SELECTING AN OCCUPATIONAL HEALTH IT SOLUTION — THE STANFORD EXPERIENCE

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17th Annual Congress on On-Site Employee Health Clinics
July 17, 2018 — Hyatt Regency McCormick Place, Chicago, IL

INTRODUCTION

A few years ago, Stanford University was at the end of the contract period for the occupational health IT solution or electronic medical record used to support our occupational health center operations. We needed to make a determination on what our path would be moving forward. We had electronic records in place since clinic inception approximately five years before, and at that time the clinic was small. It started as a medical surveillance entity, with one nurse and one physician.

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After graduating from Brown University with a bachelor's degree in Neuroscience, Dr. Wittman attended Medical School and internship training at Tufts and Brown University Schools of Medicine, respectively. He completed his Occupational and Environmental Medicine Residency at Harvard, where he served as Chief Resident while concomitantly obtaining his Masters' of Public Health degree. Dr. Wittman is Board-Certified in Occupational and Environmental Medicine since 2002.

Both in clinical practice and as part of CDC and NIOSH teams, Dr. Wittman has participated in toxicologic investigations related to occupational and environmental disorders in both adults and children, with particular focus on lead and other heavy metal intoxications as well as solvent neurotoxicity.

At Stanford since 2010, Dr. Wittman works closely with the Department of Environmental Health & Safety to provide a wide array of medical support and injury care for a population of nearly 20,000 employees and postdocs whose work includes lab animal and chemical/infectious agent research. In this role, Dr. Wittman leverages technology and the electronic medical record to optimize surveillance compliance, training, and interdepartmental communications.

Since that time our needs changed, and we grew in dramatic ways. The solution we had in place was an old version of the vendor software. It was click-intensive, not much was automated, it was difficult to pull reports, and ultimately, it was not delivering the functionality we needed.

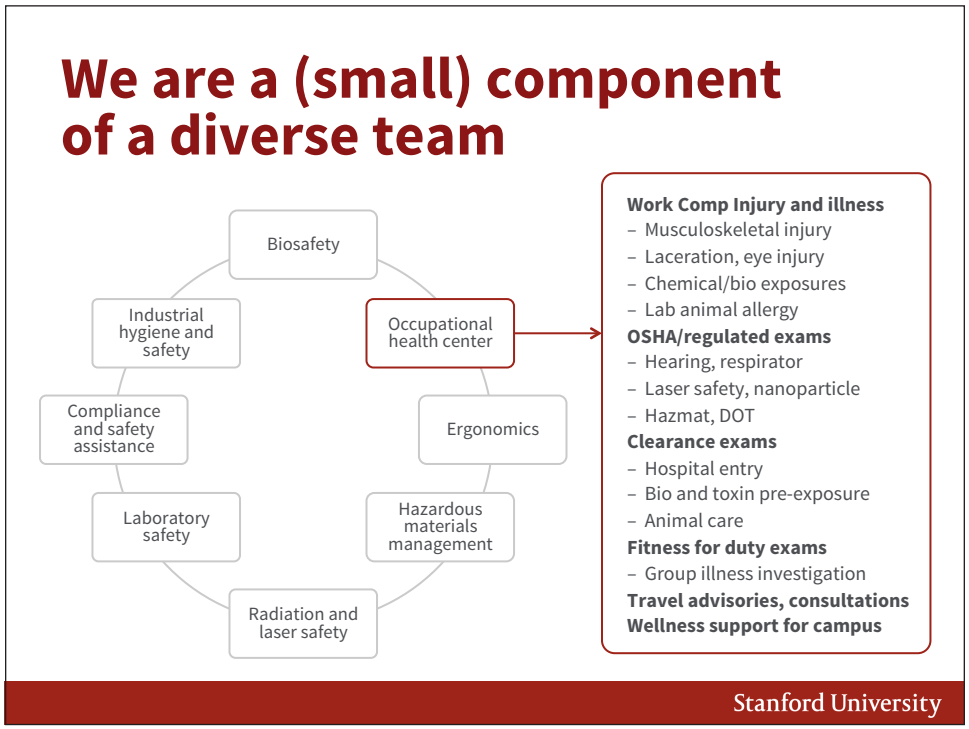
As we began thinking about which vendor to move forward with and what the evaluation and selection process would look like, we realized the decision was about more than whether to remain with our current vendor or find a different one. We had to recognize who we were, where we wanted to be, and with whom we would want to advance. And this internal introspection led us to think about how and where we fit in as a piece of the atmosphere that is Stanford.

WE ARE A (SMALL) COMPONENT OF A DIVERSE TEAM

We were, and we still are, a smaller but equal component of a larger health and safety team (fig. 1). To assert ourselves and operate as a fully-functional part of this team, we recognized that we needed to collaborate with other team members and do so in a far broader way.

We had grown as a clinic operation, with all-encompassing services including full workers compensation care, injury treatment and follow-up, medical surveillance for infectious diseases and animal care, travel medicine, and fitness for duty exams. We had expanded to covering over 20,000 employees with 15 people working in our clinic. However, we looked beyond our clinic and asked how as a clinic group could we move forward as part of a larger health and safety team and how could we leverage a new medical record to bring us there.

fig. 1



UNDERSTAND YOUR PROCUREMENT PROCESS

As we launched the process, we were very eager to move ahead with our initiative. Our gung-ho operations manager went to our local vice provost and essentially stated the following:

"We have an idea. We need to upgrade our medical record. We have some good things in mind we want do for the university. It might cost a little bit more up front, maybe just a little extra zero on the invoice. We're going to go ahead and do that, just need your approval, please sign this, thanks."

The provost nodded, agreed that as a group we could move forward together, and described the path we needed to

take. The provost explained that part of this procurement process is understanding not just who we are normally beholden to, but understanding what the provost and others involved in funding this initiative need to do to justify this expense. He sent us on a path that ultimately proved very, very, helpful in terms of the growth of our clinic, and led us to consider other ways that we could expand what we are doing.

A process that we thought might take up to six months turned out to last well over a year. In fact, this was not the first time we tried to get a new medical record. Two years before we had gone through the process and had been turned down. There was a lot riding on this effort, because if it was not approved this time, it could be a number of years before we could move ahead with procuring another solution. A new, more robust solution would affect not just what we do internally at the clinic, but our role within the broader university community. We remain interested in expanding the value of our health and safety offerings at Stanford.

ANTICIPATE COMPLEXITY

Looking beyond our clinic, we started with the Stanford environmental health and safety team and realized this group had needs in concordance with ours. One of the major deficits they faced was a paper based process for injury reporting on campus. When an injury occurred an employee would fill out a paper form which would go to the employee's supervisor and then get routed on to health and safety. For a variety of reasons there were significant lag times in this process and it could be two to three months after an injury before reports were reviewed and analyzed to understand cost and potential prevention measures.

We recognized the environmental health and safety team could benefit from an accessible online solution that could manage incident reporting and integrate with the employee medical record. At the time, we were relying on a third party to analyze injuries and prepare reports, often based on either incorrect or incomplete data and responses to questions that were not pertinent. This created an opportunity to take hold of this process and generate a comprehensive, campus-wide incident report. We could use the occupational health IT solution to control and manage the data being collected, and use this data to conduct our own analysis. Our reports could be generated more rapidly and accurately, as we would have better and more current data. This capability generated significant interest from the environmental health and safety group.

The human resources group was faced with similar issues in managing work status reports that are shared with supervisors and used to document restrictions and time away from work. HR representatives spent a great deal of time tracking and managing these reports, maintaining up-to-date employee restrictions and determining whether issues were work related. This was being managed primarily on paper and via email.

We asked the HR group if they would be interested in having online access in real-time to work restrictions for all the employees under their purview, and giving that same access to supervisors for the employees reporting to them. This was a pie-in-the-sky, what if you could have this capability discussion, as we were unsure whether a solution existed with this functionality.

Fortunately they were interested, as their participation was of high import. The HR group manages our PeopleSoft HR application and our registry database, and we needed to be able integrate with whatever solution we selected in order to move forward. While we were not purely altruistic in trying to coordinate with HR, by working together we could advance our mutual goals.

Another vital party we needed to work with was information technology. Our health and safety team had an internal IT team responsible for vetting anything electronic in our group. They also managed databases containing health and data surveillance information on infectious diseases and animal care which we wanted to include in our occupational health IT solution. Most important, our IT team had a long history of collaboration with the Stanford offices of site security, internet security and privacy.

The primary rate-limiting factor in adoption of a new medical record solution was the challenge of convincing a university-based IT department responsible for managing personal medical information for a wide variety of the campus population ranging from employees to undergraduate students. This effort included securing the involvement of the security and privacy offices who would need three to six months to vet our preferred solution. This group is involved in a wide range of major Stanford projects, and the wait time to work on our clinic project could be well over a year. We had to secure review time on the IT schedule before moving ahead with vendor evaluation.

We also worked with procurement, our general counsel, and senior executives. Our pitch to these groups was tied to Stanford's commitment to health and wellness, and we linked this initiative to addressing total worker health.

THE JOURNEY: SELECT A POINT PERSON TO DRIVE THE PROCESS

Managing these different groups and moving the process forward is challenging. Scheduling meeting times and setting agendas is a significant job on its own, let alone trying to foster collaboration among stakeholders with various interests and little desire to follow a linear process.

We decided to assign a point person who could manage the process firmly and with resolve. We chose our clinical operations manager, who benefited from having private practice background, significant financial expertise, and experience managing a clinic with a constrained budget.

It was very important for those funding this project to understand that we were actually budget conscious and that our evaluation would look not just at the product, but the investment necessary and the return on that investment.

When selecting a point person, it is also imperative to identify someone who is a connector — someone who can take all these different groups and different personalities, bring them together with a sense of humor, and move the project forward. The first time we went through this process and the project was not approved, one of our mistakes was not choosing the correct point person.

ASSEMBLE THE TEAM

The project team included the individuals and groups already mentioned, as well as the group of clinicians and other members of the health and safety team who would work with me to make this determination. We realized we needed a core group of people who would be present for every vendor evaluation session to provide consistency and also offer a wide range of perspectives. This included not just the clinicians and myself, but our medical assistants, our industrial hygienist and other people we wanted to have a role in this medical record initiative moving forward. This initiative prompted us to think more globally and recognize this is not just about us. It is about our university partners and how we can use this medical record project to potentially bring our visions together. So before we decided what we actually wanted the medical record to do, we focused on planning and setting up the infrastructure to make this project a success.

FROM PAIN POINTS TO WISH LIST

After our cross-functional and far-reaching team was assembled, the first stage of vendor evaluation and selection was developing a list of pain points (fig. 2). In thinking about that, how many of you here are using an occupational health record electronic health record for medical charting? A number of clinicians here and some others. Now, of those who raised their hands, how many are 100% happy with their medical record? No one can say that. We started by identifying our primary pinch point — the biggest barrier to success we had with our existing medical record application. For us, it was the fact that everything was very, very manual.

fig. 2

It was easy for us to identify our number one pain point. We had a paper questionnaire that needed to be scanned by someone by hand, brought into the electronic record system, and indexed. Hopefully the scanned document was readable and legible, and it was then transcribed by a clinician because we were trying to add that information to the note itself. All these steps in the process made it pretty easy to say that we want a solution that makes all of this more automated. And this is one item in a wish list.

We combined the pain points and wishes of industrial hygiene, health and safety, the fit testers, the surveillance folks, and the people in our clinic ranging from the billing specialist to the administrative assistants.

We created a list of well over 40 categories of desired improvements and well over 100 specific line items of either must have, nice to have, or pie in the sky goals. Assembling this list was fun, labor intensive, time consuming and extremely important. If you do not take the time to define what you need with your occupational health record, your objectives can get lost when you go through the process. There is too much going on, and you need to have a checklist that can be used to vet each of the vendors.

CAST THE NET

Our operations manager started to benchmark with other universities we had relationships with including Berkeley and UCLA. We also reached out to institutions that we had no prior connection with — parallel academic institutions with research and hospital components of medical care. We cold called and talked to them about their medical record, and we set up an interview sheet to make sure we covered specific points.

We also reached out to the networks we have including our local ACOEM [American College of Occupational and Environmental Medicine], WOEMA [Western Occupational and Environmental Medical Association], and nursing networks. One of our Stanford clinic sites is a Department of Energy research lab, so we contacted all of the other DOE office of science labs as the DOE has specific requirements that go beyond what the university requires in terms of cyber security. We found out what all these sites are using for their medical records. This part of the process was fun and interactive as we put ourselves out there. Leaving our typical sphere of interest was a growth opportunity for the clinic.

We also conducted online research, and searching by Google can be a pretty effective way to find occupational health record applications that are there. This includes records that few are using and new records that are starting to rise up. We could then view demos and gather other information from vendor websites.

We contacted vendors directly, explained the process to them, scheduled demos, and provided guidance for their presentations. We took our pain list, and the categories on the pain list, and organized them into a single page letter that we provided to a group of ten to fifteen vendors. Based on vendor response to this letter, we narrowed down to a list of six first round finalists and invited them to conduct a ninety minute webinar with our team.

LEAD WITH YOUR WISH LIST

We used our wish list to communicate our interests and asked these six vendors to please come prepared. This wish list included broad categories — user-friendly intuitive interface, scheduling, patient portal, work status reporting, interfaces with labs, interfaces with outside vendors, interfaces with hardware. These were simple things, but things that we wanted the vendors to address.

We provided the list and let the vendors run with it. When we started each session we let the vendors show us the software on their own, with very little guidance during the first portion of the call. We thought maybe they would show us what they did best, and how easy their software is to use. We were hoping they would pay attention to our list and address our needs, although this was not always the case.

This was a really interesting part of the process, as even without our interference, these nationally known and well vetted medical record entities stumbled. These experienced outreach teams could not effectively demo their products. We often heard things like “Oh this doesn't seem to be working today,” or “I'm sorry this is really slow,” or “This is something new that we just developed.” We realized right away without doing anything what some of the problem points were with their applications, and it was truly fascinating to experience.

On top of that, we built time in the demo sessions where we actually directed the vendors to respond to the items on our list. We stepped in and threw a little wrench in the works to see how they replied.

Now I understand people have bad days and sometime presentations do not go as planned. To account for this, we gave vendors the opportunity to answer questions after their demo sessions. We sent an email pretty uniformly to the vendors describing things that we felt we may not have been clear on.

WALK THE TALK: FROM WISH LIST TO SCORECARD

As we evaluated vendors during these demo sessions, we did so using a scorecard based on our wish list with all of the wish list items listed in priority order. We then assigned each vendor a rating of zero to three on each item, with zero meaning the vendor demonstrated no functionality, and three meaning the vendor demonstrated highly impressive functionality.

Our team was the same from vendor to vendor. This is important, as we wanted internal consistency. Having different clinicians, different IT people, and different health and safety people in these six vendor meetings would throw us off what we were trying to do. We wanted a single team to compare vendors. Every team member graded every vendor separately, and we then compiled the grades and looked at the numeric results objectively.

On occasion a vendor might have a zero in one category from some people and three in the same category from others. With six vendors being evaluated that is not surprising. In those cases, we did have qualitative discussions about the vendors. We ultimately relied on the numeric outcome and if there was disagreement the majority ruled.

fig. 3

Ultimately, there was one medical record vendor that was rated either highly successful or impressively successful in 80-100% of the areas on our checklist (fig. 3). Two of the other vendors were in that 60-80% range, and these were the three vendors that we moved on to our final stage. It became clear as we were going through the process even without crunching the numbers that these three vendors were in the lead, but it was still very helpful for us to see the objective results.

SCORECARD SNAPSHOT

This is an example of the comparison scorecard we used (fig. 4). It is very important to have a summary document like this that explains to someone who was not involved in the evaluation process what the heck you were doing. We put all of the vendors we were evaluating on one sheet with the categories we were judging them by along with relevant comments about strengths and weaknesses. Having these comments was also helpful because the process was nearly twelve months long, and when those vendor demos occurred months ago things can get blurry. Taking clear notes and documenting them this way helped us remember what was going on.

The importance of this scorecard is that it goes back to our original list of pain points. For example, one of the items on this list is appointment reminders. We can clearly ask a vendor "Does your system have appointment reminders?" and across the board they would say yes. But we also asked the question in a little more detail — "What kind of important reminders do you provide?" Vendors responded with more detail — that we provide important reminders for only surveillance cases, or only for injury cases, or only until their due date. We do not provide reminders after a visit, or when someone is overdue. When someone is overdue they are off our system

and now on another system that we do not actually interface with. In another case, we learned that if someone missed an appointment we would not be notified.

fig. 4

It is important to understand that one broad question may not get the answer that you want, and you really need to have detailed questions that you hit each vendor with. In this example, one of the main things that we need to do from a medical surveillance standpoint is identify all the people who are overdue and make sure that they are emailed with a reminder to schedule an appointment. We want to automate this process so that we can free up our staff to actually do what they are trained for, versus these mundane processes.

NARROWING THE FIELD

We started with demos from six vendors, and the top three scores advanced. Before we moved into the second phase, we emailed each vendor a list of forty to fifty technical questions that were put together by the Stanford IT group in advance of the security review. Many of the same questions that the security office would need answers to were asked up front. We additionally asked the groups for their pricing scheme. We might have thirty users on our medical record and up to forty thousand records, and we wanted to understand their pricing per year and any other fees that might be included.

We made this request very specific asking for a list of all the fees including maintenance fees, hosting fees, etc. We listed off all of the possible fees as we did not want to go through the procurement process only to learn that a vendor left out fifty thousand dollars worth of annual fees. For one or two of the vendors, their pricing was a show stopper at this point.

For the second round we scheduled a deeper dive session with the three groups. This was two hours, face-to-face or via webinar. The first sixty minutes we had our core team who had been there for all six original demos ask mundane, routine, and then critical questions on an ad hoc basis. We did not tell the vendors what we were going to ask. We wanted them to respond on the fly — show us how you print this, show us how you navigate to this. We put the vendors in a more stressful situation to see if what we observed during the first demo would hold during this session.

Following this, we asked the Stanford partner groups we integrated into the process to ask questions that were important to them. This included individuals from risk management, HR, IT and other groups. We wanted these other groups to be part of this medical records initiative, and we wanted to make sure the selected vendor could meet their needs as well. This was important from a budget standpoint, and from a functional standpoint. We asked the vendors to demo functionality such as employee and supervisor portals that these other groups might interact with.

With a large team like this, you have to be willing to allow many cooks in the kitchen. You create an opportunity for disagreement, and strong personalities can overtake the dialog and push things in a direction you or your team may not want to go.

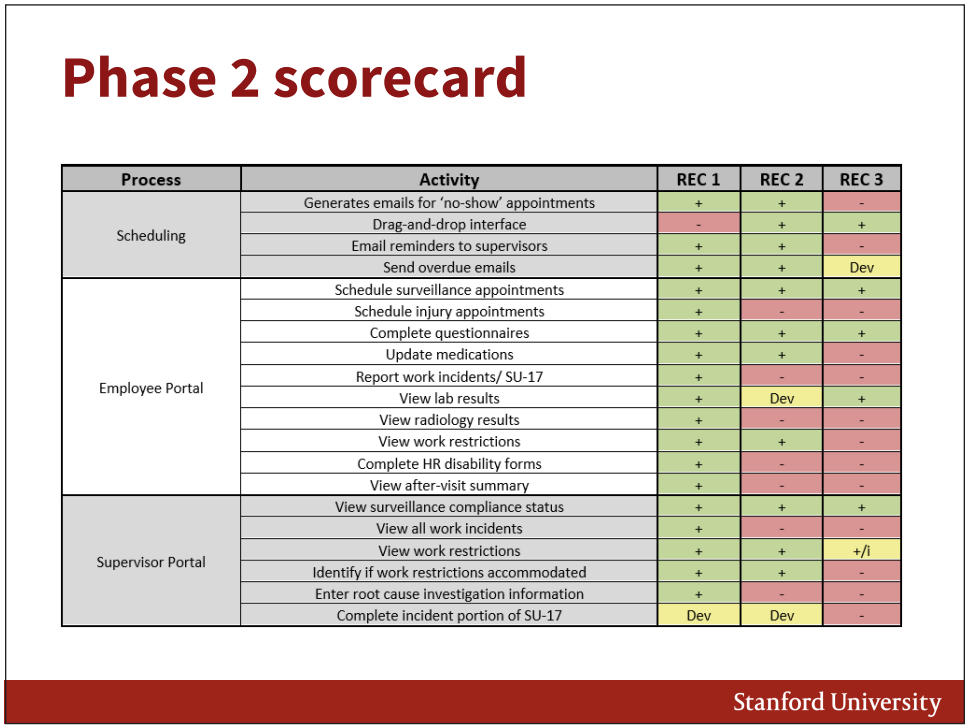
However, those other points of view can be extremely valuable. For example, Stanford Health Care is our university affiliated health system and they use Epic as their electronic health record system for patient care. As we selected an occupational health and compliance health record application for Stanford University employees, it was important to find a solution that could interface with Epic. We included representation from the Epic IT group in the final round, and they were grilling each medical record system vendor about what to us is crucial integration with what Stanford Hospital does. We use the hospital for x-rays, we order labs and view medical reports, and we really desired integration with the Epic system. When the Epic IT personnel were talking with vendors much of it was technical speak, but it was pretty apparent to even the non-technical people that one or maybe even two of the finalists did not have the expertise to integrate with Epic securely and in any really meaningful way. So we were willing to take the risk by having these other groups involved, because in the end it led us to less buyer's remorse once we got to the end stage.

Just like when you study for a test, you want to look at old test questions. Ultimately, we contacted end users of all these records vendors and either sat face to face with them or chatted by webinar. We talked in detail about their experience not just with using the medical record, but with the migration process and the whole A to Z interchange that they had undergone. This too was very, very helpful for us.

PHASE 2 SCORECARD

Again for phase two, we created a scorecard (fig. 5). This is nothing fancy — it was Excel based and color-coded in a simple but functional way. We were able to compare vendors and look at every line item we were interested in, and see how each of the three vendors met, did not meet or might meet our needs. We were able to use this documentation when we submitted to our provost for approval.

fig. 5



Process	Activity	REC 1	REC 2	REC 3
Scheduling	Generates emails for 'no-show' appointments	+	+	-
	Drag-and-drop interface	-	+	+
	Email reminders to supervisors	+	+	-
	Send overdue emails	+	+	Dev
Employee Portal	Schedule surveillance appointments	+	+	+
	Schedule injury appointments	+	-	-
	Complete questionnaires	+	+	+
	Update medications	+	+	-
	Report work incidents/ SU-17	+	-	-
	View lab results	+	Dev	+
	View radiology results	+	-	-
	View work restrictions	+	+	-
	Complete HR disability forms	+	-	-
	View after-visit summary	+	-	-
Supervisor Portal	View surveillance compliance status	+	+	+
	View all work incidents	+	-	-
	View work restrictions	+	+	+/i
	Identify if work restrictions accommodated	+	+	-
	Enter root cause investigation information	+	-	-
	Complete incident portion of SU-17	Dev	Dev	-

This helps others see that we did our due diligence. Someone can quickly look at this, see a broad category, see a question within that category and then see visually how each vendor compares to the others. This all ties back to our foundation for this project, starting with our list of pain points developed with help from our colleagues. This foundation made the process easier and more consistent.

MAKING THE BUSINESS CASE

When it was time to make the business case, we put together a 25-page report. While that might sound like overkill, it includes written text and diagrams, plus multiple appendices which includes all these reports that I mentioned — the wish list, the scorecard, the cost justification, the vendor analysis, final reports, and the executive summary that really brought this down to one page.

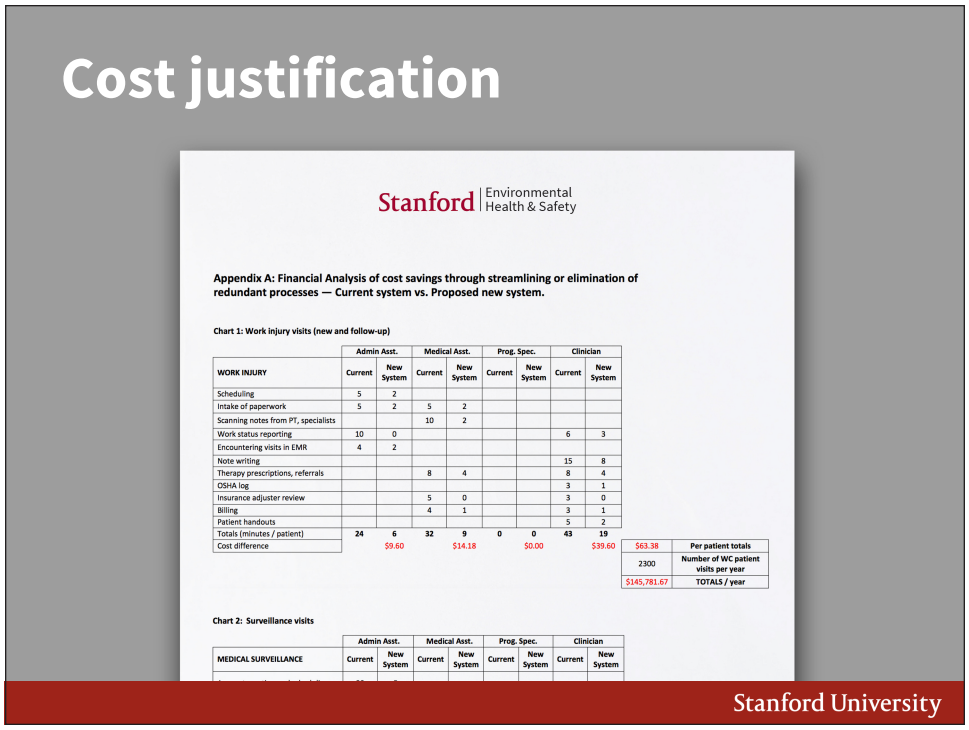
In thinking back to the procurement process, why was this even important? Maybe this was too much, but as long as we have this new medical record in place, our provost group might need to defend this choice or this expense

down the road to their superiors. This document, which probably no one would read in its entirety, would provide justification. We wanted to make sure we were successful, and our vendor selection was ultimately approved.

COST JUSTIFICATION

As part of our process, we developed an internal document to help us think about how the new record would help us (fig. 6). We were moving from a record that had a large of number of manual processes, and we were trying to automate as much as possible. For example, if we spent ten minutes of medical assistant time scanning and indexing a document, and now the new record automates scanning so it becomes two minutes of medical assistant time. That differential in time was turned into a monetary value for the clinicians, the medical assistants and the administrative assistants.

fig. 6



While this was not a formal part of our pitch, we identified potential savings of about one hundred fifty-thousand dollars per year with the new vendor. The true number could be a third of that, but we recognized we were clearing up at least a full medical assistant's salary or time — enabling them to do the work they were trained for and to help the growth of the clinic and the health and safety of the university, rather than the tasks that should be done automatically by a computer or a system. This framework helped us understand that the true cost of the occupational health IT system we selected was lower.

SELECTED VENDOR VERSUS INCUMBENT

We also developed another document that took our pain points and expressed them as the goals we had at the start for our new electronic health record solution. These were in one column, and we then added columns to show how the solution we selected compared with our incumbent application against those goals. This document showed the functionality of each application and how each would or would not meet our goals. Someone could look at this document and understand where we started and where we ended up and feel happy with the process, as the solution we selected met our goals in large degree.

MAKE A SELECTION

Ultimately we notified the selected vendor that they were our choice, and we notified the incumbent vendor that we were moving away. Our incumbent vendor was involved in the process and did not make our final round so they were aware that we were moving on. Even this step of the process was important as we wanted five to six years of medical record data to migrate successfully and without issue from this record to our new record. We needed the support of our incumbent vendor for this. They could have made it harder, and this could have been more of a barrier. We kept an open dialog with them, and we were very honest throughout the process. They remained very professional and the data migration process worked very well.

One of the things that we did was insure that there was significant overlap between the two records. We budgeted for 6 months of potential overlap where we would have two applications. While we did not want to keep both for that long, we planned for delays not just for deployment of the new record and migration from the old record, but for potential delays internal to Stanford with the procurement process and IT approvals. We knew the red tape of an academic environment could take a little bit of time, and we did not want to be left high and dry from a clinical standpoint.

SUMMARY

In summary, in thinking about this process know that when you make a move to a new medical record it is a big endeavor. Ask yourselves how much pain you have with your current record and is that enough to prompt you to move on? For us, the pain was clearly enough and it clearly was for years.

Take the time to delineate your pain points, and to understand the steps you need to go through from a procurement management standpoint. For us this included assembling a team that included a wide range of people to weigh in and help with the process.

Over the course of this effort, we as a clinic grew — not just intellectually or emotionally. We grew from being sort of a one-off clinic in a small part of campus that was a component of Stanford health and safety, to become a larger player with risk management, with HR, with all these other distinct groups around campus. And in fact

we now have much more leverage to push for campus wide-initiatives for health and wellness. Part of this process enabled us to make a case for a new medical clinic, at a time when budgets on campus were being constrained. In a few months Stanford is breaking ground on a new clinic where we will have more space and will add on-site PT, on-site acupuncture, and educational training where we can do things like bring in wellness teams to give nutrition talks.

This occupational health IT initiative, which seemed to have nothing to do with the rest of our role on campus, ultimately has propelled us forward and it has been a really positive experience.

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