It is my pleasure to bring you the 10th edition of the Report. This report covers some interesting aspects of cancer, arthritis, etc. The research for many of these reports overlap with my work with the American Cancer Society in cancer survivorship and updating screening guidelines for cancer. I have begun collaboration with the dental profession in creating guidelines for dentists to follow up cancer patients after treatment. For those that live here, congratulations on another fine year for the Sid Weber Memorial Cancer.

I reported on Vitamin D last month and will report on the most common antioxidants in this month. One thing we all share is aging….so I will report on osteoarthritis, and continue with the series on autoimmune diseases with rheumatoid arthritis and contrast it to osteoarthritis, the wear and tear arthritis.

Subjects for November:

I. Brief Information On Recent Advances in Medical Issues:

Melanoma advances//shingles vaccine//new definition of heart attack//smoking pot and IQ// Shingles vaccine//cooling cap to prevent chemo hair loss// signs of possible cancer in men// “what did you say?”-hearing loss// and carpal tunnel syndrome
II. How Can Your Teeth And Gums Play A Role In Systemic Disease And The Treatment of Cancer

III. Anti-Oxidants—Are Supplements As Good As The Foods That Contain Them?

IV. Osteoarthritis vs. Rheumatoid Arthritis-Part 1—Diagnosis, signs and symptoms

I. Brief information on Late Breaking Medical Issues

A. New gene mutation found in half of melanoma patients

An exciting breakthrough has been discovered about melanoma patients. There is a gene mutation called BRAF, which is sensitive to a new drug that will extend the life of melanoma patients with advanced disease. This genetic finding is one of the first discoveries that give new hope for these patients with the potentially fatal skin cancer. Half of these patients have been found to have this gene mutation, and this is just one example of the breakthroughs in genetic cancer research. Most women are aware of the BRCA gene in breast cancer that if found in breast cancer patients points to the need for their female family members to be tested. These findings amplify the need for continued support from our government and organizations like the American Cancer Society and the Komen Foundation to emphasize increased cancer research funding in years to come.

B. Shingles Vaccine

Today, I received my shingles shot. If you never had chicken pox, you do NOT need the vaccine. Three friends in the last week have come down with shingles, and they are in pain!! The fact that only 7.6% receive this shot over 50 is horrible. There is a reason. The insurance companies only partially cover it or not at all. Walgreen’s charges $219, but I paid $86 (Medicare), and my wife paid full price (United Health). Here is the other thing....you have to go to your doctor’s office and get a prescription and take it to Walgreen’s (CVS in Clayton, Georgia doesn’t provide it). So with having to get a prescription and pay quite a bit, one can see why people aren’t jumping to get vaccinated. BUT, if you talk to someone with shingles, you will get the shot that day!!! Here is the other factor...it only prevents shingles in 60%, but the main reason to get the shot is to prevent the post-herpetic neuralgia, which is AWFUL! It is usually permanent pain, and to prevent that is worth the time and money to get the shot. The reason for the prescription is, there are those that shouldn’t get the shot. Next month, I will go into the herpes zoster virus infections more extensively. For now, see your doctor and
get a prescription for the vaccine, if you are a candidate (over 50) without serious disease currently.

C. New definitions just out for the diagnosis of a heart attack—myocardial infarction

The American Heart Association has redefined what factors are necessary to make the diagnosis of a heart attack.

This is very technical, but I will simplify this for most of you: a) there is a special chemical called troponin that is elevated in heart attacks. This chemical is made by heart muscle cells, and when there is major damage to these cells, this chemical is secreted in higher amounts. b) symptoms of heart pain (ischemia)—chest or pain to the neck and jaw, or down the left arm. c) new EKG (electrocardiogram) evidence of certain abnormalities on certain electrical waves seen (ST/T wave changes or acute left bundle branch block (again this an electrical sign by the heart muscle that damage is occurring). d) pathologic Q waves on the EKG (more electrical abnormalities) e) cardiac imaging procedures show how well the heart muscles is working—in a heart attack, there will be abnormalities in the motion of the heart wall. f) angiography (dye study-heart cath) evidence of a clot blocking a coronary artery, which would of course cause heart muscle damage. The bottom line is to dial 911 and get to the emergency room ASAP to have blood tests, an EKG, and if necessary cardiac imaging studies and/or a heart catheterization to diagnose a heart attack. The earlier you get help, the better chance you have to recover.
D. Heavy marijuana use linked to a decrease in IQ for 38 year olds

A new study reports that smoking pot at least 4 times a week starting in the later teenage years, will show a decrease in IQ by the age of 38. The reason I bring this up is that there is continued movement to legalize pot. 3 states (Wash., Ore., and Colo.) are voting for its legalization as they vote for a president. I was in Seattle recently, and a rally there to support the legalization was attended by 50,000 people. There are new studies to show that the chemical in pot may prevent relapses in patients with multiple sclerosis, and there are many other illnesses that have medical indications for the legal use of pot, especially patients with chronic pain, nausea from chemotherapy, etc. Medical use of cannabis is appropriate. You decide about legalization? It is a $2 billion dollar industry already. It is still illegal according to the federal government.

E. Cooling cap saves hair in patients receiving certain chemotherapy agents.

The Penguin cap has been found to be useful in keeping the hair of patients when undergoing chemo. The cap on the scalp must maintain a constant temp of 40 degrees. Start with soft gel bags that go into the cap from the freezer or from a cooler with dry ice. You need 2 caps to change the caps every 30 minutes. You must have an infrared thermometer to check the temp inside the cap. 50,000 have used it, and it is currently being used in 24 medical centers throughout the country. This should not be used in leukemia and lymphoma, and there are two drugs that aren’t recommended for — anthracyclines, and taxanes. Ask your oncologist, and check this information on the internet. The upfront cost is about $1500. Hair starts to be lost 2-3 weeks into the chemo treatments, and usually stops in 6-8 weeks. It takes about 2 months for hair to start to return after chemo is stopped, and there are recommendations from salons that biotin and other scalp treatments help the hair return in a more healthy state, as these treatments supposedly stimulate the hair follicle. Hair color on newly grown hair is not recommended for 3 months.

F. Symptoms of possible cancer in men that should not be overlooked

1) A breast mass—even though it is uncommon, breast cancer does occur in men, and it is quite aggressive. Early diagnosis is a must. Also changes in the nipple should alert a man to get checked. 2) Persistent pain—ANYWHERE IN THE BODY—it can be an early sign of cancer. 3) A change in the testicles—any lumps, swelling, or change—this should be part of a yearly exam (ask your doctor to include it, because a lot don’t do it). 4) A change in lymph nodes—any swelling in the neck, armpit, or groin should alert a man to get checked. Lymph nodes are a network of glands that are throughout our entire bodies. These are the “policemen” of our body catching infection or cancer from spreading to the rest of the body. I diagnosed my own cancer by feeling a node (non-tender) in my neck before I ever had any symptoms in my throat. 5) An unexplained weight loss 6) Fever for no reason—can occur in lymphoma and leukemia. It also can indicate spread of cancer. 7) Abdominal pain and depression is frequently associated with pancreatic cancer 8) A persistent cough especially in a smoker (longer than
3 weeks) could indicate lung cancer. It is especially important to get checked if a man is coughing up blood-tinged mucus. 9) Fatigue for no reason—can be a sign of spread of cancer, leukemia, colon and stomach cancer. 10) Trouble swallowing—especially in esophageal and throat cancer. 11) Changes on the skin, moles that change, scaly sensitive areas on the skin. 12) A change in the lining of the mouth (white patches) or a loose tooth should be checked by a dentist or doctor. 13) Urinary symptoms—it may be infection, an enlarged prostate, or cancer. 14) Persistent indigestion—esophageal cancer can come from chronic reflux. 15) Persistent hoarseness—possible laryngeal cancer.

G. 17% of Americans report some degree of hearing loss.
There are 4000 cases of sudden hearing loss a year in the USA, and it is a medical emergency if you want a chance of getting it back. See an ENT doctor at once. Turning up the TV, having to ask people to repeat what a person says, can’t hear clearly in a crowd, hear noise in your ears or ringing, becoming more of a recluse because you can’t hear, refusing to admit you have a hearing problem and won’t get tested, had your doctor look in your ears for excessive ear wax, can’t understand words even though you can hear sound??? Consider a hearing test! Most hearing appliance dealers can test you, or you can see an ENT doctor or go to a hearing center. Your family and friends will appreciate it!!
One out of five, who need a hearing aid, get tested for one!

Prevention of noise exposure is the number way to keep your hearing. Turn down the smart phone, music, wear hearing protection when being exposed to noise, wear hearing protection when shooting firearms, etc. PROTECT YOUR HEARING!

H. Carpal Tunnel Syndrome
This syndrome affects thousands of people characterized by pain, tingling, and pressure into the hand because of compression of a nerve (the median nerve) as it routes through the wrist that also has the tendons from the muscles in the forearm that controls the fingers. All of these route through the wrist and is surrounded by a tough non-elastic wrap of tissue called the transverse carpal ligament. As this area swells with over-activity (computer work, construction, etc.), the nerve is compressed and causes these above symptoms. Slide 1 below shows a normal wrist cross-section.
There 7 Signs Of **Carpal Tunnel Syndrome**- 1-numbness of the thumb and first fingers, 2) tingling or “pins and needles” of the hand 3) ache in the forearm to the elbow 4) stiffness of the fingers in the morning 5) hand movements impaired as it worsens 6) pinch test with loss of strength of first finger and thumb-dropping things; unable open a jar 7) positive Tinel’s sign-forcefully flexing the wrist will make the hand go numb or cause tingling.

The diagnosis is confirmed with nerve testing. EMG tests the speed of conduction of the nerve. The Tinel’s test flexing the wrist forcefully for 2 minutes will elicit numbness and tingling in the hand. Conservative treatment includes splints to keep the wrist straight and take the tension off the compartment in the wrist. Steroids orally or by injections may help with arthritis type anti-inflammatory meds, and most importantly stopping the motion that is causing the problem. Acupuncture, massage and exercises may also be helpful. After over-use, consider icing the wrist. There are medical issues that may be causing excessive fluid in the tissues, like hypothyroidism, lupus, diabetes, fluid retention because of poor kidney function, pregnancy, etc. These conditions must be looked for and treated before more than conservative management is considered.

Surgical management, when necessary, includes cutting the carpal ligament that is causing the compression the median nerve. Whether an open or endoscopic surgery is performed, pick a very experienced surgeon.
Prevention
Frequent breaks and exercise of the wrist throughout the day is important. Be sure your work station is properly put together to maximize prevention of problems due to repetitive motions.

II. Dental issues affecting your health

Summary—A healthy mouth makes sense to anyone, but did you know that dental diseases can aggravate or even cause systemic disease (diseases of the body). The mechanism of action regarding this is outlined. Gingivitis and periodontal disease is defined. These are the diseases that must be prevented with daily brushing and dental flossing plus dental cleanings and regular checkups. Also, it is pointed out that the dentist is part of the cancer team, since oral cancer can be diagnosed in the dental office, and the mouth suffers with cancer treatments. The dentist can manage these in cooperation with the oncologists.

A. The number of bacteria in a normal mouth is in the trillions even with good hygiene measures. With disease in the teeth and gums, that number jumps exponentially. Most people would be surprised that neglecting their teeth have serious consequences beyond bad
teeth and gums. Research has proven that unattended inflammation in the gums and poor dental hygiene create inflammatory markers creating systemic disease, in the heart, blood vessels, and other organs (described in previous record—www.themedicalnewsreport.com under the archives link). These markers are called cytokines that are keyed off by a reaction to infection and have now been proven to be the initial cause that starts the atherosclerotic process and cardiovascular heart disease. Infection in the gums (gingivitis-see slide) also can cause endocarditis, an inflammation of the heart valves. In fact, the continuation of gingivitis is periodontitis (see slide 1 and 2 below), and it has been proven to cause bacteria to get into the blood stream (septicemia) influencing the entire body with inflammation particularly in the blood vessels and heart. All of these inflammatory markers can be recovered in the gums of people with this kind of disease.

A. There are many diseases that are influenced by the mouth. Diabetes, and autoimmune diseases can be negatively affected by gum and dental diseases. Even pregnancy can be affected (premature births and low birth weight babies).

B. Gingivitis (slide 3) can seed the blood stream with bacteria. Periodontitis (slide 2) is the extension of gingivitis; the gums recede and the teeth become exposed below the gumline leading to more infection resulting in loose or even loss of teeth.

C. The mouth has influence on cancer, and if those same inflammatory markers are involved in cancerogenesis, it is reasonable to believe that preventing dental disease may help prevent cancer. I have reported previously that oral HPV (human papilloma virus) infections occur in thousands of young people and is the cause of a significant percentage of oral and oropharyngeal (palate, tonsil, base of tongue) cancers.
D. Neglected teeth and gums can increase the risk of other cancers—49% more likely to develop kidney cancer, 54% more likely to develop pancreatic cancer, and a 30% increased risk of blood cancers. (Med-Link)

E. Not only does the mouth have great influence on systemic disease, but CANCER TREATMENT HAS A MAJOR INFLUENCE ON THE MOUTH. Most of this information is well known by dentists that evaluate and follow cancer patients. Radiation treatments and chemotherapy have a serious impact on the lining, teeth, and gums. Even the jaws are involved if radiation is used to treat a cancer in oral cavity or throat.

F. Slide 3 below shows a cancer on the side of the tongue (in the circle). This should be able to found by a dentist if they are doing screening exams for cancer. If your dentist is not doing screening for cancer, ask him to. Additionally, a cancer in the tonsil (slide 4) shown in the right tonsil is another common oropharyngeal cancer that if diagnosed early has a good prognosis (chance of cure). An ENT specialist can see all the way down the throat with a mirror exam or using an endoscope. These were two of the most common cancers I removed in my practice.

Slide 3- tongue cancer

Slide 4 (above) cancer right tonsil

Slide 5 shows leukoplakia of the tongue
A precancerous condition is frequently seen in those that dip snuff or chew tobacco called leukoplakia (slide 5), and if not removed (usually with a laser in my practice), it would become cancer, requiring much more aggressive treatment. These precancerous lesions can be easily diagnosed by a dentist. Of course, stopping using smokeless tobacco would help.

H. The influence of cancer treatment on the mouth.

A disease called mucositis, which is an infection that is very painful, and caused by an imbalance of normal and pathogenic bacteria which is created by chemotherapy and radiation therapy to the mouth, throat, etc. Also treatments change the acid level in the mouth coupled by decreased saliva with secondary infections of fungus (thrush) can occur (slide 6-above). Saliva is full of protective enzymes that kill harmful bacteria in the mouth normally, and when saliva is reduced or lost from radiation treatments or chemotherapy, one loses the protective enzymes, etc., resulting in dental caries (tooth decay) and other mouth problems.

During cancer treatment, preventative dental prophylaxis is a must, including frequent cleanings and daily fluoride rinses, dental irrigations with machines like the Water Pic system, and flossing. Close observation by a dentist is a must. Gum disease and mouth disease can increase in severity with chemotherapy, including bleeding, and even periodontal complications. That is why before any patient is going to be treated for cancer, a visit to a dentist is recommended. If there is dental/gum disease already present, treatment is necessary to prevent complications before cancer treatment if possible. Long term side effects are also very possible, so it is key to include the dental profession as member of the
cancer team. After radiation to the mouth, if a tooth needs pulling, hyperbaric oxygen treatments are necessary to prevent osteo-radionecrosis of the jaw.

I. Xylitol

Finally, it is known by the dental profession that xylitol, a simple sugar, does not feed bacteria in your mouth. It occurs naturally in fruits and vegetables. Bacteria can’t metabolize xylitol, like it can sucrose, glucose, and fructose. Since bacteria can’t metabolize xylitol, they can’t form the acid by-products that are created when bacteria thrive on regular sugar. It is this acid that creates tooth decay. 80% of the population experiences tooth decay by age 18 (National Center for Health Statistics). Why don’t we see more xylitol containing candy instead of sucrose and fructose?? GOOD QUESTION! Go to www.xlear.com or www.drjohns.com for xylitol containing food products. Ask your dentist about xylitol. We will report on what good dental hygiene should be and more about the mouth in the future.

III. Antioxidants—are supplements as good as the foods that contain them?

Summary: Antioxidants are ingested everyday in our diet, but $$ millions are spent on supplements because of advertising, word of mouth, and because people think if they take more and more antioxidants, it will prevent disease. There are those that have inadequate diets rich in antioxidants and may very well need supplements. Antioxidants are chemicals that naturally occur in fruits and vegetables. These are very important to combat disease. The mechanism of action is described, and the vitamins and minerals that have this action are discussed.

A. Antioxidants are very important substances we ingest daily, especially in fruits and vegetables. They combat a natural process when food is digested, called oxidation. With this process free oxygen radicals are created. They are also created by environmental substances that are taken into our body from tobacco byproducts, pollutants, meat, and saturated fatty foods. These free radicals can damage our bodies at the cellular level causing disease.

B. What is it about oxygen that can possibly be bad? We need it to breathe, to function, to live……but there are metabolic byproducts of oxygen that are harmful. These molecules have a negative effect on creating devastating chemical reactions that are involved in cardiovascular disease, type 2 diabetes, cancer, degenerative diseases,
autoimmune diseases, and even genetic disorders. If you listen to advertising or talk to some salesman in health food stores, you would swear that all these non-prescription “herbs and spices” are miracle substances. Research on drugs is funded primarily by Big Pharma (the pharmaceutical industry), and unless they can create a drug with a patent, there is no big money in spending millions on non-prescription substances. These antioxidants are not drugs, are not controlled by the FDA, and so the regulations on these substance are not optimal, in the sense assuring purity of substance, equal activity of the chemicals from each manufacturing company, lack of contaminants, fecal material from insects, effectiveness of one product vs. another, etc. You are at the mercy of the manufacture! The fungal meningitis comes to mind.

C. What are the major anti-oxidants? The most popular include vitamin A (vegetables), vitamin C (citric fruits), and vitamin E (fish, oils), zinc (meat), flavonoids (blue berries), and carotenoids (carrots and yellow vegetables). There are spices like turmeric (curry-helps diabetes) and lutein, and lycopene (tomatoes), anthocyanines (berries), one is resveratrol (berries and red wine). You have heard of most or all of these supplements, but did you know that we can take in all we need if we follow the ADA’s food consumption recommendations in fruits and vegetables (5 portions of each daily). If we follow these recommendations, we don’t need any of these in supplements! However, if you have certain diseases (digestive diseases) that interfere with absorption of these food ingredients, or can’t eat these food groups, you may have to rely on supplements. There is no scientific proof that is reproducible that proves we must take any of the above supplements if we are eating correctly. And they are not as good!

D. There are biochemical and physiologic reasons why our body could not function without ingesting or producing these antioxidants. Fortunately, our bodies can counter these reactions and render them nontoxic. External sources of byproducts of tobacco, enviornment pollution, heavy metals in our fish and water, hormonal additives, antibiotic additives, insecticides, etc., are ingested and create a real challenge for our bodies. Just increase fruits and vegetables in your diet, with less fatty meats, less hormonally stimulated beef, diary, poultry, processed meats and grilled foods, and you are doing as much as you can to stay healthy.

E. These free radicals cause oxidative stress and this process is thought to contribute in the development of many categories of disease, especially, neurodegenerative diseases (Alzheimer’s, Parkinson’s), diabetes, autoimmune disorders, cardiovascular disease and cancer.
F. Excessive intake of supplements will harm some of the body’s biochemical reactions and lead to worsening of diseases. Consult your doctor when you consider dietary supplements. Doctors need to know more about these chemicals, but they can be overwhelmed just staying up with prescription meds. Read on your own and discuss this with your doctor, because of possible interactions with those medications you are prescribed. It should be his decision in partnership with YOU!

G. For you exercise enthusiasts…listen up. There is little research to support taking antioxidant supplements to improve exercise tolerance. Exercise can increase oxygen consumption by 10 fold, which produces an excess oxidation and leads to muscular fatigue. There are inflammatory processes that occur after exercise which are necessary to take away damaged cells. Free radicals are used in this process, so not all free radicals are bad. Taking excessive supplements may interfere with normal recovery from exercise. Exercise can have great benefit, and is now thought to actually boost our immune system, combat cancer, assist in cancer treatment, recovery, and diminish the chance of recurrence. Diet and exercise and good hydration has never been proven to be so important, and yet we are the fattest country in the world!!

H. THE MOST COMMON ANTIOXIDANTS

**Vitamin C**- ascorbic acid has been hyped as a miracle drug since Dr. Linus Pauling promoted massive doses to treat all kinds of disease, and after many years of research, there is no substantial evidence that more than the USDA recommendations of 90mg/day for men, 75mg/day for women should be taken. The upper limits should not exceed 200mg/day for anyone as pointed out by several references.

**Vitamin A** – retinol is a very important vitamin for vision. The retina of the eye is dependent on Vitamin A to function. It is especially important for low light (night vision) and color vision. It is used on the skin in many products to turn the skin cells over faster and make it smoother. Vitamin A is made up of 4 carotenoids, the orange pigment in carrots, known as beta-carotene. Other functions include genetic functioning, immune system capability, embryo development, bone metabolism, blood formation, skin and cell health. It is one of the fat soluble vitamins (A,D, E, and K are the fat soluble ones) that require some fat in the stomach for these vitamins to be absorbed. If a person is a vegan, they may well need to supplement their diet, even though supplements have never been shown to be equally effective as the natural product. The RDA for adult males is 900 micrograms/day, and for women is 700 micrograms/day, with the upper limit for both at 3000 micrograms/day. There are interactions with certain chemotherapeutic agents, so be sure your medical oncologist...
knows what you are taking. High doses of Vitamin A have wrongly been recommended in cancer patients.

**Vitamin E-tocopherols** and 7 other compounds make up this vitamin, which can be found in animal and vegetable oils. This antioxidant stops the production of free oxygen radicals from forming when fat undergoes oxidation. Other functions include assistance with enzymes, gene expression, and neurological functions. It can also prevent platelets from helping with clotting, so you might want to stop this vitamin before surgery (ask your surgeon). It also protects lipids from degrading. It is used on scars to soften them, and in many cosmetic products. The RDA amount is 15mg/day for anyone over 14 years of age. There is poor science to support its use as a supplement, although there is ongoing research in the fields of neurological and cardiovascular disease.

**Zinc**—this trace mineral is one of the most important to biologic functioning. It is included in almost all multivitamins. It is thought to protect against premature aging of the skin and muscles. It assists the cell’s RNA and DNA. It speeds healing and is helpful in speeding healing. I used it in my practice for patients who lost their sense of smell. It is important to the action of more than 100 enzymes. The use in helping the common cold is controversial. It may be helpful in adult aging macular degeneration, gastroenteritis, and recently has been studied in patients with prostate cancer, since it tends to concentrate in that gland. We all know zinc oxide as a sun-block, for diaper rash, and it is frequently in anti-dandruff products. It is found naturally in oysters, lobster, meats, nuts, and whole grains. The RDA is 8mg/day for females, and 11 mg/day in males.

**Lutein and lycopene** have found their importance more recently in macular degeneration, and possibly prostate cancer, but much more research is needed. Lutein is present in high concentrations in the macula of the retina and is found in green leafy vegetables such as kale and spinach, while lycopene is the red pigment in peppers, and it is high in tomatoes. Supplements are a poor second.

I. Eat 5 servings of fruits and vegetables a day, drink a glass of red wine (resveratrol and flavonoids) tea, coffee, chocolate, cinnamon, or a handful of blueberries, exercise 30 minutes 3-4 times a week, avoid tobacco, excess alcohol, and leave it at that unless your doctor tells you otherwise. There is little evidence that supplements are a good substitute for the natural sources. There are other vitamins, herbs, and mineral we will report on in the future, including other anti-oxidants such as vitamin B-12 and CoQ10.
IV. Rheumatoid Arthritis (RA) vs. Osteoarthritis (OA) Part 1

Summary—Arthritis causes more disability than any other disease. The cost for care and the loss of workforce is in the billions. There are basically 2 types of arthritis—wear and tear arthritis (osteoarthritis) and inflammatory arthritis (rheumatoid, and other autoimmune or genetic forms). Although the joints of the body are the main target for both disease types, there are major differences. Prevention of joint damage is the goal of all arthritic conditions, but there are many more challenges with the inflammatory types because the real cause for these are unknown. Part one, I will report on the diagnosis and next month, part 2, will be the non-surgical management of these diseases. Surgical management will follow the following month with part 3.

A. Arthritis affects millions of Americans and is the most common cause of disability in the country. 27 million have OA, while there are 1.3 million with RA. Rheumatoid arthritis is an immune disease contrasted with the stress and degenerative disease of osteoarthritis. This type includes injury from any cause. There are similarities, but they are very different diseases affecting some the same joints of our body. I have reported on several autoimmune diseases previously, and will remind you that these diseases have at least one thing in common....the body sees certain tissues as foreign and attacks it. The normal process of protecting our body goes against us. RHEUMATOID ARTHRITIS is one of the most common of these autoimmune diseases. These diseases also include almost every organ in the body. There are many factors that are involved including genetic factors, sex, parts of the world, diet, etc. On the other hand, OA---can be thought of as a “wear and tear” type of disease, that is the result of repeated injury, overuse, and physical stresses that create a degenerative process called osteoarthritis. The synovium (lining of the joint) is the target for RA and the cartilage is the main target for OA.

Slide 1 below shows normal cartilage in the knee with good cushion between 2 bones.

Slide 2 shows worn cartilage with exposure of both bones to each other causing OA
Slide 1

Slide 2 shows cartilage damage

Slide 3 shows the contrast of normal, OA, and RA look like side by side
B. *Rheumatoid arthritis occurs 3 times as often in women 30-60 but can start at any age.* Osteoarthritis occurs equally in the sexes and frequently becomes more obvious with aging. The major distinguishing features of RA are that it is autoimmune, inflammatory, chronic, and systemic (affecting the whole body). Inflammation is the most obvious sign of this debilitating disease, because the immune reaction sends white blood cells to attack the target of the joint (the *synovial membrane*-lining of joint) causing this membrane to thicken where it attaches to the joint surface. Continued release of enzymes and other inflammatory factors can erode the cartilage, tendons, ligaments, and even the bones within the joint capsule. Although both types of arthritis are chronic, RA is much more severe, causing limitation of joints, with significant deformities. OA is from wear and tear, and comes from injury to the joints and vertebrae causing degenerative processes of the joints, with swelling, loss of cartilage, loss of function, pain, and impingement on the nerves that are near (sciatica). Swelling occurs in both types, but with much more inflammation present in RA, so these joints will be red and feel hot when they flare.

C. *OA is a degenerative joint disease and is incurable.* When the cartilage is injured or inflamed by either disease process, it has no way of healing, because it normally has such a poor blood supply. As the cartilage erodes in OA, deformity occurs, and the joint becomes less functional. As the joint deforms, it causes osteophytes (spurs) that break off in the joints and cause some inflammation, but not like RA. Pain can be prominent in either. By age 40, 90% of RA patients will have some early signs, usually peaking in the 50s. OA usually is later in the 60s.

D. *Causes*—the causes of OA are wear and tear, from our generation trying to fight aging to our last breathe. We all want to stay active, compete in athletics, stay in shape, and there is a cost for all this attempt to retain our youth....arthritis, joint replacements, pain, going to doctors to get over the next trauma we incurred. Epidurals! I know! I am one of these people. We pay the price trying to keep up until we realize the price is too high. Ce’ la vie! Genetics, obesity, and overdoing it are all factors. Being over-weight causes increased burden on the spine and joints is becoming a huge factor and will almost guarantee damage and degeneration of the major weight-bearing joints.

E. *RA is different...it is autoimmune, it has genetic tendencies too.* There is a genetic marker (HLA-DR4) that occurs in 60-70% of people of European descent, but it doesn’t mean they will automatically have RA. Infection can be a factor in the arthritic
symptoms of Lyme’s disease which is a bacterium from a tick bite. It is possible that infection keys off the autoimmune response in RA. Environmental factors as smoking and heavy second hand smoke exposure play a role. Eating a diet rich in red meat and other high protein foods may increase the risk. However, there is still no absolute cause of RA other than it is an unknown autoimmune response.

F. **Prevention**—A vaccine is being studied for RA, but none is available yet. For those who push their bodies, prevention comes by warming up well before exercise, exercising regularly, weight control, preventing injury at work, and play (wearing braces, good equipment, etc.)

G. **Joints involved**—Weight bearing joints, especially knees and hips, and fingers are affected but any joint can be flare in OA. In RA, the smaller joints are more affected, such as the hand, foot, wrist, shoulder, or ankle, and usually both sides. Deformity can be severe (see slide 4 X-ray to the right). OA joints are painful, but RA joints are warm and swollen and very painful. Morning stiffness occurs in both, but RA lasts much longer. OA may be worse in certain kinds of weather, but it is present most of the time. RA is characterized by flares with remission of symptoms.

H. **Systemic symptoms**—OA does not affect other organs of the body. I have described several autoimmune diseases in previous reports that involved just about every major organ. RA can involve the lining of the chest wall (pleura), nerves can be involved near the joints (neuropathy), and about one third of RA patients will be anemic. The eyes can be involved in 10-15% of patients (dry eye-inflammation of tear glands, glaucoma, cataracts, scleritis-inflammation of the whites of the eyes—see Sjogren’s Syndrome in a previous report). Blood vessels (vasculitis) can be inflamed throughout the body and the lining around the heart (pericardium). The spleen can enlarge, and white blood cell counts can drop, increasing the risk of other infections (Felty’s syndrome). A significant number of RA patients have recurrent fever, weight loss, and fatigue.

I. **OA worsens over the years, whereas RA worsens over months.** The stiffness for RA improves with activity, whereas pain subsides with rest for OA, and doesn’t with RA.
Slide 5 show classic RA of the fingers usually starting in the main knuckles.

J. The 7 classic signs for RA are 1) morning stiffness 2) arthritis in 3 or more joints 3) arthritis in the hands 4) both sides of body involved 5) rheumatoid nodules 6) elevated RF (Rheumatoid Factor) in blood 7) classic X-ray changes. The RF (rheumatoid factor) blood test is positive in only 80%, but eventually test positive. There are other tests that can be positive, such as the ANA (anti-nuclear antibody), elevated CCPs-another antibody test), elevated sedimentation rate (a blood test that shows clumping of red blood cells), C-reactive protein (an inflammatory marker seen in inflammation), low red blood count with higher white counts, and an increase in platelets (increases clotting). Liver and kidney functions should be checked. If joint fluid is removed, it will show white blood cells. Osteoporosis is also increased in RA, so a bone density study should be performed.

K. Osteoarthritis causes hip pain (slide 6) with bone exposure and bowlegs because knee arthritis in slide 7 to the right.

Non-surgical treatment of arthritis will be discussed NEXT MONTH. Osteoarthritis and the inflammatory arthritis group! Also other forms OF ARTHRITIS will be discussed including GOUT and PSORIATIC arthritis, REACTIVE arthritis, and other more rare types. Additionally, since fungal meningitis has been in the news. I have sent you information about the updates. This type of meningitis is exceedingly rare. I feel it would be appropriate to discuss bacterial
meningitis and encephalitis as well. There are more deaths, so be careful about taking steroid injections of any kind.

Have a great Thanksgiving!! Stay healthy and well my friends! Get your vaccinations!!

Dr. Sam