OSTEOPOROSIS

THE CURSE OF AGING.

Osteoporosis is a disease where decreased bone strength increases the risk of a broken bone. It is the most common reason for a broken bone among the elderly. Bones that commonly break include the back bones, the bones of the forearm and the hip. Until a broken bone occurs there are typically no symptoms. Bones may weaken to such a degree that a break may occur with minor stress or spontaneously. Chronic pain and a decreased ability to carry out normal activities may occur following a broken bone.

Osteoporosis may be due to lower than normal peak bone mass and greater than normal bone loss. Bone loss increases after menopause due to lower levels of estrogen. Osteoporosis may also occur due to a number of diseases or treatments including alcoholism, anorexia, hyperthyroidism, surgical removal of the ovaries, and kidney disease. Certain meds increase the rate of bone loss including some antiseizure medications, chemotherapy, proton pump inhibitors (knock out acid required for absorption of calcium) selective serotonin reuptake inhibitors and steroids. Not enough exercise and smoking are also risk factors. Osteoporosis is defined as a bone density of 2.5 standard deviations below that of a young adult. This is measured by dual-energy X-ray absorptiometry at the hip.

Prevention of osteoporosis includes a proper diet during childhood and efforts to avoid medications that cause the condition. Lifestyle changes such as stopping smoking and not drinking alcohol may help. Medication of the bisphosphonate type are useful in those with previous broken bones due to osteoporosis. In those with osteoporosis but no previous broken bones they are less effective. White and Asian people are at grater risk. The word “osteoporosis” is from the Greek for “porous bones.”

The most common osteoporotic fractures (Fxs) are of the wrist, spine, shoulder and hip. The symptoms of a vertebral collapse (compression fx) are sudden back pain, often with shooting pain down the nerve root compression and rarely with spinal cord compression. Multiple vertebral fxs lead to a stooped posture, loss of height and chronic pain with resultant reduction in mobility. Fractures of the long bones acutely impair mobility and may require surgery. Hip fx usually requires surgery and bring on the risks of deep vein thrombosis and pulmonary embolism with increased mortality.

Fracture risk calculators (FRAX and Dubbo) assess the risk of fx based upon several criteria, including BMD (Bone Mineral Density), age, smoking, alcohol usage, weight and gender.

The most important risk factors for osteo are advanced age (especially in women 4 to 1); estrogen deficiency following menopause or surgical removal of the ovaries while in men a decrease in testosterone levels has a comparable but less pronounced effect. A small inactive stature is also a risk factor. Female endurance athletes tend to have a decreased bone density with an increased risk. This may be due to suppressed of menstruation with intense training.

Many diseases and disorders have been associated with osteoporosis.
Immobilization causes bone loss. Hypogonadal states can cause secondary osteo. These include Turner syndrome, Klinefelter syndrome, anorexia nervosa, andropause, hypothalamic amenorrhea or hyper-prolactinemia. Endocrine disorders such as Cushing’s syndrome, hyperparathyroidism, hyperthyroidism, hypothyroidism, diabetes mellitus type 1 and 2, acromegaly and adrenal insufficiency. In pregnancy and lactation, malnutrition, malabsorption syndromes, Crohn’s disease, ulcerative colitis, cystic fibrosis, bowel surgery, bulimia, inability to absorb calcium and vitamin D. Rheumatoid diseases, renal insufficiency, multiple myeloma, lymphoma and leukemia, hemophilia, Parkinson’s disease.

**Medication...**Steroid-induced osteo arises due to use of glucocorticoids such as prednisone; barbiturates, phenytoin and some other antiepileptics, over-replacement of thyroid hormone, methotrexate, depot gonadotropin, anticoagulants, proton pump inhibitors. Chronic phosphate binding may also occur with aluminum-containing antacids, some diabetic and lithium therapy.

The underlying mechanism in all cases is an imbalance between bone resorption and bone formation.

**Diagnosis...**Conventional radiography and by measuring the bone mineral density (BMD). The most popular method of measuring BMD is dual-energy X-ray absorptiometry (DXA). One must rule out cancer with metastasis to the bones, multiple myeloma and Cushing’s disease among others.

Radiography is relatively insensitive to detection of early disease and requires a substantial amount of bone loss (about 30%) to be apparent on X-ray. **Dual-energy X-ray absorptiometry** is the gold standard for the diagnosis. Osteo is diagnosed when the bone mineral density is less than or equal to 2.5 standard deviations below that of a young (30-40 year-old) healthy adult women reference population. This is translated as a T-score. But because bone density decreases with age, more people become osteoporotic with increasing age.

**Biomarkers...**Chemical biomarker are a useful tool in detecting bone degradation. The enzyme cathepsin K breaks down type-I collagen protein, an important constituent in bones. Prepared antibodies can recognize the resulting fragment, called a neoepitope, as a way to diagnose osteoporosis. Increased urinary excretion of C-telopeptides, a type-I collagen breakdown product also serves as a biomarker for osteoporosis.

Quantitative computed tomography (QCT) differs from DXA in that it gives separate estimates of BMD for trabecular and cortical bone and reports precise volumetric mineral density in mg/cm³ rather than BMD’s relative Z score.

Quantitative ultrasound has many advantage in assessing osteo. The modality is small, no ionizing radiation is involved, measurement can be made quickly and easily, and the cost of the device is low compared with DXA and QCT devices. The calcaneus is the most common site for quantitative ultrasound assessment because it has a high percentage of trabecular bone that is replaced more often than cortical bone, providing early evidence of metabolic change. Also, the calcaneus is fairly flat and parallel, reducing repositioning errors. The method can be applied to children, neonates and preterm infants.

**Screening...**It is recommended that all women 65 years of age or and men older than 70 be screened by bone densitometry.

**Prevention...**Stop smoking, stop drinking excess alcohol. Have an adequate calcium intake (at least one gram daily) and take vitamin D (400 IU. daily) supplements if needed. Beware, an excess of calcium intake can increase the risk of heart attack, kidney stones and stomach problems. Vit. K deficiency is also a risk factor for osteo Fxs. Weight-bearing endurance exercise and/or exercises to strengthen muscles improve bone strength in those with osteo. Aerobics, weight-bearing, and resistance exercises all maintain or increase BMD in older women.

**Medications...**Bisphosphonates, such as Actonel, Atelvia (Risedronate, tablets by mouth), Boniva (ibandronate, 3 mg i.v. every 3 months 150 mg tab by mouth monthly), Fosamax (Alendronate, daily tablet by mouth), Reclast (Zoledronic, 5mg IV once a year) are useful in decreasing the risk of future fxs in those who have already sustained a fx due to osteo. This benefit is present when taken for 3-4 years. Fx reduction is around 50%. There are concerns of atypical femoral fxs and osteonecrosis of the jaw with long term use, but these risks are low. With evidence of little benefit when used for more than 3-5 years and in light of the potential adverse events, it is appropriate to stop treatment after this time. In higher risk it is recommended to take up to 10 years of oral medication or 6 years of I.V. treatment.

For those with osteo but who have not had a fracture, evidence does not support a reduction in fx risk with risedronate (Actonel). Alendronate (Fosamax) decrease Fx of the spine but does not have any effect on other types.

Fluoride supplementation does not appear to be effective in post-menopausal osteo, as even though it increases bone density it does not decrease the risk of fx.

**Micadolin & Fortical** (Calcitonin) has been shown to slightly effective in older women and is taken by nasal spray & injection. (Fortical is available only by nasal spray.)

**Female Hormone replacement** Raloxifene (Evista, 60 mg tab daily) while effective in decreasing vertebral fxs, does not effect the risk of nonvertebral fxs. And while it reduce the risk of breast cancer, it increases the risk of blood clots and strokes. Other hormone replacement aids are Climara, Ogen, Premarin.

**Osteoclast Inhibitors** include Prolia (Denosumab) 60 mg subq every 6 months.

**Parathyroid hormone, Forteo** (teriparatide) 20 mcg subq daily.
In 1975, 140 scientists gathered in Monterey, California because they were worried about what was called “recombinant DNA,” the manipulation of the source code of life. It had been 22 years since Watson, Crick and Franklin described what DNA was—four different structures called bases stuck to a backbone of sugar and phosphate, in sequences thousands of bases long. DNA is what genes are made of, and genes are the basis of heredity.

Preeminent genetic researchers like David Baltimore, then at MIT, went to grapple with the implications of being able to decrypt and reorder genes. It was a God-like power—to plug genes from one living thing into another. Used wisely, it had the potential to save millions of lives. But the scientists also knew their creations might slip out of their control. They wanted to consider what ought to be off-limits.

At the end of the meeting, Baltimore and four others stayed up all night writing a consensus statement. They laid out ways to isolate potentially dangerous experiments and determined that cloning or otherwise messing with dangerous pathogens should be off-limits.

Earlier this year, Baltimore joined 17 others for another conference, this one in Napa Valley. There he was again, gathered with some of the smartest scientists on earth to talk about the implications of genome engineering.

The stakes, however, have changed. Everyone at the Napa meeting had access to a gene-editing technique called Crispr-Cas9 (clustered regularly interspaced short palindromic repeats) a description of the genetic basis of the method; Cas9 is the name of a protein that makes it work. CrisprCas9 makes it easy, cheap and fast to move genes around—any genes, in any living thing from bacteria to people. “These are monumental moments in the history of biomedical research,” Baltimore said.

Using the three-year-old technique, researchers have already reversed mutations that cause blindness, stopped cancer cells from multiplying, and made cells impervious to the virus that causes AIDS. Agronomists have rendered wheat invulnerable to killer fungi, hinting at engineered staple crops that can feed a population of 9 billion on an ever-warmer planet. Bioengineers have used Crispr to alter the DNA of yeast so that it consumes plant matter and excretes ethanol, promising an end to reliance on petrochemicals. Startups devoted to Crispr have already launched companies that have spun-up Crispr R&D. Crispr make you see a gleaming world of the future.

The technique is revolutionary and perilous. It could allow genetics to conjure everything anyone would want—designer babies, invasive mutants, species-specific bioweapons and a dozen other apocalyptic sci-fi tropes. It brings with it all new rules for the practice of research in the life sciences. But no one knows what the rules are—or who will be the first to break them.

Humans were genetic engineers before anyone knew what a gene was. They could make corn sweeter, flatter bulldog’s faces—through selective breeding. But it took time and it didn’t always pan out. By the 1930s refining nature got faster. Scientists bombarded seeds and insect eggs with x-rays, causing mutation to scatter through genomes like shrapnel. If one of hundreds of irradiated plants or insects grew up with the traits they desired, they bred it and tossed the rest. That’s where red grapefruits came from, and most barley for modern beer. Genome modification has become less of a crashstop. In 2002, biologists learned to delete or replace specific genes using enzymes called zinc-finger nucleases; the next-generation technique used enzymes named TALENs.

The procedures were expensive and complicated. They only worked on organisms whose molecular inards had been thoroughly dissected—like mice or fruit flies. Genome engineers went on the hunt for something better.

As it happened, the people who found it weren’t genome engineers at all. They were researchers, trying to unravel the origin of life by sequencing the genomes of ancient bacteria and microbes, descendants...
EDITOR’S NOTE: Walter Winchell began broadcasting in 1933 to an audience of 25 million people. The Winchell style was unmistakable. He talked rapidly at 197 words per minute—the voice was high-pitched and not pleasant to the ear; but it was distinctive. The staccato quality made every item compelling. He claimed he talked so fast because if he talked more slowly people would find out what he was saying...he began his radio program with a series of dots and dashes operating the key himself. Telegraphers throughout the country complained that what Winchell tapped out made no sense. He realized he hadn’t the faintest knowledge of Morse code but he refused to have an experienced telegrapher provide the sound effects for him. He wrote like a man honking in a traffic jam.

QSL cards...Sending a QSL card with a self-addressed, stamped envelope helps boost the response rate from fellow hams. Stamps are made with a peel-and-stick adhesive. Placing one face down and taping it to the back of the QSL card, then mailing it as a postcard requires no envelope and stamps are the less-expensive postcard variety instead of first-class 47 cent. The P.O. says it is okay and as a result you will have a higher response rate and spend less money.

Volunteer Examiner (VE) accreditation...ARRL accreditation renewal is automatic. VE who maintain a current address, phone number, and e-mail address on file at the VEC office and have participated at an exam session within the past 5 years are valid. Renewal stickers, extending the VE’s accreditation expiration date, are issued and should be placed on your credentials. After 5 years of inactivity, your VE accreditation will be placed on inactive status until you contact the VEC office. Depending on the amount of time that has passed you may be required to reapply. No one’s accreditation will be permanently revoked solely because of inactivity. A VE whose FCC license has expired is not eligible to administer any exam element.

Hot item at Dayton was the ICOM IC-7300 which should be available now...sells for around $1,500 and according to ICOM all the bugs have been eliminated.

What is “virtual reality?” Virtual reality combines state-of-the-art imaging with computer technology to allow users to experience a simulated environment—as reality! Several technologies are integrated into a virtual reality system, including holography, which uses lasers to create three-dimensional images; liquid crystal displays; high-definition television and multimedia techniques that combine various types of displays in a single computer terminal. It has made a rapid development recently due to its ability to present gaming to youngsters at an affordable price.

What makes knuckles crack? When a person pulls quickly on his or her finger, a vacuum is created in the joint space between the bones, displacing the fluid liquid normally found in the space. The popping sound occurs when the fluids rush back into the empty gap.

How much water is an inch of snow? An average figure is 10 inches of snow is equal to one inch of water. Heavy wet snow has a high water content; 4 to 5 inches of wet snow may contain 1 inch of water. A dry powdery snow might require 15 inches of snow to equal 1 inch of water.

Went to the Air & Space Museum but there was nothing there! Why are zero scores in tennis called “love”? In France, where tennis is popular, the round zero on the scoreboard looked like an egg and was called “l’œuf”, which is French for the egg’. When tennis was introduced in the US, Americans mispronounced it “love”.

Why do people clink their glasses before drinking a toast? Because in earlier times it used to be common for someone to try to kill an enemy by offering him a poisoned drink. To prove to a guest that a drink was safe, it became customary for a guest to pour a small amount of his drink into the glass of the host. Both would drink it simultaneously. When a guest trusted his host, he would only touch or clink the host’s glass with his own.

What do they call a woman who always knows where her husband is? A. A widow!
If the value, shape, color or other characteristics of something does not change in distinguishable steps, it is an analog quantity. Your age, the color of tree leaves, the outside temperature and most things governed by nature are analog.

A microphone transforms human speech, an analog form of communication, into an electrical current that continually varies in accordance with the strength and frequency of the physical energy. At the output end, a speaker transforms the continuously varying analog current into physical energy so the ear can hear it.

When something changes in discrete steps or units, it can be thought of as a digital quantity. There is no in-between. The football score, the model year of your car, and the number of freshmen are digital values.

Digital computers know how to evaluate only two conditions. Everything is either on or off, high or low, one or zero, thus, computers communicate in digital form. Since the computer works in binary (meaning two conditions), each of its digits is a binary digit or bit.

All modern computer communication is done in digital form. Analog computers do exist, but they do not lend themselves easily to modern techniques.

In communications, distinguishing between analog and digital quantities is very important. With analog transmission techniques, an infinite number of points or values can be transmitted and received. With digital transmission, only discrete values can be transmitted and received.

Converting Analog to Digital... In many cases , we can digitize an analog quantity, that is, convert it into a digital quantity, and still be very close to its actual value. That’s important to remember. Even analog quantities like sounds and pictures can be converted to digital form.

Let’s consider how we are going to transmit digital information from one place to another. Our familiarity with the telephone will help to explain two additional terms, serial and parallel, which are common in data communications.

Serial... A single pair of wires connects each telephone to the central office. Without using special equipment and techniques, each pair of wires can carry only one conversation at a time. Once the conversation is completed, the same pair of wires can be used to carry another conversation, and then another.

If Bill and Susan both want to make a phone call at the same time, they can’t do it with only one telephone set and one line. Susan can make her call, then when the finishes, Bill can make his call. The two calls are in series on the same one line.

Similarly, if only a single pair of wires is available, digital information must be transmitted one bit at a time along the wires. This is serial transmission.

Parallel... If Bill and Susan have access to two telephone sets, and if each is on a separate line, they can place their calls at the same time. The two calls occur in parallel, but two lines are required.

Internally, computers transfer data by moving several bits at one time. The number of bits that can be transferred at one time is called a byte. For personal computers, a byte is usually eight bits. When a number of pieces of information are all sent via a common circuit at the same time, the transmission is said to be in parallel. The number of communications paths inside the computer must equal the number of bits to be transferred at one time. Actually, it usually takes more than 8 communications paths to transfer eight bits of data in parallel because other signals are needed to coordinate the activity and these add to the number of paths required.

*************** ARE YOU OPERATING ILLEGALLY? *******

Best to check your license expiration date; You didn't receive an extension when you upgraded.

You must apply 90 days before expiration and not more than 2 years after.

Lingers on.

The second annual meeting was held at the Jack Tar Hotel in San Francisco, CA, on June 28 1968 with Dr. Jack London K2JVA presiding.

Of the present long-standing members, Dr. Fred Simowitz K0FS, still active, appeared on the scene as President of MARCO in 1986. Alfred Greenwald, M.D. WA2CBA, gave a talk in Dayton on A Very Large Array, (“Don’t call me All!”) and Dr. Mike McGirr and his wife Susan gave a talk on the DXpedition to the Island of Galapagos.

The sunspot cycle was at its lowest point during this year but MARCO survived.

In 1989, Dr. Ira Wexler W3HEF, fathered the first annual “mini-meeting” of the eastern states in downtown Philadelphia with thirty attending. Ed Briner, D.M.D. WA3TVG, had just begun to learn how to compose the Newsletter with PageMaker, and the Laser Printer. Each issue got better...by 1999, it was noted, he will probably know how to use them. In 1999, ironically Ed became a Silent Key & Dr. Warren Brown KD4GUA took over his job as editor.

1990 was the year the late Dr. Polycarp WB4LPC told those attending about the horrible conditions at the hospital in Liberia where his mother had been a patient.

In 1991, Dr. Robert “Smitty” Smithwick W6JZU began scratching the surface of the work that they can do in helping developing third world hospitals get much needed help from us. Thus, MediShare was born.

New familiar names began appearing—Robin Staebler NN3L, Robert Currier WB5D, Doug Badell N9GB.

The year 2000 issued in the advent of the “list-serve” initiated by Robin Staebler and Bruce Small KM2L, and the turnover in leadership from Dr. Bob Currier to Dr. Small. The name of Dr. Bob Morgan began to appear as he babied the formation of a more active CW net.

Active membership in 2000 included names such as Eugene Hoenig, Ian Kellman, Keith Adams, Judy Hoenig, Jeff Wolf, Chuck Lind, Jim Patterson, Warren Brown, Bruce Small, Chip Keister, Arnold Kalan, Mary Favaro, Al Breland, Paul Lukas, Roger Higley, Danny Centers, Bill Otten, Greg Johnson, Richard Doncaster, Doug Sanders, Rick Zabrodski, Louis Lyle, Ira Wexler, Carl Wernitz, who did we miss? Membership at that time was 145—today’s listing includes 208 members. Today’s Newsletter is sent to members in Brazil, Israel, Sweden, Canada, Japan, Finland.

We have met some unforgettable characters in our March of Marco. We have marvelous experiences of saving lives through Marco. We have tolerated each other miraculously and managed to “keep the ship going” as the late Robin Staebler requested prior to his unforeseen passing.

Who can forget Robin fishing from the second floor hotel window in Clearwater, FL during a mini-hurricane or the opening of membership to “a licensed professional in the health field who owns a ham license in June 2000, later to be opened to “patients.”

Do you remember trying to find the hotel in Chicago that began on the 14th floor of a downtown bank building? Or Bruce KM2L confronted by his double at the 2014 Dayton Ham Fest....or the coyotes waiting at the door at the desert restaurant in El Paso, Texas?
INVENTION...The idea of wireless communication predates the discovery of “radio” with experiments in “wireless telegraphy” via inductive and capacitive induction and transmission through the ground, water, and even train tracks from the 1830s on. James C. Maxwell showed in theoretical and mathematical form in 1864 that electromagnetic waves could propagate through free space. It is likely that the first intentional transmission of a signal by means of electromagnetic waves was performed in an experiment by David Hughes around 1880, although this was considered to be induction at the time. In 1888 Heinrich Hertz was able to conclusively prove transmitted airborne electromagnetic waves in an experiment confirming Maxwell’s theory of electromagnetism.

After the discovery of these “Hertzian waves” (it would take almost 20 years for the term “radio” to be universally adopted for this type of electromagnetic radiation) many scientist and inventors experimented with wireless transmission, some trying to develop a system of communication, some intentionally using these new Hertzian waves, some not. Maxwell’s theory showing that light and Hertzian electromagnetic wave were the same phenomenon at different wavelengths led “Maxwellian” scientists such as John Perry, Frederick Trouton and Alexander Trotter to assume they would be analogous to electrical signals and the Serbian American engineer Nikola Tesla to consider them relatively useless for communities since “light” could not transmit further than line of sight. In 1892 the physicist William Crookes wrote on the possibilities of wireless telegraphy based on Hertzian waves and in 1893 Tesla proposed a system of transmitting intelligence and wireless power using the earth as the medium. Others, such as Amos Dobear, Sir Oliver Lodge, Reginald Fessenden, and Alexander Popov were involved in the development of components and theory involved in the transmission and reception of airborne electromagnetic waves for their own theoretical work as a potential means of communication. \n
Over several years starting in 1894 the Italian inventor Guglielmo Marconi built the first complete commercially successful wireless telegraphy system based on airborne Hertzian waves (radio transmission). Marconi demonstrated application of radio in military and marine communications and started a company for the development and propagation of radio communication services and equipment

19th Century...The meaning and usage of the word “radio” has developed in parallel with developments within the field of communications and can be seen to have three distinct phases: electromagnetic waves and experimentation; wireless communication and technical development; and radio broadcasting and commercialization. In a 1864 presentation, published in 1865, James Clerk Maxwell proposed his theories and mathematical proofs on electromagnetism that showed that light and other phenomenon were all types of electromagnetic waves propagating through free space. In 1886-88 Heinrich Rudolf Hertz conducted a series of experiments that proved the existence of Maxwell’s electromagnetic waves, using a frequency in what would later be called the radio spectrum. Many individuals— inventors, engineers, developers and businessmen—constructed systems based on their own understanding of these and other phenomenon, some predated Maxwell and Hertz’s discoveries. Thus “wireless telegraphy” and radio wave-based systems can be attributed to multiple inventors. Development from a lab demonstration to a commercial entity spanned several decades and required the efforts of many practitioners.

In 1878, David E. Hughes noticed that sparks could be heard in a telephone receiver when experimenting with his carbon microphone. He developed this carbon-based detector further and eventually could detect signals over a few hundred yards. He demonstrated his discovery to the Royal Society in 1880, but was told it was merely induction, and therefore abandoned further research. Thomas Edison came across the electromagnetic phenomenon while experimenting with a telegraph at Menlo Park. He noticed an unexplained transmission effect while experimenting with a telegraph. He referred to this as etheric force in an announcement on Nov. 28, 1875. Elihu Thomson published his findings on Edison’s new “force”, again attributing it to induction, an explanation that Edison accepted. Edison would go on the next year to take out US Patent 465, 971 on a system of electrical wireless communication between ships based on electrostatic coupling using the water and elevated terminals. Although this was not a radio system the Marconi Company would purchase the rights in 1903 to protect them legally from lawsuits.
At a wedding ceremony, the pastor asked if anyone had anything to say concerning the union of the bride and groom. It was their time to speak or forever hold their peace. The moment of utter silence was broken by a young beautiful woman carrying a child. She started walking toward the pastor slowly. Everything quickly turned to chaos. The bride slapped the groom. The groom’s mother fainted. The groomsmen started giving each other looks and wondering how to help save the situation. The pastor asked the woman, “Can you tell us why you came forward?” What do you have to say?” The woman replied, “We can’t hear in the back.”

A guy goes ice fishing for the first time. All of a sudden, he hears a voice, “There are no fish under the ice!” He ignores it and moves to another area, cuts a hole, and tosses his line in. Again, he hears the booming voice: “There are no fish under the ice!” He nervously looks up and asks, “Lord? Is that you?” "No, this is the rink manager!"

Here’s all you have to know about men and women. Women are crazy...men are stupid. And the main reason women are crazy is that men are stupid.

My boyfriend and I broke up. He wanted to get married, and I didn’t want him to.

Why do blondes smile when lightning flashes? Because they think their picture is being taken.

An airliner was starting its descent and the pilot had forgotten to turn off the P.A. system. “As soon as I clock off,” he said, “I’m going to have a nice cold beer and then blast that flight attendant.” The horrified flight attendant made a dash toward the cockpit, but tripped over a little old lady sitting in the aisle who whispered, “There’s no need to hurry love, he said he was going to have a beer first!”

ON THEIR WEDDING NIGHT...the young bride approached her new husband and asked for $20 for their first lovemaking encounter. In his highly aroused state, her husband readily agreed. This scenario was repeated each time they made love for more than 30 years, with the woman saying, “I need to have a nice cold beer and then blast that flight attendant.” The horrified flight attendant made a dash toward the cockpit, but tripped over a little old lady sitting in the aisle who whispered, “There’s no need to hurry love, he said he was going to have a beer first!”

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Little Larry, skipped kindergarten class to attend a horse auction with his father. He watched as his father moved from horse to horse, running his hands up and down the horse’s legs and rump, and chest. After a few minutes, Larry asked, “Dad, why are you doing that?” His father replied, “Because when I’m buying horses, I have to make sure that they are healthy and in good shape before I buy.” Larry, looking worried, said, “Dad, I think the UPS guy wants to buy Mom…”
MEMORIES OF YEARS AGO
IN MARCO
Our History Book

Bruce Small, KM2L
Marco Historian

30 YEARS AGO IN MARCO
The July-August 1986 MARCO Newsletter reported on Dick Doncaster WB3AJC’s over the air assistance to a, the injured crew member of a boat off the coast of Columbia. The crew member had sustained a serious injury to his arm, and Dick provided advice on managing the situation until he could be evacuated.

Editor Ed Briner WA3TVG chided the group’s members on their lackluster participation in the numerous scheduled nets and asked where the hell is everyone at 7.

Twenty Five years ago In MARCO
Twenty years ago in MARCO

Ten years ago in MARCO
To lead off the July 1996 MARCO NL, Ed Briner WA3TVG once again decades the poor participation in the scheduled nets. The number of sessions had been reduced from 12 per week to 5, but this did not translate into more check-ins.

Ron Levy K2AIO published an editorial in the NJDXA Newsletter which was reprinted for MARCO members. Dr. Levy saw the Internet as a great threat to the future of ham radio and urged us to plan for our survival.

Dick Brown, then W4VN/5 and later W5 Anthrax Anthrax, reviewed mad cow disease for the membership.

Fifteen years ago in MARCO
The August 2001 issue of the MARCO Newsletter featured a recap of the recently completed annual meeting in Clearwater, FL. Attendees included W6CS, N5RTF, AE4BX KF4DCK, KD4GUA, WB5D, W4TDAD, KM2L, WA1HE, WB3FTJ, K3MBW, K3FP, KQ4IC, KZ4P, N3EL, KC9CS, assorted spouses, and plenty of rain. Our scheduled speaker was grounded in DC due to bad weather, so we did a fine job of entertaining each other at the banquet.

The Hoenigs WB3FTJ and N3MBW provided a copy of the recently adopted MediShare mission statement and organizational description.

We noted with sadness the passing of MARCO founding member Bill Sprague WA6CRN and also Eldon Snow WA7RPR and Ansel Martin KC2AS.

Bruce Small KM2L described his experiments with asymmetrical vee-beams. Bottom-line: They work better than one might think.
of the first life on Earth. Deep amid the bases, the As, Ts, Gs, and Cs that made up those DNA sequences they noticed recurring segments that were the same back to front and front to back—palindromes. They named these clusters of repeating palindromes Crispr.

In 2005 a Danish biologist Barrangou spotted some of those same palindromic repeats in *Streptococcus thermophilus*, the bacteria that his company used to make yogurt and cheese. He noticed that the unidentified stretches of DNA between Crispr’s palindromes matched sequences from viruses that had infected their *S.thermophilus* colonies. Like most living things, bacteria get attacked by viruses—called bacteriophages (phages). He went on to show the segment served an important role in the bacteria’s defense against the phages, a sort of immunological memory. If a phage infected a microbe whose Crispr carried its fingerprint, the bacteria could recognize the phage and fight back. His colleagues realized they could save their company some money by selecting *S.thermophilus* species with Crispr sequence that resisted common dairy viruses.

As more researchers sequenced more bacteria, they found Crisprs again and again—half of all bacteria had them. Even stranger, some of Crispr’s sequences didn’t encode the eventual manufacture of a protein, as is typical of a gene, but instead led to RNA—single-stranded genetic material. (DNA is double-stranded.)

That pointed to a new hypothesis. Most present-day animals and plants defend themselves against viruses with structures made out of RNA. So a few began to wonder if Crispr was a primordial immune system? Jill Banfield, at UC Berkeley, who had found Crispr sequences in microbes she collected from acidic, 110-degree water from the defunct Iron Mountain Mine in Shasta County, CA., but she needed help.

Luckily, one of the country’s best-known RNA experts, a biologist Jennifer Doudna who worked at the same campus took notice. Doudna had made important discoveries revealing the three-dimensional structure of complex RNA molecules that could, like enzymes, catalyze chemical reactions. The mine bacteria piqued Doudna’s curiosity, but she was unable to connect the bacterial immune system to the one plants and animals use. Still, she thought the system might be adapted for diagnostic tests.

Banfield wasn’t the only person to ask Doudna for help with a Crispr project. In 2011, Doudna was approached by Emmanuelle Charpentier, a microbiologist at Umea a Swedish university. By sharing their research they discovered that a particular enzyme—namely Cas9—could function as a powerful pair of molecular scissors. Crispr, they discovered, could be programmed to target a specific section of DNA by loading it with its matching RNA sequence. Once paired, the Cas9 enzyme would cut out the matched section.

“I had this gut feeling that this could be something really, really exciting said Doudna.

The two teams moved quickly to publish their findings.

Meanwhile, Feng Zhang, a molecular biologist at the Broad Institute of MIT and Harvard was able to utilize Doudna and Charpentier’s work in his human cell research and was awarded the patent on Crispr-Cas9 as a method to edit genomes.

This started a firefight as the Doudna group had filed for patents earlier. The stakes are high. Any company that wants to work with Doudna’s work in his human cell research and was awarded the patent on Crispr’s sequences didn’t encode the eventual manufacture of a protein, as is typical of a gene, but instead led to RNA—single-stranded genetic material. (DNA is double-stranded.)

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In Summary: We now have the power to quickly and easily alter DNA. It could eliminate disease. It could solve world hunger. It could provide unlimited clean energy AND it could really get out of hand.

Information for the above was taken from Alice Park’s fine article “Life, The Remix” which appeared in the July 4th edition of Time Magazine and Amy Maxmen’s fine article which appeared in the August 15 edition of Wired Magazine & the Internet.

+++++ PAST PRESIDENTS OF MARCO ++++++

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Listing of past Presidents on Page 3
OVARIAN CANCER

Ovarian cancer is the most lethal gynecologic cancer. It affects women of all ages, but is most commonly diagnosed in those 55 to 64 years of age. About 90% of tumors are epithelial ovarian cancers that occur in the cells on the outer surface of the ovaries mostly in postmenopausal women. Germ cell tumors, which occur primarily in women in their early 20s from cells that form the eggs are found in less than 2% of ovarian tumors. About 1% are stromal cell tumors which begin in the tissue cells that hold the ovary together and produce hormones, and occur at any age.

Early diagnosis when tumors are small and still confined to the ovaries is the most important prognostic factor. Only about 45% of women with ovarian cancer survive five years or longer. The 5-year survival rate is 92% for women with stage I epithelial ovarian cancers but only 17-18% for those with advanced stage tumors. The incidence and mortality rates have decreased slightly over the previous 40 years which may be because of increasing rates of hormonal contraceptive use and decreasing postmenopausal hormone use.

Risk Factors: Genetic syndromes...Familial genetic syndromes are the strongest known risk factors, accounting for about 10% to 12% of ovarian cancers. BRCA gene mutations are involved in about 10% and hereditary nonpolyposis colorectal cancer (Lynch syndrome) is involved in 3% of cases.

BRCA1/BRCA2 tumor suppressor gene mutations are the cause of hereditary breast and ovarian cancer syndrome, which affects one in 300 to 800 women, but the prevalence may be higher than one in 50 among Ashkenazi Jews. In families with a history of ovarian or breast cancer, BRCA mutations are responsible for about 90% of cases of ovarian cancer. The estimated lifetime risk of ovarian cancer is 40% in BRCA1 mutation carriers and 18% in BRCA2 mutation carriers. Because of incomplete penetrance, however, 35% to 85% of BRCA carriers do not develop ovarian cancer and about 25% never develop breast cancer.

Other Risk Factors: Because only 10% to 12% of cases have a genetic basis, most women with ovarian cancer do not have a relevant family history. Known nongenetic risk factors are age over 40, postmenopausal hormone therapy (particularly for more than 5 years), obesity or weight gain, not having children or breastfeeding, and having had breast cancer. Previous tubal ligation & or hysterectomy will cut risks in half. The roles of diet, nonsteroidal anti-inflammatory drugs, perineal talc exposure and smoking are controversial and the effect of infertility drug treatment (Clomid) is uncertain. Family history of colon or breast cancer will increase the risks.

Presentation...About 60% of women with ovarian cancers have metastatic disease at the time of diagnosis because early stage disease is usually asymptomatic. Late-stage ovarian cancers often have symptoms, but they are usually nonspecific and not recognized as symptoms of cancer. In a survey of 1,709 women with ovarian cancer, 72% reported having back pain, fatigue, painful sex, abdominal pain/boating, constipation or urinary symptoms for three months or more before diagnosis; 35% reported symptoms for six months or more.

H & P...Rectovaginal exam with the bladder empty to evaluate for pelvic and abdominal masses. The Px should assess for metastatic disease, including inguinal & supraclavicular lymphadenopathy, pleural effusions and umbilical mass. A transvaginal ultrasonography or CT scan which can assess ovarian architecture and vascularity, differentiating cystic from solid masses, and detect ascites. Lymph node biopsy & pelvic laparoscopy may help.

Lab Testing: CBC, chemistry profile and serum biomarkers including Cancer antigen (CA125) is the biomarker commonly tested, but its diagnostic ability depends on disease risk and stage at the time of presentation. CA 125 is elevated in about 80% of epithelial ovarian cancers overall but in only 50% of early stage disease. Furthermore, CA 125 can be elevated in benign conditions such as endometriosis and fibroids. The value of CA 125 is higher in postmenopausal women than younger ones, partly because of the higher pretest probability of cancer and lower prevalence of the benign lesions after menopause.

There are other serum biomarkers under investigation including human epididymis protein 4 (HE4), a glycoprotein expressed in about 1/3 of ovarian cancers that lack CA 125. HE4 is used primarily to assess disease progression and monitor for recurrence. However, a positive HE4 or CA 125 level during the diagnostic process may improve the sensitivity and specificity of the six item symptom index in 83.8% and 98.5%, respectively.

Biomarkers for nonepithelial ovarian cancers include inhibin A,B for stromal tumors, and serum a-fetoprotein and quantitative beta human chorionic gonadotropin (HCG) for germ cell tumors.

Indications for Referral...Women who have a high-risk family history should be referred for genetic testing. Women whose evaluation suggests ovarian cancer (based on imaging or lab test results) should be referred to a gynecologic oncologist. A serum CA 125 level greater than 200U per ml, in a premenopausal woman or any elevation in a postmenopausal woman, nodular or fixed pelvic masses, evidence of metastasis, or unexplained ascites are definite indications for referral. Referral to a gyn oncologist is also recommended for women with suspicious or complex adnexal masses on transvaginal ultrasonography that persists on short-interval (one to three months) follow-up imaging: premenopausal nonpregnant women with an ovarian value greater than 20 ml; or women with ovarian volume greater than 10 ml after menopause.

Treatment: Surgery is the primary treatment. It is used for staging and cytoreduction (debulking), but it is potentially curative in disease confined to the ovaries. Fertility sparing surgery involving unilateral salpingo-ophorectomy, preserving the uterus and contralateral ovary is an option for younger women. Chemo & radiation is used in advanced cases mainly for palliation.

Screening: Transvaginal ultrasonography and CA 125 testing are the two most studied ovarian cancer screening modalities.

Prevention: Risk-reducing bilateral salpingo-ophorectomy is the most effective prophylactic treatment for BRCA carriers. It reduces ovarian cancer risk by 70-100%, but a small risk of developing peritoneal carcinomatosis remains. This procedure induces premature menopause with it’s attendant risk and limits reproductive capacity. Other preventive measures are avoiding long-term (greater than 5 years) postmenopausal hormone therapy and maintaining a healthy lifestyle. Long-term hormonal contraceptive use is a promising chemo preventive approach even for BRCA1 carriers, and especially in women with early menarche, women who delay first pregnancy, or women who are infertile.

Staging:

Stage I...cancer found only in ovary or tubes.
Stage Ib...cancer found in one ovary or tube.
Stage Ic...cancer found in both ovaries or tubes.
Stage II...cancer has burst out of ovary or tubes.
Stage IIa...cancer has spread to the peritoneum but not lymph nodes.
Stage IIb...cancer has spread to the uterus.
Stage III...cancer has spread to the bladder & sigmoid.
Stage IV...cancer has spread to the peritoneum & lymph nodes.
Stage IV...cancer has spread all over body.
A New Empire for a New Century

Most people believe Guglielmo Marconi invented the radio, he did not. His contribution—however great—was actually the wireless telegraph, which permitted the transmission of coded messages through the air. Radio made a huge leap beyond the coded confines of the telegraph. It brought to the human ear the sounds of the human voice and music, sounds it seemed to pluck magically from the air. The telegraph and telephone were already instruments for private communication between two individuals. The radio was democratic; it directed its message to the masses and allowed one person to communicate with many.

The new medium of radio was to the printing press what the telephone had been to the letter: it allowed immediacy. It enabled listeners to experience an event as it happened. Rather than read, about Lindbergh meeting President Coolidge after his flight to Paris, people witnessed it with their ears and imaginations; rather than learn of the Hindenburg explosion the next day, people felt the power of the inferno the moment it occurred. Soon the human ear and imagination became inextricable: people wanted more of everything—music, talk, advice, drama. They wanted bigger and more powerful sets, and they wanted greater sound fidelity. Radio became a “godlike presence,” as one essayist described it, which had taken over American lives and homes.

Radio as we know it was created by three men of genius, vision, determination and fascinating complexity: Lee de Forest, the self-styled “father of radio, whose invention of the audion made long-range reception possible and provided the foundation for the modern electronics industry; Edwin Howard Armstrong, the resourceful inventor who created the unique system of FM broadcasting and whose discoveries for the framework for virtually all radio transmission and reception today; and David Sarnoff, the immigrant from Russia who rose from delivering telegrams for the Marconi Company to head the Radio Corporation of America (RCA). We never turn on a television, tune a radio or listen to a voice from space without being touched by one of Armstrong’s or de Forest’s inventions, inventions that Sarnoff was responsible for manufacturing and selling.

In this world of high-definition television bringing satellite-transmitted pictures from around the globe, we tend to think of radio as merely a quaint prologue to the present age. Radio was in fact the first modern mass medium prologue to the present age. Radio made America into a land of listeners, entertaining and educating, angering and delighting, and joining every age and class into a common culture. The various entertainers in the thirties and forties— the “golden age” of broadcasting—captured the imaginations of millions. People talked then as much about the schemes of Amos and the Kingfish or the visitors to Fibber McGee and Molly as they talk today about the latest guest on “Donahue” or Vanna White’s dresses. Radio created the visitors to Fibber McGee and Molly as they talk today about the age” of broadcasting.

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From his office at 826 Broadway in New York City, Dr. Alfred Sanden was selling his electric belt that cured “impotency, lame back, nervousness, varicose,” among other maladies. “It gives you strength, because Electricity is Strength,” the doctor confidently declared. Electricity was lighting cigars, running automobiles, and raising people in elevators higher than ever. Many people believed in an alchemy of the electron. Not unlike the scientist and student of natural philosophy Dr. Frankenstein, they hoped that the electron would enable them to create an ideal servant to do the work of the world. The electron would bring humanity to a new golden age.

In September 1899, Guglielmo Marconi, a twenty-five-year-old from Italy, arrived in New York with his recent invention—a wireless telegraph that, he promised, would report the international yacht races off Sandy Hook, New Jersey. Two steamships outfitted with his equipment would follow the yachts and send messages on the yachts’ progress to a nearby shore station. The previous April, Marconi had prepared the U.S. for his visit by explaining the origin and development of his telegraph system in the North American Review. “The possibilities of wireless radiations, “Marconi concluded, “are enormous.” He was proving this almost daily. That very month he had successfully transmitted a message from France to England. American newspapers reported that the London Times had printed a brief dispatch from France. That message had come by wireless was news. The next month, at an electrical show in New York’s Madison Square Garden, engineers gave small-scale demonstrations of Marconi’s wireless telegraph apparatus to enthusiastic and awed onlookers.

Wireless, Marconi and others realized, promised a revolution in communication. Using electromagnetic waves, Marconi had been able to send messages over great distances at the speed of light. The telephone and telegraph could do the same thing, of course, but they were tethered to places wires could reach. The new technology suggested that a person in a remote corner of Kansas—or on a ship at sea—might someday be able to send an unostentatious message to a person across a continent or across the water. Wireless massages would shrink the globe and change the pace of the people who lived on it.

Communication before wireless had been limited by mechanics and costs. In 1899, it cost 2 cents and took six days for a one-ounce letter to travel from New York to San Francisco; a ten-word telegram sent and delivered by Western Union moved a great deal faster but cost $1. Rates to foreign countries were even higher. A half-dozen letter sent from N.Y. to London cost 5 cents and, under the most favorable conditions, took nine days; a telegram cost 25 cents a word. Marconi hoped someday to bring those costs down, but he never saw the possibilities of sending voices through the air.

Though few wished to acknowledge it in 1899, America’s position in the world was changing from a parochial, isolated nation into a significant world power. The nation had just won a victory over Spain in what Sec.of State John Hay once called a “splendid little war.” That victory set the tone for much of the close of the century. Of short duration (about 111 days), the Spanish-American War cost little (about $250 million) produced new territories (the Philippines, Puerto Rico, & Guam) and claimed but few casualties. A new century awaits the U.S.
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