



TESTIMONY OF ALBERT PATTERSON

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before the

SUBCOMMITTEE ON SCIENCE, TECHNOLOGY, AND SPACE

SENATE COMMITTEE ON COMMERCE, SCIENCE AND TRANSPORTATION

on

E-HEALTH AND CONSUMER EMPOWERMENT:

**HOW CONSUMERS CAN USE TECHNOLOGY TODAY AND IN THE FUTURE
TO IMPROVE HEALTH**

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Mr. Chairman, distinguished members of the Subcommittee. My name is Albert Patterson. I am vice president of contracting for Premier, a strategic alliance of more than 1,800 not-for-profit hospital and health systems in the United States. The Premier family of companies provides an array of resources in support of health services delivery, with a focus on patient safety and quality improvement initiatives, including healthcare informatics, clinical technology/best-practice products and services, insurance consulting, and physician practice management. Premier, Inc. operates major facilities in San Diego, CA; Charlotte, NC; Chicago, IL, and Washington, DC.

For healthcare providers, purchasers, and suppliers across the country, tapping the vast potential of the Internet has become an integral, even requisite, component of strategic thinking and planning. Health industry observers herald the potential value of the Internet to promote quality-of-care improvement and cost efficiency through both private sector initiatives and public policy action. As Paul Starr, Princeton University professor

and founder of the Electronic Policy network, observed, improved uses of greater information hold vast promise for health cost reduction, coverage expansion, and greater innovation. Patients, too, have come to appreciate this power. Not simply “opening up their email and saying ‘ah,’” as J.D. Kleinke, president of Health Strategies Network recently opined, consumers are using Web-based resources not only to inform, but also to *empower*, themselves and their families. In effect, the “system” is coming to the “people” as health plans and providers establish Web sites and open up on-line avenues of communication with patients and each other. A variety of healthcare businesses on the Web now provide customized health information, medical advice, and a widening array of services. Patients with chronic conditions, such as diabetes, are now able to offer their physicians daily updates of their conditions through Web-enabled reporting systems. Taken together with new e-commerce processes in which individual patients may order health supplies for delivery to their own homes, it’s clear that the informational, networking and commercial opportunities for the healthcare industry are immense.

While innumerable e-health issues may be debated before this committee, I will focus my testimony on one specific initiative. **This initiative is the adoption by the health sector of an electronically readable, uniform industry data standard—namely, the Universal Product Number (UPN)—prominently displayed at every level of packaging and transmitted via bar code technology into hospital and vendor information systems.** UPN implementation has vast potential for improving healthcare safety and quality, facilitating clinical product and service innovation, and enhancing cost-efficiency at the supply chain level. The technology exists. It is used widely and with documented success in countless other industries—the retail sector, perhaps, being the most obvious example. Within healthcare, implementation has been far less extensive, particularly at the unit-of-use level. It’s important to point out that the failure of the health system to embrace this technology does not imply reticence on the part of hospitals. Hospitals, in fact, are eager to develop and deploy this kind of technology to help them improve the quality of care they provide and to achieve additional economic efficiencies. In this regard, my testimony will focus on three issues:

- the potential of UPNs to facilitate sustained quality improvement and medical error reduction;
- the potential of UPNs to generate industry-wide cost savings and efficiencies;
- the potential of UPNs to enhance knowledge transfer and engender quality improvement through the use of comparative data.

Sustained Quality Improvement and Medical Error Reduction

From the Institute of Medicine (IOM), the Agency for Healthcare Research and Quality (AHRQ), the Quality Interagency Coordination Task Force (QuIC) and countless public, private, business, consumer, and healthcare organizations, the message is resounding and the mandate unmistakable.

Sustained quality improvement and medical error reduction in the American healthcare system can be significantly enhanced through hospitals' and other health providers' acquisition and implementation of new patient safety and information technologies.

The mounting significance of technology for the quality improvement of health care—a notion Premier has long championed—was underscored in the March 2001 IOM report, *Crossing the Quality Chasm: A New Health System for the 21st Century*. Recommending no less than a top-to-bottom system overhaul, the report called for the widest possible “utilization of information technologies to improve access to clinical information and support clinical decision-making.” The committee concluded that the “automation and standardization of clinical, financial and administrative transactions are *essential* to improving quality, preventing medical errors, enhancing consumer confidence...and improving efficiency.” It is extremely regrettable that, as the IOM observes, “while medical science and technology have advanced at a rapid pace, the healthcare delivery system itself has foundered.”

Although the causes of medical errors and less-than-acceptable measures of care quality are complex and deeply rooted, the most immediate and far-reaching solutions are imbedded in the sphere of technology implementation. New and emerging technologies—such as computerized physician order entry (CPOE), electronic medical records, automated pharmacy dispensing and bar code-enabled bedside verification, to name a few—harbor immeasurable promise for the safety and quality improvement of health care in America.

As has been documented in numerous inter-disciplinary studies, patient safety may be significantly improved upon and reinforced, beginning at the supply chain level, through the industry-wide adoption of a standardized system of machine-readable codes on all medication packages and containers and medical devices. In the patient care setting, a scannable bar code can help guarantee that the *right* drug in the *right* dose is administered in the *right* way to the *right* patient at the *right* time. Technological advances in the last few decades have been such that larger amounts of information, more comprehensive in nature, can be imbedded within a bar code, making the coding of even the smallest packages possible. The technology *is* out there. It *can* be done.

- A study published in the July 5, 1995 volume of the *Journal of the American Medical Association* (Systems Analysis of Adverse Drug Events) identified drug administration errors (i.e., wrong dose, wrong drug, missed dose, wrong time, wrong route, extra dose, etc.) as the cause of 58 percent of all adverse drug events (ADE). The vast majority of these errors, the study concluded, could have been prevented with the use of bedside medication verification technology.

An underlying requirement for any bedside technology—to ensure patient identification and the five medication ‘rights’ (right drug, right dose, right route, right time, and right frequency) is a “unique symbology identifier for both the patient and medication.” Authors of the study go on to observe that this unique symbology can be accomplished with *current* bar code technology, allowing all drug dosage forms to be labeled with its unique identifier, the National Drug Code, or NDC. “Today’s bar

code reader technology would allow the accurate reading of over a dozen different bar code symbology formats,” the authors observe, “yet only 60 percent of all drugs administered at the bedside are so (commercially) packaged.” The study concludes that the simple addition of a “unique bar code identifier” on all medications used at the bedside could prevent nearly 60 percent of all medication errors.

- The Coalition for Healthcare e-Standards states that the adoption and promotion of uniform industry data standards, typified by UPN and other bar coding systems, would “reduce costs and improve efficiencies across the industry, and improve the safety and quality of care for all patients.” In its mission statement, the Coalition cited the November 1999 IOM report, *To Err is Human: Building a Safer Health System*, which clearly identified the integration of bar coding technology as an effective tool in the prevention of medical errors and improvement of overall patient safety. The IOM report, itself, maintained that “patient safety programs ought to incorporate well understood principles, such as the standardization and simplification of equipment, supplies and processes.” In addition, investigators emphasized the safe use of drugs in both pre- and post marketing processes through the development of standards for drug packaging and labeling.
- Two weeks ago, the National Coordinating Council for Medication Error Reporting and Prevention, in collaboration with the pharmaceutical industry, information systems vendors, regulators, and electronic standards-setting organizations, issued recommendations relative to the industry implementation of bar coding technology. While honing in on the application of bar codes in institutional settings, the Council made clear that its recommendations have “broader applicability to other settings.”

In summary, the Council recommended that the Food and Drug Administration and the U.S. Pharmacopeia (USP) collaborate with appropriate stakeholders to establish and implement uniform bar code standards for the immediate and intermediate packaging of all commercially available prescription and non-prescription medications. These standard bar codes would be featured on all unit-of use

packaging, including single and multiple unit and dosage. As you know, through the federal Food Drug and Cosmetic Act, USP is responsible for establishing strength, quality, purity, packaging, and labeling standards for medicines. Regulatory requirements for bar coding would fall under the purview of FDA and its labeling standards for pharmaceuticals.

The Council recommends that the data elements of such a bar code be uniformly ordered, and include, at a minimum,

- the National Drug Code (NDC) number,
- the respective lot, batch or control number, and
- expiration date.

The NDC already enjoys regulatory standing with the FDA and is used by the pharmaceutical industry and numerous healthcare organizations for the automated tracking of drug products. The Council further envisions professional associations developing relevant standards of practice, including the repackaging and labeling of compounded preparations and the education of practitioners on optimal bar code use.

The Council characterizes its recommendations as the “first step to the ultimate use of bar codes in the medication-use process.” As Council Chairman Jerry Phillips, associate director of medication error prevention for the FDA’s office of post-marketing drug risk assessment, observed, “Once implemented, we believe this standardized approach to bar coding technology is a primary and important mechanism to improve patient safety in hospitals and other health care institutions.” The Pharmaceutical Research and Manufacturers of America (PhRMA) and Generic Pharmaceutical Association (GPhA), both dominant process shareholders, agree that the implementation of standardized bar codes would be an effective way to improve pharmaceutical product, and ultimately, patient safety.

- As Premier urged in its formal comments to HHS with respect to the Medicare inpatient prospective payment system (PPS) proposed rule and the current outpatient prospective payment system (OPPS), all new medical devices qualifying as ‘new technologies’ (and therefore subject to special ‘pass-through’ payment) ought to be identified by the appropriate UPN, or universal product number—a unique numerical sequence identifying a specific healthcare device and its manufacturer.

Given that healthcare providers have agreed to accept either of two industry-standard data formats, we believe UPN could be readily incorporated into the Centers for Medicare and Medicaid Services’ (CMS) existing coding system. By mitigating administrative and payment system complexity for both hospitals and CMS, and fostering wider application of a bar code that, recognized at all levels of the supply chain, can assist in ordering, tracking, and validating inventory, such implementation would go a long way toward improving safety in the patient care setting.

As I just described, the explicit identification of medical devices that qualify as ‘new technologies’ is but a single application of a standardized bar code system. While admittedly specific, the example is emblematic of this technology’s inherent promise for wider integration in our health care delivery system.

Cost, Affordability, and Innovation

One of the most significant developments to come out of the e-commerce revolution is the ability for businesses to link information systems seamlessly. Business-to-business (‘b-to-b’) e-commerce is defined as the direct sale of goods and services to other firms and government agencies. Health e-commerce b-to-b models, including medical and surgical supply Web sales and on-line auctions for refurbished equipment, are extensions of general business e-commerce. Unlike pharmaceuticals, to which unique government-mandated National Drug Code (NDC) numbers, recognized across the industry, are assigned, the standardized identification system for medical and surgical supplies has no such mandate. Clearly, this makes Web-enabled linkage of information systems—even

for purposes of comparison alone—anything *but* seamless. Federal regulation of the identification of medical and surgical supplies would support industry compliance and facilitate the broad-based implementation of these technologies.

Application of existing bar coding technology to the healthcare supply chain harbors great potential for driving down management costs. The 1996 Efficient Healthcare Consumer Response (EHCR) report predicted such developments would yield annual savings of \$11.6 billion in healthcare supply chain costs. These projected savings are largely based on the industry's implementation of a series of automated trading transactions, and integration of a frictionless supply data stream across the healthcare industry, from point-of-manufacture to point-of-use. EHCR projects that the standardized use of UPN across the supply chain would yield among the highest returns on investments in automated transactions. Most importantly, the study indicates that UPN implementation can result in significant efficiencies and cost savings for the healthcare supply chain, and ultimately, individual medical centers and health facilities.

We all have become accustomed to having our purchases scanned at the checkout line. We know the technology is there. We know efficiencies can be achieved through the technology. By positioning the supply chain to engage in new e-commerce capabilities, the health industry would be able to leverage investments in health information networks and reduce the cost of patient care. Such positioning would fuel the momentum essential for the prompt introduction of new products, the reduction of administrative costs, and the dissemination of data across the supply chain.

Opportunities for Better Benchmarking

Technological innovation makes higher-quality health products and services, as well as improvements in productivity and supply chain efficiency, possible. Comprehensive data on—and the ability to conduct rigorous comparisons of—existing and emerging health practices, products, and services is critical to decision-making in the clinical and business spheres. Across the health industry, from the supply chain to the inpatient setting,

comparative data—and more pointedly, the ability to compare and qualify different sets of data—is essential for clinical process and resource utilization improvement.

Perspective, Premier's signature healthcare informatics product, is the most complete cost-based, test-level clinical and financial data warehouse in the country, permitting peer group comparisons at the resource consumption level. Hospitals track resource utilization and patient billing for products and services rendered through what is called a 'chargemaster,' unique to each institution. *Perspective* compiles these individual chargemasters, and translates or normalizes them to a standardized, 'master' chargemaster, if you will, enabling the ever-elusive 'apples to apples' comparison. Now, to appreciate how truly monumental in scope the implementation of a standardized bar coding system for product identification would be, consider the following:

- It is likely that every distributor and user of a specific product identifies it with a different 'inventory' or 'stock' number.
- Manufacturers' product identification numbers are not usable for ordering from a distributor.
- Often, distributors and recipients/users of products find different product number on packing slips and invoices.

The absence of standardized industry-wide product identification creates a situation in which there is no reliable, referable link between a product's facility-specific 'inventory' number and references to that product in the chargemaster. Utilization comparison at the facility or system level is rendered virtually impossible because providers are able to 'drill down' in the data only *so far*. General comparisons are permissible with respect to a product's general grouping or category—i.e. catheters or stents—(often variable, themselves, among facilities), but isolating product specifications, or even the manufacturer, can prove insurmountable. Standardized product identification through a universal bar coding system would vastly improve supply chain efficiency, and make richer, more valuable data comparisons possible. These comparisons would facilitate true clinical comparability, providing for greater cost and quality improvement.

The UPN would be especially valuable for high-cost, ‘high technology’ items, such as pacemakers, defibrillators, and orthopedic implants, as illustrated by the following case study.

Case Study: Achieving Greater Cost Efficiencies in Orthopedic Transplants

An analysis of *Perspective* data revealed that the engagement of multiple orthopedic implant vendors by one of Premier’s hospitals was resulting in needlessly excessive costs. By comparing its performance in orthopedic implants (hips, knees and related components) in terms of cost, length-of-stay and outcome, to that of the top-quartile performers in this area, Premier was able to demonstrate to the hospital that improved vendor utilization would be more cost-effective.

Because orthopedic implants and related components are not identifiable across the health industry in a consistent, standardized way, hospitals cannot provide vendor-level data in their chargemasters. As a result, this valuable vendor-level data cannot be compiled and analyzed by Premier’s *Perspective* database. Its absence, and more pointedly, its unavailability, required Premier to go back to their top-performing (with respect to orthopedic implants) hospitals, *one by one*, to gather data on the vendors they engage and costs they incur.

If the implants and related components had unique identification numbers, accessible across the industry by a standardized bar coding system, critical vendor-level data with respect to cost and outcome would be not only available, but ripe for analysis. In addition, standardized identification would make the data compiled vastly more accurate and reliable. The accuracy of data is absolutely critical, especially when comparative analyses reveal that changes in practice or behavior are warranted, from either clinical or business perspectives. In this case, the hospital was able to convince its physicians that streamlined utilization of selected orthopedic implant vendors was significantly more cost-effective. Had the vendor-level data necessary to make such a determination been

readily available, Premier's *Perspective* database could have conducted the analysis in a more prompt and effective way.

In summation, if all medical and surgical products and supplies were identifiable by UPN, Premier would be able to:

- Identify cost, length-of-stay (LOS), and outcomes (re-admissions, mortality and complications) by vendor;
- Use that information to select which vendors would be better for standardization;
- Identify and quantify the value of product standardization; and
- Identify cost, LOS, and outcomes by vendor in hospital-to-hospital comparisons.

Conclusion

Comparative data is the building block upon which quality and safety improvements in the clinical setting are achieved. To date, with more than 520 reporting hospitals, Premier's experience in this arena has yielded critical success. The fact remains, however, that our ability to benchmark in the healthcare setting, and to reap the benefits of subsequent quality improvement and greater cost efficiency, is contingent on the standardized identification of all—pharmaceutical, medical, and surgical—products, devices and supplies. UPNs—as unique identifiers—offer such a tool.

On behalf of Premier, its hospitals and their patients, I deeply appreciate having had the opportunity to attest to the vast, untapped potential of new and existing technology implementation in e-health and the health care industry.

About Premier

Premier is totally owned by its not-for-profit healthcare systems, which operate or have affiliations with approximately 1,800 hospitals in all 50 states. The Premier family of companies provides these members an array of resources in support of health services

delivery, with a focus on contributing to the improvement of clinical care quality, cost-effectiveness of health services, and patient and worker safety.

Premier's member services include group purchasing for pharmaceuticals, supplies, and equipment; healthcare informatics and comparative databases that help hospitals benchmark and improve; clinical technology services supporting hospitals' acquisition, use, and maintenance of biomedical equipment; consulting expertise in support of performance improvement; management of member-owned insurance programs; and support services for physician office management. As reflected by its organization, products and services, Premier is grassroots-oriented, value-based, and guided by the interests of its community health system owners.