Focus on Extending Clinical Communications

Forum Paper ■

Does National Regulatory Mandate of Provider Order Entry Portend Greater Benefit Than Risk for Health Care Delivery?

The 2001 ACMI Debate

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Abstract The 2001 debate of the American College of Medical Informatics focused on the proposition that national regulatory mandate of computer-based provider order entry (CPOE), to take effect by the end of 2005, portends greater benefit than risk for health care delivery. Both sides accepted that provider order entry offers potential benefit. Those supporting the proposition emphasized public safety, noting that payers have little economic incentive to pay for quality and that a mandate would force vendors to improve the usability and value of their systems. They argued that the mandate would align the economic incentives to finally allow CPOE to be widely adopted. Those opposing the proposition emphasized the risks resulting from a mandate, including the direct implementation costs, the logistic issues of implementation, and the cost of failed implementations. They also noted the potential for errors introduced by the systems themselves and the fact that the safety and utility of commercially available CPOE products have yet to be proved.

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Every other year, the American College of Medical Informatics (ACMI) sponsors a debate at the closing session of the AMIA Annual Symposium. The debate is intended to highlight the informatics issues implicit in important national issues. As with any complicated topics, the debaters often take extreme positions to emphasize the issues.

In preparing this summary, we sought to convey the substance and spirit of the debate in printed form. Transcripts of the actual debate were edited for clarity, but the text retains much of the colloquial language that the presenters used.

Introductory Remarks

Dr. Friedman: The topic this year addresses a key issue in clinical computing. This is the proposition for this year's debate:

> *Resolved:* National regulatory mandate of provider order entry, to take effect by the end of 2005, portends greater benefit than risk for health care delivery.

Arguing the affirmative side of this debate, that the mandate portends greater benefit than risk, are Blackford Middleton, from Partners Healthcare, and Rita Zielstorff, from Health Vision, Inc. The negative position is argued by Randy Miller, from Vanderbilt, and Marc Overhage, from Indiana University. William Hersh, Chairman of ACMI Scientific Affairs Committee, organized the debate and recruited our four excellent debaters.

After the close of the formal debate, we are going to give Howard Bleich and Warner Slack a brief time to comment on the debate—perhaps to highlight those points they see as take-home points in the debate. This will be completely spontaneous, as is the entire debate itself. I think it's entirely fitting and appropriate that Howard and Warner, our Morris Collen Award recipients, will have the last word at this debate and, indeed, at this meeting.

The order will be first affirmative, followed by rebuttal by the second negative, then first negative rebuttal by second affirmative, second affirmative followed by rebuttal by first negative, then second negative followed by rebuttal by first affirmative.

Statement in Support of the Proposition

Dr. Middleton: Thank you, Dr. Moderator, and thanks to the ACMI Scientific Affairs Committee for inviting me and my colleague, Rita Zielstorff, to engage in this debate. We do so with relish and enthusiasm.

This topic is central to our society, the health care profession, the health care technology industry, and the future health and welfare of our nation. I am not overstating the magnitude of this issue.

Let me begin: Why do we need a national regulatory mandate for computer-based provider order entry (CPOE) by 2005? The answer is simple. It's an embarrassment to continue to practice medicine and run our health care institutions without it. Please remember the Hippocratic Oath, the central tenet of which is "First do no harm." Yet we are harming our patients, our families, and therefore ourselves in great numbers.

We are all familiar with the evidence showing the magnitude of the problem of medical errors, from the Institute of Medicine report *To Err Is Human*[1]—namely, that 3.7 percent of hospitalizations are associated with error, and 13.6 percent of these led to death. Half of these deaths were thought to be preventable. That's a jumbo jet going down about every other day.

While pundits may quibble about these numbers, it is generally accepted that medical error is a serious problem indeed.

How can this be? I am here to tell you that the emperor has no clothes. It is shameful! We know that physicians practice in a state of incomplete information all the time.[2–4] We rarely apply our best evidence to our decision making at the point of care.[5] We know there is great variability in the care delivered,[6] and the medical chart itself is often not available at the time of care.[7,8] We know that reminders work.[9–12] We know that the error incidence rate may be as high as 5.3 percent of admissions.[13]

It is not just limited to the inpatient environment. In nursing homes, Gurwitz et al.[14] found two adverse drug events (ADEs) per resident month, and 6 percent of these were life threatening, 38 percent were serious, 56 percent were significant, and one was fatal. And in the outpatient environment, Gandhi et al.[15] found that ADEs occurred in 3 percent of patients. National estimates of medication errors suggest that more than 770,000 people are injured by ADEs each year, and 7,000 of these people died.[1] Boiling that down to some tangible numbers, we can expect, in the 6 minutes I have for this statement, approximately nine ADEs to occur across the land. In almost as long as it takes for us to debate this issue, someone will probably die from an ADE.

So do we care? Regrettably, in our country today, health care is more often about time and money than about quality and safety. So here are the basic costs of

this travesty. The IOM report *To Err Is Human* suggests that the total cost to society of medical error is on the order of 17 to 29 billion, half of which is for health care.[1] An ADE costs about $2,000 for every hospitalization in which it occurs and adds up to 3.6 days to length of stay.[16]

How might these mistakes be avoided? Make providers use CPOE. When providers use CPOE, the number of mistakes goes down. Bates et al.[17] found most ADEs could be prevented with CPOE and that use of even a relatively simple CPOE system results in a 64 percent reduction in medication errors. And a more sophisticated system produced a 55 to 58 percent reduction in error.[18]

What other benefits arise with CPOE? They are numerous and impossible to recite here in their entirety, and the known effects are probably just the tip of the iceberg. Computer-based provider order entry improves clinical processes, which decreases lost orders, transcription time, and cost.[19,20] It also reduces ambiguity secondary to illegible handwriting and incompleteness of written orders.[21] Computer-based provider order entry supports cost-effective decision making, improving formulary compliance; cost-effective medication ordering; appropriateness of medication administration, route, dosage, duration, and interval; decrease in test redundancy; and improvement in consequent, contingent, and corollary orders.[22]

Yet, given these known positive effects of CPOE, penetration in this health care environment is poor. Only 15 to 32 percent of hospitals have CPOE systems, and in the study by Ash et al.,[23] only 1.6 percent of hospitals required its use by providers. Rabinowitz[24] estimates that less than 2 percent of all prescriptions in the outpatient environment are written electronically.

What would we save with CPOE? Birkmeyer estimates that hospitals would save up to $100,000 each, or $370 million in aggregate. He found that 1,250 lives could be saved per year with CPOE—an economic value of $549 million.[25] That's about a billion dollars a year saved with CPOE.

So why haven't we done this to date? It's not about the technology. The simple answer is that there's no business case for CPOE in the current fractured health care marketplace. Not because of any lack of well-described effects, as I have presented, but because the incentives are not aligned. No one stakeholder is willing to pay. The provider community is expected to pay for the technology, even though they have no capital and are operating at razor-thin margins, losing money. Computer-based provider order entry technology accrues benefits largely to others, not providers. Improved cost controls benefit payers, but payers don't pay for the information technology. Improved patient safety benefits patients, but they don't pay for quality directly. Yet payers don't pay for quality, because they generally have a short-term view of health care and are betting that patients will switch between plans frequently and regularly.

The self-insured employer purchaser appears to be the only stakeholder motivated to improve patient safety and efficiency, because of its relationship with the employee as proxy for health care purchasing and because of its long-term view of employee health satisfaction and productivity.

So the question becomes whether the pressure arising for CPOE from the purchaser groups, like Leapfrog (www.leapfroggroup.org), is going to be sufficient to drive the adoption of CPOE. In the current and foreseeable medical market place, I'm afraid not. Purchasers cannot apply pressure universally when hospitals and providers have only a small percentage of their patient panels covered by these employers. Therefore, we need a national mandate to catalyze the market and align its forces to adopt CPOE and produce a safer U.S. health care delivery system.

Rebuttal to Dr. Middleton's Statement

Dr. Overhage: We appreciate the careful and thorough review of the potential benefits of CPOE and, as most of you know, I have long advocated the implementation of these systems and the benefits they may provide us. However, as Dr. Middleton has previously stated, in his testimony to the National Committee on Vital Health Statistics (NCVHS) in 1998, successful implementation of these systems is largely dependent on "multiple factors, including provider [belief that] the system will make a difference, provider willingness to promote and accept change, management commitment, technical confidence of staff and leadership, and project management capabilities."[26] These are all, indeed, potentially improvable through an appropriate alignment of incentives and other measures, but we have yet to see how this can be accomplished in the time frame described.

A second point to be made about the comments is that Dr. Middleton has noted only the benefits and not the risks, and the proposition mandates us to review those as well. There are a number of risks, several of which we will touch on in subsequent comments. Primarily,

we have to worry about the risks of attempting to implement CPOE at a time when organizations are not sufficiently prepared, have not made the commitment of resources, and have not properly evaluated the necessary cultural changes and the negative effects and repercussions of that decision. I look forward to the further comments by my colleague to follow.

Statement Opposing the Proposition

Dr. Miller: Thank you. In deference to the great city of New York, I have chosen to take a David Letterman Top 10 List approach to explaining why a mandate for CPOE is suboptimal. In deference to my having only 6 minutes, I have truncated the Top 10 List to six.

- Reason #6—Confucius 2,500 years ago stated that the essence of knowledge is, having it, to apply it, and not having it, to confess your ignorance. This is clearly sage advice to our opponents, who, at the end of the debate, will have the opportunity to admit the ignorance of their position regarding the topic at hand.
- Reason #5—Many vendors' current CPOE products are suboptimal from the clinician's viewpoint, because the systems were designed for use by clerks rather than by doctors and nurses. Provider order entry, as our opponents pointed out, should include things such as decision support, error reduction, just-in-time education, and quality improvement. It will take time for vendors to put such advanced capabilities into their systems, and a mandate to implement "now" would pressure institutional chief executive and chief financial officers to just do something quickly. A mandate too early will lock in the wrong technology and, from an informatics standpoint, accomplish net harm.
- Reason #4—System implementation represents a profound workflow change for users. Mandating chaos and mayhem is not good form. Instead, a significant amount of time and study by each institution is required to prepare for, select, and install clinical systems, train end users, and evolve the systems. A mandate is not appropriate in such situations and would short-circuit each institution's practice improvement efforts.
- Reason #3—Implementation of CPOE systems is a process, not an event. It's an evolving way of incorporating good ideas from all employees in the institution and of adapting the system to address the strategic needs of the institution. In this regard, clinical end users' concerns must be continuously respected, listened to, and addressed. Vendors and information technology teams are not accustomed to doing so, and are less likely to do so under conditions of a mandate than a voluntary approach, by which each institution in its own time goes to a vendor to obtain a specific, carefully selected system.
- Reason #2—End users, not IT technicians or Big Brother mandates, must determine when a clinical system is ready to be implemented. Implementation cannot be forced without disastrous consequences (as has been documented both in the literature and in the folklore of our profession). Common wisdom is that the reason the average health care chief executive officer has a job life span of three years in the United States is that three years is just long enough to select and install a CPOE system, get it running, and leave town as a result.
- Reason #1—A Big Brother approach to mandating CPOE implementation is wrong. There are ample good reasons to implement CPOE systems, which I think both sides in this debate will document. Each institution must do so in its own time, on its own terms, or it won't be here in ten years.

Rebuttal to Dr. Miller's Statement

Ms. Zielstorff: Thank you. I could take each of Randy's six points, and I will get to them eventually. Let me just hit on some of the highlights right now.

Randy points out that you cannot force providers to use the system. I can guarantee that, if there is a law mandating the initiation of CPOE systems, and if a hospital's ability to operate depends on implementing a system, providers will use the system or will not be on staff.

Furthermore, providers will not have less power but more, because vendors will be forced to deliver. There will be a lot of dollars chasing a very few vendors, and I can assure you, now that I have stepped over to the vendor side, that there will be a reinforcement of the notion that vendors will supply the product that meets the demand. At this moment, we have a chicken and egg situation: Hospitals don't buy systems because the systems are not good enough, and vendors don't produce the systems because the marketplace just isn't out there. A law would change all that, and the dollars to come with it would have to, of course, be supplied with the law, but part of that is

also a realignment of priorities. A law would definitely realign the priorities.

Year 2000 (Y2K) was a deadline that had to be met. Institutions found the money to completely overhaul their codes to meet the Y2K deadline, and Health Insurance Portability and Accountability Act (HIPAA) regulations now loom. Institutions are finding the money to review all their systems, both manual and automated, for compliance with HIPAA, and while some are still waiting to see whether HIPAA regulations are actually going to be implemented, most are dealing with the situation now.

When is it going to be a good time to implement CPOE systems? How long is it going to take us to decide that there is a good time to do this? Organization after organization has mandated, has recommended, has urged, has exhorted the installation of automated information systems to support decision making. Yet here we are, a decade after the Computer-based Patient Records Institute (CPRI) stated that within a decade automated systems ought to be the standard in every agency, and only 15 percent of hospitals have CPOE systems in place.[27,28]

Statement Supporting the Proposition

Ms. Zielstorff: Thank you. Our opponents have described some potential risks in installing systems, but I would ask you to compare these potential risks with the known errors in the current health care system. Blackford gave us several statistics that are very compelling indeed. Summarized, these statistics tell us that being admitted to a hospital is 20 times more likely to lead to accidental death than flying on a commercial plane.[29]

Over the past two decades, as I mentioned, a number of organizations have advocated the installation of clinical information systems with decision support.[1,27,30–33] And now we know that only 15 percent of hospitals have CPOE systems in place. What our colleagues are giving us are all the reasons, we saw them listed 6 to 1, why we are still not ready to move forward even toward the CPRI goal.

I acknowledge that there are barriers to implementing CPOE systems; I would assert that legislation mandating the purchase and installation of CPOE systems would remove these barriers.

So let's take the issue of cost. These systems are massively expensive. There is no denying that. Lack of financial support is the most frequently given reason for not implementing clinical systems, according to the 2001 Healthcare Information and Management Systems Society survey.[34] So, as I mentioned, it's a matter of these agencies getting their priorities straight. Legislation would help them do that.

Next is the issue of risk of failure, and I think Mark may have been alluding to the well-documented failure at the University of Virginia Medical Center in implementing a CPOE system.[35,36] There is no question that health care organizations are extremely risk-averse. Chief executive officers talk to one another, and hearing the war stories of organizations that have installed systems that have failed is plenty of rationale for not sticking your neck out. Instead, organizations have devoted more and more effort to promoting patient safety by improving manual system processes. This is a tried-and-true process that gives you good press if only marginal results.

There is a rich and very useful body of knowledge about how to install systems well. The University of Virginia Medical Center experience shows us how not to implement a system in an academic medical center. I can guarantee that, if there is legislation to mandate the installation of CPOE systems, the consulting companies will latch onto this in a big hurry.

Just as we saw conference after conference on preparing for Y2K, and now conference after conference on preparing for HIPAA regulations, we will see conference after conference on how to install these systems, and experts popping up all over the place. What is needed is the impetus, and legislation would be that impetus.

So what about clinician resistance? It's astonishing to me that physicians still claim that entering their own orders is secretarial work. One study tracing the origin of adverse drug events found that the original prescription was the cause of the error in 72 percent of cases. Delving into more detail, it found that lack of information about the drug and lack of information about the patient were the cause of the error in 47 percent of the cases.[21] And we all know that computer systems are ideally suited to solving information access and recall problems.

If we say that our systems now aren't ready and don't provide these decision support features, well, computer systems are perfectible. Clement McDonald wrote an article about 25 years ago about the nonperfectibility of man.[37] He asserted that human beings are not perfectible. But computer systems can be perfected.[38,39]

And what about this notion that vendor-supplied systems just aren't there yet? I'd be the last one to say they are, but if legislation mandates the installation of these systems, there will be a large number of dollars chasing a relatively small number of vendors,[40] and competition for producing the features that clinicians want and need would be most intense. Ultimately, it's the patient who would benefit the most.

Return on investment? The plain fact is that either side can provide statistics showing that return on investment is[18] or isn't there, depending on your point of view. This thorny issue exists for almost any intervention whose benefits are real but difficult to measure. What is the value of air bags, seat belts, helmets—when the dollar cost of installing them is much more quantifiable than the value of injuries prevented and lives saved? What is the value of preserving our environment when the dollar cost of antipollution technologies is much more immediately measurable than the value of clean air and water?

The plain fact is that, in cases in which public safety is at stake—and we are in a crisis now in which we know that public safety is at stake[1]—legislation is the only way to ensure that public safety is upheld. Otherwise, the people waving cost estimates will always win out over the people giving warnings about health and safety.

Lack of top management support? There is no arguing that this is an absolute requirement for committing the resources to purchasing and installing an automated system.[40] Many an implementation has failed because of it. My assertion is that legislation would fix this issue in a great hurry. If a hospital has to close its doors because it doesn't have a CPOE, then senior management will be held accountable by its board and by its stockholders and will provide the support that is needed to get it done.

In summary, my colleagues, I leave you with the assertion that, not only is legislation the right thing to do, it is the only thing to do to remove the barriers to installing systems that will improve safety and reduce costs in health care. It's time to get off the dime and onto the action train.

Rebuttal to Ms. Zielstorff's Statement

Dr. Miller: Thank you. First of all, I have to concede a point to Rita—I agree that flying to a hospital increases one's risk of a bad outcome.

Second, while we agree with our opponents that CPOE is a good thing, unfunded mandates from Congress are not. Essentially, having a law that requires everybody to do something with limited resources will not necessarily produce a good outcome. It's better again for an institution to plan and budget for this, doing it the right way, than to be told that, without money, you have to do it anyway and fast.

Another point is that, while systems clearly have been documented to have beneficial effects, almost all such systems are in academic settings and were developed predominantly by members of this organization [AMIA] and collegial organizations. Very few of the objectively evaluated beneficial systems are vendor products. So, basically, the vendors need time to catch up. Otherwise, as I said earlier, we'll install the wrong technology. Furthermore, if we legislate now that vendors should go into a frenzy to install systems everywhere, they will have very little marginal time to improve the systems in the interim.

Finally, legislation does not "fix" the backgrounds, personalities, or attitudes of chief executive and chief financial officers. They are who they are, where they are, and if they don't "get it" now, they're not going to "get it" because of legislation. The process has to be completed, as stated earlier, through the volition of the institution, because the institution has to realize that the only way they are going to survive is by doing the right thing, and it takes time for that to happen.

Statement Opposing the Proposition

Dr. Overhage: You have heard our opponents describe the benefits of CPOE, and we wholeheartedly agree with them! There is good evidence that some CPOE systems have these benefits or can deliver these benefits. We accept that there are benefits, but we assert that the benefits are difficult to realize and that the risks are greater than those benefits.

You just heard our opponents admit that commercial CPOE systems are not today up to the job. They may address legibility, and they may improve timeliness of medication delivery once an order is written, but they lack decision support capabilities. According to a recent Agency for Healthcare Research and Quality report,[41] the order entry process with many CPOE systems currently on the market is error prone, time consuming, and lacking in important screening capabilities to alert practitioners to unsafe orders.

Our opponents suggest that these are correctable deficiencies, and indeed they are, but we know that those corrections will take time and energy to accomplish. Institutions will have to create the rules, and

this will require an even larger investment, of time and money, and will require skills and knowledge that are not widely available.

In addition, even if these systems have the rules, the rules require data to operate. Even institutions that have successfully deployed CPOE systems and computer-based patient records struggle to obtain the data required for decision support. Getting providers to record information, such as allergies, and interface various clinical systems, such as laboratory and surgery scheduling systems, are not easy, inexpensive, or quick tasks to accomplish.

A related risk is that providers will subvert the CPOE process if it is mandated. Providers are amazingly inventive in creating ways to bypass order entry, such as stepping around the corner from the nursing station and telephoning in admitting orders to the nurse at the station.

We risk much by rushing or mandating the implementation of physician or provider order entry. Our opponents suggest that the consulting companies will latch on and gear up to accomplish these needs. It is simply not practical to implement CPOE in the time frame proposed. Simply take the number of hospitals in the United States. As our opponents mentioned, only 15 percent might have some level of CPOE system. So we have to implement CPOE at 5,810 hospitals in 48 months. That's 121 a month, or 4 a day. There are not enough vendor staff, consultants, and internal IT staff of the hospitals to make this happen.

Take this analysis one step further, and consider the number of physicians in the United States and the fact that, on average, they each practice at two hospitals and very few are currently trained in CPOE use. Do the math, and you'll see that one physician will have to be trained every minute, 24 hours a day, 7 days a week, over the next four years to accomplish this task.

As our opponents point out, HIPAA is a major issue for institutions. This will impair the financial and institutional resources that can be devoted to implementation of CPOE. We risk a backlash from the providers who are adversely affected. A failure may actually push back the time when the benefits that might be achieved with CPOE can be achieved. The provider ill will and the drain on the financial resources of the institutions that fail in their implementations will delay dramatically the time when those institutions will again attempt implementation.

There are many examples of organizations that have implemented CPOE but have had such difficult challenges or have so badly damaged their credibility and lost so much of their good will that they have had to delay re-implementing CPOE in certain clinical areas after their initial attempts failed. This effect is likely to be even worse in small institutions and institutions in which the providers have a choice of hospitals at which to practice. Cost of failed implementation could prevent organizations from attempting again to implement CPOE for some time.

Kaiser Permanente expects to spend $2 billion over the next three years to implement their computer-based record, including CPOE, and even for mighty Kaiser Permanente, this must be a difficult investment to make. The real risk is that missed steps due to forced implementation or mandated implementation may delay the use of CPOE and thus delay the benefits that could be obtained if the implementation were driven by organizational imperatives rather than by external mandates.

Finally, like all medical technologies, CPOE has a significant potential to lead to patient harm. The Institute for Safe Medical Practices last year noted that, while new technology always introduces the opportunity for unanticipated errors, some vendors have marketed their products without sufficient testing or the ability to fully implement them on site.

As-yet-undiscovered errors are likely to be introduced by mandated CPOE before the workflows have been adapted to accommodate these processes. At one hospital, for example, nurses initially refused to honor orders written by physicians who were not physically present on the nursing unit, even though the orders had been appropriately entered and signed in the system.

Providers may choose the wrong drug from lists, creating perfectly formed, correct dose- and interaction-checked orders that are simply wrong. In David Bates' frequently cited study, benzodiazepine-associated ADEs actually increased by 99 percent while others went down.[42] In another publication, from the Brigham and Women's Hospital, an increased potential for ADEs was attributed to a flaw in the design of the ordering processes. When you take into account the many risks, we think they far outweigh the potential benefits.

Rebuttal to Dr. Overhage's Statement

Dr. Middleton: I've thoroughly enjoyed listening to my worthy opponents, but I'm afraid they've missed the point. We have commercial systems to do basic

CPOE today. I've used one for the past six years. You (Marc and Randy) need to get out of the ivory tower. The commercial system I've used did not require sophisticated interfaces for many of the tasks that have been described. It required me to use the computer to enter an order and have the drug interaction checked at the time of its printing. It boils down to this. Marc, you're no Gopher,[43] and Randy, you're no WizOrderer.[44,*]

In a marketplace in which no single stakeholder bears the entire financial risk for quality, we will continue to play a shell game with the public good of U.S. health care and risk further eroding the public's trust. Do we need a funded mandate? I think not. WEDI estimates that there is $250 billion of waste in the system already. Patient safety is a public good that must be ensured by the social contract of a public mandate. Short of structural reform of our health care delivery system into an enlightened single-payer model self-interested in improving health care quality, we will continue for the foreseeable future in a pluralistic, fractured, and chaotic health care delivery environment.

We know the emperor has no clothes. Let's get dressed. We need the vestments of CPOE to improve the safety and efficiency of U.S. health care, to rekindle the public trust in our health care delivery system, and to allow us to continue to advance our field in a data-driven, value-based, and informed way. The market is willing to take risks, but it needs a catalyst. For our part, clinicians can touch a computer, and it won't kill them. In fact, maybe it will prevent someone else from dying. We need to take responsibility for our orders, be the creators of the data by which we are judged, and do our part in the transformation of the U.S. health care delivery system.

I can type. It's OK.

We have not passed Andy Grove's inflection point[45] or Malcolm Gladwell's tipping point.[46] Let us not let perfection be the enemy of the good. I suggest that we rally around this mandate and view it as the nation viewed Kennedy's mandate for putting a man on the moon in 1961. It was thought to be impossible, the technical hurdles were immense, but we did it. Let's make CPOE our moon shot. Let's pull together, provide the leadership, get it implemented, and make a difference before someone else is added to the list that started with Betsy Leeman and Libby Zion.

*The Medical Gopher is the CPOE system developed and used at Dr. Overhage's institution, and WizOrder is the order entry system developed and used at Dr. Miller's institution.

As Clem McDonald did say, let me remind you, in 1976, "I conclude that, though the individual physician is not perfectible, the system of care is, and that the computer will play a major part in the perfection of future care systems."[37] The time is now. Let's go for it!

Commentary by the Morris Collen Award Winners

Dr. Bleich: Warner, it seems to me that the speakers for the affirmative see this as a public safety issue. They recognize that good patient care requires CPOE with decision support. They recognize that payers have little economic incentive to pay for quality. For them, legislation will align the economic incentives and get this much-needed job done. In contrast, the opposition doubts that the decision support that we all want will truly be there. They are concerned that computer software vendors will comply with the mandate on the basis of trivial implementations and that an ever more tangled web of costly regulation will ensue. And they believe it unwise to mandate doing in every hospital what has, to date, been done in only a small number of hospitals. Warner, how do you see it?

Dr. Slack: Once again, I have the luxury of following Howard and his eloquent comments. I think most Americans are committed to the principle of maximal freedom for the individual. We agree to restrictions on our individual freedom only when a compelling argument can be made that such restrictions are necessary to protect the rights of others as well as ourselves. And I think most would agree that when legislation is proposed that would further encroach on our freedom, this must be weighed very carefully. And I would like to congratulate all four of the debaters, who clearly have weighed these issues very, very carefully. All of us here are interested in the higher good, in improving the quality of medical care, and I think it has been convincingly demonstrated that good CPOE systems, when they adhere to the behaviorist paradigm of immediate positive reinforcement, help the clinician in the care of the patient and should be encouraged. The debate, so aptly engaged in this afternoon, is whether a law is necessary to bring this about.

Clearly, there are good regulations as well as bad regulations, and I, perhaps too often, tend to take the good regulations for granted and focus on the bad ones. Examples of the bad ones were those I experienced as a neurologist in the early 1960s at Clark Air Base in the Philippines, during the early days of the Vietnam War. I needed to equip my clinic, and when

my corpsman filled in the wrong form, the equipment didn't arrive. Then a sergeant with lots of stripes (I will call him Sgt. Rulebender) appeared and said, "Doc, what do you need? Just tell me." And the next day this blue truck pulled up and out came more equipment than I needed, and the sergeant said "Don't ask any questions, but come to me first next time."

It occurred to me that this was the process by which bad regulations evolved, in the Air Force as well as in other social endeavors. A bad regulation would be put into place by a Lieutenant Colonel Martinet; Sergeant Rulebender in turn would learn how to circumvent the regulation, and then Martinet would make another regulation to block the circumvention, and on and on, with multiple layers of bad regulations intertwined with useful circumventions—somewhat like the biological evolution of enzymes, in which the loss of an essential organic molecule from an evolving ecosphere is similar in function to the imposition of a bad regulation in an evolving bureaucracy.

In one case, the temporary solution to the problem is the enzyme that enables the organism to synthesize the essential molecule. In the other, it is Sergeant Rulebender. In both cases, it is extremely difficult to retrace the sequence of events—a veritable archeological dig, as my friend John Melski (Medical Director for Informatics, Marshfield Clinic, Marshfield, Wisconsin) used to say. Most important, of course is the outcome—in the one case, a marvelous diversity of living beings; in the other, an unreadable, unmanageable diversity of deadly tomes. Most of us would agree that it is important to limit regulations to those that are necessary; the dilemma, of course, is how to differentiate between those that are necessary and those that are not.

From a historical perspective, the debate in our country about when to regulate and when to desist is a long-standing one. Thomas Jefferson argued for as much individual control as possible and pointed out that when you pass a law to solve one problem you often create two problems in its place. On the other hand, equally eloquently, Alexander Hamilton took the opposing position, arguing on behalf of strong central control and much regulation. And as I recently read in David McCullough's wonderful biography,[47] John Adams pursued the middle ground in this argument.

But I'm sure these three great founding fathers would have very much enjoyed the discussion here this afternoon and would have respected the arguments of all four participants. And at the risk of breaking Chuck Friedman's admonishment that there are no winners, I would say that we have all been the winners in witnessing this wonderful debate.

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