

2018

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New Year's Resolutions

January 11, 2018

So...Did you make any New Year's resolutions? If you didn't why not? If you did, how are you doing?

According to a Marist Poll from late last year:

- 47% of men were likely to make a New Year's resolution for 2018
- 53% of women were likely to make a New Year's resolution for 2018
- 63% of those age 18-29 were likely to make a New Year's resolution for 2018
- 68% of those who made resolutions in 2017 kept at least part of their promise

I am a big proponent of change and personal improvement generally, and of New Year's resolutions in particular. However, many people are afraid of New Year's resolutions because they are afraid of living with failure. Statistics like these are telling:

Length of Resolutions	Data
Resolutions maintained through first week	72.6 %
Past two weeks	68.4 %
Past one month	58.4 %
Past six months	44.8 %

Indeed, these statistics bear out two things The first is that the usual understanding of "New Year's resolution" is along the lines of "I will always (or never) do thus and such," and secondly they show that most of the time such resolutions DO end in failure. I learned a long time ago how to deal with fear of failure in a class on Basic Life Support. At the start of the class we were told, "Failure is not an option this class...There are only two options, Success and Quitting, because we will stay with you as long as it takes for you to be successful." That struck me profoundly, because I saw that I could apply that to most things in life. When I try something, I either succeed or I do not, but almost always I can -- if I want -- try again. I am free to hold that I have not failed, just because I have not yet succeeded. As an inventor, Edison made 1,000 unsuccessful attempts at inventing the light bulb. When a reporter asked, "How did it feel to fail 1,000 times?" Edison replied, "I didn't fail 1,000 times. The light bulb was an invention with 1000 steps." No one ever needs to live in fear of failure, as long as you are alive and have not given up. Of course it is true that you may die before you succeed, but you still are not LIVING WITH failure!

My advice is to no longer think of marking the event of New Year's eve by making a resolution and then expecting to either do it perfectly or fail in your resolution. Instead, consider that the resolution is the beginning of a process whose outcome cannot be judged until the next New Year's eve. Besides taking the focus off of January and putting it on to December as the time to judge the results, there are three or four other things I advise people to consider so their resolutions are more effective. The first is to always describe the change in terms of DOING, even if it is to stop doing something. For example, in 1994 I resolved to, "Do whatever it takes to not smoke that first cigarette." Write down the resolution, tell people about it, and tell them that December 31 is when the results will be judged. Finally, feel free

to add a New Year's resolution, or modify it at any time during the year. If you want to have the satisfaction of keeping resolution perfectly for an entire year, you can make the same resolution next year...starting early improves your chances for success like nothing else can.

Perhaps the most important of the common resolutions has to do with stopping smoking. If you want to quit smoking then resolve this year to become continuously abstinent before the end of 2018, and become willing to do whatever it takes to not smoke that first cigarette. It worked for me in 1994!

Buckwheat honey to suppress cough

January 18, 2018

About 10 years ago the news broke that the cold and cough preparations for children, which had been used for many years, were of no benefit and likely caused harm. An article that appeared in the April 2008 issue of the *Pediatrics* journal, based on a national study from 2004 through 2005, stated, “Annually, an estimated 7091 patients aged <12 years were treated in emergency departments for adverse drug events from cough and cold medications, accounting for 5.7% of emergency department visits for all medications in this age group. Most visits were for children aged 2 to 5 years (64%).” At about that same time there were other articles which showed that there was no benefit in taking these medications. As a consequence, some products were taken off of the market, and the rest had changes in labeling that resulted in the situation that there was literally nothing that was approved for relief of cough in children. In Britain the Medicines and Healthcare Regulatory Agency (MHRA) actually banned use of the most commonly used over-the-counter (OTC) cough remedies in children under 6 years of age.

What’s a parent to do? In December of 2007 an article appeared with the title, “Effect of honey, dextromethorphan, and no treatment on nocturnal cough and sleep quality for coughing children and their parents.” This article, written by Ian Paul *et al.*, was great for headlines in the same way that “Man Bites Dog” grabs attention; honey was shown to be more effective than placebo or the cough suppressant dextromethorphan (the DM component in many products), which is typically regarded as the best cough suppressant available without a prescription. It is well worth noting, however, that Dr. Paul used specific type of honey which most of us have never seen or tasted –buckwheat honey—and the results found in the study may not apply to other types of honey. I recently got some buckwheat honey, purchased over the internet from ebeehoney.com, and found it to be unlike any honey I had ever tasted. According to Meg Campbell at Livestrong.com, “Honeybees that collect and process the nectar of buckwheat flowers create a dark honey characterized by a full, robust flavor. While buckwheat honey can range in color from coppery yellow to purple or nearly black, the average jar is dark amber with a reddish tint when held to the light. Compared with lighter-colored varieties, buckwheat honey isn’t as sweet and tastes similar to molasses.” The honey I got was quite dark; it looked and tasted much more like molasses than the honey I had previously known. Ms. Campbell goes on to say, “The three main components of all varieties of honey are fructose, glucose and water. Honey has a small percentage of many other sugars, including sucrose, in addition to trace amounts of proteins, minerals and natural acids. Fructose is about 70 percent sweeter than sucrose, and sucrose is slightly sweeter than glucose. Light-colored honey, including wildflower and clover, has the highest ratio of fructose to glucose, making it sweeter than dark-honey varieties. The average jar of buckwheat honey is about 40 percent fructose and 30 percent glucose. Buckwheat and other dark-colored honey varieties also have less water and higher concentrations of anti-oxidants, macronutrients and trace elements.”

So, if you are considering giving honey for a cough, you should first be aware that **no child under one year of age should ever have honey**, because their immune system is unable to protect them from something that is extremely common and absolutely no danger to most of us – the spores of *Clostridium botulinum*. The honey used in Dr. Paul’s study was dosed in the same manner (same times and volume) as the comparator DM product. Some parents did report mild side effects with the honey treatment, such as hyperactivity. Finally, the real danger of cough and cold preparations is that a child can pick it up and overdose on it, and this danger is not balanced by any real, demonstrated benefit. Obviously, from a safety standpoint any jar of honey is fine, and if you think that it makes your child more comfortable

then it has accomplished its therapeutic purpose. But, when it comes to advising others, I tell people that not all honey is the same. Darker honeys may be better in general, but only buckwheat honey has ever been found to be superior to placebo (or dextromethorphan).

How bad is the flu this year?

January 25, 2018

On the 12th of this month the CDC presented an update on the 2017-2018 flu season. They indicated that the flu season has started early and is predominantly due to a strain of Type A flu known as H3N2. In the years that this type of influenza dominates there tend to be more severe cases, and more deaths among young people. The cases this year are similar in severity and timing to the 2012-2013 season, and not as bad as the 2014-2015 season. That season the vaccine was less effective than usual. This season the vaccine was a little better--about 30% effective by most accounts--but not the 40 % effectiveness that is usual. The CDC has a tracking system that has been in place for 13 years, and by that measure there have been only two seasons of high severity, 2003-2004 and 2014-2015. This year is the first time, however, that every part of the continental United States has widespread flu activity.

If you get the flu you may--or you may not--benefit from an antiviral drug such as the brand name Tamiflu. The CDC recommends that not everyone needs to get antiviral drugs, but there are certain people who should, "People who are very sick or people with flu symptoms who are high-risk for serious flu complications should be treated as soon as possible with flu antiviral drugs. Who are those people? That means people that are 65 and older. It means young children. It means people with chronic conditions like diabetes, heart disease or asthma. It means pregnant women and others more vulnerable to serious flu illness. Clinicians should not wait for confirmed testing, but they should begin treatment if they suspect flu in a severely ill or high-risk patient." Flu screening tests are not always available, and have at least a 10% false negative rate. In other words, if ten people who actually do have the flu are screened with one of these office tests, one of these ten--on average--will test negative. There are side effects from antiviral medications, which is the main reason that I do not prescribe them to everyone that has the flu. These side effects most commonly are headache, nausea, vomiting and diarrhea. However, there are serious reactions including delirium and bizarre behavior in addition to allergic and other immunologic reactions.

At their meeting, some in the CDC expressed the opinion that we may have already seen the peak in flu activity for the season. We hope that is true. So far the flu has been mostly Type A H3N2, but as time passes, Type B is becoming more common. The practical significance of this is that you can get the flu more than once this year. Even though catching the predominant H3N2 strain will give you immunity from that strain, you can catch Type B or another strain of Type A. So it is not too late to get the vaccine, if you haven't. Also there are things that you can do to keep healthy. Stay away from people who are sick, either by encouraging them to stay home or avoiding the places they go. Also stay well hydrated, as it makes the mucosal surfaces in your body healthier and better able to resist the virus. Get plenty of sleep and do the other things that promote a healthy immune system, such as getting proper nutrition and avoiding or reducing emotional stress. Finally, the drugs such as Tamiflu can be used prophylactically, usually for 10 days at a time, but in some cases for up to 12 weeks in order to try and prevent the flu.

Measles outbreak in Ellis County.

February 1, 2018

There have been 6 confirmed cases of measles in Ellis County so far this year, all in unvaccinated individuals. The first case had a history of international travel during the incubation period. One of the six went to the movies while they were contagious, on January 9 at the ShowBiz Cinemas in Waxahachie. The incubation period is about 2 weeks, and health officials say that it takes 21 days (until January 30) to know whether the disease was transmitted in the visit to ShowBiz Cinemas.

Not only is measles highly contagious, it does not require contact with a diseased individual; simply being in the same large room is enough, as it is spread by airborne microscopic droplets. The disease begins like a cold, with runny nose and cough, but the fever is usually higher (101 degrees F or higher) and there is often conjunctivitis (like pink eye). Then the rash starts, and this lasts for more than 3 days. The sick individual is contagious beginning 4 days before the onset of the rash, and continues to be contagious for 4 days after the appearance of the rash. Besides vaccination, symptomatic treatment is about the only useful intervention. A single vaccination, even shortly after exposure, may be effective in preventing the disease. Two vaccinations are required to be confident of long-term immunity, however. During an outbreak susceptible persons (those who have not had at least two measles vaccinations) should be isolated from anyone who might be ill with measles. This not only prevents them from getting the disease, it helps to prevent spread of the disease.

Measles is a real nuisance for everyone who gets it or must care for someone sick with the disease, but it can have serious--even fatal--complications. Pneumonia is the most serious common complication and occurs in about 6% of cases. Pneumonia accounts for most of the measles-associated deaths. Respiratory tract infections occur most frequently in those less than 5 years of age, or more than 20 years old. In connection with this fact, it should be mentioned that measles in the pre-vaccine era had a different natural history than it does in today's outbreaks. Then it was a disease that affected children of primary school age, almost exclusively. Now, it is more likely to have severe complications because it is more likely to strike those who are more than 20 years old or less than 5 years old.

The most feared complications of measles are neurological. Encephalitis occurs in about 1 of every 1000 cases, and typically appears within a few days of the rash. The symptoms are new onset fever, headache, stiff neck, vomiting, seizures and coma. About 15% of these cases die, and another 25% of children suffer neurodevelopmental consequences. Acute disseminated encephalomyelitis (ADEM) occurs in about 1 in every 1000 measles cases. ADEM is a demyelinating disorder, like multiple sclerosis (MS), that comes on after the rash has resolved. This has life-long effects and is fatal in 10 to 20% of cases. Finally, there is Subacute sclerosing panencephalitis (SSPE) which is a fatal, progressive degenerative disease of the central nervous system that usually occurs 7 to 10 years after measles illness. We used to think that SSPE occurred at a rate of about 8 per million cases of natural measles, but based on the cases caused by the resurgence of measles in the US during 1989-1991 the risk of SSPE among children less than 5 years old at the time of illness, may be higher than 1 in 1000.

Measles is a bad disease that is preventable, but only if we each do our part. Everyone who does not have a firm contraindication should be immunized. Ellis County isn't very far away from Runnels County, less than 200 miles.

DIABETES, Part 1

February 8, 2018

I was probably about 9 years old the first time I remember having heard of the phrase “sugar diabetes”. I asked my mother what it meant; she told me that it was a disease that some people get when they eat too much candy, and it causes their bodies to lose the ability to regulate the level of sugar in their bloodstream. I wasn’t sure what that meant, or why it was bad, but at least it was an answer.

It has been known for quite some time that there are two distinct types of diabetes. One type (called Type One Diabetes Mellitus or T1DM) is due to a sudden failure in the body’s ability to produce the hormone insulin. T1DM has a sudden onset, usually before 15 years of age, and is rapidly fatal without appropriate treatment of insulin given usually as shots, multiple times per day. This type is also called childhood onset or insulin dependent diabetes. The cause is unknown, but it is known that there is a strong genetic component. With no family history the chance of an American child coming down with it is about 4 in 1000 (0.4%). If the mother has T1DM the chance of the child getting it is as high as 4%; if the father has it the risk is twice as high. If one identical twin gets T1DM, the chance that the other will eventually get it is more than 50 %. But there is evidently more than genetics involved. In genetically susceptible individuals one or more environmental agents appears to trigger an immune response that leads to the body destroying the insulin producing cells that reside in the pancreas. The pancreas is a unique organ that is part of the digestive system of the body, and it produces a number of hormones that help the body use nutrients. In order for glucose in the blood stream to be used in the body the cells of the body must receive a signal to take up that glucose. Insulin and only insulin provides that signal. Apart from the brain, which can use other back-up fuel, most of the cells in the body will starve for glucose, even when it is present in high levels in the blood, without adequate insulin to allow the glucose into the cells. That is why people with T1DM go into the crisis that is called ketoacidosis, and will die without immediate and proper care.

Although T1DM is increasing in frequency, it is the other type of diabetes, Type Two Diabetes Mellitus (T2DM) that has had explosive growth in recent years. Although it is not uncommon for people with T2DM to eventually develop insulin dependent diabetes, T2DM begins in an entirely different way from T1DM. Whereas T1DM is due to a complete lack of insulin, people with new onset of T2DM usually have levels of insulin that are normal or high. Their problem is not an absolute lack of insulin, but is due rather – as Cool Hand Luke would say – to a failure to communicate. The insulin receptors of the cells of the body have become insensitive to insulin; they don’t respond normally and the pancreas must produce higher and higher levels of insulin in order to provide for the needs of the body. This condition is called insulin resistance, and it usually results in both the insulin levels and the glucose levels creeping gradually higher and higher until some crisis causes the person to come to the attention of a health-care professional, resulting in diagnosis after many years of damage has been done.

Coming back to my mother’s answer, too much candy and not enough exercise actually CAN cause insulin resistance. I have learned why it is bad for the body to lose the ability to control the level of sugar in the blood, and the answers are complex, but there are good ways to prevent T2DM as well as to control it and prevent much of the damage it would otherwise cause. The most important first step is to diagnose T2DM early, before years of damage have occurred. See this space next week for more information on diabetes, as well as its diagnosis and treatment.

Diabetes, Part 2

February 15, 2018

In addition to the two types of diabetes mellitus that we looked at in this column last week (T1DM and T2DM), there is also gestational diabetes and Pre-Diabetes. It is estimated that more than 30 million people in the US have diabetes; 90% of these have T2DM, and probably 25% or more of these do not know that they have the disease. Gestational diabetes is similar to T2DM, in that it is due to insulin resistance, but it is found in women that do not have diabetes before pregnancy. Many of these women do go on to T2DM later in life. Insulin resistance is the root problem in T2DM, and we learned last time that this is a 'failure to communicate'. It is a little like having a car with a sticky or sluggish accelerator pedal. If your car's accelerator pedal does not move freely you won't be able to properly communicate how much gas you want to put into your engine, and your car will not accelerate smoothly. Sometimes there will be not enough fuel and sometimes too much. In a similar way it is not uncommon for the first symptom of insulin resistance to be blood sugar that is too low, a condition known as hypoglycemia, before the blood sugar becomes too high.

Diabetes damages the body in many ways. It is the seventh leading cause of death in this country and the number one cause of kidney failure and lower-limb amputation as well as the leading cause of adult blindness. It greatly increases the chance of heart attack and stroke, impairs the body's ability to fight infection or repair itself and it damages nerves, especially the ones in the legs. Most of these effects are related to the effects of sustained high sugar levels. These high levels cause changes in the molecular structure of many of the proteins etc. that are necessary for life. One example of such a chemical change is known as hemoglobin A1c (HgbA1c) which is used to estimate the average blood sugar over the last three months. Very simply, hemoglobin is a large protein molecule that is prone to chemical change in the presence of sugar in the blood. In a very literal sense a sugar molecule gets stuck onto a hemoglobin molecule. The percentage of the hemoglobin molecules that have been changed in this way is thus dependent on the level of sugar and the length of time exposed. The more sugar, the more rapid the change and the higher the percentage of changed hemoglobin molecules. Since hemoglobin in a red blood cell (RBC) is manufactured at the same time that the RBC is created, and the life of each RBC is usually about 3 months, normally some of the hemoglobin molecules (about 4 to 6%) in a sample of blood will have this sugar stuck on. Finding HgbA1c above 6.5% is diagnostic of diabetes. Red blood cells and hemoglobin molecules have a relatively short life, and the sugar does not materially affect their biological usefulness. On the other hand, nerves and blood vessels as well as their constituent molecules are expected to last for decades, so these are where we see the most damaging effects. The large vessels are affected, leading to loss of circulation to the legs and feet, and the small vessels are affected leading to blindness. There are direct effects on the function of nerves, and nerves are also affected due to damage done to the small vessels that are their blood supply. This damage to nerves causes some people to experience severe pain in their feet, and causes some people to lose much of the sensation in their feet -- and some people get both of these problems at once-- the longer the nerve, the more it is affected, hence the problem is worst in the feet. This lack of sensation makes them prone to getting sores that go unrecognized until they are infected. On top of that, the body's white blood cells are very ineffective at fighting infection when the blood sugar is over 200. Thus high sugar levels over a prolonged period of time results in a perfect storm of injury, infection and ultimately amputation. The kidney, heart and brain are affected by both the small vessel and large vessel damage. Return here next

week for the final installment on diabetes, or go to <https://www.niddk.nih.gov/health-information/diabetes> for more information.

Diabetes, Part 3, What is to be done?

February 22, 2018

The ravages of diabetes are due primarily to blood sugar levels that remain high for a long period of time, so it is important to diagnose the disease as early as possible, and keep the levels as near to normal as possible after that. For people with T1DM this is entirely reliant on strictly managing diet, exercise and insulin to keep blood sugar levels from being too high or too low. Low blood sugar can cause a person to feel bad, have a seizure or pass out and fall or have some other accident. Insulin may be managed with a pump (about the size of a deck of playing cards) worn continually, or by shots of insulin, multiple times each day with short-acting and long-acting insulin. The short acting insulin is usually given just prior to meals, and I tell patients to have their food in front of them before they take their insulin. Occasionally something will happen that prevents them from eating after they have taken their insulin, resulting in an episode of low blood sugar. Of course T2DM can also be treated with insulin; it is very effective at controlling blood sugar, but it does so by driving glucose into the fat cells of the body, increasing the person's weight and worsening their insulin resistance. The class of drugs known as sulfonylureas, such as glipizide and glyburide, are oral medications that work by increasing insulin levels and have the same drawbacks, including frequent episodes of low blood sugar. There are now many types of oral medications that can be used to treat T2DM that do not have these drawbacks. Metformin is the most important. It is cheap, does not cause low blood sugar, promotes weight loss and is the only drug that has been shown unequivocally to improve outcomes in T2DM. These are the things to look for in a T2DM drug: at a minimum it should not cause weight gain or low blood sugar, and preferably there should be evidence that people's lives, not just their numbers, are improved by using the drug. It must also be affordable. In addition to controlling blood sugar, diabetics should also be especially vigilant to control their cholesterol, take medications – including aspirin – exactly as prescribed, and get regular eye exams as Dr. Robbins suggested in an earlier column in this space.

Finally, recall that there are millions of people in our country, and hundreds in our community who are suffering the ravages of uncontrolled, undiagnosed T2DM. These people often believe that they are healthy, and the fact that they have not been to see a doctor in years is one of the pieces of evidence that they rely on to convince themselves and others that they are healthy. The best way to find these cases is for them to break with type and actually establish care with a PCP (primary care provider) just as was suggested in a previous column in this space, written by Michelle Aguilar, RN. However, this requires a change in behavior and people do not change their behavior without good cause. Therefore, the second best way to find these undiagnosed diabetics is to provide free and convenient screening tests. That is one reason why Lions International has added diabetes to their areas of focus, complementing ongoing efforts to combat hunger and blindness, with Strides: Lions for Diabetes Awareness, to provide direction and tools for screening. The Health and Wellness Coalition of Runnels County is also taking an active role in education and is looking for partners with whom to conduct screening programs. When I was in private practice I would tell people who wanted to know if they were diabetic to eat a large meal of pancakes and syrup just before their next appointment and we would check their blood sugar. If that is normal then diabetes is excluded, but if not normal then they need further evaluation. The same goes for screening at a fair after funnel cake or cotton candy. As is shown by the examples already cited, community involvement is essential to improving the health of the community. For this reason, the next series of columns will focus on strengthening the ties of community in Runnels County.

Personal responsibility is an important component of health, as has been emphasized by several of the articles that have appeared on these pages. However, natural disasters and other large scale emergencies pose health hazards that require planning and action on a larger scale at town, county or even state and regional levels. It is true that personal planning and preparation can be invaluable, but they can only go so far. Those of us who lived through the 1950s and 1960s remember the “duck and cover” drills, and the yellow and black signs denoting FALLOUT SHELTER at designated locations like the basement of the courthouse. These places had been selected and provisioned for a certain number of individuals, in order that these individuals would survive a nuclear attack, provided it were not too close by. Many of these shelters were used, in fact, primarily for tornado shelters. After the early to middle 1960s the federal interest and funding necessary to maintain these diminished and then vanished. The modern “all hazards preparedness programs” directed by the Department of Homeland Security date from the September 11, 2001 attacks. These programs have been given increased relevance by natural disasters such as Hurricane Harvey and by numerous active shooter incidents like those in Las Vegas, NV and Parkland, FL. In last week’s paper the lead article contained information regarding efforts at the local level to respond to the last type of emergency, and I was greatly relieved to read of these efforts. However, in point of fact, active shooter incidents often result in multiple wounded victims and require the participation of healthcare organizations as well as law enforcement, despite the best efforts of the school system. This and many other types of emergency require the cooperation and coordination of multiple agencies at more than one level. The coordinating agency for our area is the West Central Texas Council of Governments, or COG, which is a political subdivision of the state of Texas serving 19 counties, including Coleman, Runnels and Taylor in an area encompassing 18,000 square miles. Within that vast area are hundreds of organizations that actually do the work required to maintain the health and safety of the people who live and work there. The federal plan for Emergency Preparedness calls for “Healthcare Coalitions” in order that various individual healthcare organizations within a given community or county will have a structure through which they can cooperate, share resources and interface with governmental structures at the level of the COG. (For details see <https://www.phe.gov/Preparedness/planning/mscc/healthcarecoalition/Pages/default.aspx> accessed 2/23/2018.)

The Health and Wellness Coalition for Runnels County (HAWC) is an organization in its infancy, but those of us who are involved with it believe that HAWC is in the best position to interface between the healthcare organizations of Runnels County and the COG. Our first step should be to bring together the health and safety organizations of the county for planning and coordination in order to facilitate the sharing of information and resources. To that end we have invited key professionals and officials from the county to meet at 2001 Hutchings Ave. (in the building with Keel Drug) on March 8, 2018 at 7 pm for the purpose of updating and improving our Emergency Preparedness Plan(s). Representatives from The COG as well as the RAC (Regional Advisory Council for EMS and Trauma) will be present as well, to advise and assist. There will be an opportunity for community input from any interested individual from 6:30 to 7:00pm. Key objectives are to identify and then plan for potential emergencies such as flooding, power outage for extended periods, blizzard, active shooter, train derailment or bioterrorism. We need also to characterize potential surges in need such as due to food poisoning epidemic or bus accident,

especially if combined with other elements such as blizzard conditions. If you are responsible for health and safety issues in Runnels County, even if you have not been otherwise invited, please join us.

Another type of ACE, Adverse Childhood Experiences March 8, 2018

One of the most consistent findings, and yet one of the most perplexing, is that people who are of lower social and economic classes are not as healthy, nor do they live as long as those in the middle and upper classes. This is true even when we take into account all of the things we know to be important, such as nutrition, sleep, smoking and injuries — but why? The first big piece of the puzzle came to light in 1998 with the publishing of a study of thousands of people in the Kaiser HMO who answered questions about their experiences growing up and about their health or illnesses as adults. They were asked about abuse they experienced before they were 18 years old, using questions to uncover psychological, physical and sexual abuse. People were also asked questions aimed at 4 other categories: living with someone who used street drugs or abused alcohol, living with someone who was mentally ill, living in a home where the mother was treated violently and living in a home where a household member went to prison. These 3 categories of abuse and 4 categories of dysfunction are known as Adverse Childhood Experiences (ACEs). They turn out to be highly predictive of disease, disability and early death for those individuals who were exposed to 4 categories or more. In the study there were 3,859 people who reported no exposure in any category, 2,009 respondents had one, 1,050 people reported two and 590 reported exposures to 3 categories but these were not statistically different in terms of their likelihood of having cancer or heart attack or chronic bronchitis/COPD. However, the 545 people who had exposures to 4 or more categories were more than twice as likely to have a heart attack, twice as likely to have cancer and 4 times as likely to have chronic lung disease as those who had no ACE.

These abusive and dysfunctional situations may be many things, but they are always stressful. While stress is not always bad, stress that is of high intensity or long duration is toxic stress, and under these conditions the body produces hormones and neurotransmitters that have evolved to help humans live through stressful periods such as famines. According to one expert:

The result of this extended stress response is that a child's nervous system, immune system and even DNA are changed. Toxic stress causes the fear centers of the brain (limbic system, amygdala) to significantly increase in size, and the child can develop symptoms very similar to post-traumatic stress disorder (PTSD). Toxic stress decreases the size and impairs the functioning of the regions of the brain responsible for learning, memory, executive functioning (prefrontal cortex, hippocampus). As a result, the child is placed at risk for having learning and behavior problems. The child's immune system is suppressed and puts the child at risk for developing a variety of chronic, lifelong health conditions including asthma, heart disease, stroke, autoimmune disease and cancer. The DNA is changed in such a way that the child's gene expression affects bodily functions and can potentially be passed on to the next generation.

<https://www.texaschildrens.org/blog/2016/12/toxic-stress-and-child-development>

Evidently poor health is associated with low economic class because both are caused by the same thing. Exposure to four or more ACEs leads to both poor health and poor cognitive skills, which in turn results in low earning capacity. Next week we will look at what can be done, remembering...

“It is easier to build strong children than to repair broken men.” — Frederick Douglass

Last week we looked at Adverse Childhood Experiences (ACEs) and saw that there is a strong relationship between the experience of traumatic or abusive situations in childhood and the health behaviors and health outcomes those individuals have as adults. Because the topics of trauma and abuse in children are so important, and because doing something about them -- while maintaining the freedoms guaranteed by our Constitution -- is so difficult, we would like to have proof that what is proposed as a solution is actually going to work. Unfortunately, we are prevented by the very freedoms just mentioned as well as by common decency, from obtaining such proof. In order to actually prove that any treatment is effective in a population it is necessary to divide the population into two groups that are similar, then manage them in exactly the same fashion except that one group receives the study treatment while the other does not. Because we cannot exert the kind of control necessary to have proof, in this case, we have to settle for evidence.

Beginning in the late 1960s a series of simple but fascinating study was begun, evaluating the ability of various children to delay gratification. The basic design is as follows: A 4-year-old child is introduced to an experimenter who then says that he must step out for a few minutes. They offer to give the child two marshmallows when the experimenter gets back, if they can wait, or the child can ring a bell to summon the experimenter back early and get a single marshmallow. The aim is to measure how well different individuals can delay gratification at 4 years of age. The ability to delay gratification is related to the broader set of behaviors known as "self-regulation", and this in turn is tied to lots of behaviors that impact our health. These children, and many others in similar experiments around the world, were followed into adolescence and then into adulthood. It turns out that the children that were good at waiting when they were 4 were described by their parents as significantly more competent socially and academically at 14 years of age, when assessed by statistically valid questionnaires. In some variations of the testing, seconds of delay time in preschool were significantly related to their Scholastic Aptitude Test (SAT) when they applied to college. In another study, each additional minute that a preschooler delayed gratification predicted a 0.2-point reduction in Body Mass Index (BMI) in adulthood.

Self-regulation and the "executive functions" of the brain are the very things that are adversely affected by ACEs that seem to be responsible for the negative outcomes later in life. Cognitive flexibility and working memory, the ability to hold information in the mind and use it, are principal components of the brain's executive functions. The more ACEs present in a child's life, the more likely it is that the child will be deficient in the skills of executive function and self-regulation. The evidence suggests that by intervening to improve executive function and self-regulation, at least some of the effects of ACEs can be overcome. The Harvard Center for the Developing Child has excellent suggestions for doing just that at <https://developingchild.harvard.edu/science/key-concepts>. There you will find several short videos as well as literature for professionals and lay persons. These types of suggestions are for the people that are already involved in a child's life, however. What, if anything, can be done by people who are not parents? Providing treatment options for parents who suffer from addiction is one thing that can be effective. Also, making parenting classes available and supporting parenting classes, such as through work place policies that allow time for these activities, can be effective. There are several suggestions at websites of the CDC (<https://www.cdc.gov/violenceprevention/childmaltreatment/prevention.html>) and the National Child Traumatic Stress Network (<http://www.nctsn.org/>). Parenting classes are most effective in an environment where attending these classes is seen as normal, not unusual or remedial. Indeed, the most important role of the community may be in setting the expectation that parenting is

the most valuable job in the world, and no one is born knowing how to do it well. Therefore, training for that job is crucial.

Recently released statistics show that life expectancy is declining in the US, continuing a trend that began in 2015. Is access to care declining or old people not living as long? It is worse than that. The decrease in life expectancy is directly attributable to medical treatment with prescription pain medicine, and the increase in mortality is only in people younger than 65 y/o. These pain medications, like morphine, are related to products derived from the opium poppy; they are therefore known as "opioids." Overdose deaths from opioids have increased by more than five times since 1999, killing more than 42,000 people in 2016 (the last year for which complete statistics are available), and 40% of these deaths were from prescription opioids. Many of the rest of these overdoses -- though no one knows how many -- were in people that had become addicted to prescription opioids, and then had turned to street drugs because they were more available or cheaper. Fatal drug overdoses are tallied as "Unintentional Injury" fatalities, and that category is now the leading cause of death in the US, behind heart disease and cancer.

Is this a case where the cure is worse than the disease? A few people that have told me they would kill themselves if they didn't get some relief from the pain. However, I think that people are biologically not different from previous generations, and suicide attributable to pain has never been a major cause of death, so the treatment of pain does seem to result in higher mortality than the untreated disease processes. This opioid epidemic is a very complex problem, because the use of these medications changes the bodies reaction to pain, making even minor pain -- such as getting a tetanus shot -- into excruciating pain that completely overwhelms a person for hours. This is a condition known as "hyperalgesia" and this, I believe, is the sort of thing that causes people to literally be dying for relief from pain. On the other hand, it seems cruel to withhold opioid medication from someone who has a broken bone in their foot, for instance. Likewise, it seems heartless to not treat the pain of cancer, using every tool available. And what is to become of all of the people that are already dependent on these medications, if they are not able to continue getting the prescriptions they have been receiving for their chronic non-cancer pain? As I said, it is a complex problem, but don't worry ... the government is here to help. Pharmacists and physicians are coming under increased scrutiny to limit the prescribing of these medications. (See www.cdc.gov/drugoverdose/prescribing/guideline.html) The intentions of the governmental guidelines are good, and they have sound principles such as these. First and foremost, "The Guideline is not intended for patients who are in active cancer treatment, palliative care, or end-of-life care." These are, of course, the very people in whom the cure CANNOT be worse than the disease, because their disease is already fatal! There are other good recommendations, such as that nondrug therapy and medications that are not opioids should be used when and where possible. Also, treatment goals should be established at the outset, along with a plan for discontinuing therapy if the benefits do not clearly outweigh the risks. In my experience, the role of opioid medication in the treatment of chronic pain that is due to a non-fatal condition is this: If pain is preventing someone from doing the simple things in life that give them pleasure and make life worth living, such as going for a walk or attending the concert of a grandson, these medications should be used in the smallest doses, as infrequently as possible in order that the person is able to do those things.

What's Good to Eat?

March 29, 2018

The country first became obsessed with fat and cholesterol during the Carter administration, and our government published the food pyramid guidelines which suggested that the "bread, cereal, rice and pasta group" (6 to 11 servings per day) should constitute the foundation of a healthy diet. Within 10 years after this publication, the explosion of obesity and diabetes had begun to eclipse fat and cholesterol as drivers of the ongoing epidemic of heart disease. Then "healthy whole grains" became the focus of the new My Food Pyramid that was rolled out in 2005. By that time the importance of the glycemic index and glycemic load had begun to be widely known. But, the swing of the pendulum had already been made clear in the summer of 2002, when the New York Times Magazine published a cover story entitled "What if Fat Doesn't Make You Fat?" Some people were beginning to wonder if "healthy whole grains" might not be an oxymoron. We have learned a lot, in the last 15 years, about diet and its effects on health, but it is important to distinguish between what we know and what is opinion.

There are three main components or macronutrients in the food we eat -- proteins, fats and carbohydrates -- and carbohydrates can be broken into two broad types, simple carbohydrates and complex carbohydrates. Sugars, like glucose and table sugar are simple carbohydrates. They are small to medium size molecules that are easily digested and quickly enter the blood stream, raising the sugar level in the blood. The starchy foods like potatoes and bread are composed mostly of large molecules that are complex carbohydrates, and after cooking these also are easily broken down into simple sugar components that quickly enter the blood stream and raise the sugar level in the blood. In fact, gram for gram, white bread raises the blood sugar level faster than table sugar. It is the rapidity of this rise in blood sugar that triggers rapid rises in insulin, and these in turn promote excessive fat deposition and causes the insulin resistance that leads to Type 2 diabetes (T2DM). The glycemic index is a measure of how fast the blood sugar rises for a meal of different foods. A standardized meal of 50 grams of glucose and water is the reference, and that has a glycemic index (GI) of 100. Table sugar has a GI of 65, white bread has GI of 75 and one brand of whole grain bread (Natural Ovens) is said to have a GI of 51. This is one of the reasons that whole grains are better for you, because they cause less of a spike in blood sugar and therefore less of a spike in insulin and all that that entails. (See www.glycemicindex.com and others.)

Without a doubt, besides the starches, there are things in grains that are very bad for some people. There are more and more people who are allergic to various grains, with wheat being the most common allergen, but corn is also a common offender. In these people exposure to these allergens can cause a skin disorder like eczema, a rash or a severe anaphylactic reaction that can be fatal. Much is made, by some authors, of the fact that grains are from various grasses and our ancestors never ate any part of any grass until the last 10,000 years or so. This is similar to the debate about partially hydrogenated fats, such as Crisco -- a topic for another day. It seems reasonable to suppose that since the human body has not evolved to ingest these items as food, we might be prone to develop problems, such as allergies to grains or unstable fatty plaques in our arteries when we eat Crisco. These grain allergies are separate and apart from the reaction that some people have to gluten and the related compounds in wheat, barley and rye. We will examine gluten and gluten sensitivities in more detail next week.

Why Gluten Free?

April 5, 2018

Bread is a staple of the diet everywhere in the western world, and the cultivation of wheat was evidently one of the earliest cultural developments of our civilization. Many people find fresh baked bread one of life's greatest delights. It is therefore passing strange that a substantial fraction of today's population has now foresworn bread and eliminated this food from their diet, along with pasta and all other products made from wheat and its close relatives, barley and rye. The reason for this is that they have come to believe that their body reacts badly to the protein gluten which is found in these grains. There are many different manifestations of these reactions, including fatigue, obesity, arthritis, irritable bowel and 'brain fog' or lack of mental sharpness. Coincidentally there are many reactions, on the part of health professionals, to these varied and seemingly unrelated manifestations. The thing that everyone agrees about is that there is a condition known as celiac disease which has both clinical manifestations and laboratory abnormalities that reliably establish the diagnosis. In celiac disease, also known as gluten sensitive enteropathy, there are pathologic changes in the surface of the small intestine which result in malabsorption and diarrhea. These symptoms usually show up in infancy, but can show up later in childhood, or even in adults. Many people have less severe manifestations and most people with the conditions have not been diagnosed. The most accurate diagnostic test is intestinal biopsy, but blood tests are now fairly accurate in diagnosing the disease. As might be expected in a disease of malabsorption, many people with celiac have dietary deficiency diseases. What is more surprising is the high prevalence of neuropsychiatric disease and even symptoms of schizophrenia in celiac patients. All of these can be fully treated by following a gluten free diet.

Lots of people choose to limit gluten in their diet, even though they do not have celiac disease. Some doctors approve of this, and others think it is a waste of time and effort. One doctor who is convinced that it is not a waste of time and effort is William Davis, MD, a cardiologist who wrote *Wheat Belly*, after seeing the remarkable improvements in many of his patients who followed a strict elimination diet. Long before this book was written I had come to the conclusion that many of the common symptoms I saw in my practice were due in part to dietary and environmental exposures. It had been my practice to suggest a trial of an elimination diet, and if the symptoms improved to advise avoidance of the implicated food(s). I had found, however, that avoiding gluten was relatively difficult. (Probably the only diet more difficult to follow was one that eliminated corn products.)

What is gluten and why are we now seeing so many people who seem to have a problem with it? Gluten is a long, stringy protein that allows bread to rise. Without gluten, the gas generated by yeast either makes a few big bubbles in the dough, or none at all. It is this stringy protein that allows the dough to trap the gas and rise in the process. When plant breeders in the middle of the 20th century produced wheat with higher yields and shorter, sturdier stalks these varieties also had much higher gluten content. This probably accounts for the fact that all types of sensitivity to gluten are much more common now than they were previously.

People with celiac disease, and others who are severely affected by exposure to gluten, must keep away from foods with even a trace of gluten. Other people who have found that they feel better when they avoid these foods can often escape any ill effect while eating foods with small amounts of gluten, such as an entree with a sauce in which a little flour has been used as a thickener. In any case, there is no

need to avoid all starches. Only wheat, barley, rye, and the less common grains: spelt and triticale, contain gluten.

Should I take a magnesium supplement?

April 19, 2018

There is perhaps no more contentious subject in medicine than the role of vitamin pills and supplements. It is a huge subject area, and one to which we shall return. Rather than address the entire field, I want to stick with just two questions: Who needs to take magnesium supplements? What should they take? The answer to the first question is, "A lot of us." Studies indicate that 12% to 25% of the population is deficient in magnesium. The Recommended Daily Intake (RDI) of magnesium is 320 to 380 mg/day for adults. Most of us do not get that from the food that we eat. Some people get some in their water, 13 to 20 mg/liter in tap water from ground sources, but many people drink only bottled water. Ozarka water in Texas has 1 mg of magnesium per liter. Cooking with water low in magnesium (Mg) can also reduce the Mg content of foods. Foods that are high in magnesium include dark leafy greens, nuts and seeds, fish, soybeans, avocados, bananas, dark chocolate, and yogurt.

Many health conditions are made worse by magnesium deficiency. Leg cramps, in particular, can be debilitating in some people with magnesium deficiency, and I have never seen a case of leg cramps that did not improve with Mg supplementation. Diabetes also can be greatly affected by magnesium levels. A study published in the journal *Diabetes Care* in 2003 showed that the addition of magnesium chloride supplementation resulted in reducing average blood sugar from 240 to 183. Another study from Harvard University revealed that a high daily magnesium intake reduces the risk of diabetes by up to 33 percent. Low magnesium can cause potassium to be low, and it increases blood pressure in hypertensive patients. It will also make asthma and migraine headaches worse and it is associated with obesity.

In addition to low dietary intake, certain medications cause loss of Mg, especially the combination of diuretics ("water pills") and medications like Nexium or Prilosec, known as proton pump inhibitors. Anything that causes large losses of fluids in the urine or the stool, such as uncontrolled diabetes or chronic diarrhea, will cause Mg deficiency. Blood tests are notoriously inaccurate for diagnosis of magnesium deficiency, because less than 1% of the body stores of Mg are in the blood. Therefore, blood levels are mostly determined by physiologic factors that determine the movement of magnesium within the body. However, if a blood test does pick up a low level it is a good indication that total body stores are low. Another problem with blood tests is that magnesium is not on any of the routine laboratory panels, even more frustrating is the fact that insurance usually won't pay for a blood test without the documentation of one of a handful of specific diagnoses... like "low magnesium." Of course!

As far as which supplement to take, the usual factors should be considered: availability, cost, side effects and efficacy or effectiveness. Magnesium oxide (e.g. MagOx) and magnesium chloride (e.g. Slow K) are the two most readily available supplements, and neither is very expensive. Any type of magnesium can cause diarrhea as well as stomach upset and cramping. I find that magnesium oxide has less in the way of side effects than some others, but that is probably because so much of it passes through the gut without being absorbed. I find that some people don't absorb anything at all from it. Slow K is better absorbed, but causes more side effects. It takes at least 3 months to replenish a body that has a significant magnesium deficiency. One tablet of a non-prescription magnesium supplement is safe for almost anyone who does not have kidney disease, but if you do have kidney disease you should probably not take any supplement -- and especially not magnesium -- without your doctor's specific recommendation. The kidney is the only organ that can compensate for excessively high magnesium levels in the body.

How Safe Are Supplements?

April 26, 2018

I became interested in the safety of dietary supplements early in my practice. While in El Paso I took care of a retired couple, Mr. and Mrs. C, who were both engineers that had worked at White Sands Missile Range. They were both very smart and the wife was a native of Germany, where they would return twice a year. She would always bring home a large suitcase full of dietary supplements. After learning this I asked her why she didn't just purchase them locally, and her response was unforgettable. In her surest German accent, she said, "If you buy supplements in *Germany* you know what's in them. If you get them here, *God* knows!" I asked her what she meant, and she informed me that the German government regulates the supplement industry, but in this country there is very little regulation. I looked into what she said, and she was right.

My conversation with Mrs. C took place in the early 1990s, about the time of the last great change in the way the government views the supplement industry. The standard for a drug is that it must be shown to be both safe and effective before it is released for sale to the public, and many people believe that supplements should be held to a similar standard (as is the case in Germany). However, there has been a political battle between these people and others who believed that the government should merely remove from the market any supplements found to be tainted. In 1994 the Dietary Supplement Health and Education Act (DSHEA) was passed, which is much more in keeping with the second position and largely deregulated supplements, as long as they don't claim to function as drugs. Actually it effectively allows manufacturers to make almost any claim they want, as long as it is followed by words such as, "This statement has not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease;"

Several years ago a survey was made of supplements being sold for enhancing athletic performance. The researchers purchased products off of the shelf and tested them to see what they contained. They found that half did not contain one or more of the ingredients listed on the label, and a quarter contained something potentially dangerous that was not on the label. Three years ago the state of New York tested herbal products, that were said to contain specific plant derived substances and 79% of these products contained zero DNA from the plant they were supposedly derived from. One national brand fared particularly badly, with only 4% of their products containing such DNA. An article from Forbes at the time noted, "While overall 21% of the product tests confirmed [unique DNA sequences] from the plant species listed on the labels, 35% of the product tests identified [unique DNA sequences] from plant species not listed on the labels, representing contaminants and fillers. A large number of the tests did not reveal any DNA from a botanical substance of any kind.... In many cases, unlisted contaminants were the only plant material found in the product samples." <https://ag.ny.gov/press-release/ag-schneiderman-asks-major-retailers-halt-sales-certain-herbal-supplements-dna-tests>

The regulation of dietary supplements is essentially equivalent to that on frozen pizza, or fresh lettuce. If someone reports a hazard it is investigated, reported and then tracked, but there is no proactive testing or enforcement regarding formulation. Having said that, I do believe that supplements can be beneficial. Just as I buy frozen pizza and fresh lettuce, I apply the same criteria to supplements. The most important thing is to stick with outlets and brands you know and trust. For greatest safety I advise the use of brands that do not use ingredients from China and whose finished products are tested by independent laboratories. These brands include, but are not limited to, Thorne, Xymogen and Pure.

Suicide

June 21, 2018

In 2016 suicide was the 10th leading cause of death in the country. Earlier this month the Centers for Disease Control (CDC) released a report that showed suicide rates increased in nearly every state of the union between 1999 and 2016, and the increase nationwide was more than 30%. For a generation people have been taking their own lives at increasingly alarming rates. Now, twice as many Americans die by their own hands than die by homicide. Earlier this month we were shocked to learn of the deaths of designer Kate Spade and chef/media personality Anthony Bourdain. These served to put faces to the grim statistics, and placed an exclamation mark on the dawning of our awareness of this problem. The rate of increase in Texas is almost identical to the national average, but rural populations have higher rates than do urban dwellers. It is baffling what one discovers by digging into the statistics. More than half (54%) of completed suicides were in people who did not have a known mental health condition. The number of people who have been on antidepressants has tripled since 2000, and now stands at 15 million. An interesting side note was provided by a recent study of marijuana use, which asked the question, "Does a single use of marijuana improve depressive symptoms?" The answer provided by the data is that a single use of marijuana may improve depressive symptoms, but habitual use undoubtedly makes depressive symptoms worse.

So what can be done?

Know the 12 warning signs:

- Being isolated
- Increased anxiety
- Feeling trapped or in unbearable pain
- Increased substance use
- Looking for a way to access lethal means
- Increased anger or rage
- Extreme mood swings
- Expressing hopelessness
- Sleeping too little or too much
- Talking or posting about wanting to die
- Making plans for suicide

Know the 5 Steps to help someone at risk:

1. Ask.
2. Keep them safe.
3. Be there.
4. Help them connect.

5. Follow up.

Find out how this can save a life by visiting: www.BeThe1To.com

Be Careful, It's HOT!

June 28, 2018

The phrase, "Be careful, it's hot!" applies more than what is on the stove. Heat related illness (HRI) is a common, serious and sometimes fatal condition. Alcohol and certain prescription drugs increase susceptibility to heat illness, as does obesity. Being acclimated to the heat and being in good physical condition are protective factors. Exertion and heavy clothing or protective gear are major factors in many cases of HRI, but probably nothing is more important than water. The more water present in the air as humidity, the more likely is heat illness. The less water a person drinks, during heat exposure, the more likely they are to suffer HRI. Often a quart or more per hour is necessary to remain properly hydrated. The best guide to whether one is drinking enough water is to weigh before and after periods of heat exposure. If you weigh less after than you did before, the difference is due to un-replaced water loss. Most authorities recognize three types of HRI, and heat stroke is the most serious. The two less serious conditions are heat cramps and heat exhaustion. Heat stroke is among the leading causes of death in young athletes, and football participants are the segment of the population with the highest incidence of heat stroke, about 4.5 cases per 100,000 participants per year. Since 1995, 31 players have died of heat stroke. There is an excellent short course on HRI at https://www.cdc.gov/nceh/hsb/extreme/heat_illness_training.htm, which I found easily with a Google search using, "CDC HRI." It is aimed at teachers, coaches, parents or caregivers, and has a number of handouts that are tailored to each group. The information below is taken from that site, and it uses the term "athlete" but the information applies equally to anyone with significant heat exposure, especially in association with exertion:

Heat cramps are muscle pains or spasms, usually in the legs, abdomen, or arms, and might occur in association with strenuous activity.

Treatment: Have athlete rest in a cool, shady, or air-conditioned place, and drink water, clear juice, or a sports beverage. Do not allow athlete to return to strenuous activity for a few hours after cramps subside. Seek medical attention if cramps do not subside in one hour.

Heat exhaustion is a form of heat-related illness that can develop after exposure to high temperatures and inadequate or unbalanced fluid replacement.

Symptoms: Heavy sweating; headache; nausea and/or vomiting; muscle cramps; dizziness, fainting, weakness or tiredness; pale, cool, moist skin; Fast, weak pulse; breathing fast and shallow.

Treatment: Remove restrictive clothing, equipment, and helmet; rest in a cool, shady area or seek an air-conditioned place; drink water, clear juice, or a sports beverage; take a cool shower, bath, or sponge bath.

Heat Stroke is the most serious heat-related illness. It occurs when the body becomes unable to control its temperature, because the sweating mechanism fails (completely or partially), and the body is unable to cool down, resulting in a rise in body temperature. Body temperature may rise to 106°F or higher within 10 to 15 minutes. Heat stroke can cause death or permanent disability if emergency treatment is not provided. Seek medical attention immediately.

Symptoms: High body temperature; rapid pulse; skin is hot and often red, but may be moist or dry; throbbing headache, dizziness, nausea, confusion, unconsciousness.

Treatment: Have someone call for immediate medical assistance while you begin cooling the victim. Response time is critical. Remove restrictive clothing, equipment, and helmet. Cool the person rapidly: place the person in a cool shower or spray them with cool water from a water hose; sponge the person with cool water. You may use ice bags at neck, armpit, and groin area, or – if the humidity is low – wrap the person in a cool, wet sheet and fan him or her vigorously. Monitor body temperature* and continue cooling efforts until body temperature drops to 101-102°F. Do not continue cooling efforts once core body temperature is less than 102. If the person is alert, give him or her sips of cool water, regardless of temperature. Do not give the person alcohol to drink. Do get them to a medical professional as soon as possible.

*Rectal temperature is the most accurate measure of core body temperature available in the field.

The Two Revolutions of 1776

June 28, 2018

There were two world shaping revolutions in 1776. Next Wednesday, July 4, we celebrate the signing of the document that resulted in our American Revolution. The other revolution was one of ideas, resulting from the publishing of Adam Smith's second book, *An Inquiry into the Nature and Causes of the Wealth of Nations*, usually known simply as *The Wealth of Nations*. Smith explained the principles of economic freedom and self-determination that we call capitalism. Both of these revolutions are critically important to the good health that we enjoy today in America and around the world.

The embrace of capitalism and the defeat of serfdom in Europe resulted in the greatest increase in life expectancy and general health that the world has yet seen. Increases in freedom, self-determination and economic freedom are highly correlated with increased health and reduced mortality. That is true historically and today. A male child born in France in the 18th century had a life expectancy of less than 30 years. A male child born in 18th century England had a life expectancy of 34 years. There were serfs in France, but not England, at that time. Life expectancy in England had risen to 41 years by 1820, 50 years by the early 20th century, and today the life expectancy at birth is 81 years in the United Kingdom (UK). It is 82 years in France, and 80 years in the USA. (<https://www.cia.gov/library/publications/the-world-factbook/rankorder/2102rank.html>).

While the changes in health during the 18th and 19th centuries were due mostly to capitalism, the 20th century showed the importance of the other revolution for the world. That century birthed the most brutal totalitarian regimes the world has ever known, at least in terms of numbers of deaths they caused. The first was the USSR, which was the initial communist government that spawned other communist regimes, and then the Nazi regime arose in Germany about 20 years later. The deaths resulting from communist governments and the World War started by the Nazis amounted to at least 140 million, and perhaps 180 million people. These regimes and their associated killing would not have been ended, but for the United States of America and the dedication of the men and women of this great country who did and do pledge their lives, fortunes and sacred honor in order that the cause of freedom not perish from the earth. The Declaration of Independence and The Gettysburg Address are two short documents that are well worth re-reading as we remember this country's striving to fulfil the founders' dream of a sovereign and independent nation where people are free and equal.

It is often alleged that capitalism is amoral and is not as compassionate as socialism. In answer to the morality question I cite Adam Smith's arguments in his first book, *The Theory of Moral Sentiments*, which is still one of the world's most influential books on the philosophy of morals. I would also point out that the people of the United States give much more money to charity – almost twice as much, as a percentage of their income – than do the citizens of any other country. As to compassion, there is a strong correlation between freedom and health, as can be seen by comparing the chart for life expectancy (above) with the Heritage Foundation's Freedom Index (<https://www.heritage.org/index/ranking>). Indeed, of the 50 countries with the highest life expectancies, only Greece has recently been less than moderately free. Finally, it should be noted that the fall of the USSR marked the time at which capitalism began to advance rapidly in the third world. On the brink of that fall (in 1990), 1.9 billion people – 43% of the developing world – lived on less than \$1.25 a day. In 2008, about 1.3 billion, or 22% did. The average life expectancy in the world increased from 65.4 years to 70.1 years in that time.

In the upcoming week let us give thanks for the miraculous gift of our freedom. It has made us a healthy and wealthy nation, but freedom is always only one generation away from oblivion. May we ever remember that, and act accordingly. And may God Bless America.

