

system -- a library that simply allows all caregivers to scroll through new and old medical science easily by topic. We also need a more proactive communications tool set. We need a process that identifies urgent new care science and care delivery information and then makes that urgent information available very quickly to care settings where that piece of information can change care and save lives.

An example of a need for very rapid information distribution to caregivers might happen when a prescription drug is found to be dangerous and is recalled. Likewise, there are times when pieces of medical technology are found to be dangerous and also need to be recalled.

Both hip implants and heart implants have had recent situations where new science has shown that some types of existing implant technology have been discovered to be harmful and even dangerous.⁹⁸ That new set of information about the danger levels should result in those implants or those devices to be either recalled or closely monitored. In each of the instances that have occurred to date, we have seen that those care sites that now have electronic care data about each and every patient and each and every implant have been able to learn about the alert and then sort through their full array of relevant data in hours or -- at worst -- days to figure out which of their patients might be affected. The best EMR supported care sites can usually do that work overnight or even faster.

By contrast, the care sites that still use paper records for all of their patient data can take months to figure those issues out. It can take months or even years in a paper based system to simply get a sense of which patients might be affected by the bad technology. In some cases, and in some settings, literally no one is accountable to conduct that search process through those paper record files to find any patients who might be affected by that information.

In the current non-system, there have some situations where recalls or major product warnings have happened and many of the patients who should have been contacted or supported by their care team fall between the data flow cracks and never learn of their risk -- until the device actually fails and they are damaged. That level of inadequate

information availability about the key patient care issues should be unacceptable. We clearly need the kind of patient-centered dataset that can add huge positive ability for caregivers to do that work on behalf of patients.

It Can Take Months or Years to Share New Learning Without Electronic Support

When medical research or various safety learnings identify better ways of delivering care, it can be a very hard – even impossible -- thing to make all relevant caregivers aware of that care improvement opportunity. Systematic notifications about those new learnings usually do not happen today. Several studies have shown that an important new medical learning can take years to have an impact on care for most care settings. There are no mechanisms in most care sites to even disperse and distribute key new pieces of information to relevant caregivers and there are almost no systems anywhere to track to see if important new information was ever used by the caregivers.

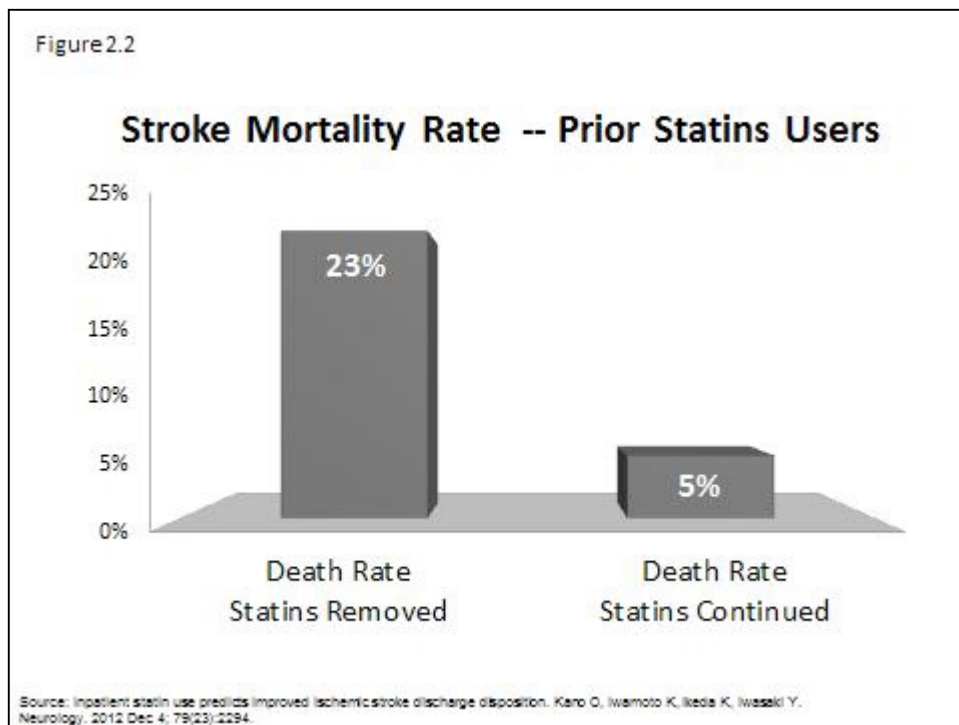
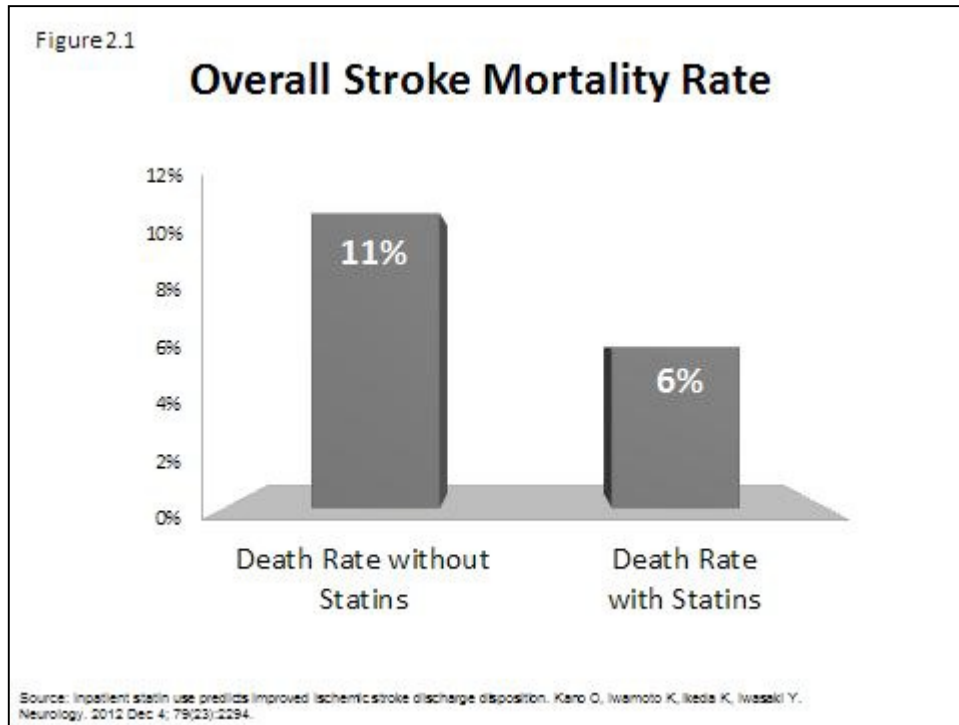
There is a better way. If we design the information and care support systems well, we can use support processes embedded in our care sites to do that work and to do it well.

The Death Rate For Stroke Doubled Without The Drug – And No One Knew

As one real-world example of how computer support tools can improve care, we should look at some recent work that was done to figure out the impact of statins on the death rate for stroke patients. That piece of research was done by Kaiser Permanente researchers using the new Kaiser Permanente expanded electronic medical record database. The researchers looked at stroke patient hospital care and they focused on stroke patient survival rates. The study actually looked at a computerized database for millions of patients for three full years. They drifted down to look specifically at patients who had been hospitalized

for stroke. The data search in the electronic medical records for those patients was a gold mine. The EMR-based study learned that stroke patients who received statins while they are hospitalized for stroke had an average 6 percent mortality rate. That same research showed that the stroke patients who did not receive those same statins while they were in the hospital being treated for their stroke had an average 11 percent mortality rate.⁹⁹ That is a much higher death rate. Eleven is nearly double six. That is a huge difference in the rate of stroke patients dying. The data showed that the major difference in the death rate for those stroke patients was based on the differential use or non-use of just one medication -- a medication that is easily available to all hospitals.

That difference in overall death rates wasn't even the most dramatic finding that resulted from that particular research, however. The same study also learned that if the hospital stroke patients had been taking statins prior to admission and if their statin medication was continued for the patient in the hospital -- the death rate actually dropped to five percent. That's a great outcome. But the researchers also learned that if that same medication was being used by the patient before the stroke and the use was discontinued while the patients were in the hospital, the death rate for those discontinued patients who didn't get the statins jumped to 23 percent.¹⁰⁰



So the death rate for stroke patients who went down one treatment path is one in four patients and the death rate for stroke patients who went down the other treatment path is only one in twenty patients.

That is obviously extremely important information. A lot of people have strokes. Likewise, a lot of people are taking statins. The researchers learned that the death rate for stroke patients literally doubled or quadrupled based on the care choices made by their care team about the use of statins.

So why is that example of important medical research included in this book chapter about optimal care delivery approaches?

It's important to understand what was done with that care-changing new information. In an optimal medical science information distribution situation, patients would hope that all hospitals and all physicians in the world who treat stroke patients would actually know about those important care results relative to statins and stroke patients.

That universal learning did not happen in the real world. Learning did happen. That information was shared through "normal" channels with the rest of the health care world. And the sharing process largely failed.

The point about how difficult it is for caregivers across the country to "keep up" is very relevant to this story. Unfortunately, there is literally no systematic approach that can be used for knowledge sharing about important new scientific discoveries for care sites across the planet today.

That particular set of information about stroke death was shared through the normal channels that exist. That new science about stroke deaths went into the usual distribution process that we use for new medical science. That particular piece of research was published in a highly respected medical journal. Anyone who read that particular journal that month might have learned about those results. That journal and that piece and research are on file.

So that very important piece of information about major differences in the death rates for stroke patients was shared with the health care world in the usual way that medical information is functionally shared with the health care world. It went to a "refereed journal". Publishing new science in a refereed medical journal is a very good thing to do. The steps that are involved in a refereed journal screening process include having objective experts on any given topic read the information that is proposed for inclusion in a research paper and those experts gave as

judges and evaluators before the information is actually accepted and then published.

These steps can add real value. It creates a lovely intellectual rigor for the information. It improves the science and gives readers and the journal the comfort of knowing that objective experts have looked at the materials and the data in the paper. It is a good process.

On its own, it is also a functionally inadequate process. Unfortunately, the facts are that the pure publication of that kind of information in a refereed journal isn't enough to get that important new information to all relevant caregivers. In this case, that journal publication obviously did not and could not get that information to all doctors and all hospitals that are treating stroke patients.

The journal that actually published that research had important and relevant readers -- but that article also was one of tens of thousands of refereed journal research articles that were published that same year.¹⁰¹

The truth is, for any given article on any given care topic, most caregivers who treat patients in America will never read any particular single study or any single report. Publishing new medical science in refereed medical journals is clearly a good thing to do. A very good thing. But it isn't enough. Publishing something really important about patient care in a journal that 90 percent to 95 percent of our relevant caregivers will never see and will not read is not an optimal or even a functionally adequate way of sharing really important new key information about improving care with all of the people who should learn that information.

[We Need A Mechanism To Trigger Alerts About Important Learning](#)

What would a more optimal approach to sharing that kind of information look like?

Because every individual caregiver can't possibly read tens of thousands of medical journals every year, there needs to be a resource put in place that has appropriate, well-qualified care experts very intentionally and consistently scanning through all of that medical research information. That expert-reader scanning process needs to look

for breakthrough ideas as well as looking for key pieces of research that can either point care in a new direction or reaffirm the validity of old and in-place care approaches and directions. Patients deserve to have that scanning resource in place and functioning for the use of their caregivers.

Caregivers who want to keep up with current medical science also need to have a resource of that nature up and functioning to do that work for them. That resource should scan the new learning in health care and should make key pieces of information available in a systematic and convenient way to caregivers. Ideally, there should be both a prioritization process and a functioning mechanism that can be used to get that key information in front of the front line care practitioners.

If that kind of resource had existed and if it had been in place last year when the stroke death rate research was done and published, the set of objective medical experts who did the screening of all research studies could have read the article, appreciated the huge importance of that particular discovery, and they could have both flagged that piece of research and given it a high priority for distribution and teaching for all relevant care teams and caregivers.

That is not an unreasonable expectation for either patients or caregivers. The right information distribution model for new medical science could have highlighted that piece of critical research and then the distribution model could have ensured that all caregivers who treat those patients would have easy access to that piece of information.

Only The Internet Can Easily Distribute That Information

This is another key area where the internet can be a lovely resource to enhance the provision of care. Ideally, that kind of lifesaving information should flow electronically to all relevant caregivers. It is clear at a very basic logistical level that only the electronic distribution of that kind of information can achieve the very best results. Mailing a hard copy of a printed journal to thousands or even tens of thousands of people is obviously not going to reach all the people who need to be reached with that information.

Electronic versions of the journal could reach more people—but electronic versions of those Journals only reach the caregivers who pay to subscribe to the Journal. Simply adding that information—and other information like it—to an electronic medical library would be a very good thing to do. That would be a far superior mechanism for sharing that information with all caregivers. But even inserting the information entirely into an electronic medical library would probably not have been adequate to create targeted sharing if important new information of that magnitude.

For the most important pieces of new medical information, we need to go a couple of steps further on down the distribution road to create prioritized information sharing. In an optimal care delivery information support world, there should also be reminders and prompts available for the relevant caregivers and those reminders should be embedded in the actual computer systems that are used by each of the caregivers at the point of care.

Real time reminders about that particular piece of stroke treatment information could be extremely useful to the caregivers. When the death rate quadruples if the doctors choose the wrong treatment path, than information about the right treatment path should be prompted and available for the caregiver at the point of care.

We need actual electronic reminders given to caregivers about that new science and those reminders should happen at the actual point and time of care could remind each relevant caregiver to do the right things for their stroke patients. The findings from that particular study literally create an issue of life and death for patients. A lot of people die from strokes. A lot of people have prescriptions for statins.

We also know from other data that the stroke mortality rates actually vary significantly now from hospital to hospital. Death rates for strokes vary from care setting to care setting. Some of that unnecessary variation in the percentage of people dying from stroke could be ended or reduced if there were consistent reminder mechanisms in place to remind the relevant caregivers at the point of care in each hospital what the very best current medical practices are for their stroke patients.

each patient in each situational setting to help resolve each situational care crisis.

The Care Sites With A Different Business Model Build Patient-Centered Care

Some care sites today already do have a different business model where they currently do sell care by the package and not by the piece. Those sites who sell an entire package of care today can and do look at asthma care at the patient level rather than just reacting at the incident level to each asthma crisis triggered “moment of care.” When the payment model works well, the sites that sell care by the package can actually benefit financially by averting asthma crises rather than literally losing money when an asthma attack is prevented. In the package care model, the caregivers also benefit financially when the asthma care needs of patients are handled so well that the care team response to an asthma issue doesn’t always become a full medical crisis. That is much better care for asthma patients. The thought processes for each of the two approaches are fundamentally different.

The care sites and care teams that have a total package of care focus for asthma care tend to develop an early intervention plan for each asthma patient. Prevention becomes a top priority when the cash flow model changes. That is a good thing. Prevention works. The number of asthma crises for those patients are reduced. The truth is, nearly 70 percent of today’s hospital-admission triggering asthma care crisis -- in many care settings -- are preventable.¹⁰⁵ Care is better and life is better for the patients who are not going through those crises. Patient-focused, proactive asthma care is far superior to crisis focused, fee-fed asthma care. The caregivers can afford to reengineer the procedures of care when the caregivers are prepaid and when the caregivers can benefit from the reengineering. Without that very basic change in the cash flow, for caregivers, reengineering simply changes provider revenue in an adverse way. As this book says several time -- no industry ever reengineers against its own self-interest. That is true of any other industry and it is

very true of health care. So we need to make care reengineering in the best interest of the care industry and reengineering will quickly happen.

Asthma obviously, isn't alone in offering us a universe of opportunity for better care that is anchored on a better business model and reengineered processes of care.

Congestive Heart Failure Care Is Also Better As A Package

For patients with chronic conditions -- and particularly for patients with multiple conditions -- we really need proactive and intervention-focused, process-based thinking to make care better and more affordable.

Congestive heart failure (CHF) is another good example of an area of care delivery where looking at the total care needs of each patient in a proactive way creates far better -- and less expensive -- care than a care delivery approach that is focused entirely on responding on a piecemeal basis to CHF crises after they occur.

Multiple settings have shown that care is much better for those patients when their personal CHF crisis are reduced or prevented. A congestive heart failure crisis can be pretty grim for patients. Those crises are really not pleasant experiences for patients. When patients have a congestive heart failure crisis, they are often drowning in their own fluids. Those CHF crises can be horrible, terrifying, painful, frightening, demoralizing and deeply unpleasant experiences for the patient.

They are actually very much like a typical asthma crisis. And -- like the asthma crisis -- most of those terrible and painful CHF crises do not need to happen for most of those patients. Hugely competent, proactive patient-focused, well organized care approaches for each congestive heart failure patient can use systematic intervention processes to cut those horrible crises by half or more.¹⁰⁶

Patients' lives are obviously significantly better when that happens. Cutting the number of CHF crises in half also reduces the cost of care for those very expensive patients by almost half. So care is better and care

also costs less when it is delivered in a proactive patient-focused package rather than simply being sold to the patient after the fact entirely by the piece. Continuous improvement can also happen once the care is set up as care processes instead of being triggered as purely reactionary incidents of care.

Once caregivers begin looking at these issues through the lens of continuous improvement and not through the lens of piecemeal-billing volume, creativity can flourish and care finally can get continuously better.

Proactive Care Needs to Be Incented By the Business Model for Care

The sheer value of patient-focused care and of proactive care and interventional care strategies as the basis for our new continuously improving business model for care is obvious. This isn't a theoretical or ideological or philosophical insight or aspiration. It is an entirely practical and highly functional aspiration. The functional ability of care teams to actually do proactive patient focused care clearly exists. We know that is true because in some care settings whose business model already incentivizes and rewards those approaches, care teams are doing that level of proactive intervention care now and they are doing it well. People have significantly fewer asthma and significantly fewer CHF crises in those care settings. So we clearly would be well served to put the tools and the financial models in place to make that kind of purchasing and care process improvement happen in more places for more medical conditions.

Most Care Costs Come From Patients With Co-Morbidities

Another major focus of the new business model we should be using to buy care should be to put programs and tools in place to help achieve team care. We need care to be data based and we need care to continuously improve. We need process reengineering to maximize the

effectiveness of our ability proactively to reduce care crises. We also need a care delivery business model that incents team care.

Why do we need team care?

We want health care costs in this country to go down and team care is a great tool for achieving that goal.

We need to recognize the very powerful reality that most health care costs today come from patients with chronic conditions and co-morbidities -- multiple health conditions. We know from multiple studies and we each tend to know as patients from our own care experiences that most of the patients in this country who have co-morbidities have badly coordinated care today. Their care is badly coordinated because we haven't built any care coordination processes and we have not implemented any care coordination tools in most care settings. We don't support team care financially and we don't support it functionally with team care tools. We very much need to improve the processes of team care for those patients who have multiple health conditions if we are going to reduce costs for those patients. We need to do that work as a conscious strategy rather than hoping that somehow the infrastructure of care will spontaneously and magically improve in a number of key areas. The opportunities for better care based on care teamwork are huge and they are very real. We actually can cut the needed hospital days by half or more for many of those patients with multiple health conditions if those patients get great care and if they -- as a result of better care -- have both fewer direct crises and fewer complications. To do that care coordination job for those patients well, we need the caregivers who share that patient to be able to function as a team.

We Need Care Coordination Tools

For our caregivers to function as a team, there are a few very basic sets of logistical issues and operational realities that need to be addressed. Tools are the first issue. We need tools. Chapter one talked about our tool deficits and our tool gaps. They are very real. Tools are essential. Most caregivers do not have the right set of care coordination

and care support tools today. We need to build the right tool kit to support team care and coordinated care and then we need to put that tool kit in place and use it.

What will those particular tools do? Information sharing is a key functional need. Minimally, we need all of the caregivers who collectively treat patients who have co-morbidities to be able to share current information about each patient they share. That data sharing need is particularly important for all of the patients who have co-morbidities. That tool to share knowledge is actually equally useful in many respects for many other patients who have serious single illnesses. That tool is needed for the patients because many of the patients who have very serious single primary illnesses often have multiple doctors as well who can't easily share information. We clearly need a care delivery infrastructure and care delivery tool kits that allow our caregivers to share information as needed for each shared patient -- with a focus on information sharing for the patients who have co-morbidities and complex medical conditions.

Team Care is Wonderful

We clearly need to build business models for care that will both create care teams and make it possible for patients to have easy access to those teams.

We clearly need to support and facilitate team care if we want to achieve the goal of improving care and reducing the costs of care. We need doctors, nurses, pharmacists, lab techs and various categories of therapists working together for each patient in ways that their collective and joint care is focused on their patients and not just on the cash flow and the operational convenience needs of various provider business units.

Patients and Caregivers Need Data about Care Consequences

Chapter one talked about the extreme variation in care outcomes and even mortality rates that can happen between care sites and care approaches today. Far too often, those significant performance differences exist and they are invisible both to the caregivers and to the people receiving care. We also should do much better in regard to sharing data about care performance levels with both patients and caregivers.

Both patients and caregivers will benefit.

Patients should be able to know what the likely outcomes are for various medical procedures and patients should be able to compare performance for various care sites and care teams.

Care sites very much need comparative data about their own performance in key areas. The chart below was referenced in chapter one. It shows the sepsis death rate in a number of individual hospitals as it occurred over several years at a major American hospital system. That comparative data helped those care sites improve care. That death rate chart shows why data is so important to caregivers. Having the data very clearly and directly helped bring the death rate down for those care sites. A decade ago, no one even measured outcomes like sepsis death rates at the caregiver level. For the hospitals on this chart, data on that topic was not gathered, collected, received, or even considered ten years ago. As noted earlier, sepsis is actually the number one cause of death in American hospitals -- killing more patients than stroke, heart disease or even cancer.¹⁰⁷ Sepsis is the single biggest cause of death in hospitals and most hospitals do not even collect the level of data that is shown on those charts.

Hospitals Didn't Believe that Data Was Needed

People who run hospitals very much want to do the right thing. Until fairly recently, however, the people who run hospitals believed that doing the right thing actually did not require using a lot of data.

For the hospitals on this chart -- before the initial data set was collected -- everyone in each care site believed that their own hospital was doing a great job on sepsis care. People at those same data-free care

sites also believed they were doing a great job on all of the other care-related infections for their patients. All of the care sites shown on this chart believed they were using best practices and all of the care sites believed that their outcomes for patients were as good as or better than the outcomes at other care sites. Then the first actual measurements were done at the hospitals. The hospitals that did that initial measuring of their own performance and then built their first level of data comparison capabilities actually learned very quickly there actually were major differences in death rates between hospitals. Sepsis turned out to be an area of significant performance variation. The hospitals learned in a very powerful way that everyone in the hospital world was not delivering great sepsis care. Results were inconsistent. Some very good people who had believed very sincerely and honestly that their own hospital care was the best available hospital care on the planet learned after looking at real data about sepsis outcomes that their results for that condition were actually worse than the results in other hospitals in the comparison group.

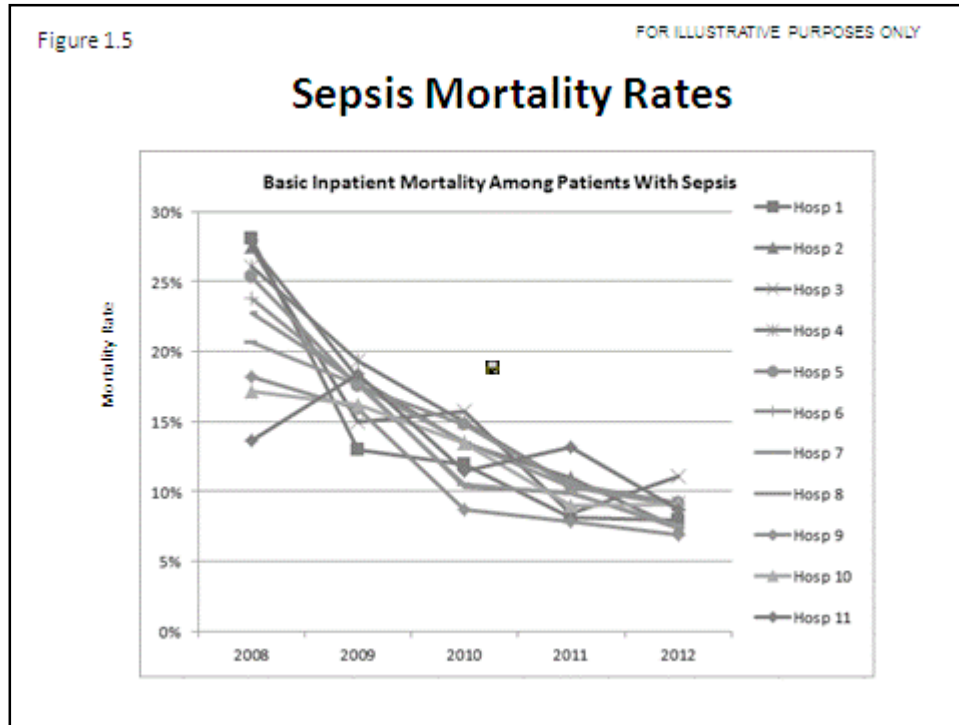
That was unexpected. And it was shocking to many people.

That data was golden. It was honest. Some of that data was painful.

Overall -- having that data was, in total, wonderful.

That data has saved a lot of lives.

Because that comparative data finally existed and also because the data was made available, accessible, and transparent to the care teams at each hospital, all of the care sites in that hospital system began the process improvement work that was needed to bring down the death rate from sepsis at their hospital. The next chart shows very clearly the reduction in overall death rate for all of those hospitals as a group over a couple of years of continuously improving care.



The mortality rate in those hospitals is now far below the national average death rate in American hospitals for sepsis. Lives are being saved every day in those hospitals that would be dead in most other care settings. There is no possible way that those absolutely impressive levels of performance improvement in all of those hospitals could have happened without that data.

Other Hospitals Need To Collect That Data

What does that example have to do with the data elements that we want to build into the future business model of care? We should want all other hospitals in this country to do down similar paths of data-based continuous process improvement for multiple important areas of care. It is possible to do. Buyers can help make that happen, as chapter five explains. We need to buy care in a way that will incent and reward a continuous improvement process approach that will make the outcomes in all American hospitals in key areas get better every year.

So why did these hospitals manage to achieve those reductions in the sepsis death rate while other hospitals here made a lot less progress? The business model used to buy care was relevant. Those hospitals on this chart actually benefited financially by improving sepsis care because these hospitals are already selling care by the package and not selling care by the piece. Those hospitals do not lose revenue when sepsis patients are quickly cured. For other hospitals that sell care entirely by the piece, an equivalent improvement in sepsis care results could have reduced revenue by many millions of dollars per hospital. The business model of selling hospital care as a full package instead of selling that care purely by the piece enabled that stunning level of care improvement to happen. And allowed all of those lives to be saved.

[Hospitals Need A Business Model That Rewards Better Care](#)

Those sepsis results show why we need to change the business model for other hospitals in a couple of key ways -- to stop paying more money when care is bad and paying even more money when care is worse.

We need that same commitment to continuous improvement to be true in other hospitals as a core financial and operational reality that allows those hospitals to benefit when sepsis response minimize damage to sepsis patients.

In a nutshell, we need to put American hospitals into a financial reality where better care creates financial rewards rather than creating financial penalties. This book addresses some new ways of compensating hospitals that can work toward these goals -- including having hospitals functioning as part of the new Accountable Care Organizations approaches to care delivery that are described in chapter four and five. Quite a few care organizations are trying to set up Accountable Care Organizations as a way of creating team care and changing the business model to reward proactive care instead of penalizing it.

The new ACO models for care delivery and care financing that are being built have the potential to create a new financial reality and a new

cash flow model for hospitals and care teams that will incent and deliver better sepsis care rather than penalize it. The ACO's that sell care by the package will also have the potential to incent better asthma care and better congestive heart failure care. That ACO strategy is discussed in both chapters four and five. For this chapter, the point to be made is that care can get a lot better when the business model we use to buy care rewards better care. We need business models that allow and incent better and safer care to be the norm rather than the exception.

Consumers deserve safe care. The business model we use to buy care and the care support tools we use to deliver care need to support safety, and patients need to know which care sites create the most risk for them as patients.

Patients Should Know Which Care Sites Are Safe

In the new health care world we are building, patients should have much better data about care delivery performance and care outcomes. Having access to key pieces of needed data about care outcomes and care safety is an area where one very effective tool we might want to use to improve the business model of care might be the law, itself. Laws create their own business reality. Business models can be created by the market place -- and business realities can also can be created by regulatory edict. In some cases, laws clearly have a role to play in making care better. Laws about care delivery very much create their own business reality about care delivery for care sites. When something specific is required by the law, care sites tend to invest the resources needed to do whatever is required by the law in order to stay in business or avoid regulatory penalties.

We May Need Regulations About Care Outcome Reporting

Laws are a clumsy and potentially damaging tool to use to structure specific aspects and care delivery, but laws can create a context for data availability that can be extremely useful for caregivers, patients, and

buyers. We may actually want to set up a few additional regulations about care data reporting that will require care sites to gather and report a whole array of outcomes related data about specific aspects of care.

In the best of all worlds, that data about care quality could be voluntarily reported. That voluntary reporting approach for care outcomes has not happened in most care settings, however. Some care sites already do that data gathering work and they do it well -- but the sad truth is that too many sites will not gather or report significant levels of outcome data voluntarily. That lack of outcomes data for care delivery isn't good, if our primary goal is to improve the quality of care and also -- in the process -- allow patients to make informed choices about care sites based on comparative performance and safety data. We need to use a combination of market forces and regulatory oversight to make appropriate levels of safety data available to consumers and caregivers.

[Safety Is A Key Issue](#)

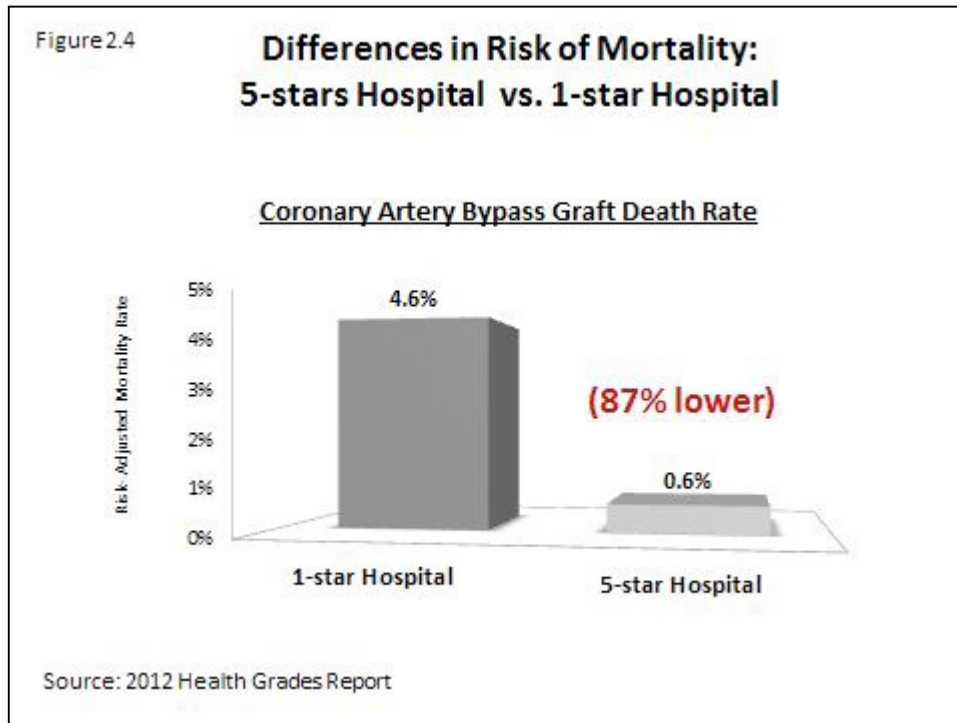
Safety is a good place to start when we are looking at areas where data transparency can be useful and meaningful.

Patients should know which care sites are safe. The business model we use to buy care should make safety a priority and the specifications used by key buyers should make public data about safety levels a mandate. As the last chapter of this book pointed out, the death rate triples and quadruples for several categories of care if you go to the wrong hospital or to the wrong care team.

The next four charts show some graphic and powerful differences in care outcomes by hospitals. The National Health Grades Report rated an array of hospitals in this country.¹⁰⁸ The Health Grades teams looked at available performance and operational data and then they assigned from one-star to five-stars to each hospital based on the quality improvement and the continuous improvement programs that are in place at each hospital.

What did they learn?

They learned that the existence or the lack of existence of very basic data based quality programs in each measured hospital had a huge impact on saving people's lives in each hospital setting.



The hospitals that were given five stars were hospitals that had extensive quality improvement programs in place. Those hospitals clearly used their data to improve the quality of care. One-star hospitals had less data, fewer reporting processes and when you look at the results, it's clear that the one-star hospitals clearly did not improve some key areas of care.

Heart surgery was a good example of differences in care outcomes between the five star hospitals that have formal data based quality assurance programs in place and the one-star hospitals that rely primarily on good will and good intentions to make better care happen.

The hospitals that only had one-star ratings had one out of every 20 coronary artery bypass surgery patients die.

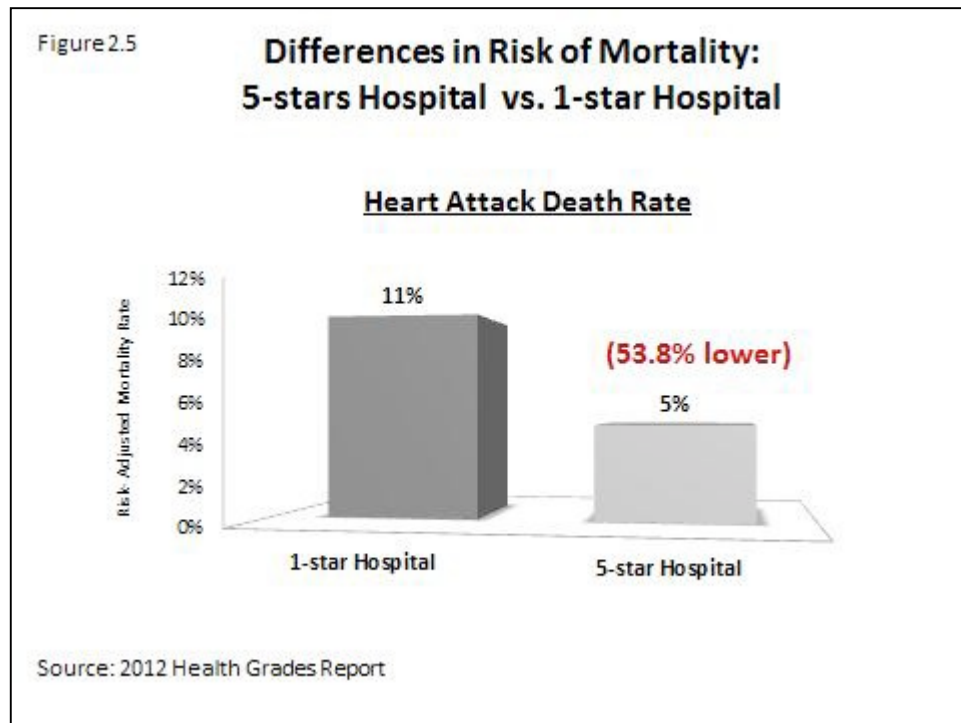
By contrast, the five-star hospitals in the Health Grades report has less than one out of 100 of their patients with that exact same surgery dying.

Earlier studies of mortality levels for that heart bypass surgery have shown that the death rate for the worst hospitals in America who do that particular heart procedure has actually ranged closer to one in ten of their surgery patients dying from that surgery.¹⁰⁹

So if you need that particular heart surgery and if you go to a high quality, data supported five-star hospital, and have the surgery, your likelihood of death is only one in a hundred. If you go to a one-star hospital, your chance of dying jumps to one in twenty. And if you go to an even lower performing hospital -- if you go to a worst care performers for that particular surgery -- your chance of dying from the same exact surgery jumps to roughly one in ten. One in ten is a very different risk level for a patient than one in a hundred.

Heart attacks also result in very different outcomes when you compare one and five-star hospitals.

The difference in death rates between the one-star hospitals and the five-star hospitals for basic heart attacks is also worth knowing. Look at the chart below. Over ten percent of the heart attack patients die in the one-star hospitals. Less than five percent of those some patients die in the five-star hospitals.



Our current business model for care makes no differences in the way we buy care for any of those fairly dramatic differences in care outcomes. We don't change the cash flow for care in any way based on these very difference care outcomes. That is obviously a flaw in the way we buy care today.

As we build our business model for care, we definitely should -- at a bare minimum -- insist that any of the patients who will be undergoing those surgeries should know clearly what those relative mortality risk levels are for each site before having the surgery. Likewise, we need a business model for care that creates an information flow so that patients who have heart attacks can easily know that their personal death risk doubles if they go to a hospital that only gets one star for its safety programs and its care processes instead of earning five stars.

Ideally, we should pay hospitals less for a bad mortality rate and more for a good mortality rate. The chapter of this book on how employers should establish performance specifications addresses those issues in more detail. At this point, we just need to keep in mind that the business model we use to buy care should probably be set up to encourage data supported care because the hospitals included in the star rating system who had the best results were the hospitals with the most intense care data.

Sepsis Death Rates Vary As Well

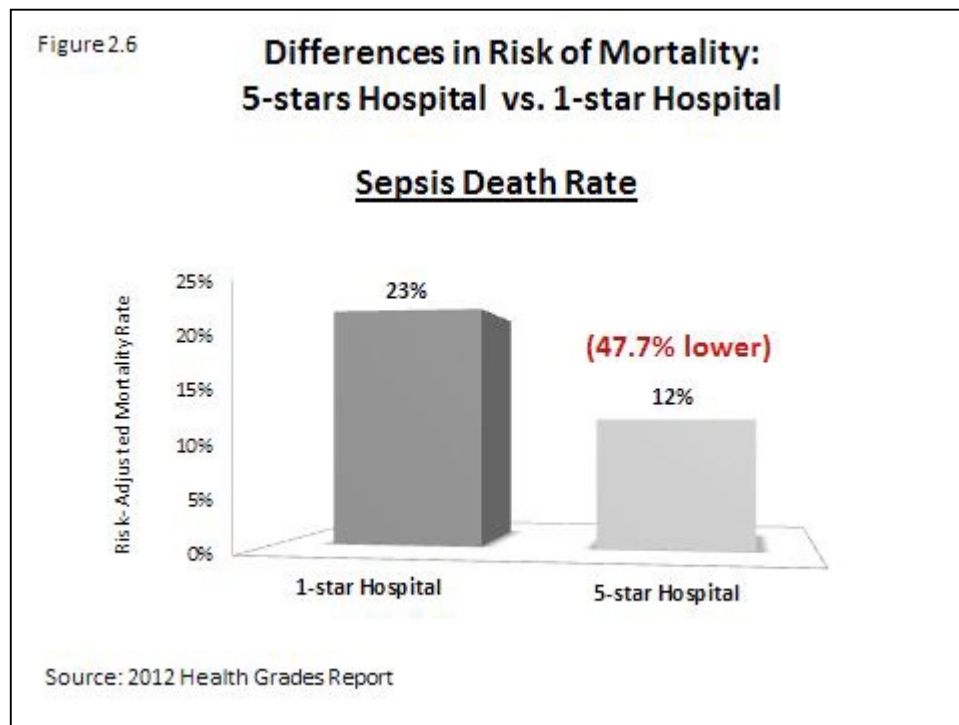
The patterns of sepsis care -- not surprisingly -- look very familiar for the hospitals included in the star rating system.

The wide variation in performance that exists now relative to mortality levels for patients with sepsis in American hospitals and the many opportunities we have for care improvement for sepsis patients have both already been discussed in this book. The National Health Grades report looked at sepsis care, as well and their data confirms the points made by this book. Their outcomes numbers directly reinforced

the point that was made earlier about the benefits of systematic care improvement for sepsis care patients.

The next chart shows the impact of systematic care improvement in hospital settings for sepsis patients. The 12 percent mortality rate for sepsis they report for the top performing five-star hospitals that were included in their study is clearly a great success story. That 12 percent number is a bit higher than the best hospital performance results in the other care system that was mentioned earlier in this chapter -- but their five-star hospitals mortality level for sepsis is clearly a lot better than the 23 percent mortality number that is the average death rate the National Health Grades Organization uncovered in their one-star hospitals. In some hospital settings, the death rate reaches 30 percent of sepsis patients.

The chart below shows the sepsis mortality rates for the one and five-star hospitals rated by Health Grades.

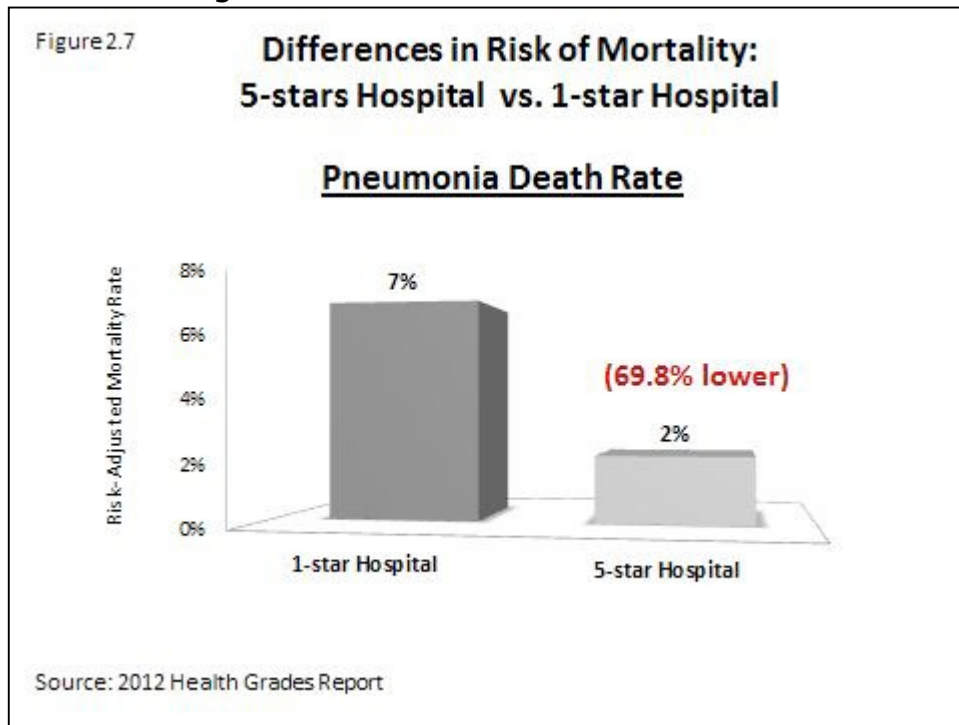


Not surprisingly, the same relative performance paths existed for pneumonia data in the Health Grade study. Those differences were fascinating, as well. Pneumonia is one of the hospital acquired infections

that happen most often to patients in this country. The success level variation for treating that disease is huge. As you can see from these charts, the best “five-star” hospitals only lose about two percent of those pneumonia patients. The one-star hospitals, however, lose over seven percent of the pneumonia patients. Being more than three times more likely to die is a very important difference in the survival rate if you personally are a pneumonia patient.

Again -- the business model we use today to buy care does not differentiate in any way between those differences in care outcome. If anything, the way we buy care today rewards the hospitals with the worst death rates because the pneumonia patients in those less effective hospitals tend to have their pneumonia longer than the cases in the best hospitals and they spend more time in the very expensive intensive care units.

We clearly need a business model for care that insists on making that kind of comparative mortality rate information available to patients who need those levels and categories of care. We also need a business model for care that pays hospitals more for higher survival rates and pays hospitals less for higher rates of death.



We Need Care Delivery Innovation

We also need a business model for care that incentivizes providers of care to be much more innovative in developing alternative care delivery tools and support systems.

As one example -- one important care delivery improvement that patients tend to appreciate and use is to give patients e-connections with their caregivers. E-visits can actually replace face-to-face visits for multiple levels of care. When people deliver care by the package, e-visits are easily included in the package. But when care is sold only by the piece, e-visits are rare and they are sometimes not available at all.

That makes economic sense for the caregivers because the current piecemeal payment model for care doesn't usually pay for e-visit, and that lack of payment penalizes any fee-based care sites that use e-visits and telephone connectivity as an efficient tool for delivering care. It penalizes those sites and those care teams because those electronic connections, information flows, and remote venues of care delivery are not paid for by the typical insurer or medical fee schedule.

That rigidity in payment decisions for those electronically connected levels of care is unfortunate because we need to design and implement care innovation approaches that use those new tools. It is a flaw in the business model we use now to buy care to not pay for improved connectivity. We obviously need a business model that supports reengineering the delivery of care to make it more affordable and more accessible using any and all of the new connectivity tools available to us.

We need to use the available sets of new connectivity tools to achieve a more flexible connectivity goal. Enhancing connectivity should be a very conscious goal. We need to fully and creatively use the new connectivity tool kit that is increasingly available to us through all of the new smartphones and internet connectivity devices so that we can deliver care in highly patient-focused ways in multiple care settings and deliver care that is both less expensive and much more patient friendly from a logistical perspective.

The Cusp of a Golden Age for Care Support Tools

We are actually on the cusp of a golden age for health care support tools. If we take full advantage of the new tool kit that is being made available to us, we will be able to deliver better care with major improvement in the access to care and achieve a significant reduction for the overall cost of care in the process. These are exciting times for health care support tools. We are on the cutting edge of a connectivity revolution for health care. The new computerized connectivity revolution and an explosion in data purchasing capabilities and operational functionality has already transformed many work flows and has fundamentally changed many basic customer/vendor interactions and transactions in multiple other areas of the economy. That new connectivity capability is now reaching health care and if we use the new tools well, that connectivity revolution will change care as well. If we know what we are doing, we will change care significantly for the better.

Hospital Care Will Also Have Better Tools

The new tools will make care better at all of the various sites we use to deliver care. The next generation of care delivery will have hospitals that are supported with great technology and with databases that will give hospital caregivers all of the information about each patient and their care needs.

Hospital care will get better with the new tool kit and it will become safer and more effective when hospitals adapt both continuous improvement approaches and data based core tracking as care competencies.

Hospitals are much more likely to do that work and use those tools well if the business model for care buys team care instead of piecemeal care and if the hospitals are allied as team members with appropriate caregivers for each patient.

So hospitals will still be a primary site of care. Hospitals will not disappear. If we design the entire process well, hospitals will be

increasingly embedded into a care team approach rather than simply continuing to be free-standing functionally unconnected care business units that deal with patients in the pure context of the patient's situational care needs.

Clinics Will Also Have Much Better Tools

The second site of care that will survive and thrive, going into the future will be the clinics and doctors' offices where people have a direct face-to-face encounter with licensed caregiver who will provide needed elements of care.

Those clinic based sites of care will also continue to be needed for the foreseeable future. Those doctors' offices will also have much better technology and they should be supported with electronic information about each of the patients they serve if we put the right linkage in place. In many settings, the electronic data will come from an electronic medical record that are installed and operated at the clinical care site. In other settings, the electronic data will be available from patient focused electronic care registries and the data may be independent of any care sites. The goal for both approaches needs to be to have all of the needed data for each patient available at the point of care.

The patient focused medical homes and the Accountable Care Organizations that are described in chapter four of this book will both be a very powerful source of patient supported registry functionality. The medical homes and ACOs will need systems that anchor that data for care settings that do not have a full electronic medical record in place.

There will be variations relative to the patient data connectivity tools -- but we should be headed very deliberately for a functional future where all face-to-face care sites will have either EMRs or an electronic patient registry of some kind to support care.

The physician's office part of the care delivery system is clearly also destined to survive as a key element of future care delivery. There will be a growing level of variability in site size, site scope, site scale and functionality for those medical offices. At one end of the continuum, we

will see face-to-face care delivered at micro sites -- tiny care kiosks -- where licensed caregivers will see patients face-to-face in very small care settings.

Some of those settings will even be mobile. A number of care vans exist already and are being used to bring face-to-face care more conveniently to patient locations.

As we go forward to create team care and accessible care, even the micro care kiosks should be well supported with electronic medical records and extensive levels of patient information.

At the other end of the physician's office care continuum from the micro clinics will be a growing number of medical macro clinics. In a number of settings, care delivery organizations are building full service, full capability macro care sites -- mega care hubs. The care hub model has the potential as a medical group to provide almost all of the care needs of their patients in one very large care sites sometimes available to provide multiple levels of care in one visit.

Those care hubs will also be heavily supported by the new electronic tool kit. The care hubs will also be supported by extensive levels of connectivity tools that will allow for video links, team consults, and care connectivity levels that will allow key levels of care expertise to flow electronically to the patient rather than having the patient moving from one physical site to another.

The ability of really well designed care hubs to do that work well is already being proven. One of the large multi-specialty care settings is already using video consults so well that over 40 percent of their dermatology visits¹¹⁰ are now being done by video from the office of the patient's primary care doctor.

The ability to redesign work flows and to build care delivery around the patient can be enhanced significantly by the use of those tools in a multi-specialty team care context and setting.

In any case, the doctors' offices will continue to be a major site of care -- in multiple sizes and permutations -- and those physician anchored sites will also have all of the information about each patient available electronically in real time.

For some elements of care -- like drawing blood, removing a cyst, setting a broken bone, or getting a tissue sample for diagnostic analysis -- sheer logistical realities will require physical medical office sites to continue to exist.

The Home Will Become The Third Site of Care

One obvious problem with delivering care in either a hospital or a clinical care site is that the patient who is receiving care has to actually physically travel to those care sites. Travel can be inconvenient and sometimes difficult for patients. Any time a patient can receive appropriate care without having to travel to a care site to get that care, that approach to care delivery has the potential to make life easier for the patient.

If we really want to build care delivery around the patients and not around the business units of care delivery, the ability to receive basic care without travelling to a care site has obvious value and merit.

That fact -- combined with the fact that most of the care dollars spent in this country are spent on patients with chronic disease who generally benefit physically from consistent care monitoring and care support -- have caused quite a few caregiver organizations to conclude that the third primary site of care in the future should be and will be the home.

The new tool kit for care monitoring and care connectivity is already allowing the home to be the primary site of care for a growing number of patients. A whole array of in-home care support tools can already track key elements of a patient's physical status. In-home EKGs are now possible. Basic function monitoring can be now done relatively inexpensively from the home for an increasing number of patients.

Caregiver contact with the patient in the home can be very often video linked and tied to a blend of phone connections and email connectivity. That in-home care package already can replace many of the patient doctor encounters that have always required the patients to go in person to a clinic or a hospital for care.

In-home care can be far more convenient, significantly less expensive, and -- for many patients -- faster, more consistent and better care.

That in-home care support model works best in the context of accountable care and a care team. It's hard to do isolated pieces of care in a home. But team care makes sense for home care. The use of patient centered medical home team care approaches can create an easy to manage context for care delivery where in-home care is part of a total care package and a total care agenda for a patient instead of being an incidental, siloed, unconnected array of services that can be individually provided in the home as a site of care. Preventable care can also often be done remotely.

The best accountable care teams will also look at in-home care tools as a key and easy way to react quickly to patient needs when patient need quick interventions. The ability of care teams to monitor physical statuses of patient in their homes will be at a level that is far superior for many patients to the traditional monitoring that has happened in person when the patients have a monthly or even weekly appointment for a face-to-face care at a medical office.

The home could be the primary site of care for quite a few people - - and that will be most effective in the context of team care being delivered to those in-home patients.

The Internet Will Be The Fourth Site of Care

In addition to those three increasingly well supported physical sites of care, we are on the cusp of seeing care delivery evolve very quickly to an entirely new care concept -- care everywhere.

Internet supported care can happen whenever an internet connection exists.

Care everywhere is clearly going to happen. There are thousands of computerized care opportunities already available on the internet that can do some levels of care diagnosis, care monitoring, and various kinds

of care consultations. Second opinions on the web are becoming easy to do. So are initial diagnoses for some conditions.

Health care apps already abound. Many elements of care that once required a face-to-face doctor's office visit can now be achieved on the internet. The new monitoring tools that exist on the web today can give patients the ability to track their activity levels, their food intake levels, and even their relative levels of heart activity or emotional status. Electronic tools to help monitor patients who are suffering from depression exist now. Monitoring for congestive heart failure patients is also available as a web tools. There are a number of tools now and more are being developed.

Group therapy session and individual counseling are even available electronically.

The new tool kit of care is exploding -- and it will transform care delivery.

We Need To Avoid New Electronic Silos

That could be wonderful. It could also be -- for some patients -- dysfunctional and even dangerous. That new tool kit could also create entirely new data silos. It would be more than a little ironic if one consequence of using the internet as a care support tool would be to replace paper data silos with new electronic data silos that are equally segregated and equally dysfunctional.

As we look at the business models we need to use to buy care in the future, we need to make sure that those new business models embrace and support the best elements of this new world of care delivery rather than rejecting, derailing, defusing, or ignoring it.

Again -- building a level of accountability for the care of each patient can be a key thing to build into the new tool kit. If Accountable Care Organizations actually become accountable and are functionally responsible for the total care needs of a patient, we will need those ACOs to embrace team care, connected care and continuously improving care.

E-visits, done well, can replace some face-to-face office visits for the new care organizations and can both improve care and reduce costs. As noted earlier, quite a few existing care sites that could do various kinds of e-visits well do not do them at all today because the piecemeal business model we use to buy care pays well for a face-to-face visit and doesn't pay at all for an e-visit.

Patients Love E-visits

Again, that perspective is not theoretical or hypothetical; that set of assumptions about what is possible when providers of care sell care by the package and not by the piece is based on direct observation of patient behavior and care delivery in settings where that model is used.

Kaiser Permanente is currently paid a lump sum today for all care as a care system. KP is not paid by the piece for care -- so Kaiser Permanente has already built electronic patient connectivity tools and uses e-visits today for many patients. Last year, there were over 15,000,000 e-visits in that particular care setting that would or could have been face-to-face visits in other care sites.¹¹¹ Over 30,000,000 Kaiser Permanente patients also received their lab results electronically -- with several million of those lab results going directly to people's smart phones.¹¹² In the past -- and in other care settings -- patients would need to visit their clinic to see their doctor in person to get those lab results.

Patients love that that electronic connectivity for e-visits and lab results. It doesn't happen in too many other care sites today because those electronic connections tend to replace a face-to-face billable event and any care redesign that eliminates a billable event is frowned on by people who rely on that cash flow for their livelihood.

We don't need care delivery built around entirely those kinds of billable events when other and better alternatives exist for meeting patient needs.

What does that tell us?

It tells us that the business model we use to buy care should very intentionally and effectively support the evolving delivery opportunities in care. The new ACO's and Medical Homes that are being worked to sell and deliver packages of care are highly likely to use that same set of tools and use them well.

Before describing what that new business model for buying care should look like, it makes sense to look at one more key issue that has a huge impact on health care costs in America. The next chapter focuses on that key issue -- the prices we spend for care. Any solution to health care costs that doesn't look at prices as part of the strategy to reduce costs is overlooking a major opportunity. So read the information in the next Chapter about the reality of prices in this country today and then look at various ways how we might change the way we buy care.