeries, procedures, ancillary tests, etc. This downstream revenue is also captured monthly. Each
month we look at all the new patients who entered the system through primary care one year ago and follow their activity throughout our organization. We consistently see over $6 Million in one year downstream revenue for all the new patients we bring into primary care. For example, in September of 2014, 687 new patients entered our primary care system and generated 8,265 encounters 12 months following [Figure 19]. Such encounters generated $6,620,483 and the distribution of dollars amongst specialties are shown in Figure 20.

<table>
<thead>
<tr>
<th>Sept 2014 Primary Care New Patient Count</th>
<th>12 Mo Downstream Encounters</th>
<th>12 Mo Downstream Net Revenue</th>
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<tbody>
<tr>
<td>687</td>
<td>8,265</td>
<td>$ 6,620,483</td>
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Figure 19. Monthly tracking of New Patient business and 12 months of downstream revenue
Figure 20. Over $6 Million in one year downstream revenue from new patient business, by department