e-Perspectives

on the Medical Transcription Profession

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Contents

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Everything Exists All at Once

As a member of the medical transcription industry for the past forty years, I've come to believe that everything exists all at once. That is, over the years we've enjoyed and suffered through many predictions of what the industry was going to be like in the future. And the future would sometimes be portrayed in very scary terms for those who were comfortable with the status quo. We were told in the late 1970s and throughout the 1980s that our jobs would soon be passé as speech recognition technology replaced us in the workforce. In the late 1970s we were still using IBM Selectric typewriters for medical transcription, and the automatic MTST machines and word processors were just beginning to take hold. The future seemed distant indeed.

Over the years the technology has greatly changed and everyone has long used computers of various levels of sophistication. The workplace has changed a great deal and fewer transcriptionists are working in medical facilities where the dictation originates. Thousands of medical transcriptionists are home-based, working for international companies using the most sophisticated technology and high-speed telecommunications. At the same time freelance transcriptionists are often home-based and work for solo medical practitioners and medical group practices in their geographic area. In the latter case, the work is usually done on the individual transcriptionist's personal computer, with electronic transmission of completed work. In many cases the dictation is still physically "picked up" and transcribed reports are "delivered" back to the medical office in various forms. And everything exists all at once.

That's why I marvel that so many news releases and reports attempt to describe the industry and its future in monolithic terms as if the electronic medical record is here and now. It isn't, as much as we would like it to be for optimal patient care. My own primary care physician (an internal medical specialist) doesn't even dictate office notes and initial office H&Ps. Instead she handwrites—yes, handwrites—detailed reports into the medical charts in her office, and my husband's neurologist does the same thing. These medical offices and thousands of others are a long way from computerization.

Speaking of computerization, this issue of *e-Perspectives* features an article by Laura Bryan on "Formatting and Character Restrictions in Healthcare Documentation" in which she clearly describes the technologies and limitations that influence the application of formatting and style guidelines in medical documentation. We need to know this because in many settings technology is changing not just HOW we do our work but WHAT work is to be done. Not only are we editing dictation transcribed by others or generated by speech recognition machines instead of recording the healthcare narrative ourselves, we're having to become even more computer literate. HIPAA, EHR, HL7, ARRA, HI-TECH—the mind boggles with acronyms relating to healthcare technologies and government regulations concerning healthcare.

Dr. John Dirckx describes and explains hyperbaric oxygen therapy to provide an understanding and context for transcribing HBO therapy reports. In "Do You Speak Medlish?" Linda Campbell provides examples and discusses errors and misperceptions of students in medical transcription. Rich Lederer entertains and enlightens us about American dialects and slang in two columns of Looking at Language. A full four pages of What's New in Medicine rounds out the 58th issue of *e-Perspectives* magazine.

All this information seeks to familiarize us with new technologies or old technologies being used in a new way. These articles ground us and remind us that we don't have to abandon the familiar and the comforting as we embrace the new.

Sally C. Pitman

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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 isotachophoresis (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

Do You Speak Medlish?

1 MT Tools CE credit approved

by Linda C. Campbell, AHDI-F

As the hot rays of the summer sun blanket North America each July, my thoughts are carried back in time to 1998. Having returned home from one of many allied health conventions, held in a hot city that I now cannot recall, there were numerous messages on the answering machine. With my finger hovering over the "delete message" button, I listened to one recording after another, most of them of no great interest. Except that last one. "Hello," came the voice, "This is Vera Pyle. I was just calling to say goodbye."

And so she was. Having stoically fought the good fight, Vera succumbed two days later to the ravages of pancreatic cancer. That's what I remember about that summer. But what I remember about Vera Pyle—let me tell you a story!

A Pioneer Story

Vera Pyle was a pioneer like no other in the medical transcription industry. A longtime practitioner of medical transcription herself, her goal was to make medical transcription an honored profession. For this to happen, it was necessary to ensure that all those who put type to paper understood what the doctor said, and what it meant.

Whether her vision of professional status for MTs would ever come about, Vera's support and championship of those who practiced medical transcription were indefatigable. She recognized the importance of training and education for those who documented the healthcare record and publicly said so: "We are the mind behind the machine."

Vera Pyle
1917-1998

In league with the American Association for Medical Transcription, Vera Pyle became a regular columnist in *The AAMT Newsletter* in November 1979, providing a list of new, difficult, and hard-to-find words, broken down into simpler English. It ran in each issue. At a time when medical dictionaries defined one medical term using other medical terms just as complex, Vera understood the importance of translation, the necessity of understanding, the vitality of thought transference.

The fruits of Vera's labors culminated in a book titled *Current Medical Terminology* (1985). It was the first of its kind, a reference book written especially for medical transcriptionists. In typical Pyle-esque fashion, it also contained a good dose of humor.

> Wouldn't it be wonderful if Dr. Andreas Grüntzig had called us and said: "Just wanted to let you know that I'm inventing a new balloon catheter; it will be a very nice thing to use in transluminal dilatation and in performing angioplasties. And, by the way, my name is spelled G-r-ü-n-t-z-i-g, in which case don't forget the umlaut over the *u*; or else, you can spell it Gruentzig, but in that case, don't use the umlaut. However, I will answer to either."
>
> Vera Pyle, "A Medical Transcriptionist's Fantasy," *Journal of AAMT*, Winter 1983-84

Here's the *Stedman's Medical Dictionary* definition of anatomical snuffbox:

> A hollow seen on the radial aspect of the wrist when the thumb is extended fully; it is bounded by the prominences of the tendon of the extensor pollicis longus posteriorly and of the tendons of the extensor pollicis brevis and abductor pollicis longus anteriorly. The radial artery crosses the floor that is formed by the scaphoid end of the trapezium bones.

Huh? Here's how Vera Pyle handled it:

> Shallow depression between two tendons in the wrist, just proximal to the base of the thumb.

Vera Pyle did not believe that the medical dictionary's take on *anatomic snuffbox* was too complex for medical transcriptionists to be useful. But she did not believe her methods of explanation were condescending, either. Far from it! The more explanations, the better. Her idea was to bring student and practitioner from the starting line, negotiate the maze of medical jargon, instill passion for the race, then cross that finish line.

"Without visual aids," she once told me, "your words had better be good!"

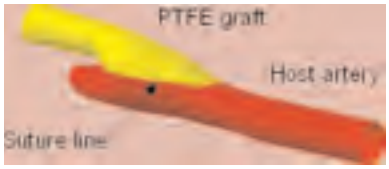
A Picture Is Worth . . .

An early edition of *Current Medical Terminology* contains a foreword that is self-explanatory: "What is the use of a book," thought Alice, "without pictures or conversations?" (Lewis Carroll, *Alice's Adventures in Wonderland*). Ironically, Vera Pyle was a great fan of illustrations and understood their role in communicating ideas. With few exceptions (*Melloni's Illustrated Medical Dictionary* being one), the illustrations in medical dictionaries were paltry at best. "Without visual aids," she once told me, "your words had better be good!"

Today there are thousands of medical graphics on the Internet that can be used free or for a nominal fee, and what a difference they can make understanding complex medical jargon! (All the illustrations in this article are copyright free from Wikipedia.)

The commonly dictated phrase *end to side anastomosis* refers to a procedure in which the end of one structure is joined surgically to the side of another. How much easier to envision this procedure with a picture!

A polytetrafluorethylene (PTFE) graft.



Three Little Words

Vera Pyle once commented that "in," "and" and "on" caused more confusion than any complex medical term. (To this I would add "of.) **The misuse of a little word is often a clue that a concept is misunderstood, even if on the whole these errors are not significant in the report and don't change medical meaning.** Little errors may be a sign that a significant piece of medical knowledge is missing.

Here are some actual errors made by both students and practitioners; insight offered as to why the student may have erred; and suggestions for teaching moments.

Correct: There was a contracture in flexion.
Error: There was a contracture and flexion.
Misperception: Flexion is an abnormality.
Teaching moment: The contracture is the abnormal finding. Flexion (toward the body) is simply the direction of the contracture. Hold your arm out in front of you. Bend it at the elbow to touch your forehead. That is flexion. A contracture is an abnormal position of a muscle, often caused by scarring. A contracture is either pulled toward the body (in flexion) or pulling away from the body (extension).

Correct: The left leg demonstrated a contracture and varus knee.

Error: The left leg demonstrated a contracture in varus knee.

Misperception: The patient has a contracture within the varus knee.

Teaching moment: There is a contracture causing the knee to turn out abnormally (varus knee, or bowed leg). A normal knee is aligned straight with the hip and ankle.

Using a rubber band, hold each end vertically (floor to ceiling) with the thumbs and pull taut. The top end represents the hip; the bottom end is the ankle. Using a free finger, gently pull the middle of the rubber band (the knee) to one side. This is how a contracture can affect the vertical alignment of the knee. If the knee is not aligned normally, it is either varus (bowed out, or bow-legged) or valgus (bowed in, or knock-kneed). A contracture can pull a knee out of proper alignment.

Correct: There was a sensation of a mass on abdominal examination.

Error: There was a sensational mass on abdominal examination.

Misperception: The doctor is using a colloquial English word in a medical way.

Teaching moment: Subjective words like *sensational* are seldom used in an objective examination. Objective findings on physical examination are described with precise terms: size, look, feel, consistency. Look up *sensational* in *Merriam Webster*'s online dictionary (**www.m-w.com**). There are three entries listed. Do any of these really fit the description of a tumor?

1: Of or relating to sensation or the senses;
2. Arousing or tending to arouse (as by lurid details) a quick, intense, and usually superficial interest, curiosity, or emotional reaction;
3. Exceedingly or unexpectedly excellent or great; arousing or tending to arouse (as by lurid details) a quick, intense, and usually superficial interest, curiosity, or emotional reaction.

Correct: There was a pseudoaneurysm of the arteriovenous (AV) fistula.
Error: There was a pseudoaneurysm and the arteriovenous (AV fistula).
Misperception: An arteriovenous fistula is a disease condition.
Teaching moment: An arteriovenous fistula is surgically created when an artery is joined with a vein. It is not a disease. A novice may overlook the bigger picture: an arteriovenous fistula is created to facilitate dialysis.

To clean the blood artificially, since the kidneys don't work well enough, the technicians must have access to the

blood so that they can hook up the "blood cleaner"—the dialysis machine. The blood vessel that blood is taken from must have a great deal of blood flow to make the process work efficiently. The best source of such blood flow is derived from an artery. The most common arteries used are the ones located in the arm and typically at the wrist. It is not safe or practical to stick an artery, particularly as frequently as needed for hemodialysis (typically 3 times per week). Thus, a means is needed to bridge between the high pressure and flow of the arterial system and the low pressure and slower flow of the venous system.

A surgical procedure is performed wherein the surgeon links an artery and vein deliberately to form a junction where there ordinarily isn't one (artery and vein joined surgically is called an arteriovenous fistula). The techs can now access the blood to hook up the dialysis machine and clean the blood of waste products (dialyze the patient).

Critical Thinking Gone Awry

Using Vera Pyle's methods and techniques, let's now examine some relatively common medical phrases that have stupefied students and practitioners alike. In doing so, we'll also translate the Medlish.

Correct: This child became steadily worse and required hospitalization because of an emergent condition.

Error: This child became steadily worse and required hospitalization for an emergency condition.

Misperception: The physician said or meant to say emergency condition.

Teaching moment: Look up all words. Do not guess, and do not make assumptions without research. There are legitimate English words not often used in casual conversation, so you may not be familiar with some of them. *Emergent* is a legitimate term and is appropriately used within the context of the report; it refers to a condition that arises unexpectedly; it emerges, comes forth.

Using an English dictionary, look up these words and use them as they might be used in a medical report: rent; stalk; ray.

Correct: The conjunctivae were then closed with 10-0 Prolene sutures.

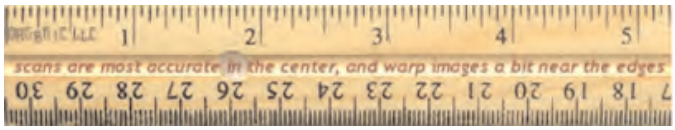
Error: The conjunctivae were then sutured with ten 0 Prolene sutures.

Misperception: I've never heard of 10-0 sutures before. That must be wrong. Therefore, the doctor said ten 0 Prolene sutures.

Teaching moment: The larger the suture number, the smaller the suture size. An 0 Prolene suture is larger than 10-0 Prolene suture.

To better understand how sutures differ in thickness, look at a ruler that has inches, centimeters, and millimeters marked on it (most do). Using the millimeter increments (one-tenth of a centimeter), find the 0.5-millimeter mark; that's about the thickness of a #2 suture. A 1-0 suture is about 0.37 of a millimeter. A 10-0 suture is even smaller at 0.025 of a millimeter

The misuse of a little word [in, and, on, of] is often a clue that a concept is misunderstood, even if on the whole these errors are not significant in the report and don't change medical meaning.



(that's 0.025, not 0.25). The smaller the anatomic structure, the smaller the suture used. A 10-0 suture is often used in the eye, whereas a 2-0 suture might be selected to close layers of the abdomen.

Correct: This catatonic patient was found with fixed stare.

Error: This catatonic patient was found with fixed air.

Misperception: The patient had catatonia. She wasn't moving.

Teaching moment: Hold your breath as long as you can. Even though you are not actively breathing, oxygen and other blood gases are still moving throughout your body. If air wasn't moving—if air was fixed—what would that mean for you?

Correct: Blood loss: None apparent.

Error: Blood loss: Unapparent.

Misperception: *Unapparent* means that no blood loss was noted.

Teaching moment: Look up the prefix *un* in a dictionary. *Unapparent* indicates that blood loss was not evident and thus could not be determined. But surgeons monitor blood loss as they operate, and it is unlikely that a surgeon would comment that blood loss was unapparent.

Correct: There was no palpable lymphadenopathy

Error: There was no probable lymphadenopathy.

Misperception: There probably was no lymphadenopathy.

Teaching moment: There definitely was no lymphadenopathy, at least none that was palpable. The words *no* and *probable* are near-opposites in definition. Either there are masses palpable, or there aren't masses palpable. (This does not mean there are no masses; it only means that there are not any that can be felt.)

Correct: CARDIOPULMONARY: She denies any shortness of breath, palpitations, history of rheumatic fever.

Error: CARDIOPULMONARY: She denies any shortness of breath, palpitations. History of rheumatic fever.

Misperception: The patient had rheumatic fever.

Teaching moment: The patient did not have rheumatic fever. The dictator provides a list of findings (in this case, all

negative) for the cardiopulmonary review of systems. Had the patient had rheumatic fever, it is likely that more details about this illness would have been provided (age at onset, heart or joint problems as a result).

Correct: Labor and delivery were unremarkable. The placenta had three cord vessels.

Error: Labor and delivery were unremarkable. The placenta had two cord vessels.

Misperception: There were two cord vessels.

Teaching moment: There were three cord vessels. If one of these vessels is not present, it is an abnormal finding, and the dictator would likely comment on it. Two cord vessels have been linked to (but are not necessarily indicative of) birth defects or learning disabilities as the child ages.

Correct: The medial and lateral inner cortex was curetted with a medium-bowl curet followed by a large-bowl curet.

Error: The medial and lateral inner cortex was curetted with a medium bone curet followed by a large bone curet.

Misperception: Because this instrument was used during orthopedic surgery, the correct adjective is bone curet.

Teaching moment: A curet is shaped rather like a spoon. A spoon is comprised of two parts: a handle (the part of the spoon we hold in our hands) and the bowl (the part we sip from). These bowls can be small, medium, or large. Often many different-sized curets are used during one surgery.

Education Needed Here

• Patient was given 10 units of MPH (NPH) insulin.

Teaching moment: This insulin is very common and is listed in numerous references. If a word cannot be found with an initial *n* sound, try *m*. Insulin is one of the few drugs measured in units.

• Toes are downward (downgoing) bilaterally.

Teaching moment: Look up Babinski sign in your dictionary. What is a normal Babinski sign for an infant? For an adult?

• PROCEDURE: Left hiatal (inguinal) hernia and hydrocele repair

Teaching moment: A hiatal hernia occurs at the junction of the esophagus and stomach; there is no left or right. An inguinal hernia may be accompanied by a hydrocele.

• A 66-year-old man with obstructive warning (voiding) symptoms.

Teaching moment: The patient is having a problem urinating (voiding) because the prostate is enlarged or a mass is blocking the urinary tract. Symptoms include frequent urination of small amounts (frequency), getting up a lot at night to urinate (nocturia), problems starting the urination process (hesitancy).

• Urinalysis (urinary amylase) was 9.6.

Teaching moment: A urinalysis is a set of specific tests performed on the urine. Show a urine reagent dipstick (can be purchased at a drug store). If possible, dip stick in urine to show the changes that occur on reagents. The term urinalysis will never have one numeric value.

• assist (assisted) rupture of membranes.

Teaching moment: The doctor or nurse manually broke the bag of amniotic fluid (bag of waters). The rupture did not occur spontaneously. Rupture of the amniotic fluid stimulates contractions and the progression of labor.

• date of conception (confinement)

Teaching moment: The date of confinement is the day the baby is due to be delivered and is no longer confined to the uterus. It is not the date of conception.

• The wound was left to heal by secondary attention (intention).

Teaching moment: A wound that is closed by secondary intention is one that heals by itself rather than being closed surgically. For example, drain wounds are often left open and heal by secondary intention (by themselves) rather than being sutured closed (closed primarily).

There is no "talking down" in medicine. When it comes to understanding complex topics, it's important to translate the Medlish. As Vera Pyle often said, now you know all that I know.

Linda C. Campbell, AHDI-F, is a medical transcriptionist, writer, and editor. She was Director of Product Development for Health Professions Institute for many years, where she coauthored *The SUM Program for Medical Transcription Training* and several attendant books. Most recently she was an educational consultant for The Andrews School in Oklahoma City, OK. She is the author of *Understanding Medical Transcription and Editing*, to be published by Pearson/Prentice Hall next year. She lives with her family in the Rocky Mountains.

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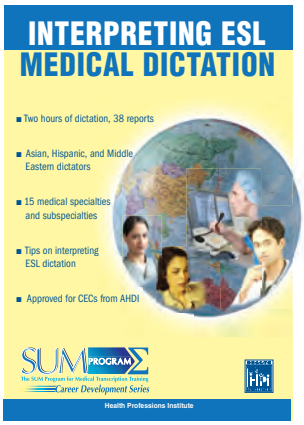

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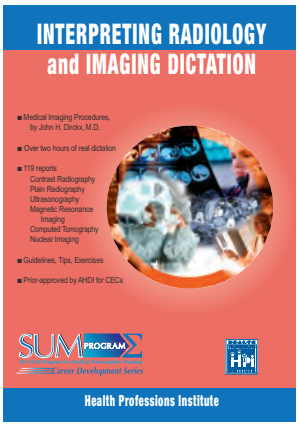

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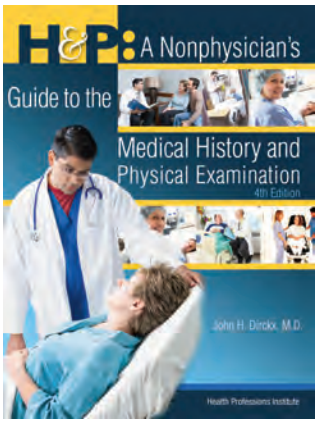

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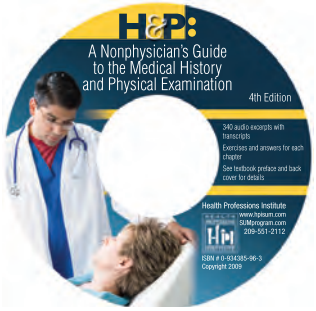

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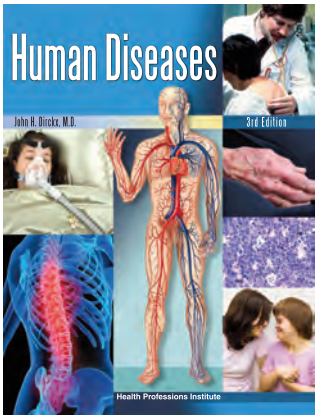

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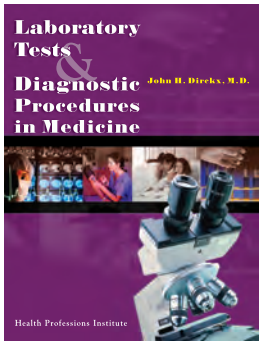

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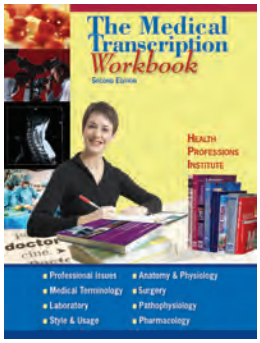

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Looking at Language

All-American Dialects

by Richard Lederer, Ph.D.

I have tongue and will travel, so I run around the country speaking to groups of teachers, students, librarians, women's clubbers, guild professionals, and corporate clients. These good people go to all the trouble of putting together meetings and conferences, and I walk in, share my thoughts about language in their lives, and imbibe their collective energy and synergy. I will go anywhere to spread the word about words, and in going anywhere from California to the New York Island, from the redwood forest to the Gulf Stream waters, I hear America singing. We are teeming nations within a nation, a nation that is like a world. We talk in melodies of infinite variety; we dance to their sundry measures and lyrics.

Midway through John Steinbeck's epic novel *The Grapes of Wrath* young Ivy observes, "Ever'body says words different. Arkansas folks says 'em different, and Oklahomy folks says 'em different. And we seen a lady from Massachusetts, an' she said 'em differentest of all. Couldn't hardly make out what she was sayin'."

One aspect of American rugged individualism is that not all of us say the same word in the same way. Sometimes we don't even use the same name for the same object.

I was born and grew up in Philadelphia a coon's age, a blue moon, and a month of Sundays ago—when Hector was a pup. *Phillufia*, or *Philly*, which is what we kids called the city, was where the epicurean delight made with cold cuts, cheese, tomatoes, pickles, and onions stuffed into a long, hard-crusted Italian bread loaf was invented.

The creation of that sandwich took place in the Italian pushcart section of the city, known as Hog Island. Some linguists contend that it was but a short leap from *Hog Island* to *hoagie*, while others claim that the label hoagie arose because only a hog had the appetite or the technique to eat one properly.

As a young adult I moved to northern New England (*N'Hampsha*, to be specific), where the same sandwich designed to be a meal in itself is called a grinder—because you need a good set of grinders to chew them. But my travels around the United States have revealed that the hoagie or grinder is called at least a dozen other names—a bomber, Garibaldi (after the Italian liberator), hero, Italian sandwich, rocket, sub, submarine (which is what they call it in California, where I now live), torpedo, wedge, wedgie, and, in the deep South, a poor-boy (usually pronounced *poh-boy*).

In Philadelphia, we washed our hoagies down with soda. In New England we did it with tonic, and by that word I don't mean medicine. Soda and tonic in other parts are known as pop, soda pop, a soft drink, Coke, and quinine.

In northern New England, they take the term *milk shake* quite literally. To many residing in that little corner of the country, a milk shake consists of milk mixed with flavored syrup—and nothing more—shaken up until foamy. If you live in Rhode Island or in southern Massachusetts and you want ice cream in your milk drink, you ask for a cabinet (named after the square wooden cabinet in which the mixer was encased). If you live farther north, you order a velvet or a frappe (from the French *frapper*, "to ice").

Clear—or is it clean?—or is it plumb?—across the nation, Americans sure do talk "different."

What do you call those flat, doughy things you often eat for breakfast—battercakes, flannel cakes, flapjacks, fritters, griddle cakes, or pancakes?

Is that simple strip of grass between the street and the sidewalk a berm, boulevard, boulevard strip, city strip, devil strip, green belt, the parking, the parking strip, parkway, sidewalk plot, strip, swale, tree bank, or tree lawn?

Is the part of the highway that separates the northbound lanes from the southbound lanes the centerline, center strip, mall, medial strip, median strip, medium strip, or neutral ground?

Is it a cock horse, dandle, hicky horse, horse, horse tilt, ridy horse, seesaw, teeter, teeterboard, teetering board, teetering horse, teeter-totter, tilt, tilting board, tinter, tinter board, or tippity bounce?

Do fisherpersons employ an angledog, angleworm, baitworm, earthworm, eaceworm, fishworm, mudworm, rainworm, or redworm? Is a larger worm a dew worm, night crawler, night walker, or town worm?

Is it a crabfish, clawfish, craw, crawdab, crawdad, crawdaddy, crawfish, crawler, crayfish, creekcrab, crowfish, freshwater lobster, ghost shrimp, mudbug, spiny lobster, or yabby?

Depends where you live and who or whom it is you're talking to.

I figger, figure, guess, imagine, opine, reckon, and suspect that my being bullheaded, contrary, headstrong, muley, mulish, ornery, otsny, pigheaded, set, sot, stubborn, or utsy about this whole matter of dialects makes you sick to, in, or at your stomach.

But I assure you that, when it comes to American dialects, I'm not speaking fahdoodle, flumaddiddle, flummydiddle, or flurriddiddle—translation: nonsense. I'm no all-thumbs-and-no-fingers, all-knees-and-elbows, all-left-feet, antigoddling, bumfuzzled, discombobulated, flusterated, or foozled bumpkin, clodhopper, country jake, hayseed, hick, hillbilly, hoosier, jackpine savage, mossback, mountain-boomer, pumpkin-

husker, rail-splitter, rube, sodbuster, stump farmer, swamp angel, yahoo, or yokel.

The biblical book of Judges (12:4-6) tells us how one group of speakers used the word *shibboleth*, Hebrew for "stream," as a military password. The Gileadites had defeated the Ephraimites in battle and were holding some narrow places on the Jordan River that the fleeing Ephraimites had to cross to get home. In those days it was hard to tell one kind of soldier from another because soldiers didn't wear uniforms.

The Gileadites knew that the Ephraimites spoke a slightly different dialect of Hebrew and could be recognized by their inability to pronounce an initial *sh* sound. Thus, each time a soldier wanted to cross the river, "the men of Gilead said unto him, Art thou an Ephraimite? If he said, Nay, then they said unto him, Say now Shibboleth: and he said Sibboleth: for he could not frame to pronounce it right. Then they took him and slew him at the passages of Jordan: and there fell at that time of the Ephraimites forty and two thousand."

During World War II, some American officers adapted the strategy of the Old Testament Gileadites. Knowing that many Japanese have difficulty pronouncing the letter *l*, these officers instructed their sentries to use only passwords that had *l*'s in them, such as *lallapalooza*. The closest the Japanese got to the sentries was *rarraparooza*.

These days English speakers don't get slaughtered for pronouncing their words differently from other English speakers, but the way those words sound can be labeled "funny" or "quaint" or "out of touch." In George Bernard Shaw's play *Pygmalion*, Professor Henry Higgins rails at Liza Doolittle and her cockney accent: "A woman who utters such depressing and disgusting sounds has no right to be anywhere—no right to live. Remember that you are a human being with a soul and the divine gift of articulate speech: that your native language is the language of Shakespeare and Milton and the Bible; and don't sit there crooning like a bilious pigeon!"

Most of us are aware that large numbers of people in the United States speak very differently than we do. Most of us tend to feel that the way "we" talk is right, and the way "they" talk is funny. "They," of course, refers to anyone who differs from "us."

If you ask most adults what a dialect is, they will tell you it is what somebody else in another region passes off as English. These regions tend to be exotic places like Mississippi or Texas—or Brooklyn, where *oil* is a rank of nobility and *earl* is a black, sticky substance.

It is reported that many southerners reacted to the elections of Jimmy Carter and Bill Clinton by saying, "Well, at last we have a president who talks without an accent." Actually, southerners, like everyone else, do speak with an accent, as witness these tongue-in-cheek entries in our *Dictionary of Southernisms*:

ah: organ for seeing
are: sixty minutes
arn: ferrous metal
ass: frozen water
ast: questioned
bane: small, kidney-shaped vegetable
bar: seek and receive a loan; grizzly
bold: heated in water
card: one who lacks courage
farst: a lot of trees
fur: distance
har: to employ
hep: to assist
hire yew: a greeting
paw tree: verse
rat: opposite of *lef*
reckanize: to see
tarred: exhausted
t'mar: day following t'day
thang: item
thank: to cogitate

Any glossary of Southernspeak would be incomplete without "*yawl*: a bunch of you's." When I visited Alexandria, Louisiana, a local pastor offered me proof that *y'all* has biblical origins, especially in the letters of the apostle Paul: "We give thanks to God always for you all, making mention of you in our prayers" (First Epistle to the Thessalonians, 1:2) and "First, I thank my God through Jesus Christ for you all" (First Epistle to the Romans, 1:8). "Obviously," the good reverend told me, "Saint Paul was a Southerner." Then he added, "Thank you, Yankee visitor, for appreciating our beloved Southernspeak. We couldn't talk without it!"

An anonymous poem that I came upon in Louisville, Kentucky, clarifies the plural use of the one-syllable pronoun *y'all*:

Y'all gather 'round from far and near,
Both city folk and rural,
And listen while I tell you this:
The pronoun y'all is plural.

If I should utter, "Y'all come down,
Or we-all shall be lonely,"
I mean at least a couple folks,
And not one person only.

If I should say to Hiram Jones,
"I think that y'all are lazy,"
Or "Will y'all let me use y'all's knife?"
He'd think that I was crazy.

Don't think I mean to criticize
Or that I'm full of gall,
But when we speak of one alone,
We all say "you," not "y'all."

If the truth about dialects be told, we all have accents. Many New Englanders drop the *r* in *cart* and *farm* and say *caht* and *fahm*. Thus, the midwesterner's "park the car in Harvard Yard" becomes the New Englander's "pahk the cah in Hahvahd Yahd." But those *r*'s aren't lost. A number of

upper northeasterners, including the famous Kennedy family of Massachusetts, add *r*'s to words, such as *idear* and *Cuber* when those words come before a vowel or at the end of a sentence.

When an amnesia victim appeared at a truck stop in Missouri in the fall of 1987, authorities tried in vain to help her discover her identity. Even after three months, police "ran into a brick wall," according to the *Columbia Daily Tribune*. Then, linguist Donald Lance of the University of Missouri-Columbia was called in to analyze her speech. After only a few sentences, Lance recognized the woman's West Pennsylvania dialect, and, within one month, police in Pittsburgh located the woman's family.

Among the clues used to pinpoint the woman's origin was the West-Pennsylvanian use of *greezy*, instead of *greacey*, and *teeter-totter*, rather than *seesaw*. Dialectologists know that people who pronounce the word as *greezy* usually live south of a line that wiggles across the northern parts of New Jersey, Pennsylvania, Ohio, Indiana, and Illinois.

Linguist Roger Shuy writes about the reactions of Illinois residents in a 1962 survey of regional pronunciations, including the soundings of *greasy*: "The northern Illinois informants felt the southern pronunciation was crude and ugly; it made them think of a very messy, dirty, sticky, smelly frying pan. To the southern and midland speakers, however, the northern pronunciation connoted a messy, dirty, sticky, smelly skillet."

Using the tools of his trade, Shuy was able to accurately profile Ted Kaczynski, the elusive Unabomber who terrorized the nation through the 1990s. Culling linguistic evidence from Kaczynski's "Manifesto," published in the *New York Times*, and the notes and letters accompanying the bombs, Shuy deduced the Unabomber's geographical origin, religious background, age, and education level.

Among the clues were the Unabomber's use of *sierras* to mean "mountains," an indication that the writer had spent some time living in northern California. In his "Manifesto" Kaczynski used expressions common to a person who was a young adult in the 1960s—*Holy Robots, working stiff,* and *playing footsy*. His employment of sociological terms, such as *other directed*, and his many references to individual drives suggested an acquaintance with the sociology in vogue during the sixties, particularly that of David Reisman. The complexity of Kaczynski's sentence structure, including the subjunctive mood, and the learnedness of his vocabulary, such as the words *surrogate, sublimate, overspecialization,* and *tautology*, pointed to someone highly educated.

All these conclusions were verified when Kaczynski was captured: He was in his early fifties, he had grown up in Chicago, he had lived for a time in northern California, and he was well educated, having once been a university professor.

Now is the time to face the fact that you speak a dialect. When you learned language, you learned it as a dialect; if you don't speak a dialect, you don't speak. *Dialect* isn't a label for careless, unlettered, nonstandard speech. A dialect isn't something to be avoided or cured.

Each language is a great pie. Each slice of that pie is a dialect, and no single slice is the language. Don't try to change your language into the kind of English that nobody really speaks. Be proud of your slice of the pie.

In the early 1960s, Steinbeck decided to rediscover America in a camper with his French poodle Charley. The writer reported his observations in a book called *Travels with Charley* (1962) and included these thoughts on American dialects:

> One of my purposes was to listen, to hear speech, accent, speech rhythms, overtones, and emphasis. For speech is so much more than words and sentences. I did listen everywhere. It seemed to me that regional speech is in the process of disappearing, not gone but going. Forty years of radio and twenty years of television must have this impact. Communications must destroy localness by a slow, inevitable process.
>
> I can remember a time when I could almost pinpoint a man's place of origin by his speech. That is growing more difficult now and will in some foreseeable future become impossible. It is a rare house or building that is not rigged with spiky combers of the air. Radio and television speech becomes standardized, perhaps better English than we have ever used. Just as our bread, mixed and baked, packaged and sold without benefit of accident or human frailty, is uniformly good and uniformly tasteless, so will our speech become one speech.

Forty years have passed since Steinbeck made that observation, and the hum and buzz of electronic voices have since permeated almost every home across our nation. Formerly, the psalmist tells us, "the voice of the turtle was heard in the land," but now it is the voice of the broadcaster, with his or her immaculately groomed diction. I hope that American English does not turn into a bland, homogenized, pasteurized, assemblyline product. May our bodacious American English remain tasty and nourishing—full of flavor, variety, and local ingredients.

See Order Form for Books by Richard Lederer, page 12.

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Formatting and Character Restrictions in Healthcare Documentation

by Laura Bryan, CMT, AHDI-F

Medical transcriptionists (MTs) are primarily concerned with creating an accurate written record that clearly reflects the provider's thoughts and intentions, and as you probably know, this requires more than simply "typing" what is said. As documentation methods have progressed from typewriters to word processors and now integrated transcription platforms, modern transcription requires a broader understanding of document-creation and document-storage methods. Electronic record systems and software interfaces used throughout the healthcare industry often influence the way documents are created and the way style rules are applied. It is important that those working in the field of healthcare documentation understand the life cycle of transcribed reports so the information can be successfully used to provide optimal patient care.

Healthcare delivery involves many forms of written information—discrete data, documents with paragraphs of narrative "free text," graphs, charts, and images. The healthcare community uses a variety of formats, styles, and notations to clearly communicate health-related information. Greek letters, the degree sign, virgules, ampersands, greater-than and less-than signs, superscripted ordinals, mathematical operators, and other miscellaneous symbols play an important role in the communication and differentiation of technical and scientific information. For example, the hormones associated with the thyroid are typically written with subscript numbers (e.g., T_3 and T_4) while the thoracic vertebrae are indicated with plain arabic numbers (e.g., T3 and T4). Many routinely accepted abbreviations such as *D&C* and *T&A* are so commonly written with the ampersand that one has to pause to recognize the meaning when these terms are written any other way.

Issues of style, such as those published in the AHDI *Book of Style for Medical Transcription*, are primarily concerned with the clear and unambiguous communication of technical and scientific data in the field of healthcare. In addition to technical style rules, character attributes such as bold and underlining, and paragraph attributes such as alignment, indention, and numbering contribute to a document's structure and organization and improve readability. Word processors such as MS Word and WordPerfect make maximum use of formatting and style to increase the readability and even the functionality of a document.

To the extent possible, it is important to apply formatting and rules of style to a transcribed medical report, but within your workplace you may encounter restrictions in the use of certain characters or style guidelines due to technical limitations imposed by the information system that is used. Interfaces that pass information from one computer system to another may impose limitations as well. This article describes the technologies and limitations that influence the application of formatting and style guidelines in medical documentation.

ASCII

To exchange text-based information electronically, every character must be defined and standardized. Computer code must be determined for every character—letters, numbers, symbols, punctuation marks—even the spaces between words. The first standards for exchanging text were developed in the early 1960s for use in Teletype equipment and were later adopted for use in computerized systems including the modern personal computer. The earliest standard for encoding text-based characters is the American Standard Code for Information Interchange (ASCII). The standard is commonly referred to as the ASCII character set or just ASCII (pronounced "askie"). The standard used in the United States is designated US-ASCII. ASCII is a universally accepted standard for encoding characters in written communication and represents the most basic set of characters used in a computing environment.

The ASCII standard includes 128 characters but may be extended to 256 characters. The number of characters in the standard is actually based on the number of characters that can be uniquely encoded using either seven or eight bits per character. A bit is the smallest unit of information that a computer processor can understand. A bit has only two possible values, written as either a 0 or a 1. Code that uses only two possible values is called binary code. Using seven bits per character with only two possible values per bit (i.e., 0 or 1), a total of 128 characters can be encoded ($2^7 = 128$). Eight bits allows for 256 unique codes ($2^8 = 256$). Table 1 shows the characters included in the ASCII character set along with each character's corresponding code number and binary code.

The first 31 characters in the set are actually commands (also referred to as nonprinting characters) for controlling the

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transmission of text messages as well as very basic layout commands (e.g., new line, carriage return). Most of these control characters were used in the original standard designed for Teletype machines and have since become obsolete. Characters numbered 32 through 127 (as shown in Table 1) include the space, upper and lowercase letters of the Latin alphabet used in U.S. English, arabic numbers 0-9, punctuation marks used in U.S. English, mathematical operators, and basic symbols such as the dollar sign, asterisk, number sign, tilde, underscore character, and the caret. The space (created by the spacebar) is not really considered a character but rather a "nonprinting graphic." The extended set, represented by characters 128 through 256, include Latin letters with diacritics, some Greek letters, several superscripted characters, mathematical operators, and miscellaneous symbols.

An 8-bit system with 256 characters could suffice for most applications in U.S. English, but there are many languages that use other alphabets such as Arabic, Cyrillic, and Hebrew. To accommodate the many characters used throughout the world, a larger and more extensive character set has been defined and is referred to as the Unicode system. Although other character sets have been developed, the first 128 characters of the US-ASCII character set have remained consistent and have been duplicated within other character sets for universal compatibility. As such, these 128 characters represent the most common and widespread set of characters used in a computing environment. Up until 2008, the US-ASCII character set was the most widely used standard for displaying text on the World Wide Web.[1]

Defining character sets is vitally important for creating, displaying, and exchanging text-based information. Software that displays text must be specifically programmed to recognize characters, and only those characters included in the specified character set will be recognized and displayed. In addition to recognizing specific characters, software must also be "aware" of formatting attributes that are added on top of characters. For this reason, a basic understanding of ASCII characters is required if you work in an environment where documents are exported to other information systems or into an archival system with limited character sets available. Systems that display plain text may only take advantage of the first 128 characters in the US-ASCII character set. Characters outside of the ASCII character set may not translate or be recognized correctly. Even though the transcription software or word processor you use to create documents makes a wide variety of symbols and characters available, you must know which characters are allowed and avoid using those that will not be recognized. When instructed to use only ASCII characters, it is implied that you would use only the characters in the first 128 positions of the US-ASCII character set.

The characters contained in the ASCII set can be viewed using the Symbol dialog box in MS Word, as shown in Figure 1. Open the Symbol dialog box (press ALT, I, S) and change the Subset to Basic Latin. In the bottom right-hand corner of the Symbol dialog box, change the From drop-down box to ASCII (decimal). This will display the selected character's ASCII identification code at the bottom of the dialog box. The first 31 characters, originally assigned to control commands when the standard was created in 1963, are not included in the Symbol dialog box. The first character on the grid is character 32, which is the space. Characters with a character code of 126 (the tilde ~) or lower are consistent across all encoding standards and will always be recognized. Character 127 is reserved for the delete command.

Characters listed in the extended set (characters 128-256) may vary depending on the typeface being used. Characters that do not have a corresponding key on the keyboard have a universal "ALT" code, which is the key combination for inserting the character using the ALT key combined with four digits on the keyboard's number pad. This code is also displayed on the Symbol dialog box. Each individual character is assigned the same character code and the same ALT key code regardless of the typeface. Letters may have different styling due to their typeface, but an "M," for example, is an "M" in the same sequential order with the same character code in all typefaces. You can demonstrate this by changing the font in the Symbol dialog box and comparing the order and codes for each character in the Basic Latin subset.

When instructed to limit characters to the "ASCII characters," you can easily reference the Symbol dialog box and use any character on the grid up through the tilde when the From box is set to ASCII (decimal). You can view Unicode character sets in Word (change the From box to Unicode) or use the Windows Character Map. To access the Character Map, go to Start > Programs > Accessories > System Tools > Character Map.

If you study the characters in the Symbol dialog box, you may notice that the extended set includes a superscript 2 and a superscript 3 (character code 178 and 179, respectively). These are defined characters, which are not technically the same as the "regular" characters with superscript formatting applied. In a plain-text editor, the superscript characters will be handled differently than a number 2 with superscript formatting applied. The final outcome will depend on the character set defined in the plain-text editor.

[1] **http://www.w3.org/QA/2008/05/utf8-web-growth.html**, World Wide Web Consortium, Accessed 8/26/2009.

Table 1
ASCII Characters

Decimal	Binary	Value	Description
032	00100000	SP	Space
033	00100001	!	exclamation mark
034	00100010	"	double quote
035	00100011	#	number sign
036	00100100	$	dollar sign
037	00100101	%	percent
038	00100110	&	ampersand
039	00100111	'	single quote
040	00101000	(	Left parenthesis
041	00101001	)	right parenthesis
042	00101010	*	asterisk
043	00101011	+	plus
044	00101100	,	comma
045	00101101	-	minus or dash
046	00101110	.	dot
047	00101111	/	forward slash
048	00110000	0	
049	00110001	1	
050	00110010	2	
051	00110011	3	
052	00110100	4	
053	00110101	5	
054	00110110	6	
055	00110111	7	
056	00111000	8	
057	00111001	9	
058	00111010	:	colon
059	00111011	;	semi-colon
060	00111100	<	less than
061	00111101	=	equal sign
062	00111110	>	greater than
063	00111111	?	question mark
064	01000000	@	AT symbol
065	01000001	A	
066	01000010	B	
067	01000011	C	
068	01000100	D	
069	01000101	E	
070	01000110	F	
071	01000111	G	
072	01001000	H	
073	01001001	I	
074	01001010	J	
075	01001011	K	
076	01001100	L	
077	01001101	M	
078	01001110	N	
079	01001111	O	
080	01010000	P	
081	01010001	Q	
082	01010010	R	
083	01010011	S	
084	01010100	T	
085	01010101	U	
086	01010110	V	
087	01010111	W	
088	01011000	X	
089	01011001	Y	
090	01011010	Z	
091	01011011	[	left bracket
092	01011100	\	back slash
093	01011101	]	Right bracket
094	01011110	^	caret/circumflex
095	01011111	_	underscore
096	01100000	`	
097	01100001	a	
098	01100010	b	
099	01100011	c	
100	01100100	d	
101	01100101	e	
102	01100110	f	
103	01100111	g	
104	01101000	h	
105	01101001	i	
106	01101010	j	
107	01101011	k	
108	01101100	l	
109	01101101	m	
110	01101110	n	
111	01101111	o	
112	01110000	p	
113	01110001	q	
114	01110010	r	
115	01110011	s	
116	01110100	t	
117	01110101	u	
118	01110110	v	
119	01110111	w	
120	01111000	x	
121	01111001	y	
122	01111010	z	
123	01111011	{	left brace
124	01111100	|	vertical bar
125	01111101	}	right brace
126	01111110	~	tilde
127	01111111	DEL	delete

File Formats

Text can be created and saved in a variety of electronic formats using text editors or word processors. The most common formats used in healthcare include plain text (with the extension *.txt), rich text format (with the extension *.rtf), and document format (with the extension *.doc), which is created in Microsoft Word and Word-based processors. Plain-text files are just that—files containing only text. A plain-text editor typically has no provision for storing or displaying character attributes such as bold, italic, or underline. Multiple font faces are typically not supported either. Plain text editors also do not recognize paragraph attributes such as indention or alignment. Line wrapping may or may not be supported.

Rich-text editors are based on the RTF file format originally created by Microsoft in 1987. Microsoft developed this file format for cross-platform use (i.e., to be compatible with

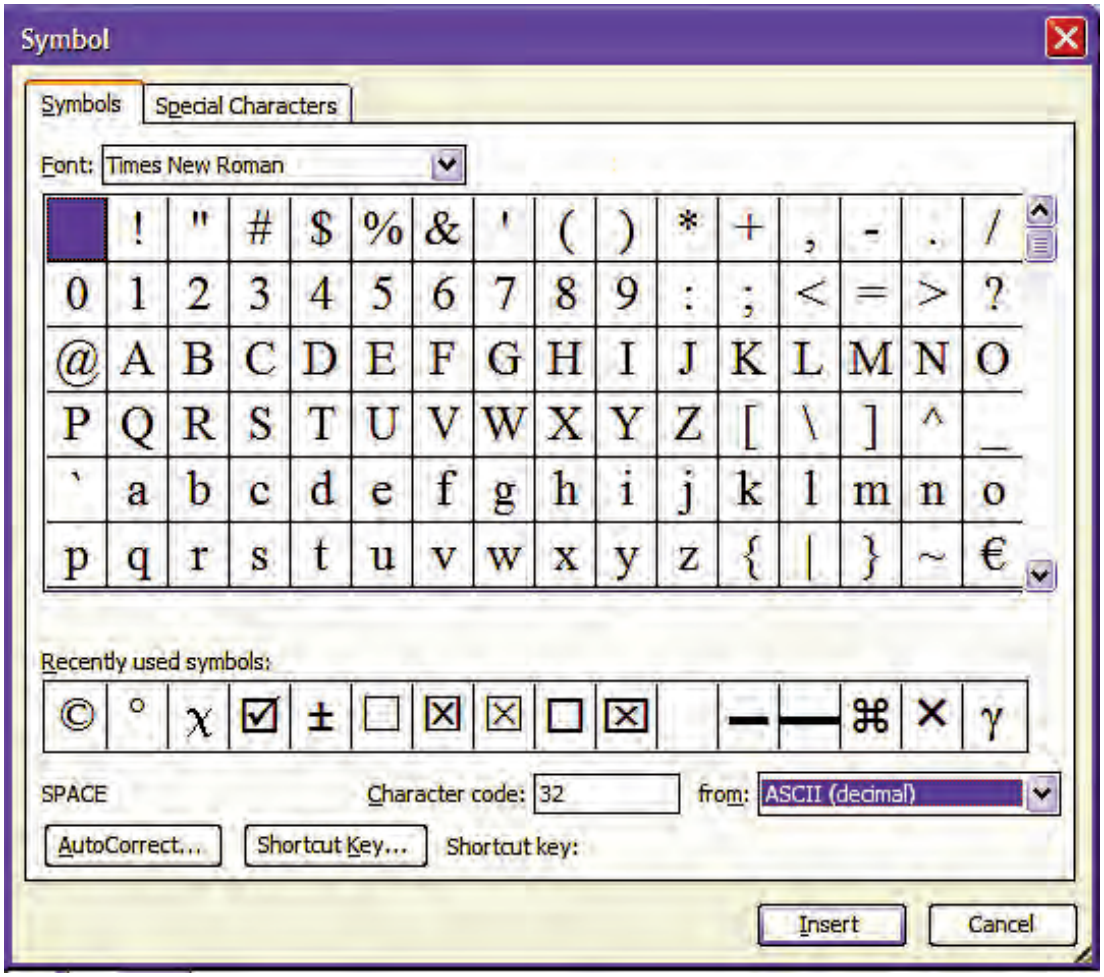

Figure 1. The Symbol dialog box in MS Word showing the ASCII characters.

a Mac, Windows, or Unix system). At a minimum, rich-text editors are capable of supporting bold, italic, and underline formatting. Many typically support paragraph alignment, indents, line wrap, and lists. In contrast to plain-text editors, rich-text editors can also display a variety of font faces and will maintain document margins. Most word processors are capable of opening and displaying files saved in RTF, so this format is favored for its interoperability as well as its ability to retain basic formatting. On the down side, there are several versions of the RTF specification with varying degrees of functionality. This makes it more difficult to predict which characters will be supported and what formatting attributes will be recognized.

Text files, in the form of *.txt and *.rtf, are popular in large enterprises such as hospitals because they have many advantages over proprietary file formats. Text files are cross-platform, generally compatible, and easily exchanged across multiple software applications. Because they contain little-to-no formatting information, text files are much smaller in size. They require less space for long-term storage and can be transferred throughout a network quickly and easily. Text editors do not require the purchase of expensive user licenses, upgrade fees, or ongoing maintenance fees (as is the case for MS Word), making text editors more economical to deploy in a large hospital or transcription service.

Word processors, on the other hand, have a full array of formatting available. MS Word is a robust application for efficiently creating attractively formatted and stylized documents, but it is not always the best format for universal compatibility or for efficient use of storage media. Word's automatic formatting feature, called AutoFormat As You Type, may insert characters that are incompatible with hospital information systems. For example, Word automatically formats quotation marks as "smart quotes." These quotation marks curve inward toward the text so that the opening quotation marks curl to the right and the closing marks curl to the left. Standard quotation marks (included in US-ASCII) are straight, making these curly quotes an entirely different character as far as a computer is concerned. Word also automatically formats single-space fractions for the three most commonly written fractions (¼, ½, and ¾) and automatically inserts an em dash when two hyphens are typed together. The automatic numbered list feature in MS Word uses field codes instead of actual numbers to display the list number, and these fields are not always understood when the text is exported to other information systems. All of these features can be disabled by

removing the appropriate check mark on the AutoFormat As You Type dialog box (ALT, T, A > AutoFormat As You Type).

A fully formatted Word document can be saved as a text file (with the extension .txt) but all formatting will be lost. Any images in the file will also be removed. Superscript and subscript characters will be converted to regular characters and unrecognized characters may be substituted or converted to an empty box. Table 2 shows examples of formatted text after converting to text format using different character sets and different conversion rules.

Transcription departments and transcription services typically use software that is designed specifically for creating documents accurately and efficiently. These systems are often based on word processing applications such as MS Word. These applications include important productivity tools for inserting blocks of text, automatically correcting typos, and spell checking. While MS Word is one of the most common processors used for creating transcribed reports, there are also many proprietary software systems on the market. These systems may be built on a rich-text editor or a scaled-back version of MS Word. It is difficult to predict what characters and formatting capabilities are available to the transcriptionist in these proprietary systems.

In many healthcare environments, documents are still printed and placed on the chart. Printed documents benefit greatly from formatting such as bold and indent, and the healthcare facility may prefer a traditionally formatted document because of its improved readability. These same documents may also be transferred into electronic record systems that allow access of the information from multiple points inside or outside the facility. A hospital may be reluctant to install a copy of MS Word on every workstation in the facility because of the high licensing costs, yet users on these stations must still be able to view transcribed reports. Because healthcare facilities use and reuse the text within documents in various ways, characters contained within the document must be compatible with other software applications used throughout the enterprise as well as usable within the long-term storage/archive system.

Connecting Information Systems

Today, large healthcare facilities (hospitals, large multispecialty clinics, ambulatory care centers) use a variety of software applications to manage the entire healthcare enterprise. Each department within a healthcare system may have its own software vendor and a variety of software applications designed specifically for its use. For example, the admissions department uses software to admit patients and gather demographic and billing information. The laboratory uses a Laboratory Information System (LIS) for managing specimens and reporting results, and radiologists use Radiology Information Systems (RIS) for tracking and reporting imaging studies.

Much of the information gathered through these various systems is fed into the Hospital Information System (HIS) that is accessed by the physicians, nurses, and others involved in direct patient care. Each of these separate systems is connected through a series of interfaces, which are software programs that allow disparate systems to exchange information.

Table 2

Formatting commands were applied to the original text in the first column and actual characters (taken from the Symbols dialog box in MS Word) were used to transcribe the text in the second column. Note how characters and formatting are handled differently when converted to text or rich-text format.

Original using Formatting	Original using Characters	US-ASCII character set	MS-DOS character set	US-ASCII with substitutions allowed	RTF
	Temp 98.6°	Temp 98.6?	Temp 98.6ø	Temp 98.6?	Temp 98.6°
	mm² cm³	mm? cm?	mmý cm?	mm2 cm3	mm² cm³
	1¼ 2½ 3¾	1? 2? 3?	1¬ 2« 3?	11/4 21/2 33/4	1¼ 2½ 3¾
	“Hello!”	?Hello!?	?Hello!?	"Hello!"	“Hello!”
mm² cm³		mm2 cm3	mm2 cm3	mm2 cm3	mm² cm³
1¼ 2½ 3¾		1? 2? 3?	1¬ 2« 3?	11/4 21/2 33/4	1¼ 2½ 3¾
“Hello!”		?Hello!?	?Hello!?	"Hello!"	“Hello!”

It is common for people to refer to HL7 as if it is a specific software application or even a brand of software, but this is not actually the case. The HL7 organization creates the standards and protocols that programmers use to write customized code for exchanging information in a given situation.

In these situations, the transcriptionist must be aware of constraints placed on documents by the interfaces that move text between the various systems within the healthcare enterprise.

The most common type of interface used in healthcare facilities is called an HL7 interface. HL7, which stands for Health Level Seven, is a standards developing organization (SDO) that creates standards for exchanging administrative and clinical data in the field of healthcare. According to its website (**www.HL7.org**), "HL7, the leading authority for global healthcare IT standards, provides standards (protocols) for interoperability that improve care delivery, optimize workflow, reduce ambiguity and enhance knowledge transfer among all of our stakeholders, including healthcare providers, government agencies, the vendor community, fellow SDOs and patients."

It is common for people to refer to HL7 as if it is a specific software application or even a brand of software, but this is not actually the case. The HL7 organization creates the standards and protocols that programmers use to write customized code for exchanging information in a given situation. HL7 interfaces are typically unique but are encoded using a standard protocol that defines the structure and content of information to be passed between two computer systems. HL7 interfaces are "event driven" which means a "message" is created and sent to a receiving computer system when a real-world event occurs such as a patient being admitted to the hospital or a lab test being completed.

One of the most common types of HL7 interfaces is the Admission, Discharge, and Transfer (ADT) feed. This interface provides patient demographic information to the various information systems used throughout a healthcare facility so the information does not have to be entered multiple times. Transcriptionists often use ADT feeds as a reference for patient demographic information to properly identify a transcribed report. HL7 interfaces are also used to pass documents from the transcription information system to the hospital information system and/or the document archival system.

The HL7 protocol is a text-based messaging standard, and as such, information flows through an interface as a "stream" of text. A message is created by gathering the necessary elements of a message and lining up the data in a specified order. A message is composed of segments, which are clusters of related information. For example, an ADT message includes the patient identification segment that contains the patient's name, identification numbers, and date of birth. Segments are further divided into composites. The information contained in a segment is identified by its position within the segment. The HL7 standard specifies the name of segments, the type of information included in a segment, and how many composites must be included in each segment. For example, the segment designated PID (patient identification) contains 11 composites and the patient's name is always contained within the fifth composite of the PID segment.

Delimiters are used to mark the beginning and end of composites and the individual components of a composite are also demarcated. As you can see in Figure 2, the vertical bar (called a pipe delimiter) is used to separate composites, and the caret is used to separate components of a composite. This figure shows part of an ADT message for a patient John Doe born on 2/3/1948. The first segment (starting with MSH) is the message header. The second segment identifies the event (EVN) and the third segment contains the patient's identification (PID). In addition to the pipe and the caret, the backslash, ampersand, and the tilde may also be used within messages as delimiters.

HL7 messages are text-based and must use ASCII characters. The only identifiers in an HL7 message are the segment identifiers, so the order of the information within the segments is crucial to identifying the information on the receiving end. The delimiters are also critical for marking the beginning and end of components of the message. A receiving computer is said to "parse" the data, which means the message is deconstructed and the data is stored within the receiving computer according to the data structure of the

```
MSH|^~\&|EPICADT|SMS|SMSADT|19991271409|CHARIS|ADT^A04|1817457|D|2.3|
EVN|A04|199912271408|||CHARRIS
PID||0493675^^^2^ID 1|454721||DOE^JOHN^^^19480203|M||B|254
```

Figure 2. Part of an HL7 ADT message showing pipe delimiters and carets to separate the components of the message.

receiving system. If the delimiters are placed incorrectly or removed, the information will be parsed incorrectly and the remainder of the message will be misconstrued.

The delimiters used in HL7 messages (especially the ampersand) may also be used as characters within the actual user data. To prevent characters used within the actual data of the message from being interpreted as a message delimiter, the HL7 standard provides a method for ignoring those characters when they are contained within a message but are not part of the message structure. Programmers refer to this as "escaping" a character, which essentially means the character is ignored when it appears in a given area of the message. In this way, any character in the ASCII standard can be included in the user data of an HL7 message.

When documents are sent through an HL7 interface, the document's text is typically converted to a "string" of text and contained within a segment of the message. Formatting commands may be converted to formatting codes embedded in the string of text and then reinterpreted when the message is processed by the receiving system. Any characters contained within the document's text will be part of the string. If the parser encounters a character used as a delimiter within the body of the document (for example, an ampersand), it will act on that delimiter according to the parsing rules.

Transcriptionists may encounter limitations on the types of characters that may be used within a transcribed report because "the characters will not go through the HL7 interface." Unfortunately, the ampersand is one of the most common characters to be disallowed, yet it is a widely used symbol in transcribed reports. Technically, the HL7 standard does not disallow the use of any ASCII character, but the programmer may fail to instruct the interface to escape characters when located within the body of the transcribed report. Transcriptionists can help to inform information specialists on the importance of style and usage in medical documentation and work cooperatively to improve the quality of the information flowing through a healthcare enterprise.

Conclusions

Transcriptionists play an important role in patient care by accurately conveying the meaning and intent of dictated information. The need to communicate clearly must be balanced with the software's ability to transmit and display the information as well as the storage capacity of the system used to manage the information.

Although technical specifications related to allowable characters and formatting may clash with the AHDI *Book of Style for Medical Transcription*, MTs must understand how to apply technical specifications when creating healthcare documents. Failure to comply may result in incomplete, inaccurate, ambiguous, or even lost reports. Understanding the importance of style to the overall goal of quality patient care is important, and conveying this to software engineers, programmers, and other information technology professionals can lead to better software solutions and better end-user functionality.

1 Technology and Workplace
CEC approved

Laura Bryan, CMT, AHDI-F, is the author of *The Medical Transcriptionist's Guide to MS Word, Technology for the Medical Transcriptionist*, and the soon to be published *Microsoft Word for Healthcare Documentation*, all published by Lippincott Williams and Wilkins. She has worked over 20 years in the healthcare field and currently owns MedEDocs, a transcription technology services company, as well as MTWerks, a technology consulting business focusing on medical transcription.

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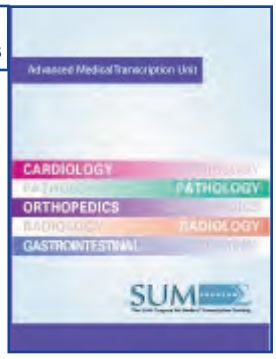

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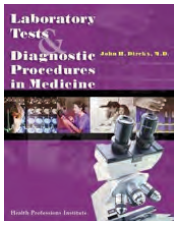

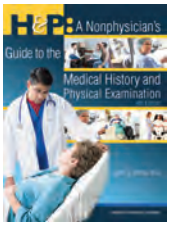

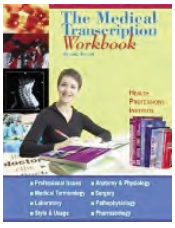

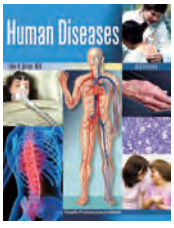

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Hyperbaric Oxygen Therapy

by John H. Dirckx, M.D.

Hyperbaric oxygen therapy (HBOT) is a form of treatment that lies outside the mainstream of American medical practice. All the same, some background information on the topic may be welcome to the medical transcriptionist.

HBOT is the administration of oxygen at higher than atmospheric concentration, in an environment of higher than atmospheric pressure, for medical reasons.

Oxygen is the third most abundant element in the universe, making up 1% of the mass of the sun, 20% of the air we breathe, 50% of the earth's crust, and 88% of water. The alchemists of old rightly judged that gold, silver, lead, mercury, and sulfur are elements, but they mistakenly placed air (a mixture of oxygen and nitrogen) and water (a compound of oxygen and hydrogen) in the same category. Late in the eighteenth century, the researches of Scheele, Lavoisier, Priestley, and others gradually brought to light the existence and nature of the gaseous elements oxygen, nitrogen, and hydrogen.

Early experiments with animals showed that atmospheric oxygen is essential to life. Advances in biochemistry during the past two centuries have clarified the role of oxygen in thousands of chemical reactions that take place in living things. Meanwhile, the inhalation of oxygen at higher than atmospheric concentration (but at normal atmospheric pressure) has become a standard procedure in the treatment of conditions ranging from acute myocardial infarction to chronic obstructive pulmonary disease.

The use of elevated atmospheric pressure as medical therapy began in the seventeenth century, long before the discovery of oxygen. The first hyperbaric chambers were purely experimental, and when they failed to cure anything, work in that line was abandoned.

Around the middle of the nineteenth century, compressed air began to be used to force water from coal mines, tunnels, diving bells, and caissons around the piers of bridges under construction. Underwater workers and deep sea divers suffered no ill effects except popping or aching ears while working at higher than atmospheric pressure. On returning to normal pressure, however, they often experienced excruciating joint pains and other ills, which sometimes proved fatal.

This disorder was variously called decompression sickness, caisson disease, and "the bends" (because pain caused victims to assume distorted postures). Eventually it was recognized as an illustration of Henry's Law, one of the basic principles of classical physics. Henry's Law states that the volume of a gas that can be dissolved in a liquid is directly proportional to the pressure of the gas within the system.

An unopened bottle of carbonated soft drink, beer, or champagne contains a fluid in which carbon dioxide gas is dissolved at higher than atmospheric pressure. When the bottle is opened, the drop in the pressure of the gas causes some of it to come out of solution in the form of bubbles.

When a human being spends several hours in an environment of elevated atmospheric pressure, the gases of which air is composed—oxygen and nitrogen—become dissolved in the blood at higher than normal concentrations. If decompression (the return to normal atmospheric pressure) takes place too quickly, bubbles of gas form in the circulation, the joints, and elsewhere. Oxygen bubbles quickly disperse because oxygen is biologically active. Bubbles of molecular nitrogen, which is inert, take much longer to resolve, and can cause permanent tissue damage and even fatal vascular occlusion.

Even before the cause of decompression sickness was clearly understood, an effective treatment had been discovered. Recompression, a return to higher than atmospheric pressure, shrinks or redissolves nitrogen bubbles. A more gradual drop to normal pressure then results in the formation of nitrogen bubbles small enough to be excreted by the lungs. Recompression, increasingly performed in chambers designed specifically for the purpose, relieved the bends and saved the lives of many divers and other underwater workers. Schedules for safe rates of decompression were gradually established.

Another risk of breathing compressed air, a particular danger for divers, is "the rapture of the deep." Deep sea divers can experience euphoria and hallucinations and display severe deterioration of judgment, sometimes with fatal consequences. In 1935 Dr. Albert Behnke, a Navy submarine medical officer, showed that these central nervous system effects are caused by the high concentration of nitrogen in the circulation that results when air is breathed at the pressure required to counteract the water pressure at a depth of 100 feet or more.

Two years later Dr. Edgar End, an intern at Milwaukee County Hospital, theorized that nitrogen narcosis could be

The combination of elevated atmospheric pressure and the breathing of pure oxygen constitutes hyperbaric oxygen therapy. Although first used to treat decompression sickness, HBOT has found application in many other acute and chronic conditions.

prevented if divers breathed a mixture of oxygen and helium instead of air, with its 80% nitrogen content. Using himself as an experimental subject, and later in collaboration with Max Nohl, an engineer and professional diver, End developed gas formulas and decompression schedules that successfully prevented both nitrogen narcosis and the bends during and after deep dives in Lake Michigan. End joined the faculty of Marquette University School of Medicine (later reorganized as the Medical College of Wisconsin), where he lectured on underwater physiology until his death in 1981.

(If I may be permitted a personal note, I attended Dr. End's lectures in the early 1960s. He found a synopsis of the topic that I submitted in completion of an assignment so excellent that he requested, and of course received, my permission to duplicate it and use it as a handout at future lectures. A classmate broke my bubble by assuring me that Dr. End routinely acted out a similar travesty year after year. Probably that's why I couldn't find a copy of that synopsis when I undertook to write this article, and had to do the research all over again.)

Theoretically both nitrogen narcosis and the bends could be eliminated if pure oxygen were substituted for compressed air in underwater work and recreational diving. But the enormous cost of flooding an entire caisson or tunnel with pure oxygen and the risk of fire or explosion make this solution unworkable. In addition, marked elevation of the concentration of oxygen in the blood can cause seizures.

But the use of pure oxygen in recompression chambers to counteract decompression sickness is strongly supported by theoretical and practical considerations. While increased atmospheric pressure forces nitrogen bubbles back into solution, breathing 100% oxygen leads to a gradual washout of nitrogen from the circulation, so that with subsequent return to normal atmospheric pressure few or no nitrogen bubbles form.

The combination of elevated atmospheric pressure and the breathing of pure oxygen constitutes hyperbaric oxygen therapy. Although first used to treat decompression sickness, HBOT has found application in many other acute and chronic conditions. The basis of its effectiveness in most of those other conditions appears to be its ability to raise the concentration of oxygen in tissues.

HBOT achieves this result by two unrelated mechanisms. First, breathing pure oxygen under hyperbaric (higher than atmospheric) pressure virtually saturates hemoglobin, the constituent of red blood cells that transports oxygen in loose chemical combination from the lungs to the tissues. Breathing 100% oxygen at normal atmospheric pressure cannot achieve anything like this saturation.

Second, under increased atmospheric pressure, more oxygen gas is dissolved in the plasma (the fluid component of circulating blood). (Remember Henry's Law and all that carbon dioxide quietly lurking in the root beer until you pull the tab.) Although under normal conditions the transport of dissolved oxygen by the plasma is far less significant than its transport by hemoglobin, with HBOT the contribution of plasma transport to tissue oxygenation increases enormously. In fact, breathing pure oxygen at three times normal atmospheric pressure results in a 15-fold increase in the concentration of oxygen dissolved in plasma. That is a concentration sufficient to supply the needs of the body at rest even in the total absence of hemoglobin!

Increasing the oxygen supply to damaged or infected tissue promotes healing by stimulating angiogenesis (the formation of new capillaries) and enhancing the proliferation of fibroblasts (cells that produce collagen fibers for the repair of injury). These effects can be of critical importance in certain conditions, including wounds that refuse to heal because of severe mechanical damage, vascular compromise, or diabetes.

Delivery of oxygen to tissues at high concentrations can have beneficial effects beyond those noted. A rise in tissue oxygen causes vasoconstriction, which reduces edema in crushed or burned tissues and decreases intracranial pressure in acute head trauma and intracranial abscess. It also suppresses the growth of anaerobic bacteria (which prefer an environment low in oxygen) in gas gangrene and of some aerobic organisms involved in necrotizing soft tissue infections.

Although tissues, particularly those involved in superficial infections and nonhealing wounds, absorb some oxygen directly from a hyperbaric environment, the principal effect of HBOT is achieved through augmentation of oxygen delivery by the lungs. Local treatment of superficial lesions with oxygen applied through a topical unit under slightly elevated pressure is not HBOT and is only marginally effective.

The efficacy of HBOT in decompression sickness, air embolism, carbon monoxide poisoning, and other conditions mentioned above rests on firm theoretical grounds and is supported by the results of clinical trials. But the use of HBOT as treatment for autism, multiple sclerosis, cerebral palsy, inflammatory bowel disease, migraine headaches, Lyme disease, tinnitus, and numerous other disorders, although promoted by some who cite anecdotal reports of favorable outcomes, lacks justification by rigorously controlled studies.

The Undersea and Hyperbaric Medical Society (UHMS) was founded in 1967 to foster the exchange of data on the physiology and medicine of commercial and military diving. The organization publishes research findings and treatment protocols for various indications. Its Hyperbaric Oxygen Therapy Committee oversees the ethical practice of hyperbaric medicine, defining conditions for which hospital treatment with HBOT is reimbursed by third-party payers, including government agencies.

The earliest hyperbaric oxygen chambers were simply recompression chambers adapted for the administration of pure oxygen. These were built of the same materials and along the same lines as diving bells and had room for only a single occupant. In some of these, oxygen was administered by mask while the chamber pressure was raised with compressed air. In others, the entire chamber was flooded with pure oxygen at elevated pressure, although this was much more expensive and added to the risk of fire.

Although monoplace chambers were eventually equipped with windows, intercom systems, and even small air locks for the passage of food or medicine, they were extremely confining for the patient and allowed no opportunity for direct intervention by health care workers.

In hospital settings, multiplace chambers with room for several patients as well as for physicians or medical attendants soon made their appearance. Inside such a chamber both patients and medical staff breathe from flexible, transparent soft plastic helmets or tightly fitting aviators' masks, which supply pure oxygen. A multiplace chamber is equipped with means of removing exhaled carbon dioxide and water vapor from the atmosphere. In addition, exhaled oxygen must be continuously extracted from the atmosphere to reduce the risk of fire. The largest rectangular hyperbaric chamber in the U.S. is a 6000-square-foot facility built at the Mayo Clinic in 2007 with a seating capacity of 24.

One standard atmosphere (1.0 atm), the pressure exerted by the atmosphere at sea level, is defined as 760 torr (mm of mercury, mmHg), 29.92 inches of mercury (inHg), 14.696 psi (pounds per square inch), 1013.25 millibars, or 101.325 kPa (kilopascals). In HBOT parlance, a pressure of 1.0 atm is referred to as 1.0 ATA (for "atmosphere absolute").

A typical HBOT session (which may be called a "dive") consists of 90 to 120 minutes of pure oxygen breathing at 2.0 to 2.5 ATA. The duration, frequency, and total number of sessions of HBOT for various indications have not yet been standardized. For most conditions, treatments are administered once daily. For acute disorders such as decompression sickness and carbon monoxide poisoning, one or two sessions may suffice. For chronic disorders such as diabetic ulcers, therapy may be continued for 50 or more sessions. A session can cost up to $1000, depending on the facility.

Portable HBOT chambers made of nonrigid materials can achieve pressures of about 1.3 ATA. These less expensive units may be found in smaller healthcare facilities and are also used in homes. Although approved by the U.S. Food and Drug Administration (FDA) only for the treatment of altitude sickness, soft chambers are widely marketed and used for other purposes, including many for which evidence of efficacy is entirely lacking.

Hyperbaric oxygen therapy is not without its discomforts and dangers. The commonest adverse effect is pain in the ears due to stretching of the tympanic membranes by the pressure difference between the middle ear and the surrounding atmosphere. This is similar to what happens when you drive through the mountains or travel by air. Although many people are able to equalize pressures by wiggling their jaws or performing some variation of the Valsalva maneuver, some cannot. For these, surgical placement of ventilating tubes in the tympanic membranes may make the difference between a successful series of HBOT sessions and no treatment.

A typical HBOT session (which may be called a "dive") consists of 90 to 120 minutes of pure oxygen breathing at 2.0 to 2.5 ATA.

Oxygen exhaled by patients receiving HBOT can create a fire hazard by raising the oxygen concentration in the environment. In order to reduce the risk of sparks, both patients and staff are required to wear exclusively cotton garments and not to take jewelry or other metallic objects into the chamber. Potentially flammable substances such as hairspray, perfume, aftershave, and oil-based cosmetics are also forbidden.

The maximum pressure for HBOT is 3.0 ATA, because oxygen toxicity, with pulmonary edema or seizures, can occur at pressures above that limit. Even below 3.0 ATA, a patient wearing a helmet or mask for HBOT may be instructed to remove it occasionally and breathe atmospheric air to permit the partial pressure of oxygen in the blood to drop. These intervals of breathing room air are called air breaks (not "air brakes"!). In a monoplace chamber that is filled with pure oxygen under pressure, the patient must breathe through a mask providing ordinary air in order to take an air break.

Hyperbaric therapy is contraindicated in untreated pneumothorax and (because of various biochemical interactions) in persons taking bleomycin, cisplatin, disulfiram, or doxorubicin and those who are being treated with topical mafenide for burn wounds. A history of thoracic surgery, severe emphysema, high fever, and upper respiratory infection are relative contraindications.

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.

1 MT Tools CE credit approved

Looking at Language

Slang As It Is Slung

by Richard Lederer, Ph.D.

Slang is hot and slang is cool. Slang is nifty and slang is wicked. Slang is the bee's knees, the cat's whiskers, and the cat's pajamas. Slang is far out, groovy, and outta sight. Slang is fresh, fly, and phat. Slang is bodacious, ducky, and fantabulous. Slang is ace, awesome, bad, sweet, smooth, copacetic, the most, the max, and totally tubular.

Those are 25 ways of saying that, if variety is the spice of life, slang is the spice of language. Slang adds gusto to the feast of words, as long as speakers and writers remember that too much spice can kill the feast of any dish.

What is slang? In the preface to their *Dictionary of American Slang*, Harold Wentworth and Stuart Berg Flexner define slang as "the body of words and expressions frequently used by or intelligible to a rather large portion of the general American public, but not accepted as good, formal usage by the majority." Slang, then, is seen as a kind of vagabond language that prowls the outskirts of respectable speech, yet few of us can get along without it. Even our statespersons have a hard time getting by without such colloquial or slang expressions as *hit the nail on the head, team effort, pass the buck,* and *talk turkey*.

Nobody is quite sure where the word *slang* comes from. According to H. L. Mencken, *slang* developed in the 18th century (it was first recorded in 1756) either from an erroneous past tense of *sling (sling-slang-slung)* or from the word *language* itself, as in *(thieve)slang*(uage) and (beggar)*slang*(uage). The second theory makes the point that jargon and slang originate and are used by a particular trade or class group, but slang words come to be slung around to some extent by a whole population.

The use of slang is far more ancient than the word *slang* itself. In fact, slang is nearly as old as language itself, and in all languages at all times some slang expressions have entered the mainstream of the vocabulary to pollute or enrich, depending on one's view of the matter. We find traces of slang in the Sanskrit of ancient India, where writers amused themselves now and then by calling a head a "dish." In Latin literary records we discover, alongside *caput*, the standard term for "head," the word *testa*, which meant "pot" or "jug." Both the Sanskrit "dish" and the Latin "pot" share the flavor of our modern *crackpot, jughead,* and *mug*.

The 14th century poet Geoffrey Chaucer used *gab* for "talk" and *bones* for "dice," exactly as we employ them today. William Shakespeare, the literary lord of stage and classroom, coined *costard* (a large apple) to mean "head" and *clay-brained* and *knotty pated* to mean "slow of wit." We discover "laugh yourself into stitches" in *Twelfth Night*, "not so hot" in *The Winter's Tale*, and "right on" in *Julius Caesar*.

There are some very human reasons why the river of slang courses through every language. One of them is that people like novelty and variety in their lives and in their language. To satisfy this urge, they continuously coin new slang words and expressions. This disquistion began with twenty-five breezy ways of saying "wonderful," but that feat pales next to the 2,231 synonyms for *drunk* (and fifty pages' worth) that Paul Dickson trots out in his book *Words*—from the euphemistic tired to the comical *plastered*, from the terminal *stiff* to the uncategorizable *zoozled*.

Second, slang allows us to break the ice and shift into a more casual and friendly gear. "What's cooking?" or "How's it going?" sound more easygoing and familiar than "How do you do?" "Slang," said Carl Sandburg, is "language that rolls up its sleeves, spits on its hands, and gets to work."

A third motive is sheer playfulness. Slang such as *rubber-necker* for a sightseer in a car and motor-mouth for someone who gabs on and on and reduplications such as *heebie-jeebies* and *okeydokey* tickle our sense of humor.

Finally, as G. K. Chesterton proclaimed, "All slang is metaphor, and all metaphor is poetry." American slang abounds in fresh figures of speech that evoke arresting word pictures in the mind's eye. We intellectually understand "an angry, persecuted husband," but the slanguage version "a hen-pecked husband stewing in his own juice" takes a vivid short-cut to our imagination.

An English professor announced to the class, "There are two words I don't allow in my class. One is *gross* and the other is *cool*." From the back of the room a voice called out, "So, what are the two words?" Slang is a powerful stimulant that keeps our American language alive and growing. Slang is a prominent part of our American wordscape. In fact, the *Dictionary of American Slang* estimates that slang makes up perhaps a fifth of the words we use. Many of our most valuable and pungent words have begun their lives keeping company with thieves, vagrants, and hipsters. As Mr. Dooley, a fictional Irish-Irish saloon keeper, once observed, "When we Americans get through with the English language, it will look as if it has been run over by a musical comedy."

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Update

1 Clinical Medicine
CE credit approved

What's New in Medicine

Anderson Orthopaedic Research Institute bone defect classification.

Arndt wire-guided bronchial blocker—for lung isolation in thoracotomy.

Bernard-Freeman-Fries technique—surgical treatment for T3 lip carcinoma.

bidirectional Glenn anastomosis—a cavopulmonary anastomosis for congenital heart disease in infants. Related terms include *Glenn pressure*, an elevated ventricular pressure after the procedure, and Glenn shunt.

BioEnterics Intragastric Balloon (BIB).

bisphosphonate-related osteonecrosis of the jaw (BRONJ)—a condition related to the use of bisphosphonate bone resorption inhibitors for the treatment of osteoporosis. Examples of bisphosphonate inhibitors for treatment of osteoporosis include alendromate (Fosamax), pamidronate (Aredia), and coledronic acid (Reclast, Zometa).

Brugada sign—a typical right bundle branch block and ST-segment elevation in V1 and V2 (coved morphology) on an electrocardiogram, diagnostic of Brugada syndrome (sudden unexpected death syndrome). Also referred to as *Brugada-type ECG pattern* and *Brugada electrocardiogram*.

Bryan cervical disk—a titanium and polyurethane device that fits between adjacent neck bones (vertebral bodies) to replace a diseased or bulging cervical disc that is causing neck or arm pain. It is used to replace a cervical disc from C3 to C7 following removal of the disk for intractable radiculopathy and/or myelopathy (conditions that result from a diseased or bulging disc).

Campanacci grading system for giant cell tumors.

cardiovascular risk markers—established, emerging, and nontraditional cardiovascular risk markers include the following: sCD40L (CD40 ligand), high-sensitivity C-reactive protein, lipoprotein-associated phospholipase A(2) (Lp-PLA(2), soluble cellular adhesion molecules (CAM), plasminogen activator inhibitor-1 (PAI-1), CD40L, MMP-2, MMP-9, and Lp-PLA(2).

Charnley modification of Merle d'Aubigne and Postel score—a hip scoring system that assesses pain, range of movement, and walking ability after total hip arthroplasty.

Cohen Flexi-tip bronchial blocker.

cone-beam computed tomography (CBCT).

coronal truncation sign—a sign of possible central hole tear of discoid meniscus on MRI.

DANE procedure—a technique that combines the use of a biotenodesis screw for ulnar fixation with the docking procedure for humeral fixation for ulnar collateral ligament reconstruction. Also *DANE TJ procedure*.

DECARTO technique (Dipolar ElectroCARdioTOpography technique)—a method for graphic presentation of location and extent of area at risk estimated from ST-segment deviations in patients with acute myocardial infarction.

DGBA ["dagbah"] (duplex-guided balloon angioplasty).

Dialysis Symptom Index—a scale used to assess quality of life in patients with end-stage renal disease (ESRD).

Disse index—a lipid-based index for assessing insulin sensitivity.

DRW-HBsAg—a laboratory test for the detection of hepatitis B virus surface antigen (HBsAg) in plasma or serum specimens. It uses signal amplification to achieve enhanced sensitivity. In trials, it was determined to be more sensitive than Determine HBsAg, a widely available commercial test.

DSAEK (Descemet-stripping automated endothelial keratoplasty).

Dyonics bonecutter electroblade resector—an all-in-one device for surgical correction of subacromial impingement. The device consists of a mechanical shaver for soft tissue removal, a burr to smooth bone, and a radiofrequency probe to seal blood vessels at the surgery site.

endoscopic submucosal dissection (ESD)—a technique that enables en-bloc resection of large colorectal tumors allowing a more precise histopathological analysis of the resected specimen. However, it has not been widely adopted due to its technical difficulty and increased risk of perforation.

fat notch sign—a pattern seen in closed-loop small-bowel obstruction on CT scan (two adjacent beaks, C-shaped bowel, radial distribution of mesenteric vessels).

felt sandwich technique—a technique used to close ventricular septal defects. The sandwich technique is not recommended to close muscular ventricular septal defects directly due to postoperative cardiac dysfunction. However, large apical ventricular septal defects, especially those located just underneath the moderator band, are considered suitable for the sandwich technique. A modified sandwich technique may be useful for the surgical treatment of acute aortic dissection, and a double-patch sandwich technique (bi-patch closure) may be used for ventricular reconstruction.

fetal micturition jet—a sonographic landmark, the direction and origin of which in males may contribute to

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the correct determination of fetal sex in late first and early second trimester. Fetal micturition also may be of value in the diagnosis of posterior urethral valves and hypospadias.

fifth vital sign—pain and pulse oximetry, two different assessments that may be referred to as the *fifth vital sign*. Similarly, a *sixth vital sign* has been proposed, the most endorsed being cancer-related fatigue or distress. Body mass index and weight change have also been proposed as a *sixth vital sign*.

floppy iris syndrome—a triad of the following intraoperative findings: (a) flaccid iris stroma leading to fluttering and billowing of the iris, (b) prolapse of the iris through the surgical incisions, and (c) progressive pupil constriction. A possible association between the use of tamsulosin for symptomatic prostate hyperplasia and IFIS is suspected. Consequently, in 2005 the U.S. FDA issued an alert recommending ophthalmic examination prior to treatment with tamsulosin. Also called *intraoperative floppy iris syndrome* (IFIS).

Florida sleeve repair—a simplified valve-sparing technique for repair of functional type I aortic insufficiency associated with root aneurysms. Sustained reduction of left ventricular dimensions 3 years after operation suggests the Florida sleeve procedure is a durable valve repair.

FPBA (femoropopliteal balloon angioplasty).

Fries technique—a surgical treatment for T2 lip carcinoma.

Fuji Uni-blocker.

full can test—a maneuver for diagnosing tears of the supraspinatus or infraspinatus.

glutaric acidemia type I and II (GA-I, GA-II)—a rare, autosomal recessive metabolic disorder that is detected by qualitative analysis of urine organic acids by gas chromatography/mass spectrometry (GC/MS). Glutaric acidemia leads to severe dystonia, basal ganglia degeneration, and bilaterally enlarged anterior middle cranial fossae. Other organic acidemias include isovaleric acidemia (IVA), propionic acidemia (PA), methylmalonic acidemia (MMA).

Hawkins-Kennedy impingement test.

HIEG (hyperinsulinemic-euglycemic **clamp**—clamp for assessing insulin sensitivity.

hyperattenuated artery sign—a sign seen on head CT scan of patients who have suffered a stroke.

hyperdense middle cerebral artery sign (HMCAS)—on unenhanced CT, a specific but insensitive indicator of acute thrombosis. The hyperdense basilar artery (HDBA) sign is a similar feature on unenhanced CT scan in patients presenting with a high pretest probability of posterior circulation stroke based on clinical symptoms and a strong predictor of basilar artery thrombosis, and both short- and long-term outcome. Also, *hyperdense vessel sign*.

hyperintense vessel sign (HVS)—focal or tubular hyperintensities in the subarachnoid space on fluid-attenuated inversion recovery (FLAIR) MRI that has been described in hyperacute stroke patients with arterial occlusion.

intercondylar notch sign—a sign of possible central hole tear of discoid meniscus on MRI.

intraperitoneal fat sign—on an abdominal radiograph, a wide fat stripe between the parietal peritoneum and the lateral wall of the ascending colon associated with ovarian cystic teratoma and peritoneal cavity filled with sebaceous material.

knotless metal suture anchors—a generic reference to the trademarked BioKnotless suture anchor.

LARIAT suture delivery device—designed to facilitate soft tissue approximation and ligation during procedures where it is desirable to deliver a pre-tied suture loop with control and accuracy. The LARIAT suture delivery device can be used with access routes ranging from 4 mm and larger and is compatible with a variety of imaging techniques.

left apical extrapleural cap—an early and important sign on chest radiographs indicating massive mediastinal hemorrhage.

Ley prosthesis—a titanium plate used for sternum stabilization after postoperative mediastinitis and sternal dehiscence or chest wall reconstruction.

lung comets—see *sonographic B lines*.

Mayo Elbow Performance Index.

McAuley index of insulin sensitivity.

Mercedes Benz sign—(1) a radiologic finding related to the presence of gallstones. (2) A double Mercedes Benz sign is a radiologic finding related to tuberculous pericarditis.

microthoracoscopic sympathectomy for palmar hyperhidrosis.

microthoracoscopy, one-port or two-port—a minimally invasive thoracoscopy technique that may be used for pulmonary lobectomy, lung biopsy, or electrocoagulation pleurodesis.

Minisite 2 mm disposable introducer, **Minisite 2 mm 0-degree laparoscope**.

modified Marmar technique—a technique used in the treatment of varicocele.

Mount Fuji sign—a finding on cranial CT scan suggestive of tension pneumocephalus. (See *pneumocephalus* and *tension pneumocephalus*.) Mount Fuji is Japan's tallest mountain at 12,388 feet. It is considered an active volcano, although its last eruption occurred more than 300 years ago. Its gentle, symmetric slopes and snow-capped summit have been featured in so many paint-

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ings and photographs that it has become a symbol of the country and its culture.

Naclerio's V sign—a radiographic presentation of pneumomediastinum.

oligofructose—a supplement being investigated for its potential to promote weight loss and improve glucose regulation in overweight adults.

optical fiber-free intravitreal surgery system (OFFISS).

ovarian crescent sign—a marker for malignancy in the ultrasonogrpahic evaluation of adnexal masses.

Oxford Hip Score—a 12-item questionnaire for patients who have undergone total hip replacement.

Patte test—a clinical test for diagnosing rotator cuff tendon disease. Also called the *Patte maneuver*.

Penn Shoulder Score for assessing scapular dyskinesis.

percutaneous dilatational tracheostomy with suspension laryngoscopy (SL-PDT).

perimacular dot-and-fleck retinopathy—a finding on imaging of the central and peripheral retina that may be diagnostic of Alport syndrome, particularly in male individuals with early-onset renal failure.

perinidal dip—a reduction in perfusion in the tissues around the nidus (point of origin or focus of a morbid process, such as an ateriovenous malformation) on MRI scan. Usage example: "Perinidal high-signal-intensity changes on T2-weighted magnetic resonance imaging can be seen surrounding radiosurgically treated brain arteriovenous malformations. Mapping of concentric shells of immediate and adjacent brain tissue around the nidus was used to define the perinidal dip."

peripheral fleck retinopathy—see *perimacular dot-and-fleck retinopathy*.

pistol-grip deformity—a radiologic finding in the hip of patients with severe osteoarthritis.

PlasmaBlade—used in various cosmetic surgeries for greater precision and to minimize bleeding, pain, and bruising.

pneumocephalus—the presence of air within the cranial cavity. Usually this results from head trauma (basal skull fracture), craniotomy (especially evacuation of a subdural hematoma), or surgery on the paranasal sinuses. Although the displacement of a quantity of cerebrospinal fluid by air is abnormal, it poses no immediate threat unless the air is under pressure. So-called *tension pneumocephalus* implies the presence of a ball-valve mechanism by which air is permitted to enter the cranial cavity but is prevented from escaping. Because sustained elevation of intracranial pressure, regardless of cause, can lead to irreversible brain damage, tension pneumocephalus is a neurosurgical emergency. See *tension pneumocephalus* and *Mount Fugi sign*.

preterm ovarian hyperstimulation syndrome (POHS)—a rare condition in which immaturity of the gonadal axis is accepted as the cause. A pathognomonic sign of POHS is swelling which develops around 37 +/- 3 weeks postconception age.

pseudostring sign—a finding on spectral and color Doppler imaging of internal carotid artery occlusion with vasa vasorum collateral flow.

radiocephalic arteriovenous fistulas (RC-AVF)—access method for hemodialysis.

red color sign—an endoscopic finding positive for bleeding esophageal varices or hemorrhoids, depending on the area being examined.

retinal lozenge—a dull macular reflex seen as confluent perimacular dots and flecks on retinal imaging. This finding described in Alport syndrome is not a normal variant but reflects a severe, almost confluent perimacular dot and fleck retinopathy. This sign is useful diagnostically and also prognostically, since it is associated with early-onset renal failure, hearing loss, and lenticonus.

ridge sign—the presence of an opaque ridge at the squamocolumnar junction after application of topical acetic acid solution to the uterine cervix. The sign is strongly suggestive of cervical intraepithelial neoplasia (CIN-2 or CIN-3) and infection with HPV-16.

ring-around-the-artery sign—on chest radiograph, a distinctive oval shadow at the right hilum due to collection of a thin layer of gas around the right pulmonary artery (RPA).

ring sign—on optical coherence tomography (OCT), a ring-shaped pattern on the fast retinal thickness maps with little central retinal thickness but increasing retinal thickness at the edge of the pigment epithelial detachment, a pattern typically seen in patients with pigment epithelial detachment with or without underlying choroidal neovascularization.

scratch collapse test—a diagnostic procedure for carpal and cubital tunnel syndromes. With both elbows flexed, the patient is instructed to resist bilateral external shoulder rotation applied to the forearms by the examiner. The examiner then gently scratches the skin overlying the area of suspected nerve compression and immediately repeats the shoulder rotation maneuver. Transitory loss of the ability to resist external shoulder rotation on the affected side is reported to indicate nerve entrapment with greater sensitivity than either Tinel's or Phalen's test.

Sculptra Aesthetic—an injectable cosmetic filler for facial wrinkles and nasolabial fold contour deficiencies.

Simon's bleedings—hemorrhages into the anterior aspect of the interverte-

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bral discs of the lumbar region, usually considered a classic sign of vitality in cases of hanging with full suspension of the body.

single-stage adjustable strabismus surgery (SSASS).

sliding sign—the observation on ultrasonography that a structure is moving with respect to an adjacent structure. Sliding of the visceral pleura over the parietal pleura with respiratory movements indicates that lung expansion is taking place and that pleural adhesions are absent. Conversely, lack of such movement indicates a successful pleurodesis (surgical fusion of visceral and parietal pleural surfaces for the prevention of recurrent spontaneous pneumothorax). Absence of sliding movement between adjacent abdominal viscera (for example, liver and bowel, or adjacent loops of bowel) with respiratory movements or on external application of pressure suggests peritoneal adhesions or invasion of one structure by a malignant process originating in the other.

SLT (selective laser trabeculoplasty).

small-bowel feces sign—a finding on CT scan frequently seen in cases of small bowel obstruction from matted adhesions.

sonographic B lines—ultrasound findings that have been shown to correlate with the presence of extravascular lung water. Absent in normal lungs, these sonographic findings become prominent as interstitia and alveoli fill with fluid. Also known as *lung comets*.

spinnaker sail sign—(1) a typical radiographic presentation of pneumomediastinum; also *wind-blown spinnaker sail sign*; (2) a double-line sign around AVN (avascular necrosis) lesions on magnetic resonance images.

staircase technique—a surgical technique used to close defects of up to two thirds of the lower lip after excision of cancerous lesions.

Taxus Liberte long paclitaxel-eluting coronary stent—an expandable, meshlike stainless steel tube with a drug (paclitaxel) contained within a thin polymer coating on its surface. The stent is mounted over a deflated balloon attached to the end of a long thin flexible tube called a stent delivery catheter. It is used to treat narrowing of coronary arteries.

tension pneumocephalus—a neurosurgical emergency. With the patient supine, a standard CT scan of the head shows the frontal lobes of the brain at the top of the image. Any air in the cranial cavity rises and appears between the frontal bone and the frontal lobes. When the air is under pressure (tension pneumocephalus), the flattening of the anterior surfaces of the frontal lobes, as seen in such an image, creates a contour that has been likened to that of Mount Fuji. Descriptions of this sign in the radiologic literature emphasize that the widening of the interhemispheric space between the frontal lobes in tension pneumocephalus creates the appearance of a cleft at the summit of the mountain, and imply that this twin-peak effect enhances the resemblance to Mount Fuji. Of dozens of images of Mount Fuji available on the Internet, however, none shows such a cleft.

Thoraco Holder.

TOFU (transolecranon fossa ulnar) procedure—arthroscopically assisted, modified all-interference screw technique for collateral ligament reconstruction.

topless disk syndrome—superior segmental optic nerve hypoplasia, optic nerve hypoplasia that is sectorial rather than total and involving only the superior aspect of the optic disk with corresponding inferior visual field loss. Optic nerve hypoplasia is a well-known congenital maldevelopment presenting with an abnormally small optic nerve head occupying the central aspect of a normally sized chorioscleral canal. Characteristically, the optic nerve head is surrounded by scleral anlage with a "double ring sign." Superior segmental optic nerve hypoplasia is less well recognized, but it is important to differentiate this syndrome from true optic atrophy to ensure proper management.

transanal open hemorrhoidopexy—a procedure that can be performed under direct vision and is cost effective compared to the other hemorrhoidal tissue-sparing procedures.

triangular cord sign—on ultrasound for biliary atresia in a neonate.

tug-of-war sign—an echocardiographic marker of end systole in the ischemic left ventricle.

Urrets-Zavalia syndrome—prolonged mydriasis, often after ophthalmologic surgical procedures.

wall-socket technique—surgical procedure for revision acetabular arthroplasty.

water jet deformation sign—a colonoscopic maneuver to distinguish between colon polyp and inverted diverticulum. Spraying suspect lesions with a water jet flattens or partly everts them providing conclusive evidence that the projections represent inverted diverticula. The maneuver may be easier and safer than probing an inverted diverticulum with biopsy forceps and may prove a more reliable diagnostic maneuver than air insufflation.

Winkelmann technique (Path)—a classical histologic staining procedure for nerve fibers based on impregnation with silver nitrate.

yoga sign—callosities of cross-legged sitting, an under-recognized cultural cutaneous presentation.

z drugs—a new class of nonbenzodiazepine sedatives. The three most popular z-drugs are zolpidem (Ambien), zaleplon (Sonata), and eszopiclone (Lunesta).