

APPENDIX L

Healthcare Variation: Trends, Cost Drivers, and Effective Interventions

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Director, Center for Healthcare Research & Transformation

Marianne Udow-Phillips is the Director of the Center for Healthcare Research and Transformation, a nonprofit partnership between the University of Michigan and Blue Cross/Blue Shield of Michigan. The role of the center is to promote evidence-based care delivery and improve population health and extend access to care. From 2004 through 2007, she was Director of the Michigan Department of Human Services appointed by Governor Jennifer Granholm. She came to state services from Blue Cross/Blue Shield of Michigan, where she served in leadership roles for over 20 years.

It's delightful to be that here this morning and to follow two great speakers who've laid wonderful groundwork for you, and I'm hoping to give even a little more detail about what we're seeing in Michigan. I'll also give you my thoughts on the Mega Question.

I'm teaching a course this term at the Ford Public Policy School on Health Insurance in America, and we're toward the end of the term. All of our students have come to the conclusion that you would never design the system we have if you were really thinking about it. So there's lots of opportunity to change things, and I'm going to talk with you about those today.

The conclusion I really want to leave you with is that the cost and variation in healthcare is a complex issue that's a combination of patients, providers, and communities. That may seem self-evident, but if you look at healthcare policy in this country, we tend to focus on one of those elements and we tend to focus on cost-effective elements in ways that don't promote systemic change. So my message to you is that it would be a fundamental mistake to focus on only one element, you've got to look at the complex interactions and dynamics. To really make sustained change, you've got to focus on systemic change, not simple change.

What I'm going to share with you today is a study we did on variation and the use of healthcare in Michigan. I was delighted to see the Gawande article on the healthcare conundrum in your

advance materials because he did a fabulous job communicating this issue in a very real way in his look at McAllen, Texas. You're going to see it here more specifically applied to Michigan via 20 years of research at Dartmouth. You've heard a commentary about what Elliott Fisher believes about this work. There's some controversy around it, not surprisingly, and though we've pretty much followed the Dartmouth methodology, we did make some adjustments to deal with some of the issues they've been most criticized for, in particular to look at the risk factors for the population.

Dartmouth focused on the Medicare population, and there have been many questions about whether that's really representative. Is there something unique about the Medicare population when we talk about variation in healthcare, or is it, in fact, sustained if we look at the total population? So we looked at the commercial population. We are very fortunate because we had a 1997 study I was involved with that also worked with Dartmouth, so we had 10 years of comparison data on variation in healthcare, as well as comparison data to Medicare.

You heard a little bit here about some of the conclusions around variation, but I just want to reiterate a couple of things. First of all, that variation, at least in the data we are looking at, is generally not explained by the underlying health status of the population. This is very important to keep in mind because we have to look, then, for other factors that might be driving this variation. It tends to be much higher in cases that we describe and the Dartmouth folks describe as preference-sensitive care. There's actually more debate about the supply sensitive issue, and we're doing a follow-up study to look at that question in Michigan.

But the preference-sensitive care is quite clear. Preference-sensitive care is where there are two alternative treatments: one is not better than the other in a population sense, but where patients should be making the decisions. Back care is really a great example of that, and any of you who've had back problems know that there are two basic choices in how they are treated. One is through surgery and the other is through medical intervention, physical therapy, and medication. There are different risks and benefits to surgery versus medical intervention. One is not necessarily a better treatment than the other, but it should be patients making fully informed decisions in choosing treatment.

We know from research that when patients are truly informed they tend to make much more conservative treatments on medical care than their

doctors do. In other words, doctors are much less risk-averse than patients and are more likely to do surgery than patients are likely to want surgery if they know their choices. This is very important to keep in mind when talking about preference-sensitive care, as are practice patterns.

Conclusions from this study, which are pretty consistent with conclusions from other studies, are again quite clear: diagnostic tests are related to later interventions. The more you study, the more you do. There's a lot of controversy around full-body scans and how needed they are. And what clinicians will tell you is that if you scan most of us, you'll eventually find something wrong. And when clinicians find something, whether that thing will ever really cause problems or not, they feel compelled to do something about it. We call this the diagnostic therapeutic cascade because the more you study, the more you do.

I'm going to share data on lower back and cardiac care and about variations persistency over time. Jack Wennberg started this work in the 1970s and I studied him in graduate school. We've known about this for a long time, but it's very, very tough to deal with.

Here's the first map of Michigan and looking at CT scans of the back (see Fig. 1). We selected procedures and services for this study in part because we feel not only are they preference-sensitive, but on these particular services we have a lot of good data to say they're over-utilized. There are simply too many being done, and a CT scan of the back is a great example. For most people you do not need a CT scan to be diagnosed or to set a treatment plan, and that's kind of the question raised earlier about asking your doctor if it will make any difference. We'll know whether it is a herniated disc or not, but will it make any difference in the treatment plan? CT scans

have a significant risk. They expose people to unnecessary radiation, and we have more and more data that says that that radiation is later a risk factor in cancer.

A general issue across the country is that we tend to believe more is better, and not just from a physician's view, but also a patient. Patients feel like they deserve a lot of tests. Whenever I do talks like this to residents and suggest that, for example, the best treatment would be no treatment, they tend to feel like they'd be depriving patients of interventional medical care that's very important. But there are risks with too much medical care, and we have not done a great job in communicating those risks, and a CT scan of the back is a great example.

A word on the variation because what this chart (see Fig. 1) shows is by health referral region, which is a referral region organized around a tertiary institution, the usage on a population-adjusted, risk-adjusted basis of these CT scans of the back. We did this analysis for a number of procedures, and the variation we see is pretty much the same. You'll see in the ones selected to share with you today that the dark areas have the highest use rates, the lighter areas the lowest. And quite consistently in our data, the thumb area—Saginaw—has among the highest use rates of all the procedures we looked at unexplained by patient demographics or health status. This is pure variation in use. Overall, we think there's too much use, but the variation in use is quite remarkable.

And here's back surgery (see Fig. 2). Same variation, same areas that are high, and a statistically significant association between areas with high rates of CT scans for the back and communities with high rates of back surgery. This is very clear in the data.

Cesarean sections rates are another story, and it's a very interesting story worth spending a little bit

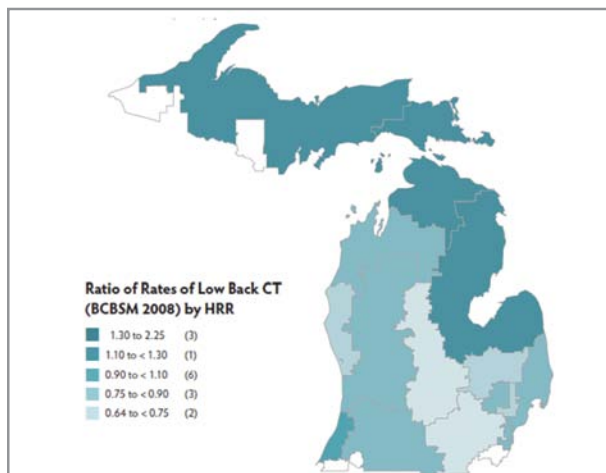


Figure 1. Low Back CT

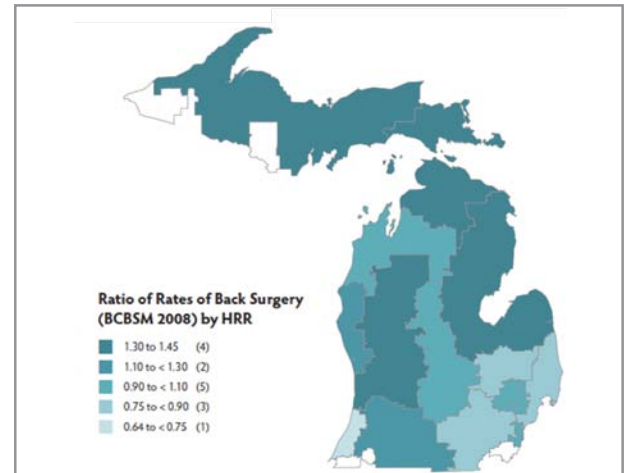


Figure 2. Back Surgery

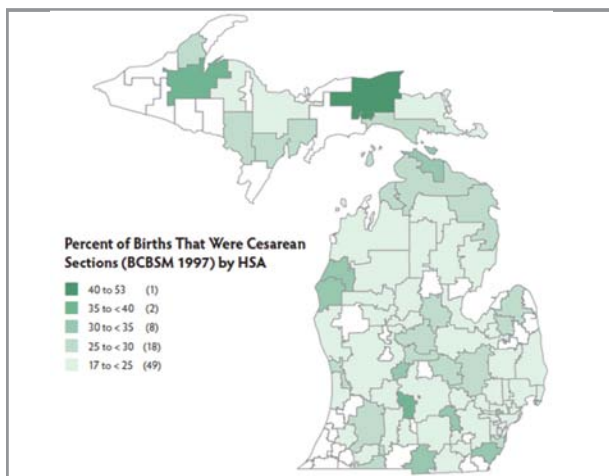


Figure 3. Cesarean Section 1997

of time on in your discussions. This data is from the 1997 atlas we did on the Blue Cross data (see Fig. 3). Again, we're talking about a commercial population.

You can see the variation, but overall in 1997, about 22 percent of Blue Cross babies were born via C-section. Mary [Kramer] referenced GDAHC [Greater Detroit Area Health Council]: some of you from that era might remember that GDAHC had a major initiative called vaginal birth after Cesarean (VBAC). It was an initiative around the country because the Centers for Disease had set a goal for C-section to be no more than 15 percent. So we were 22 percent or so here in this data. We had major coalitions working across the country to encourage reducing C-sections, including in Michigan. So how did we do? The 2008 data (see Fig. 4) shows we did not do well.

So in the 2008 data, 33 percent of Blue Cross babies are now being born by C-section. I will tell you a couple things about this; you'll see the variation is persistent here, too, but overall the use rate is high. A number of physicians have said to us when we've shared this data: you know, in the next five years it's going to be 50 percent. And I know you're going to hear from a malpractice attorney here, and so we always get the questions whether this is being driven by defensive medicine or fears of malpractice, and there is probably some of that in here, but that issue was there in 1997. That issue has been persistent in this country, but it doesn't really explain this increase.

What we've seen from the research and what many people are postulating at the moment in terms of why C-sections have gone up in the country and in Michigan is that we have a much greater rate of induced deliveries and a much greater preference on the part of patients and physicians to schedule deliveries. This is a very complex issue, and here you see patient preferences very directly linked to physician preferences to healthcare outcomes.

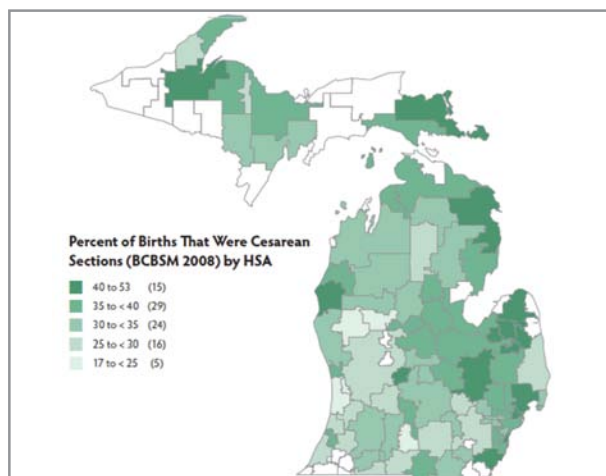


Figure 4. Cesarean Section 2008

C-sections are more costly even though physicians don't actually get a higher rate for it. There is a longer hospital stay and there tend to be more complications. We're actually doing a follow-up study now on this question because we again think people don't understand that there are risks to surgery, and we want people to understand what those risks are.

C-section rates are also a global issue. The World Health Organization has also identified overuse as a critical health issue. I gave this talk and had somebody from India in the audience who it is a sign of wealth and achievement to have a C-section. So again, cultural issues are also very important to understand here.

Here's a quick story on cardiac care. There's another link between diagnostic testing, and you'll see the supply or provision of therapeutic services in our supply study. We're looking a little bit more closely at catheter labs to see what kind of association we see here between what Mary described as over capacity, potentially, and the outcomes we see here.

Again, the thumb area (see Fig. 5), near Saginaw, is very high on coronary angiography. Here's the comparison between Blue Cross and Medicare (see Fig. 6). There is the same variation regardless of the population in the same areas of our state. Here are bypass procedures from 2008, and the same areas of the state are high (see Fig. 7).

Next is Medicare for bypass and it's the same picture (see Fig. 8). And here's stenting; again, the same areas of the state are high. Here's stenting for Medicare (see Fig. 9). And again, there is a statistically significant correlation between coronary angiography and the areas of our state that are high for surgical intervention (see Fig. 10). This is another procedure where medical intervention is an alternative to surgical intervention and where we have very good

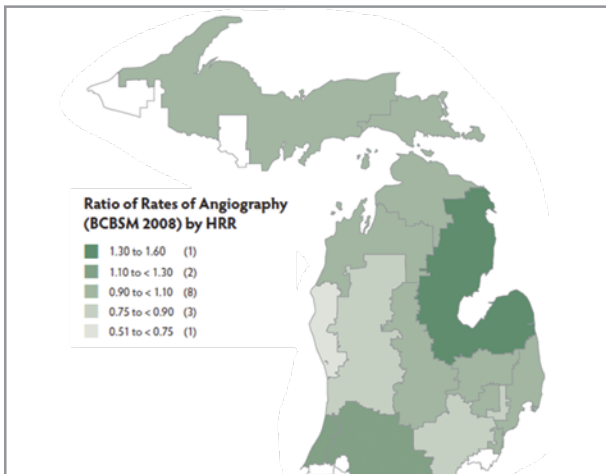


Figure 5. Coronary Angiography: BCBSM 2008

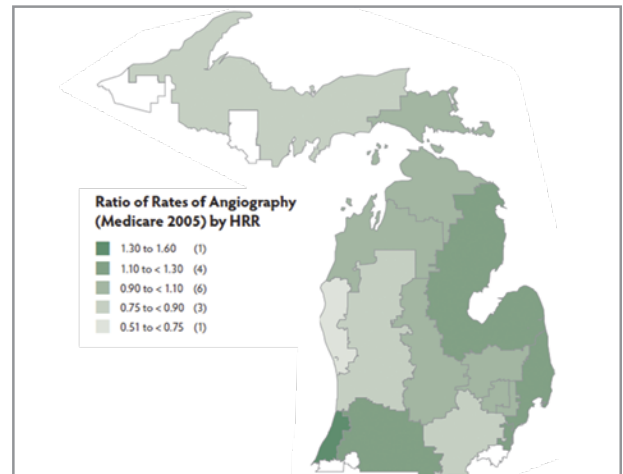


Figure 6. Coronary Angiography: Medicare 2005

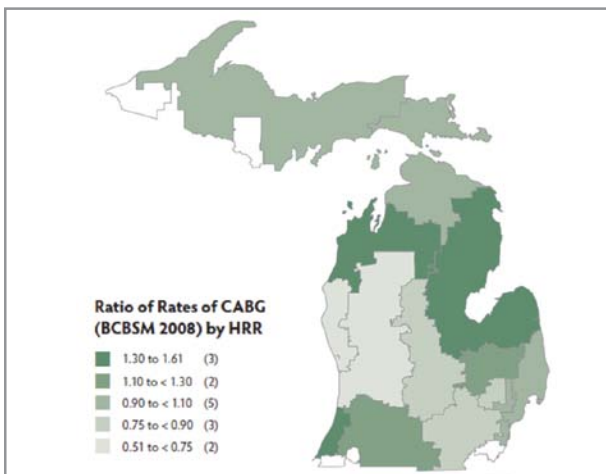


Figure 7. CABG BCBSM 2008

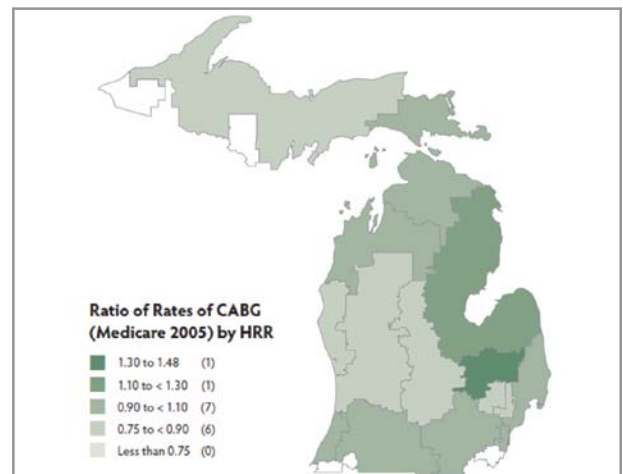


Figure 8. CABG Medicare 2005

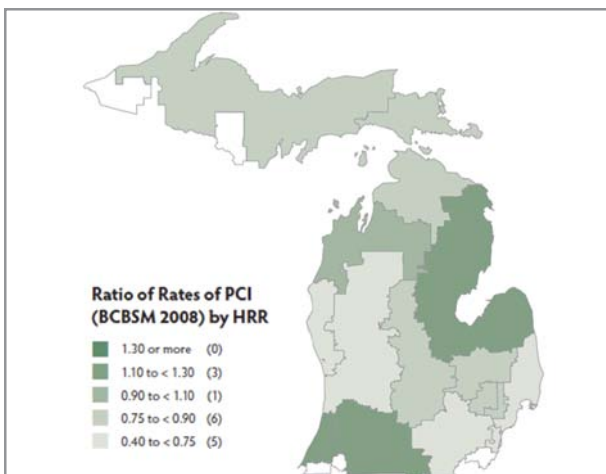


Figure 9. PCI BCBSM 2008

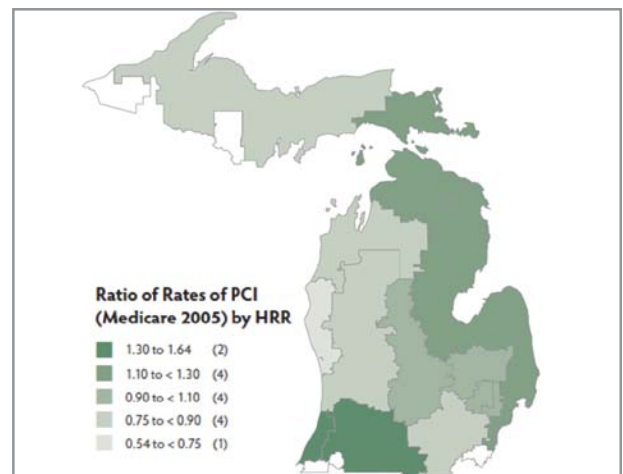


Figure 10. PCI Medicare 2005

data that says population health outcomes are the same between stenting and more conservative medical treatment: medications, drugs, some lifestyle issues. And we know from even further work that there really are benefits to at least trying medical intervention before you go to surgical intervention.

Now I'm going to conclude with an idea for your discussions. The hopeful part is to look at the data between 1997 and 2008. Though variation has been persistent and we see very uncommon areas that have very high use rates unexplained by patient health status, what we have seen is a tremendous

drop in Michigan in the overall use rates of surgical intervention for cardiac care. And it is a drop much greater than what we see at the national level.

We're also doing a follow-up study on this to see what's happened with health outcomes. We think they have certainly not deteriorated and we want to see what they look like in these regions where we've seen a significant drop. This is a good outcome because we believe, again, we selected procedures that are generally overused, and we believe surgical intervention for patients with stable coronary artery disease is generally overused. This national drop over the past 10 years is remarkable and good.

I do want to say a word about variation: it is not always bad. And sometimes we have to be very careful about how we talk about this with clinicians because the goal is not to have everything look exactly the same. The goal is to have variation be warranted in the terms that Bob [Kelley] used [in his presentation]. Warranted not unwarranted. Warranted based on patient preferences, warranted based upon medical condition. We don't expect variation to totally go away, but we do think it can and should be reduced. And I want to just give you this one example, a couple slides and then I'll conclude.

There's been a major initiative in our state, sponsored by Blue Cross/Blue Shield, to put these clinical quality collaboratives in place; there are now about 10 of them in the state focusing on different conditions. The oldest one was launched in 1997 and it focused on stenting. It focused on percutaneous coronary intervention (PCI). The collaborative brings together all the hospitals in the state and their lead clinicians who perform these services, and there is a data registry that has rich clinical data about all payers, all patients. Blue Cross funds the data collection, but Blue Cross does not see the data.

Data is shared between hospitals on a peer confidential basis. They get their own data and they see how every other hospital anonymously performs on a variety of indicators, and you'll see those indicators in a moment. The clinicians come routinely together to review their own data and learn about best practices from each other. Again, it is a confidential collaborative environment with rich data that people really see their real performance and learn from each other.

Here's what happened over the time this collaborative has been in place:

- 32 percent reduction in hospital deaths
- 60 percent reduction in contrast-induced nephropathy (kidney injury from contrast dye used during angioplasty)
- 30 percent reduction in blood transfusions after angioplasty
- 32 percent reduction in vascular complications (resulting from injury to the arteries in the groin)

- 31 percent reduction in emergency revascularization
- 19 percent reduction in unplanned coronary artery bypass surgery
- 29 percent reduction in strokes or transient ischemic attacks (TIAs)
- 19 percent reduction in gastrointestinal bleeding
- Saved an estimated \$15.2 million annually, \$4.7 million for BCBSM

This is a collaborative that focuses on quality improvements. It starts there, but if you go down here to the bottom, at the same time it achieves cost savings. With \$15.2 million statewide and \$4.7 million saved for Blue Cross annually. This is saving money for all payers, all patients. It's entirely funded by Blue Cross, but it does benefit. The cost of doing this, it's not trivial but it's much less than what the savings are.

So we're saving money, improving quality, and saving lives. And here you can see 2002 versus 2008 performance on these particular risk factors for cardiac artery bypass graft (CABG), reduction for deaths as well (see Fig. 11).

It's a powerful approach, and I would say to you

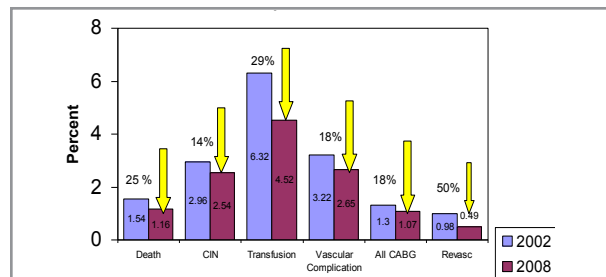


Figure 11. Outcomes Comparison of Initial Six (2002) Hospitals, 2002-2008

it's a much better approach than, frankly, many of the things are included in the health reform laundry list of ideas about how to save money because many things we look at in healthcare to save money focus on punitive one-issue answers, not systemic change. So things like readmissions will not pay—we don't pay for them after 30 days, or even never—events that got a lot of press because it's really easy to understand. Frankly, it's a really simplistic idea. It doesn't get at what the underlying issues are within systems causing these adverse outcomes. This is a robust approach because it's collaborative, rich with data, peer-reviewed, and I will tell you personal opinion: the fact that the data by the hospital is not published, I think, makes it successful. Because when people see published data, and we have a lot of evidence about this, of their own performance, frankly, they perform to the test. This isn't a test. This is a group working together to improve outcomes. Best of luck throughout the day. Thank you.

APPENDIX M

Waste in Healthcare

Michael A. Geheb, MD, FACP, FCCM

President, Oakwood Hospital and Medical Center

Dr. Michael Geheb is President of the Greater Dearborn Regional Oakwood Hospital and Medical Center, a position he's held since January 2006. Dr. Geheb earned his medical doctorate from Wayne State University School of Medicine and completed his residency at the University of Pennsylvania in the Department of Internal Medicine. He returned to Wayne State University in 1992 when he was appointed Professor of medicine. In 1994, he became the first CEO in charge of healthcare operations for the University of Alabama at Birmingham Health System.

My presentation today finds its foundation in two sources: the publications and recommendations of the Institute of Medicine of the National Academy of Sciences and observations from the Blue Ridge Academic Health Group. In 1999, the Institute of Medicine pointed out that care in hospitals was unsafe compared to many other industries, such as aviation. In 2001, its seminal publication *Crossing the Quality Chasm* got the patient safety and quality ball rolling by pointing out that there wasn't a gap in healthcare quality, but rather a chasm. Accordingly, I've had the privilege of being a founding member of, and spending the past 15 years with, the small think tank Blue Ridge Academic Health Group. Many of the members are members of the Institute of Medicine and once a year we convene to publish something we hope will gain enough interest to try and synthesize challenges and make specific actions or recommendations about what to do.

There are two areas I'd like to address. One is changing the culture of the delivery side of healthcare. The other involves the requirements to change the structure. I see on the initial slide here the question is to optimize silos or optimize integration. I think you have to optimize functionality of your silos, but there's no doubt you're going to have to integrate many of these functions.

Very importantly, in *Crossing the Quality Chasm*, the Institute of Medicine published six aims for healthcare that offer up key operative words. It's been important to define a common language. Those key words are:

- Safe: avoiding injuries to patients from the care intended to benefit them
- Effective: providing services based on scientific knowledge to all who could benefit and refraining

from providing services to those unlikely to benefit (avoiding under and overuse)

- Patient-centered: providing care that is respectful to the individual patient, needs and values, and ensures that patient values guide all clinical decisions (patient as the center of control, The True North).
- Timely: reducing waits and sometimes harmful delays for those who receive and give care
- Efficient: avoiding waste, including waste of equipment supplies, ideas, and energy
- Equitable: providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socioeconomic status

For example, safe care means avoiding injuries like a fall in the hospital, effective care is based on scientific knowledge and not strictly practice based. It's also avoiding resource underuse and overuse because underuse may mean you don't provide the right care at the right time, although overuse is clearly the major challenge we face right now. Care needs to be centered on what the patient needs and not focused around the nurses' and the doctors' schedules. Don Berwick, the current head of the Centers for Medicare & Medicaid Services (CMS), describes this as the True North, and it requires that the patient's values guide clinical decisions.

Timely care is reducing waits that can sometimes cause harmful delays. Time for the catheter lab is important if you're having a heart attack because time is the muscle of the heart. Efficient care is avoiding waste, the topic we're discussing today, but not just waste as measured in dollars, but the waste of equipment and supplies, and very, very importantly, wasting human capital, or the energy people put into things and the energy required to get things done. Finally, equitable care is something left unsettled in this country. We have to provide care to individuals of all socioeconomic status and unless we address that issue, we will not have an efficient healthcare system. Someone showing up in the emergency room who hasn't had care because it is very expensive and not often covered for an underserved patient results in the cost shifting to someone else.

A fundamental cultural change needs to occur with a new set of rules. An example of rules has been defined by the Blue Ridge Group and the Institute of Medicine and it includes care based on continuous healing relationships. Right now you go to the doctor, leave, and the transaction is over. It needs to be customized to the patient's social status, what he/she needs, and an

understanding of that. It needs to be focused around the patient and we need to resolve the notion that professional autonomy often drives variability.

Knowledge needs to be shared and information needs to flow freely and securely. Right now you can't move information from one medical record to another, from one system to another. Safety needs to be a system priority and transparency around processes needs to occur. We need to anticipate needs and simply not react to the adverse event of the day. Waste needs to be continuously decreased and there needs to be cooperation among clinical professionals as a priority. The way we've all been trained, whether you're a nurse, a pharmacist, or a physician, is that you're autonomous, you're the captain of the ship, you do what you're told to do if you're a nurse and the doctor tells you what to do. The new mantra in a safe system is you have to work as a team because everyone has a skill set he/she brings to the bedside or the office.

This is a diagram Claire Pomeroy, Dean of the School of Medicine at the University of California at Davis, put together for a publication coming out soon from the Blue Ridge Academic Health Group (see Fig. 1). It shows the many of the components of the healthcare system.

Start on your left and look at the population-level health and wellness and medical home self-care.

I'm going to use a story about my sister-in-law, Huey (her middle name, to protect her privacy). She takes very good care of herself. She exercises regularly and controls her adult-onset diabetes. I'm going to describe a scenario and see if this occurs where you live.

She has a very fine primary care internist at the Beaumont Health Care System, she has a very good nephrologist at the Henry Ford Health System, her orthopedic surgeon is at the Oakwood Health System, and her ophthalmologist and women's health doctor is at the Wayne State University Practice Group. Do you think they talk to each other? Do you think she can get those records moved around? She made a choice of some very good clinicians to take care of her for very specific reasons. Do you think she gets great care? About every other week she asks, "Do you know how messed up this healthcare system is?" I say, "Yeah, I know [Huey], I got you two of the doctors."

The other story I'll tell you is about Leslie, who is a housekeeper and mentally disabled, at Oakwood. She works two jobs to make a living. And when I said, "You know, Leslie, have you tried a healthy lifestyle and are you eating all that new wellness food we have in the cafeteria?" Since this is one of my employees, part of this is shame on me. She said, "I'm taking care of my elderly mother on two

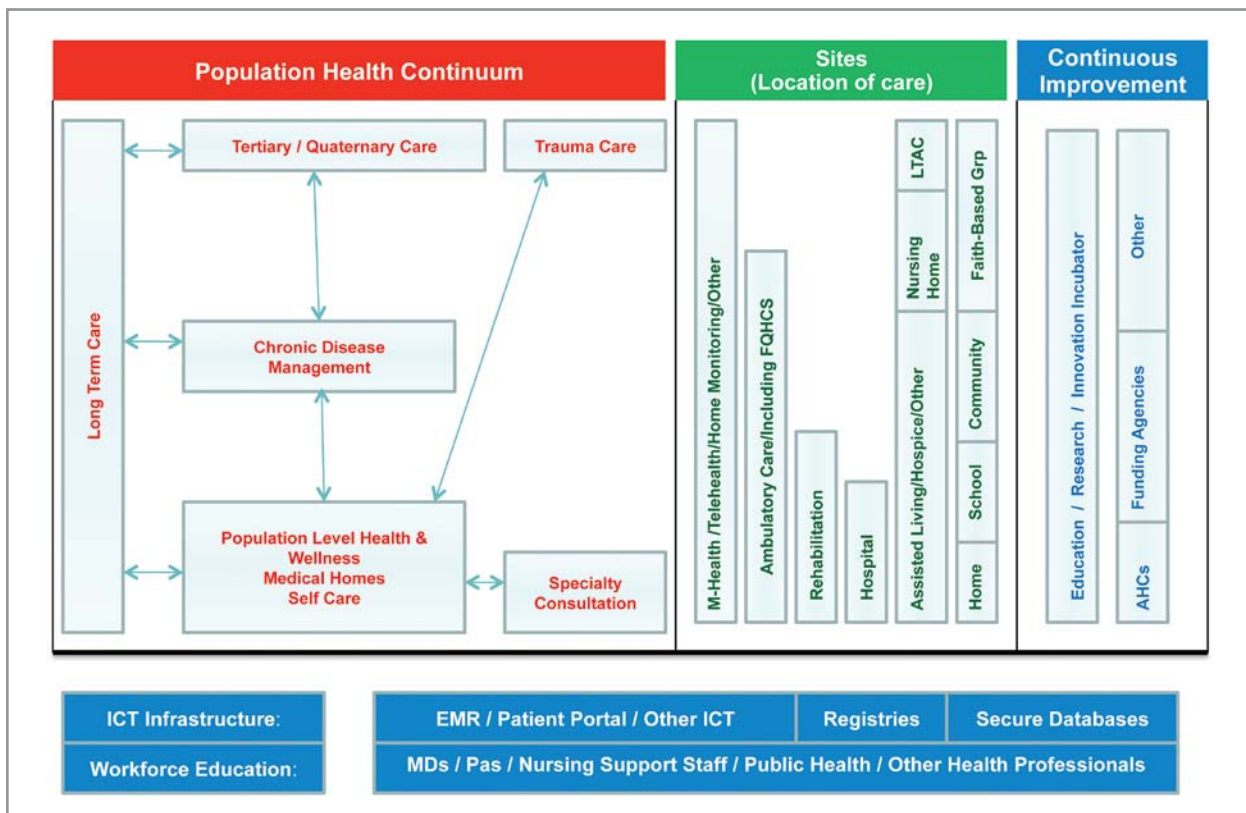


Figure 1. Blue Ridge Academic Health Group: Health Care Reform

incomes. I can't afford to buy the food and I can't afford to go exercise. My exercise is helping keep this hospital look as good as it can."

If something happens to her, do you think she has the ability to control what we call the social determinants of healthcare? And something we don't talk about that is a major factor is that unless we deal with some systematic issues while going after waste in the system, there will be a portion of this that's simply not controllable based on the kind of chaos in people's lives.

If you continue looking on the left side of this diagram, if you're well, you're well until you're not, and then you may require some chronic disease management. So when you have lower back pain and go get spinal surgery at a tertiary or quaternary center, you may become disabled and have to flip to the box on the right to a rehabilitation center. And as you get older and more disabled and don't have anyone to take care of you, you may end up in a long-term care facility.

These are parts of the delivery element. If you look at the middle box, this shows you where care occurs. It can be in the home, school, or community. Or it might be in hospice, assisted living, or a nursing home. If you have specialty needs, it might be in a long-term acute care facility if you're on a ventilator. When you get sick, you go to the hospital. If you need a little rehabilitation, you end up in a rehab center. You get back out into the community at your doctor's office or, if you're a patient who doesn't have insurance, you may be lucky enough to end up in a federally qualified health center.

So where is the IT system that hooks all this together? I would argue that it takes training our people differently, implementing the results of the kind of research you just heard from our previous speakers in terms of plant, and then designing insurance products and models around that are absolutely required.

One thing we've not talked about today is the relative efficiency, or lack thereof, of the insurance systems and risk pools. It seems that the Portability Act looked to deal with insurance reform in some sense as it looked to consolidate large risk pools. I'm over my head in terms of understanding what needs to be done, but I do know the system doesn't work very well.

The bottom here on the left of the diagram requires a robust information technology infrastructure to make the information flow to make good decisions as we move into an evidence practice. Do you know how much that costs? The Oakwood Healthcare System has just decided to move to the Epic Information Technology Platform, which I think is generally regarded as the best in breed, and

for us that's \$300 million. Who is going to capitalize that? That discussion is going on at our place and I suspect more of the same is going on in every health system in this region. It takes hundreds of millions of dollars to make this thing work.

A chart was published by the Blue Ridge Academic Health Group that serves as the playbook we've used at Oakwood when looking at changing the culture. I'd like to highlight a few things. You should not underestimate the power of the professional values of healthcare workers. People go into healthcare for the right reason by and large. The incentives may not be correct, but people go into it for that reason. And the importance is that these noble values really align with a common set of inter-professional values recognizing that you have to develop teamwork.

The next section is built around disciplinary competency. In 2004, two colleagues of mine at Oregon—Dr. Kate Potempa, the Dean of the Nursing School now at the University of Michigan, and Dr. Chris Cassel, Dean of the School of Medicine at Oregon and current president of the American Board of Internal Medicine, said with me, we've got to revise the curriculum. You know, we're training everyone the old-fashioned way. Let's take a sample and see whether or not licensing, documents, training requirements, and board requirements embody those six aims you saw from the Institute of Medicine.

We gathered thousands of pages of documents, had them digitized, did word searches for those attributes you saw and underlined earlier. You know how often the word safety appeared in any of the documents in pharmacy, social work, medicine, nursing? That number was 0 in 2004. We weren't training people to do that and that was an "ah-ha" moment. As my good friend Chris Cassel said, "You know you're onto something when a word search gets published."

Since that time there's been a lot of change in the training models to promote interdisciplinary care. It's not there yet, but it's moving along toward patient-centered care. Probably the hardest thing I deal with is old folks like me and people who have been in practice for more than 20 years, whether it is a nurse, a physician, or a pharmacist, who were trained that the world revolves around him/her. In the new model, the world revolves around the patient, with staff behaving as team members providing care, which is a very difficult transition.

On the operational side, we are learning how to adopt tools in quality and continuous improvement. What we're learning as a field with the help of Annette Werner here, who is an expert in this area, is which tool you apply to which circumstance

because each circumstance is different. What I found out at a couple of institutions, if you aim your Lean process gun at a light bulb, you'll never turn it off because you get caught up in why it is on or off. When you're dealing with very complex flows and processes, as in an emergency department, you have to use that tool to be able to define the value change and what you take out as waste. Healthcare is new and it's not intuitive to us to use these tools, but we are getting better.

What we've not explicitly addressed is how the financial model and incentive model are related to how a provider gets paid. If you're getting paid by the piece or paid by the procedure, that's what you do. And I don't know if there are major rehabilitation services available in the Upper Peninsula, but if they aren't and you have back pain, you probably only have one choice unless you travel. One of the motivations is if you get paid to do spinal surgery, you're going to do spinal surgery. Payment reform is a key issue, and I think we're beginning to see that.

I would just make two comments as I finish up: one is I think the work Blue Cross/Blue Shield is doing and its value-based purchasing program are beginning to change behavior. Certainly the hospitals

don't want to leave money on the table, and they're getting better outcomes that are demonstrable for patients with that program. I'm not sure, for instance, that there's enough money on the table yet to get the kind of change the physician community would like to see, but they simply can't afford to implement. So payment reform, I think, is a huge issue if you want to change a lot of the behaviors, and it's really not being addressed aggressively enough.

Finally, I think we should be very proud of the work that's been done in Michigan to date. If you take a look at the MHA Keystone efforts, that work is being recognized worldwide. The rate of infection for bloodstream-associated catheter infections and ventilator-associated pneumonia in some institutions, including ours, is zero. I'm a critical care doctor; six years ago I would have never believed you could reduce that rate to zero. Michigan has redefined the international standard for infection rates in certain procedures. This is very, very good work that we can build on in this state. And with that, I want to thank you very much for inviting me here today and for being able to offer some observations for you to consider in the next two days.



APPENDIX N

Removing Waste: Perspectives

Bruce K. Muma, MD

Chief Medical Officer, Henry Ford West Bloomfield Hospital

Bruce K. Muma is the Chief Medical Officer of Henry Ford West Bloomfield Hospital. It's a 300-bed hospital that opened in spring 2009. Dr. Muma has a special interest in innovative approaches to improving the quality and safety of healthcare. He has led the hospital in adopting Lean methodologies and the creation of a culture of safety. Dr. Muma has spearheaded numerous initiatives within the Henry Ford Health Care System over the past 17 years, from diabetes care to wellness programs. Dr. Muma is a fellow of the American Academy of Pediatrics and the American College of Physicians.

The perspective I'm providing you today is that of a practicing physician; I am a Chief Medical Officer. I have a deep interest in quality improvement methodology, which really amounts to stealing quality improvement methodologies from other industries. In the beginning it was Deming and TQM, and now I think Lean is really driving a lot of our thinking. In fact, when we designed the new hospital in West Bloomfield we used Lean thinking in designing a lot of our work processes, as well as our planning process and our management system. But for today the observations I want to give you really reflect that of a practicing physician. I'm an internist and I'm also board certified in pediatrics. I see patients every week, several times a week. I see patients in the hospital, and so I want give you that perspective.

The observations I'm going to provide are really qualitative. They are derived from a number of conversations I've had with my colleagues over the last three or four weeks asking the general question of where and why we have waste in healthcare. What are the biggest drivers of waste in healthcare? And what are some of your thoughts about how we could mitigate those drivers?

My perspective is very qualitative and not as quantitative as some of the other speakers, but I'm actually heartened to know that the observations I'm going to make are very much aligned with what you've heard and what you will hear with the next speakers. I also want to thank you all for giving me the chance to give you these observations and I want to commend your bravery. This is a huge task you're undertaking and it's a complex system. It's a treacherous challenge and

I really look forward to hearing your perspectives and your outcomes at the end of this process.

I want to start out with some views from the exam room, the hospital bed, and the hospital administrative office just to give you some of the perspective used in developing our observations about the key drivers of waste. The first view is actually from the exam room, the clinical exam room, where I see patients in the clinic. The first observation is that patients have a deep belief that more is better.

I should mention that I practice in the Henry Ford Medical Group. We're a large employed group practice of more than 1,200 doctors. I practice in an integrated healthcare setting, so I practice in one of the most efficient and integrated, organized settings in healthcare right now. I think only about 15 or 20 percent of physicians practice in this kind of setting right now. What I spend a lot of time doing in the exam room with patients is explaining to them why they don't need the routine stress test. I see a lot of executives and when they turn 50 or even 40, they think they should get a routine exercise stress test. I spend a lot of time explaining why you don't need an MRI because it's not going to change our approach diagnostically or therapeutically, why you don't need to take an antibiotic on the third day of a cold. I bet 20 or 30 percent of the time I spend in the exam room is actually talking about those kinds of things; there's a deep belief in this country that more is better from the perspective of patients. I don't know the drivers of that, but I know a lot of it may have to do with the Internet, talking to neighbors, and certainly with the effects of advertising.

That's the second thing I wanted to mention: vendors and suppliers do a great job of promoting their products and services via direct consumer marketing. They market to doctors, they market to nurses, they market to hospitals. They drive a lot of the demand I see in the exam room.

Thirdly, from the exam room I see payers, insurance companies, attempting to improve the efficiency, quality, and safety of healthcare by inspecting medical decisions. And that's not a bad thing; their intent is good, but the result of it is that it creates waste and inefficiency at the front lines. So I spend a lot of time having my medical decisions get inspected, which requires me to hire people or spend time on the phone to explain why I want to make a specific medical decision. Ironically, it's intended to improve efficiency, but what it does is creates waste.

The last thing I wanted to make a comment about is what it's like to practice today. We're seeing physicians increasingly frustrated because they're

seeking an elusive balance between or among scientific evidence, clinical risk, how much clinical risk they are willing to take in terms of not ordering a test or not prescribing a treatment, how much legal risk they are willing to take, and patients' expectations and how can you balance those in providing care. Again, patients think more is better. Preauthorization insurance activities and their own financial performance are big drivers and that's the moral hazard for practicing in today's world. If I do more, I get paid more as a doctor, which creates a whole other pressure in the exam room.

The view from the hospital bed is a little different. Acuity of illness is dramatically increasing in the hospital. A lot of that has to do with an aging population. It also has to do with amazing advances in the treatment of disease. We can do a lot more and we have a lot more options. We can preserve life, we can keep people alive longer, but they're still very sick. Then there is the insurance company. The financing mechanisms are designed to restrict access to hospitals because that's where a lot of cost is incurred, and so the thresholds to get into a hospital are going up and up and up. That's another point of inspection: a doctor cannot just put a patient in the hospital; he/she has to go through a fairly intense evaluation process, scoring system, talk to a bunch of different people to actually put a patient in the hospital and it has gotten really hard.

A second view from the hospital bed is that hospital care is increasingly complex. It's not unusual for my patients to be on 15 different medications and have four or five chronic diseases and organ failure in two or three key systems at the same time. In addition to that, we have multiple treatment options, and we have expanding and multiple choices with respect to imaging. We can actually image the same part of the body three different ways, and the best way is not always clear. Sometimes we do all three, and then we're left trying to figure out what's the truth and what the state really is of that organ system, but it just creates complexity.

We have a lot of caregiver segmentation happening in healthcare: specialization, not just within physician practice, but even with nurses.

“A patient in the hospital will typically have many nurses, not just one. “

A patient in the hospital will typically have many nurses, not just one. They'll have a bedside nurse, they'll have a utilization management nurse, they've have a stomal therapist, they'll have a physical therapist, and so forth. We have a lot of documentation and regulatory requirements, some of it is medical decision inspection, some of it safety. Its intent is good, but it creates a lot of extra work and waste.

And the third observation from the hospital bed is that there is an intense pressure to reduce the length of stay. That means some patients are much sicker and care is very, very complicated, but at the same time the pressure is to get patients out. That pressure is applied not only by insurance companies and payers, but also by hospital administration because the bottom line of the hospital is very much driven by how quickly you can get patients out of the hospital. That creates even more overburdening on the inpatient process.

Lastly, protocols and pathways and bundles are also widespread. For those of you who aren't spending a lot of time in hospitals, we do a lot today to standardized care. Dr. Geheb mentioned [in his earlier presentation today] ventilator-associated pneumonia and bloodstream infection rates, which are essentially zero in hospitals that have implemented those bundles. The problem is that we don't do a good job of implementing those across healthcare; there's a lot of variability in the ability of hospitals to implement those protocols. The infrastructures are different, the cultures are different, and the incentives are very different. So while it's widespread, the effectiveness of these bundles is not great.

The last view is from the corporate office. This is the corporate hospital, not the system office. The impact of declining reimbursement is offsetting a lot of the improvements we're making in quality. While we are making progress in reducing cost and reducing harm, the declining reimbursement and increasing burden of uncompensated care is more than offsetting those gains. I think it raises a big question about the structure of healthcare from the financing perspective.

The front line of healthcare is where profit margins are the thinnest. Most hospitals are sort of on the edge of viability. The place where you really want to implement improvements, particularly IT solutions, is where you have the least amount of money to do it. Dr. Geheb mentioned spending \$300 million on Epic, and Henry Ford Health System is in the same situation, as are most hospitals.

So we have a mismatch in terms of the need for new technologies and the ability to pay for it. Hospitals are also challenged to provide the

staffing to create the robust infrastructure you need to improve quality. For example, in a traditional Lean system, about 1–2, maybe up to 3 percent of the workforce should be in what they might call your Kaizen promotion office or your Lean office to support Kaizen events and support the kinds of Lean initiatives needed to really bring out waste. But hospitals are challenged to actually have enough nurses on the floor to keep the staffing ratio at 5:1 or 4:1, let alone hire a process engineer.

The last view from the corporate office is end-of-life care, which is really consuming a disproportionate share of resources in hospitals now. Health economists talk about how much a year of life is worth, and they call it a cost-per-quality adjusted life. How much money are we willing to spend to save a year of life? And the widely prevailing threshold is about \$100,000. What's happening in hospitals is we're spending a lot more than that at the end of life to buy additional days or weeks or months. This is a huge source of waste and I think Mr. Kelley identified that in his paper.

So the first opportunity my colleagues and I identified was that there is broad-scale, pervasive excess demand for healthcare services. In my attempt to use some Lean thinking, we applied the “five whys” as the start of problem-solving.

Why do we have excess demand for healthcare services? The first reason is that financing incentives drive demand. For patients it's free care sometimes and if they can get an MRI scan, that's a good thing because they believe more is good. Certainly physicians, hospitals, vendors, and suppliers are driven by profit margins. Why is that? Why is that a problem? Because the financial incentives are not aligned with achieving an efficient, high-quality system. Why? Because the beneficiaries of the current system have a lot at stake. Some people like to describe it as having a lot of pigs feeding at the trough in healthcare right now, and not all of it is lean.

And why is that? There are excellent profit margins in many segments of healthcare, and as I said earlier, interestingly, the biggest profit margins tend to be on the periphery and vendor supplier side and not at the gembu, not at the front lines of healthcare. And why is that? Well, at least from my perspective and my colleagues' perspective, healthcare is currently structured more like a growth industry than a utility, and that's a fundamental question about healthcare: is it a utility or is it a growth industry? The structure of healthcare, the right now is perfectly designed to create the results that it is. I think it's more of a growth industry. So for us, we're looking at the cost side of it, that's the profit side for the rest of healthcare. And I think we

“We need to think about how we let vendors and suppliers market their services.”

really have to think about that fundamental question as we go forward.

In terms of how to approach that first opportunity for excess demand, we should systematically address the drivers of demand, and some of that requires redefining and becoming more explicit about value, as I think one of speakers said, the adverse effects of more testing. When I was a resident at Henry Ford Hospital back in the early '80s, I had a patient come in, he was in his early sixties, had been pretty healthy, had undergone a routine stress, test and it was equivocal. It wasn't wildly positive, but it wasn't negative. So that patient was taken to the lab and had a cardiac cath. During the course of that, the catheter knocked off a piece of cholesterol, which floated into the brain and caused a fairly severe stroke. He ended up being transferred to Henry Ford Hospital and I took care of him. You could say he really didn't have a medical need for that cardiac cath, and he had a stroke because of it and subsequently passed away because of it. People are not aware of those risks, and I think focusing on educating consumers of healthcare in this country about the risks of more testing is a key component of that strategy.

We need to think about how we let vendors and suppliers market their services. Defensive medicine is an important factor in over- and excess-demand. One of the biggest differences between the United States healthcare system and other systems is we have this perception that death is optional, and so we'll spend as much money as we have to live longer, which drives a lot of the end-of-life care in hospitals that I see.

There are moral hazards for physicians—do more and make more—and right now in the practice of medicine those who make the most money do so on the downstream revenue. They have the ability to bill for testing services and other sorts of downstream opportunities to support their income, which raises questions about how decisions are made to order tests that affect their income. And, of course, patients believe more is better and especially if out-of-pocket costs are minimal.

Opportunity number two is complexity in healthcare at the front lines is overburdening the

work processes. This is a form of waste. We have nurses who are being asked to do 10 or 11 hours of work in 8 hours every day, and so the question they have to answer is what am I not going to do today? What type of care, what type of documentation am I not going to do because I can't possibly do everything? This also applies to physicians and pretty much all the other aspects of work processes in hospitals.

So why? Well, complexity is increasing faster than improvements in work process and infrastructure can adapt. Why is that? Well, the structure of U.S. healthcare consists of multiple layers of oversight and control that impact patient care processes. And why is that? Each component of a broader healthcare system introduces change to improve performance from its own perspective. Everybody in our healthcare system has the right intent and the belief they can make things better.

For example, insurance companies introduce systems to inspect medical decisions as a way to improve the quality of those decisions and so on. But we do not have systematic alignment of all these oversight bodies in healthcare. And why is that? The healthcare system is fragmented and it lacks a unified vision of purpose, kind of getting back to the question of whether it's a utility or a growth industry. What do we want for healthcare in this country?

In terms of how to approach that, obviously, we feel like reduction in the complexity of healthcare at the work system and process levels would be highly recommended, and implementing robust IT systems that allow for effective and efficient sharing of information between caregivers would be a key first step. Dr. Geheb mentioned Oakwood, and we're looking at improving our IT systems, as well. If we all invest \$300–500 million in those systems, what do we have at the end? We still have a disconnected array of electronic medical records. The Henry Ford Health System's EMR is still not going to talk to Oakwood's EMR. So we will have spent billions and trillions of dollars, but because of the structure of healthcare, we haven't eliminated a lot of waste.

“Coverage and access to healthcare vary across the population, which results in delays in care and more expensive venues and episodes of care.”

Also, there needs to be a reduction and prevention of the layering of new waste of external entities through the redesigning of the financing, regulatory, and insurance processes. We need to stop thinking of better ways to inspect medical decisions or force nurses to document differently. That is not the solution here. We need to go in the opposite direction. We recommend promoting coordination of care across time and space. The foundation of that is an integrated IT system, but also looking at all of the systems that help us connect information and caregivers from one side of care to the other.

Opportunity number three is where poor access and delays in care increase cost of disease burden. A lot of my colleagues take care of patients in indigent areas, and we see a lot of patients who are coming in late for diseases that could have been dramatically changed if intervention had occurred earlier. Probably the biggest one that comes to mind is prenatal care in the inner city or indigent areas; our infant mortality rate in indigent areas in inner cities is equal to third-world nations.

So why? Coverage and access to healthcare vary across the population, which results in delays in care and more expensive venues and episodes of care. Why is that? Because we have multiple entry points, a complex system with multiple qualifying factors, and incomplete coverage for all U.S. citizens. And why is that? Because the system has evolved over many years using a political process. The approach on opportunity number three would be to redesign the systems and expand and simplify coverage, especially for high-risk populations, to reconfigure the delivery systems to increase access for high-risk patients.

Some final thoughts: the one thing that gets missed a lot is the widespread belief that the American healthcare system has more defects at the front lines than other countries, and I don't think that's true. In general, our defect rates with respect to treatment and prevention and so forth are fairly commensurate with the other developed nations. I think the biggest explanation for the cost differential between the United States and other developed nations relates to system factors and excess demand as opposed to our systems being more broken.

My final thoughts are that overburdening and unevenness, muri and mura of the Lean system, are very important sources of waste in our healthcare system. Also, I don't think our system is really designed to manage per capita costs. It's designed more as a growth industry, and so I think we really need to think about how we're spending our money. I'm not advocating death panels and rationing, but I do think we could design it in a way such that we could do a much better job at controlling per capita cost. I thank you very much for this opportunity.

APPENDIX O

A Plaintiff Attorney's Perspective

Norman D. Tucker, JD

Plaintiff's Medical Malpractice Attorney, Sommers Schwartz PC

Norman Tucker is a Plaintiff's Medical Malpractice Attorney with Sommers Schwartz and a frequent speaker, attending over 100 seminars on medical malpractice, including at the Boston University Medical School Annual Conference on Obstetrics, Trinity Health Insurance, and Risk Management Services Conference. He's past President of the Michigan Association of Justice. Mr. Tucker has received numerous awards, including the Michael Frank Award and the President's Choice Award from the State Bar of Michigan. He was recently recognized as the best lawyer for 2011 in medical malpractice for Southeastern Michigan.

I'm wondering why you have a plaintiff's attorney in this crowd, and I've come to the conclusion that I must be lunch. Although, I do have the solution to the healthcare problem: more tort reform. Specifically, having subtitles on today's comments from a plaintiff's attorney's perspective: I have no hands-on experience in the medical profession, either management or otherwise, like all of you. My entire career, however, has been in medical malpractice.

I started as a clerk 42 years ago for a law firm that defended hospitals and doctors. I did that for about five years, then switched to a large firm, Sommers Schwartz, and have been a plaintiff's attorney ever since. Unlike Marianne's comment that "you can't look at a narrow area," you're going to hear a narrow perspective because my perspective is the law.

There are two parts to my perspective. The first is: has litigation driven up the cost of healthcare? Has tort reform fixed the issues with healthcare or has tort reform cost us more money than we save? The second part will be my observations as an attorney over all these years on the areas where I think some of the improvement could be made. I have some ideas, but I don't have the expertise to make all the changes, so these are just my observations.

Before I make any comments, I always like a test scale. You hear our facilitators: you're going to test all of these remarks. I don't know if you've read the book *Fresh Medicine: How to Fix Reform*. I love the title "How to Fix Reform," and how it talks about building a viable healthcare system. This book was written by Tennessee Governor Phil Bredesen. I

like his comments because he's in a unique position. He was governor from 2003 to 2011 when it had a huge Medicaid problem. He also has extensive financial and healthcare experience because he's the founder and CEO of Health America Corporation, a large healthcare insurance company. He has some admonitions and said if you want to solve problems, keep these things in mind: when you've lost your way, don't speed up. In Michigan that is like passing tort reform in 1975, which didn't work. More was passed in 1986 and 1994 and that didn't work. So now we have Senate Bill 858, which is just going to give doctors immunity. It's a good test.

Another test is saying "medicine does" it in an effort to blame someone else and explain the problem away. You'll hear in a minute that I'm not a big fan of the concept of defensive medicine, but if you want to rationalize it, blame the lawyers and then say I'm protecting myself from lawsuits. I'm trying to be objective. And here's one of my favorites: I have gone through tort reform three times. Last time deeply involved and getting out of Lansing sometimes at 2 a.m. And it's nice to see this group because it's contrary to what I see that is a huge problem. The old approach doesn't work. Elected officials, staff, and a coterie—that's a kind word—of lobbyists in Lansing proposing convoluted solutions that don't work. You're going to see my views on those.

When talking about litigation and cost, you need background and to know the numbers. There are two numbers to consider: the cost of litigation and malpractice insurance. We need to know how much it costs and if it's worth the effort of solving the problem.

Another issue is defensive medicine. See the letter I've included from Doug Elmendorf to Senator Orrin Hatch from October 2009 when Senator Hatch was trying to determine whether he should include tort reform, particularly a \$250,000 cap in the healthcare bill. This is an objective definition of defensive medicine.

The cost of malpractice litigation in the healthcare system is 2 percent of \$35 billion a year nationwide. Not too many people know that. So if the problem is solved and there is a lower amount of compensation for noneconomic losses, pain, and suffering, that would be a quarter of a million dollars—a proposed tort reform—what would that save? Just 0.2 percent of the healthcare dollar. Here in Michigan, which has had tort reform since 1994, the savings of passing national tort reform would save about 0.1 percent.

So here we are talking about defensive medicine. I want to include this whole sentence because this was in the letter to Senator Hatch: "many analysts

surmise that the current medical liability system encourages providers to increase the volume or intensity of the healthcare services they provide to protect themselves against possible lawsuits.”

This shows the confidence the budget director had in defensive medicine. Some conclude that it encourages overuse against possible lawsuits, which is not very confident. According to the Kessler study shown here, there is an estimate that 0.3 percent would be eliminated from overuse or defensive medicine, and overall, passing more tort reform would save about one half of 1 percent, or about \$11 million. That’s the problem we’re going to fix.

The rationale behind defensive medicine is hard to understand. Usually a doctor’s rationale is “I’m ordering more tests to protect me against malpractice actions.” I ask doctors how ordering more tests protects them against malpractice actions unless the test was a standard of practice. It is because of the law, which says you’re obliged to order those tests that the ordinary physician of the same training and specialization would order. Ordering more tests doesn’t do anything for you. You’re not responsible for bad results, only for not making the diagnosis. These are the jury instructions we read when we try a case.

Most of the evidence on defensive medicine comes from surveys. In a 2008 survey done in Massachusetts, 83 percent of the doctors said they ran unnecessary tests, including CTs at up to 27.6 percent. The total cost in Massachusetts was estimated to be \$1.4 billion. If you multiply that by 50, that’s more than \$70 billion, or twice as much as the cost of litigation.

In all my 40 years I’ve never heard anyone raise the issue of a doctor saying “I do defensive medicine, I order unnecessary tests.” If that’s my client, I’d say he’s not answering the question based on the Fifth Amendment. Think about it. As a lawyer, you’re my client, I do 40 hours of work, not because it benefits you, it’s unnecessary in the case, but to protect me so you don’t sue me and I send the bill? This just doesn’t make sense.

Another study on unnecessary medicine, which in my mind throws great doubt on defensive medicine, is the Kessler report, which is the one everyone cites, including President Bush in a speech. He said there’s \$50 billion because of lawyers. Speaker Boehner misquoted, saying it was \$100 billion; but 50-100 doesn’t make much difference. The important thing in this study was that we saw some short-term effects, but for the long term, using their report, their language, it’s speculative. The only person who really started it was a CEO in 2004 by looking at defensive medicine in states where there was tort reform and where there wasn’t tort reform,

and the congressional budget office couldn’t find any difference: must be a myth for overutilization. Professor Frank Sloan from Duke University said if it’s out there and it’s driving the system, there’s certainly no evidence of it.

So now we have a system where we’re not sure defensive medicine is there, and maybe we can fix about a tenth of a percent by more tort reform. This is what we did in Michigan, and this qualifies in my mind for any clinical trial. It’s thousands of cases filed in 17 years. For those of you not familiar with the law, here’s what we did: we put caps on noneconomic damages and they’re not as severe as the national level. Our caps go up by the Consumer Price Index and the current lower cap is about \$410,000 and the higher cap is \$735,000.

So if I have a brain-damaged client, even if it’s a child, the most he/she can recover for lifelong of noneconomic losses is \$735,000. You read about the large verdicts in the paper, but a classic example from Michigan starts a few years ago, with a baby in an incubator that exploded at Beaumont Hospital. The verdict was \$8 million. Do you know what the result was? The family ended up owing Beaumont Hospital about a quarter of a million dollars, as you’ll see in the sanctions, because the jury put almost all the money in the noneconomic bracket. And there had been a prior settlement for \$500 million, so it wiped out the entire verdict and illustrates that we have caps.

We have Notice of Intent (NOI) to file a claim. Six months before you sue a doctor or a hospital, you have to send notice specifically telling them what your claim is so they can get the records, prepare their defense, and possibly come to you and see if they can settle the case. We have very strict limitations in Michigan on experts’ qualification. If a defendant is a specialist, the expert’s got to be a specialist. If they’re board certified, they have to be board certified in the same specialty. And the doctor, before you file a case, has to review all the records and sign an Affidavit of Merit saying there was a violation of standard of practice, and that violation of standard of practice caused the injury. You don’t have an affidavit of merit, you don’t file your case. Those of you familiar with joint and several liability, if I sue three people and only one is collectible, that one has to pay the judgment. Some people don’t like this.

There’s a long rationale for this. In Michigan, we still have it in malpractice unless the plaintiff—the person being treated, the patient—is at fault at all. So if he/she is 1 percent at fault, there’s no joint and several liability. We have a collateral source rule, which means if I collect money for a patient and the bills are half a million dollars, I’m probably going to have to pay all those bills back to whoever paid them. You don’t get to keep those.

I hear all this stuff about the English rule: the loser pays. More politics and politicians and lobbyists are pushing for more reform. We have no less than 20 court rules and statutes. If you lose a case in Michigan, you can be subject to paying a lot of money, particularly a malpractice case. This was passed in 1994 and part of it is based on a study from 1986 done by Todd Arrent that was published in the Medical-Legal News and also Michigan Lawyers Weekly. You'll see there's a gap between 1986 and 2002; that's because the numbers are online after 2002. To count things before then, you had to go back and manually count them. The important fact is: between 1986 and 2002 we have tort reform. What happened to new filings? Between 1986 and 2006 they dropped 75 percent. We don't have 2010 numbers yet, but 2009 filings of new cases had dropped by 80 percent.

There were 707 new malpractice cases filed in the entire state in 2009. There were over 3,600 in 1986. So I'm sure we've all seen our medical bills drop drastically because of that drop in filings. Sorry, I used to do defense work.

There are two numbers you look at if you're a defendant: indemnity payments and cost of defense.

What happened to indemnity payments? In 2006 they dropped by almost 60 percent. It went from \$114 million a year to \$47 million, so less is being paid out. Insurance rates for doctors only dropped a couple of percentage points, but 60 percent less money was paid out on these filings. And here's the cost of defense (see Fig. 1). You can probably look at this and say 1991 and 2006 are backwards; you shouldn't spend more with only 20 percent of the cases filed, 80 percent are gone. The problem is people who pass legislation don't realize consequences of what they do.

The best explanation: my youngest son is on the Options Exchange in Chicago, and we were talking

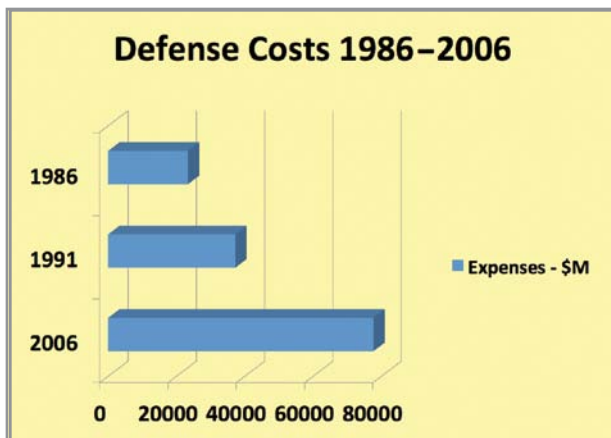


Figure 1. Defense Costs 1986 - 2006

about this. And I said, "Do you understand why this has happened?" He said, "Sure, I'm in finance; when you're losses are capped, you gamble. If you can't lose money, you try more cases. You lose a big case, they reduce it down. If the most you can lose in a case is \$400,000, even if it's 60/40 in favor of the plaintiff, you may try it."

Defense costs went up 109 percent with 80 percent fewer filings. In 1991 the cost was \$37 million and in 2006 it was \$77 million. Of course, I've always liked the finance side of medicine and law. There's always the bottom line, what you need to look at was the savings. The green is 1986, red is 1991, blue is 2006 (see Fig. 2). Savings was 15 percent, which is just the number, so keep in mind there's more to this story when it unravels: they saved \$23.7 million.



Figure 2. Total Savings from Michigan Tort Reform 1986 - 2006

Tort reform, by eliminating only two people out of 10 who had cases and filed, means only one in eight who are injured by malpractice sue anyway, according to the Institute of Medicine. Now, that one in eight, we've eliminated 8 percent, we've maybe saved \$23 million. The problem that most people don't understand with tort reform is that when the lawsuits go away, the bills don't go away. Somebody's still paying the bills. The only thing tort reform changes is who pays them. And guess what? If the person who caused the injury doesn't pay them, you're going to pay them and I'm going to pay them in higher taxes or higher premiums.

I'll give you one example: in 1996, as part of the tort reform movement, Michigan became the only state in the United States to give drug companies FDA immunity. That's because we knew it would keep Pfizer and we'd bring more people back in Michigan and our drug costs would go down. This was a promise. The effects that they did not factor in were what it's going to cost you and me. In 2008,

then-Attorney General Mike Cox sued Merck for misrepresentation and fraud under the Medicare False Claim Act for the drug Vioxx. Three weeks ago, the Court of Appeals dismissed the case based on the Drug Immunity Statute.

The amount claimed paid for a drug that wasn't working was \$20 million. You and I pick up that \$20 million. If you subtract that this year from the savings of the \$23 million, we may not have saved any money at all. But we're not done, I've got the numbers:

1995–2009, Michigan Medicaid recovered an average of \$1.6 million per year	\$22.3 M
Medicaid's present outstanding liens	\$10.3 M
1995–2009 Medicare and private insurance projected recoveries, \$10 million per year	\$140.0 M
Yearly average recovery for all	\$11.5 M
1995–2009 projected recoveries for all	\$162.0 M

I think Medicaid is about 14 percent, but I couldn't get all the numbers from Medicare. I'm also working with Blue Cross/Blue Shield, but they may have proprietary interest. I have a Freedom of Information response from the State of Michigan, and in the 14 years from 1995–2009, it was an average of about \$1.6 million per year. Keep in mind: that's about 14 percent of the healthcare dollars. Over that time it was \$22.3 million. Their present lien on outstanding cases—these are cases in which they filed a lien saying, you get money back, you have to pay me back or I come after you—was \$10 million.

I did some conservative calculations on a prorata basis for Medicare and private insurance. Those numbers came to about \$10 million a year or \$140 million over the same time period. That averages to \$11.5 million a year, which we're now recovering. I don't want to get into too much detail, but this is on 20 percent of the cases with 80 percent dismissed. Total recovery would be about \$162 million over that same time period.

Now, the question is—we save about \$23 million with tort reform—if on 20 percent of the cases it's \$11.5 million, what would the other 80 percent be? At least double, maybe triple. If it's double, it's \$23 million and the lost reimbursement back to Medicaid, Medicare, and private insurance wipes out the savings in tort reform. Tort reform didn't save a nickel, but did eliminate 80 percent of the cases. I say when I negotiate with the other side here are my facts, here's my analysis; if I'm wrong tell me.

Here's one of my biggest complaints in this whole system: tort reform has become the best mantra for political fundraising in America. Everybody gets excited, everybody gets nervous, and everybody jumps on the bandwagon. Tort reform has become a great fundraising device and you've got to keep the doctors on board, you've got to keep the hospitals on board. During the earlier comments, I thought, you know what would happen if the doctors said to their senators, state senators, state reps: "You know what, I don't buy into that tort reform stuff anymore; I think it's the healthcare system that's got to be fixed and I'm going to work with my fellow doctors to fix the system?" Well, it would be good for business because you'd have a lot of cardiac admissions.

A couple of quick thoughts: if tort reform isn't the problem, how do you save money? These are my observations: fee for services is a problem. I'm biased, though, and I find that closed-staff hospitals—I spent a lot of time in the last three months, unfortunately, with family at the University of Michigan, Northwestern Memorial, and Mayo Clinic—I'm convinced there's a difference in quality of care, not to offend anybody who's at an open-staffed hospital in closed-staff systems.

I proposed enterprise liability, which I'll mention quickly in a minute, in 1986. They thought if you're proposing it, it must help plaintiffs. They shot down that and safety systems. I didn't use Dr. Gawande, a doctor with an ATM around his neck; I thought it was a little disrespectful talking about fee for services in an article that's been circulated to the cost conundrum. I think the elephant in the room is probably a little more appropriate; I'm not sure why the health profession is focusing on it now: I talk to people about this and they say, well, don't regulate us anymore; the market system will take care of the healthcare.

It's been a long time since I was in that little old building off the diag in Ann Arbor and took Econ 101, but I think I understand the market system. You have one person creating demand, the seller offering a service, and you negotiate a price. Here's what happens in the healthcare system, and I think when you're too close to it you don't appreciate what it looks like to outsiders: the doctor creates a demand, the doctor gives you the supply, and you send the bill to a third party.

A little humor to make a point: when I talk lawyers about this I ask if they would like a system that, when the client comes, you sit down and talk, learn a little about his/her life, and then you tell him/her what they need for legal services, estate trust plan, new mortgage, whatever. You supply it and then you don't even have to bill them, send the bill to a third party. After wiping

“...the most recent figures are that 60 percent of all doctors are presently employed by hospitals, so maybe the market is driving them in that direction.”

the big grin off, the response is pretty much “I died and gone to heaven.” It’s amazing to me that the system has worked as well as it has. I understand there are some checks and balances, but I think it’s a problem.

A couple of quick points on why I think closed-staff systems or doctors employed by hospitals are better. And I don’t have the chart on here but I mentioned it earlier, the most recent figures are that 60 percent of all doctors are presently employed by hospitals, so maybe the market is driving them in that direction. Dr. Sage, whose article is in the bio from Depaul University, said if you had people employed by hospitals, you wouldn’t have insurance companies do class ratings. One of the reasons rates are so high, this has been mentioned before, is that you have a “team effect.” Everybody’s on the same team. You’re communicating with everyone. If I ran a law firm of 40 or 50 lawyers the way you run a hospital on an open staff, it would be chaos. People coming in when their client’s coming in, leaving. We have some general rules they have to abide by. I’m impressed that it works. It also removes the incentive for overutilization. Dr. Gawande made that point in his article. Litigation reduces anxiety, which is a big problem.

I won’t preempt Mr. Boothman, but the University of Michigan has probably done this better than anyone in the United States. I think Rick’s comments to a senate committee in 2006 were in short order: litigation’s going to be a background noise. It’s not going to be part of our system. It only works when you can control everyone and everyone’s under the same tent. Physicians focus on healthcare instead of business, that’s why they’re going to hospitals: the cost of care goes down.

I’m big on this. The Institute of Medicine indicates that we’re 10 years behind safety. When I updated their numbers for inflation purposes, the cost now may be close to \$40 billion a year for safety.

Here are three quick examples:

1. “Heal thyself.” It’s a great line for fixing the healthcare problem and was in the Wall Street Journal in 2005. Anesthesiologists of 1985 were at the highest risk and paid some of the highest premiums of anyone in medicine, but they didn’t go and say let’s get some tort reform and hopefully get rid of 80 percent of the cases. What they said was let’s fix us. That will be great tort reform. They devised protocols, monitor systems, started using manikins. Simulation is going to be huge if you want to do safety. And what did they do? They reduced their insurance premiums by over a third. In 2005 they paid less money than they did in 1985. That’s a 33 percent savings, a little bit more than they predicted in tort reform. Safety saves a ton of money in the right places.
2. Another one of my favorites is one we’re all familiar with because it was the keystone effort at the University of Michigan. I like it and I’ve even used it with lawyers saying simple things. Do good work washing your hands, sterilizing an area, removing a catheter, the simple things. They reported 66 percent reduction, but I think in some cases it was down to zero. The important thing is what it saves. It costs about \$45,000 a year per infection. You’re saving \$2.3 billion a year for doing simple things like washing your hands.
3. If you’re familiar with Hospital Corporation of America, they have 114 hospitals in 21 states and deliver 225,000 babies a year. Steven Clark, many of you know him, in Salt Lake City, wrote an article. He’s big on safety in healthcare and said they instituted protocols and additional training for fetal monitor interpretation and reduced their incidents and claims by 70 percent. He recently said “we are absolutely convinced that in five years if you institute the protocols we’ve done, that the obstetrical malpractice crisis will be basically over.”

Tort reform, in my opinion, until you tell me otherwise, doesn’t fix anything: it doesn’t fix healthcare, doesn’t save any money. What’s going to save money is safety and probably readjusting how we’re compensated. Thanks very much.

APPENDIX P

The Physician Perspective

Joseph Fortuna, MD

Co-founder and CEO, PRISM

Dr. Fortuna is the founder and CEO of PRISM, a nonprofit corporation providing sustainable transformative services to medical practices. He is also the current Chair of the Health Care Division of the American Society for Quality and a member of the Executive Committee of the Michigan Primary Care Consortium. Dr. Fortuna served as a Divisional Medical Director of the Delphi Corporation, where he supervised the medical and occupational health activities in 73 facilities worldwide.

I see several problems, a lot of which we have talked about. The medical model is not the same as the engineering model. The medical model derives from the medieval guild system. Basically what happens in medical education is a product of something that's about 800–1,000 years old. A guild involved a lifetime progression from apprentice to craftsman. Usually apprentices would not learn more than the most basic techniques until they were trusted by their peers to keep the guild's or the company's secrets. In order to become a master, the apprentice had to create a masterpiece retained by the guild, and, similarly, a scientist or a physician is that way with his/her first publication and in the case of a physician, his/her first case.

This was echoed in an article written about graduate medical education in ophthalmology. Graduate medical education has relied heavily on the apprenticeship model, and all of our educational systems in healthcare do that. The model, unfortunately, has significant limitations. They have driven calls for transformation to be more competency-based. In other words, the apprenticeship model is: you do it like your mentor did. There is relatively little room for change or passion for change, except maybe incrementally and except in the clinical arena.

Another problem is that skill sets required to be acquired skillfully, positively and sustainably, with sustainably a key word here. You can go into any medical practice and use a checklist to get that practice working a heck of a lot better than it has in the past with a couple of quick changes, like Lean training. The key is having it sustained after a year. We have some examples where we've gone into practices that have been Lean trained and a year later just completely abandoned that training because they really didn't change culturally.

Primary care today is also another problem. This focus is because we mostly work in primary care practices. For an average-sized panel of 2,500 physicians per clinical full-time equivalent (FTE) primary care physician, you have 7.4 hours a day for preventive care, 10.6 hours a day for chronic care, and how many hours for acute care and anything else. That's a big problem requiring a lot of attention to efficiency, a lot of attention to what we heard today about teamwork, and doctors aren't trained for that. They're trained, as somebody said earlier, to be the captain of the ship.

Change also poses another challenge. Change is hell, no question about it. A little vignette on change: most of you have heard this, but from the Roman chariots to the modern railroad, the first mass-produced military vehicle was the imperial Roman chariot. They were made to be just wide enough to accommodate the rear end of two horses. When Rome built the first long-distance roads in Europe for their legions, they built the ruts into the road. The rut remained, and every person and every wagon maker since has been using the Roman rut distance for their wheels and axles. From wagons, the practice was transferred into trains and then into the modern railroads. Such was the power of tradition and human reluctance to change; that's what is going on in almost every medical practice in the state.

"There is nothing permanent except change," according to Heraclitus (not Disraeli, as people normally think). Another relevant quote is from Charles Darwin: "It's not the strongest or most intelligent that survive, but the ones that are most adaptive to change," and medicine traditionally has not been adaptive to change. However, like it or not, in the immortal words of Pulitzer Prize-winning poet Bob Dylan: "the times they are a-changin'."

There are eight types of physician waste in healthcare:

1. Excessive Processing
2. Overproduction
3. Transportation
4. Defects
5. Inventories
6. Movement
7. Waiting
8. Underutilization

One example: St. John's Family Medical Center is a family medical center. We worked with this practice for a little while and asked everybody in the room—the doctor, nurse, medical assistants, practice manager—and said, okay, what's the biggest problem you have in this practice? Every single one of them said exactly the

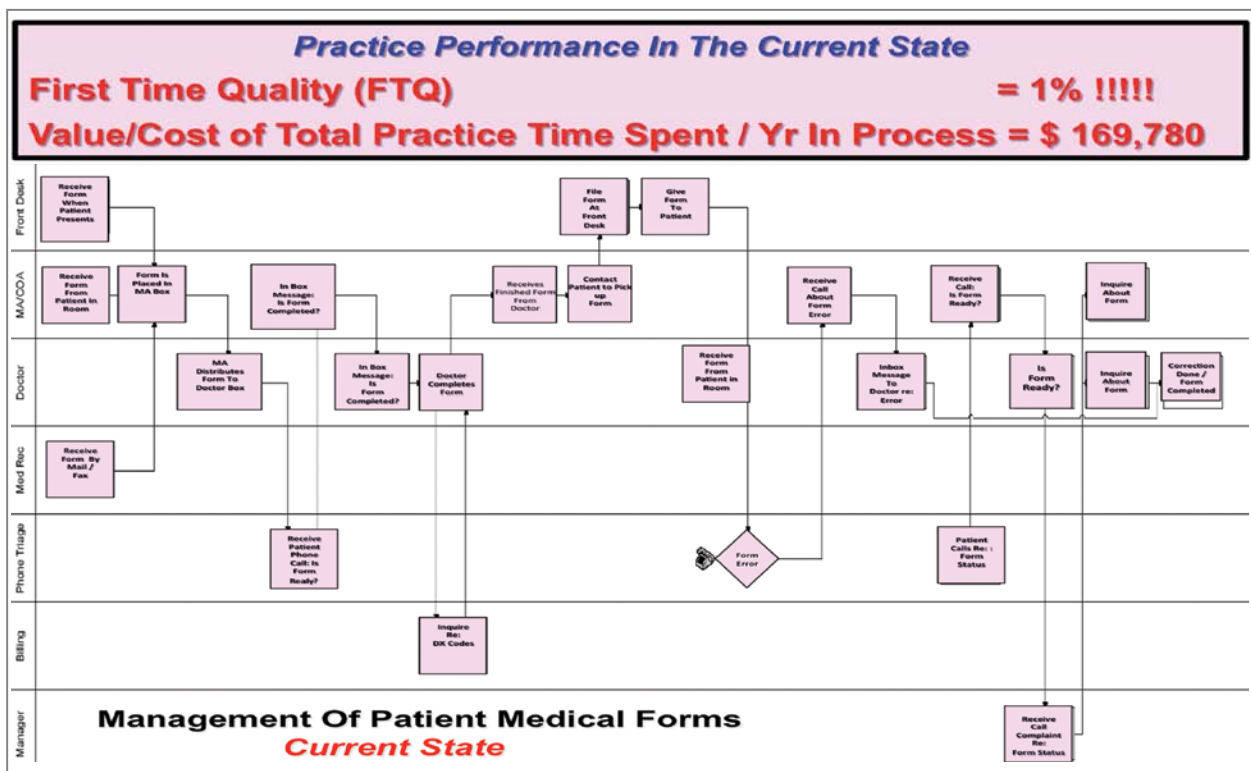


Figure 1. Management of Patient Medical Forms: Current State

same thing: I hate it when a patient comes in and says, “I’ve got to have my disability form filled out or I’ve got to have my work comp form filled out or my school physical,” because that’s on the patient’s dime. It’s on the patient’s schedule. They want it and they want it now because there’s money at the end of the table or at end of the line for them.

So we worked with this practice using one of GM’s senior value stream engineers, who donated her time to work with this practice, and we went through and looked at their process for doing that. This is one practice, one process. It turned out that that process had a first-time quality of 1 percent, which means it went right the first time, 1 percent of the time.

Secondly, it was costing the practice a total of about \$170,000 to do it the way everyone wanted. We asked them to go away for a couple of days, not much time, and work on their own to figure out what was wrong and to come up with a better system. Their better system can be seen in Fig. 1. It now has a first-time quality of 72 percent, which is very respectable, and the cost is only \$80,000. The throughput time was also cut in half.

However, there were some real interesting things. We did save them \$90,000 for one process in about two days’ time. It resulted in them having two hours more of doctor time every day to do what they wanted and six hours of medical assistant (MA) time. The most important thing that probably came out of this, though,

was that it energized the staff and physicians and they became eager for more improvement.

The interesting thing here, and what was the biggest surprise to me and brought tears to my eyes, was that at the end of the report, a billing clerk, who’d been there for 10 or 15 years, got up and said, “You know, this is the only time in this practice that I’ve ever been valued and that my words and my information meant something.” She has since gone on to become an extremely effective contributor to their improvement cycles.

We talked earlier about waste example number two. Elliott Fisher looked at the Medicare data and found that enrollees in higher spending regions received more care than those in lower. And then Mr. Fisher went one step further and tried to find out: what was the biggest factor involved in that? It wasn’t causative, necessarily, but certainly related. He said the discretionary decisions by physicians seem to account for most of the regional variation, which we’ve heard before.

Waste example number three is my favorite. Patient-centered medical homes are certified and in Michigan, there are two primary levels of certification, National Committee for Quality Assurance (NCQA) and Blue Cross/Blue Shield. Well, then the Joint Commission notices these homes as a source of income, so it develops its own certification. And then several others come in. Now you’ve got at least seven types of certification. I was at the Patient-Centered Primary Care Collaborative (PCPCC) meeting down in Washington about six months

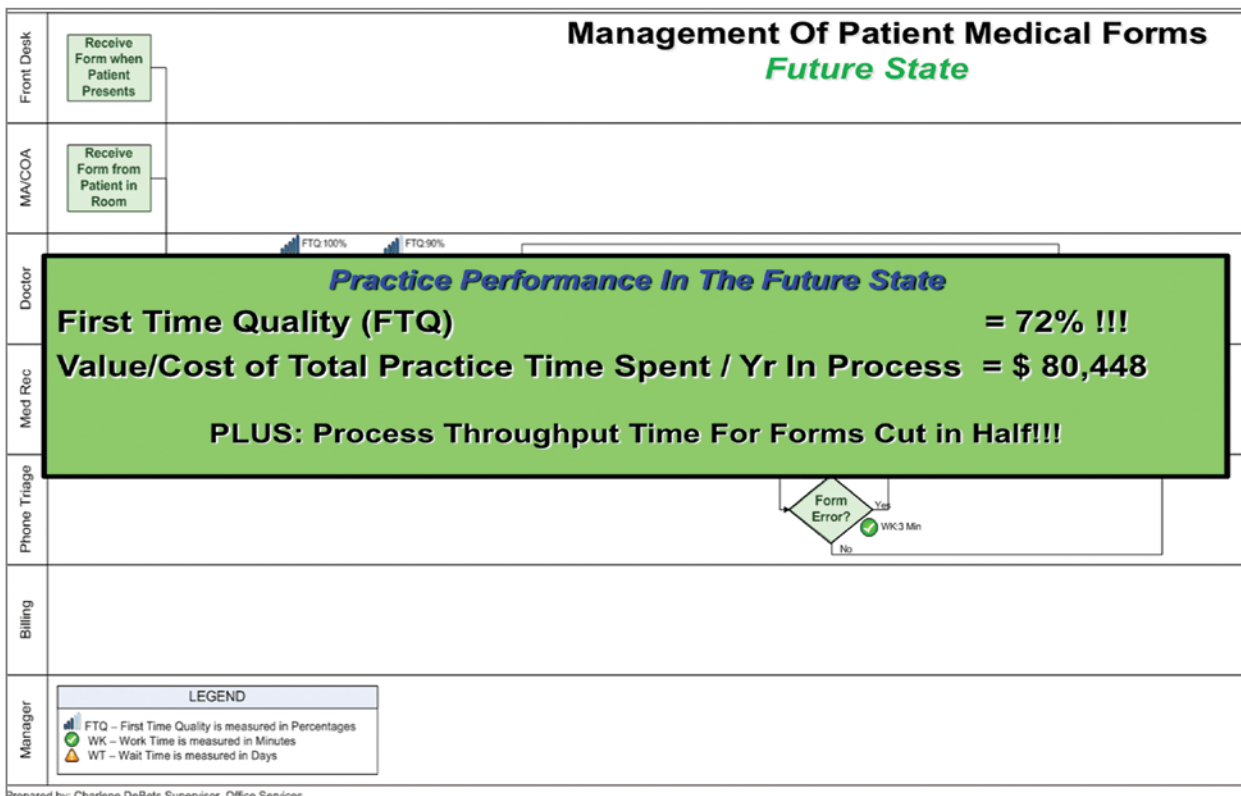


Figure 2. Management of Patient Medical Forms: Future State

ago, and this family physician came. He said, “Look, I’m just a run-of-the-mill family physician. I got a question to ask you people”—they had a panel of everybody who is represented here to present their way of accrediting—and he asked, “why do we need all of you?” And none of them had an answer, but privately, it’s because they can make money from it.

There are some medical model solutions; that is, solutions we develop using the medical model of addressing things. One is the accountable care organization (ACO). We’re going to see a lot more about this. It drives a lot of the behavior we’ve heard about before because physicians generally will be under one form of reimbursement, be it salaried or otherwise. You’ve got a drive toward a medical panel-type situation, closed-panel type situation, in effect. And basically, it’s going to drive this into the corporate practice of medicine.

Now, if you look back into the last century, 1900s, the early 1890s, the people who make up this organization, The Engineering Society of Detroit, almost all had their shingles out and they were almost all private. Over the years, corporations such as General Motors and others hired them into their companies and engineers became more and more corporatized. Well, you could say that that was a problem because they were no longer independent businessman, but one thing is sure: they didn’t get any less professional, and I suspect that we’re going

to see the same with physicians because they’re going to be freed up to do a lot more of what they really want to do, which is take care of patients.

This is another innovation driven by the medical model: the patient-centered medical home (PCMH). Let’s get all the docs working as a team, let’s make them patient-centered. All of these are wonderful words until you figure out how you have to do that, and how you have to do that is back-breaking work. Many of you in this room have gone through that. It is not easy. It can’t be achieved by going over and waving a magic wand. One of the reasons is not only because it’s hard work to do it, but because you have to change the culture.

Another innovation is health information technology. Someone said earlier first we need health information technology (see Fig. 2). I would say that’s not true. We do need it, no question, but I think if we put health information technology into systems before we’ve really rationalized those systems and made them perform efficiently, what you’re then doing is making a good process go faster. And you may be exchanging information, which is critically important, but you really have to get these processes first.

In regard to “pay for performance”: there are more and more data coming out that this doesn’t work or doesn’t work as effectively as it should. What happens is, you pay doctors for doing things

better. Unfortunately, in many cases you don't tell them how to do it better, you don't tell them how to get their systems functioning so they're more efficient, how to get their systems functioning so they have higher quality.

Here are some engineering solutions: first, Quality Management Systems (QMS); we've heard about this before. It's making the whole system work efficiently and effectively. This is a traditional quality assurance model in most hospitals. What you're doing is cutting off the right end of the bell curve. In engineering, what we try to do is move the curve all the way to the left and narrow it so there are few errors. This is an example of a system you all heard about that drives hospital and others into this. Another one is ISO-9000, which DMC and other hospitals have moved to in addition to Joint Commission.

Yet another engineering solution is process improvement and problem solving, tools we've heard a lot about. There are a number of these kinds of things. I was very pleased to hear Dr. Muma use the "five why" analysis because we don't do that enough in healthcare. This is a problem-solving report; this is a use of process of improvement tools. Doctors were going into their practice rooms or exam rooms and they'd be there and say, "I need this tool, I need that tool, where is this tool, where is that tool." This is the idea of work standardization. And one practice in Waterford did this with the help of one of the coaches who's in the room, John Casey, and what they did was they developed a standardized workbook and within a relatively short time they were able to save \$20,000 of time. That's just one practice, one system.

Solution number three is something you may have heard about, most probably haven't: social technical systems thinking. It was developed by Eric Trist at Tavistock Institute in the mid-'60s. Actually, they ended up being a communist think tank asked to help the coal industry, believe it or not. They looked at the productivity and found pick and shovel productivity was very low. So they put these huge, long machines into the coal and just scooped the coal out. Production went down, not up. Trist went in and he said, Hey, we have to break this thing up and make sure we remember these are people working in here and they have a sense of work organization. We have to provide; we have to preserve that.

This is the idea of the managers needing to recognize interplay between social and technical subsystems. We put these IT systems in, and we figure they will work. Well, they're not going to work unless you also pay attention to the

“The relationships between people are every bit as important as what you're trying to tell them to do.”

work organization and the results of that and the interplay between the people. Demands of the environment cause changes in the technical subsystem, and so on. Too often we work too hard on the details of the new process or new technologies, but anybody putting an IT system into a hospital knows this. People expect magic metamorphosis and expect to use those processes. We've got to pay attention to the people side of this.

Engineering culture and change management: I love the work by Nutting out in Denver who says that what we're dealing with, in something as simple as reorganizing a family practice, is it's a terribly complex, adaptive system. There are many players, many parts, and each of them has an effect on the other. Implications for practice changes of using or applying the common complex adaptive system model and patterns of relationships among staff are critical determinants of practice changes. We've seen that at our work at PRISM.

The relationships between people are every bit as important as what you're trying to tell them to do. The quality of life of interactions are more important than the quality of the staff. High-quality interactions process will emerge to create high-quality change. Emerging processes will not be the same in every practice. So you've seen one practice? You've seen one practice. To sum this up: culture eats strategy for breakfast every single day. Benefits of effective culture change enhance change and adaptation. You can move faster, quicker, and improve. You can increase your profit, sometimes dramatically; decrease time for implementation. If your practice time hits the minimum for being a PCMH, time is important. And using these tools you can get there much quicker. Enhance employee engagement and sustainability: this is probably the most important thing, because if you make all these changes and they don't stick, why do it? It just doesn't make any sense.

APPENDIX Q

Healthcare Impact in Michigan (Healthcare as an economic engine in Southeast Michigan)

Gregory Auner

Director, SmartSensors and Integrated Microsystems programs at Wayne State University

Dr. Auner is a Professor in the Departments of Electrical and Computer and Biomedical Engineering at Wayne State University. He's also the Director of the Smart Sensors and Integrated Microsystems, SSIM, programs. His primary research focus involves the research and development of biomedical microsystems and BioMEMS systems. Dr. Auner formed a consortium with the smart sensor program involving the Karmanos Cancer Institute for an ultrasonic breast cancer detection system and Children's Hospital of Michigan robotic surgery and real-time surgical diagnostics. He holds more than 20 issued and pending patents in the field.

I'd like to talk to you from the standpoint of economics in healthcare, particularly in our area how technology may impact it, and looking at some of the things that are going on, some of the things other people are doing, and what we're doing here.

The U.S. healthcare value chain really starts with looking at pharmacy, biotechnology, medical devices and makers, and medical suppliers and information firms. That goes into hospital systems and integrated delivery networks and pharmacies and then goes to issuers, HMOs, pharmacy benefit managers, and then finally government employees and individuals' employers. Everything done at every single level within here affects the other ones. So if you make a change in one of the systems, it will affect all the way down. What I'm proposing is that if we can affect [producers] a great deal, we can affect the cost, economics, and so on.

Healthcare is one of Michigan's leading industries; it provides millions of dollars in annual tax revenue and economic stimulus, and the healthcare jobs stabilize local economies. In 2007, the total full-time and part-time employees in Michigan numbered at about 5,454,613 (from the North American Industry Classification System). Healthcare and social assistance is around 634,675 and includes a lot of other auxiliary types of work. It's a very huge impact from the standpoint of employment in the economy in Michigan itself: about one in every 10 jobs, in fact, is directly related

to healthcare in Michigan. And it accounts for approximately 542,000 jobs, in particular areas like Detroit, Warren, and Livonia; it's a major, major impact for the hospital groups there.

So what are the costs? What are the statistics showing for the changes in the economics and that? Actually, the cost as a percentage of overall costs in hospitals is going down. Efficiencies, insurance company-driven effects to have shorter stays, etcetera, have made that decrease as a percentage of the whole. Physicians have been relatively flat as a percentage of the cost (see Fig. 1). What has really been costly is pharmaceuticals and treatments. Those have gone up exponentially probably because of insurance reimbursements and other factors, plus defensive medicine.

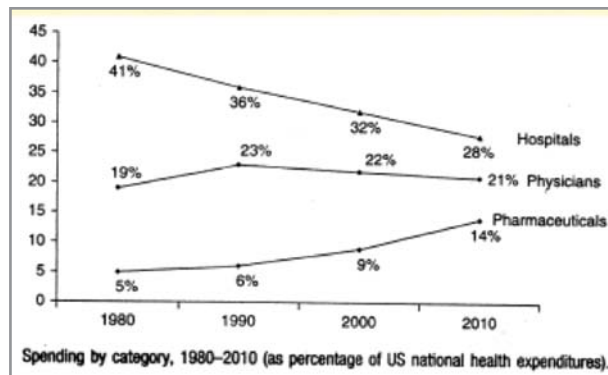


Figure 1. Rising costs of therapeutic interventions

So the trends, then, are toward simplification. That is, do specialized work: nurses do doctors' work, have patients do clinicians' work, and machines do all of the work. So what we mean is really shifting of the burden for individuals to do things more at home. It wasn't too long ago that it would be outrageous to have a home pregnancy test; it had to be done with a laboratory certification. Now, of course, it's routine. Automation, robotics, automatic systems that can monitor at home or monitor in a clinic rather than an advanced system in the hospital: post-modern medicine is novel and an emerging treatment that may stem, change, or genetically alter disease.

Globalization, or the ability and technology to transfer data back and forth and to have access to information, data, and training for physicians, along with clinicians who are readily available all save time and lives. So first: simplification. Home defibrillators are an example that the technology is there. It would save many, many lives; home dialysis systems and, in fact, even home systems for treatment of blood diseases like sepsis would help, along with home pregnancy tests, home genetic tests, self-triage, and

self-diagnostic treatments on the web and social media. DaVinci simulators augment reality and are where you can directly interact with a physician from your home and go back and forth. Now, these aren't things that are really futuristic: these are things being implemented all over the country and the world. Decision-support software simplifies diagnosis and much more: I mean, this is really the trend of the future if we're going to save money and possibly greatly increase healthcare benefits to people.

Automation of administration is also needed. Some of the things being worked on in some of the hospital systems involve when you walk in. Instead of filling out forms, you sit in a chair that does diagnostics. Then you type in or say the answers to different questions and while you're waiting to see the clinician, everything is being filled out and your vitals are taken. All aspects of workflow from patient registration to discharge, automated logistic systems, equipment, and supplies would be tracked and inventoried. This is how some industries work, but not medicine. The Department of Defense, in fact, has been doing a lot of work in automation of tracking and recordkeeping, and it's probably the most successful system so far.

Patients may also be tracked by something like radio-frequency identification (RFID) badges. So the future will be that instead of walking into a room and having a cart or getting a clunky computer, staff will use an iPad to bring up the patient's data, including their picture and their records. Walk into the next room and that iPad automatically comes up with the next patient, which really uses software-based workflow, much like industry. It can not only make it more efficient, but more importantly, it can make it safer.

In simplifying communication, the process would be free of the mess of personal pagers, overhead pagers, cell phones, and desk phones. Instead, we'll have personalized communication systems. Why is it that that's not widespread in the healthcare industry if it's everywhere else? I've looked at the different types of technology being used and there are up to a dozen different types of communication within one hospital. Why not have one system just like everybody else does?

Quality measurement and evidence-based medicine is very important. If you look at tracking from surgical procedures to what the clinician diagnostics are, variability is great. Earlier someone talked about how the mentorship is really what goes on most of the time, but there is little feedback for quality control from the standpoint of a standardized system, at least from the standpoint of maintaining a minimum level of evening out the variability from excellence to poor types of treatment.

“Probably the largest impact would be telemedicine, which is the virtual office that allows interactive video links and vital sign monitoring over the Internet.”

We need to evaluate vital evidence-based medicine, that is, treatments and methods typically and historically passed on by one physician to another. We would be better suited to have a system where you have a proof of concept of “this works well” that is also data driven. That is somewhat done by some physicians and not done by others. Data gathering via different types of systems should really be consolidated into one type of system and full integration of the financial administrative logistics.

Finally, probably the largest impact would be telemedicine, which is the virtual office that allows interactive video links and vital sign monitoring over the Internet. A prime example where that could have a huge, huge impact is in heart disease and congestive heart failure, where the maintenance of drugs spikes up and down depending on the office visits rather than routine vital sign measurements at home. The use of virtual rounding via fixed or mobile Internet video conferencing systems would help not just in that scenario, but also in specialist consulting. Telesurgery is now possible with daVinci, and we've even had it set up where we've taught pediatric surgery from Children's Hospital to a European hospital where the robot didn't do the surgery in Europe. Instead, it went through and showed how do it on the patient, and then the physician then learned via satellite communication.

In looking at continual biomonitoring of patients' vital signs using sensor technologies at home or worn implant, the Defense Advanced Research Projects Agency (DARPA) programs that have a smart bandage and smart biosystems are really coming to fruition. You can wear them and have your vital signs relayed to hospital systems. There is also video with 3D and holographic imaging looking at virtual reality: that is, the interaction that tells you this medication is correct or you've taken the wrong one. It interacts directly with you.

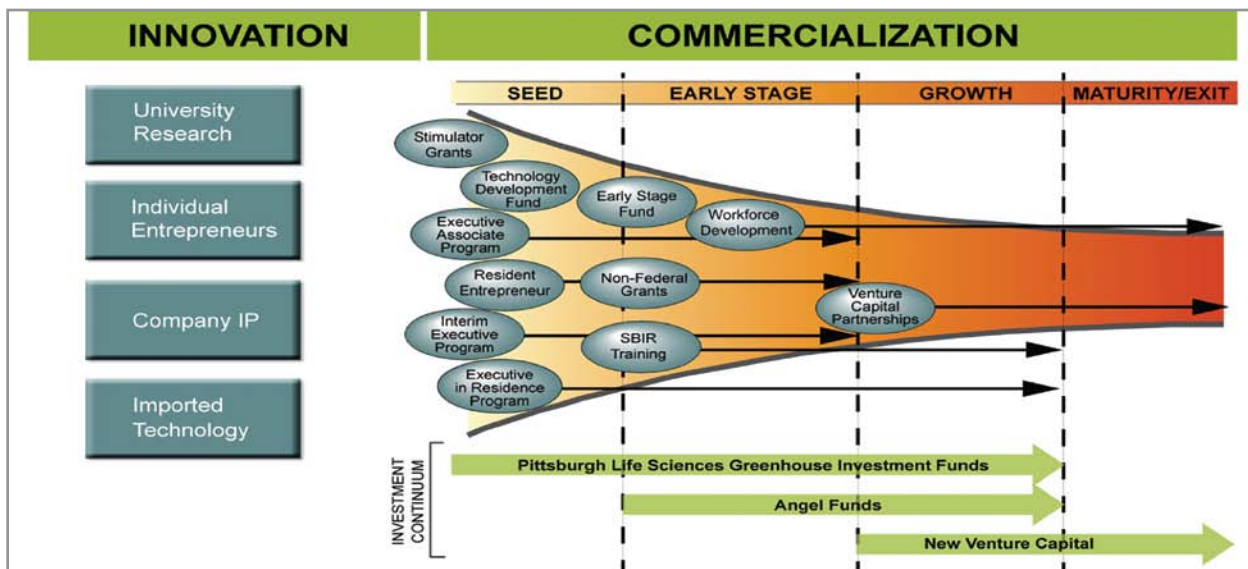


Figure 2. The Pittsburgh (Good) Example

Then there are the commercialization aspects. I like this model and Pittsburgh is a good example where hospital systems acted as actual investors in the biotech industries (see Fig. 2). And point of fact, the last statistics I looked at from them have more income coming in from investments in these companies than they do from actual patient reimbursements. That is really the future, and that's actually a very, very sweet spot for the Metro Detroit area given the large number of engineers and technology-driven expertise here.

So in this Pittsburgh life science greenhouse example, they've had almost exponential growth in the types of companies that are starting, as well as the investment feedback, and actually the increase in quality care because of advances technology (see Fig. 3).

So what is the effect of these investments in technology? What can we look at? Take Alzheimer's disease, for example, which is a huge burden from the standpoint of impact. A patient costs around \$5,000 per month for taxpayers just to maintain and medicate. If that can be automated or there can be treatments that prolong the functionality of an Alzheimer's patient, that can have a massive impact on society. It's over \$50 billion a year.

Heart disease, of course, is one of the largest ones. Heart disease in the United States costs \$350 billion in 2003. Of the \$350 billion, about \$209 billion was spent on direct medical cost and around \$32 billion in lost productivity due to not being able to work, the cost to society, and so on. So research and economists think

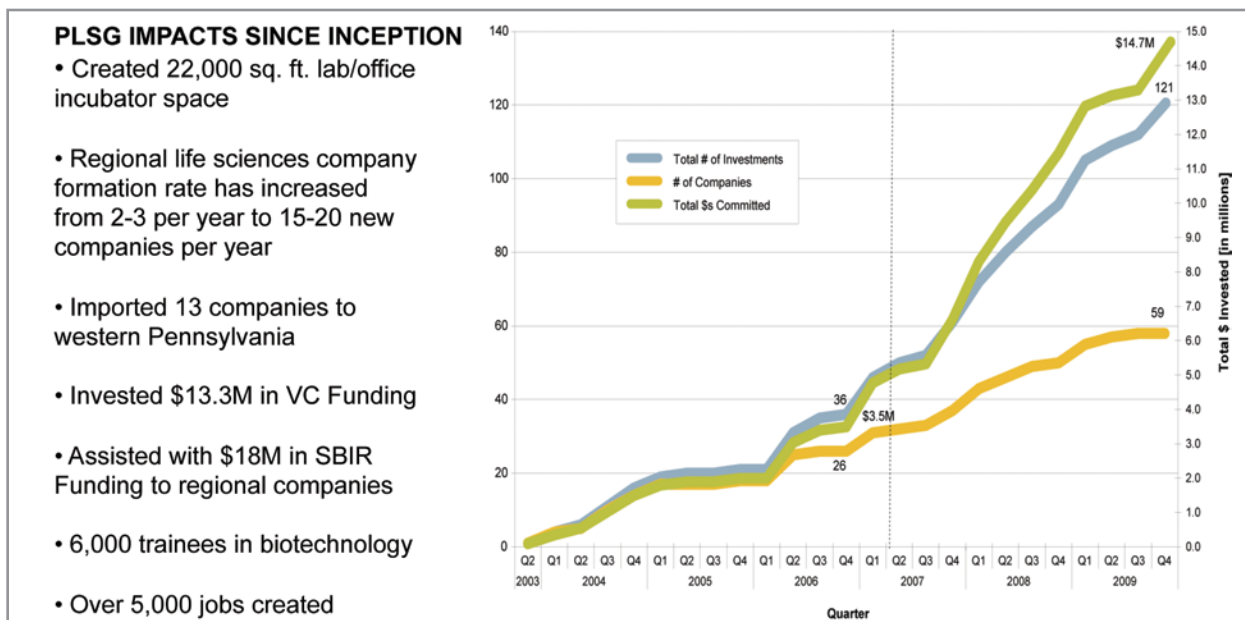


Figure 3. Pittsburgh Life Sciences Greenhouse

that if you could decrease that just a small amount, cardiovascular disease could really decrease about \$15 trillion to the nations' economy each year over the span of 1970 –1990. So it would have a massive impact if we could actually delay the onset of cardiovascular disease or make a person more productive and healthier, even if they have the onset of that disease.

One thing we've done is formed a rather large consortium, Technology and Engineering Applications in Medicine and Surgery (TEAMS). It involves the Detroit Medical Center, Karmanos Cancer Institute, the Henry Ford Medical Center, Beaumont Hospital, Oakwood Hospital, and Detroit VA Hospital and Children's Hospital, which is also part of the DMC. The idea here, particularly with a Department of Surgery, and other clinicians as well, is to advance technology needed by clinicians to form groups where you do collaborative research that's not the engineer saying well, we made this, can you use this; or it's not the physician saying I wish I had this, but it's not really realistic. It is a team working together to identify and develop technologies specifically that have high impact in the areas mentioned earlier. It has everything from technology of diagnostics to something of communication and recordkeeping, and so on.

Another development with the National Cancer Institute and local hospital systems is a handheld device that can detect in real-time during surgery whether there's cancer or not using Raman spectroscopy. It's a technique that basically uses a laser that shines and you have a reflection back of light scattering, but you also have hidden in there an array of other types of wavelengths of light due to energies that are gained or lost due to the vibration's molecules. What that means is you get a fingerprint of what something is made of and how it's put together by using this technique. We could make that into a small handheld device, and then a surgeon

“A 1 percent reduction in cancer deaths would be worth \$500 billion, or approximately 2.5 times the annual cost of the disease in the United States.”

during surgery could scan through and tell if you have cancer or not and where the margin is. Why is that important? Well, if you can tell the margin and you can get the cancer and actually diagnose the type of cancer, then you can have a treatment that's much more effective in the likelihood of survival because it's secondary cancer that kills.

Another example: we asked economists at Detroit Medical Center to look at the low-level cost burden of a disease, one that's not widespread like heart disease that would be a huge impact. So we looked at one of the lowest ones, which are burns. In this case, they looked at if they could diagnose a burn the first day whether it was first, second, or third degree, the cost savings because of the treatment they would give is on the order of \$108,304 per year for just one hospital system. Multiply that by thousands of hospital systems, and this is one of the lowest level numbers. Now, why is that? Because they generally cannot tell whether it's going to be first or third degree until the third day and at that point, treatments are no good. So knowing the treatment the first day gives you a profound change impact and that's an economic impact on one of the smallest number of events.

Now consider something that is thousands of times more common like heart disease and what you could do if you could diagnose it in those cases. Generally, there are three days before there's treatment, and you don't know what type of treatment. Is it a virus, a fungus, or bacteria in the blood and kills millions of patients?

I'm going to leave you with an example of something that's really kind of hard-hitting: early and accurate diagnosis of a disease is necessary to curtail the burgeoning costs of healthcare. The National Cancer Institute estimates that the overall cost of cancer in 2006 was \$206 billion; \$78 billion for the direct medical cost and \$128 billion for low productivity and premature death. A 1 percent reduction in cancer deaths would be worth \$500 billion, or approximately 2.5 times the annual cost of the disease in the United States. So if you could just decrease by that fatality or the rate of a person being incapacitated due to cancer by 1 percent, that in itself is more than the entire cost of treatment of cancer 2.5 times that within a year.

It's a major impact that occurs due to not only the treatment itself, but the indirect impact that's on the economy from the loss of productivity and so on. In conclusion, what I'd like to say is: things have to change from the standpoint of how medicine is done. Much more has to be automated at home, which we're seeing rapidly develop. That's not something to be afraid of. That's actually something that will improve healthcare. It's also an opportunity for an industry of an area like this where we have such a rich environment of not only healthcare, but engineers. Thank you.

APPENDIX R

Lessons Learned from the University of Michigan's Medical Malpractice Experience

Richard C. Boothman, JD

Chief Risk Officer, University of Michigan Health System

Rick Boothman is the Chief Risk Officer for the University of Michigan Health System, where he implemented a proactive and principled approach to healthcare system claims through an open and honest approach to patient injuries, patient safety, and claims. Mr. Boothman has delivered scores of presentations for distinguished groups, including the Institute of Health Care Improvement, the Joint Commission, and the American Association for Health System Risk Managers. He is a graduate of the University of Michigan and earned his law degree from the University of Detroit School of Law. As a trial lawyer he was listed in Martindale-Hubbell's Bar Register of Preeminent Lawyers and carried the highest rating for skill and ethics.

Thank you for having me. Last night was a very big night in the Boothman household: our oldest daughter was accepted to one of the preeminent schools of public health and our middle daughter last night got accepted to medical school. So it was an interesting coincidence that I would be here today to talk to you about our experience and what I think we might do to carve down some of the costs or eliminate some of the waste.

I have been involved with healthcare systems in Michigan and Ohio for 30 years. I was blessed when I was in private practice to represent the University of Michigan, the Cleveland Clinic, and some of the finest healthcare institutions in both states, along with Kaiser Permanente and Henry Ford Hospital, or a division of Henry Ford and others. I will tell you as a disclaimer that I am humbled every day by the people I work with. To be able to serve a group of people so dedicated and so into what they're doing, sometimes at great expense to them personally and emotionally, it really is a privilege. But sometimes the best friend you have is the person who will level with you, and that's what I do every day.

Norm was right when he said that my goal when I spoke before the U.S. Senate was to say we will reduce malpractice to background noise. We will put the focus at the university where it belongs: on quality patient care, safe patient care, and on keeping

our caregivers safe. That's basically what we've done, and there's no genius to this; it was really simple.

In 2001 we took stock of our own status and we asked "Where are we right now?" Well, we were inconsistent. We stupidly defended some cases right to the courthouse steps and we smartly defended other cases right to the courthouse steps. We spent gobs of money on defense, and because it's a risk-averse institution, we settled almost every case. As a trial lawyer, it was a frustrating place to represent. I had very cool defendants. I had access to the country's best experts. I had usually exceptional care involved, and yet we would settle those cases. That was what I inherited in 2001 when I actually was asked to come and look over some résumés as they were trying to fill the spot of a person overseeing the program, and I simply asked them a simple question: have you ever thought about doing things differently?

For 22 years until that point, I'd represented some of the best hospitals, but not a single one ever asked me what lessons they should have learned from the cases I handled. If you can prevent patient injuries, you will prevent the claims. So why is the emphasis always downstream? Why don't we move things and be more proactive?

The first line of our approach was to get on top of the current set of cases, and we did that with three simple principles. The first was if we hurt someone through unreasonable medical care, then we need to step up and do our best to make it right, not subject our staff to litigation and force our patients, whom we hurt, to sue us. Secondly, we ask our healthcare practitioners to do things that are dangerous every single day, and I don't care if it's a big Whipple procedure where they're trying to find pancreatic cancer or it's giving a kid an antibiotic for his first ear infection. Every single thing they do is dangerous and they cannot control all the risks. If their care was reasonable, then we owed them support, and support originally took the form of just being tough in the trenches. That was a sea change for this institution.

Today support means sitting down with people who are angry with us, who are hurt, whose lives have been changed, whether it's a \$10,000 case or a \$10 million, and having an honest discussion, because I don't help my staff at all by defending cases I shouldn't defend, and Norm Tucker is not interested in prosecuting a case he shouldn't prosecute. So just sit down and have an honest discussion. Revolutionary? It was. It's too bad, but it is.

The third principle is the most important: let's learn from our experiences. There is a psychological disconnect between claims and learning anything in this business. It was not just a unique experience that

“There’s deep fear about reporting and licensing.”

I had at hospitals like the Cleveland Clinic, places like the Kaiser Permanente or the University of Michigan, never asked what they should have learned from the cases I handled. So we hardwired those things in. By making those simple changes and by cutting the baloney, we started to see a drop in our claims.

Our claims may have dropped for all sorts of reasons. Hospitals and employee scorched-earth tactics have also seen drops in claims. I am not here to tell you that our process has dropped the claims because I don’t know how to isolate it as a factor. But I am here to tell you that by being honest we have achieved enormous benefits in every other respect, and we have never had a catastrophic disaster because we were honest.

So that’s generally the Michigan model. It’s quite simple. The trick is knowing the difference between reasonable and unreasonable care, and you can’t do that unless you sit down with the person who was harmed. You can’t do that unless you sit down with people like Norm and honestly ask, What am I missing?

We’ve changed the dialogue with the plaintiffs’ bar in a remarkable way, and I’ll give you a quick example: a 34-year-old woman with a cervical spine disc that we missed. She had pain in her right wrist and she had pain in her neck, and somebody in our health system put them together and said every time she moves her head, her wrist hurts, but we didn’t get that message and by the time the diagnosis was made she’s hemiparetic, has chronic pain, she’s really in trouble, and she’s 40 years old.

My opening offer in that case was \$1.75 million. In the normal paradigm, I should have offered \$150 (thousand). The plaintiff’s lawyer in that case demanded \$20 million. I went back to him and said, “I’m still at one and three quarters. I’ve had a life care planner look at this, I’ve had a financial planner look at this, I’ve had an economist look at this. Here is a line item justification for how we got where we’re at. Tell me what we’re missing.” He came down to 16, then he came down to 6, then we had lunch. I sat down and said, “if your goal is to play the game, the litigation game, then just do it. I’ll turf it over to the legal office, we’ll hire a lawyer, and you can beat your brains in. We’re trying to do the right thing; don’t punish me for that. Please tell me what I’m missing.”

And after a quick phone call to his life care planner, he came back and said, “I think you’re a little light on household replacement services.” I bumped it up by \$350,000 and we settled that case for \$1.8 million. That has become the norm for us

almost always. Do we have opportunistic courses we’re in? Sometimes, absolutely we do. But if you just sit tight and control the dialogue and you’re credible, honest, and your real goal is to do the right thing because your main goal is to make sure it never happens again, all the games dissolve.

So why do I talk about this? Well, here’s the status quo: repeated malpractice crises. I’m not as old as Norm, but I do remember the hearing about the malpractice crisis in 1976. I lived through them in 1986 and 1994, but if you believe the current critics we’ve been locked in one all along, but problem is that this justifies a “deny and defend” mentality, that’s true across this industry. That said, there are some other observations I want to make:

Honest discussions, unfortunately, are seen as scary and unthinkable. I tried a case early in my career for a surgeon, and after I won the case and the jury was filing out of the jury box, the lady who sued him leaned around the podium and for the first time in six years they talked. First time in six years. And she said to him, “if I had heard everything I heard in this courtroom, I would never have sued you.” And I thought to myself, how stupid is this that we create an adversarial environment and then use it as justification for not talking to each other?

There’s deep fear about reporting and licensing. Doctors report that they feel hunted over this issue. The emotional baggage over this whole thing is grossly out of proportion with reality, but we have to take it seriously because it is driving a lot of behaviors. We are, as an institution, an industry addicted to regulatory and accrediting agencies’ intrusions and standards. I watched a presentation the other day on the importance of quiet hospitals. The presenter made the link at our place between health and being able to get rest and being able to heal while you’re in the hospital, and how important and urgent it is that we have a quiet hospital.

Well, our hospital is 30-some years old and we’re a little anachronistic. We have 80 percent of our rooms as double occupancy or semiprivate. It’s not quiet. It’s not a great place to be. Why is it today that all of a sudden this connection between health and quiet hospitals is important? Solely because we have Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS); we have a new measure that’s going to get public if we’re not. So now it becomes a big deal. If we’re more concerned about core corporate quality, this would have been addressed a long time ago. We’re addicted to the regulatory things; why do we need the government to tell us what a “never event” is? We shouldn’t. And

“...defensive medicine is a serious cause of high cost.”

nobody in the healthcare side stops and says why is this happening? The real truth is: it's happening because we don't take care of it.

The Institute of Medicine sees no change in medical errors. It reported several years ago that we're killing 100,000 thousand people through medical errors alone, and now, unfortunately, we haven't seen any change. The New England Journal article just last month, I think, reported the same thing. It's a little dispiriting. Financial incentives are not aligned with quality of care. The financial engine in every one of our hospitals is the imaging suite and the operating room, and our care gets designed that way. They're not grabbing me and saying, "You're 56 years old 100 pounds overweight, let's spend a lot of time getting you in shape." They're just happy when I have my bypass in a few years to bill a whole lot of money for that. It's wrong and we need to pay attention to it and take control.

Defensive medicine: I disagree with Norm. I think defensive medicine is a serious cause of high cost. Norm said it isn't because doctors are supposed to live by the standard of care. But that begs the question: if your kid falls off her bike tomorrow and bumps her head, she's going to get a CT scan even though we know close clinical observation is every bit as good as the radiation she's going to get from that expensive scan, but it's become the standard of care, most doctors will tell you, because they don't want to have the one in 10,000 case where there was a unique bleed that might have been picked up. They need to make sure they've covered themselves with that scan, and your kid gets unnecessary radiation and we pay for that unnecessarily. It is a serious cost and I think there's a different way of looking at it. So I would disagree with Norm on that.

Culture change is almost unrecognizable. We struggle. At the heart of our medical errors is culture, and not a very good culture, frankly. We struggle with punitive environments and teaching relationships. We struggle with all sorts of workarounds that don't get fixed. We struggle with terrible financial incentives that drive behaviors like surgeons who think it's okay to do two surgeries at once and administrators who are only happy to see that happen because that financial engine just keeps going.

We struggle with that, and if you have any doubt at all you need to look at the book *Forgive and Remember* by Charles Bosk. It is dry as sawdust. I'll tell you, it's not a book you can sit down and really have a good time with. But in 1979 he published a

close sociologic analysis of a major surgery center, he said on the West Coast, but I have come to learn it was really the University of Chicago. You can't see a difference between what he documented then and today in most surgery departments in major academic settings. Change is awfully hard, and in this overheated malpractice environment it's especially hard.

So how did we get here? Well, in my overheated imagination, I think there was a time when a doctor greeted a patient who was not happy with his result and said come in and talk to me. I imagine there was a hospital administrator who said to a family who was aggrieved, Come in and let's talk. And then something changed. What was it that changed? Well, I don't want to lay it entirely at the feet of the insurance industry, but the advent of insurance changed that. All of a sudden it became a lot more convenient to avoid that difficult conversation and hold up a hand and say that's what I have insurance for, go talk to my lawyer. Think about the wisdom of that choice: medicine took the most intimate, complex conversations and turfed it to trained fighters. As a defense lawyer, I wasn't trained to know the truth. I was trained to win the case.

Litigation is a social expedient designed to resolve disputes that can't be resolved otherwise. It's a contest. The whole idea is that a trained adversary on each side will clash and a jury will figure it out. It's meant as a last resort, it's not meant as a first resort. But we turned it into a first resort: we gave patients no alternative. That doesn't make any sense. We created that adversarial relationship.

So at U of M, we just said stop. Why do we choose to fight before we know if we should fight? We're fully prepared to litigate the most complex cases right to the end when we need to, but let's first figure out if we have to. Now, look at the consequence of this Faustian bargain: we have a cottage industry that is very, very entrenched now. Plaintiffs' lawyers are stoking the coals with pretty awful and embarrassing advertisements that create an impression that every bad thing that happens in your life has someone to blame and probably an insurance company to pay, and defense lawyers are no better. They are billing and billing and billing and they're not pulling their clients aside and saying stop the madness, this is not a cause you should defend. They are fueling that emotional sense that doctors are victims in this whole thing and they're afraid to say to physicians and hospitals: maybe this isn't a case we should fight. And they only make money if they keep billing hours. I will tell you, as I go around the country the single most virulent opposition to what we do is the defense bar.

The insurance industry is genius in its marketing. I think it's amazing that they tell physicians to go march on Lansing and demand tort reform, when

they know the premiums are actually driven by whether or not their investment did well. When Hurricane Andrew came through, everyone got a premium bump, it had nothing to do with the malpractice crisis. The government studied this and has reported this in a couple of reports in 2003. We know that, but what genius. You're the target. You're the one who they pull the premiums from and they get you to go and start to argue in favor of decreasing their costs. They think it's great, but they market with fear, which doesn't help.

The expert witness industry is shameful, in my opinion, and it's both sides. When I was a defense lawyer, I knew in the worst case who the go-to people were who could at least make it a horse race and see if we couldn't fool an uneducated jury. We know that when we see certain experts on the plaintiffs' side, it's a real flag that it's a garbage lawsuit, but there are still cracks in the system and they can still win. It's shameful what goes on, and physicians are taking advantage of it on both sides of the fence even while they're crying what victims they are in this malpractice mess.

Interestingly, even the judges are playing a role in this. Two complaints about judges: we don't ever have a case where the solution to a judge isn't that the defense should pay. That's always the case. No matter how bad the case is, that's always the case. So I knew when I put these three principles in place that the judges in Washtenaw County were going to see a tough stance all of a sudden for the first time, and it was going to screw up their docket. I tried to give them a head's up that if they're just patient they will see our claims come down. To this day we get still raked over the coals if we don't cough up a nuisance settlement. I won't do it.

Judges in New York (and I'm a consultant on a government grant where five hospitals are trying to do what we're doing but they're doing it in conjunction with the court system) just took my skin off at the idea that we would encourage hospitals to resolve claims with their patients without the court system. They are as invested in this as the rest of us, and we need to call it out for what it is. Then you have all this other infrastructure holding us in place with the status quo, all invested in a fight as the way to handle this. But every malpractice case starts with an injury, and fear keeps us from talking about the medical errors. And Alcoholics Anonymous knew in 1923 that if you can't talk about it, you're not going to fix it. If you can't admit you have a problem, how will you address it?

Yet fear today, overblown fear, I'll admit, keeps us from openly talking about medical errors. The present litigation system unnecessarily stokes the fear, and if we can't talk about it, we won't fix it, and

if we don't fix it, patient injuries will continue and the spiral goes on and on and on. So what do we do? I know Norm is a fan of Mark Twain; I'm a fan of Will Rogers: "When you've found yourself at the bottom of a hole, the first thing to do is stop digging, take a deep breath, and say maybe there's a better way." So what we've said over and over at the University of Michigan is it's not about malpractice, it's about us. Let's pay attention to how we communicate with our patients and what the quality of our care is, and if we do that, these things are going to get resolved. So we took responsibility. I've got some benefits that others don't have, but that's what happened really in a nutshell at our institution. But we need to identify the things that prevent medicine in general from doing that because we're all paying for this overheated, emotional response to a threat that isn't even real, in my opinion.

A major challenge for the court is that it's too easy to forget that medicine is inherently dangerous. I met a woman the other day who had a perforation from a colonoscopy. I said to her, a little crudely, "How did you expect that doctor to push a garden hose up there with no risk at all?" It doesn't work. You can't mess with things like that and not do it without risk. You knew about the risk. We found the perforation quickly, we did the responsible thing; no, I'm not paying. She doesn't understand that and I'm not sure why, but I think the fix is upstream. I think the fix is how we talk to her before she got the colonoscopy. Did somebody really sit down and talk to her as a human being and say, pay attention, here's what we're going to do and these tissues can be delicate when we push instruments up there. I'm in this with you. We don't yet talk that way and I think that's the future, frankly.

There's a fundamental flaw in the legal system that drives me crazy. I will never be a fan of no-fault systems. I think the day we stop having open access to courtrooms we're all going to rue the day, both sides. But I do think there's a fundamental flaw in the way we do these things, and think about it this way: if you're a juror, we will never put you in a box if you know anything about medicine. We deselect people for any sophistication, and then we make a battle of the experts and expect this group of people we've deselected to decide who is lying and who is telling the truth and things that are so complex we need expert testimony for. Sorry, that doesn't make any sense. I think we have to fix that and every court actually has tools to fix that it. Unless we fix that, it will always be a place where people who are opportunistic will find a way to gain the system, both ways. Doctors who think they can obscure the issues enough that take advantage of still a high standing in the community to win cases they shouldn't win, and

plaintiffs' lawyers who see an opportunity, especially in catastrophic cases, to roll the dice. We need to take the gamesmanship out of it.

And add liberal financial incentives as we have right now. We have experts who don't bill very much for the first review of a case, but bill a lot if they testify. It's all built on keeping that lawsuit going, keeping that spiral moving in that direction. That rewards opportunism and accelerates overuse, in my opinion. Healthcare providers never believe the system stands for them. Isn't justice supposed to be both ways? It's not from the organizational perspective, I'll tell you that.

So there are things wrong and things we can fix. Here are a couple of ideas. We need to find a way to relegate litigation into the role for which it was intended, as a last resort. Make people talk to each other if they don't want to talk to each other. Force them to engage in open discovery so that all the gamesmanship gets sucked out of this. We also need to diminish the opportunity with hot tubbing, I term I love. In Australia, they make the expert sit in a room with the judge and talk to each other. So they can't pursue a lot of purposefully elaborate scientific evidence because they have somebody on the other side of the table who can call them out for it.

We also need to recognize and eliminate junk science. There's too much of that in our business. When I was a new lawyer I had a group of cases called retrolental fibroplasia cases. They were babies who were born prematurely in the 1940s, '50s, and '60s. They were given oxygen and a high percentage of them were blinded. And for years hospitals paid millions of dollars on the theory that the oxygen caused the blindness. It was overnight those cases disappeared because, in the early '80s, a guy named William Silverman figured out it was actually carbon dioxide retention and not injudicious use of oxygen that caused that blindness. Nobody returned that money. We litigate cases on junk science too often and it should stop.

I don't understand why judges today don't consider bifurcation of liability from damage cases. Sometimes it's very tough to litigate a case with a sympathy factor when you've got a good liability defense. I think if we bifurcated some of those it might make a difference. And calling experts charlatans for what they are really is important, and we don't have a good system for weeding that out. I don't know why courts in malpractice cases don't consider the use of masters; we do in divorce cases, we do in property cases. So if you're getting divorced and you think your house has X value and your spouse has someone who says it's Y value, the court can call in its own expert. We don't ever do that to break the log jam in malpractice cases when we have

these highly technical arguments on both sides.

Force early evaluation of medical merit. You shouldn't go through two years and a whole lot of money before you belly up to the bar and say, you know what, it's not a case we should have defended. There are ways of doing that. We're doing that now in 30 to 60 days in most of our cases. Encourage involvement with clients. Too often I've seen insurance companies take a position that they're insureds don't share.

Make judges do their jobs. They have the power and responsibility to bring some sense to these runaway verdicts, and most of the time it doesn't happen. I think bringing an attorney and witness misconduct pretrial is also important.

Here are some realizations: honesty is more likely when financial ruin is less likely. The advantage I have is to be able to say to our caregivers, no matter how professionally accountable you are and need to be, you're not facing financial ruin. We will take care of you across the board that way, but we will also plug you into a robust peer-review program. You will be professionally accountable if it's required. Predictability is important to everybody.

I think caps from a personal perspective are abhorrent. If somebody told me my wife, who doesn't have a job outside the home, is worth a certain arbitrary figure, I wouldn't think that was very fair, but I also understand that predictability is important. Since the system hasn't worked to produce any constancy in the results that we get, I think that caps have a social utility. I would promote and protect quality improvement and peer review, and that's extremely important. Stop criminalizing medicine. We're starting to see that on the increase, but we have to find a way to insist on accountability. We should also reexamine joint and several liability rules. I won't get into that, that's complicated. But here's what I would do:

In 2003, I said to the State of Ohio as it looked at an insurance upheaval that caregivers needed protection. Financial ruin is too Draconian for people who have to do difficult things and risky things every day. That's not fair. You can't ask me to do that surgery and then threaten to take my livelihood away if something goes wrong. So let's get an umbrella program: let's require all the doctors to have a primary policy of insurance. Let's have a catastrophic injury fund to make sure that people who are hurt are actually helped, and for a certain extra premium you can buy into this as long as you agree to real peer review and real chart audits and real analysis against best practices. We can weed out the people who are causing the problems and we can fix this from a patient safety perspective, not from a medical malpractice perspective. Then we won't need the courts.

APPENDIX S

Management Consulting

Dennis Pawley

President & CEO, Pawley Enterprises, LLC

Dennis Pawley is the former Executive Vice President of Manufacturing for DaimlerChrysler North America, where he was responsible for more than 80,000 employees, 12 car and truck assembly plants, and five manufacturing technical centers in the United States and Canada. Bob Eaton called him “the ultimate manufacturing leader with his ability to lead change which is unparalleled in manufacturing today.” In April 2001, Mr. Pawley and his partner, Andy Carlino, co-founded the Lean Learning Center to assist suppliers in the development of Lean operating systems. In addition, Mr. Pawley also owns an independent management consulting firm, Pawley Enterprises, LLC. In 2002, he was appointed to the Oakland University Board of Trustees by Governor John Engler and funded a \$1-million endowment to the university to establish the Pawley Lean Learning Institute.

I'm glad they moved me to after lunch. It reminded me of the first night I went to work in manufacturing as a foreman. I reported to the night shift and met my big, Dutch superintendent. He proceeded to give me my orientation while we drank some coffee. He said asked if I was ready to go to work and I said yes. He said, “You got the sheet metal load department, and I'll take you over and introduce you to the utility manager.” I said, “Okay, but just a minute, I want to run over to the head.” He said, “Let me tell you something. You want to be a success in the manufacturing world? Good manufacturing men die of ureic poisoning. You better never leak on company time.” And that was my introduction to that culture.

Through all the presentations this morning, I saw a lot of facts and charts, and they're all things that need to be deal with if we're ever going to fix the healthcare system. When I was asked to come and speak, Doug Allen came to me and I said I was about as far removed from the medical field as you could get. My skill is putting a Band-Aid on my grandson's knee when he falls while he's destroying my house. He said I still had things to contribute considering I'd worked with a lot of organizations and have seen the upheavals and turnovers. I've also been involved in a lot of change models and how to fix things and sharing the processes and concepts with medical people would be beneficial. So my purpose is to share some thoughts from the last 15 years that have been used in the automobile industry.

I want to talk to you about something that's already been mentioned and in my mind is the key to making change happen in any industry. It is the one element of change that is usually sorely overlooked. History is strewn with mergers, purchases, and acquisitions of companies and at first watching the culture was important. However, it is clear that they jumped right to the hard facts of the business, the product and financial stuff, and they completely ignored the people and cultural aspect of what they were doing to the human element in the company.

I went through a very famous, and one of the biggest, disasters because of a disregard of culture: the merger between Daimler and Chrysler. On the surface, it looked good. All the facts said nobody would lose his/her job, our products won't step on each other so no plants are going to get shut down, and it was going to be a marriage made in heaven. And we then spent hours upon hours working, including my synergy team and four other officers. We were told to put together a study to support the decision to merge the companies.

There was no alternative. The new culture said to develop the synergy to support the decision, and that's what we did. But in doing that, it became obvious it was going to be a huge culture shock to both companies. Chrysler was a company of cowboys and quick-change artists. We'd go to meetings and our knowledge was in our heads. The German officer on the other side would walk in with 15 books and six staff people to go through the discussions. It became obvious that the culture was going to be the big thing that was probably going to destroy the company. Having seen that, I said I had other things to do in life. I left and I've been consulting ever since. And, unfortunately, what happened is the company did go downhill. But what I'd like to talk to you a little bit about is about when I joined Chrysler in 1989. Lee Iacocca was the chairman, Bob Lutz was there, and Jerry Greenwald, who were some of the names that brought Chrysler out of the first bankruptcy, and a very strong culture existed in Chrysler at that time.

Lee came over from Ford and really got the government loan, got the dealers to come in and throw in the money, the union to throw in the concession, and really pulled that company away from the brink of oblivion. But the culture that existed out of that was very strong “my way or the highway.” And when I came in in 1989, I could see it went down with a lot of products and things out there. I thought, well, the product looks good; maybe this whole people thing could get changed. So I was head of Chrysler's manufacturing when one thing

became very obvious: Lee around 1988 was trying to decide whether or not to get out of the automobile business and go into government, maybe become governor of Illinois or a senator. But when he left in 1988, while he was making that decision was the same time he was rebuilding the Statue of Liberty, and he put together the model that had made Chrysler successful again. He brought in the K-Cars, got the union concessions, really got on a firm basis. When he left he basically said (paraphrasing), “I have saved this company; while I’m out, you guys follow this model and everything will be fine.”

Then Chrysler went from a strong leadership mentality to managing. Change stopped happening and the rest of the world started running by Chrysler again. When Lee came back, he wondered what happened. Well, we did exactly as he said, but he said we must have executed it wrong. It became obvious while he was gone that there was a new cowboy mentality riding into Chrysler and Lee was not changing with time. Had Lee stayed in the company, we probably would still have what in their minds would have saved Chrysler: velour interiors, landau roofs, wire wheels, and so on, all built off the old K-car platform, because it was successful.

But he left and new leadership came in with Bob Eaton and Bob Lutz, and these guys, particularly Lutz, really knew and took over the role of leadership and said if we’re going to save Chrysler, we have to embrace change in this company and reinvent the whole system. At the time they came in, this is the type of culture that existed.

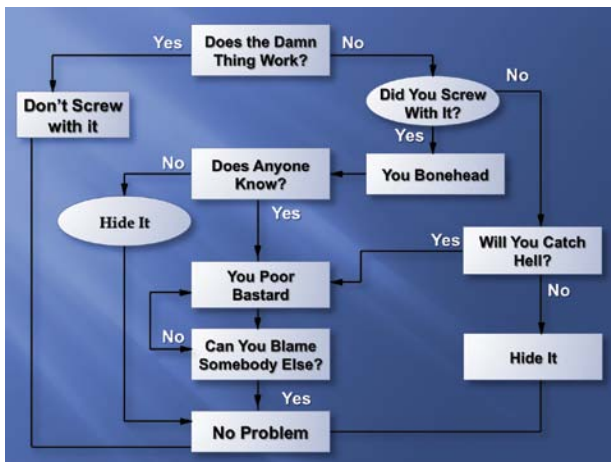


Figure 1. Typical Management Culture

That’s a typical management culture (see Fig. 1). Basically someone says does the thing work and the answer is no. So did you mess with it? Yes. Does anyone know? Yes. And that means trouble. All is not lost, though; can you blame somebody else? And if he answers yes, you have no problem and that’s the way the management system worked. You’re managing a

process. If something goes wrong, hire the media. And that’s what they did. If the answer was yes, then don’t change it and everything will be all right and there will be no problem. If the answer was no and you don’t have to answer to someone for it, then hide it and pretend like it never existed.

Everybody laughs when I show that, but a lot of the laughter I hear is because they say that is our company, too. I suggest to you that that’s the only true place the cultures can exist in a company, and one is in a managed company. People are afraid to take risks. They’re following a given model, a set model on how things worked.

The alternative to that is a new culture and a company that encourages risk, wants change to happen, and is always dissatisfied with the status quo. That’s when you get is the same question: does it work? If not, how do we fix it and then how do we make it or keep it world-class. That is a leadership type of a culture. That doesn’t happen overnight. For that to happen, these ingredients have to be what we call an adaptive culture, which is what began to be established in Chrysler.

The leadership of the company, the two Bobs and the executive VP, all of us were heads of our staffs, and we really reinvented ourselves and our behavior. Behavior of leaders is what determines the culture of a company. If a manager is managing, everything’s measured, maxims; nothing can be stacked higher than this against the wall, you know, you can only have 20 percent of two-tone colors. I mean, forget what the customer wants. What is best to keep our little system in place here? That’s the type of culture that exists.

What you have to have are people full of ambition who strive and have humility. People who are not afraid to say “I don’t know” when the boss asks you a question, “but I have an organization, I’ll get you the answer and come back,” instead of trying to fake your way through because you know the boss don’t know the answer either or he’d never ask the question.

Curiosity and inquisitiveness are also important. Why do things have to be this way? If you’re looking at a piece of equipment, I used to like to ask, “What percent capability do we buy this machine on? If it’s 85, make it run at 85. What’s the theoretical capability? Why do you stop? How can you make it better even going beyond that?” Keep stressing and pushing the limits with people. Disagreement, discomfort, and contention are the most important things in creating an adaptive type of culture. You want a culture that will challenge the system in a way that is not threatening to people, but if you hear something come out of a company, a manufacturing person, or an engineer that says, “I can’t develop it this way, I can’t release it this way.” Why not? Not being personal, but challenging and pushing the system.

You also need truth, candor, and collective concern for one another and the courage to step out and take a risk. Historicism, to never lose the ability to look back at where you were, has two important elements. One, to see the mistakes you made and, two, to see what you did well. Because in leadership, one thing I've always found, is it runs a wide spectrum. You're going to lead if you're head of a company for a period of time. Then there's going to be a period of time you're going to drop down to manage, and then the environment changes and hopefully you jump back and lead. A lot of today's leaders will lead for a period of time. They'll wake up one morning and say it was hard and they want to go back and manage for a while, but then they never go back to leadership. Think about that for a minute.

If I named two leaders for you, one of them George Patton, Commander of the Army in Germany, leadership comes to mind. He knew how to motivate the troops, take the hill. In the film about his life, he got up and gave the "we're going to take that hill; we're going to grease the tracks of our tanks with their guts. They went all out and ran through the wall. The opposite of that is Gandhi. Remember when the two groups were fighting each other and he went on a hunger strike? He was a very loving, benevolent leader who thought the world ran that way but was very effective in the environment that he was in.

But leaders from today and the last 20 years have had to be able to shift management style across a full spectrum of management skills. There are times at Chrysler that people would compare me to Patton. They'd say, "He wants this change done in my plants and I know damn well I better get it done." There were other times we were under a lot of stress and I would move more to the spectrum of Gandhi and be more patient when the organization is really taking on some tough, tough things and become more of a teacher. They never said I was Mary Poppins, but you have to exercise your leadership skills across a wide spectrum depending on what's going on in the environment around you and adjust your skills.

Anybody know what that is? A NASCAR race team, right? To me, that is the best example of a culture, an adaptive culture that is very process-centered on what they're doing. A NASCAR race team has one objective in mind, one vision. What is that? To win the race they're in. That's a tightly knit team. They have all the adjectives I just talked about with an adaptive culture. Everybody on that team, I think there are 10 or 11 crewmembers, go across that wall. There are another 10 or 11 on the other side of the wall with their partner, hand them the wheel, hand them the jack, hand them the lug wrench if they go across the wall to change the tires. That team, if they can't pull it far into the pit, and because of the way they're organized if they can't have that car out of that pit in 16 or 17 seconds, they've lost the race.

Everybody on that team has a full knowledge of each other's processes. That person taking that gas bowser to the car on the left side knows exactly the route and how many steps and how many seconds it's going to take the other person with the tire or jack to get to that left rear tire. Can you imagine the confusion if they didn't have a full understanding and appreciation for the route and how that was going to happen with the gas pumps? Think of your own organizations. Does the man in design, does he understand what that job is like in the pit he's designing for or does he just design something, throw it over the fence, and say good luck, try to find a way to put that on?

That's the way our systems used to work. At Chrysler, there were silos that existed all over the company. Engineering was a very strong organization. Design was a very strong organization. Manufacturing was a strong organization, along with sales and marketing. It was like four different companies operating under the same roof. No respect for each other, not understanding; don't come into my world. You design it, you engineer it, you give it to me, and stay out of my plant. I'll heat it, beat it, ship it, and get it out. Get it to the sales guy and he can deal with the customer, but don't bother me with all the other stuff. To the man in finance, I know what it takes to put a process in place. It's your job to find me the money. That's the way the system worked. That's a management system. Very strict with walls built all the way around it, very tight. Not a very good culture to work in.

That had to be completely reinvented in Chrysler starting in 1990, and that's what we set about to do. We said, we need a new system. We went out and benchmarked over 200 companies, I think, between the 26 officers and some of the general managers and directors. We came back and said the system we had didn't work. We had all this new product coming, great stuff—new Intrepids and Jeeps, the Viper, all that—and we said great stuff was coming out of design, but if we engineer and manufacture and sell the way we always have, we'll never meet the design intent of the product. We're going to be in trouble.

So every organization really had to develop a new system and mantra of how to convert to a world-class company. We started asking, "If you say to yourself who is the greatest basketball player who ever lived, who would you say?" (Participant answered, "Jordan.") Jordan. Why do you say that? Because we measure that by points, assists, and rebounds. He was excellent in all three. So those metrics give us a description that says he was world's best basketball player.

I suggest to you there's a system that made him, that produced those types of results that led you to the conclusion that he's the greatest basketball player the world ever saw. A good set of lungs lets

“...the metrics you look at to say that’s a world-class company are the same as in the medical profession.”

him run up and down the floor; a good strong heart pumped the blood; an enviable muscular system. He could do just about anything. But what would happen if he only had one lung? What if he had a bad heart valve or if one of his legs had a muscular problem or become paralyzed in one of his arms? He wouldn’t be the basketball player he was. But the point is what you see when you go to the basketball arena and that’s what you’re judging by. It’s how well all of these body functions work together as a total system to produce the metrics that say he’s the greatest basketball player the world’s ever seen.

A company is exactly the same. If you look at any company, the metrics you look at to say that’s a world-class company are the same as in the medical profession. It has to produce safety, it has to be high quality, it has to be delivered speedily at low cost to make a happy customer or employee, whatever you want to call it. I sat and listened to the reports today and looked at my own experience as a consumer of the medical system. I have fairly good confidence in the safety of the health system in this country until I see something happens and then I get shaky. I’m fairly confident when I go to my doctor that I’m going to get some high-quality advice, until I read in the paper that somebody’s being sued and I hear the lawyers in here talking about countersuit and suit. So then I think I might have been wrong on this one. I don’t like the delivery and I sure don’t like the cost. And as the consumer, I am not happy. We have the government or insurance companies that write the policies, hospitals to administer it, doctors that go into it, and then you have the customer and lawyer standing on the outside waiting to feed. So they’re either happy or they’re unhappy, depending on what they see.

If the quality’s bad and we’re not meeting our delivery schedules and the cost of our operation is too high, the customer’s unhappy because he/she is not getting the product. And if we’re not doing our processes right, the product’s probably not even safe. The causes for failure in any one of those metrics are what you don’t see below the water. There’s something wrong with the human infrastructure system, the way people are trained, the communication, and so on. Maybe the work isn’t

being presented in level and balanced schedules so the process you have in place can swallow it. Look at the value-added activities and at how much nonvalue activity is going on in your operation.

There’s where you begin to define what’s of value and what’s not. And if you have a lot of waste, look at your processes and say, okay, are we robust and capable, or how much waste is actually built into these processes? And then you pull out all the tools you read about in books, such as Lean institutes. Let’s do a process redesign. Let’s take a look at our processes.

Somebody mentioned lay out the yellow dots and identify ways, and you do those types of things. But what happens if you get this far and you go to your boss and say you’d like to take three or four employees off line this afternoon and start doing a layout, do a process redesign on the way I load fenders. An old culture would have said “let the industrial engineers do that and you stay within the fences. When the whistle blows, you control the animals on the line.”

So if you don’t have the right culture, a learning change type of a culture, built into your organization from the boss down, the ability to go in and do these types of things to fix that won’t happen. The old manager-type mentality and running that type of culture will just do it the way it’s always been done and you won’t have these problems. But that mentality is obviously the problem. You can’t control your system that’s set up so nicely for you, but it happens all the time.

I know there’s a problem in the healthcare system. You know how I know that? This is the second seminar in 10 days that I’ve been asked to come in and see what we can do to fix things. The public isn’t happy with the healthcare system. But I may say I don’t like the way it works and someone who works in the healthcare may say that happens because you don’t understand it. It doesn’t matter. If the customer perceives there’s something wrong with your product, there’s something wrong with it. Now, it may be only right here that the industry isn’t doing enough to communicate with me to make me understand how the systems work, but lack of knowledge means I’m unhappy.

You have to create a culture in the organization that encourages openness and is led by a value-added leader. When the first slide I showed said leadership, the only value-added thing a leader does for a product or a service is drive change. A Japanese executive from Toyota told me that. He asked me how much value-added, true value-added things do you think you do in your job in an eight-hour day? I said probably about 80 percent. He said he only added about 30 percent and the rest of the

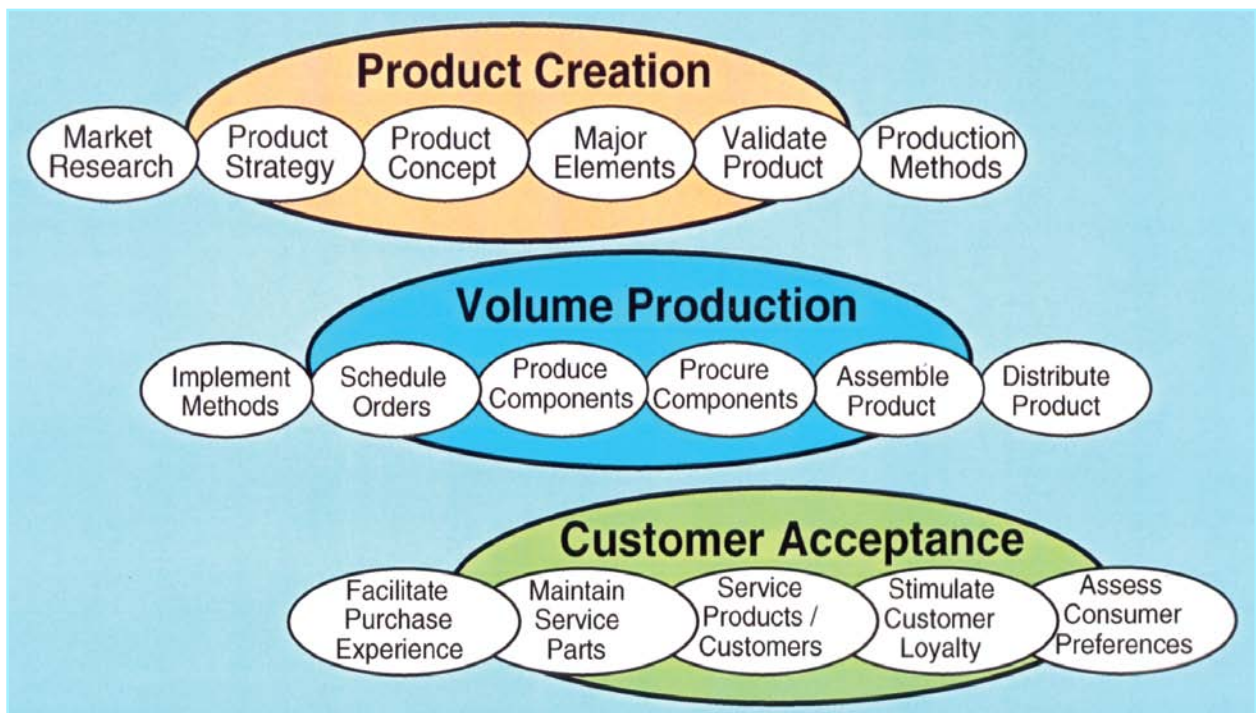


Figure 2. Process Map

time he had to revert and manage and do nonvalue added things until he completely fixed the system. I worked for a Japanese company for three years then I really understood what value-added activity was: a lot different from what my original view was. Now you can look that up in the engineering organization. There was a specific way you were supposed to go through the release of product. The first thing people in the healthcare, or any system, need to do is drop the arrogance. Step back and look at the system from the eyes of the consumer or look at the system from the eyes of your internal customer.

The last chart I want to show you is what we found in Chrysler as we started taking our systems apart (see Fig. 2). We found that three businesses existed in the business that we didn't even know were there until we stepped back and started taking a whole new look at things. We had a product creation end of the business, which was basically design and engineering. They came up with the concept, did the release, and then pass it on to volume production, my organization, the purchasing organization, logistics, and so on that built the stuff and all of our supports. Then there was a customer acceptance end of the business, which was basically sales and marketing and service that distributed the vehicle, got it out to the dealers, dealt with the dealers, relay the input back from the customer, dealt with customer complaints, and things like that.

After discovering that, we had to identify things that were missing. If you just set up a company like

this, maybe you combine engineering and design where they take care of each other, but maybe you have purchasing and production control and manufacturing working together here and you have the salespeople down here. But there ought to be people from this team on this team and this team on this team and this team on this team. They have to be interlocked in some way, which required a whole new organizational structure, completely redoing the organization chart where we actually took the company and built it around products and said, okay, now we have a small car business and we're going to have people from product creation, volume production, and customer acceptance all part of that team.

A lot of time was spent explaining the new behavior to executives that required making the culture we were putting in place successful, which in turn would make the product successful. No one was bigger than the new system. If you couldn't adapt to the type of behavior, you lost your job. High-level people lost their jobs over that. But it only took three or four of those for the rest of the organization to realize change was happening and they had to adapt.

Right now I see pretty strict silos. You name the stakeholders. I couldn't even begin to name them all. But someplace, once you get them all named, they're going to fit into some type of a restructuring that has to happen in the healthcare system that's going to take it toward a new culture and produce a happier customer. I have no idea what that is, but I want to wish you lots of luck. Thank you.

APPENDIX T

Opening Presentation Questions and Answers

The following information represents answers to questions asked during the opening presentations. While not a part of the formal presentations, this information was a resource upon which the attendees could draw.

UNIDENTIFIED SPEAKER: Just a general question for the speakers. Having been a practicing physician for over 25 years in obstetrics and gynecology and being a medical director of a large multi-specialty group and now in a health plan, what has impressed me in my role as medical director of a health plan and your comments on one of your slides was the amount of time for prior authorizations.

In my experience, I found there's only one group that oversees the variation in care and that's health plans. So in looking at waste, I'd be curious to see the Cochrane Database, which actually was the result of an obstetrician looking at variance in care of intranatal steroids to prevent lung disease in premature infants. What we know is the best, most clear guidelines after 10 years, only 80 percent of providers are following that, and the reinforcement is only by the payer. And one of the things that I see in this is the payer now is also businesses, the small businesses, large businesses, and oversight by the health plan. So I'd be interested to see where in waste would there be the proposal that let you do what you want to do, but how do we know it's evidence-based and not variant?

DR. GEHEB: If I could take a crack at answering, I think the health plans were the principal police of these processes. I think that's changing. And if I could use the obstetrical example right now, we have 30 metrics that we track on a weekly basis because we know that that's going to reduce the risk profile for our patients. So we're hardwiring those things. Frankly, I would argue to the health plans take a look at our outcome metrics, see how well we're doing with those. I think it's a dialogue between the health plan and the health systems what those metrics should be. And if you're doing all right with them and you're monitoring it, I'm not so sure that you shouldn't say, well, maybe we don't have to ask that question to every patient. The provider systems are getting in place hardwired tools to get rid of that particular step. I can tell you it adds delays to care and enormous cost to the system right now in terms of going through that process. So there's a clinical risk to those delays on the authorization process in addition to a cost.

DR. MUMA: I agree. I think I would not advocate for loss of accountability or loss of review of those decisions. I think what we need is a process that doesn't introduce more waste, and we need to think deeply about how you create a process to decide about whether to do a C-section or whatever treatment you're talking about that doesn't. In that case, it's not preauthorization, but any medical decision that's getting inspected, how can you do a better job or a more efficient way of assessing the quality of care without introducing waste into the system? And so preauthorization is a form of waste intended to do a good thing, and how can we keep the good thing without continuing to add waste?

MR. KELLEY: I think what you're seeing is some disagreement or some different thinking about whether the best way to address this is through increased control systems or whether or not you're looking at creating an incentive system that shifts the incentive for controlling this kind of process of care down to the level where the care is actually provided. And I think what I heard and you'll hear several people say is that we get what we pay for. Health plans are the only place where all the costs come together at one place and have a view across the patient and the process of care. Unfortunately, they're not the ones providing the care. The only way in which they're able to provide any solution to that is to try to implement a control system of some sort, and that's what these are. They're control systems.

And I think what we're seeing is at least an attempt to try to shift the accountability and the incentives for these kinds of process of care standards down to those people who are actually providing the care. One of the issues right now is health plans don't differentiate based on that performance. You talk about it happens 80 percent of the places. Well, the people, the 20 percent who aren't doing it get paid exactly the same as the people who are doing it. And so, therefore, there's really no incentive for them to spend the money and resources in order for them to do that.

MR. SAFRAN: I can't add anything to the answers that you guys gave. Very thorough.

MR. WEBB: Another question I wanted throw out. All four of you, if there were two things you could do right now, no barriers, to drive waste out, in a sound bite, what would they be?

DR. GEHEB: Change payment reform. Change incentives. People will respond to it very, very

quickly. That would be the most immediate thing I would do. The harder part of this is the capital structure is based in the hospital. If you're talking about trying to link a bunch of doctors together, right, whether they're in practice in the community or they're in a group practice, the hospital is where the payers deposit the capital. So if the hospitals aren't capitalized, they can't spend \$300 million on an IT system to talk to each other. So fundamental change in what this capital structure looks like down the road is something that's required, but that will be a very difficult set of conversations.

DR. MUMA: I agree with that. I think payment reform would be number one. Number two for me would be to develop immediately and quickly a rational IT solution for healthcare so that hospitals don't have to spend \$300 million and end up with a disconnected fragmented IT system at the end of that. So I think having a simple unified IT solution across the country would be number two for me.

MR. KELLEY: I agree. Payment reform, I think, with an emphasis on paying for value. So basically getting to the point where we pay for actual value, differentially pay for value. And I think my number two, and it's related to this, is getting patients into the game. It's back to changing the attitude that more isn't necessarily better. I think what enables that mentality is the fact that the majority of our patients don't really pay for the marginal cost, even close to the cost of providing those services. So it's a very easy kind of position to be in.

MR. SAFRAN: I agree with the prior speakers. Developing an incentive system that is aligned with the development of a standard protocol, standard way of communicating patient medical records to me would be extremely powerful.

UNIDENTIFIED SPEAKER: This is exciting for me to hear because if I were to have answered those questions, it would have been right in line. When I was born in 1960, half the physicians in the United States were considered primary care. Today that's about 70/30 and it's not getting better, and it's basically driven by one thing: money. The payment for subspecialists versus the payment for specialists, primary care, is the discrepancy if you graduate from college with a \$250,000 loan and you can make \$600,000 not being in primary care, what's your incentive to be in primary care? So payment reform to us is near and dear. So I guess with that in mind, do you have any comments on systems like Physician Group Incentive Program (PGIP) that are attempting to transform some of the payments are made by insurance companies and who they're paid to?

MR. SAFRAN: I defer to the folks who know PGIP and know I'm kind of the support services end of the business.

MR. KELLEY: I have a really quick opinion, which is that I think it's a good direction, but it's not big enough. So I don't think... back to your money thing. I believe the financial incentives have a significant impact on the way the system runs, and I don't think PGIP, I think it's encouraging but it's not enough money to change the whole structure of the system.

DR. MUMA: I agree. I think PGIP is a great way to incentivize people to do the right thing, but it's really incremental, and it will never have enough scale to make the big changes we need.

DR. GEHEB: I agree. PGIP is in the right direction. On the financial side, I guess the question is who is going to pay off the debt? So you're either going to go to work and you're going to generate the money out of the healthcare delivery system to pay off your medical school debts or you're going to come out without the debt and all the interest so that, in fact, you can choose in the current payment system to be a primary care doctor. We've not grappled with it. We've not come to a conclusion as a society. I think one way or the other you can't complain about not having enough primary care doctors if they can't pay off their debts and get mad at people for doing what makes sense for them and their families. So it's a fundamental issue I don't think we've grappled with or come to resolution on.

MR. WEBB: I'd like to ask you an unfair question. Using your crystal ball, in your experience, what do you think the hospitals of tomorrow will look like? How do you see them? Are they physical buildings? What are they?

DR. AUNER: I think you'll see a transformation of much of what hospitals do out to local clinics and more to the home. And hospitals themselves will be much more advanced treatments and a lot of robotics, not the daVinci type of robots that do a prostatectomy very well and other things okay, but, rather, microrobots that do retina or other types of surgery extraordinarily well. That will transform how things are done. A lot of treatment I think will be home care, not only the diagnostic system, but providing medications and so on. So I think you will see a shift from the waiting room and the lobby to the burden in the hospital to a shift to the home and local providers, and the hospital will be there for the more extraordinary, and it really has to be that way.