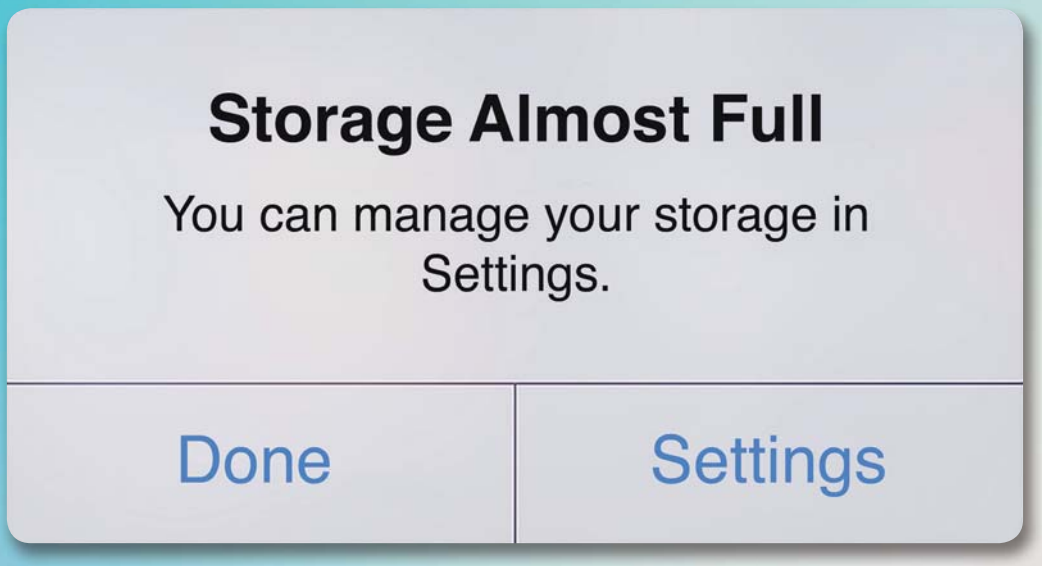
PANHANDLE HEALTH

A QUARTERLY PUBLICATION OF THE POTTER-RANDALL COUNTY MEDICAL SOCIETY

Fall 2019 | VOL 29 | NO. 4

Weird Science



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Weird Science

On The Cover: ***Wise Counselor*** by Patsy Kisor

PANHANDLE HEALTH is published quarterly by the Potter-Randall County Medical Society, (806) 355-6854. Subscription price is $12.00 per year. POSTMAN: Send address changes to PANHANDLE HEALTH, 1721 Hagy, Amarillo, Texas 79106. ISSN 2162-7142

PHOTOCOMPOSITION AND PRINTING BY CENVEO.

Guest Editor's Message:
Happy Fall

by Tracy Crnic, MD

Among several of the things that make an article readable is it's "story telling" quality. What better time of year to tell "ghost" stories than autumn, when days are shorter and colder and fireside chats are most fun? Thus is born the theme of our third quarter issue, Weird Science and Spooky Medical Stories. Early medicine's origins in gross anatomy and the horrors of medicine during the holocaust are a few examples of medicine's proclivity to enlighten unusual and creative methods. Within the following pages, you will discover multiple other examples. Almost all cultures and religions have, at some time, manipulated the body to ward off evil, to torture adversaries, or to promote political agendas. As I was researching thoughts on this issue, I found some interesting facts and misconceptions I will share here.

Some fun facts

If you want to scare yourself, study malpractice; if you want to have fun…. read on.

1) Mary Shelly's Frankenstein tells the story of a monster brought to life with lightning and made from parts the doctor retrieved from the graves of criminals. Early medical schools did use retrieved corpses to study gross anatomy, and even today, there are many uses in medicine for electricity.
2) Among the issues that the Holocaust medical trials brought about was the origin of Informed consent for procedures and experimentation.
3) Bats and dogs see differently than humans but are not blind. Some animals like snakes and butterflies can perceive more wavelengths of light than the human eye. Our eyes only have three types of cone receptors to detect our visual spectrum of light.
4) Several infamous mass murderers were first physicians. Examples include Dr. Harold Shipman, Dr. H. H. Holmes, Dr. Marcel Petoit, and Dr. Josef Mengele to name only a few. To read more about these sinister caregivers, visit www.ranker.com/list/serial-killers-who-were-doctors/ranker-crime.
5) Child-proof containers and sealed medical bottles were initiated because of the poisoning of Tylenol with potassium cyanide that occurred in 1982.

Some medical myths

1) We only use 10% of our brain….. Not true, we use all areas of our brain, just not all of it, all of the time – some times, more than others.
2) The tongue is not the strongest muscle in the body; in fact, it isn't even a muscle. The heart is by far the strongest followed by the masseter, calf muscles, gluteus and the female uterus.
3) You don't catch "cold" in cold weather. The warm air being circulated throughout many buildings contain viruses and is more to blame than a cold wet head.
4) Blood is not blue before it is oxygenated. It is always red of varying shades. Our veins appear bluish because the color blue is not absorbed by human skin as much as the color red, so our eyes perceive the different hue. The color we see when we look at the sky is another example of this effect.
5) Einstein did not fail math; however, he did display signs of Asperger syndrome. The only exam he is known to have failed was written in French, a language with which he was not familiar. Even then, he passed the math section of the exam.

POTTER RANDALL COUNTY MEDICAL SOCIETY (PRCMS) OFFERS HELP TO TROUBLED PHYSICIANS

If you, or a physician you know, are struggling with addiction, depression or burnout and are unsure what to do or whom to contact, the Potter-Randall County Medical Society is here to help. We offer face-to-face confidential sessions with the PRCMS Physician Health and Wellness Committee, made up of your physician peers who know and understand recovery. Please don't struggle alone when help is a phone call or an email away. Whether you are calling for yourself, your practice partner, or as a family member of a physician, contact Cindy Barnard, PRCMS Executive Director, at 806-355-6854 or prcms@suddenlinkmail.com. Membership in PRCMS is not required.

Our Next Issue Of
Panhandle Health
Features:
New Specialties and Subspecialties

Potter-Randall Alliance NEWS

by Ashley Troutman, President

AUGUST 2019

Autumn days will soon be here…. The Potter-Randall County Medical Alliance had a fun and impactful summer, and we are looking forward to our upcoming events and cooler weather.

During the month of August, the Potter-Randall County Medical Alliance contributed over 100 community service hours and 412 backpacks to our annual community outreach project. We were honored to be one of the many partners that included the Texas Medical Alliance Association, Give More HUGS, Heal the City, Storybridge, and Hillside Church on North Grand ensuring that local children start the school year off right! We were proud to witness many member's children also involved with the Back to School event, from stuffing backpacks on a hot summer evening to distributing them to their peers. Thank you to all who donated to this purposeful event. We could not have made this a success without your support.

The Potter-Randall County Medical Society, Alliance and Circle of Friends will again be hosting a Fall Couples Social on Thursday September 19th. The social will be held at the beautiful home of Dr. and Mrs. Assadour Assadourian. We look forward to seeing you there!

Everyone can now join or renew your membership online! www.texmedalliance.org

Please check Facebook and email for a list of upcoming events. Our website is currently being revamped so please continue checking it for updates as well. www.potterrandallalliance.com

SHOUTOUTS

Thank you Courtney Carthel, Ana Rodriguez, and Michelle Agostini for providing meals to the Ronald McDonald House in June, July and August. Thank you Kristen Atkins for hosting our backpack stuffing event. We appreciate your service!

UPCOMING EVENTS

Thursday, September 19: Fall Couples Social @ 7p-9p (1900 Westwood Dr) RSVP to potterrandallalliance@yahoo.com or Ashley 832-265-7694

Thursday, October 24: Quarterly Meeting – Ladies Social @ (Time & Location TBD) Please bring food pantry or toiletry items to be donated to a local charity.

Sincerely,
Ashley Troutman-PRCMA President
www.potterrandallalliance.com

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Executive Director's Message

by Cindy Barnard, Executive Director

I have a suspicion that this issue of *Panhandle Health* will be exceptionally popular as it is very readable for the general population (not to insult the "general population", but often our articles are very technical and difficult to read for those not well-versed in medical terminology.) Every so often, it's fun to have a different kind of issue, and this is one of those. The topic is "Weird Science", and if that doesn't pique your interest, I'm not sure what we need to do to get your attention!

Below are some examples of "home remedies". You might some useful, some bogus, and many amusing. Somehow, I don't see myself walking around with a banana peel taped to my skin for "a week or so (use a fresh peel every day)". This is supposed to get rid of warts but I am afraid my friends might fear for my sanity if they saw me with banana peels taped on my arms and legs, and personally, my vanity would definitely not allow me to use this type of "cure".

If nothing else would work, I'll just live with the warts! However, I am sure that some of these "old wives' tales" didn't get to be such without some element of truth to them, be it small or large. Below are some "medical" (and I use the term loosely) home remedies garnered from a small book written by Susan Richardson Jordan, entitled "Home Remedies – Tips & Other Stuff".

Our cover is entitled "Wise Counselor" by Patricia Kisor. In 1984, she enrolled at Amarillo College for sculpture classes in clay medium. After two years there, she decided she needed a bigger challenge so she taught herself to be a stone carver. Years later, she is still enthralled with sculpture although she has expanded her choice of mediums (i.e. metal, wood, etc.) In 2003, she finally began painting and is self-taught in oil and acrylics. Lately, she is creating and experimenting with copper enameling. Her work can be seen at her new gallery at 1422 S.W. 15th Avenue. Patsy is also showing art creations in the Gallery at 112 in Sayre, Oklahoma.

Bee/Wasp Sting: Put a copper penny on the sting for 10+ minutes which takes the sting out. You might want to tape the penny to the sting. Also, vanilla (real) will work as well as pure vodka.

Ring Worms: Burn a brown paper sack and rub the ashes on the ring worm.

Warts: Soak a cotton ball in apple cider vinegar. Attach to the wart with tape. Also a banana peel taped on for a week or so (use a fresh peel each day) is reported to work. Over-the-counter Duofilm applied twice a day for a month or so. Pumice the wart in-between applying Duofilm. A poultice of crushed garlic, dandelion stem extract, honey and cooked cabbage will also do away with the warts.

Feet Fungus: A 50/50 mix of water and peroxide on the feet and toes will kill the fungus. Let the mixture dry. You can also use Listerine to get rid of unsightly toenail fungus by soaking your toes in the mouthwash. The antiseptic leaves your toenails looking healthy again.

Toothache: If you cannot get to the doctor, you can use a capful of Peroxide to lessen the pain. (hold in mouth, then spit out)

Boils: Peroxide helps rid one of boils. You can also cover a boil with Hunt's Tomato Paste as a compress. Acids from the tomatoes sooth the pain and bring the boil to a head.

Poison Ivy: Putting straight alcohol on cotton swabs and dabbing each blister causes faster healing.

Burn Remedies: It has been told that when you burn yourself, put plain old flour on it for at least 10 minutes. It helps cool the burn, but you will not ever have a blister. Also swabbing egg whites onto the area of burns takes the burn away. Also, Colgate toothpaste is said to be an excellent salve for burns.

Splinters: Pour a drop of Elmer's Glue-All over the splinter, let dry and peel the dried glue off the skin. The splinter sticks to the glue. You have to have a portion of the splinter showing – not buried deep in the skin for this to work.

Broken Blisters: To disinfect, dab on a few drops of Listerine which is an antiseptic.

Bruises: Soak a cotton ball in white vinegar and apply to a bruise for 1 hour. Vinegar reduces the blueness and speeds up healing.

Band Aid Replacer: Instead of a Band-Aid, use the inner membrane of an egg. Just crack open fresh egg and peel the fine membrane from the inside of the shell. Place it over your cut, rash or whatever. It heals so quickly and with less scarring. If used on a spot that will be in water quite a bit (like a finger), you may have to reapply several times.

Callus Softener: 5-6 aspirin nd TBSP lemon juice makes

a paste. Apply to callus, cover with plastic wrap and warm towel. Leave 10 minutes then rub with pumice stone.

Gingivitis: "Oil Pulling" is swishing a tsp of mineral oil for 10-20 minutes per day before brushing. It has been proven as effective as a prescription oral rinse. Some people like sesame oil or chlorhexidine mouthwash. Be patient – it may take a year or so, but it is effective and cheap.

Diarrhea: Heat oven to 350 degrees and put a square piece of plywood board in until it is hot. Be sure it does not burn. Remove and sit on it till it cools. The heat keeps bacteria in the intestines.

Iron: Coffee and cereal don't work together. Coffee has tannins which block uptake of iron from plant foods like cereals, bread and pasta. Tea also contains tannins.

The calcium in cheese attaches to iron and keeps it from being absorbed by your body.

Red Wine is loaded with iron binding polyphenols. Adding tomatoes or peppers to pasta reduces the negative effect.

Soybeans and grains have compounds called phytates which interfere with absorption of iron. Do not eat them together.

Colds: You will have fewer colds when you eat tomatoes and broccoli. They are loaded with vitamin C. When olive oil is added, the body consumes the beta-carotene better. Olive oil allows 5X more beta-carotene to be absorbed.

Tummy: Eat yogurt and bananas together. Pro-biotics and pre-biotics help good bugs to fight off stomach aches.

Cholesterol: Eat oatmeal, soy milk, almonds and enriched margarine with terols. In 4 weeks it can lower LDL's by 30%.

Use 2 TBSP of honey and 3 tsps of cinnamon powder and mix in 16 ozs of water. It will lower your cholesterol by 10% within 2 hours. Honey and cinnamon revitalize the arteries and veins.

Arthritis: Drink 1 cup hot water, 2 tsp honey and 1 tsp cinnamon. It helps with pain. (Honey contains anti-bacterial, anti-viral and anti-fungal which are effective in fighting bacteria that causes many infections.) (The wound centers at hospitals use a "honey pad" to place on wounds. It helps kill the bacteria and heals)

Mix 2 cups of Quaker Oats and 1 c. water in bowl and warm in microwave for 1 minute. Cool slightly then apply mixture to your hands for soothing relief from pain.

Bladder Infections: Drink 1 TBSP cinnamon and 1 tsp honey in glass of lukewarm water. It destroys germs in the bladder.

RECIPE FOR CINNAMON AND HONEY – I mix in a small bowl enough for a week's worth of drinks. I then heat the water and add a couple of TBSPs of the mixture per above. This drink helps colds, strengthens the immune system, indigestion, gas, influenza and longevity. It also helps with bad breath, fatigue, weight loss and research in Japan and Australia reveals cancer cures for stomach and bones.

Canker Sores: 1 capful of 3% peroxide held in mouth for 10 minutes daily will cure canker sores. Just be sure to spit it out. It also whitens teeth. Alum (spice) also cures canker sores. Just put a dab on the sore.

Brewer's Yeast Tablets: Helps with tremors, morning sickness, diabetes, lowers cholesterol and aids with weight loss. Can also improve acne.

Immune System: Cranberries, blueberries and pineapple contain anti-oxidants and anti- inflammatory properties which help immune systems.

Asthma: Try chewing on a couple of curiously strong Altoids peppermints rather than the high-priced inhalers if you find yourself in a predicament where you don't have your inhaler.

Muscles: Apply 1 TBSP horseradish in 1 cup olive oil – let sit for 30 minutes then apply as a massage oil for instant relief.

Sore Throat: Mix ¼ cup vinegar with ¼ c. honey and take 1 TBSP 6 times per day. Kills bacteria.

Urinary Tract Infections: Cure with Alka-Seltzer. Dissolve 2 tablets in glass of water and drink at onset of the symptoms. Alka-Seltzer begins eliminating urinary tract infections almost instantly – even though the product was never advertised for this use.

Hayfever/Allergies: Drink Comfrey tea.

Apples: There and many health benefits from apples: may protect menopausal women from osteoporosis and increase bone density; strengthens bones; children of mothers who ate lots of apples during pregnancy have lower rates of asthma; quercetin in apples may protect brain cells from the kind of free radical damage that may lead to Alzheimer's disease; pectin in apples lowers LDL; two apples per day may lower cholesterol by as much at 16%; studies show those that eat lots of apples had a 50% lower risk of developing lung cancer; reduces risk of breast cancer; pectin lowers risk of colon cancer and helps maintain a healthy digestive tract; and eating the apple skins lowers the risk of liver cancer by 57%; prevents constipation, protects your heart; blocks diarrhea; improves lung capacity and cushions joints. So you can see why eating an apple a day keeps the doctor away.

Apricots: Combats cancer, controls blood pressure, saves your eyesight, shields against Alzheimers and slows the aging process.

Artichokes: Aids digestion, lowers cholesterol, protects your heart, stabilizes blood sugar, guards against liver disease.

Avocados: battles diabetes, lowers cholesterol, helps stop

| *continued on page 10*

stokes, controls blood pressure and smoothes skin. Is also good for healing stomach ulcers.

Bananas: Protects your heart, quiets a cough, strengthens bones, controls blood pressure, blocks diarrhea. Also take bananas apart when you get home from the store. They ripe faster when connected.

Beans: Prevents constipation, helps hemorrhoids, lowers cholesterol, combats cancer, stabilizes blood sugar. Also a great substitute for protein.

Beets: Controls blood pressure, combats cancer, strengthens bones, protects your heart, aids in weight loss.

Blueberries: Combats cancer, protects heart, stabilizes blood sugar, boosts memory, and prevents constipation.

Broccoli: Strengthens bones, saves eyesight, combats cancer, protects heart and controls blood pressure.

Cabbage: Combats cancer prevents constipation, promotes weight loss, protects heart and helps hemorrhoids.

Cantaloupe: Saves eyesight, controls blood pressure, lowers cholesterol, combats cancer, supports immune system.

Carrots: Saves eyesight, protects heart, prevents constipation, combats cancer and promotes weight loss.

Cauliflower: Protects against prostate and breast cancer, strengthens bones, banishes bruises, guards against heart disease.

Cherries: Protects heart, combats cancer, ends insomnia, slows aging process, shields against Alzheimers.

Chestnuts: Promotes weight loss, protects heart, lowers cholesterol, combats cancer, controls blood pressure.

Chili Peppers: Aids digestion, soothes sore throat, clears sinuses, combats cancer, boosts immune system.

Figs: Promotes weight loss, helps stop strokes, lowers cholesterol, combats cancer, controls blood pressure.

Fish: Protects heart, boosts memory, combats cancer, supports immune system.

Garlic: Lowers cholesterol, controls blood pressure, combats cancer, kills bacteria, fights fungus.

Grapefruit: Protects against heart attacks, promotes weight loss, helps stop strokes, combats prostate cancer, lowers cholesterol.

Grapes: Saves eyesight, conquers kidney stones, combats cancer, enhances blood flow, protects heart, good for diarrhea.

Green Tea: Combats cancer, protects heart, helps stop strokes, promotes weight loss, and kills bacteria.

Honey: Heals wounds, aids digestion, guards against ulcers, increases energy, fights allergies.

Lemons: Combats cancer, protects heart, controls blood pressure, soothes skin, stops scurvy.

Limes: Combats cancer, protects heart, controls blood pressure, smoothes skin, stops scurvey.

Mangoes: Combats cancer, boosts memory, regulates thyroid, aids digestion, shields against Alzheimer's.

Mushrooms: Controls blood pressure, lowers cholesterol, kills bacteria, combats cancer, strengthens bones.

Oats: Lowers cholesterol, combats cancer, battles diabetes, prevents constipation, smoothes skin.

Olive Oil: Protects heart, promotes weight loss, combats cancer, battles diabetes, smoothes skin.

Onions: Reduces risk of heart attack, combats cancer, kills bacteria, lowers cholesterol and fight fungus.

Oranges: Supports immune systems, combats cancer, protects heart, strengthen respiration.

Peaches: Prevents constipation, combats cancer, helps stop strokes, aids digestion, helps hemorrhoids.

Peanuts: Protects against heart disease, promotes weight loss, combats prostate cancer, lowers cholesterol BUT AGGRIVATES DIVERTICULITIS.

Pineapple: Strengthens bones, relieves colds, aids digestion, dissolves warts, blocks diarrhea.

Prunes: Slows aging process, prevents constipation, boosts memory, lowers cholesterol, protects against heart disease.

Rice: Protects heart, battles diabetes, conquers kidney stones, combats cancer, helps stop strokes.

Strawberries: Combats cancer, protects heart, boosts memory, calms stress.

Sweet Potatoes: Saves eyesight, lifts mood, combats cancer, strengthens bones.

Tomatoes: Protects prostate, combats cancer, losers cholesterol, protects heart.

Walnuts: Lowers cholesterol, combats cancer, boosts memory, lifts mood, protects against heart disease.

Water: Promotes weight loss, combats cancer, conquers kidney stones, smoothes skin.

Watermelon: Protects prostate, promotes weight loss, lowers cholesterol, helps stop strokes, controls blood pressure.

Cold Water Fish: All cold water fish are great for your eyes, heart and bones. Salmon (the "l" is silent) is the richest in Vitamin D and contains Omega 3.

Medicine Men and Shamans

by Susan Hellberg

A medicine man or woman differs from a shaman, a fact that is confusing to many. A medicine man "is a traditional healer and spiritual leader who serves a community of indigenous people of the Americas" while a shaman "explores the entirety of the patient's life and experience", entering a trance state that allows him/her to identify the sickness and its origins and consequently, heal it. (Wikipedia)

Individual Indian cultures have their own names, in their respective indigenous languages, for their medicine men, their spiritual healers and ceremonial leaders…" (Wikipedia). Native Americans are often hesitant to discuss the practices of medicine men with anyone except other Native Americans or First Nations communities, and, in fact, are often truly suspicious and secretive with outsiders who are trying to learn about their practices and healings. Westerners have mostly had to rely on information passed down from elders and literature, saved from the 1800's.

Some of the literature suggests that several ancient Indian tribes followed the "rule of three": a medicine man could have two "patients" in a row die, but the third death was "three strikes and you're out"! "Out" was more than unpleasant – not a retirement to the beach or an ouster from the tribe – but instead, death – killed by knife, rifle, hanging, beheading, or, in at least one case, dragged behind a horse until lifeless. In addition, the medicine man was often held responsible for deaths from sickness, plague, and/or other epidemics (i.e. smallpox, etc.). It has been reported that, in some tribes, a medicine man could be executed if only ONE patient died (failing to prove witchcraft). He was offered an unappealing choice in the case of losing a patient—execution or the opportunity to escape on foot (surely, death, but a slower and more painful demise).

Clearly, a practicing medicine man was in a high-risk profession (not unlike our current medical practitioners, although, mercifully, depending on one's point of view, the "rule of three" no longer applies to our modern physicians!) On the other hand, a successful medicine man could become exceedingly wealthy. In a successful "healing", he was often rewarded with the currency of the time, or horses, food, etc.

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PANHANDLE HEALTH

A Publication of the Potter-Randall County Medical Society

Editorial Policy and Information for Authors

Purpose *Panhandle Health* strives to promote the health and welfare of the residents of Amarillo and the Texas Panhandle through the publication of practical informative papers on topics of general interest to most physicians while maintaining editorial integrity and newsworthiness.

Spectrum *The Journal* seeks a wide range of review articles and original observations addressing clinical and non-clinical, social and public health, aspects as they relate to the advancement of the state of health in the Texas Panhandle. Pertinent letters to the editor, news submissions, and obituaries listings are accepted pending editorial review. The Editorial Board accepts or rejects submissions based on merit, appropriateness, and space availability.

Submission process Material should be e-mailed to the editor at prcms@suddenlinkmail.com or mail a hard copy to Cindy Barnard, PRCMS, 1721 Hagy, Amarillo, TX 79106. A recent photograph of the author (optional) and a curriculum vitae or a biographical summary are also to be submitted.

Conflict of Interest Authors must disclose any conflict of interest that may exist in relation to their submissions.

Journal Articles Manuscripts should be double-spaced with ample margins. Text should be narrative with complete sentences and logical subheadings. The word count accepted is generally 1200 to 1500 words. Review articles and original contributions should be accompanied by an abstract of no more than 150 words.

References References to scientific publications should be listed in numerical order at the end of the article with reference numbers placed in parentheses at appropriate points in text. The minimum acceptable data include:

Journals: Authors, article title, journal, year volume, issue number, inclusive pages.

Books: Author, title, place of publication, publisher, year.

Web sites: URL of the site and the date the information was accessed.

Other sources: Enough information must be included so that the source can be identified and retrieved. If not possible, the information for source should be included parenthetically in the text.

Illustrations Illustrations should be black and white only with complete-sentence legend.

Previously Published Material Short verbatim quotations in the text may be used without permission but should be quoted exactly with source credited. Otherwise, permission should be obtained in writing from the publishers and authors for publishing extensive textual material that was previously published.

Editing Accepted manuscripts are edited in accordance with the *American Medical Association Manual of Style.*

Letters Letters will be published at the discretion of the editor and editorial board. The length should be within 400 words. References should not exceed five. All letters are subject to editing and abridgment.

News News should be e-mailed prcms@suddenlinkmail.com or mailed to Cindy Barnard, PRCMS, 1721 Hagy, Amarillo, TX 79106.

Obituaries Listings of deceased members of PRCMS with highlights of their contributions are published when adequate information is available.

Point of View Opinions published in any article, statement, or advertisement are the responsibility of the author and shall not be construed by any means to represent those of the editors or the medical society.

Medicine men 's impressive knowledge and ceremonies have been passed down through the generations for centuries, so that training a medicine man takes years. Well-trained, knowledgeable, legitimate medicine men are still important to Native Americans.

The confusion between a medicine man and a shaman is because those terms have continually been used interchangeably for years. This is not only incorrect but also insulting to many Native Americans. The use of the term, "witch doctor" is even more inappropriate—and rude! One article suggested that Native Americans discussing the use of the word, "shaman", abandon "political correctness". For example, the article likened it to blacks who, within their own circles, often use the "N-word". However, if an "outsider" used the word, it would (and should) be more than totally unacceptable.

The origins of the word, "shaman", are not even Native American but are from the Tunguisk inhabitants of Siberia. The word, "shaman", is rarely used by "true" Native Americans or First Nations people, but because scholars have incorrectly used the terms interchangeably, it has become virtually impossible to distinguish between the two. However, it appears that a shaman spends his time in the spiritual world, communicating between the spirits and man, while a medicine man primarily acts as a physician, attempting to cure disease through more traditional techniques (and by "traditional", I mean techniques that are still fairly "traditional" now— obviously, not always the modern techniques of today.)

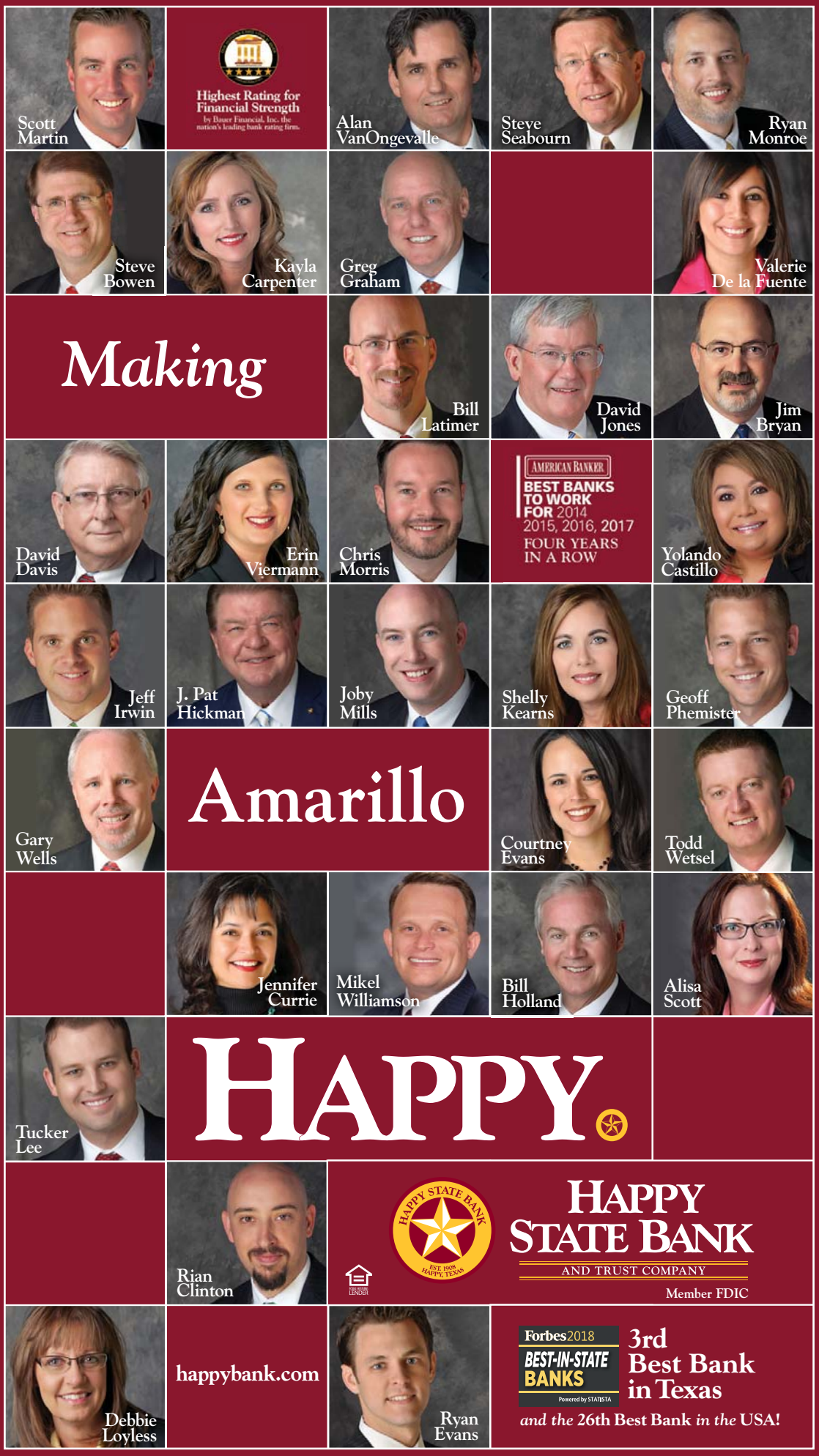
Native American communities have a real problem with scam artists and fake shamans and medicine men, and a task force from the Cherokee Nation has tried to weed out these charlatans. Normally, in order to see a true medicine man, an individual must find a tribal member to recommend him to the healer.

Tribes using shamanism are becoming scarce. A shaman often is viewed as a crazy, or, at best, eccentric person, dancing around in strange costumes and body paint, uttering odd sounds, and immersed in mystery and superstition. "Crazy" is an incorrect characterization of a true shaman. For Westerners, it doesn't help that shamanism has incorporated psychedelics in its practices for years (though many tribes have largely abandoned this system of beliefs).

In fact, a true shaman is not a witch doctor but more of a "mystic", investigating the patient's thoughts and background, assisting him in entering an altered state of consciousness, and then, often laying on of hands. A shaman often views the patient's illness as basically psychosomatic, a physical manifestation of some life trauma or problem, and when this is identified, a "talk cure" is not only possible but also probable.

Therefore, shamanism is still relevant in today's world as a simplified type of psychiatry.

In conclusion, both medicine men and shamans have their place in current culture. Both incorporate faith and spirit into their healing practices, although medicine men can be more easily likened to traditional health professionals. Both have realized that today's diet and culture have contributed to the chronic illness, alcoholism and malnutrition of our Indian tribes. Both identify a similar root cause of disease, but each approaches the cure differently.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Poisons: A Study of History, Chemistry and Intrigue...

by Rouzbeh K. Kordestani, MD, MPH

Cyanide…Arsenic…Anthrax…
Smallpox…Ebola.....Polonium….
and VX gas…

Fear is often evoked when these names are mentioned. Unfortunately, in the heyday of modern times, it is the norm to evoke fear and anxiety as opposed to understanding. The next news alert from FOX or from MSNBC or from the internet noting an attack or some sort of exposure has made most people so sensitive and so anxious that the true science behind these chemicals/poisons has been belittled or sidelined. Science and critical understanding have taken a backseat to daily hysteria. That needs to change.

To understand poisons or the field of poisons, toxicology, one must look to history. Dr. Mathieu Ortila is thought to be the father of the field of modern toxicology. As a practicing physician in Europe, he found that most of the tests that were present at the turn of the century (19th) were unreliable for the detection of poisons. To this end, he began to study many of the commonly seen/used poisons and began to understand their specific interactions. He found that many of the older qualitative tests were unreliable. He then discarded these and moved to design more accurate tests to detect even the smallest traces of poisons in human body. In his book, Traite de Poisons, published in 1813, Ortila catalogued the known poisons, described their effects on the body, listed the symptoms and the hallmark signs if any, and then proceeded to list the ways best to identify/detect them. His exhaustive text formalized the understanding of poisons into the modern science/field of toxicology.

The Exotic Poisons

Many compounds can be toxic to humans in large amounts. As is said in some texts, "Poison is in the dose. The right dose differentiates a poison and a remedy." Even water can be toxic in large quantities, giving neurosurgical patients water intoxication and dilutional (life threatening) hyponatremia. However, certain chemicals such as arsenic can be poisonous in even the smallest of amounts, sometimes practically undetectable. In this brief survey, we will discuss six such poisons, with historical and/or recent significance.

Arsenic

Often when poisons are discussed, arsenic is first on the list. The reason for this is simple. Arsenic is a classic poison. Since it is colorless, tasteless, and odorless, and since even in small quantities it can cause death, it was the poison of choice for centuries. As far back as the fifth century B.C., its use had been documented. It was used by wives to slowly kill off their husbands. It has been used by kings to kill off opponents. It has been used by emperors to kill off unwanted offsprings or threats. In fact, its use was so common in the middle ages that it was given the nickname "inheritance powder," since many individuals used arsenic to expedite the death of family members in order to get their inheritances. The choice of using arsenic was made even easier since it was not hard to get and was in fact very hard to detect with the older detection methods.

Arsenic works by binding to proteins in cells, causing molecular havoc. As the levels of the metallic poison accumulate in the tissues, multiple systems are affected. The symptoms often begin with abdominal pains, vomiting and diarrhea. At first, the symptoms mirror those of a stomach virus. However, the symptoms often progress and get far worse. As the gastrointestinal signs worsen, the pattern becomes similar to that of cholera exposure. The next system affected is the neurological system. The patients show initial signs of weakness in their muscles, and eventually show signs of paralysis. The patients soon become confused as their neural pathways become scrambled. Unfortunately, the damage is irreversible at this point. Once multiple systems are damaged, death is inevitable. With arsenic, doses as small as 0.25 grams are enough to kill a person.

Arsenic and Napoleon Bonaparte

Napoleon Bonaparte died of an

apparent perforated ulcer while living out his exile on St. Helena. While his autopsy confirmed the diagnosis, it was later thought that the British and the French may have used poisons to ensure his slow death. Late analysis of Bonaparte's hair showed presence of arsenic. Traces of arsenic were present throughout his household in St. Helena. Interestingly, arsenic was also present in trace amounts in the paint used to prepare his residence. Apparently, in a moist environment (as surely an island residence on St. Helena would be), mold would digest the paint and would aerosolize the arsenic, exposing the inhabitants to undetectable levels of the poison. Even if the perforation had not killed him, it is thought that arsenic poisoning would have eventually guaranteed that Napoleon would never leave his permanent exile to again wage war in Europe.

Strychnine

Like arsenic, strychnine is one of the oldest poisons known to man. Even though its chemical structure was not discovered until the mid 20th century, its historical use stretches back to the ancient Chinese empires. The compound is derived from the bark or seeds of the plants of the strychnine tree. It is known to be colorless, and highly toxic. Its use was first advocated as a poison for rodents and unwanted animals, like cats and dogs. However, deaths from the poison were so horrific that, even as a poison for rats, it was thought to be too cruel to be used. It was eventually banned from use as a pesticide in 2006.

Strychnine works by blocking glycine receptors in the motor nerves in the spinal cord. It heightens sensitivity to stimuli causing sudden severe muscular contractions, almost seizure-like in activity. In poisoned individuals, the contractions are gradual as effects of the poison spread through the body. First the face is affected and then later, the body. The muscles of the body jerk violently in a myriad of contortions, called opisthotonos. The body then relaxes for a few minutes before the next series of spasms hits. These episodes continue until the affected person dies of exhaustion or of paralysis and an inability to breathe. Unfortunately, the strychnine does not cross the blood brain barrier and so the affected individual is conscious throughout this process as they go through the pain and the spasms. They feel all of the contractions and, in some cases, they are witness to their own vertebrae snapping. It is said that death from strychnine is the most horrific death by any poison.

Ricin

Ricin is thought to be one of the deadliest poisons ever discovered. Like strychnine and arsenic, only small amounts can lead to death. It is derived from the seeds of the castor oil plant, *Ricinus communis*. The poison consists of two long chain carbohydrates bound together. When these two chains are bonded, the compound is inert. Only when the two long chains split does the poison become active. This is the reason why more deaths due to castor oil are not seen. It is an old-world trick to give children castor oil to relieve their constipation. The oil customarily used has a very small concentration of the poison. In larger doses, castor oil can prove deadly. In fact, accidental deaths due to castor oil ingeston are documented routinely.

Only tiny amounts of ricin are needed to poison someone. Studies show that only 500 micrograms of the complex carbohydrate substance are needed to kill an adult human being. It can be injected, swallowed or even inhaled. It works by preventing the production of essential amino acids in the body. The initial effects are often seen within six hours after exposure. If inhaled, the lungs begin to fill with fluid. If ingested, vomiting and diarrhea are soon noted. This is often followed by internal bleeding. As the effects of the ricin progress, different organ systems begin to fail. Soon the person dies from multi-system organ failure and/or cardiovascular collapse. Death is often seen within 36 to 72 hours after the initial exposure.

Ricin and the Bulgarian Secret Service

In the late 1970s, Georgi Markov, a Bulgarian exile, was a part of the dissent against the Communist government of Bulgaria. He lived in London and worked actively on efforts against the Soviet-backed government. He was then strangely stricken ill and died shortly thereafter. He died only five days after he began an illness that resembled a cold. Upon investigating the unusual death, it was found that he had been given ricin. In his case, he was found to have an unusual

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puncture wound on his leg. Analysis of the wound found that it contained a small carrier pellet that contained ricin. Once injected into his leg, the pellet began to decay and allowed the ricin poison to circulate into the tissues. The death would have never been detected if not for the suddenness of the symptoms and the quick decay noted in the activist. The Bulgarian Secret Service was thought to be the instigator of Markov's murder. The case was never prosecuted.

Cyanide

Cyanide is also deadly and is much more accessible. Unlike the other poisons, cyanide exists in many forms in the environment. It works by binding to the iron in cytochrome oxidase. It then blocks the oxidation of glucose in the cell mitochondria. In this way, it disrupts the generation of energy in the mitochondrial workhorse. Almost immediately after exposure, the nervous system and the cardiovascular system are affected. Without energy, the system quickly fails and the exposed person dies. The hallmark of cyanide poisoning is the presence of very bright red blood because, even though the blood is oxygenated, it cannot be extracted by the cells.

Often when people are exposed to cyanide, they note either a sweet or a bitter almond taste/scent. As opposed to other poisons that are colorless or tasteless, cyanide and its almost bitter almond scent are pathognomonic. The symptoms of exposure include generalized weakness, dizziness, confusion, shortness of breath, bizarre body movements and, in some case, seizures. Since the exposure and the symptoms are concentration based, heavier exposures will immediately affect the heart and the brain. If exposed to large doses, there is often a sudden collapse, followed by a seizure or a coma state and then death. This death is again different from others as the skin of the victim is not ashen as is often seen but instead is cherry-red since the blood of the victim is high in oxygen content.

Cyanide and the Cassava Root

As one of the classic poisons discussed, cyanide is often misunderstood. Cyanide exists in multiple forms in many plants and fruits. It is found in small amounts in cherries, plums and apricots. For certain plants and trees, it often acts as a protectant against grazing animals. In trace quantities, it causes the grazing animals to have headaches and problems with ingestion. In this way, cyanide helps to act as a natural deterrent in the environment.

Cyanide is contained in high quantities in the plant root cassava. This is interesting since cassava is used as a carbohydrate food source in many parts of the world. It is often prepared as a porridge in drought regions in Africa like Nigeria. The method of preparation of the cassava root is critical to its use as a food source. Without the correct preparation, the consumption of cassava root is deadly.

By itself, fresh cassava root contains 300 mg of cyanide per kilogram. Eaten fresh, cassava root will immediately cause death. But if peeled and soaked in water for five days (usual preparation in Africa), and then sun dried, its cyanide content drops to 30 mg per kg. It is then grated before being incorporated into foods. By this method, its content of cyanide drops to below 10 mg per kg, the maximum level suggested by the World Health Organization (WHO).

If incorrectly prepared and then consumed, cassava consumption can result in a disease called konzo. It begins with symmetric hypertonic paralysis. It is often seen when the cassava root is incorrectly prepared and the steps as described are not properly followed. In many war regions where water and time are short, steps in cassava root preparation are skipped and konzo is seen. The disability and the paralysis of konzo are often permanent.

Polonium 210

Polonium 210 is a part of the new generation of poisons. Its use has been associated with political assassinations and is highly suspicious in international espionage. Since polonium is a radioactive isotope, its access is incredibly limited. Only nations with nuclear accessibility to fissionable compounds can develop this poison.

Polonium 210 is almost impossible to detect. Its half-life is 138 days and so, by the time any thought is given to such a rare poison, the damage has been done. It is easily injected, ingested, inhaled or even swallowed. The victim never suspects that he or she is already dying. The polonium begins by causing its effects on the germ cells and on the stem cells present in the body. The bone marrow is affected. The stomach lining is damaged, along with any leukocytes or any proliferating cell lines. The patient begins to lose weight, feels sickly and begins to decay. They soon develop aplastic anemia and appear toxic. Shortly thereafter, they die. The deaths only take a week to two and are often sudden. Because the chemical is so rare, few if any think of it as the offending poison. By the time that they do, the patient has died and any trace of the poison is long decayed and gone.

Polonium and the Russian Spies

The deaths/murders of many defected Russian spies have been trailed back to polonium. In England, the recent death of a Russian super spy was thought to be caused by the nuclear agent. Sergei Skripal, a former spy who had escaped to England, was found to be missing. He was then found unconscious on a park bench close to his home in Salisbury, England, with exposure to an "unknown substance." He soon died. No trace of any

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poison was noted. It was thought that his death was due to polonium. This was the same manner in which the Russian super spy Litvinenko was murdered. However, in his case, the unknown chemical was identified since Litvinenko himself had experience with polonium and recognized how he had been poisoned. He was able to help the British authorities identify fellow Russian spies as his assassins. Using his knowledge, his exposure was confirmed. Unfortunately, his exposure was so severe that his death could not be prevented.

VX Gas

Like polonium, VX is a new poison for a new age. It is thought to be the most dangerous chemical nerve agent in existence. Its potency has no equal. Only 0.5 milligrams is enough to kill someone. It is so potent that its use has been banned by most of the countries of the world, under the 1997 Chemical Weapons Convention.

VX has been used only once in large quantities in modern history. It was used by Saddam Hussein as the primary nerve gas agent to kill 5,000 Kurds in the village of Halabja in Iraq. The victims were found helpless, frozen and dead where they stood. Since the chemical is colorless and odorless, the victims never stood a chance. Since Saddam used large quantities, the deaths often took only minutes.

In smaller quantities, VX has been used as an assassination tool. Small amounts can be easily aerosolized and the victim exposed. It is thought that Kim Jong Nam, the brother of the dictator of North Korea, Kim Jong Un, was exposed to VX on his visit to Indonesia. He was exposed to an aerosolized chemical at the airport in Kuala Lampur. He was then rushed to the local hospital for care. He died there several hours later.

Conclusion

There are many exotic poisons. A tally of what exists in the planet shows over 1,000 kinds of poisonous marine organisms (700 poisonous fish), 400 poisonous snakes, over 200 killer scorpions, ticks, and spiders, 750 deadly plant species, and even several birds that have toxins in their feathers (National Geographic data). In such a hostile world, chemical poisons seem not so problematic.

However, the presence of poisons is not only a matter of fact but is also a matter of history. Archaic poisons such as arsenic and strychnine have been used for centuries. Cyanide and ricin have been present for some time and have been used both as friend and foe. The difference between the uses of these chemicals is related directly to the knowledge that goes along with their use. In other words, an understanding of science and history is most important in educating one about poisons. In the modern age of pseudo-science and social media where true science is lost, it is most important to remember history and understand the facts that are present. In a future where horrors such as VX gas are possible, our greatest weapon/asset will be our minds and our understanding of science.

We must not forget the past (history) because it can save us in the future.

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Maladies of the Mummies: A Brief Review of Diseases Found in Ancient Human Remains

by Scott Milton, MD, FACP

Introduction

This article reviews evidence of diseases found in ancient human remains. Much of our knowledge comes from examination of mummies from ancient Egypt. The first well documented autopsy was in 1825 in London on a mummy from the necropolis of Thebes, a woman about 50, and the initial cause of death was felt to be ovarian cancer. Subsequent more recent analysis, using modern technology, suggests *Mycobacterium tuberculosis* as the likely cause of death (1). Other infectious diseases such as malaria, schistosomiasis and leprosy have been shown to be present in ancient Egypt, as well as non-infectious maladies such as heart disease and cancer. The prevalence as well as the natural history of these still common human infections is estimated in some of studies reviewed.

Dr. Granville's mummy

Augustus Bozzi Granville (1783-1872) was an obstetrician who performed the first autopsy on an ancient Egyptian mummy in 1825. He studied the remains of a woman, about age 50, named lrtyersenu, from the necropolis of Thebes. Her remains dated to about 600 B.C. His detailed description was presented to the Royal Society of London. His findings concluded the cause of death was ovarian cancer. Subsequently, new technologies (mycolic acid biomarker derivatives) suggested instead that this individual died of disseminated tuberculosis. *M.tuberculosis* DNA was detected from multiple tissue samples as well.

Tuberculosis seems to have been present in an endemic manner by the time humans began to congregate in villages and cities. Further studies of remains at different times in ancient Egypt suggest that tuberculosis was present at a frequency that was constant for at least 2500 years and likely infected 25% of the population (2). Some have suggested that *M. tuberculosis* actually evolved from *M. bovis,* but these studies and other remains tested from Siberia suggest that *M tuberculosis* is actually the strain from which *M.bovis* evolved. In fact the earliest evidence of *M .bovis* is from around the late 1st century BCE to early 1st century CE (2).

Malaria

Evidence of the prevalence of malaria is astounding. King 'Tut' or Tutankhamun, as well as his grandparents, all had evidence of *Plasmodium falciparum* infection. Prevalence was estimated at around 72% and epidemics likely occurred (2). Malaria in ancient Egypt was likely affected by urbanization as well as the rise in agriculture. Depressions in the landscape along the Nile were sometimes flooded to form lakes. Canals were dug to enhance these areas and enlarge the lakes. From this, irrigation canals were dug for cultivation. Settlement of these areas ensued and over time urbanization occurred. Larger human populations in smaller geographic areas that have increased amounts of standing water were conducive to malaria epidemics. Further, coinfection with tuberculosis was very common. The perception that the ancient Egyptians were a vibrant and healthy people who built the pyramids, and had nobility, and were unaffected by these infectious diseases is not supported by examining their remains.

Schistosomiasis

This tropical parasitic disease remains a very common illness in Africa. This disease likely proliferated in ancient Egypt in agricultural and swampy areas along the Nile. A snail serves as an intermediate host in the lifecycle of this trematode. Eggs from this parasite were found in mummies dating to 500 B.C. and were first described by Ruffer, a British paleopathologist. ELISA, an immunologic assay, has detected evidence of this disease 5000 years ago (3). There are five species of schistosomiasis causing intestinal and urogenital disease. Both *Schistosoma mansoni* and *haematobium* are still found in many countries in Africa. Research confirms that standing water greatly increases the prevalence of this disease (3).

Leishmaniasis

DNA from this tropical parasite has been extracted from mummies from the middle kingdom period of ancient Egypt. This dates to about 4000 years ago. Leishmania DNA has also been extracted from much later Christian burial sites in modern day Sudan. The Egyptians traveled extensively into Nubia or modern Sudan for both trade and military needs. In light of the fact that Egyptian mummies from earlier periods did not contain Leishmania DNA and modern Sudan remains highly endemic for Leishmania, Sudan was likely the area where this disease arose (4).

Leprosy

The earliest evidence of *Mycobacterium leprae* in Egyptian mummies is around these first century AD. This mycobacterial disease likely originated in East Africa. *Mycobacterium leprae* has four strains that infect humans: European, West African, East African and Indian. Human migration and conquest likely introduced this disease to Egypt. Both European and Indian strains have been found in Egyptian mummies and were likely brought by sea trade and by Alexander the Great's army returning from lndia (5).

Other maladies

As may be expected, dental disease was common in ancient Egypt and included abrasions, dental caries and dental abscesses. Around 20% of individuals studied showed evidence of dental disease. Traumatic injuries were found in approxi-

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mately 20% of individuals as well. Cribra orbitalis and porotic hyperostosis are chronic bony formations felt to be secondary to anemic conditions. These abnormalities were found in 29% and 15.5% respectively. Osteopenia and subperiosteal bone formation suggesting metabolic disease or malnutrition was also commonly found. Other common conditions included osteoarthritis and spondylosis. Most mummies examined were between 20 and 40 years old (6).

Conclusions

The nobility of ancient Egypt were a very privileged group of individuals. Generally we imagine their lives as leisurely and not subject to chronic painful and debilitating illnesses when viewing their tombs filled with treasures. However, when the bodies of these individuals are examined, a much different picture of what life was like comes into focus. Their lives were shortened and maligned by infectious diseases that are still quite problematic today. Newer technology in identifying infectious diseases such as DNA amplification also provide clues to disease prevalence and risk factors for transmission of various infectious diseases. Chronic medical conditions such as anemia, arthritic conditions, dental disease and even traumatic injuries were found in these individuals. Many of the maladies of today affected the ancient Egyptians, although likely at a younger age.

In researching this topic I was struck by the fact that there is not a comprehensive text covering the subject of paleoarchaeology. A textbook describing current technologies for identification of infectious diseases in ancient civilizations as well as the evolution of current infectious diseases would be a wonderful contribution to a field that continues to grow with each new archaeological discovery.

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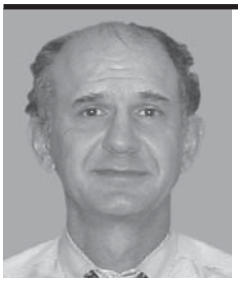

"With the Best of Intentions..." Medical Treatments that were Worse than the Disease

by Steve Urban, MD

Several articles in this issue of *Panhandle Health* address medical misadventures and debacles. Perhaps not surprisingly, medicine has its share of crooks, charlatans, sociopaths, zanies, crackpots, mountebanks, and fanatics. Medical schools are pretty good at excluding those with poor academic achievements, but not very good at weeding out those with serious character and personality flaws. There are about as many sleazebags in medicine as in any other field of endeavor. In this essay, however, I am going to avert my eyes from all those nutcases, sexual predators, Nazis, snake oil salesmen and criminals (you will read about them in other articles in this issue). Instead, I'm going to look at treatments that most doctors—and certainly most thought leaders of the profession—believed to be beneficial, but which, on closer study, were found to be useless or even harmful. I present this article as a stimulus for more scientific skepticism and professional humility.

From Hippocrates (if he existed) through Osler, very few historically accepted treatments are now used, and many were undoubtedly harmful. The academic discipline of medicine was more like a branch of humanities than a science (I'm a big fan of the humanities, but some questions are best answered by the scientific method – medical treatments being one). The Roman physician Galen famously studied the corpses of slain gladiators for anatomical details, but for the next thousand years his works were explicated rather than critically revised. His errors persisted for a millennium. The ancient theory of the four humors was used to justify treatments, such as bleeding and purging, that to the modern eye seem quaint and/or dangerous.

If you look through the "Principles and Practice of Medicine" by the revered William Osler, you are lucky to find ten medicines that are now considered effective. Some treatments from Osler's textbook (e.g. digitalis, quinine) were probably more beneficial than harmful, but most are either comical or terrifying to the modern observer. The first really dramatic advances were not (as is commonly believed) antibiotics but instead vitamins for the treatment of deficiency diseases. The discovery that citrus fruit could prevent and treat scurvy—a major cause of mortality among sailors—and that eating liver could treat pernicious anemia—then a fatal disease—seemed almost miraculous. In the early to mid-20th century, the chemical moieties (now called vitamins) in these foods were isolated and found to be the essential to health. These chemicals were cheap to isolate, easy to synthesize, and had almost no side effects. The search for effective chemical treatments for common diseases—antibiotics for bacterial infections, diuretics for edematous states, antihypertensives for the then fatal disease of malignant hypertension—grew out of this "easy" success. Most of these early treatments were obviously effective and relatively safe. It didn't take a randomized controlled study to demonstrate that penicillin was effective in bacterial meningitis. Untreated the disease was 100% fatal; with treatment almost all patients were cured.

I might parenthetically mention that the "miraculous" nature of these early successes has led to what my mentor Dr. Donald Seldin would call a "therapeutic frenzy." If antibiotics were useful in bacterial infections, they might help patients with other febrile illnesses, even viral diseases. If vitamins made a patient with scurvy or pernicious anemia feel better, why deny them to tired and harried patients with no evidence of deficiency disease? One current byproduct of this therapeutic mania is the indiscriminate use of vitamins and supplements, contributing billions of dollars to national medical expenditures, but with very almost no benefit (folate sup-

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plementation in pregnancy being the exception that proves the rule).

After the low-hanging fruit of deficiency and bacterial illnesses had been plucked, other equally devastating diseases—heart failure, cancer, dementia—came to the hand of modern pharmacology. These diseases, however, proved more difficult to treat and the treatments more fraught with side-effects. An excellent early example was the treatment of rheumatoid arthritis—a devastating disease—with corticosteroids. Patients improved dramatically and in short order. Inflammation melted away, bedridden patients arose to walk—steroids seemed as obviously effective as penicillin in bacterial meningitis. Only with time did side effects become more evident and more debilitating. I remember how my grandfather, an RA sufferer, would go from one physician to the next, searching for another who would give him his "big shot" of Kenalog. Months and years later his joint pain and deformity persisted; to them were added osteoporosis, skin fragility, and susceptibility to serious infection. Most treatments proved suppressive rather than curative. It became clear that careful scientific scrutiny would be necessary; we needed to properly weigh risk and benefit.

In response to the risk/benefit dilemma of these more problematic therapies, scientific and statistical methods were developed. It became clear that unintentional bias was just as troublesome as the intentional and self-serving bias of the charlatan. As a result, blinded and placebo-controlled studies became *de rigueur*. The studies needed to be prospective; the treatment and control groups needed to be comparable. Ideally, the conclusions of one randomized controlled trial (RCT) should be supported by multiple congruent studies. Many current treatments – ACE inhibitors in heart failure, immunosuppressives in multiple sclerosis, many cancer chemotherapies—have weathered this scrutiny.

And yet we know that much of what we do in medicine is not supported by such robust evidence. RCTs are expensive and time-consuming. Patients present to us with immediate needs, and we want to help them. As a result, many standard treatments are based on consensus, expert opinion, clinical judgment, and other wobbly foundations.

I'm going to give an example from the 1990s to demonstrate the potential pitfalls of the deductive or empirical approach to therapy and to explain why we must demand high-quality trials even for treatments that seem effective. I'm traveling back nearly 30 years because the lessons from this experience are so dramatic and so relevant to today's treatments. I will revisit the Cardiac Arrhythmia Suppression Trial (CAST), published way back in 1991 in the New England Journal of Medicine.

When I was a house officer at U.T. Southwestern, we believed that suppression of ventricular arrhythmias in patients with coronary artery disease was an important component of our treatment. Numerous studies had dem-

onstrated that frequent PVCs were often harbingers of ventricular tachycardia and fibrillation; we knew that many deaths in the acute situation were due to V Fib. We assumed that suppressing PVCs would prevent V Fib and would lower our patients' risk of sudden cardiac death. We suppressed PVCs acutely with prophylactic lidocaine and chronically with type 1 antiarrhythmics such as quinidine or procainamide. We believed in it. We weren't padding our pockets or trying to make our patients dependent on our expertise; type 1 antiarrhythmics made sense.

Then along came CAST.

When CAST was proposed, many cardiologists considered it unethical. The paradigm of PVCs→V Fib→ cardiac death seemed compelling. But a few radical empiricists realized that the chain of causation was unproven. They managed to get the CAST trial funded. In this study, almost 2000 patients were randomized--half to type 1 antiarrhythmics, and half to placebo. It was a rigorous, prospective, randomized trial. Everybody expected that Type 1 antiarrhythmics would confer a mortality benefit, justifying their widespread use. When the data were published, however, the final analysis showed that 60 patients died in the treatment group, compared to 22 in the placebo group; the results were both statistically and clinically significant.

So, this treatment proved to be worse than nothing. Why were we wrong? Now we know that PVCs don't cause sudden cardiac death. Both PVCs and V Fib accompany cardiac ischemia, but the suppression of one does not prevent the other. Furthermore, these antiarrhythmic drugs possessed previously unsuspected pro-arrhythmic effects that counteracted and indeed exceeded their potential benefits. In this case, the cure was worse than the disease, and many patients (surely including—let's be honest here—some of my own) died from our well-intentioned treatment.

Medicines have side effects, as well as beneficial effects, and we don't know which effect predominates until careful studies are performed. Is this unique to cardiac antiarrhythmics? Are the disturbing effects of the CAST trial an isolated event, or have other medical treatments proved similarly harmful?

Let me append a brief (and woefully incomplete) list of medical treatments that seemed reasonable, that should have worked, that were administered to thousands (or millions) of patients with good intent--but were found to be ineffective, harmful, or dangerous. We gave chloramphenicol to premature babies to prevent neonatal sepsis: HARMFUL. We gave high-dose steroids to patients with rheumatoid arthritis: HARMFUL. We gave Vitamin E to smokers to prevent atherosclerosis: INCREASED INCIDENCE OF LUNG CANCER. We gave hormones to prevent cardiovascular disease in post-menopausal women and caused more BLOOD CLOTS and (probably) more BREAST CANCER. So many cancer therapies provided minimal palliation at the cost of grievous side effects that all cancer drugs are now subjected to RCTs before approval.

Surely we have learned our lessons and no longer use unproven therapies: WRONG. We give antibiotics for viral upper respiratory infections at the cost of *Clostridium difficile* infections, some of which are fatal. We give systemic steroids for self-limited inflammatory conditions at the risk of avascular necrosis of the hip. We use antipsychotic medications for borderline indications at the risk of fatal ventricular arrhythmias. We have been seduced by the opinion of "pain experts" into believing that opioids can be safely used for non-terminal pain—and we have 17,000 deaths a year from prescription opioids to show for it. Wishful thinking and clever marketing will eat science for breakfast and won't even burp.

My conclusion? Human physiology is complicated—too complicated for us to predict deductively what will and what won't work. We have designer drugs and computer modelling, but we can't always predict the downstream effects. We want to do the best for our patients, and to do our best we have to measure the risk-benefit ratio of the therapies we provide. We're getting closer to our goal. It has become difficult to release an unproven drug, or to introduce an unproven procedure or surgery, but we have to remember the debacles of the past to avoid repeating them. We must continue to look critically at how we translate our burgeoning knowledge of pure science into the day-to-day applied science of patient care.

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Medical History on Display: Some of the Greatest Medical Museums of America

by Tracy Crnic, MD

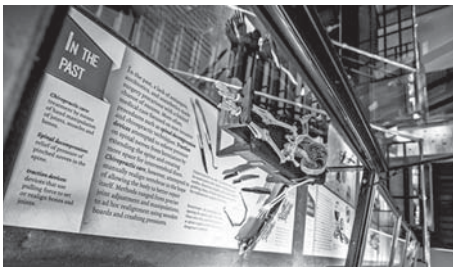
While we are busy studying the origins of our profession in order to better understand how to improve its future, there are endless fascinating findings that the general public and other scientists find useful also. These collections are broken down into geological regions, timeframes, specialties and genres to name only a few. Many of these have been placed in museums all over the world. There are too many to include in one article, but I will start with a taste of some of the more intriguing I found in hopes of inspiring you to pursue more detail and expand your list of places to explore. With each I have included the web site and address for the collections so you can enjoy a much broader experience regarding them. The amount of information I have about them varies mainly by my contact with the museum administrators. Some of these I was unable to communicate with, but I wish to thank all of them for sharing their amazing stories and details about their institutions.

Mütter Museum, the College of Physicians of Philadelphia

Philadelphia's Mütter Museum specializes in anatomy. The museum was founded in 1787, and it is housed within the College of Physicians of Philadelphia. It houses one of the most comprehensive collections of exhibits outlining the evolution of anatomical studies and anomalies. All the photos here are provided as a courtesy of The Mütter Museum of the College of Physicians of Philadelphia. Highlighted here are some of the permanent exhibits. On site you will find additional special exhibits, living exhibits, and a collection of online exhibits.

A Stitch in Spine Saves Nine: Innovations in Spinal Surgery

Parviz Kambin, MD, a pioneer in minimally invasive spinal surgery, donated this collection that depicts the history and development of spinal medicine. It includes information about common forms of spinal injury, disease, and the evolution of their treatment. It also includes discussions on treatments still being developed.



Albert Einstein's Brain

Nobel Prize winner Albert Einstein's journey in the world did not end at his death in at age 76 in 1955; in some ways it had just begun. When the physicist died in New Jersey, pathologist Thomas Harvey, MD autopsied the body and removed Einstein's brain (eventually with the family's permission for scientific research purposes). Dr. Harvey made 1,000 microscopic slides of the brain and enlisted the assistance of researchers worldwide to aid him in its study. It was, as you might expect, determined that his brain is unlike most. For example, it's weight is 0.3 lb less than average, the inferior parietal lobe is 15% larger than average, and it lacks the Sylvian fissure. It also lacks degenerative signs typical of a 76 year old male. The neuroscientists speculate that these findings may account for Einstein's exceptional mathematical and reasoning skills.

The Soap Lady

Joseph Leidy, known as the father of American vertebrate paleontology, procured the body of the Soap Lady after she was exhumed at a Philadelphia cemetery in 1875. She is unique in several ways. The rare fatty substance adipocere that encases the remains only forms in alkaline, airless environments, thus her name "The Soap Lady". Dr. Leidy's original theory on her cause of death was yellow fever, during the epidemic in the 1790's. That and her lack of teeth suggested she had lived to middle or old age. However x-rays taken in 1987 revealed features on her clothing that were not manufactured until the late 1830's. Thus a radiology team from Quinnipiac University repeated the x-rays digitally in 2007 and revised her age at death to be much younger.

Chang and Eng Bunker

The Mütter museum contains a large collection of conjoined fetal specimens and other artifacts. The twins pictured here were born in Thailand in 1811 and traveled to the US in 1829 to tour and speak. Before their death in 1874 they married, raised 21 children and managed two farms. The gallery houses a cast of their conjoined livers and their torsos.

Also included in the exhibit are studies by C. Everett Koop, MD, who pioneered techniques to separate conjoined twins.

Chevalier Jackson Collection

Chevalier Jackson, MD (1865-1958), was a renowned Philadelphia otolaryngologist who developed methods and tools for removing foreign objects from the human airway. This exhibit includes 2.374 of these objects he removed from throats, esophaguses, and lungs throughout his 75 year career. It was created to teach bronchoscopy and anesthesia methods and ways to extract specific objects.

Hyrtl Skull Collection

Anatomist Joseph Hyrtl (1810-1894) specialized in the study of phrenology. This "science" used the features of the human skull to determine information about a person including intelligence, personality trains, and racial differences. Dr. Hyrtl focused his studies on Caucasian European populations. Pictured here is a collection of 139 of his subjects which he donated to the museum in 1874.

Mütter Museum, the College of Physicians of Philadelphia
For more information:
muttermuseum.org
Address 195 22nd Street,
Philadelphia, PA 19103

Museum of Questionable Medical Devices, Saint Paul (MN)

If you want a good example of weird science, this is the museum for you. Most medical museums focus on medical education, either on a specific area of science or a specific geographical area in which they reside. This museum has a bit of a different flavor. The Copley Wire Service called this "The Quackery Hall of Fame," describing it as the world's largest display of things the human mind has devised to cure itself without the use of scientific method or common sense. Most of its collections are from the American Medical Association, the U.S. Food and Drug Administration, the St. Louis Science center, The Badkken Library and the National Council Against Health Fraud. Since 2002 the collection has resided in the Science Museum of Minnesota and is now in their "Weighing the Evidence" exhibit. Congress passed the first U.S. Pure Food and Drug Act in 1906 as a result of a report in Collier's magazine, "The Great American Fraud." Its exposures include the addicting properties of cocaine, morphine and alcohol, and dangerous practitioners such as Samuel Hopkins Adams. The Museum website includes a video vault, papers and stories of "Great American Quacks", and links to proven non-useful devices and other quackery sites. To name just a few items on display:

- The Battle Creek Vibratory Chair
- A Foot Operated Breast Enlarger Pump
- The history of the Psychograph and a Phrenology Machine
- Phlebotomy tools and information on bloodletting
- A Radium Ore Revigator
- Soap and Eye Glasses for weight loss
- And many more.

For more information:
www.museumofquackery.com
Address 120 W. Kellog Blvd. Fl 3,
St. Paul, MN

Glore Psychiatric Museum, St. Joseph (MO)

Among several great museums in the area, the Glore Psychiactric Museum chronicles 145 years of the state hospital and centuries of mental health treatment. Mental health remains one of the least understood medical genres. What and where in the brain things happen to cause different behaviors and actions, and what we can do to fix those problems, remains a mystery in some cases still today. Unfortunately along the road of learning about these diseases, many frightening and dangerous treatments have been tried. The many exhibits in this museum give a great deal of perspective on the evolution of some of these treatments. The museum originated as the 'State Lunatic Asylum No. 2' opened in 1874 and run by Dr George Catlett. In 1968 George Glore (1937-2010), an occupational therapist at the hospital, asked his patients to reconstruct replicas of primitive 17th to 19th century treatment devices which sparked the development of the museum. The museum was established with the intent of spreading mental health awareness to the public. It is currently the largest exhibition of psychiatric treatment history in the U.S. It continues to grow as they add new exhibits.

'Tranquility Chair' – used to keep patients immobile for the application of leeches.

Exhibits show how those who've been judged mentally ill have been burned, devil stomped, shocked, shackled, kicked, dunked, punctured, and killed in an effort to make them well. A doctor in the museum's introductory video explains that early physicians did their best with what they knew, but thousands of artifacts suggest that America's asylums were once filled with dangerous lunatics – and

| *continued on page 26*

they weren't all inmates! Kathy, one of the museum coordinators, explains that the definition of "crazy" in the past was considerably broader and individuals had fewer ways to protect or prove themselves otherwise. Some thought to have maladies "Could really be admitted for *anything*. You could be checked in by a family member for *whatever*." She claims they have records documenting just that. All photographs are kindly used with permission from the directors of the Glore Museum.

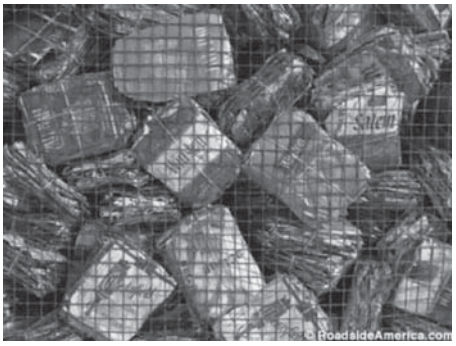
For more information:
www.stjosephmuseum.org
Address 3406 Fredrick Ave.,
St Joseph, MO 64508

Replicas of apparatus for witch burning, the bath of surprise, and the human hamster wheel. The "Bath of Surprise," for example, sometimes drowned patients. The Human Hamster Wheel looks fun, but patients were usually locked inside and forced to run for ***up to two straight days****.*

Diorama of a typical 1960s mental hospital ward features a straitjacket Barbie.

Showroom example of patient about to get a jolt of Electroconvulsive therapy.

Artistic arrangement of 1,446 nails, pins, screws, and buttons eaten by one patient. The oldest display in the museum dates to 1910: an imaginative starburst arrangement of 1,446 buttons, screws, bolts, and nails that were ***eaten by a patient*** *who died unexpectedly. They were only discovered during her autopsy.*



This ceiling high cage contains 108,000 cigarette packs saved by a patient who thought he could redeem them for a wheelchair. Some had more than others, and Glore had an eye for preserving the hospital's most memorable manifestations of odd behavior.

National Museum of Health and Medicine, Silver Spring (MD)

The National Museum of Health and Medicine was established during the Civil War as the Army Medical Museum, a center for the collection of specimens for research in military medicine and surgery. In 1862, Surgeon General William Hammond directed medical officers in the field to collect and forward "specimens of morbid anatomy together with projectiles and foreign bodies removed" to the museum for study. The Museum's first curator, John Brinton, solicited contributions from doctors throughout the Union Army from the mid-Atlantic battlefields.

During the late 19th and early 20th centuries, Museum staff engaged in various types of medical research. They pioneered photomicrographic techniques and established a library and cataloging system which later formed the basis for the National Library of Medicine. This initiated the museum's research on infectious diseases, which discovered the cause of yellow fever, researched vaccinations for typhoid fever, and during World War 1 was involved in vaccinations and education for sexually transmitted diseases.

In 1946 the Museum became a division of the new Army Institute of Pathology (AIP), which then underwent several other transformations, finally becoming the National Museum of Health and Medicine in 1989. Its exhibits and photos are open to the public for use. Current exhibits include:

An Extraordinary Enterprise: Medical Effects Of The Civil War

NMHM has installed a special exhibit featuring "Medical and Surgical History." Objects on display include artifacts, specimens and images documented in the work.

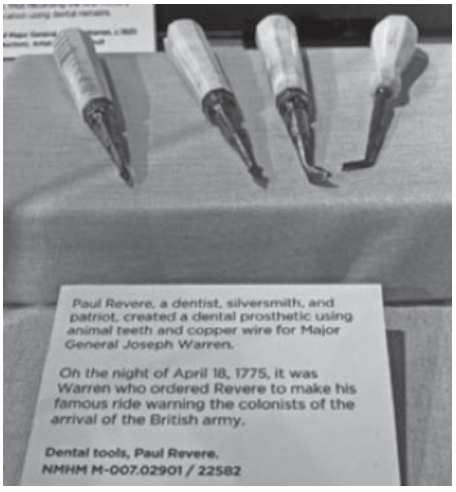
Other current exhibits include,
- Advances in Military Medicine
- Normal Human Anatomy
- Human Identification through Pathology
- Trauma Bay II, Balah, Iraq

For more information:
https://www.nlm.nih.gov
2500 Linden Lane,

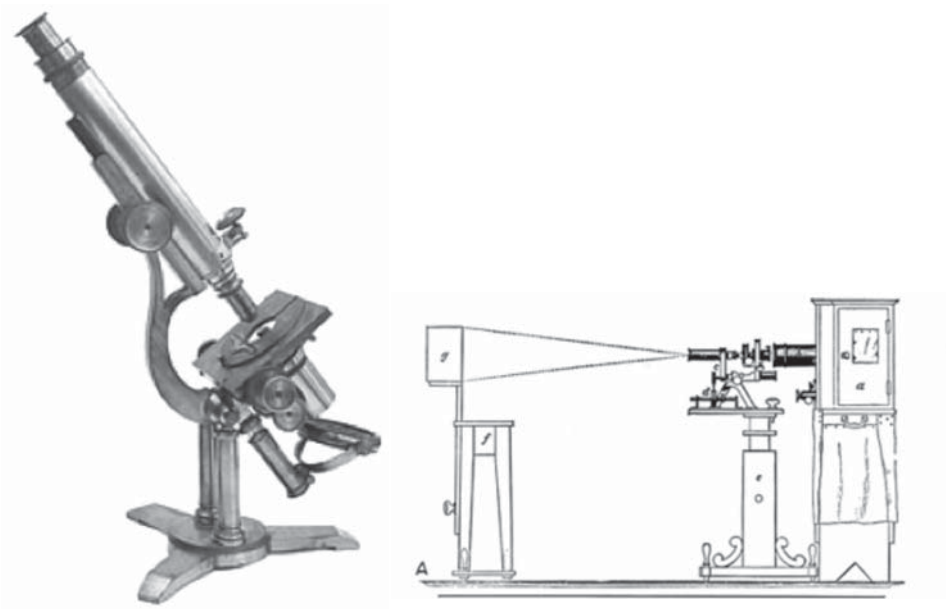
Complete set of the ***"Medical and Surgical History of the War of the Rebellion****"- 6 volumes (1870-1883) The more than 6,000 pages recount detailed case histories, illustrations of woodcuts, photos of injuries, and information on treatment and anesthesia techniques used in the Civil war.*

Chloroform Tin
Chloroform played a major role in Civil War surgery. Of 8089 wartime injuries involving major operations, chloroform was used in 6784 cases, ether in 1305.
Silver Spring, MD 20910

***Private Milton E. Wallen**, Co. C, 1st Kentucky Cavalry, was wounded July 4, 1863 at Richmond, VA.*

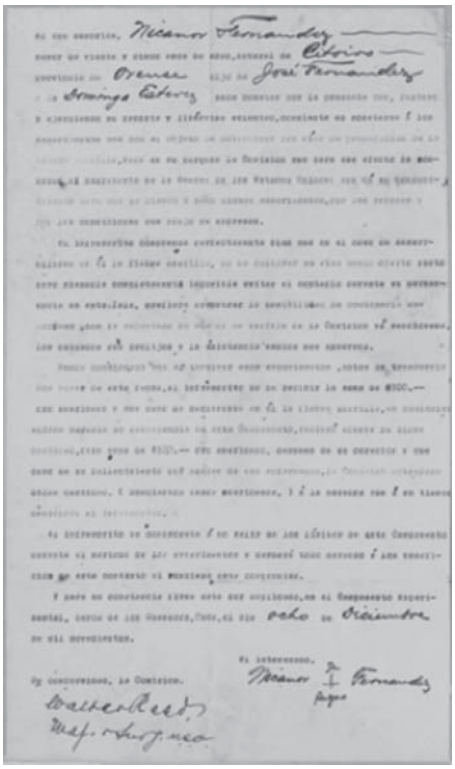


***Dental Tools Of Paul Revere, Late 18th Century.** In one of the earliest cases of forensic evidence used to identify a fallen American soldier, Paul Revere recognized dental work he had done on Joseph Warren, thus identifying Warren's remains and allowing the family to receive the body and give it a proper reburial.*



***Dr.Joseph J. Woodward** used this microscope (top) for his pioneering work in photomicrography, which provided extraordinary insight into the physiological processes associated with various diseases. The illustration from Woodward's "Report to the Surgeon General on the Magnesium and Electric Lights, as Applied to Photo-Micrography," (1870) demonstrates how a light source (A) is concentrated on the lens of the microscope (B) and then projected on to a photographic plate (C).*

U.S. Army Maj. Walter Reed (1851-1902).
The Legacy of Walter Reed
Maj. Walter Reed's celebrated research into the causes of typhoid and yellow fever—including the landmark discovery that yellow fever is transmitted by mosquitoes—has saved countless human lives. In 1898, he investigated a typhoid fever epidemic, expanding our understanding of how this disease spreads



The 1900 Yellow Fever Commission, headed by Maj. Reed, was the first recorded use of informed consent in human research. As this consent form shows, researchers wanted to be certain that all volunteers understood the potential hazards of the research.

The Window to the Soul

by Tracy Crnic, MD

"What you see depends upon where you are looking. If you want to see the soul, look into the eyes of people, including your own eyes." *Uriah J. Fields*

"The Eye is the Window to the Soul" is a proverb many people have used to describe the utility of looking into a person's eyes to appreciate who they truly are or what they are feeling. This sounds preposterous if you consider it realistically, so why is the phrase so commonly used? I asked myself these questions to help better understand this theory.

- Where did the idea originate and what meaning did it hold then?

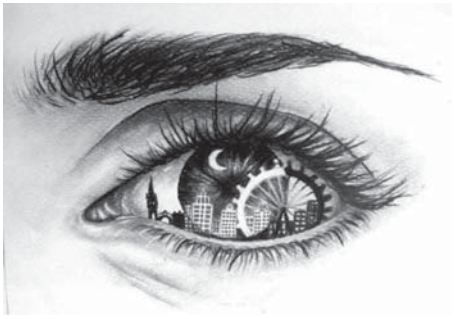
- Is this information actually possible to obtain by looking into one's eyes?

- What scientific evidence has been used to validate this idea?

-And finally, is there any actual link known between the two?

The History

Many sites quote that the first description of this phenomena is first mentioned in the bible in Matthew 6:22-23, which states "The eye is the lamp of the body. If your eyes are healthy, your whole body will be full of light. But if your eyes are unhealthy, your whole body will be full of darkness. If then the light within you is darkness, how great is that darkness..." Cicero, a philosopher much earlier (106-43 BC), has however been quoted as saying "Ut imago est animi voltus sic indices oculi". Translated – "The face is a picture of the mind as the eyes are its interpreter." Many additional artists and great thinkers including William Shakespeare and Leonardo DaVinci have used versions of the phrase in their works as well. While each example has its own more specific meaning, the general idea is to express the observation that the eyes reveal a great deal about a person.



Drawing by Genovera Brigitta on wehearit.com

To See or not to See

Realistically there are things you can tell by observing the eyes. Psychologists and even law enforcement officials observe expressions to gain insight into an interviewee's honesty and emotion. For example, one can distinguish a fake smile, termed a Duchenne smile, from a true smile by observing the eyes and not just the mouth. When someone truly smiles, they crinkle the corners of their eyes; when the expression is not genuine they often forget to include the eyes. Observation of gaze and pupil size are also clues as to several emotions and reactions. I will expand below.

Eye Science shows

The pupil of the eye dilates and constricts to regulate the amount of light that enters the eye; however it also changes size in relation to other information. Constriction and dilation of the pupil are partly controlled by the autonomic ner-

vous system. The pupil dilates as part of the body's stress response such as being frightened by a scary trick-or-treater or nervous about a test. Constriction of the pupil is then part of the opposite scenario. When you are more relaxed or concentrating on a visual task, your pupil gets smaller and the muscles around the lens of the eye allow better control of your vision. Research also shows that the pupil changes size in response to what our subconscious mind anticipates we will see after shifting our gaze from one place to another. This is in addition to the accommodative reflex I described above.

Psychologists S. Mathot and S Van der Stigchel believe that the eyes also tell us a lot about emotions and intentions of their owners. They observed that pupils also dilate when we are aroused. The dilated pupil allows us to take action when we detect a threat or opportunity. In this scenario they describe the pupil size as a "tradeoff between two factors". First for best visual acuity the pupil adjusts to allow just the right amount of light in to best identify details. Secondly to detect something in the environment around you, the whole picture requires a more wide open pupil. For example, as a friend discusses with you every play made during his weekend golf game, you can force a smile and may even remember to squint a bit, but because your pupils are not under voluntary control your small pupils will reveal your actual lack of interest.

The Mind's Eye

You may not be able to reliably determine someone's emotion, altruism, or other qualities of the soul, but you can get information about the brain. If you consider the brain the seat of the soul, there are definite ways to evaluate many brain abnormalities by examining the eye. It's not as much fun but nonetheless very medically valuable. Signs of stroke or impending stroke can be seen in the retina. The pupils, extraocular muscles, visual acuity, and optic nerve can also give us information about other neurologic conditions. Intracranial pressure, masses, multiple sclerosis, myasthenia gravis, and degenerative brain diseases are just a short list of the many diagnoses the eyes can give us insight into.

My short summary

So to summarize what I learned in my studies of the proverb, I decided to think of it this way. While one cannot visualize another's actual soul or an image of it, you certainly can learn a great deal about who they are and how they feel. The rest medically or otherwise is in the eye of the beholder.

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The Doctors of the Third Reich: Their Methods and Their Angel of Death

by Rouzbeh K. Kordestani, MD, MPH

Adolf Hitler, Nazi Germany and World War II were responsible for the death of millions of human beings. Any attempt to fathom such catastrophe or loss by anyone not involved would be futile. The most common measure of reference of the new generation is that of September 11th, 2001. When looking at such numbers, it would be to undergo several September 11th disasters every day for the course of a decade. The losses of life and the insult to humanity were truly unimaginable.

When looking at the Nazi regime in retrospect, most of the medical field suffers from recall bias. It is truly hard to imagine how physicians of any type would allow such horrors to occur. When articles are reviewed, many physicians of the times recall that they were only doing what they were instructed to do. Many point to the fact that they were asked to support their countrymen and did so with patriotic fervor. Most of them, when faced with the horrors of the Final Solution, confess that they were truly unaware. Even though it is hard to imagine that such horrors could go on without a willingness of physicians, it becomes apparent that many were complicit while most others were simply ignorant of what truly was occurring. In details of articles discussed, most denied that such things could happen. They truly believed in the goodness of man and simply thought that these were stories that were fictional. Only when the war ended and the true atrocities were revealed did these physicians understand the gravity of their action/inaction. Many of them committed suicide. Others simply died in time never to practice again.

This is the story of the formula of medicine in the Third Reich. This is also the story of one of its star pupils, Dr. Joseph Mengele, the Angel of Death.

1933: The Law for the Prevention of Genetically Diseased Offsprings

As Hitler took over the control of Germany, he and his personal physician (Dr. Brandt) had ideas of how best to purify the Aryan race. They reasoned that other races were "tainting" the genetic purity of the Aryan *volk*. Before purging the other races, however, they sought first to clean and purify their own ranks. Through this course of reasoning was born the Law for the Prevention of Genetically Diseased Offsprings. In 1933, with the installation of this Law, genetic High Courts were instituted to judge who was deserving of life. The rules were first and foremost applied to Germans in institutionalized settings. Those who were psychotic, invalid, or disabled were first judged. Early on, as many as 5,000 German children who had been institutionalized were euthanized. Soon thereafter, the Courts were used to judge the larger population at hand. Most of the courts were comprised of medical physicians early on. Their task was to handle cases of "life unworthy of life." However, the medical composition of the courts soon gave way to the military. There simply were too many courts and too many people to be judged. In the first few years of the courts, over 400,000 individuals were deemed unworthy and impure and were ordered to be sterilized. Initially the actions of the courts could be questioned. However, an amended law in 1935 made the decision of the courts final. No appeals were allowed, and all people judged were summarily sterilized by force if needed. This continued until 1939.

1939 and the T4 Program

As the High Courts evaluated the population for worthiness, Hitler realized that his initial methods were far too slow. He needed to purify his ranks quicker. In 1939, he ordered the institution of the T4 (Euthanasia) Program.

The T4 Program (named for the address of the original building where the program was founded—Tiergartenstrasse 4) called for hospitals and other health care facilities to be equipped with crematoria and liquefaction centers for the eradication of the inferior people. Hitler ordered the Doctors of the Third Reich to evaluate all hospitalized patients for possible euthanasia. If a patient was hospitalized, he was of no use to the Third Reich. He or she would then be evaluated by the administering physician for possible euthanasia. The patients would be judged based on their genetics, their heritage and their physical and mental well-being. The data was then passed on to an appointed board of each hospital that would render a final verdict. These verdicts would then be carried out at the hospital. The patients would never leave if deemed not of use to the German *volk*. The program was mired with inefficiencies. To expedite the paperwork, often physician members/health workers simply bypassed the Board decision and damned the patients to the crematoria. Only later, they filled out the paperwork as deemed necessary. Too often there was no paperwork since a final verdict had already been rendered and the patient killed. Most of the paperwork that has survived this program shows that the patients died of "accidents" or ill-defined "illnesses." The T4 program was also used to judge and doom physicians of "impure races" within the ranks of the German medical core itself. Physicians born of the Slavic races and those with a Jewish background were often judged by fellow physicians and killed in the crematoria.

The Final Solution

The T4 Program was diabolic. However, it paled in comparison to what came next. As the crematoria did their work, Dr. Brandt and Hitler realized that they had found the Final Solution. They no longer needed to judge and waste time evaluating members of the different races for their worthiness. They noted that they were all "unworthy." For this reason, they simply needed to be exterminated. The local hospitals and facilities could not in any way handle such a monumental task.

Instead, Hitler reasoned that camps outside of Germany could be established with similar crematoria and furnaces and could be used to simply kill off the unworthy races. There was no longer a need for judgement. The judgement had already been made by him that only the Aryans deserved to live. Thus, the Final Solution was born and concentration camps such as Auschwitz and Birkenau were created.

All prisoners and all unworthy races – men, women, children and elderly – were sent to the concentration camps outside of Germany. Here they would be put to work for the betterment of the Third Reich. Of course, almost three out of every four persons who arrived at the concentration camps were immediately sent to the "showers" to be cleaned. The showers in truth were gas chambers where the young, the old and the disabled quickly met their death and were cremated. Those not put to death immediately worked until they were too fatigued and too battered to do their tasks. They too were then put to death. The average survival in the concentration camps was counted in weeks to months. Although initially records were kept of those who arrived, later on, no records were kept since the volume of people seen and processed completely overwhelmed any record keeping system.

Human Experimentation and the Angel of Death, Dr. Joseph Mengele

In the concentration camps at Birkenau and Auschwitz, those who died were considered the lucky ones. Those who were unlucky were the subjects of experiments.

The medical staff initially took interest in the well-being of some of the patient population that arrived. However, this care soon faded as the physician core understood that their purpose was not to actually take care of anyone. It was a charade for the extermination of the people who arrived. Because of this realization, the medical core and the health care staff were rotated out of the concentration camps every several months. Even they could not bear the harsh reality of what was taking place. Often, the medical officers were sworn to secrecy and then sent off to the front where they would die themselves, sealing the secret of the concentration camps.

Some patients were selected and were kept out of the crematoria for the strict purposes of human experimentation. The most highly prized were twins. The Third Reich physicians were fascinated by disease and how it would permeate through a host. For this reason, they would isolate twins. They would give one a disease or a surgical procedure and would use the unharmed twin as the control to see how each fared. Often, once the experiment was completed, both twins were killed. Later it was reported that the fascination with the twinning process expressed the intent of perfecting the process so that Aryan race could replicate at a much faster rate and reproduce more highly desired members.

Dr. Joseph Mengele was one of the physicians at Auschwitz II (Birkenau). He was remembered by many of the arriving prisoners for his apparent joy when meeting the trains that arrived. He took pleasure in meeting and examining the scores of patients who arrived. He was an astute physician and so was keen on picking subjects for medical experiments. He had particular interests in twins, pregnant women, and in genetic anomalies. He chose and kept the patients that he selected away from the others. Many thought that they had been saved. Initially they thought of Mengele as the Angel that had saved them. Unfortunately, soon, they would be the subjects of horrific experiments. Mengele often performed amputations on live subjects. He would at times infect one host with a disease such as typhus to see the course of the infection. Once he was satisfied, the subject would be killed and burned. He would transfuse blood from one patient to another to see the immunological effects. He would then dissect the prisoners to see the effects of the experimentation on their internal organs. He had a particular interest in pregnant females. He would infect them with diseases and monitor their progress. He would then sacrifice the mother and the unborn baby to see the effects on them both. For these reasons, Mengele was named aptly as the Angel of Death (at Auschwitz).

Conclusion

The Third Reich is a dark part of human history. The atrocities committed during World War II by waring nations and by the armies of these countries cannot be in any way justified or supported. However, as the saying goes, all war is hell.

The physicians of the Third Reich were recruited to do unimaginable harm. They followed an agenda put forth by a madman who bolstered the confidence of a nation to be its best. This agenda dehumanized all other races and all other peoples with the hope of better defining the Aryan race. Laws were made to justify killing fellow human beings in order to make a country more pure. Programs like the T4 Euthanasia Program were implemented to render acceptance of death as judged and administered by physicians. The Final Solution was the ultimate answer-to administer the most unthinkable judgement that is reserved only for God—to judge the worthiness of life.

The physicians of the Third Reich were at fault and complicit for standing idle when atrocities were rendered. They can be forgiven in retrospect. However, their actions can never be forgotten.

As in the future, as has been in the past (with the Third Reich), inaction and blind faith can only lead physicians astray. Physicians take an oath to do no harm. The physicians of the Third Reich failed in their promise. Each and every physician must ask themselves the same question: Do I stand for my oath and for my patients? OR Do I simply follow what is told and expected of me? The answer continues to be important in this day and age where medicine is continually under attack and our patients look to us for help and leadership.

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"Some Deemed Them Wondrous, Wise and Some Believed Them Mad"
Anton Mesmer and Mesmerism

by Taylor Carlisle, MD

Mesmer and mesmerism

The practice of medicine has existed for as long as recorded history. Aesculapius, the Greek god of medicine and he of the "snake around the staff" symbol, dates back to 1000 BC or before, and Hippocrates, the Father of Medicine, existed during the Greek classical period. However, what we think of as the modern medicine era, or actual effective practice of same, dates back only to the mid 19th century and the discovery of microbes and their relationship to disease. Most of the truly effective medical practices date from mid to late 20th century times. Thus, medicine for most of its history was more or less based on magic, false science, religion, and quackery. For more than a thousand years after Pythagoras and later Galen, medicine was connected to "earth, air, fire and water" as the primary essence of life. These corresponded to the source of nearly all maladies: black bile, yellow bile, blood and phlegm, and medical practice was based on manipulations of these "humours" by vomiting, purging, or blood letting, among other dubious interventions. That this is patently ridiculous may be obvious, but these ideas ruled medical thought for almost 1500 years.

Alchemy also dates back to biblical times, some say to Moses, he of the Golden Calf, and much of recorded history until relatively recently focused on "the philosopher's stone", which purported to turn lead or other metallic substances to gold. This idea was popular from the time of classical Greece through early Islamic thinking, and many noted scholars and scientists devoted considerable time, or entire careers, attempting to prove or discover the philosopher's stone. Studies of metallurgy thrived during medieval times and the "alchemists", who were prominent from the 10th through the 16th centuries, were widely read and admired. The noted Thomas Aquinas searched (unsuccessfully) for the philosopher's stone and the elixir vitae. Similarly, Roger Bacon devoted years of study and scholarship to these pursuits in the mid 1200's. Later devotees included the "Rosicrucians", a secret cult with hints of devil worship, and Paracelsus, who was also an early supporter of using magnets to treat illnesses.

The earliest descriptions of magnets or "lodestones" date back to as early as 2500 years ago at the time of the Mesopotamians and Egyptians, and magnetism is well described in Pliny the Elder's Histories. Later, magnets were used in compasses for seafaring in the early medieval period. During the popular alchemy craze of those medieval times, many practitioners began theorizing about the medical benefits of magnets and their use in therapeutics. Certainly Paracelsus in the 16th century is one of the "fathers" of medical magnetism. He had travelled extensively in Persia and the middle east and became convinced he could "transmutate" diseases by use of small doses of metals, including initially small doses of mercury, antimony, and arsenic, among others, to "cure" diseases. He was also an early proponent of "weapon salve" to treat sword and other injuries by application of magnetic salves to the swords themselves before or after the injuries. He and his followers also believed that magnets could be applied directly to human patients to treat a variety of illnesses and injuries and to "transplant" diseases. Recipes included mixing a magnet with "mummies", powders derived from dead humans (or actual mummies), mixed with wine or rich earth, and applied directly to both weapons and to patients themselves. This use of magnets became very popular from the middle east to Europe. Paracelsus later resorted to "reading fortunes" and faith healing and died in poverty as interest in alchemy faded.

The waning influence of alchemy in the 17th century and the increasing popularity of medical magnetism, and later electricity, changed much of the focus of this reasoning. After Paracelsus, later followers believed that magnets could not only be applied to swords and other metallic objects for treatment of injuries but ingested directly as medicine. This use of magnets for medical use became increasingly popular, from Persia to Europe, and were later introduced to England in the mid 17th century by Sir Kenelm Digby, a widely travelled English pirate and science thinker, who popularized weapon salve and "mummies" in treating English nobility after knife and sword injuries as well as direct ingestion of iron filings followed by using magnets applied to various body parts. Direct ingestion of magnets themselves was also applied to "adjust the flux" of the human body.

At the University of Vienna in 1771 a Dr. Hell, professor of astronomy, invented certain steel plates which he applied to naked human bodies to cure various diseases by demagnetizing the afflicted patients, generally with a magnetized metal wand. He communicated this idea to a protege, Dr. Anton Mesmer, in 1774. The latter had taken his medical degree in 1766 and chose as his dissertation the influence of the planetary rotations to the human body. Mesmer theorized that "the sun, moon, and fixed stars affect each others' orbits" and also "cause and direct a flux and reflux in the sea, atmosphere, and all organized bodies" through a medium of "mobile fluids, which pervade the universe and associate all things together in mutual intercourse and harmony". The influence on the human nervous system produced states of "intention and remission" which ac-

counted for the various maladies suffered by humans, with the physician's ability to change the flow via use of magnets. He adopted Dr Hell's use of metal plates, with initial encouraging successes, particularly in treating young females with convulsions or hysteria. He called his theory "animal magnetism".

Despite some initial success in Vienna, Mesmer left town for Paris after being ridiculed for failing to restore sight to a blind patient. By then he had expanded his theory of animal magnetism to apply to substances other than steel or metal, including wood, stones, glass, and then humans, reporting he "charged jars with magnetic matter in the same way as electricity". He opened a fashionable salon in Paris, well appointed with comfortable sofas, and welcomed "the lame, the blind, and the hysteric". Amazingly, he became wildly popular amongst the Parisian upper class of the late 1770's, and 1780's, applying his treatments initially individually, sitting across from the (usually female) patient, gazing into her eyes, placing his knees outside hers, and rubbing and massaging the spine and "hypochondrium" under the diaphragm, piano music playing in the background. This eventually resulted in "inflamed imaginations" or fits of sobbing or convulsions after application of the steel plates, followed by peaceful bliss. He became so popular that he changed to "group therapy". This involved placing a large open vessel four feet long, to which "magnetized water" was repeatedly added and metal filings thrown in. Through a number of holes around the perimeter of the "baquet", as the barrel or container was called, metal rods were inserted by associates. The patients seated around the vessel could then apply the metal rods to whatever body part ailed them. At the height of the experience, Dr. Mesmer would appear in a flowing cape and with a metal wand and "demagnetize" the parishioners, often dispensing with the rods and plates and applying the "animal magnetism" from his own hands "through the tips of my magnetized fingers". He was very successful, at least for several years and was much admired by the Queen and her court as well as fans such as Mozart. Europe, and especially Paris, was thus "mesmerized".

Society was actually divided, with a considerable number in the Paris scientific community feeling he was a fraud or charlatan. A royal commission from the Paris Faculty of Medicine was formed in 1784 to investigate. The august commission included the chemist Lavoisier (later guillotined in the revolution), Dr Joseph Guillotin (inventor of the previously mentioned device), the astronomer Bailly, and the American inventor and electricity expert, Benjamin Franklin. Their investigation lasted 5 months and involved a Mesmer assistant and supporter, M. D'Eslon, using his methods, as Mesmer himself did not appear. The conclusions were published with the claim that any results were from the "patient's imagination" rather than any actual effects from animal magnetism. Later, "blinded" studies used "painted wood plates" rather than metal rods, and these were equally or more effective at cure as magnetized rods.

The report ruined Mesmer's reputation in Paris. However, he managed to sell subscriptions to French supporters for 340,000 francs and retired to Switzerland. He practiced for a number of years and died a wealthy octogenarian in Germany. His ideas remained popular in Germany for a time, and M. D'Eslon continued to practice his version in France, even magnetizing a large tree to treat an entire village, with the people grasping dangling magnetized cords, with satisfaction from the crowd generally expressed.

What is the legacy of animal magnetism? It is difficult to even imagine scientific men such as Benjamin Franklin attempting to soberly evaluate "magnetizers" in a serious fashion, but history may be on the side of the magnetizers. I see many parallels with early 20th century psychiatry, particularly "analysis", but also modern faith healing, use of metal bracelets for arthritis (popular with golfers), spiritualism, UFO's, health food claims, various fad or popular diets, water cures (embraced even by the scientist Charles Darwin), ozone and oxygen therapy, and even the vast oversell of modern vitamins. Any routine analysis by flipping through cable TV channels should easily confirm the audience for these. The popularity of (roundly discredited) anti-vaxxers represents the apparent "negative" side of this, particularly as vaccines represent probably the greatest triumph of 20th century medicine. We must always remember that, in many studies of pain or difficult to measure symptoms, the placebo effect is as high as 30% in blinded studies. The human mind is a very susceptible organ and memory has been demonstrated to be frequently inaccurate. I suspect we may be subject to many more future Mesmers.

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Popular Herbals: Which Ones Really Work?

by Yvette Zeng, PharmD; Thomas Parker, PharmD

What are Dietary Supplements?

Dietary supplements are known by multiple names: herbals, vitamins, minerals, botanicals. They come in many forms including tablets, capsules, liquids, and powders. Their use has been increasing in recent years for their reported benefits, and approximately one in five adults in the United States take a natural product. They are easily accessible and can be bought over the counter in a pharmacy, supermarket, or local goods store. However, what goes into creating a dietary supplement and how well do they work?

"Regulation"

Unlike medications, dietary supplements are not regulated by the Federal Drug Administration (FDA) and do not require its approval before being put on the market. Companies marketing supplements are required to follow good manufacturing standards similar to foods and medical devices, but do not have to prove safety or efficacy. Furthermore, manufacturers of supplements cannot claim that their product will diagnose, cure, mitigate, treat, or prevent a disease.

Although multiple bottles on the shelf may have the similar labelling, not all supplements are the same. No standardization process is required of dietary supplements. Therefore, products may differ in the quality and purity of their ingredients. For herbal products, the quantity, strength, and part of the plant marketed may differ amongst products. For example, one manufacturer may sell a product containing the root of a plant while another may market the leaf of the plant. Depending on the herbal product, the effectiveness may differ amongst its various parts. Inactive ingredients may also vary between products and manufacturers.

Some labelling may state "proprietary blends" as an ingredient, which is a mixture of herbs. Manufacturers of products containing these proprietary formulas are not required to report the exact components or their amounts on the label. With the uncertainty of ingredients in proprietary blends, consumers should be aware of the possible allergens and reduced potency of the actual product.

Despite the lack of regulation of dietary supplements, many people still purchase them for their reported benefits. Sales amounted to approximately $36.7 billion in 2014. Of the purchased products, five natural products accounted for 15% (1).

Most Popular Supplements and Evidence

Based on a 2012 survey, the most popular supplements consumed were omega-3 fatty acids, glucosamine and chondroitin, probiotics/prebiotics, melatonin, and Coenzyme Q10. These products continue to be amongst the top selling products each year. Let's take a look at these products and see what the evidence shows.

Omega-3 Fatty Acids

Omega-3 fatty acids (n-3 fatty acids), the main component in fish oils, are compounds found in foods and are important for many functions in the body, including energy, metabolism, and hormone regulation. The three main types of n-3 fatty acids are alpha-linolenic acid (ALA), eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA). The body is unable to produce these n-3 fatty acids and must be obtained from food, such as fish and plant oils (2). Fish oil has been gaining a large amount of interest over the last several years, due to its reported benefits for cardiovascular disease. Of the n-3 fatty acid types, EPA and DHA, the types found in fish oil, may reduce the risk of coronary heart disease, although the evidence has been inconclusive (3).

A large controlled trial was recently published evaluating the benefits of n-3 fatty acids for primary prevention of cardiovascular disease (CVD) and cancer. Subjects without prior diagnosis of CVD or cancer were enrolled and received 1g of n-3 FA. The study concluded that no benefit was found between those who took n-3 fatty acids supplements and placebo for prevention of cardiovascular disease or cancer. Therefore, the initial ideas of a significant benefit from consuming fish oils or n-3 fatty acids may be misfounded (4).

n-3 fatty acids come in a prescription strength of 2-4 grams which has been found to be effective in lowering triglycerides. This strength is three to four times greater than found in over the counter supplements. In addition, prescription strength n-3 fatty acids are regulated by the FDA for their purity, consistency, and efficacy. The American Heart Association recommends n-3 fatty acids at a prescription strength of 4g per day (> 3g/day of total EPA+DHA) for patients with elevated triglycerides to reduce cardiovascular risk. This recommendation cannot be applied to over the counter n-3 fatty acids, however, due to lack of regulation from the FDA.

Patients who have a fish allergy should avoid supplements containing n-3 fatty acids. n-3 fatty acids may interact with blood thinners, such as warfarin, to increase the risk of bleeding, so patients on these medications should use with caution.

Glucosamine and Chondroitin

Glucosamine and chondroitin are components found in cartilage, which lines and protects joints. As a result, the product has been studied for benefits in those with osteoarthritis in which carti-

lage is worn down. The two components are often sold in combination, but the individual components have also been studied separately (5).

Available studies have shown mixed results for glucosamine and chondroitin in relieving osteoarthritis symptoms when taken separately. Trials with combination glucosamine and chondroitin showed no difference between those taking the supplement versus placebo in decreasing pain and function scores (6). The American College of Rheumatology does not recommend glucosamine and chondroitin for osteoarthritis.

Those with a shellfish allergy should be cautious of glucosamine products since the ingredient is harvested from the shells of shellfish. Chondroitin has a reported interaction with anticoagulants, such as warfarin, and may increase risk of bleeding.

Melatonin

Melatonin is a hormone naturally produced in the body that helps regulate the sleep cycle. It is released from the brain according to the time of day. Scientists have studied melatonin for use in insomnia, jet-lag, and sleep disorders. Doses of melatonin vary between 1 mg to 3 mg (7).

Evidence shows melatonin may be effective in those with jet-lag, which as it is a dysregulation of the sleep cycle that melatonin could help to normalize. Those with psychiatric conditions who suffer from sleep disorders may also have a modest benefit from taking melatonin, although these studies have a small study population. Overall, the evidence is conflicting and no definitive recommendation can be made (8).

Melatonin is fairly safe for short-term use, however its long-term effects are unknown. It is fairly well tolerated; its most reported side effects are drowsiness, headache, and dizziness.

Probiotics

Probiotics are live non-pathogenic microorganisms consumed to produce benefits for the host while prebiotics are compounds consumed to promote the growth or activity of beneficial microorganisms in the gut. Microorganisms may be either bacteria or fungi, and popular ones include *Lactobillus* species and *Saccharomyces* species, respectively. They have been studied for uses in gastrointestinal conditions, such as diarrhea, ulcerative colitis, and irritable bowel disease (9).

The strongest evidence available for probiotics is in alleviation of diarrhea caused by the rotavirus and pouchitis by shortening the duration of diarrhea. For other indications, the evidence has been conflicting with some studies reporting benefit while other analyses concluding no benefit (10).

Since probiotics contain live microorganisms, caution is advised in patients with immunocompromising conditions or who are critically ill due to the possibility of infection. If considering a probiotic, one should choose products that have been evaluated in studies, such as preparations containing LGG, *S. boulardii, B. infantis*, and VSL#3. Foods that have "live and active cultures" labelling may also contain a modest amount of beneficial bacteria.

Coenzyme Q10

Coenzyme Q10 (CoQ10) is an antioxidant produced in the body to help regulate energy pathways and metabolism. Lower levels of CoQ10 in the body have been associated with aging and a number of diseases. It has multiple reported uses including preventing cardiovascular disease, cancer, and statin-associated muscle pain (11).

Based on the few studies and evidence available for CoQ10, it may have a potential benefit in reducing heart damage by a specific chemotherapy in cancer and in heart surgery complications. For its other uses such as lowering blood pressure, improving energy in heart failure, and reducing muscle pain, CoQ10 lacks strong, supporting evidence (12).

Those on anticoagulants should use CoQ10 with caution as it may interact and increase bleeding risk. In addition, those who are on chemotherapy should use CoQ10 with caution as it may decrease the efficacy of chemotherapy due to its antioxidant properties.

Conclusion

Of the supplements reviewed, melatonin may be beneficial for those experiencing sleep cycle disorders such as jet lag, and probiotics may alleviate diarrhea caused by rotavirus or pouchitis. CoQ10 and glucosamine/chondroitin lack sufficient evidence in benefit for cardiovascular disease and osteoarthritis, respectively. n-3 fatty acids and fish oil, specifically, do not seem to offer the protection against CVD and cancer we once thought they did. At prescription strengths however, they can decrease triglycerides and have some cardiovascular benefit.

The evidence behind dietary supplements is still lacking, although more studies and trials are being conducted to evaluate their uses. Furthermore, the FDA is making efforts to strengthen its regulation of supplements by reforming and modernizing its oversight. In the meantime, to ensure the best quality and purity, consumers should look for labelling from recognized organizations which certify manufacturers have undergone purity testing. These organizations include the United States Pharmacopeia (USP), NSF International, and ConsumerLab.com.

Patients should let all of their healthcare providers know if they take a supplement in order to discuss benefits versus risks of taking a supplement. Supplements may interact with medications and increase risk of adverse effects, so patients should check with their providers before starting a product. Supplements should not replace medications for treatment of diseases and patients should continue their prescribed medications as instructed.

For more information on dietary supplements and specific products, consumers may go to the following websites:

1. National Institutes of Health Office of Dietary Supplements: https://ods.od.nih.gov/
2. National Center for Complementary and Integrative Health: https://nccih.nih.gov/
3. Federal Drug Administration Dietary Supplements: https://www.fda.gov/food/dietary-supplements

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Seventy-One Year Old Male with Enlarging Mass of Left Neck: A Case Report and Discussion of Giant Head and Neck Liposarcoma

by William Graves, DMD; Paul Wilkinson, DMD MD, Rouzbeh K. Kordestani, MD, MPH

Abstract

A 71 year old male presented to the oral surgeons at Amarillo Oral Maxillofacial Surgery with a large tumor of the head and neck area. He underwent a thorough examination and a CT scan with and without intravenous (IV) contrast, showing a large well-defined 15 cm by 15 cm tumor. The patient then underwent surgical excision of the tumor. The tumor was found to be a large, well differentiated liposarcoma of the head and neck area. He suffered no complications from the surgery and is doing well in the peri-operative period; He is now being carefully monitored for any recurrence.

Presentation

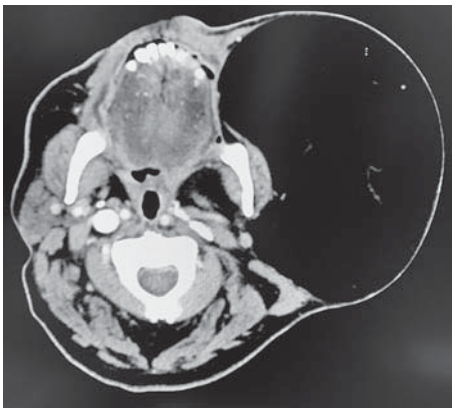
A seventy one year old male presented with an enlarging mass of the left head and neck area. The mass had been present for years but had gone through an advancing growth stage in the previous 18-24 months. The patient denied any significant weight loss. His history was significant only for treatment for high blood pressure. No previous surgical history was noted. He had never had any skin cancer or any other masses/tumors of any type.

On examination, his head and neck exam showed a large mobile mass emanating from the left cheek and neck areas. His cranial nerve exam was completely normal bilaterally. No deficits were noted. The mass was not attached to the deeper vital structures. No local lymphadenopathy was noted.

Radiology

The patient underwent a CT scan of his head and neck areas, with and without IV contrast. The CT scan revealed the mass at approximately 15 cm by 15 cm by 15 cm. The mass did not appear to invade the deeper structures and was superficial to the sternocleidomastoid musculature. No vascular invasion was noted. The differential diagnosis was a giant lipoma vs a giant liposarcoma.

We have written permission to use the images in the Case Report.



Pathology

The patient underwent an office-based fine needle aspiration in an attempt to fiinalize a diagnosis. The fine needle aspiration was unfortunately inconclusive.

Surgery

The patient was taken to the operating theatre by the oral surgeons (WG/PW) where he underwent an excision of the large tumor. The tumor was found not to invade the muscle layers. While it was well encapsulated, it had eroded through the superficial platysma, simply because of its mass and size. It did not penetrate any of the vascular structures. A superficial blood flow cascade was seen as the blood flow contributory. This was isolated and ligated during the surgical excision. Bleeding was minimal. A minimal amount of skin resection was needed, since the tumor simply shelled out.

Post-operative pathology measured the final tumor size to be about 20 cm by 20 cm by 20 cm, with a final weight at 1552 gm. Initial histological analysis noted that it was a lipoma. A secondary analysis from an outside pathology laboratory noted that the tumor was a well differentiated liposarcoma.

The patient recovered well (see photos). No perioperative complications were documented. The skin envelope shrank

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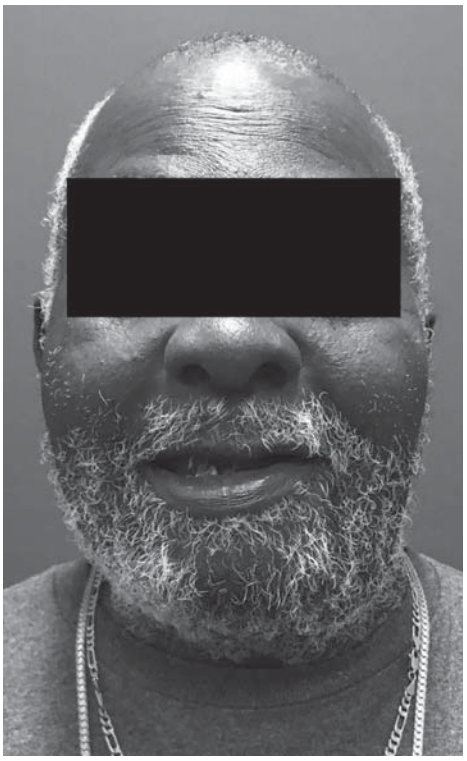

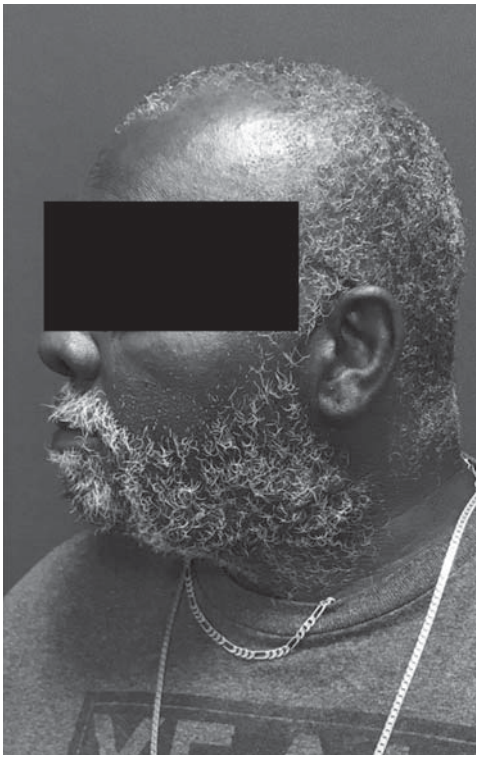

well and the patient's facial features returned to normal after a few weeks. No additional procedures were needed or planned.

The patient is scheduled for routine follow up with the oral surgeons and with surgical oncology.

Discussion

Giant head and neck liposarcomas are uncommon. In fact, they comprise less than 1% of the total number of liposarcomas seen in the head and neck areas. The diagnosis is often made based on presentation, the clinical growth pattern, the natural history of the tumor and pathology. The prognosis is dependent on the modality used to treat the tumor and the histological grade of the tumor.

Golledge et al noted in their study of 76 patients with giant head and neck liposarcomas that the best prognosis occurred in patients treated with only surgery (5 year survival of 83%). Patients who underwent surgery and subsequent radiotherapy had a 5 year survival rate of 63%. Chemotherapy treated patients had a survival rate of 33%. Patients treated with only radiotherapy had a 5 year survival rate of 0%. The survival did not depend at all on tumor size. Golledge also noted that the principle determinant of outcome was the histological grade of the tumor. In their retrospective analysis, they noted that 62% of the tumors were low grade (well differentiated and myxoid) and only 38% were high grade (pleomorphic and round cell).

In their study of 15 patients over a 32 year experience, Gritli et al noted that the mainstay of treatment for giant liposarcomas of the head and neck was surgical excision. They also concluded that the prognosis was largely dependent on the histological grade and the clinical stage of the tumor. In their study, they noted the various histological types: myxoid (5), well differentiated (4), pleomorphic (4), round cell (1), and dedifferentiated (1). Their surgical and survival data agreed with those of Golledge et al. Five year survival rate was 87% for patients who underwent surgery alone, 75% for those with surgery and radiation, and 0% for those who underwent radiation therapy as the only modality of treatment.

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Protecting People from Bad Science

by Haley Belt, MS4; Andrew Pham, MS4; Tarek Naguib, MD, MBA, FACP

What was the Tuskegee Study?
The Tuskegee Study was a clinical study conducted from 1932 to 1972 by the US Public Health Service to learn the outcome of syphilis if left untreated. The study involved 600 black men, 2/3 of whom had syphilis. Researchers told the participants they were being monitored for bad blood, and in exchange they would receive free medical exams. The men with syphilis were never treated for their disease even when penicillin was found to cure syphilis in 1947.

How did the Tuskegee study end?
In July 1972 a press story led to public outrage and the formation of an ad hoc advisory panel to review the study. The panel found that all of the participants had freely agreed to be examined; however they were never informed of the purpose of the study and were never given the option of quitting the study or receiving the new treatment that was introduced in 1947.

What happened to the participants of the study?
The advisory panel decided to end the Tuskegee Study as unethical on the basis of the risks the study posed for its participants. In 1973 a class-action lawsuit was filed on behalf of the study participants and their families. A $10 million settlement with lifetime medical benefits was given to the participants who were still alive!

What is the National Research Act of 1974?
After the Tuskegee Syphilis Study, President Richard Nixon signed the National Research Act into law, which established the National Commission for the Protection of Human Subjects of Biomedical and Behavior Research to identify basic ethical principles to be followed when conducting research on human subjects. These ethical principles were published in 1979 in what is now called The Belmont Report. In addition, the National Research Act contained a provision that required all research involving human subjects be reviewed by an Institutional Review Board (IRB).

What are the three ethical principles outlined in The Belmont Report?
Respect for persons, beneficence, and justice. In other words, individuals should be treated as autonomous agents, or provided protection in cases of diminished autonomy. Researchers should maximize possible benefits and minimize possible harms. Finally, the benefits and burdens of research should be distributed with fairness and equality in mind.

What is an IRB?
An IRB is the Institutional Review Board, which is a group designated to review and monitor research involving human subjects. All human research must be reviewed and approved by an IRB before a study is begun. When reviewing a clinical research protocol, IRBs consider the ethical framework outlined in The Belmont Report

What are "Vulnerable Populations"?
These are groups of people that require additional protections and regulations from research performed on them. These include pregnant women, human fetuses, neonates, children, and prisoners.

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by Tarek Naguib, MD, MBA, FACP

Another Option for Hypoactive Sexual Desire in Women *JAMA* (8/20) – The FDA recently approved bremelanotide for acquired hypoactive sexual desire disorder, which is characterized by low libido. The drug is used as injectable. The first agent is an oral one called flibaneserin that was approved in 2015.

Meditation App Improves Attention in Young Adults *JAMA* (8/13) – Healthy young adults had significant improvements in sustained attention on cognitive tasks after using a meditation-inspired mobile app for 6 weeks in a recent randomized clinical trial, which appeared in Nature Human Behavior

Insulin Pump could be Hacked *JAMA* (8/6) – Because of cybersecurity vulnerability in the pumps, FDA officials said that someone other than a patient or clinician could connect with a nearby MiniMed insulin pump and tamper with its settings. As a result, patients could develop hypoglycemia or hyperglycemia and ketoacidosis. Disconnecting the USB device from a computer, when it's not being used to download data from the pump, is a protective measure till software is developed to prevent hacking.

Detecting Circulating Tumor Cells through Skin (Liquid Biopsy) *JAMA* (8/13) – A new photoacoustic liquid biopsy approach that peers through the skin took 15-60 minutes to detect as few as one circulating cancer cell per liter of blood. The technique is useful in detecting metastatic melanoma before clinical diagnosis is apparent.

Quitting Tobacco Benefits *JAMA* (8/20) – Among heavy smokers, smoking cessation was associated with significantly lower risk of cardiovascular disease within 5 years relative to current smokers. However, relative to never smokers, former smokers' risk remained significantly elevated beyond 5 years after smoking cessation.

Pollution Worsens COPD *JAMA* (8/13) – In a cohort study between 2000-2018 in 6 US metropolitan regions, long term exposure to ambient air pollutants was significantly associated with increasing emphysema assessed quantitatively using CT imaging and lung function.

COPD is Overdiagnosed in the VA *Fed Prac* (7/1) – In the US, COPD is overdiagnosed with only 50% showing evidence of actual airflow obstruction. Overweight and obese patients are more likely to be misdiagnosed with COPD.

Diet and Cardiovascular Outcomes *Ann Intern Med* (8/6) – A review covering 277 trials with nearly one million participants reveals that reduced salt intake and using omega 3 fatty acids and folate could reduce risk for some cardiovascular outcomes in adults. Interestingly, calcium and vitamin D combination might increase risk for stroke!

Veterans Stroke Admissions *Fed Pract* (7/1) – Stroke admissions to a neurology service had a better outcome and less length of stay when compared to primary care. However, due to shortage in neurology availability, only 13% of all stroke admissions go to neurology.

Veterans Wait Time for Care *Fed Pract* (7/1) – The average wait time for Veterans versus community patients has become favorable with only 20 days to see primary care vs 40 days for non-veteran patients in community care setting.

Annual Economic Burden of Influenza on the VA *Fed Pract* (7/1) – An estimated $1.2 billion is the estimated annual economic burden of influenza, out of which $27 million is the value of lost productivity.

Mortality of Military Breast Cancer & Diabetes *Fed Pract* (7/1) – Women in the military health system with breast cancer and diabetes mellitus had 17 – 39% more hazard of death than those without diabetes.

Suicide in the Military by Branch *Fed Pract* (7/1) – The highest suicide death rate is reported in the Army at 26.7 per 100,000 deaths. This followed by 21 per 100,000 for the Marines, 19.4 for the Air Force, and 15 only in the Navy.

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