

e-Perspectives

on the Medical Transcription Profession

March 2010
Issue 59

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on the Medical Transcription Profession

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A Plea for Silent Editing

We just finished developing *Interpreting Medical Dictation, Acute*

Care #2: Operative Reports, the fifth in the HPI Career Development Series, and it reaffirmed our need for silent editing of physician dictation to achieve greater accuracy and clarity. I know. Editing flies in the face of the widespread cry for verbatim transcription among a certain segment of the medical transcription industry. Not only is verbatim transcription not desirable if clear communication and medical accuracy are our goals, it just isn't possible to achieve.

To quote Ellen Drake in the guidelines for transcription: "We think it's asking too much of experienced, conscientious MTs to transcribe verbatim and that verbatim transcription communicates misinformation." HPI transcripts "represent the natural and often unconscious editing done by experienced MTs in that articles, pronouns, prepositions, and verbs have been added or edited . . . Grammar and minor syntax edits have also been made, as have formatting decisions (the insertion of headings, for example), . . ." She goes on to say that "medical errors . . . obvious misspeaks and discrepancies" have been corrected and footnotes have been added to suggest more extensive editing and/or flagging where appropriate." What physicians wouldn't want slips of the tongue corrected, like "The patient smokes two beers a day and drinks two packs," or references to surgery on the left leg in one paragraph and the right in the next. Dictating physicians are counting on the medical transcriptionist to be alert and, when necessary, to correct their mistakes.

Most highly skilled and experienced medical transcriptionists are natural editors. Lea Sims calls them *error capture specialists*. They even edit when they look in a mirror, and they compulsively edit when they read novels, newspapers, magazines, billboards, and other people's e-mails. Knowing when and how to edit medical dictation is an art and a science.

Speaking of the word "people's," last week I read a newspaper editorial that quoted the text of a politician's press release and placed (sic) after the word "people's." Who was well served by a (sic) after a careless or ignorant error? I was so annoyed with the shortsightedness of the copy editor (although I frequently wonder if the newspaper staff even *employs* a copy editor when I see headlines with blatant errors in 24 point type) that I totally lost the point of the entire editorial. A silent correction would have better served the reader as well as the author. Word to the wise—"a little learning is a dangerous thing" in a pretentious editor.

In the distant past a physician in our hospital practically had apoplexy when an inexperienced English major trainee typed a doctor's misspeak and then put (sic) after the wrong word used. When the physician read the report, he was livid! He tracked down the offending transcriptionist and yelled, "Don't you ever ever sic me again! Just fix the @#%\$% error!" It was a lesson I never forgot and I don't "sic."

It's a well known fact that no dictation is perfect, and medical documentation specialists silently and competently correct misspeaks, wrong word choices, and incorrect punctuation all the time, if they are doing their job properly. Easy fixes show respect for the physician while ensuring that the finished transcripts better reflect the high quality of medical care the patient received. We are all better served by silent editing appropriately applied.

This 59th issue of *e-Perspectives* is an outstanding mix of original articles by some of our favorite writers. Sidney Moormeister, Ph.D., provides a reflective piece: "The Chaos of Change: Some Thoughts on Our Industry, 2010," and Brenda Hurley updates MT business owners with "Red Alert to HIPAA Business Associates: HITECH Is Here!" Dr. John Dirckx's article focuses on the World Health Organization's surgical safety checklist. Rich Lederer, Ph.D., entertains and informs with two columns of Looking at Language. Four pages of new, difficult, or hard-to-find medical terms by Ellen Drake round out this issue in What's New in Medicine.



Sally C. Pitman

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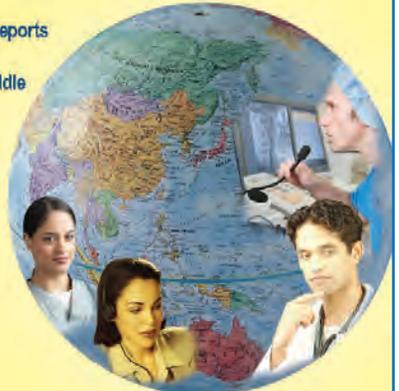
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The Chaos of Change: Some Thoughts on Our Industry, 2010

by Sidney K. Moormeister, Ph.D.

This article deals with the identification of challenges faced by medical transcriptionists in the Twenty-First Century. The first part features an overview of the climate in which today's MT must work; part two examines specific strategies and pathways for surviving—and thriving—in today's climate.

Le tremblement de terre. As I speak that expression aloud, which literally means “trembling of the earth,” I am transported to that fateful day, October 17, 1989, when at 5:04 p.m. my apartment in a large high-rise in San Francisco began to shake and tremble. Sitting on the floor waiting for the World Series to be broadcast, I felt as if I were on the back of a bucking bronco. I will never forget that day and my fervent prayer that I would die instantly rather than be buried beneath the cement rubble if our high-rise collapsed. Thankfully, the building did not collapse, but the absolute to-the-bone fear of that day has never truly left me; it lurks somewhere in the background of my mind. Lately it has been triggered by a different sort of earthquake; this time a “trembling of the earth” of the most basic of our foundations—that of financial security.

On a global level, we are facing the greatest challenge we have faced in my lifetime. Unemployment is at a 26-year high. Some people, even economists, have even dared to use the word “depression.” On a professional level, I see a similar trembling within the medical transcription profession. That state of our industry is in flux; some would go so far as to invoke the word “chaos.” So many diverse factors play a role in the uncertainty that every MT faces. The reality and the profundity of the changes that are coming (some are already here) cannot be ignored.

When a much-beloved medical transcription company (MDI) recently announced that it was merging with a much larger transcription company (Transcend), those weighing in with concerns and opinions about their future became more vocal. Other MTSOs also chimed in with additional concerns. It seems that the changes that are taking place are across the board and affect every company, from the largest corporate entity to the few mom and pops that have managed to survive.

To be an MT today is indeed to live in a state of chaos. I am often reminded of an amusement park ride of my child-

hood. Patterned after a house of horrors, this attraction featured skeletons, ghosts, werewolves, and vampires that popped up randomly in front of the little tin car that carried us down the track which ran through the middle of the house. In adulthood, I often recall that long-ago ride with its plethora of scary creatures that lunged out at us. For us children, being frightened was at least half the fun. In adulthood, the scary goblins of the haunted house can serve as a leitmotif for today's professional uncertainties; sadly, confronting them is surely not “fun,” but one of the biggest challenges contemporary MTs have ever faced. Those of us in the profession must make decisions regarding our future.

Although I frequently hear both seasoned MTs and newbies speak of plotting their exit strategies, I am not convinced that leaving is the best answer. Perhaps we need to focus more on problem identification and adaptation. We can reclaim our profession if we can inventory and utilize our skills. We must adapt to change. We must recognize how our profession has evolved. What are some of the factors that influence today's transcription climate?

- We now have a global economy which affects everything from the quality of the coat I buy to the accounts that I service for the MT company I work for. This is not your mother's (or even your big sister's) MT world. In many ways, it is a brave new frontier. For those who are not faint of heart, there are still opportunities to be had. For those who have slipped into a cavalier attitude and regard medical transcribing as a bedrock of security that will always be there and remain unchanged, there will be (and have been) rude awakenings. Medical transcription is not such a “sure thing” anymore.

- The day of the small mom and pop transcription company is long gone, likely never to return. When I began my career in medical transcription, I did so unwittingly, almost by accident. At the time, I looked at it as my ticket to finance my graduate education. I could study and attend classes during the day and work the night shift for a large metropolitan teaching hospital, thereby keeping my student loans at a manageable level. Armed with a scientific background (pre-med major) and excellent keyboarding skills, I was putty in the

Today's aspiring MTs will never know the camaraderie of the old-time transcription department where MTs worked together as a team.

hands of my mentor, the transcription department supervisor, who molded me into the kind of transcriptionist she wanted on her staff. She had the time and the interest to respond to my motivation and willingness to work hard. It was the quintessential quid pro quo situation that worked ideally for both of us. Sadly, there are few, if any, such mentors left. (Thank you, Avelina, wherever you may be.)

Today's aspiring MTs will never know the camaraderie of the old-time transcription department where MTs worked together as a team. There was something about working in a hospital that was more humane than being a "home-aloner," even if working at home affords one the much-maligned privilege of working in one's "jammies." The whole face of medical transcription has changed. Today's MT likely works alone in an atmosphere isolated from other MTs for a boss who will probably never be seen. Communication is likely to come through e-mails and instant messages. (Or in the case of a true emergency, pleas texted to one's BlackBerry imploring extra work!) The MT must be self-reliant in terms of time management and research skills.

Anxiety runs high these days among even the most skilled and experienced MTs. Those young enough to have many working years remaining are actively exploring options outside the field of medical transcription. Those of us contemplating retirement are trying to adapt to an ever-changing workplace.

Yet amidst all of the chaos and uncertainty, there is hope and, for my part, a genuine love of the profession. I hope that people will not be so quick to abandon a profession which, in my view, is still in its adolescence. I am convinced that we can survive and thrive in today's economy and in today's topsy-turvy transcription world. The key is to *accept the need for change*. Change is not an enemy but rather a catalyst that will move us to the next level in our profession.

Medical transcription as we know it today bears little resemblance to the profession I entered in 1969. Those were the days of true mentors, of carbon paper (does today's MT even know what carbon paper is?), and of seeing and smiling at the hospital's medical staff as you passed in the corridor after morning rounds. Even if Dr. Jones was a mushmouth, chances are he was a nice mushmouth who offered a smile or at least a nod. In short, he was a human being, not a disembodied voice filtering through sometimes subpar equipment. Now we are physically removed—sometimes by several states—from those whom we serve. Do we lose a bit of our humanity by working remotely? I say an unequivocal yes. And physicians do not even begin to understand the transcription process. When a colleague of mine asked her own physician

if he knew how the transcription for his clinic was handled, he replied, "It's magic."

There are other challenges that were unheard of "back in the day." Those wanting to enter our world would do well to consider these issues:

1. Working remotely can be isolating, not only in terms of missing the stimulation of interaction with peers, but also from the point of view of not being part of a team. One solution to this is to visualize not just the on-screen product but to constantly remind oneself that there is a *real patient* who is the reason for the medical record. Medical transcription is a service business and even though we may be serving the patient from the coast opposite his location, we are nonetheless providing the service and doing so in a professional and caring manner.

As a solution to the feeling that my job existed only in a kind of virtual reality, I joined a Yahoo group and round robin e-mail which enabled me to share some tips of my own and to get some of my own questions answered. I became phone friends with some of the MTs from the group and we found that we shared much in common. Most important of all, I was able to free myself of the strange notion that I was working alone somewhere in the middle of the desert.

2. Today's MT is facing more and more ESLs (dictators who speak English as a second language). Many would-be MTs are allowing the growing number of non-native speakers of English to intimidate them. In the last decade, the dictators I have transcribed have gone from approximately 10% to 90% ESL. Apprehensive when first assigned to a high-ESL account of a large mid-Atlantic teaching hospital chain, I found that the dictation had familiar rhythms, cadences, and phrases. After three months, there was no difference in my production whether doing ESLs or native speakers. (Indeed, I came to appreciate the irony of the fact that I much preferred my ESL clients to a certain native English-speaking cardiologist who had developed a fondness for eating celery and carrots while dictating.)

3. Without a doubt the factor that has the most impact on MTs is that of speech recognition (SR). Like escargot, mince pie, and Werner Herzog movies, SR is a taste to be acquired. Or not. It is either loved or hated. I have met very few MTs who are on the fence about the new technology. Twenty years ago, the MT community was fearful that the emerging SR programs would "take away our jobs." That has proved not to be the case; rather, SR has radically changed the way that some of us work.

I have met MTs who love SR, who are grateful to it for providing a way for them to work in spite of carpal tunnel and general keyboard fatigue. Some simply love it for its technology. (True techies at heart, these are undoubtedly the folks who purchase BlackBerrys and iPhones and load them with every conceivable application, not because they need them, but for the sheer fun of figuring it all out.)

MTs in the other camp find the prospect of SR to be so daunting that they refuse even to try to learn it. My own

approach is somewhat different; I like technology and have enough geeky toys throughout my apartment to establish my tech cred, but I have opted out of SR. My reasoning is that I can consistently transcribe 300-350 lines per hour; my focus and approach are in speed and accuracy. My belief is that it is much faster for me to transcribe it from scratch than to correct it on SR. After decades of developing my transcription technique and style, I do not want to slow down to the pace required for SR. This is simply a personal preference; others may hold the opposite view.

4. Global change is the macrocosm. Few if any of us in the MT community can do anything about the economic crisis other than keeping ourselves employed and out of the clutches of bankruptcy. I am happy to leave the challenges of global finance to the likes of Ben Bernanke and his minions. My attention will go instead to the microcosm—the world of the MT. Companies are born, companies merge, companies fold. The beat goes on and all that remains constant is change. We are faced with a choice: Do we embrace change and work with what we are given, do what needs to be done for our clients and work at achieving the flexibility needed to survive? It is possible to do just that, even in this economy, even with the professional challenges we face.

To those of us who are hardy souls who are determined to remain and flourish as MTs, I humbly offer a few small tidbits of insight gleaned from four decades in the MT world as we explore the second item for consideration—how we respond to the global changes and shifts in our profession. I present for your consideration a grab-bag of ideas; hopefully one or more of them will be useful.

1. It's only change, don't be afraid of it. Change has always been with us. (You should have seen the hubbub that surrounded the arrival of the first self-correcting IBM typewriters at our hospital in the 1970s!)

2. Be honest in your assessment of your skills. Keep your resumé updated in case of a merger.

3. Act, don't react, to new opportunities involving speech recognition technology. If possible, negotiate a trial period in which you can work with the technology to see if it is a fit for you. Ask for an escape clause to allow you to return to straight transcribing, should you not want to do SR. That said, give it an honest chance and an open-minded approach. There are many MTs who went kicking and screaming into the world of SR who genuinely love it and in retrospect wonder what their fear was all about.

4. Bid the past goodbye. Whether offshoring is right or wrong is essentially a political question that each person must answer for oneself, then take action that is consistent with his or her own personal values. When a much-beloved company that had been a part-time client of mine for years announced

. . . we can survive and thrive in today's economy and in today's topsy-turvy transcription world. The key is to accept the need for change. Change is not an enemy but rather a catalyst that will move us to the next level in our profession.

that it was merging with a much larger company that offshores, I politely but immediately served my notice, explaining that as a matter of personal principle, I do not accept clients who engage in offshoring. (I hold an "American jobs for American workers" kind of mindset.) I thanked the company for having employed me and genuinely wished them well. I had colleagues who opted to stay on and I wished them well, too. Civility is rapidly becoming a casualty of our technological age. I long ago vowed to be mindful to be kind to everyone. Kindness costs nothing and yields countless rewards.

5. Do some self-assessment. Ask yourself questions. Why are you an MT? Where do you want to be in one year? Five years from now? Is your current position allowing you to move in that direction? If not, why are you still there?

6. Ask yourself what you want from medical transcription. A decent salary and a way to make the mortgage payment, obviously. But I have always felt that there has to be something that remains after the money is gone. What is it about medical transcription that you genuinely like? What excites you? The new technology? Exposure to the world of medicine? Perhaps you, like the late, much admired Vera Pyle, chose transcription because you have a genuine love of words. Can that love of words be parlayed into other avenues of medical transcription? Is your grammar flawless? Would QA provide a different sort of challenge or a welcome change for you?

One of the true benefits of medical transcription has been the opportunity to meet many wonderful, intelligent, unique people. I would like to close this article, which has dealt mostly with data and questions, by introducing you to one of the most impressive MTs I have ever met, a woman by the name of Lita Lenhart. A resident of Northern California, Lita has had a steady passion for medical transcription since 1973. She explored other careers before settling on medical transcription. (As an interesting aside, Lita is, like many MTs, a voracious reader, admitting to reading even the telephone book if there is nothing else available!)

As a seasoned MT, she has seen it all and has been a witness to the ongoing transformation of our profession. Like many other practicing MTs, she laments the element of greed that has been injected into our profession. She acknowledges

We need to run our businesses like the businesses they are—even if we are a business of one and we operate not from the coveted corner office of a CEO but from a small area in our homes dedicated to our computer station.

that there was a great change in the mid to late 80s, a change driven by corporate greed that was in turn driven by the possibility of utilizing shortcuts in ways that were sometimes untenable.

(As we spoke, I found myself agreeing with her 100%. In my mind's eye I could see Gordon Gecko, the infamous stockbroker of Wall Street fame, trumpeting "Greed is good!" That snippet of movie dialogue became the motto of a generation of entrepreneurs; sadly the unrelenting greed has far outlived the greed of the original "yuppies" of that time.)

A savvy businesswoman, Lita recognizes that many investors saw the emerging medical transcription industry as an easy way to make money. Hospitals cut entire transcription departments, and the so-called "matchbook schools" emerged. A generation of people (mostly women) who wanted to work at home were exploited by transcription schools who offered very little and left these women financially poorer and ill-prepared for what turned out to be the daunting challenge of being a truly excellent transcriptionist.

An engaging, enthusiastic person, Lita would make an ideal mentor for an up and coming MT. In a different time and place, perhaps some of you who are reading this article could actually have had the good fortune of working with her in a hospital transcription department or having her as a mentor. She offers two solid pieces of advice for today's MT. Her words of advice ring true. The guidance she offers is this:

1. Focus on the skills you have.
2. Be proficient in everything.

To this, I would add one further caveat, one which is, ironically enough, very difficult for me to do myself: Be flexible. I am very much a creature of habit. This is a good trait in that it frequently supports a person who is very organized, but it can be a drawback in that it hampers one from being willing to jump off that high board and learn new things. As I have grown older, I have learned to strike a balance between rigidity and flexibility. Doing so has been the most important lesson I have learned about medical transcription in this decade.

Someone once sarcastically uttered the phrase "Change or die." At the time I heard it, I was frightened. Since then, I have come to see the wisdom of this phrase. We live in an era of change and of speed. We have instant everything—instant food, instant communication, instant transcription, or if not in fact "instant," pretty darn near to it, what with today's lightning-quick turnaround times.

As MTs, we need to stay aware of what is happening, not just in the MT world, but in the business world as well. Medical transcription does not exist as an entity separate from the rest of the marketplace, and it is a wise MT who reads at least one financial publication monthly and has some basic financial (and investing) savvy. We need to run our businesses like the businesses they are—even if we are a business of one and we operate not from the coveted corner office of a CEO but from a small area in our homes dedicated to our computer station.

I lightheartedly remind you that you do not need to be wearing Jimmy Choo shoes and corporate drag to cast yourself in a professional role. You do need to begin to think in terms of profit and loss, of what works for you and what doesn't, and what you are willing and not willing to accept. There is no MTSO in the world who will give you everything you ask for or think you need, but there are, alas, plenty of them who will engage in exploitative tactics. Know your rights as an employee and insist upon them. In return, give your very best, every hour of every day you work. (And if you are as fortunate as I am and work for a company that truly values its transcriptionists and treats them well, respond in kind and treat your MTSO like gold.) As Vera Pyle was fond of saying, "You deserve the kind of treatment you will accept."

The transcription world is light-years away from the world I stepped into four decades ago as a poor but motivated graduate student. At that time, I sought no more than to make a paycheck to pay the rent on a modest furnished room and to put food on table. I have gotten so much more from this profession. It has been the source of unending challenge, of learning, of the opportunity to meet many people who taught me so many things. It also has been the source of pain as I have seen the profession I loved transmogrified into a corporate tool, more frequently than not at the expense of the women and men who made it. I lament the death of the small mom and pop services that gave so many MTs their start; they simply could not keep up with the financial big boys (and girls).

Still and all, I have honest hope for the future. We need to stay alert, to prepare ourselves for the ongoing changes that are inevitable, to not fight them but to embrace them as the opportunities they are, and to realize that perhaps, the truth inherent in the adage that the ancient Chinese character for *crisis* is actually composed of two characters: Danger + opportunity.

Sidney K. Moormeister, Ph.D., holds doctoral degrees in forensic sciences and forensic psychology. She enjoys the stark desert beauty of Utah, where she is actively engaged in the serious study of Latin, enjoying wild animals, and writing for various publications in English and in French. She is the founder of the Voltaire Reading Circle. Veteran of 4000+ autopsies, she is a Life Fellow of the American College of Forensic Examiners and a member of the California Coroners Association.



Looking at Language

It's About Time

by Richard Lederer, Ph.D.

Welcome to *two thousand ten*, or is it *two thousand and ten*, or is it *twenty ten*? I contend it's *twenty ten*, and here's why:

During most of our lives we used the following formula to name years: *nineteen forty one*, *nineteen eighty four*, and *nineteen ninety nine*.

Then we reached the year two thousand, after which, when we tried to say *twenty one*, we realized that we would be ambiguous because *twenty one* could mean 21. So we started saying *two thousand two*, *three*, etc. This new formula was probably influenced by Arthur C. Clarke's fantasy *Two Thousand and One: A Space Odyssey*, which preceded the year two thousand and one by 33 years.

But now that we've arrived at 2010, we realize that saying *twenty ten* is not ambiguous. *Twenty ten* allows us to return to the template of the nineteen hundreds, and saves five letters, one syllable, and one word.

That's the American way: When you can save letters and syllables, you go for it. That's why we usually say (or write) *done* instead of *finished* and *despite* instead of *in spite of*. That's why I predict that *twenty ten* (*eleven*, etc.) will win out over *two thousand ten* (*eleven*, etc.).

Then there's the decade debate. Does 2010 mark the beginning of a new decade, or does that milestone not appear till first second of next year? To hear and read the dozens of decade-nt summaries of the years 2000 through 2009 that recently appeared in newspapers and magazines and whizzed around the Internet, you'd think that the first decade of the 21st century ended just as 2009 ticked into 2010.

But bear in mind that Christ was one year old at the end of the first year A.D. and that the first decade A.D. did not run its course until the end of the year 10. Each new decade, then, begins with a year ending with the number one, not zero, so that the second decade of this century (and millennium) will begin at the first breath of 2011, not 2010.

And that first decade of the new century and millennium will have remained nameless. Some of us recall the Twenties, Thirties, and Forties; and more of us have lived through the Fifties, Sixties, Seventies, Eighties, and Nineties.

Then, starting January 1, 2001, came the first nameless decade of our lives. We could have called it *The Zeros*, but that would have been too dismal. *The Noughts or Naughts*? Too negative. *The Aughts or Oughts*? Too prescriptive and ambiguous. *The Ohs*? Exuberant but also ambiguous. So we didn't call that decade anything.

And what shall we name the next decade, starting January 1, 2011? *The Teens* leap to mind, but 2011 and 2012 will not include numbers in the teens. Maybe we'll embrace *The Teens* when 2013 dawns.

Finally, let us note that the second day of this year—01/02/2010—reads the same forward and backward, coming and going. The next such January 2 will not occur for another 10,000 years—01/02/12010. Left-to-right-and-right-to-left patterns in language are called *palindromes*, from single words such as *deified* to compounds such as *race car* to statements such as the astonishing *Doc, note. I dissent. A fast never prevents a fatness. I diet on cod.*

Mirror-image dates—the next one will wink out at us on 11/02/2011—are commonly called *numerical palindromes*. I suggest a more compact sobriquet—*calindromes*.



Richard Lederer, Ph.D., is the author of more than 3,000 books and articles about language and humor. See order form for books by Richard Lederer on the next page.

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Red Alert to HIPAA Business Associates— HITECH Is Here!

by Brenda J. Hurley, CMT, AHDI-F

The American Recovery and Reinvestment Act (ARRA) and its Title XIII called the HITECH (Health Information Technology for Economic and Clinical Health) Act greatly expand on HIPAA compliance requirements. HITECH has extended to business associates (i.e., MT services) the data privacy and security requirements that had been required previously by covered entities (clients). Business associates (BAs) will now be subject to civil and criminal penalties, including a provision that allows patients to receive financial compensation for a violation of their privacy.

Enforcement under this new federal law has new teeth. Here is a summary. The new law

- Clarifies that employees or other workforce members (independent contractors) are subject to civil penalties. So legal accountability has now been expanded to individuals.
- Requires HHS to formally investigate any complaints and impose civil penalties for violations of rules due to “willful” neglect.
- Requires that any civil monetary penalty or settlement amount as a result of a privacy or security rule violation be transferred to the Office for Civil Rights to be used for enforcement of the HIPAA privacy and security rules.
- Establishes a tiered system of civil monetary penalties ranging from \$100 for unknowing violations up to \$50,000 for each violation due to willful neglect. The Secretary of HHS determines the penalty amount for the violation.
- Requires the Secretary of HHS to conduct periodic audits to ensure covered entity and business associate compliance with new rules.
- Gives the State Attorneys General the authority to bring suit in district courts for any violation on behalf of state residents.

It is fair to say that the changes promulgated by HITECH have truly rocked the world of medical transcription businesses with new regulatory requirements and obligations. Just to be clear, medical transcription business associates include medical transcription businesses and MT independent contractors who work directly for a covered entity (doctors, clinics, imaging center, hospital, etc.). Here is a summary of some of the major changes now effective for MT business associates.

- **A designated security official is needed.** This is the go-to person for compliance issues and the individual who will quarterback the compliance activities for the organization. While corporate compliance is truly everyone’s job, a coordinator is needed to make sure that the organization gets on track and stays there. This individual does not need to be an employee; it could be a consultant who fills this role. I often tell people that your security official is the person that HHS will ask for when they show up at your door for an audit. If you think that is funny, it is not. HHS is required under the law to do periodic audits of covered entities and business associates; included under their obligation to Congress is to publish those audit results in an annual report.

- **Encryption of all protected health information (PHI)—both during transmission and when in storage—is included under HITECH.** At least two states have already required encryption prior to this new federal law, so perhaps this is not a new practice within your MT business. Many have been using encryption with transmission, but encryption for stored data has not been quite as common. Now all data at rest (stored) or in motion (transmitted) are required to be encrypted to prevent a breach. HHS provides guidance for the protection of data and at this time it is 128-bit or 256-bit encryption. This guidance will be reviewed annually by HHS.

The guidelines for the protection and destruction of data are published by NIST (National Institute of Standards and Technology). These are free publications that can be found

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at www.nist.gov. The encryption and the appropriate destruction of PHI are critical processes for MT businesses to embrace because when PHI is “secured” through these processes a breach is avoided. Unsecured PHI is defined as not secured through the use of a technology or methodology that renders the PHI unusable, unreadable, or undecipherable to unauthorized individuals.

- **Breach notification obligations and responsibilities are now extended to the business associate.** HIPAA had already required business associates to provide covered entities (their clients) with a Report of Disclosure for inappropriate disclosure of their PHI and to keep a record of those disclosure reports for 6 years. So MT businesses should have already been doing this since the HIPAA privacy rule was enacted in 2003. The covered entity would then include this information in its files for when patients request an accounting of their disclosures (a right provided to patients under the original version of HIPAA).

A breach is defined as an “acquisition, access, use, or disclosure” of **unsecured** PHI that is not otherwise permitted under HIPAA “which compromises the security or privacy” of the PHI. As discussed above, *unsecured* means *unencrypted*.

Business associates are still required to notify the covered entity (their client) without unreasonable delay when there is a breach discovered. The covered entity will likely establish a timeframe for notification within the business associate agreement or amendment (more on that later) because the patient has to be notified of the breach no later than 60 days from the time of the breach discovery. State laws that permit less delay for patient notification preempt. So reporting to the client any breach discovery should be done without undue delay. If the breach involves more than 500 people, the major media outlets have to be notified. There are specific requirements for the manner and form of this notification, but most notable is that such notification is to be done by the covered entity **or the business associate** involved in the breach.

- **There is no requirement to execute totally new business associate agreements for clients who have current agreements in place.** An amendment can be crafted with language consistent with the new business associate

requirements, then executed with those clients. The option does exist, however, to forego an amendment and instead execute all new business associate agreements for current as well as new clients. Both the covered entity and the business associate are equally obligated to update and execute an agreement or amendment that reflects these expanded requirements. Since most agreements are crafted to protect the party that created them, MT businesses should consider drafting a standard business associate agreement to present to their current and future clients in order to avoid language that might be included in an agreement provided by a client that would increase the business associate’s legal burden.

- **It is now the legal obligation of the business associate (MT service) to take reasonable steps to try to stop any violations by its client (the covered entity).** If resolution does not occur, the business associate must report its client to HHS. This “policing” is the same for both parties—the covered entity and business associate are equally required by law to report violations by either party to HHS.

- **Business associates are now held accountable to all elements of the HIPAA Security and Privacy Rule.** While business associate agreements already have required adequate administrative, physical, and technical safeguards to be in place to protect the PHI received from their clients, most have not included additional specific privacy and/or security requirements. This expansion of obligations impacts MT businesses in many ways; one is the requirement for the business associate to have written documentation of a formal security risk. Given the large amount of data processed daily by medical transcription businesses, the importance of conducting and documenting a diligent security risk analysis process cannot be overstated. Some MT businesses may have already completed this since identifying potential gaps and risks related to data are critical to good security practices.

Under the Security Rule, another requirement is a **complete audit trail** for the access of all data (voice and text), actions performed, and by whom. Many MT businesses already have this in place because knowing this information and being able to track data activity equates to good business practices.

Yet another requirement under the Security Rule is **contingency planning**. HIPAA states that the purpose of a contingency plan is to have an established coordinated strategy that involves plans, procedures, and technical measures to enable the recovery of systems, operations, and data after a business disruption. The primary objective is to reduce the level of risk for loss or breach of data and to reduce the time for business disruption so that authorized individuals can have access to vital systems and information when required. It was because of the importance placed on this “availability” principle that the plans for data backup, emergency mode operations, emergency access procedures, and a disaster recovery are all required implementation specifications under the Security Rule, and now required of business associates.

A contingency plan encompasses the processes included in plans for data backup, emergency mode operation, emergency access procedures, contingency operations, and disaster recovery.

- **Security with a remote workforce is a challenge for MT businesses because HIPAA holds the business associates responsible for the actions of their workforce.** Training is required to educate their workforce members as to their obligations related to the privacy and security of PHI. Individually (each member of the workforce) and collectively (the MT business) can now be held legally responsible for their actions.

Think of security in three phases with each important to the organization. Phase 1 is **prevention**—know your risks through a security risk analysis and use appropriate methods for protecting the data and secure authentication for access. Phase 2 is **detection**—perform regular monitoring and auditing with documentation of these activities. Phase 3 is **response**—incident handling response process, breach notification processes, and disciplinary actions through sanctions.

- **Formal written policies and procedures are needed for all of the items listed above and so much more.** Sanction policies are required for corrective action and steps for remediation when a breach occurs. Processes like termination of staff need to be formalized to eliminate their access to PHI so those individuals are completely removed from your systems in an intentional and timely manner in order to eliminate their access to PHI.

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Clearly the medical transcription industry has formidable challenges for compliance with these new HITECH requirements, not only because of the enormous amount of data that is handled, stored, and transmitted on a daily basis, but also because of the large number of remote workforce. For those reasons, some people call this HIPAA version 2; I call it *HIPAA on steroids!*

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Looking at Language

“It’s My Centennial!” said Tom Swiftly

by Richard Lederer, Ph.D.

Starting in 1910, boys grew up devouring the adventures of Tom Swift, a sterling hero and natural scientific genius created by Edward Stratemeyer. Many of Tom’s inventions predated technological developments in real life—electric cars, seacoasters, and houses on wheels. In fact, some say that the Tom Swift tales laid the groundwork for American science fiction.

In Stratemeyer’s stories, Tom and his friends and enemies didn’t always just say something. Occasionally they said something *excitedly*, *sadly*, *hurriedly*, or *grimly*. That was enough to inspire the game called Tom Swifties. The object is to match the adverb with the quotation to produce, in each case, a high-flying pun. Here are my favorite Tom Swifties (says Lederer punting):

“I love pancakes,” said Tom flippantly.

“My pants are wrinkled,” said Tom ironically.

“I dropped me toothpaste,” said Tom crestfallen.

“I lost my flower,” said Tom lackadaisically.

“My favorite statue is the Venus de Milo,” said Tom disarmingly.

“I love reading *Moby-Dick*,” said Tom superficially.

“My glasses are all fogged up,” said Tom optimistically.

“I’ll take the prisoner downstairs,” said Tom condescendingly.

“I’m sorry that my jet propulsion system didn’t get the rocket to the moon,” said Tom apologetically.

“The girl has been kidnapped,” said Tom mistakenly.

“My stereo is finally fixed,” said Tom ecstatically.

“My family has a great future,” said Tom clandestinely.

“I passed my electrocardiogram,” said Tom wholeheartedly.

“What I do best on camping trips is sleep,” said Tom intently.

“What did that brain surgeon do to me?” said Tom absentmindedly.

“No ellipses, parabolas, or hyperbolas,” said Tom laconically.

“I manufacture table tops,” said Tom counterproductively.

“I’m wearing my wedding ring,” said Tom with abandon.

“I ain’t talking to my mother’s mother no more,” said Tom ungrammatically.

“I’m trying to get some air to circulate under the roof,” said Tom fanatically.

“Your Honor, you must be crazy,” said Tom judgmentally.

“I’m taller than I was yesterday,” said Tom gruesomely.

“That’s a really ugly river beast,” said Tom hypocritically.

“I’ve just figured out that this is the right route to take,” said Tom pathologically.

“I won’t tell you anything about my salivary glands,” said Tom secretively.

“I have just removed the defense mechanisms from this skunk,” said Tom distinctly.

“I’m going to kill Dracula,” said Tom painstakingly.

“Frankly, my dear, I don’t give a damn,” said Tom rhetorically.

“This just doesn’t add up,” said Tom nonplussed.

“Be sure to feed kitty her cod liver oil,” said Tom catastrophically.

“I wouldn’t like to have anything but that Chinese soup,” said Tom wantonly.

“Thank you, thank you, thank you, Monsieur,” said Tom mercifully.

Tom

“In order to join the Airborne Medical Corps, I had to earn a Ph.D. and an M.D.,” said Tom paradoxically.

Now that you see how Tom Swifties work, try to come up with a punderful adverb to complete each statement below. Suggested answers appear at the end of this article.

1. “I must attend my flock,” said Tom _____.
2. “That makes 144,” said Tom _____.
3. “She tore my valentine in two,” said Tom _____.
4. “I love to play hockey,” said Tom _____.
5. “I hate pineapples,” said Tom _____.
6. “Pass me the cards,” said Tom _____.
7. “The stock market’s going up,” said Tom _____.
8. “Let’s go to McDonald’s,” said Tom _____.
9. “Look at those cute newborn kittens,” said Tom _____.
10. “Ships ahoy!” said Tom _____.

A close cousin to the Tom Swifty is the Croaker. Croakers, invented by Roy Bongartz, also involve the punderful connecting of a statement to a quotation, except that the verb, rather than the adverb, supplies the pun:

- “My pet frog died,” Tom croaked.
- “I love cats,” Tom mused.
- “I love beagles,” Tom dogmatized.
- “The male sheep was badly cut,” Tom rambled.
- “I used to be a miner,” Tom exclaimed.
- “The little demon was deceitful,” Tom implied.
- “You’re a wicked glutton,” Tom insinuated.
- “My giant sea creature died,” Tom wailed and blubbered.

Now that you know some classic Croakers, match each statement in the left-hand column with the appropriate verb in the right-hand column. Answers appear at the end of this article.

1. “We’ve taken over the government,” bawled
2. “Company’s coming,” coaxed
3. “I’ve struck oil!” cooed
4. “I’ll corroborate that again,” deduced
5. “I’m singing well these days,” explained
6. “I travel all over America,” guessed
7. “I used to be a pilot,” gushed
8. “Please take me to the dance,” intoned
9. “My ad,” reproved
10. “Have another soft drink,” stated

Finally, and most pyrotechnically of all, is the Double Croaker, in which the verb and the adverb unite to ignite the pun:

- “Where did you get that meat?” Tom bridled hoarsely.
- “This meat is hard to chew,” Tom beefed jerkily.
- “I train big felines,” Tom lionized categorically.
- “You’re a mangy cur!” Tom barked doggedly.
- “I can’t seem to draw blood from you,” Tom probed vainly.
- “The fire is going out!” Tom bellowed greatly.
- “Here’s the story of the Liberty Bell,” Tom told appealingly.
- “I hate the taste of grape beverages,” Tom whined with clarity.
- “Your embroidery is sloppy,” Tom needled cruelly.
- “I plan to work in a cemetery,” Tom plotted gravely.
- “Get me off this horse!” Tom derided woefully.
- “I’ve lost a lot of weight,” Tom expounded thinly.
- “And I’m a mathematician,” Tom added summarily.
- “My bicycle wheel is melting,” Tom spoke softly.

Happy Tom Swift Centennial to all!

Answers to Tom Swifties	
1. sheepishly	2. grossly
3. halfheartedly	4. ideally
5. dolefully	6. fleetingly
7. bullishly	8. archly
9. literally	10. fleetingly
Answers to Croakers	
1. cooed	2. guessed
3. gushed	4. reproved
5. intoned	6. stated
7. explained	8. bawled
9. deduced	10. coaxed

WHO Cares About Safety in the Operating Room

by John H. Dirckx, M.D.

Segnar sette e tagliar uno.
(Measure seven times and cut once.)

—Benvenuto Cellini,
16th-century sculptor,
Autobiography

The pre-flight checklist has been a standard feature of aviation since before any of us were born. No U.S. commercial plane takes off without a minimum flight crew of three, any one of whom is qualified to fly that plane. Before the engines are started, the crew members together run through a formal, detailed, and rigorously complete review of instrument readings (more than 100), confirm that all controls are functioning properly, and make numerous other checks to ensure safety in the air.

In contrast, the great majority of surgical procedures performed around the world today are initiated with no more elaborate advance precautions against errors of omission or commission than a poker game or a stroll in the park.

Checklists as a reinforcement of memory and a defense against human fallibility are nearly universal features of modern life. From enormously complex projects like the construction of a skyscraper or a communications satellite to simple everyday activities such as a trip out of town or even just to the grocery store, common sense and centuries of accumulated experience dictate advance planning and some way of confirming that certain steps or operations are carried out in proper sequence and that essential materials, whether a ton of steel rivets or a quart of milk, are on hand at the appropriate time and place.

Although preliminary checklists for anesthesia and for at least some surgical procedures have been standard practice in some areas for years, it is only since the beginning of the present century that, under the sponsorship of the United Nations World Health Organization (WHO), real progress has been made toward universal implementation of an evidence-based and officially recognized set of safety checks in the operating room.

In the context of modern medicine, performing a surgical operation is often clearly preferable to allowing a disease process to continue causing chronic pain, dysfunction, or disability, or to advance to a lethal stage. According to one

study, in 2002 an estimated 164 million disability-adjusted life-years, representing 11% of the entire disease burden, were due to surgically treatable conditions. Some 234 million operations are performed annually around the world, a figure exceeding the number of childbirths.

But the lesser of two evils is still an evil. Virtually all surgery involves injury or damage to healthy tissue, with irreversible changes in anatomy and often permanent impairment of critical functions. In addition, even minor surgical procedures carry a risk of adverse effects, including death, arising from human error or from accidental or unforeseen problems occurring during or after the operation.

Studies in industrialized nations have shown a perioperative death rate associated with inpatient surgery of 0.4 to 0.8% and a major complication rate of 3 to 17%. In this country, perioperative adverse events of all kinds are thought to affect as many as one half of all surgical patients, resulting in excess costs of approximately \$25 billion. In a prospective study of colon cancer operations, the mortality rate for elective cases was 3.5% and the complication rate 24%, as compared with 10% mortality and a 38% complication rate in emergency procedures. In the developing world, postoperative complication rates are even higher.

In analyzing these statistics and seeking ways to improve them, it is essential to distinguish between preventable and nonpreventable adverse events. Negative outcomes of surgery can be divided into three classes:

1. A **sequela** is an expected negative result of surgery, a consequence that is inherent in the procedure itself. For example, hysterectomy precludes future childbearing, and hypophysectomy (removal of the pituitary gland) induces panhypopituitarism (lack of all pituitary hormones).

2. **Failure to cure** indicates that the operation performed was in some degree unsuccessful in achieving its purpose. For example, the surgeon may have been unable to excise all malignant tissue without compromising vital structures, or a disease process or previous surgery may have caused scarring or deformity that renders the intended procedure technically impossible.

. . . the great majority of surgical procedures performed around the world today are initiated with no more elaborate advance precautions against errors of omission or commission than a poker game or a stroll in the park.

3. A surgical **complication** is any deviation from the normal conduct or consequences of a procedure or from the expected postoperative course. This heading includes adverse events occurring during surgery (accidental injury to nerves, blood vessels, or organs adjacent to the operative site, shock or death from excessive blood loss) as well as those following it (wound infection, pulmonary embolism, graft rejection). Efforts to improve surgical outcomes naturally focus on this third category.

The role of human error looms large in the causation of surgical complications. Clearly only crass neglect of elementary precautions can lead to the unspeakable horror of having the wrong leg amputated or of undergoing the removal of one's only remaining kidney. Most errors, like these, are errors of omission, resulting from inadequate planning, lack of foresight, or lapses of memory or attention.

Common sources of trouble are improper practices for identifying patients, inadequate preoperative evaluation, ignorance of important clinical history (such as drug allergies), failure to confirm that required instruments, devices, and blood products are on hand, failure to make essential images available to the surgeon, neglect of protection against venous thromboembolism, failure to administer prophylactic antibiotics on schedule, failure to confirm sterility of equipment, inappropriate labeling of specimens, and omission of sponge, needle, and instrument counts.

In addition to these recurring errors of omission, human factors that contribute to poor surgical outcomes include the ineptitude, inexperience, or poor judgment of any member of the surgical team, inadvertent breaks in sterile technique, and miscommunication.

A brief historical review may clarify some of the numerous risks involved in modern surgery and explain the basis for efforts to minimize them.

The origins of surgery are lost in prehistory, but we can confidently surmise that very early Man used physical measures to stop hemorrhage, close wounds, extract decayed or broken teeth, remove foreign bodies and, eventually, incise abscesses and excise tumors. Just as, in primitive cultures, certain persons assume the role of shamans or healers, in more advanced civilizations a class of surgeons arose, professionals who were skilled in binding wounds, setting fractures, and cutting stones from the bladder.

The word *surgery* is a corruption of Greek *cheirurgia* 'handicraft', 'manipulation'. Homer (8th century BC) referred to the Achaian battle surgeons simply as *iatroi* 'physicians', but by the time of Hippocrates (4th-5th centuries BC) *cheirurgia* referred specifically to mechanical forms of treatment for injuries and certain disorders. The Hippocratic writings indicate that some forms of surgery, particularly orthopedics, had reached a considerable degree of sophistication, and also mention ocular surgery, hernia repair, and even craniotomy.

But during the early Christian era and throughout the Dark Ages, progress in surgery not only ceased but actually reversed. The profession of medicine became increasingly entangled in theories and counter-theories, elaborate classifications of diseases and systems of treatment, while gradually drifting away from hands-on examination and treatment of the sick. Academically trained medieval physicians sometimes rendered diagnoses and prescribed drugs without ever seeing their patients. Cultural and professional taboos discouraged these physicians from undertaking anything resembling operative surgery.

From the days of Hippocrates down to the eighteenth century of our era, medical theory was dominated by a system of physiology, pathology, and therapeutics founded on the conviction (utterly preposterous to our way of thinking) that health depends on a proper balance of four "humors"—blood, phlegm, yellow bile, and black bile (the last of which doesn't even exist). All disease was perceived as a lack of harmony or equilibrium among these humors, generally due to an overabundance of one of them.

With seemingly impeccable logic, then, a principal goal of therapy was to expel the superabundant humor. Among the most-used medicines were emetics to induce vomiting and cathartics to empty the bowels, often supplemented by enemas. Bloodletting was a standard procedure for treating a broad variety of ills, particularly fever. Small amounts of blood might be removed by scarification (making a row of shallow scratches in the skin), cupping (application of a vacuum device to the skin surface, often after scarification), or attachment of several leeches (blood-sucking worms) to the skin. The more usual technique, however, was phlebotomy: incising a superficial vein and allowing blood to flow until the patient lost consciousness.

For many centuries, bleeding and the administration of enemas were relegated to apothecaries (druggists) or to unlearned, often illiterate barber-surgeons, who also performed minor surgery (wound and fracture treatment, dentistry, lancing of boils). Several overwhelming obstacles blocked further progress in surgery.

Early operators were hampered by a profound ignorance of internal anatomy and physiology. Osteology could be learned by studying a skeleton or at least a partial collection of bones. But because dissection of cadavers was forbidden by civil or ecclesiastical authorities, or both, the shape, position, and relation of internal organs were only imperfectly known, often from ancient descriptions based on animal dissections, or from stylized, schematic, and even fanciful drawings.

Circulation, respiration, and metabolism were entirely misunderstood.

The impossibility of inducing adequate anesthesia turned every major procedure into a nightmare of agony. Sublethal doses of intoxicants such as opium, mandragora, and wine could barely take the edge off the pain of an abdominal incision or the amputation of a limb. The surgeon worked deftly and with lightning speed while a team of muscular attendants struggled to immobilize the writhing, screaming patient. Under such circumstances, complex procedures and refinements of technique were out of the question.

Early methods of controlling surgical bleeding were primitive, not to say barbarous. Ligation of severed vessels was known and practiced even in antiquity, but the medieval surgeon generally relied on slapdash bandaging, cautery (application of a red-hot iron), or sealing bleeding surfaces with boiling oil. Not surprisingly, many surgical patients succumbed to exsanguinating hemorrhage.

An equally frequent cause of postoperative morbidity and mortality was infection. Not until the middle of the 19th century was postoperative infection recognized as due to an overgrowth of pathogenic microorganisms introduced into the wound by the surgeon's fingers and unsterile instruments and dressing materials. So frequently did infection occur in open wounds and surgical incisions that suppuration (pus formation) was viewed as a natural, even desirable part of the healing process.

The era of modern surgery began with the discovery of the anesthetic properties of three inhalants (ether, chloroform, and nitrous oxide) and the introduction of surgical asepsis based on an understanding of the nature of infection. These advances, dating back just a century and a half, opened the door to numerous improvements in technique and instrumentation. Other major steps forward gradually followed—x-ray and other imaging methods, blood transfusion and blood banking, prophylactic antibiotics, operating microscopes and laparoscopes with high-intensity lighting and fiberoptics.

But nearly every one of these advances has been accompanied by a downside or negative feature. Ether is dangerously flammable. Inhaled nitrous oxide provides true anesthesia only at a concentration above 80%, which means that the patient is breathing less than the 20% oxygen normally present in the atmosphere, and therefore heading toward asphyxia. More modern inhalant anesthetics, injected muscle relaxants, and other components of anesthetic "cocktails" have their own sets of objectionable properties, including allergenicity and adverse interactions among themselves or with medicines the patient has been taking.

The same can be said of prophylactic antibiotics and other agents administered during the perioperative period. Transfused blood and blood products introduce lethal risks of yet another kind. Donor grafts and implanted synthetic materials (reinforcing mesh, artificial joints, ocular lenses, pacemakers) can elicit inflammatory or allergic responses or frank rejection.

Complex, multi-stage surgical procedures and elaborate armamentaria of instruments and appliances offer numerous opportunities for errors of omission. So, indeed, do many

The role of human error looms large in the causation of surgical complications. Clearly only crass neglect of elementary precautions can lead to the unspeakable horror of having the wrong leg amputated or of undergoing the removal of one's only remaining kidney.

measures intended to avoid negative surgical outcomes, such as the placement of semirigid catheters in the ureters before pelvic surgery to reduce the risk of their being accidentally injured, administration of prophylactic antibiotics before bowel surgery, and application of compressive stockings to reduce the risk of deep vein thrombosis (DVT) and pulmonary embolism.

An operation of moderate complexity may require the interaction of a surgical team of as many as ten persons. In a typical operating room scenario the key figures, gowned and masked almost or entirely beyond recognition, hover around the patient on the operating table like so many bundles of blue or green laundry. If this team works together day in and day out, identities and roles are clear-cut, and (with due allowance for differing temperaments, personal quirks, and bad hair days) collaboration is smooth and maximally productive. When distinctions of identity are lost, individual functions and areas of responsibility also tend to become blurred.

In a high-volume surgical department with frequent reassignment of ancillary personnel, the team that assembles to perform a given operation may be all but strangers to one other. Although there is seldom any doubt that the chief surgeon is in charge of the proceedings, communication among team members may be poor, with too much taken for granted instead of being clearly spelled out.

With this background, the advantages to be anticipated from going over a formal checklist as a preliminary to a surgical operation should be evident.

1. A checklist program forces both surgeon and colleagues to pause for a moment of reflection before taking irrevocable steps. The review of critical data carried out during this "time out" period may well lead to modification, postponement, or cancellation of the procedure.
2. A checklist serves to jog memories, reducing the risk of errors of omission and combatting the risk that crucial steps will be omitted or that complex tasks will not be carried out in proper sequence.
3. A growing body of evidence links teamwork in the operating room to significantly lower rates of adverse events. Ideally, every member of the team should be known by name

Many surgeons perceive checklists as reflections on their competence or assaults on their autonomy. To be perfectly frank, people who are open to regulation, assessment, and sharing responsibility with subordinates seldom become surgeons.

to every other member, and each one's professional role clearly known to all. Involvement of the entire operating team in the checking process helps to promote a spirit of collaboration, of working together for a common goal.

4. The use of a checklist fosters ongoing communication—not just transmission of orders and directives from above downward but a free exchange of information among all members of the team.

5. When routine becomes ritual, attention lags. A checklist program stimulates alertness and promotes a culture of thoroughness and safety-mindedness.

The use of formal checks to avoid errors in the operating room is not without precedent. If you have ever observed open abdominal surgery on an obese patient, you can readily understand how an instrument as big as an egg-beater (or as small as a needle) can be overlooked even with the most meticulous visual and manual search of the the abdominal cavity by the surgeon before closure. Many decades of bitter experience have shown that, in every thoracic, abdominal, or pelvic operation, a formal count of sponges, needles, and instruments before surgery, and a recount at the end of the procedure but before the incision is closed, must be performed to supplement the surgeon's efforts to ensure that no foreign objects or materials are accidentally left inside the patient. (A surgical "sponge," or "lap sponge," is a disposable absorbent pad of coarse-mesh gauze folded to 8- or 12-ply in sizes varying from 2" x 2" to 4" x 8" or larger.)

In 1998 Dr. Peter Pronovost, currently medical director of the Johns Hopkins Center for Innovations in Quality Patient Care, began evidence-based research into practical measures to improve healthcare delivery in Intensive Care Units (ICUs)—specifically to reduce the incidence of catheter-related bloodstream infections. Between March 2004 and September 2005, over 100 ICUs implemented specific safety interventions: hand washing, using full-barrier precautions during the insertion of central venous catheters, disinfecting the site with chlorhexidine, avoiding the femoral vein as an injection site if possible, and removing unnecessary catheters. Use of a written checklist was an integral part of this program.

Infection rates were recorded before, during, and up to 18 months after the study period. Rates of infection per 1000 catheter days were measured at three-month intervals. It was found that the median rate of infection decreased from 2.7 per 1,000 catheter-days at baseline to 0 within the first three

months after implementation of the intervention. The improvement was sustained, and there was a 66% reduction in the rate of catheter-related bloodstream infections at 16 to 18 months.

But the adoption of similar programs in surgery, requiring formal review of a written list of safety issues before the commencement of any operation, has been blocked or retarded by various technical and personal factors. The principal surgeon seems the logical person to carry out such checks but, like most members of the operating room team, the surgeon is sterilely gloved and ill-suited to make checkmarks on a form. The ungloved, or at least "unsterile," circulator or O.R. technician might seem a fitting alternative but, being at the bottom of the surgical hierarchy, may gain acceptance in this role only with difficulty. Many surgeons perceive checklists as reflections on their competence or assaults on their autonomy. To be perfectly frank, people who are open to regulation, assessment, and sharing responsibility with subordinates seldom become surgeons.

Despite these obstacles, during the past 10 years national and international organizations have adopted evidence-based strategies that have resulted in a decrease of adverse surgical events. In May 2004, WHO approved the creation of a World Alliance for Patient Safety. A major project of this collaboration was the Safe Surgery Saves Lives program, designed to reduce the number of surgical deaths around the world by addressing prominent issues such as inadequate anesthetic safety practices, avoidable surgical infection, and poor communication among surgical team members.

To support the efforts of operative teams to reduce adverse surgical events, WHO identified a set of safety checks that could be performed in any operating room. The purpose of the WHO Surgical Safety Checklist (see box, next page), of which the first draft was published in 2008, is to reinforce accepted safety practices and to foster better communication and teamwork in the operating room. The checklist is not a regulatory device or a component of official policy. It is intended as a tool for use by surgeons, surgical teams, and institutions interested in improving the safety of operations and reducing unnecessary surgical deaths and complications.

The checklist was designed for brevity and ease of use. Its ultimate goal is to help the surgical team consistently follow a few critical safety steps and thereby minimize the most common and avoidable risks endangering the lives and well-being of surgical patients.

Essential to the success of the checklist program is the assignment of one person to read out the items on the list and check the boxes as appropriate. This coordinator can be the circulator, the anesthetist, or any other member of the operating team. Standard procedure is for the coordinator to read each item on the checklist in proper sequence, to check a box only when the item has been properly addressed, and to prevent the team from progressing to the next phase of the operation until the previous step has been satisfactorily completed.

Before induction of anaesthesia

(with at least nurse and anaesthetist)

Has the patient confirmed his/her identity, site, procedure, and consent?

Yes

Is the site marked?

Yes
 Not applicable

Is the anaesthesia machine and medication check complete?

Yes

Is the pulse oximeter on the patient and functioning?

Yes

Does the patient have a:

Known allergy?

No
 Yes

Difficult airway or aspiration risk?

No
 Yes, and equipment/assistance available

Risk of >500ml blood loss (7ml/kg in children)?

No
 Yes, and two IVs/central access and fluids planned

Before skin incision

(with nurse, anaesthetist and surgeon)

Confirm all team members have introduced themselves by name and role.

Confirm the patient's name, procedure, and where the incision will be made.

Has antibiotic prophylaxis been given within the last 60 minutes?

Yes
 Not applicable

Anticipated Critical Events

To Surgeon:

What are the critical or non-routine steps?
 How long will the case take?
 What is the anticipated blood loss?

To Anaesthetist:

Are there any patient-specific concerns?

To Nursing Team:

Has sterility (including indicator results) been confirmed?
 Are there equipment issues or any concerns?

Is essential imaging displayed?

Yes
 Not applicable

Before patient leaves operating room

(with nurse, anaesthetist and surgeon)

Nurse Verbally Confirms:

The name of the procedure
 Completion of instrument, sponge and needle counts
 Specimen labelling (read specimen labels aloud, including patient name)
 Whether there are any equipment problems to be addressed

To Surgeon, Anaesthetist and Nurse:

What are the key concerns for recovery and management of this patient?

This checklist is not intended to be comprehensive. Additions and modifications to fit local practice are encouraged.

Revised 1 / 2009

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If a step is skipped for any reason, the box is left unchecked. For some steps, a "Not Applicable" box is provided.

The checklist divides the operation into three phases and prescribes a review procedure for each phase.

1. **Sign In** (before induction of anesthesia; 7 items). The coordinator obtains oral confirmation of identity from the patient, determines the correctness of the proposed procedure and operative site (including marking the site with a felt-tipped skin pen if appropriate), and ensures that informed consent for surgery has been given in writing. The coordinator then reviews with the anesthetist the patient's risk of blood loss, airway difficulty, and allergic reaction and verifies that a full anesthesia safety check (including a formal inspection of the anesthetic equipment, a check of drugs and supplies on hand, and a review of the patient's anesthetic risk) has been completed.

Death from airway loss, a relatively common complication of inhalation anesthesia, can be prevented with appropriate planning. The coordinator confirms that the anesthetist has examined the patient's airway for signs pointing to a difficult intubation and has assessed the risk of vomiting with aspiration due to overactive gag reflex or a full stomach. With a difficult airway or significant aspiration risk, minimal pre-

cautions include the availability of emergency resuscitation equipment and the presence of a capable assistant.

The coordinator asks the anesthetist for an estimate of blood loss during the procedure. The risk of hypovolemic shock during surgery escalates with blood loss above 500 mL. If estimated blood loss exceeds that figure, WHO advises placement of at least two large bore intravenous lines or a central venous catheter before skin incision, and confirmation that replacement blood or fluids are available.

WHO strongly recommends the use of pulse oximetry in conjunction with general anesthesia. The checklist coordinator confirms that a pulse oximeter has been placed on the patient and is functioning properly.

2. **Time Out** (after induction of anesthesia but before the first incision; 7 items). Under the direction of the coordinator, team members identify themselves to one another by name and specify their functions during this procedure. They must unanimously agree that they are performing the correct operation on the correct patient at the correct site.

The coordinator verifies that prophylactic antibiotics have been administered within the previous 60 minutes. Approximately 1 million patients suffer from postoperative wound infections each year in the U.S., extending the aver-

WHO endorses modification of the checklist to fit particular procedures, teams, or operative settings, but advises against omission of steps simply because they cannot be accomplished in an existing environment or circumstances. Rather, the list should promote changes that will enable the operative team to comply with each item.

age hospital stay by 1 week and increasing the cost of hospitalization by 20% for an additional \$1.5 billion in healthcare costs annually. The administration of prophylactic antibiotics is standard with many procedures, including most operations involving the heart, pharynx, esophagus, bowel, urinary tract, and uterus, and in the management of contaminated wounds. In a study of 2,847 patients, the lowest postoperative infection rate (<1%) was noted when an antibiotic was administered within 60 minutes before surgery, and the risk of infection increased progressively as more time elapsed between administration and surgery.

The coordinator now initiates a dialogue involving the surgeon, anesthetist, and nursing team. A preview of the intended procedure by the principal surgeon alerts all team members to any expected technical difficulties and to steps involving the risk of rapid blood loss or injury. The surgeon predicts the duration of the procedure and confirms or revises the anesthetist's estimate of blood loss.

The anesthetist reports any patient-specific risks arising from severe blood loss, cardiac or pulmonary disease, arrhythmias, coagulation disorders, and other conditions, and describes specific plans to reduce those risks and to carry out resuscitation if necessary.

The scrub nurse or technician verifies that necessary instruments and equipment (including suction, irrigation, and electrocautery devices) are on hand and functioning, and that needed grafts, implants, or other materials are available. Sterility of heat-sterilized equipment is confirmed with the appropriate indicators.

Finally, the support staff confirms that essential images are properly displayed for viewing by the surgeon.

3. **Sign Out** (at the completion of the procedure but before wound closure is completed; 5 items). Together the team reviews the operation that was performed, including unforeseen findings, variations in technique, complications, equipment malfunctions, and errors. The labeling of surgical specimens is confirmed to be correct and complete. Sponge, needle, and instrument counts are repeated. In case of a discrepancy, the team searches the wound as well as drapes and waste containers until the count is correct. X-rays may need to be taken to rule out the retention of an instrument or sponge at the surgical site.

Before the patient leaves the operating room, plans and expectations for postoperative management are discussed by the surgeon, anesthetist, and nursing personnel, with particular attention to specific risks or problems.

Because the draft checklist was intentionally made short and simple rather than comprehensive, many users have added further safety checks. WHO endorses modification of the checklist to fit particular procedures, teams, or operative settings, but advises against omission of steps simply because they cannot be accomplished in an existing environment or circumstances. Rather, the list should promote changes that will enable the operative team to comply with each item.

Supplementary checks that may be added involve prophylaxis against deep vein thrombosis (DVT) and hypothermia. DVT with resulting pulmonary embolism is the leading cause of preventable hospital deaths. All patients undergoing surgery should be screened for DVT risk before admission. Mechanical prophylaxis (anti-embolism stockings) is routinely provided for high-risk patients and for all those undergoing surgical procedures lasting longer than 30 minutes. Pharmaceutical prophylaxis (injected heparin) is also appropriate for some patients. Both of these measures should be initiated before the patient leaves the operating room, and the appropriate check can easily be added to the checklist.

Environmental temperature settings in operating rooms are geared to the comfort of the operating team (capped, masked, and swathed in sterile surgical garb) rather than to that of the patient, who is practically nude but oblivious of body temperature. By the end of a long procedure the patient's core temperature may fall as low as 96°F. Current research indicates that a body temperature lower than 96.8°F or higher than 100.5°F increases the risk of postoperative surgical site infection, the need for blood products, and cardiac irritability. Monitoring the patient's temperature, providing blankets with or without heating elements, and using warmed parenteral fluids can help avoid surgical hypothermia. A check on these measures may be included in the checklist.

Since late in the 20th century the concept of evidence-based practice has dominated medical thinking. Current theories of pathophysiology and treatment protocols are based on rigorous statistical analysis of hard observational and experimental data rather than on tradition, anecdote, or "conventional wisdom." One by one, many venerable canons of belief and therapeutic rituals have fallen by the wayside as controlled trials have shown them to be without foundation.

What proof exists that the use of a safety checklist in the operating room offers any benefits in lives saved or complications averted?

Atul Gawande, MD, a surgeon at Brigham and Women's Hospital in Boston and an associate professor in the Department of Health Policy and Management at the Harvard School of Public Health, led the team that drafted the WHO Surgical Safety Checklist. Even before the checklist was published,

Gawande and colleagues initiated a research program to assess its effectiveness.

Between October 2007 and September 2008 they gathered data at eight hospitals in eight cities: Toronto, Canada; New Delhi, India; Amman, Jordan; Auckland, New Zealand; Manila, Philippines; Ifakara, Tanzania; London, England; and Seattle, Washington. Before implementation of the checklist, the researchers recorded information on clinical processes and outcomes from 3733 consecutively enrolled patients 16 years of age or older who were undergoing noncardiac surgery. They then recorded parallel data on another 3955 consecutively enrolled patients after the introduction of the Surgical Safety Checklist.

The study focused on six checklist items, all involving basic safety issues. Although individual steps were often found to be omitted, overall adherence to the core group of six safety indicators increased by two thirds, from 34% to 57%. Adoption of the checklist involved changes in systems and routines as well as changes in individual and group behavior. For example, at some study hospitals the responsibility for administering prophylactic antibiotics was transferred from the nursing staff in the surgical wards to the anesthetist. For most of the hospitals, oral confirmation of patient identity and marking of the operative site represented new departures. However, incorporation of the checklist into operating room practice was not observed to cause delays, disrupt routines, or generate antagonism or dissatisfaction.

The primary end point of the study was the rate of complications, including death, during hospitalization within the first 30 days after surgery. The rate of death was 1.5% before the checklist was introduced and declined to 0.8% afterward, a reduction of 47%. Major postoperative complications occurred in 11.0% of patients at baseline and in 7.0% after introduction of the checklist, a reduction of 36%.

Rates of surgical-site infection and unplanned reoperation also declined significantly. Although benefits of the checklist were more marked at some geographic sites than at others, no single site was responsible for the overall effect, nor was the effect confined to high-income or low-income sites. In a survey of more than 250 surgical staff members who participated in the study, 78% reported witnessing the prevention of an operating room error because of the checklist.

An important limitation of the study is that information on complications was recorded only during patients' hospital stays. That means that data collection for patients undergoing outpatient procedures ceased within a few hours after surgery. In addition, some of the improvement in performance and outcomes can probably be attributed to the so-called Hawthorne effect, a temporary improvement in workers' motivation, performance, and productivity when they know they are being observed or assessed.

Despite some reservations about the study outcomes, medical and surgical authorities around the world have generally expressed enthusiastic acceptance of the WHO Surgical Safety Checklist, or at least of the basic concepts underlying it. Ireland, Jordan, and the Philippines have already estab-

“Surgical complications are a considerable cause of death and disability around the world. They are devastating to patients, costly to healthcare systems, and often preventable, though their prevention typically requires a change in systems and individual behavior. . . .”
—Atul Gawande

lished nationwide programs to implement the checklist in all operating rooms.

As of February 1 of this year, all hospitals in England and Wales are required by the National Patient Safety Agency to use the checklist. To date only about 10% of U.S. hospitals have adopted versions of the WHO checklist, but 5 states (New York, Washington, North Carolina, South Carolina, and Indiana) now have quasi-legal requirements for preoperative checking.

In conclusion, it seems fitting to quote the final words of the article in which Gawande and colleagues reported their findings (Alex B. Haynes, et al., “A surgical safety checklist to reduce morbidity and mortality in a global population,” *The New England Journal of Medicine*, 2009;360(5):491-499):

“Surgical complications are a considerable cause of death and disability around the world. They are devastating to patients, costly to healthcare systems, and often preventable, though their prevention typically requires a change in systems and individual behavior. In this study, a checklist-based program was associated with a significant decline in the rate of complications and death from surgery in a diverse group of institutions around the world. Applied on a global basis, this checklist program has the potential to prevent large numbers of deaths and disabling complications, although further study is needed to determine the precise mechanism and durability of the effect in specific settings.”

For a much fuller discussion of this topic, see Atul Gawande, *The Checklist Manifesto: How to Get Things Right*. New York: Metropolitan Books-Henry Holt & Co., 2009. ISBN-13: 978-0-8050-9174-8. 193 pp., \$24.50.

John H. Dirckx, M.D., is the author of *Laboratory Tests and Diagnostic Procedures in Medicine* (2004), *Human Diseases*, 3rd ed. (2009), *H&P: A Nonphysician's Guide to the Medical History and Physical Examination*, 4th ed. (2009), published by Health Professions Institute. He is medical editor of all HPI publications.



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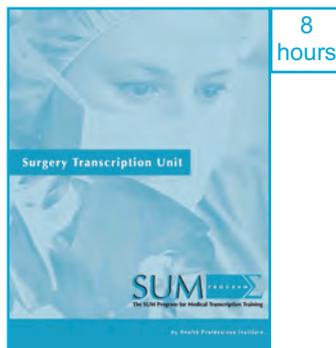
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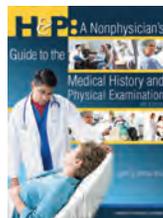
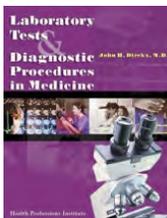
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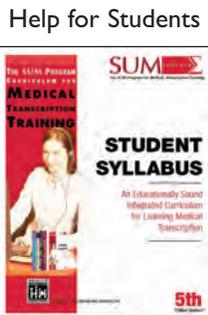
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What's New in Medicine

abduction finger sign—a new sign to detect unilateral functional paralysis of the upper limb, to differentiate functional from organic paralysis of the arm. Abduction finger movements of one hand are used against resistance with a maximal sustained contraction to detect synkinetic abduction finger movements of the contralateral hand. The abduction finger sign may be a reliable bedside test to discriminate functional from organic arm paralysis.

absent bow tie sign and flipped meniscus sign—may be a sign of central hole tear of discoid meniscus on MRI.

absent halo sign—refers to thyroid ultrasound features associated with malignancy in thyroid nodules. They represent microcalcifications, hypoechogenicity, irregular margins, or are referred to as an *absent halo sign*.

air crescent sign—can be visualized both on radiographs and CT scans of the chest. It is recognized as a crescent-shaped or circumferential area of radiolucency within a parenchymal consolidation or nodular opacity. The air crescent sign can be visualized in a pulmonary cavitory process, which results in air surrounded by radiopaque material along both its inner and outer margins. Despite being described in a number of entities, the air crescent sign is characteristic of invasive pulmonary aspergillosis when seen in the appropriate clinical setting.

antral pad sign—seen on a radiograph of the upper gastrointestinal tract obtained with orally administered contrast material. The sign refers to an extrinsic impression or indentation on the posteroinferior aspect of the antrum. The impres-

sion is generally arcuate and smooth, and it may or may not be associated with an impression on the medial aspect of the duodenum. An impression on the posteroinferior aspect of the gastric antrum is often caused by a mass lesion in the pancreas. However, the gallbladder more commonly causes such as indentation. In any case of this “antral pad sign,” a gallbladder impression should first be excluded.

applause sign—a test of motor control that helps to differentiate progressive supranuclear palsy (PSP) from frontal or striatofrontal degenerative diseases. Patients are asked to clap three times after demonstration by the examiner. A score of 3 is given for 3 claps, a score of 2 for 4 claps, 1 for 5-10 claps, and 0 for greater than 10 claps. The test has been previously reported to be indicative of various neurodegenerative disorders. It is highly specific for parkinsonian disorders but it is not a specific sign for PSP; it appears to be most sensitive for corticobasal degeneration.

atlantoaxial rotatory subluxation (ARS, AARS).

atomizer sign—primarily seen overlying the Adam's apple both in women and girls and called the *atomizer sign*. Example: allergic contact dermatitis to fragrances.

Bernese periacetabular osteotomy.

best-corrected visual acuity (BCVA).

binary sign in Anderson-Fabry cardiomyopathy.

bird's beak sign—(1) Thoracic endovascular stent graft with a bird's beak sign. (2) Barium enema revealed a “bird beak sign” at the splenic flexure, which confirmed the diagnosis of splenic flexure

colonic volvulus. (3) In 28 fasting patients with achalasia, sonography showed dilatation, retention of fluid, and smooth narrowing of the distal esophagus (like a bird's beak).

bright facet sign—on fast spin echo T2-weighted magnetic resonance imaging, the presence of high signal within the facet articulations, indicating degenerative facet and disk changes.

Cervista™ HPV HR extraction kit—used to identify human papillomavirus (HPV) DNA from 14 high-risk genital HPV types that are commonly associated with cervical cancer. If test results are positive, the patient is likely to be infected with HPV.

chronic inflammatory demyelinating polyneuropathy (CIDP).

coffee bean sign—used to refer to a proximal distended colon at the left upper quadrant. Related to splenic flexure volvulus.

colon single-stripe sign—chronic longitudinal NSAID-related ulcer of the colon or longitudinal ulcer in ischemic colitis.

comet sign—(1) the appearance of an adjacent eccentric, tapering soft-tissue mass corresponding to the noncalcified portion of a pelvic vein (phlebolith) on unenhanced helical CT which can help differentiate calculi from phlebolith; (2) on sonogram, the appearance of echoes around microliths in the parotid gland; (3) a clinical sign of unusual pruritic dermatitis caused by *Pyemotes ventricosus*, a parasite of the furniture beetle *Anobium punctatum*.

crack (and stack) method (Oph)—a highly adaptable cataract surgical procedure that allows the surgeon to perform phacoemulsification

Update

with the nucleus cracked into 4 quadrants.

DARC (detection of apoptosing retinal cells)—a noninvasive real-time imaging technology.

delamination cysts—a previously unrecognized and novel radiographic sign that can preoperatively identify acetabular cartilage delamination in patients with labral tears, thereby facilitating the selection of the appropriate surgery and determining prognosis.

drop (or dropped) toe sign—resting posture of the toes in plantarflexion and absent active dorsiflexion movement after plantar stimulation of the foot. Considered an indicator of neurologic impairment in congenital clubfoot.

duodenal wind sock sign—an intraluminal duodenal diverticulum seen on an upper GI series. This sign consists of a barium-filled sac that lies entirely within the duodenum and that is surrounded by a narrow radiolucent line that is well demonstrated as the barium in the duodenum passes distal to the diverticulum. Because of the thin radiolucent stripe surrounding the diverticulum, the appearance on an upper GI series has also been described as a *halo sign*.

dural tail sign—seen on contrast material-enhanced magnetic resonance images as a thickening of the enhanced dura mater that resembles a tail extending from a mass. Dural tail typically associated with meningioma is less than complete. Both tumor invasion and hypervascular reaction may be responsible for the dural tail sign.

eye-of-the-tiger sign—most commonly described in Hallervorden-Spatz syndrome, where the ring of marked hypointensity involving the globus pallidus on T2-weighted MR images is due to excess iron accumulation.

eye sign—as seen in an acute stroke. It's not necessarily a poor outcome.

face of the giant panda sign—on T2-weighted MRI of the midbrain. Focal accumulation of gallium ⁶⁷citrate in the nasopharynx, parotid gland, and lacrimal gland produces a distinctive pattern, the panda sign, that is strikingly similar to the dark markings of the giant panda. Also, *double panda sign* in Wilson disease. See also *panda sign*.

Fahr syndrome—a rare, genetically dominant, inherited neurological disorder characterized by abnormal deposits of calcium in areas of the brain that control movement, including the basal ganglia and the cerebral cortex.

FAST (focused assessment by sonography in trauma)—a focused exam using ultrasound to diagnose hemorrhage in a trauma setting, takes about 3 minutes, and uses 4 primary views: the RUQ, LUQ, subphoid, and suprapubic.

FC2 female condom—a sheath with one open end. There is an outer ring at the open end, and, although not attached to the condom, there is an inner ring inside the sheath that aids in insertion. The FC2 female condom is inserted into the vagina before intercourse, and it is a barrier to sperm between the penis and the vagina. It reduces access of semen to the vagina, and thereby prevents or decreases the rate of pregnancy compared to unprotected intercourse. Also, the condom barrier prevents access to the vagina of pathogenic bacteria and viruses in secretions as well as contact between lesions on the shaft of the penis and the vagina.

floating fat-density debris sign—a well-defined mass mottled with gas bubbles associated with an encapsulating wall, as seen on CT scan. The floating fat-density

debris sign and a lesion in the stomach that appears similar to the obstructing mass is typical of a small-bowel bezoar. An isolated amorphous mass mottled with gas bubbles is typical of small-bowel feces.

floating thrombus sign—pulmonary thromboembolism with thrombus trapped in a patent foramen ovale on CT pulmonary angiogram.

football sign—massive pneumoperitoneum in an infant.

four-quadrant cracking method (Oph)—see *crack method*.

galloping colored horse sign—M-mode Doppler pattern of severe functional mitral regurgitation in the presence of high left ventricular filling pressures.

Genfind™ DNA extraction kit—used to identify human papillomavirus (HPV) DNA from 14 high-risk genital HPV types that are commonly associated with cervical cancer. If test results are positive, the patient is likely to be infected with HPV.

grating sign in bladder calculi.

head supporting sign during reclining—may be the sole neurological finding in some patients with involvement of the craniovertebral junction. The craniovertebral (CV) junction can be involved in many diseases, e.g., rheumatoid arthritis, as well as destructive bone pathologies such as tumor and tuberculosis (craniovertebral Pott's disease).

hot cross bun sign—a radiological sign which is highly specific for multiple system atrophy. It is also seen in parkinsonism secondary to vasculitis, and in variant Creutzfeldt-Jakob disease.

intermetatarsal fat pad sign—radiographic aid to diagnosis of occult tarsometatarsal joint injuries.

intestinal juice—a fluid that is secreted in small quantity in the

Update

small intestine, is highly variable in constitution, and contains especially various enzymes (as erepsin, lipase, lactase, enterokinase, and amylase) and mucus. Also called *succus entericus*.

inverted V sign—in subacute combined degeneration of spinal cord.

knife-cut sign—linear erosive herpes simplex virus infection in immunocompromised patients. Herpes simplex virus presents as intertriginous fissures similar to the “knife-cut” ulcers associated with metastatic Crohn’s disease. Intertriginous fissures due to herpes simplex virus are recognizable patterns of viral infections in immunocompromised hosts.

LifeStent FlexStar and FlexStar XL vascular stent systems—used to re-open stenotic (narrowed) regions of the superficial femoral and proximal popliteal arteries which supply blood to the legs.

Luck’s histologic stages (zones)—proliferative phase, involutional phase, and residual phase.

Medtronic Attain Ability lead—a surgically implanted insulated wire that is designed to be used as part of a biventricular pacemaker system.

Medtronic Ensemble transcatheter valve delivery system—a catheter that helps guide the Melody transcatheter pulmonary valve into the heart. See *Medtronic Melody*.

Medtronic Melody transcatheter pulmonary valve—a manufactured replacement pulmonary heart valve that had already been previously repaired. The Melody valve is made from a cow’s jugular vein valve that is sewn into a small metal stent (scaffolding). See *Medtronic Ensemble*.

Medtronic METRx microdissection system—a unique muscle-splitting approach that allows

surgeons to access the spine with a posterior approach without cutting or removing muscle from the spine. With this minimally invasive approach, surgeons are able to precisely locate, see and remove herniated disks in the spine through tunnels created by tubes that split back muscle, much like a sewing needle splits the weave of fabric, along natural divisions. No muscle fiber is cut, only separated.

modified osteo-odonto-keratoprostheses (MOOKP)—a sight-restoring procedure. Usage: “For certain patients whose bodies reject a transplanted or artificial cornea, this procedure ‘of last resort’ implants the patient’s tooth in the eye to anchor a prosthetic lens and restore vision.”

Morgellons disease and the tweezer sign—a dermatologic or psychiatric delusion of parasitosis. See *tweezer sign*.

muscle retracting sign—an index of the discontinuation of endoscopic submucosal dissection, but it is impossible to diagnose preoperatively.

Navistar ThermoCool irrigated deflectable diagnostic/ablation catheter—used to destroy (ablate) abnormal heart tissue that causes an intermittent abnormal heartbeat in the upper chambers of the heart (paroxysmal atrial fibrillation).

Neuro Patties—sponges that offer exceptional pliability, compliance, and a singular design not found in existing neurosurgical absorbable materials.

nonlifting sign and forceps biopsy—widely used for evaluating the invasion depth of colorectal tumors. It is commonly accepted that endoscopic mucosal resection is contraindicated for colorectal tumors with a nonlifting sign because of the probability of massive submucosal invasion.

NovaSure procedure—a one-time endometrial ablation treatment. This minimally invasive procedure controls heavy bleeding by using energy to remove the lining of the uterus. The average treatment time is about 90 seconds and needs to be performed only once to lighten or stop heavy menstrual periods.

ocular tilt reaction—a clinical sign of cerebellar infarctions.

ominous sign—radiologic findings that consist of root-type peri-anchor radiolucency located below the equator of the glenoid. Osteophytes of the humeral head together with the ominous sign is considered progression of anchor arthropathy and may suggest early surgical intervention.

open-ring imaging sign—often present in large, contrast-enhancing demyelinating lesions and helps to differentiate them from neoplasms and infections. On cerebral angiography, tumor-like masses of demyelination may occupy an intermediate position between acute multiple sclerosis and post-infectious encephalitis.

ovarian crescent sign—used in the evaluation of adnexal masses as an sonographic marker for malignancy.

ovarian vascular pedicle sign—a way of differentiating ovarian from subserosal uterine lesions on single-detector helical CT. The presence of the ovarian vascular pedicle sign on helical CT is valuable for confirming the ovarian origin of a pelvic tumor and for differentiating an ovarian tumor from subserosal uterine myoma.

panda sign—avid and symmetrical radiogallium accumulation in the lacrimal and parotid glands on gallium scintigraphy in a patient with cutaneous manifestations of systemic sarcoidosis. See also *face of the giant panda sign*.

Update

ProGEL pleural air leak sealant—a surgical sealant made of human serum albumin and a polyethylene glycol (PEG) crosslinker that forms a clear flexible gel on mixing. Surgeons use the device to seal air leaks on lung tissue after standard closure techniques (that is, sutures or staples) for open resection of lung tissue.

ProTack fixation device—a sterile, single use device for fixation of prosthetic material, such as hernia mesh, to soft tissue. The tack is helical and made of titanium. The overall length of the shaft is approximately 35.5 cm. ProTack comes in a 30 tack configuration.

pseudointercondylar notch sign—manifestation of osteochondritis dissecans of the trochlea; mimicking an intercondylar notch.

Reclaim deep brain stimulation—a totally implanted brain stimulator intended to suppress symptoms associated with obsessive compulsive disorder (OCD) that are not adequately controlled with medications and/or other therapies.

reversal sign (Radiol)—Usage: “Total-body radiographs and non-enhanced CT of the brain showed fracture of the right clavicle, pericerebral hemorrhage, and brain damage with reversal sign.”

reverse and pseudoreverse cortical sign in thoracolumbar burst fracture—sagittal reconstruction in axial CT. What appears to be a flipped piece of posterior vertebral body is actually part of the superior or inferior endplate that is depressed into the comminuted vertebral body.

rolled-up tongue sign—a sign of previous caustic injury.

sagittal sign—direction of the genital tubercle. Downward direction of the genital tubercle indicates a female fetus, and upward direction

a male fetus on ultrasonography in late first and early second trimester to determine sex of fetus.

Saphris (asenapine)—an oral antipsychotic medication that is administered sublingually twice daily. It is used for treatment of acute schizophrenia in adults and also for acute episodes of mania in bipolar 1 disorder.

sentinel clot sign—an important clue for locating the bleeding source when other localizing findings of vessel injury are not present.

sequential compression stockings (socks)—plastic leg wraps that help prevent blood clots by inflating and deflating around the legs. The compression is delivered in a sequential manner up the leg, producing a wavelike milking effect to evacuate leg veins. Sequential devices have been proven to be more effective than single-chamber, evenly distributed pressure in preventing DVTs. The compression is set to cycle regularly (for example, every 60 seconds). Devices are available for feet, calves, and/or thighs.

sign of the fox—the typical appearance of the wounds just prior to closure after bilateral subinguinal microsurgical varicocelectomy.

sliding lung sign—a sonographic sign which appears to hold promise in certain emergency situations including diagnosis of a pneumothorax and confirmation of endotracheal tube placement.

Sluder syndrome—sphenopalatine neuralgia.

succus entericus—intestinal juice referring to the clear to pale yellow watery secretions from the glands lining the small intestine walls. See *intestinal juice*.

Synvisc-One—a single viscosupplementation injection directly into the intra-articular space inside the knee. Indicated for the treatment of pain of the knee in patients who

have failed to respond adequately to conservative non-pharmacologic therapy and simple analgesics, e.g., acetaminophen.

TECNIS multifocal foldable intraocular lens—a plastic lens used to restore vision and replace the natural lens of the eye after it is removed during cataract surgery.

traumatic atlantoaxial rotatory dislocation (TAARD).

tubal ring sign—a ring-enhancing cystic structure in the adnexa corresponding to tubal ring sign of ectopic pregnancy seen on pelvic ultrasound.

tweezer sign—the practice of dermatology patients who frequently dig at their lesions with household items such as nail clippers or tweezers as well as their own nails. The use of mechanical instruments in addition to fingernails may signify a more malignant psychological profile. See *Margellons disease*.

VersaStep trocar (not Verres-type trocar) (used in donor kidney surgery)—bladeless trocar.

WallFlex biliary RX fully covered stent—indicated for the palliative treatment of biliary strictures produced by malignant neoplasms. The WallFlex biliary RX stent is constructed of braided, platinum-cored Nitinol wire (Platinol wire) and features three key components: radial force to help maintain duct patency and resist migration, flexibility to aid in conforming to tortuous anatomies and full-length radiopacity to enhance stent visibility under fluoroscopy.

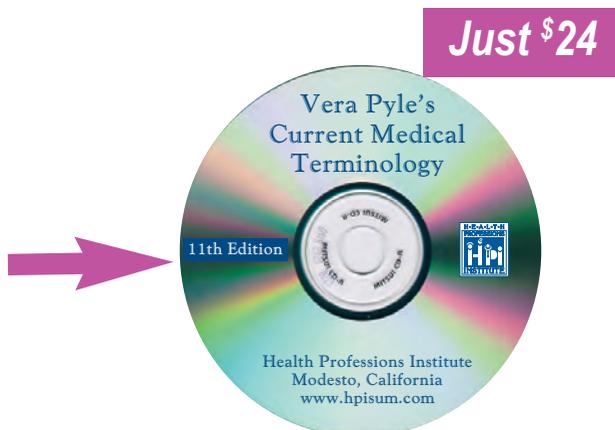
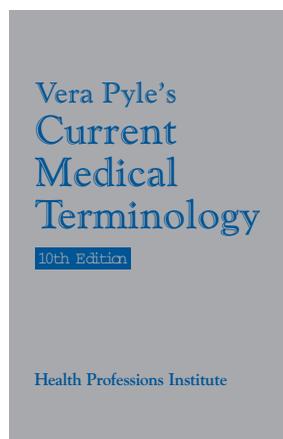
XACT foldable hydrophobic acrylic UV light-absorbing posterior chamber IOL—a plastic lens used to replace the natural lens after it is removed during cataract surgery to restore vision.

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SMASH (simultaneous acquisition of spatial harmonics) method—used in MRI procedures.

anvil dunk—a procedure used in laparoscopically performed gastric bypass to construct a gastrojejunostomy. The head of a stapling anvil is used to invaginate the stomach wall in order to bring the surgically created openings in the stomach and jejunum into apposition and stabilize them while they are being sutured together. See also *dunked end-to-end anastomosis*.

bird-beak sign (Radiol)—abrupt, smooth tapering of the distal esophagus on barium swallow, an indication of achalasia.

black knee prosthesis—a femoral component consisting of zirconium metal that has been heated and cooled in oxygen. This oxidizes the surface 5 microns of the metal and turns it into a black ceramic finish.

capillary isotachopheresis (cITP)—a modification of electrophoresis in which the use of two electrolytes with different chemical properties permits more rapid and more complete separation of analytes. It is a more sensitive means of measuring LDL subfractions in plasma.

8-to-S-plasty—a modified technique for closing a skin defect shaped like an 8 (two adjoining round lesions). The traditional method of repair by creating a single elliptical defect sacrifices healthy skin. In the Burow 8-to-S plasty, one triangle of skin with its apex at the constriction in the figure 8 is advanced to close one of the circular defects, and the other triangle of skin is advanced to close the other. No incisions are required and no skin is sacrificed. The suture line after closing resembles an “S”.

odd facet of the patella—the 7th facet of the articular surface of the patella, being the most medial portion. Only at 135 degrees of flexion does the odd facet contact the medial femoral condyles. Therefore, in most patients, it is a very underused part of the articular surface. Underuse has been incriminated as a cause of damage to the articular surface, an example being chondromalacia.

rendezvous laparoendoscopic technique—a technique used in endoscopic sphincterotomy to facilitate the identification and cannulation of the papilla. Using this technique, a guidewire is inserted through the cystic duct, caught with an endoscopic polypectomy loop, extracted from the operative channel and cannulized with a sphincterotome. This is then pulled through the papilla in the common bile duct, thus completing the

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