Barb's eBlurb

A monthly collection of Barb's wit and wisdom

Sample eBlurb

INFECTIOUS DISEASE UPDATES

The Avian flu in the world of badminton—the mystery of the sluggish shuttlecock (aka, "the birdie"). In 2006, professional badminton players noticed something strange. Their shuttlecocks, which routinely whiz around the court at speeds of 150 mph, weren't moving so fast. The phenomenon was especially strange because the process of making a shuttlecock is so tightly controlled. Each feather in a premium shuttlecock is hand-selected from the left wing of a goose, and each goose can only supply two quality feathers, at most! So what caused the change? The avian flu epidemic in geese. When geese began transmitting the disease, Chinese manufacturers, unbeknownst to world-class badminton players, switched from using goose feathers to using duck feathers. Luckily, our fine-feathered friends have been on the mend, returning smiles to the faces of badminton players everywhere.

The "fecal cloud" surrounding the patient with *Clostridium difficile*. Individuals with *C. diff* excrete large quantities of spores and the spores cover the surrounding environmental surfaces. Can spores spread aerially? Most transmission of *C. diff* seems to emanate from patients with active infection who create an environmental "fecal veneer". The new findings suggest the possibility of a "fecal cloud" –ie. airborne spread. The more the patients move around the hospital room, hospital ward, long-term care facility—the greater amounts of *C.diff* in the air. Hence the need for isolating patients with the dreaded *C. diff* infection. (Best EL, et al. The potential for airborne dispersal of *C. diff* from symptomatic patients. *Clin Infect Dis* 2010 June 1; 50:14)

What is the degree and duration of *C. diff* infection (CDI) risk after the cessation of antibiotic therapy? CDI risk rises with increasing doses and increasing duration of antibiotic use—greater than 14 defined daily doses during the preceding 14 months. All antibiotic classes except the macrolides and first generation cephalosporins were associated with CDI; carbapenems and 2nd and 3rd generation cephalosporins conferred the highest risk. CDI risk was 7-10 fold higher during antibiotic treatment and the first month after cessation of treatment. The risk of CDI was nearly 3-fold higher for the next two months. (Hensgens MPM, et al. Time interval of increased risk for CDI after exposure to antibiotics. *J Antimicrob Chemother* 2012 Marc; 67:742)

Fecal transplants for *C.diff*. The procedure of transferring stool to a patient—technically called fecal microbiota transplantation—was first performed in the U.S. in 1958

In This Sample Issue…

CPP ASSOCIATES INC

3100 N. Sheridan Road
#1C
Chicago, IL 60657
www.barbbancroft.com
bbancr9271@aol.com

to treat an intractable case of *C. diff* colitis. WTF? Stay tuned for the March 2013 eBlurb … I'll discuss the whole process and prognosis of fecal microbiota transplants—aka fecal or stool transplants for *C. diff*. Betcha can't wait.

Oral HPV spreads mostly through oral sex. Seven percent of Americans ages 14–69 have a current oral infection with HPV. It is three times more common in men, (10.1% in men vs. 3.6% in women). The portion of HPV-related oral cancers in the throat, the tonsils, or the base of the tongue, compared to smoking, increased from 16% in 1984-88 to 72% in 2000-2004.

Here are a few more numbers to mull over: 12000 women per year are diagnosed with HPV-induced cervical cancer compared to 7,100 people per year are diagnosed with HPV-related throat cancers. If trends continue, throat cancer will overtake cervical cancer as the cause of HPV-induced cancers by 2020.

Eight out of ten women are infected with HPV by the age of 50. Oral HPV infections were more than 8x more common among people who have had sex in any orifice—vaginal, oral, anal—than among people who have never had sex. Fewer than 1% of people without sexual experience had an oral HPV infection. In other words, JUST kissing is not a major risk factor. This information is important for people who teach sexual health classes. (Gillison M. Jan 26, 2012, *JAMA*)

Carbepenam-resistant enterobacteriacae (aka CRE). Another reason to step away from the hospital… the newest in a long-line of antibiotic-resistant bacteria has just reared its ugly head about a year ago and it's spreading like wildfire through nursing homes and hospital intensive care units. The scary news is that this bacteria is resistant to our *last* line of antibiotics—the BIG guns…the ones we reserve for all other resistant bugs—the carbapenems.

The very first cases were reported in 2001 in North Carolina. Not too much brouhaha over those cases until the summer of 2012 when an outbreak occurred at the National Institutes of Health. Seven ICU patients died from a CRE-resistant strain of *Klebsiella* pneumonia. Another outbreak followed the NIH cases in the ICU at the University of Virginia in Charlottesville, VA. Since the first reported cases, 42 states have sent reports on CRE to the CDC in Atlanta. In Chicago, 3% of the patients in ICUs have CRE; 30% of the residents in long-term care facilities have CRE. However, not all patients are symptomatic. Immunocompromised patients tend to be the most apt to become symptomatic. The mortality rate is quite high—40%–50% .

In addition to the high mortality rate the resistance gene carried by the bug has a tendency to hop between bugs—creating new carbepenem-resistant strains. This is the scary part of the story—common bugs that have heretofore been susceptible to the "usual antibiotics" are becoming resistant to not only the first line antibiotics but also all other lines of antibiotics—including carbepenem. In other words, a simple urinary tract infection can flip from a routine infection to an untreatable nightmare.

HISTORICAL HIGHLIGHTS

RELIEVE ARTHRITIC JOINTS—Chronically inflamed arthritic joints can be relieved, but not cured, by injecting cortisone-related steroids, or hormone drugs, directly into the joint. Repeated injections, up to 142 times in one case, had no apparently harmful effect, three doctors report in the Bulletin of Rheumatic Diseases, Jan. 1961. Some 4, 000 patients at the University of Pennsylvania Arthritis Clinic, Philadelphia, received more than 100,000 injections during a ten-year period…Reduction in swelling and relief varies and is often temporary. Because the treatment can be repeated in long-term cases of the most serious types of arthritis…however, it is especially valuable. (February 11, 1961 *Science Newsletter*.)

MEDICAL MINUTIAE

Bootylicious. Austrailian researchers named a newly discovered fly *Scaptia (Plinthina) beyonceae* because its golden bottom is "bootylicious" like Beyonce's.

Speaking of "bootylicious"—I was visiting a public restroom in a hospital in Texas recently and let out a huge peal of laughter as I read a placard placed on the inside of the toilet stall door. It said: *"If there's enough room to spell bootylicious on the back of your shorts, it probably isn't."*

Zip over to public restrooms in Taiwan. Taiwan's Environmental Protection Administration has directed local governments to put up signs in public restrooms requesting men to sit down to urinate so that they are less likely to leave a mess. (Guys—you might want to stop laughing and listen up—A Swedish study showed that men who sit will empty their bladders more thoroughly.)

"OW!" Why do we say 'Ow!'? The semi-voluntary sound we make when we stub a toe, pound a finger with a hammer, or burn a finger with an iron is constant across all languages. The Spanish say 'Ay!', the Germans say 'Ach!' , the Chinese say 'Aiya'!, and the Norwegians 'Au!'. In all languages it is a wide-open mouth with a short breath. This is the fastest and simplest way to make a loud noise and it probably evolved as an alarm call to the tribe that danger was nearby. In case that danger is a wild animal, saying 'Ow!' also has the effect of baring your teeth threateningly.

NEUROLOGY UPDATES

Why don't woodpeckers have brain damage? The force endured by a woodpecker's head on each peck is equivalent to a deceleration force 1000 times that of gravity. Humans would suffer brain damage with blows to the head that are tiny in comparison. So how do woodpeckers do it?

Using new technology including slow-motion photography, force sensors and CAT scans, researchers have identified three mechanisms that protect the woodpecker's brain. First, their hyoid bone loops around the whole skull and acts as a kind of safety belt. Second, the upper and lower halves of the beak are uneven and the birds also slightly turn their heads as they peck, which distributes the force. Third, plate-like bones with a spongy structure distribute the force around the skull, so their brains are well protected.

Contest in the WEEK magazine for THE WEEK of June 1, 2012.

The number of PhDs receiving food stamps and other public aid tripled, to 34,000, between 2007 and 2010. The WEEK asked readers to come up with the title of an arcane doctoral thesis that would be very *un*likely to result in a job.

Third Place was my favorite: *Urinary Tract Infections of the Common Earthworm: Implications for Organic Farming.* —Russell A. and Kathleen I. Joki, Meridian, Ohio

Sense-sational. The human fingertip can detect grooves of 50 nanometers (50 nanometers = 2 millionth of an inch). Most of the two billion or so nerve endings in the epidermis sense pain; the nerve endings dedicated to temperature allow us to detect differences as small of 0.01° Fahrenheit.

QUOTE OF THE MONTHLY eBLURB

People's number one fear is public speaking. Number two is death. This means if you go to a funeral, you're better off in the casket than doing the eulogy.
—Jerry Seinfeld

Rappers, Hip Hop and the functional MRI. The late Brooklyn rapper Christopher Wallace, better known as The Notorious B.I.G., also known as Biggie, had the rare ability to craft an entire hip-hop song extemporaneously. This act of improvising entire verses on the fly, or freestyling, is apparently an amazing skill that only a few rappers have the ability to perform. "More often than not, how well a rapper navigates this stream-of-conscious realm is the yardstick by which talent is measured," says Nic Halverson of Discovery News. Biggie made it look like a piece of cake. That's why researchers at the National Institute on Deafness and Other Communication Disorders (NIDCD), a part of the National Institutes of Health, set out to explore what happens to a rapper's brain when he's spontaneously stringing together words.

About four years ago, the publication of a study where the brains of improvisational jazz musicians were hooked up to scanners caught the eye of Daniel Rizik-Baer, a hip-hop enthusiast with a background in social work. He contacted the study's co-author, Dr. Allen Braun of the NIDCD, and pitched a new idea: Why not do the same for freestyle rappers? The resulting study, "Neural Correlates of Lyric Improvisation: An fMRI Study of Freestyle Rap"," actually looks at the basis for the creative process in the brain. Where is it? What is it? How does it come about?

The basics of the study. The team enlisted 12 freestyle rap artists from the Washington D.C. and Baltimore areas and hooked them up to functional magnetic resonance imaging (fMRI) machines, which measure oxygen levels in the brain and use blood flow to pinpoint which areas are active at a given point in time. In the first part of the study the rappers were given an eight-measure bar and lyrics to memorize, and were told to recite those lyrics while hooked up to the fMRI scanner. In the second part of the study they were told to freestyle over a beat.

No matter what they were rapping about, their brains activated differently during the improvised flow versus the memorized lyrics. When subjects were freestyling, the medial prefrontal cortex—an area associated with organizing and integrating information—showed an increase an activity. Meanwhile the dorsolateral region, which helps with "self-control, self-monitoring, and self-censoring," showed a decrease in activity. (This area became more active when the rappers were reciting memorized lyrics.) Also active while the subjects freestyled were the brain areas associated with language and motor control (no big surprise since the rappers had to think of words and produce them with the muscles of the mouth and jaw), and the amygdala, which is the brain's center for emotional activity.

What does that mean? Similar to the first study with the jazz musicians, the rappers' brains were paying less conscious attention to what was going on but had strong action in the area that motivates action and thought. But unlike jazz musicians playing instruments, the left hemisphere of the brain—where language is processed for most right-handed people—demonstrated a dramatic increase of activity. In other words, high-level executive function is actively bypassed to allow for a more natural, spontaneous output of language"—the brain essentially turns off its own censors, your "mother" so to speak. There's also an "absence of attention". So when the attention system is partially offline, you can just let things fly and let things come without critiquing, monitoring, or judging them. Hence, the true nature of Jay-Z, Lil' Kim, Kanye West, and the other famous hip-hoppers of today.

GERIATRIC GEMS

Speech. The speech rate drops significantly over time from ~148 words per minute at age 58 to 137 words per minute at age 73, and 106 words per minute at age 86—an overall decrease of 28% over 28 years.

Brain volume. The total loss of brain volume between our teen years and age 75 is 15% or more. This means that by the time we are in our 70's, our brains have shrunk to the size they were between two and three years old. Ouch.

More bad news on brain volume. Ten percent of our neurons die in adulthood; however, 25% of the neural network dies—the connections between the neurons (the "dendritic trees"). "Ow!"

Dopamine. By age 80, 40% of t he neurotransmitter dopamine has been lost. Dopamine is a critical transmitter involved in movement, sexual function, and transmitting signals between neurons. In other words, we're moving slowly, not quite so interested in sex, and can't think. Double "ow!" (William Jagust, Neuroscientist, University of California, Berkeley)

Hearing. High-pitched tones that we detect at a mere 30 decibels when we are young have to be boosted to an earsplitting 90 decibels for the elderly to hear. (That's about a million times the energy intensity)