

Back To Chiropractic CE Seminars

EMF Radiation ~ 6 Hours

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I'm always a phone call away... 707.972.0047 or email: marcusstrutzdc@gmail.com

Marcus Strutz, DC

Back To Chiropractic CE Seminars



The Hidden Dangers of EMF Radiation & How to Protect Yourself

Dr. Kristin Moore, DC

Course Goals

- ❖ Learn what EMFs are and where they come from
- ❖ Take a thorough patient history to recognize if there may be an overuse of electronics leading to patient symptoms
- ❖ Recognize signs & symptoms of electronic sensitivity
- ❖ How to speak to your patients about this issue
- ❖ Learn how to help your patients decrease their exposure to support their healing

Disclaimer

- ❖ This course is meant to give valuable information about electromagnetic fields and how they are potentially effecting our bodies
- ❖ This course is NOT meant to create fear nor is it meant to be negative
- ❖ With knowledge comes POWER, and the goal of the course is to give knowledge of some potentially harmful things in our environment and how we can modify those to do less harm
- ❖ Research on this subject is still being done, studies take time to complete but technology changes at lightning speed and is very difficult to keep up with

What Is An Electromagnetic Field (EMF)

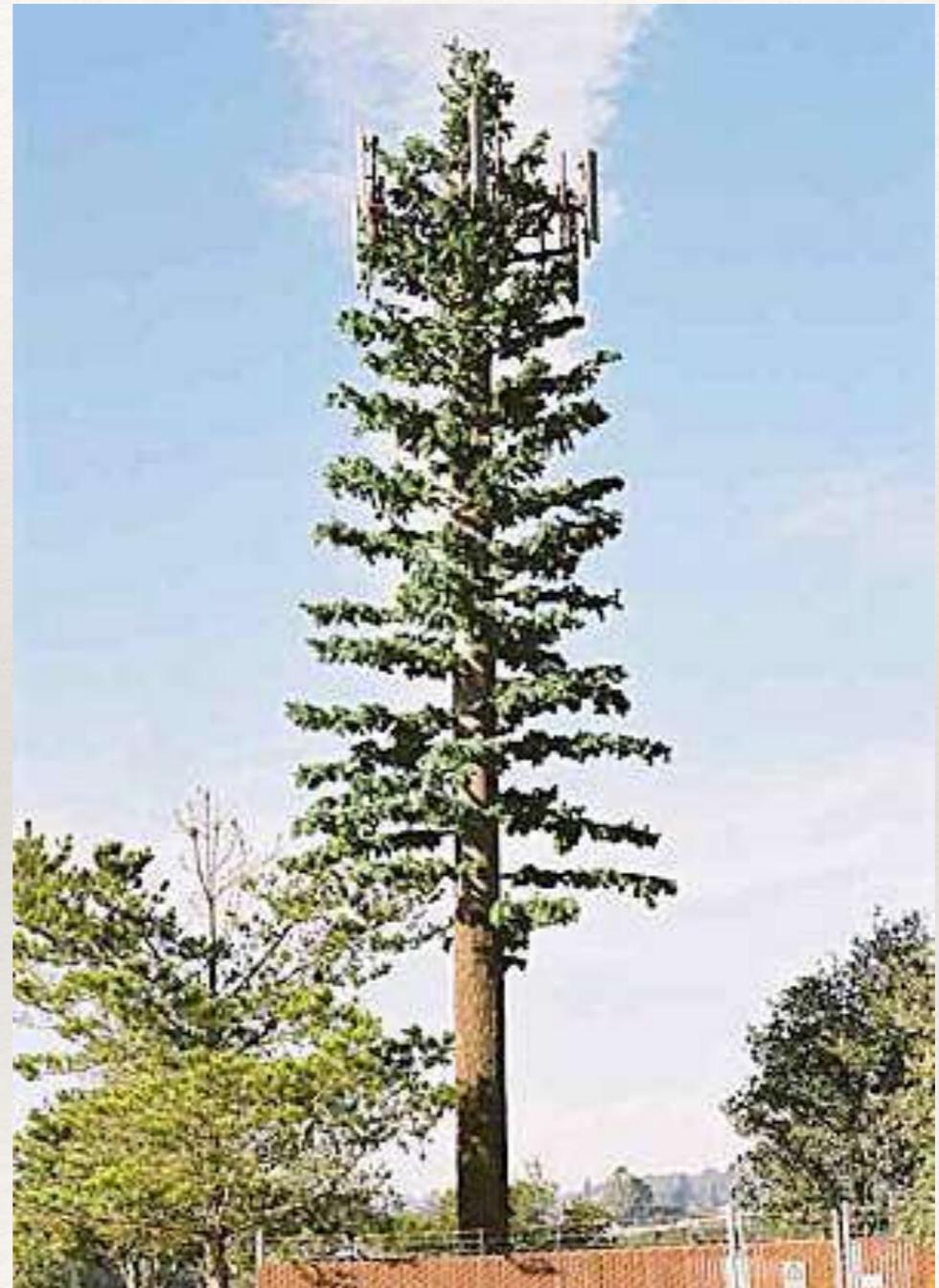
- ❖ Electromagnetic Field: a combination of invisible electric and magnetic fields of force. They are generated by natural phenomena like the Earth's magnetic field but also by human activities, mainly through the use of electricity. (1)
- ❖ The focus of this course will be on manmade EMFs not on natural EMFs
- ❖ EMFs are odorless, colorless, and silent but just because you cant see them, doesn't mean they aren't there

(1) http://ec.europa.eu/health/scientific_committees/opinions_layman/en/electromagnetic-fields/1-2/1-electromagnetic-fields.htm

4 Main Types of Man Made EMFs

1) Radiofrequency:

- Cell phones
- Cell phone antennas
- WiFi & Bluetooth
- Microwave ovens
- Cordless phones
- Baby monitors
- Smart meters

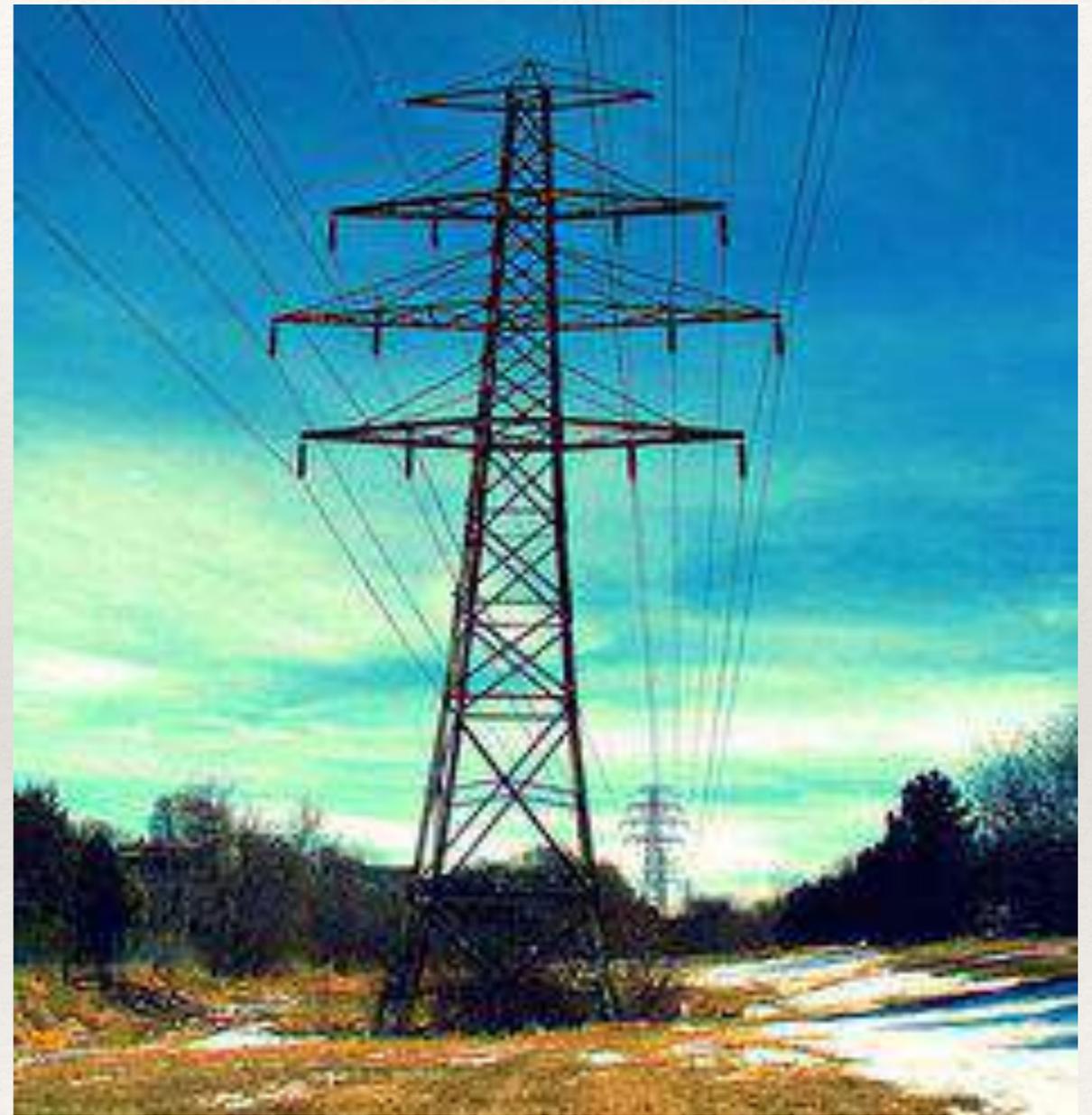


Cell tower camouflaged as a tree

4 Main Types of Man Made EMFs

2) Magnetic Fields:

- Power lines
- Chargers for electronics
- Circuit breaker panel
- Transformers and motors
- Wiring errors or current on water pipes



High voltage power lines are a large source of magnetic fields

4 Main Types of Man Made EMFs

3) Electric Fields:

- Household wiring
- Power strips
- Ungrounded electronics
- Lamps & lighting
- Cords & chargers



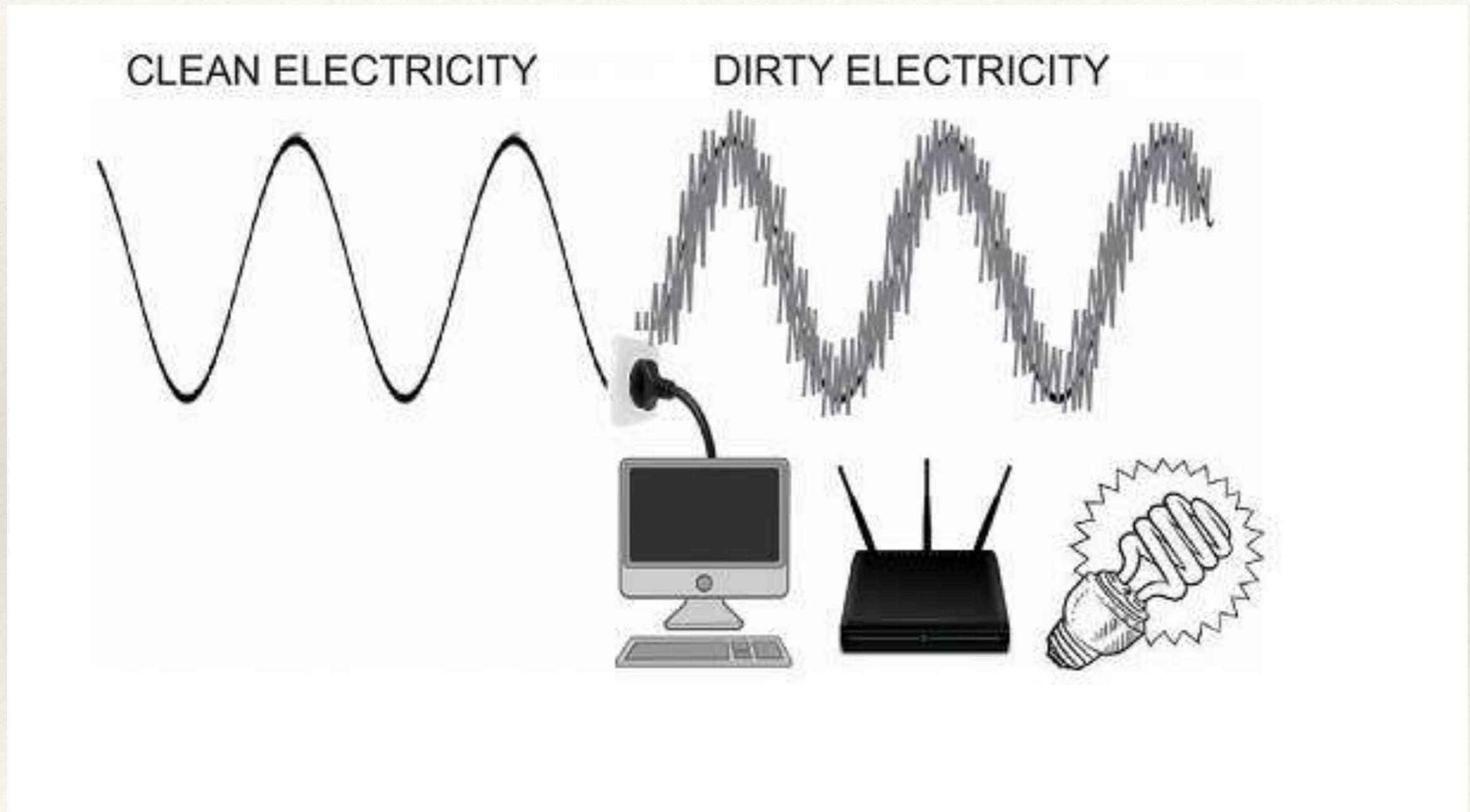
Phone and computer chargers are high sources of electric fields, especially when left in the wall without a phone or computer attached

4 Main Types of Man Made EMFs

4) Dirty Electricity: erratic spikes and surges of electrical energy that travels along wires that are meant for only standard or 'clean electricity' traveling at 50-60Hz

- CFL's and fluorescent light bulbs
- Dimmer switches
- Solar panel inverters
- Chargers for electronics
- Smart TVs
- Countless modern electronics

4 Main Types of Man Made EMFs

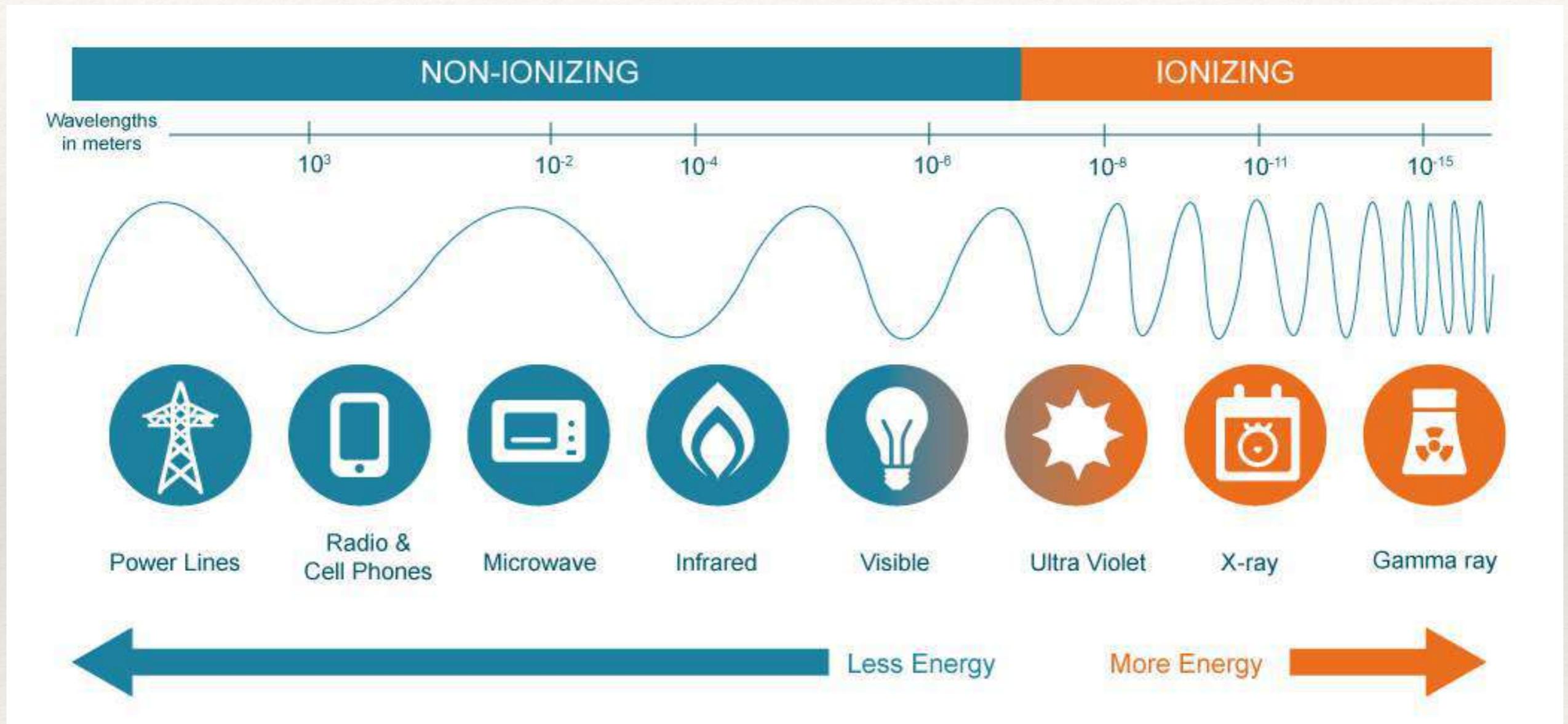


Clean electricity waves vs dirty electricity waves

EMF Spectrum

- ❖ The EMF spectrum is divided up between ionizing radiation and non-ionizing radiation
- ❖ Ionizing radiation categorized as the 'harmful' type of radiation is made up of high energy waves
- ❖ Non-ionizing radiation previously categorized as the 'non harmful' form of radiation consists of lower energy waves

Ionizing vs Non-ionizing Radiation (2)



Ionizing Radiation

- ❖ Up until this point, Ionizing Radiation was considered to be the only form of harmful radiation because of its thermal effects and due to its ability to break chemical bonds inside a human cell
 - Includes UV, X-Ray, and Gamma Ray

Non-ionizing Radiation

- ❖ In the past it has not been considered harmful because it has no thermal effects.
- ❖ Research is starting to disprove that theory and findings are showing that non-ionizing radiation can have biological effects as well. Just because it doesn't break chemical bonds immediately, doesn't mean it won't have long term health effects
 - Includes Infrared, Microwave, Radio & Cell Phone Waves, Power Lines, etc.

Hidden Sources of High EMFs

DANGER ZONES

EMF Levels from Common in Milligauss (mG)
Recommended Safety Levels: 5 mG-2.5 mG

SOURCE	mG up to 4 inches	mG at 3 feet
Blender	50-220	0.3-3
Clothes Washer	8-200	0.1-4
Coffee Maker	6-29	0.1
Computer	4-20	2-5
Flourescent Lamp	400-4,000	0.1-5
Hair Dryer	60-20,000	0.1-6
Microwave Oven	100-500	1-25
Television	5-100	0.1-6
Vacuum Cleaner	230-1,300	3-40
Airplane	50	

Source: USA Environmental Protection Agency

- Recommended safety levels should be between 0.5mG and 2.5mG
- THE BIG SHOCKER IS THE HAIR DRYER! Think about how close we hold those to our heads and think about the hazards of being a hair stylist who uses a hair dryer all day long (there are low EMF hair dryers on the market)
- The further these items are away from your body, the less harm they will cause. Exposure significantly drops at 3ft of distance
- The range is quite large on all of these due to different brands

So now that you know what EMFs are, why is it increasingly important to learn about them and their effects on the body?

“If you ask how much more radiation does penetrate your body today, compared to 100 years ago? A quintillion times more— that’s 1,000,000,000,000,000,000. ”

–Olle Johansson (Swedish researcher and neuroscientist)

“In 2016 the Total Audience Report showed that average American spent 9 or more hours a day using electronic media. Given that the average person spends 7 to 9 hours sleeping each night, that means we spend around two-thirds of our waking hours ‘wired’.”

–*Daniel DeBaun (Radiation Nation)*

Current Safety Standards

- ❖ Safety standards for electronics can't keep up with how fast technology is changing
- ❖ The last time the safety standards for Radio Frequency Radiation were updated was in 1996 (3)



The Nokia 1610 came out the same year that safety studies for RF (including cell phone safety) were last updated, A LOT HAS CHANGED SINCE THEN!

(3) https://transition.fcc.gov/Bureaus/Engineering_Technology/Orders/1996/fcc96326.pdf

Current Safety Standards

- ❖ In essence, our safety standards are greatly outdated. Considering how much technology has changed since 1996, a new review is greatly needed.
- ❖ Until that happens, there are things we can do to decrease and minimize our exposure and negative health effects

Cell Phone Warnings

- ❖ Berkeley, CA fought in Federal Court to require cell phone retailers in their city to warn consumers about the possible health effects from carrying a cell phone too close to the body (4)
- ❖ The ordinance took effect in January of 2016, where cell phone retailers in Berkeley, CA must either display a warning poster or hand out a flyer of the dangers of storing a cell phone in a pant pocket, shirt pocket, or bra while connected wirelessly

Cell Phone Warnings

- ❖ Believe it or not, cell phones actually do come with a warning!
- ❖ Buried in the fine print of the booklet that comes with the phone there is a warning that the phone is not intended to be used next to the head and should not be kept on the body
- ❖ These warnings can also often be found deep in the settings of your phone

iPhone Safety Warning

- ❖ This is a screenshot from my iPhone and can be found by going to:
'Settings>General>About>Legal> RF Exposure'
- ❖ States that it should not be carried against the body or put up against the head
- ❖ Apple advises to use speakerphone, headphones, or other accessories to protect yourself from RF exposure
- ❖ The warning also states that some cell phone cases may increase RF exposure

AT&T 1:05 PM 51%

< Legal

RF Exposure

iPhone has been tested and meets applicable limits for radio frequency (RF) exposure.

Specific Absorption Rate (SAR) refers to the rate at which the body absorbs RF energy. The SAR limit is 1.6 watts per kilogram in countries that set the limit averaged over 1 gram of tissue and 2.0 watts per kilogram in countries that set the limit averaged over 10 grams of tissue. During testing, iPhone radios are set to their highest transmission levels and placed in positions that simulate uses against the head, with no separation, and when worn or carried against the torso of the body, with 5mm separation.

To reduce exposure to RF energy, use a hands-free option, such as the built-in speakerphone, the supplied headphones, or other similar accessories. Cases with metal parts may change the RF performance of the device, including its compliance with RF exposure guidelines, in a manner that has not been tested or certified.

EMFs vs Smoking Cigarettes

- ❖ Many scientists and researchers are comparing the dangers of smoking cigarettes to EMFs
- ❖ The limitation we have is the time frame, decades of data are needed just as in the case of cigarettes
- ❖ Technology just hasn't been around long enough to test long term effects— we are essentially testing it on ourselves and on our children right now

“The problem we have is that we know that most environmental agents that cause cancer don’t cause cancer after a month or a year or two years of exposure. The best example we can give to illustrate this is that, if one was to start smoking cigarettes when they were 12, we don’t expect them to develop lung cancer when they’re 22. We expect them to develop lung cancer when they’re 42 or 52, three or four decades of exposure. We just don’t have that long period of study with people that have used mobile phones.”

–Olle Johansson (Swedish researcher and neuroscientist)

Then vs Now



Luxury and status in the 1950's
and 1960's



Luxury and status now, the newest
tech gadgets

Then vs Now



Once upon a time, it was considered normal to smoke while pregnant



In 20 or 30 years, are we going to say the same thing about electronics close to the body during pregnancy?

Cigarettes & EMFs

- ❖ 440,000 people die in the US every year from tobacco uses
 - that's more than alcohol, car accidents, suicide, AIDS, homicide, & illegal drugs COMBINED
- ❖ Smoking cigarettes can decrease life expectancy by 6.8 years!!!
- ❖ Could our cell phones, wifi routers, computers, and other gadgets be doing the same thing to us? Or could it even be worse than this?

Hidden in Plain Sight: Cell Tower

- ❖ Cell towers, a major source of radio frequency EMFs, are hidden all over our cities
- ❖ To find out if your patient has one near their home, they can go to www.antennasearch.com



Hidden in Plain Sight: Cell Towers



Cell Tower 'Cactus'



Cell Tower 'Palm Tree'

Hidden in Plain Sight: Cell Towers



Cell Tower Church Cross



Cell Tower Flag Pole

Top 15 Symptoms From Those Living Close to Cell Towers (5)

- ❖ Fatigue
- ❖ Sleep disturbance
- ❖ Headaches
- ❖ Feelings of discomfort
- ❖ Difficulty concentrating
- ❖ Depression
- ❖ Memory Loss



Towers right next to a home

Top 15 Symptoms From Those Living Close to Cell Tower

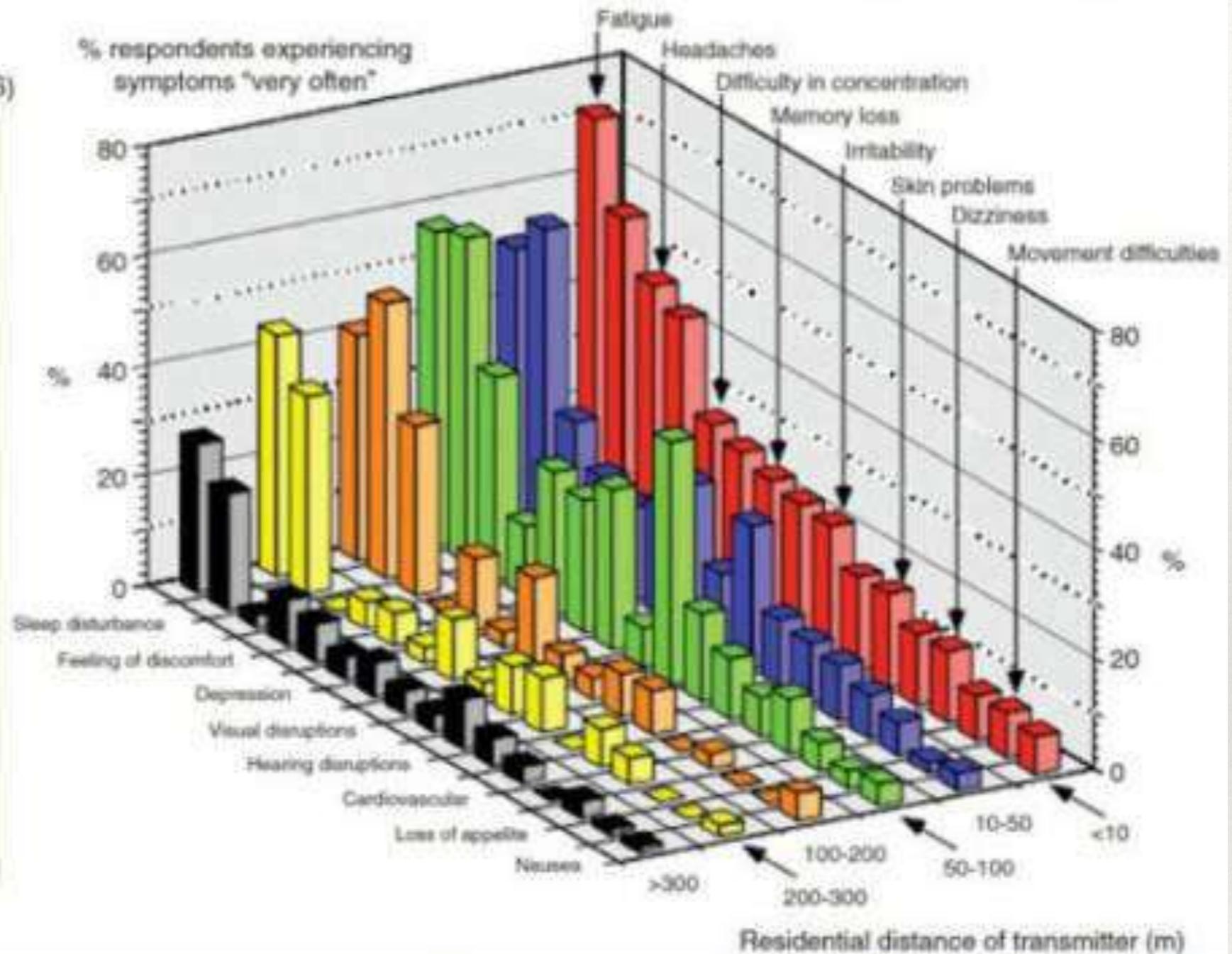
- ❖ Visual disruptions
- ❖ Irritability
- ❖ Hearing disruptions
- ❖ Skin problems
- ❖ Cardiovascular issues
- ❖ Dizziness
- ❖ Loss of appetite
- ❖ Movement difficulties

AND YES! They can build cell towers right next to homes, schools, churches, parks, office buildings, libraries, etc.

Neurobehavioral Symptoms near Cell Towers

Rapid aging syndrome (RAS)
Electro-Hyper-Sensitivity (EHS)

1. Fatigue
2. Sleep disturbance
3. Headaches
4. Feeling of discomfort
5. Difficulty concentrating
6. Depression
7. Memory loss
8. Visual disruptions
9. Irritability
10. Hearing disruptions
11. Skin problems
12. Cardiovascular
13. Dizziness
14. Loss of appetite
15. Movement difficulties
16. Nausea



Work of Santini et al (France): Pathol Biol. 2002;50:S369-73.

Is it possible to be sensitive to your electronics?

- ❖ Some argue YES!
- ❖ Dr. Dominique Belpomme's work noting reliable disease biomarkers identifying electronic hypersensitivity (6)
- ❖ Symptoms of electrical sensitivity are consistent across the subjects that were evaluated
- ❖ People who are unaware that sensitivity to electronics is possible still develop the same symptoms as everyone else, thus ruling out the likelihood that it is a psychosomatic condition

Top 15 Symptoms of Electric Sensitivity(7)

- ❖ Skin Problems (aka screen dermatitis)- “rosacea”-like redness of the face, may be hot or itchy and may have pustules
- ❖ Sensitivity to light/eye problems
- ❖ Fatigue/weakness/ trouble sleeping
- ❖ Heart problems/high blood pressure
- ❖ Headaches/Migraines
- ❖ Pain in joints or muscles
- ❖ Dizziness

Top 15 Symptoms of Electric Sensitivity

- ❖ Concentration difficulties
- ❖ Nausea / general poor health
- ❖ Memory disorders
- ❖ Endocrine reactions
- ❖ Respiratory / lung disorders
- ❖ Stomach / intestinal disorders
- ❖ Numbness
- ❖ “Influenza” / throat problems

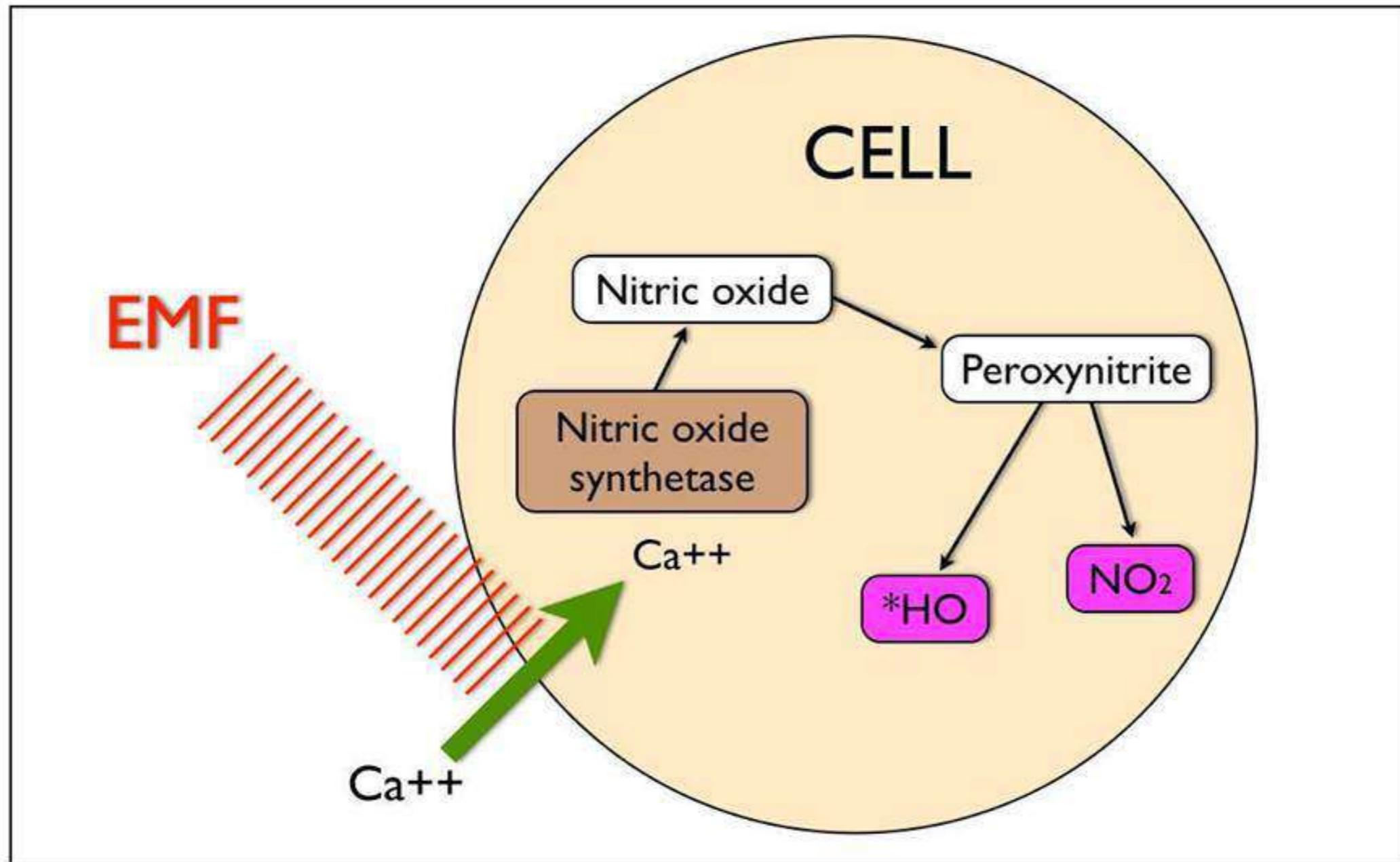


Top 15 Symptoms

- ❖ How many of our patients are coming in with these symptoms?!
- ❖ These symptoms can range from very mild to severe
 - How do we differentiate between normal symptoms and a potential sensitivity to electronic frequencies?
- ❖ Shouldn't we learn to recognize contributing factors to a patient's dis-ease?

Latest Groundbreaking Research (8)

EMF Activation of VGCCs Increases Free Radical Production



Latest Groundbreaking Research

- ❖ From Dr. Pall's work, we learned that EMF's effect the voltage-gated Ca^{2+} ion channels (VGCCs) and cause them to get stuck open
 - The electrical frequencies stimulate the voltage sensitive channels
- ❖ This causes an influx of intracellular calcium which leads to an increase in intracellular peroxynitrites
 - Peroxynitrites are an oxidant that can damage DNA and proteins
 - Increased free radicals

Other Consequences of Excessive Intracellular Calcium (9)

- ❖ Increased permeability of the blood brain barrier (10)
- ❖ Decreased melatonin production (11)
- ❖ Nervous system disruption
- ❖ Weakened immune system
- ❖ Increased cerebral glucose metabolism
- ❖ Oxidative stress
- ❖ Inhibition of repair mechanisms

(9) <https://vimeo.com/100623585> (10) <https://www.sciencedirect.com/science/article/pii/S0925443915003166>

(11) http://www.neilcherry.nz/documents/90_b1_EMR_Reduces_Melatonin_in_Animals_and_People.pdf

VGCCs Location

- ❖ The top 3 regions in the body with the highest concentrations of VGCCs thus the areas of the body that are most sensitive to EMF radiation (12)
 1. Brain
 2. Heart
 3. Reproductive organs

Excitotoxicity and VGCCs

- ❖ There is evidence that excessive stimulation of the VGCCs leads to excitotoxicity as well as mitochondrial damage and neurodegeneration. (13)
- ❖ Other examples of excitotoxins: (14)
 - Monosodium Glutamate (MSG)
 - Aspartate (nutrasweet)

Humans Are Electrical Beings

- ❖ VGCCs are not the only cells in the body that are run and influenced by electricity, these are other areas that are electrically based (15)
 - The brain
 - The heart- which is why we can shock a heart back into rhythm
 - Mitochondria (16&17)
 - Liver enzymes(16&17)
- ❖ NOTE: we don't yet fully know how EMFs effect all of the above, however, the fact that they are also electrically based proves that they are worth studying further

(15) <https://www.nmr.mgh.harvard.edu/news/141119/45-years-of-biomagnetism-and-squid>

(16) <https://www.ncbi.nlm.nih.gov/books/NBK21063/>

(17) <https://www.sciencedirect.com/science/article/pii/S0304416506002133>

This is great information, but how
do I apply it to my practice?

Take A Proper History

- ❖ Taking a detailed history is key to determining if EMFs are a potential factor in your patient's condition
- ❖ Include questions in your history that ask about electronic use, proximity to cell towers, habits at home or work as it relates to their symptoms
- ❖ Especially important to know about the environment in which your patients sleep since that is such a large portion of your patient's time
- ❖ Use the following two slides as examples of questions to ask your patients. Not all questions will apply to all patients, ask what most pertains to their condition.

Examples of History Questions

- ❖ What electronics do you use on a daily basis? And how do you use them? Phone to ear? Computer on lap? Etc.
- ❖ Where are those electronics located when you are asleep?
- ❖ Do you have WiFi in your home? If so, where is the router located?
- ❖ Do you have a smart meter? If so, where is it located?
- ❖ List the items in your bedroom that plug into the wall. (Bedside lamps, TV, night light, alarm clock, phone charger, etc)
- ❖ Do you have CFL bulbs or fluorescent light bulbs in your home?

Examples of History Questions

- ❖ Do you use a wearable tracking device or smart watch? If so, do you ever put it in airplane mode?
- ❖ How do you typically carry your phone? Pocket? Purse? Bra? Etc.
- ❖ Does your home have solar power? If so, where is the inverter located?
- ❖ Do you have dimmers on your light switches? If so, do they buzz when the lights are dimmed?
- ❖ When was your home built? Do you have 2 pronged outlets or 3 pronged outlets?

What's Next?

- ❖ If you suspect that EMFs are playing a role in your patient's condition...REMOVE THE SOURCE that seems to be effecting them the most!
 - Case studies later in the slides will show examples of this
- ❖ Also, start with the Basic EMF Protocol which helps to greatly reduce EMF exposure with just a few easy steps!
- ❖ The exciting thing is, when you remove the source, patients tend to get better FAST, if that was playing a role in their condition

Basic EMF Protocol

- ❖ Called the Sage and Jelter Protocol said to help 80% of autistic kids improve in just a few days. (18)
 - ❖ Turn off circuit breaker to bedroom at night
 - ❖ Turn off WiFi at night
 - ❖ Turn off cell phones, cordless phones, baby monitors, plug in alarm clocks, etc. at night.

Basic EMF Protocol

- ❖ This protocol is incredibly simple and is FREE to try at home.
- ❖ Anyone can try this at any time and see if they notice a reduction in their symptoms.
- ❖ This is a great first step!
- ❖ If a patient responds with a reduction of their symptoms, you can work with them to enhance their change by eliminating even more sources of EMFs

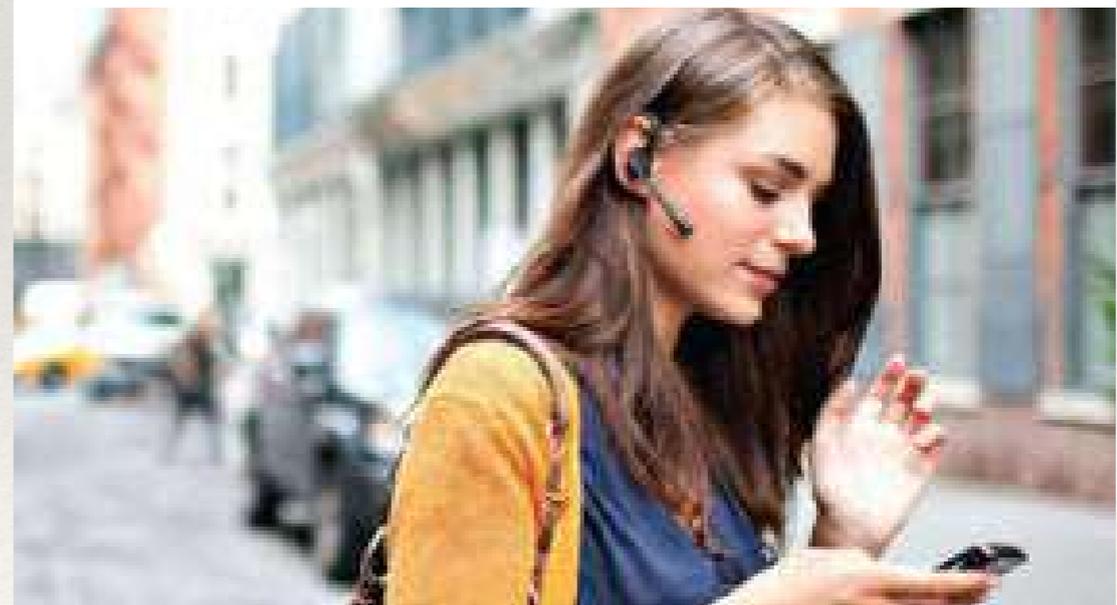
Use the following slides as a guide to aid in relief by reducing EMF exposure specific to your patient's symptoms.

Headaches and Brain Fog

- ❖ Avoid putting the cell phone to the head
 - Use speaker phone instead of speaking directly into the phone
 - Text if possible instead of calling
 - Shut off any signals that aren't being used (ex. bluetooth, cell signals, wifi)

Headaches and Brain Fog

- ❖ Avoid using bluetooth headsets which direct large amounts of RF frequencies to the head
 - Opt for wired headsets, preferably air tube head sets which are the safest headsets to use



Bluetooth Headsets

Headaches and Brain Fog



Wired Headset

- ❖ Wired headsets are a better option than bluetooth headsets
- ❖ Upside: most likely patients already have a set that came with their phone
- ❖ Downside: there is a metal in the wire and it still transmits EMF's up the wire to the head region. That being said it is a safer option than putting the phone to the ear or using unwired headsets.

Headaches/Brain Fog



Air Tube Headset

- ❖ Air Tube headsets are the safest device to use when speaking on a cell phone
- ❖ Hollow plastic tubes transmit the sound to the head region instead of metal wires
- ❖ Upside: most manufacturers claim 98% reduction in the transmission of EMFs to the head
- ❖ Downside: most people will not already have these. They can be found on Amazon for approximately \$20-\$40 depending on the brand. Also, they are more delicate than wired headphones, if the tubes get bent they most likely will stop working.

Headaches and Brain Fog

- ❖ Avoid cell phone use in the car, elevator, airplane, bus, train, etc.
 - The metal frame makes it much more difficult for RF's to exit, thus creating a higher concentration inside the vessel
 - While in motion, the cell phone uses more power and emits higher EMFs because it is constantly searching to connect with the closest cell tower or wifi signal

Sleep Disturbance- Melatonin Production

- ❖ As shown in recent research, EMFs can decrease melatonin production which can lead to difficulty sleeping.
- ❖ Keep electronics out of the bedroom
- ❖ TV's, cell phones, computers, tablets, WiFi routers, etc. should all be banned from bedrooms

Sleep Disturbance- Melatonin Production

- ❖ Naturally boost melatonin production is to go outside in the sunshine every day before noon
- ❖ Hang blackout curtains and keep the bedroom pitch black while sleeping will also help boost melatonin production
- ❖ Change out your white or light colored bedding to darker colors. The light colors reflect more light and thus deplete melatonin levels.

Sleep Disturbance- Alarm Clocks

- ❖ Use a battery operated alarm clock
- ❖ Alarm clocks that plug in to an outlet next to your bed continuously emit EMFs and are typically placed right next to the head while sleeping
- ❖ Never use a cell phone as an alarm clock unless the phone is kept at least 5 feet from your body and is kept on Airplane Mode



Sleep Disturbance- CFLs

- ❖ Compact fluorescent lightbulbs (CFLs) as well as standard fluorescent lightbulbs (FLs) are a main source of Dirty Electricity inside the home
- ❖ They can still emit dirty electricity when the lights are off but they are still plugged into an electrical source
- ❖ Be especially mindful of any light bulbs near your bed
- ❖ SIDE NOTE: CFLs and FLs contain mercury and if they break, they can expose you and your family to this toxic substance. These must be disposed of using a special recycling program, they cannot be thrown into the trash

Sleep Disturbance- CFLs



CFL Bulb



Standard Bulb

Sleep Disturbance- Blue Light

- ❖ Blue light from electronic screens also depletes melatonin production
 - Avoid blue light from the TV, computer, tablets, and smart phones 2 hours before bed
 - If that is not possible, you can buy blue light blocking glasses which will filter out the majority of blue light, start wearing them at least 2 hours before bed for best results

Sleep Disturbance- Blue Light



50% Blue Light Shielding Glasses

Sleep Disturbance- Blue Light



99% Blue light shielding glasses

Sleep Disturbance- Smart Meters

- ❖ Smart meters are the new meters used to track electricity and gas usage
- ❖ They have been used to replace the old fashioned analogue meters
- ❖ Smart meters constantly send your energy usage information to your utility company in real time. Thus, they are a huge source of radio frequencies
- ❖ Check where smart meters are located if they are located near a bedroom (which can inhibit sleep) or another area of the home where people spend a lot of time, opt out of the smart meter program

Sleep Disturbance- Smart Meters

- ❖ Additional fees will be charged by your utility company to opt out of the smart meter program
- ❖ There will be a \$75-\$100 cost to have someone come out to disconnect the smart meter
- ❖ An additional \$15-\$20 monthly fee per meter (most people have 2, 1 gas and 1 electric)
- ❖ Once you have opted out, a representative will come to your property every month or two to read your meter and track usage instead of having the information constantly sent to the utility company.

Sleep Disturbance- Smart Meters



Smart Utility Meter



Old-School Analog Utility Meter

Sleep Disturbance- Smart Meters



Example of gas meter "Opt-out"



Example of electric meter "Opt-out"

Numbness/Tingling/Burning or Muscle Pain

- ❖ Spend time each day disconnected from your electronics
 - Set times throughout the day where you do not use any electronics, do this with your kids too! (at a min 4-5 hours a day, but more is better!)
 - Examples of times:
 - From when you wake up to when you start work/school (1 hour)
 - Lunchtime (1 hour)
 - Dinnertime (1 hour)
 - 2 hours before bed (2 hours)
 - Use an app like lilspace where you can get rewards and discounts at online retailers for time spent unplugged

Numbness/Tingling/Burning or Muscle Pain

- ❖ Keep electronics off your body:
 - ❖ Laptop off of your lap
 - Keep it on a desk to allow the greatest distance away from the body
 - ❖ Phones out of pockets or bras
 - If the phone needs to be stored on the body, make sure to place it on airplane mode which shuts off the cell signal, bluetooth, and WiFi

Numbness/Tingling/Burning or Muscle Pain

- ❖ Phones out of your hand
 - Place phone down on a table, desk, or another surface while using it
 - You can even use a selfie stick to hold the phone at a distance from the body
- ❖ Smart watches/ fitness trackers
 - Use of these is not recommended especially to those with these symptoms
 - Depending on the product, bluetooth, cell signals, and WiFi may be able to be turned off to make the product safer



**"If you're worried about cell phone microwaves,
stick a piece of popcorn in your ear.
When it pops, it's time to hang up."**

Case Studies

- ❖ These are a few cases that I saw in practice that lead me to dive into researching more about EMFs and their impact on the body
- ❖ These are normal, everyday patients whose lives were being altered by electromagnetic frequencies
- ❖ While going through the case studies, think of your own patients and try to think if any of them could possibly be experiencing something similar

Case Study # 1

Severe Migraines

22 yo female presented with severe migraines 4-5 times per week since she was 14 years old. They were so severe that she couldn't function in a normal capacity and could not hold a normal full time job. Over the 8 years she had been suffering, she saw 4 other chiropractors and an acupuncturist. Each one would help to decrease the intensity of the pain temporarily but nothing seemed to be a permanent fix.

Severe Migraines

- ❖ Upon a thorough history and exam, it was discovered that the patient had been sleeping with her cell phone under her pillow since the day she received the phone on her 14th birthday
- ❖ When she was 19 years old she was given an iPad and she then started sleeping with it on the pillow next to her head
- ❖ Note: Prior to coming to my office, she had brain scans and neurological testing performed to rule out anything more serious

Severe Migraines

- ❖ The patient was advised to remove all electronic devices in her room while she slept for 1 month (this was before I knew about the Basic Protocol or any other information about EMF mitigation)
- ❖ The results were astounding! Her migraines that had gone down to 1-2 per week! Just this one modification alone was life changing for her.
- ❖ Along with regular chiropractic care, nutritional modification, and supplementation her migraines have gone down to 1-2 per month after 6 months of treatment

Severe Migraines

- ❖ A year after this patient started under care, she landed her DREAM job
- ❖ If a thorough history had not been taken on this patient, she would probably STILL be suffering from life altering migraines
- ❖ If a patients isn't healing the way you think they should, keep looking, refer out, do whatever you can to help them find the answers

Case Study #2

Difficulty Sleeping

A 52 yo female presented with Rt. SI pain and Lt. shoulder pain, both approx 6/10 in the pain rating. During the initial exam, the patient mentioned that she also had trouble sleeping every night and she thought the pain was causing her to be uncomfortable to the point where sleeping was hindered.

Difficulty Sleeping

- ❖ The patient was put on a treatment protocol and upon her first re-exam her pain was virtually gone after 6 weeks. Yet her sleeping hadn't improved.
- ❖ On re-exam she also mentioned that when she slept at her vacation home, she had no problem, she only had issues at home. (She has the same mattress in both homes)

Difficulty Sleeping

- ❖ Diving in deeper, two things were discovered:
 1. Over her bed at home she had a huge fluorescent light fixture
 2. The WiFi for the home was located on the other side of the wall, right next to her head

Difficulty Sleeping

- ❖ She was asked to turn off her WiFi at night along with shut the power off to her room at night as well.
 - She refused to cut the power to her room, but she shut of the WiFi and unplugged her fluorescent light fixture
- ❖ The night that she made this change was the first night that she started sleeping better!

Case Study #3

Joint Pain

A 66 yo Male presented with Rt. sided anterior hip and groin pain with occasional burning sensations which was a 5/10 on a pain rating scale. The pain had slowly come on over the past year and was continuing to get worse. The burning sensations started about 1 month prior to his first visit.

- ❖ Very active patient, rides his bike and does TRX 3-4 times per week
- ❖ Has seen a chiropractor for most of his life

Joint Pain

- ❖ A thorough exam and history were done and there were findings consistent of a pelvic subluxation along with weakness of his psoas mm and other hip flexors.
- ❖ Treatment included spinal and pelvic adjustments, laser therapy, and soft tissue stretching and release.

Joint Pain

- ❖ After 4 weeks of treatment his pain was a 3/10 and the burning sensation was unchanged
- ❖ The visit after his reassessment, I watched the patient put his cell phone in his front right pocket of his jeans
- ❖ As an experiment, I asked the patient to put his cell phone in his left front pocket instead of his right front pocket.
- ❖ On his next visit, he reported NO pain or burning in his Rt. hip and he stated the pain had moved to his Lt. hip

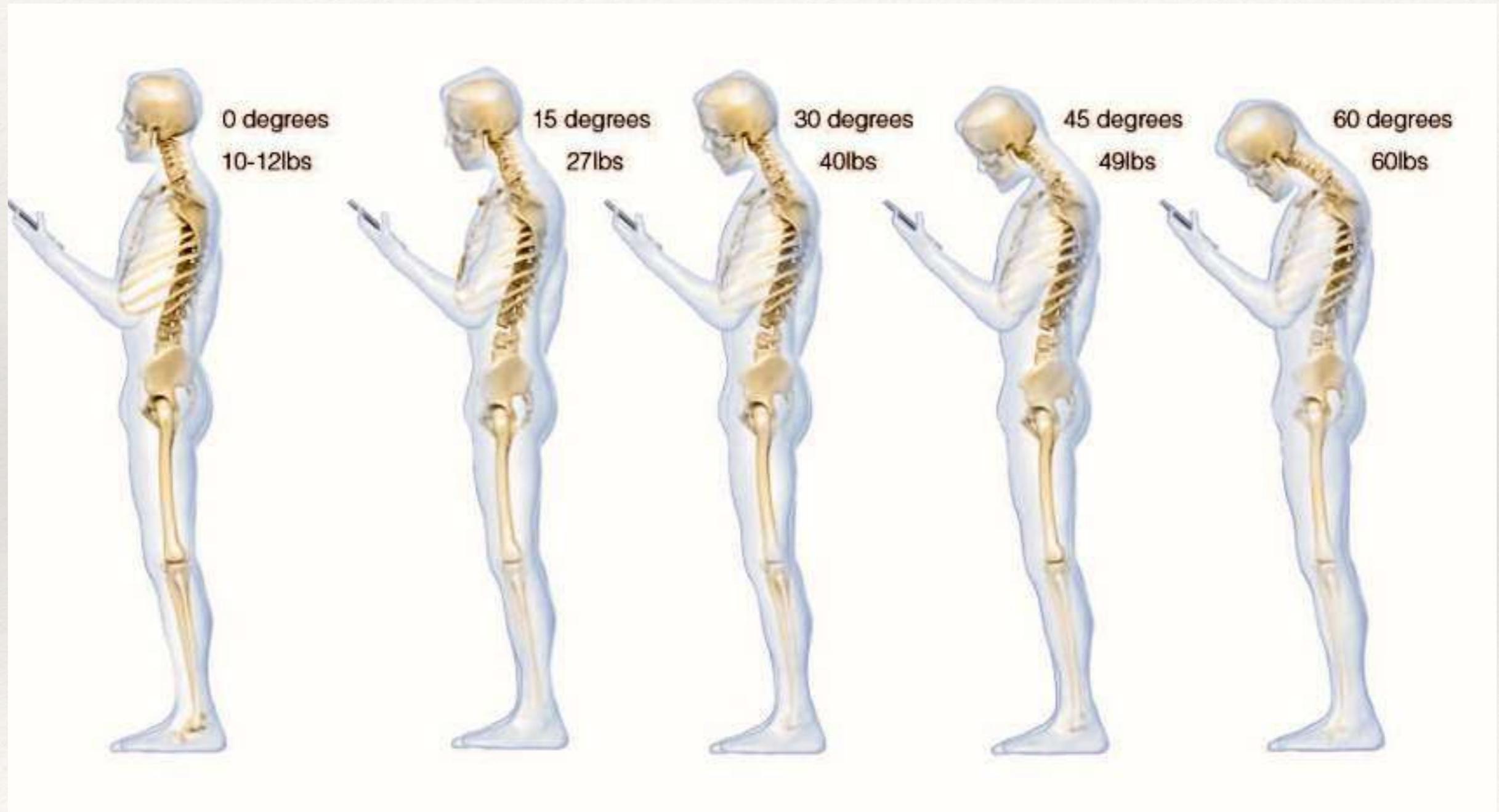
Joint Pain

- ❖ After the 'experiment' the patient was able to connect the pain in his hip to the location of his cell phone.
- ❖ The patient now refuses to put his cell phone in his pocket, and if he does, it is either on airplane mode or turned off
- ❖ He has continued with regular wellness checks and works hard to spread the word about cell phone safety

Case Study Review

- ❖ The amazing part about addressing the EMF issue is that if a patient is reacting, they can get a positive change VERY quickly without a large upfront cost
- ❖ In fact, if your patient turns their WiFi off at night and shuts the power off to their bedroom at night, they may notice a slight decrease on their energy bill

Special Considerations: Posture



Special Considerations: Posture

- ❖ Even if you completely disagree with the notion of technology effecting our health, you cannot deny that technology can largely effect our posture thus diminishing our health



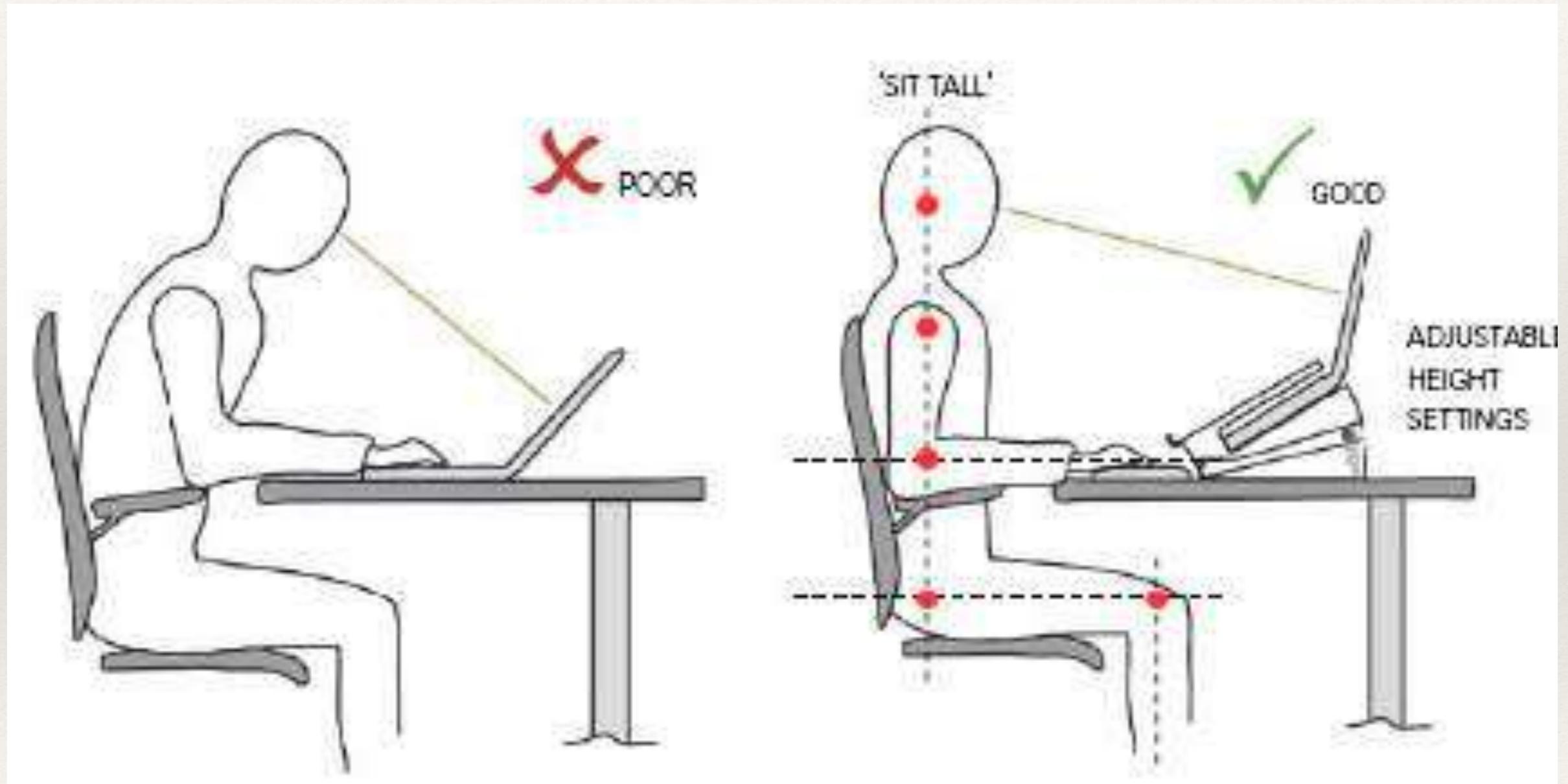
Special Considerations: Posture

- ❖ If you are adjusting your patients but then they walk out of your office and go right back to creating technology related repetitive injuries including: tech neck, laptop posture, and texting thumb, then what chance do you have to create long lasting changes in their body?

Correcting Tech Posture

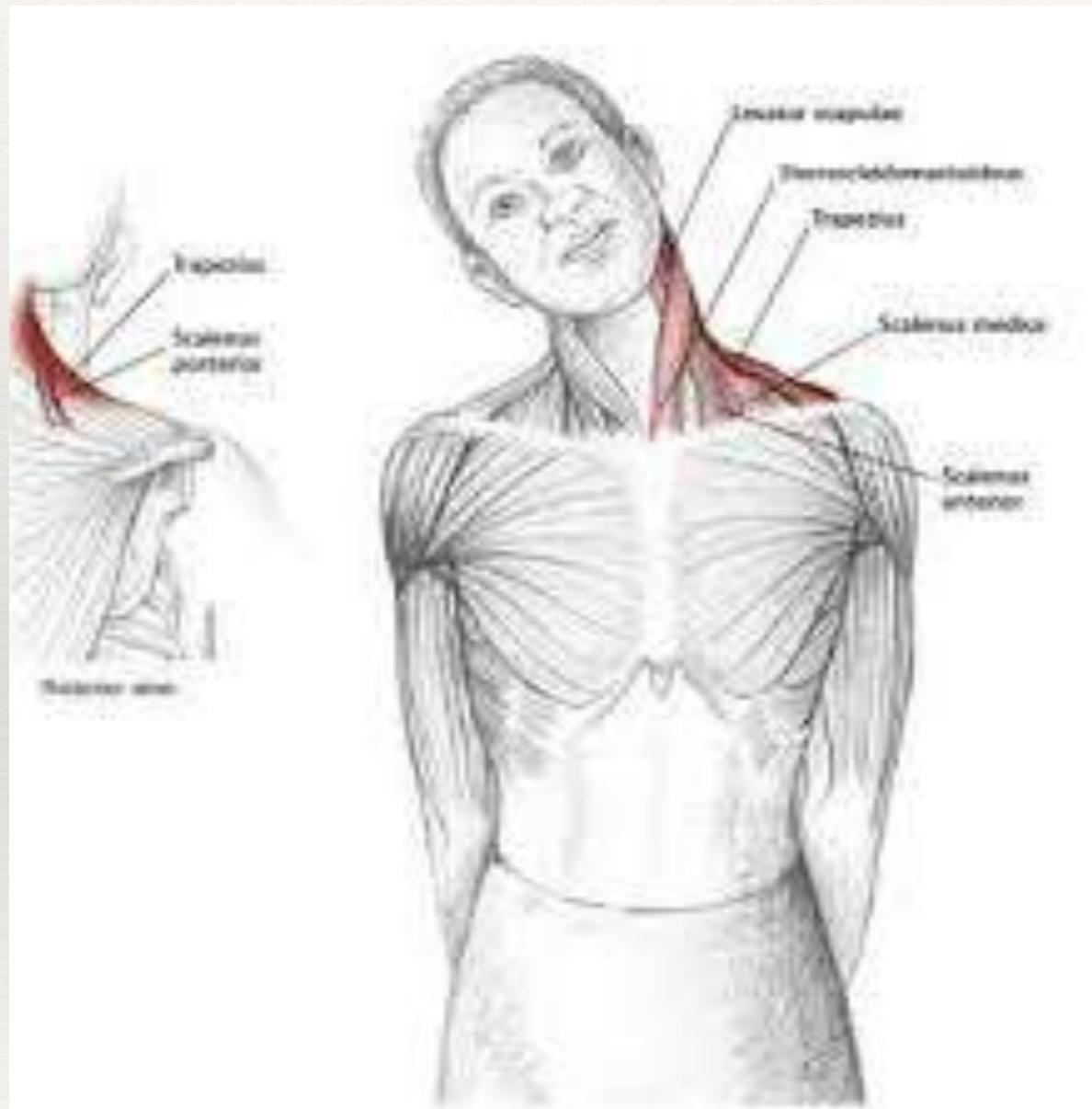
- ❖ Educate patients on the importance of disconnecting from their phones and computers at least 3-4 waking hours per day and how its affecting their spine and mechanical function of their body
- ❖ Discuss ergonomic changes that can be made, especially while at work on the computer
- ❖ Stretches and exercises to help reverse the effects of the repetitive micro traumas caused by these poor postures

Correcting Tech Posture: Ergonomics

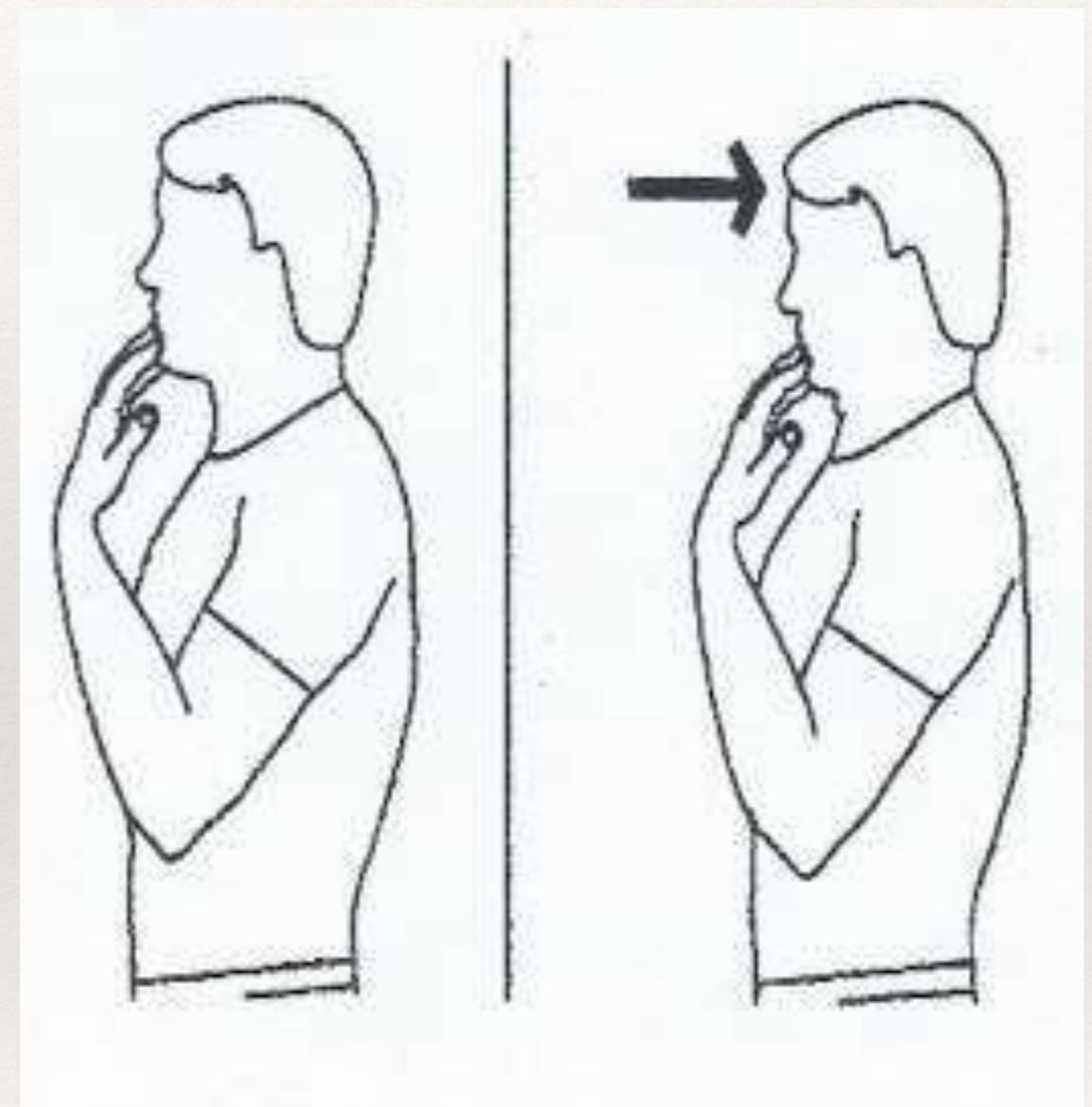


So many of us use laptops now instead of desktops, its important to discuss proper laptop ergonomics with your patients

Correcting Tech Posture: Tech Neck



Stretching the overworked anterior cervical spinal muscles



Isometric cervical spine exercise to counteract forward head carriage

Correcting Tech Posture: Computer Posture



Foam rolling to release strain from the thoracic spine

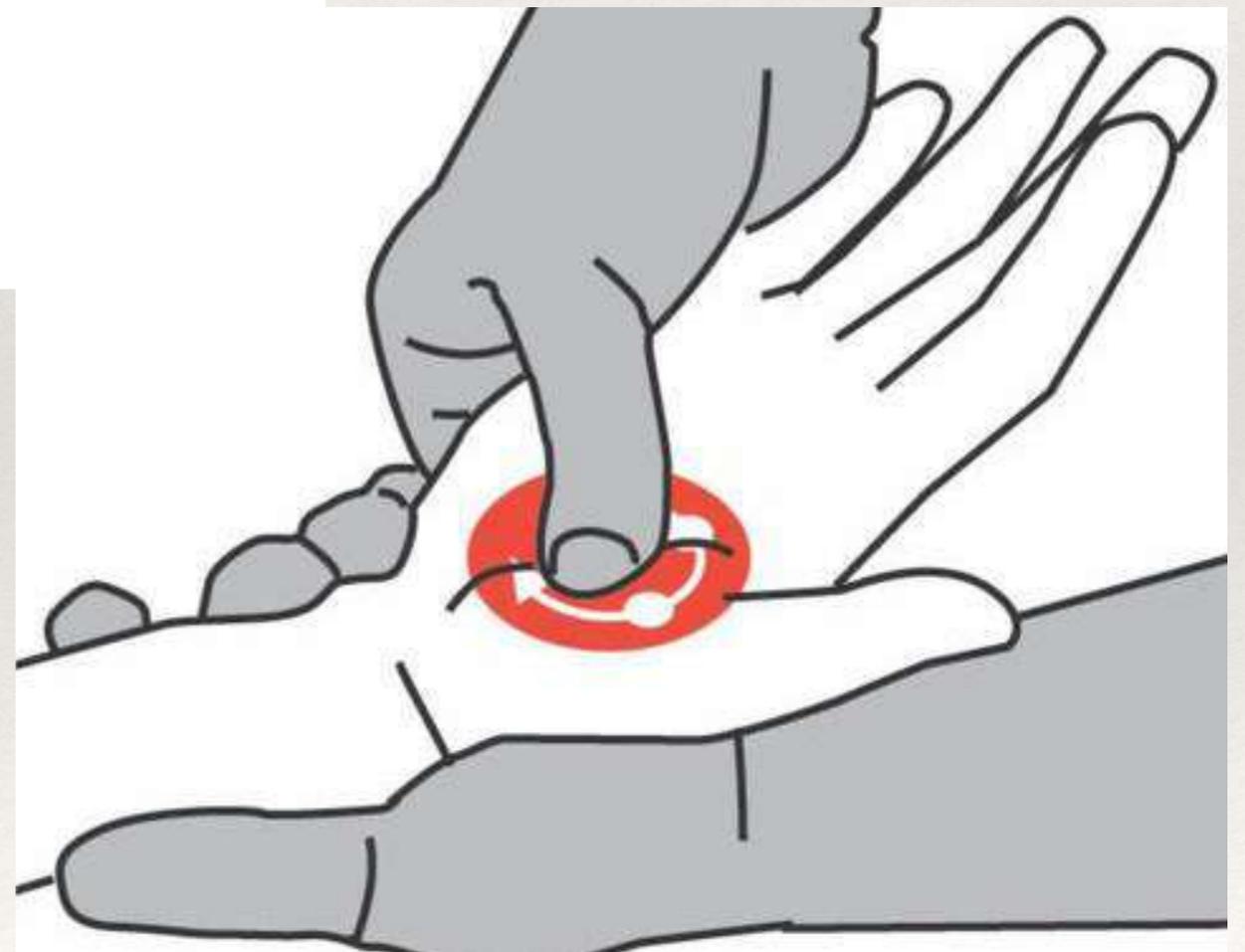


Stretching the anterior shoulder to release inner rotation of the shoulders

Correcting Tech Posture: Texting Thumb



Thumb Stretch



Myofascial release of the thenar muscles

Special Considerations: Pregnancy

- ❖ Researchers have just scratched the surface about the safety of EMF exposure to the developing fetus
- ❖ EMFs are amplified by water, since the fetus is sitting in a sac of embryonic fluid, the EMFs can become more concentrated in the womb than they would necessarily be outside of the womb

Special Considerations: Pregnancy

- ❖ Research is just beginning to scratch the surface of this topic but signs are showing a link between
 - Maternal cell phone use during pregnancy and spontaneous abortion (19)
 - Maternal cell phone use during pregnancy and childhood behavioral problems later in life (20)
 - Maternal EMF exposure during pregnancy and decreased fertility for the child later in life (21)
 - Maternal EMF exposure during pregnancy and childhood asthma for the child later in life (22)

Special Considerations: Pregnancy



Cell phone use during pregnancy

Special Considerations: Pregnancy

- ❖ More definitive research needs to be done in this area
- ❖ The current research suggests that there could be a link between prenatal EMF exposure and negative health effects for your child later in life
- ❖ Why wait for the research to catch up? Encourage your pregnant patients to decrease their exposure NOW!

Decreasing EMFs For Pregnant Women

- ❖ This protocol is suggested by The Baby Safe Project which is a collective of over 100 physicians, scientists, and public health professionals to help reduce EMF exposure for pregnant women (23)
 1. Keep your cell phone away from the body. Never carry it in a pocket or bra. Never sleep with your phone.
 2. Avoid cordless phones and their transmitting bases
 3. Keep your wireless laptop or tablet away from your body. Never rest your wireless device on your tummy
 4. Avoid close proximity to WiFi routers and smart utility meters. Turn your router off at night.
 5. Whenever possible, connect to the internet using wired Ethernet cables.

Special Considerations: Children

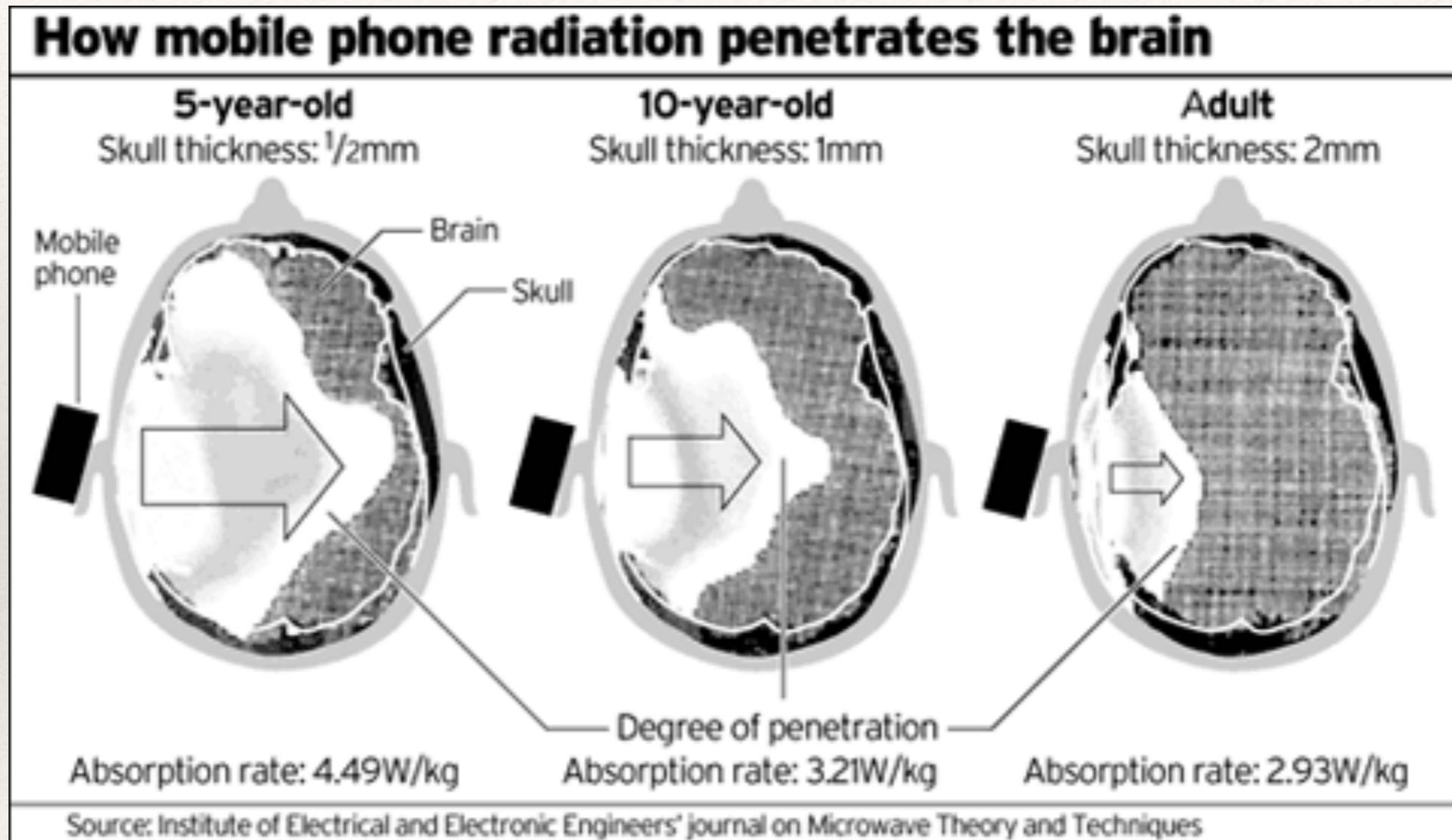


Which do you think is a healthier way to grow up?

Special Considerations: Children

- ❖ A 2011 research study showed that a child's head can absorb up to 10 times the amount of EMFs as an adult's head (24)
- ❖ Other things to consider (taken from the Defender Shield website) (25)
 1. Their skulls are thinner, making it easier for EMF waves to penetrate
 2. Their minds are still developing and are easily impacted by EMF waves
 3. They have smaller heads with brains positioned closer to the skull
 4. Their brains contain more water, meaning, EMF waves are conducted more easily through the brain

Special Considerations: Children



How cell phones penetrate the brain of a child vs the brain of an adult

Special Considerations: Children

- ❖ A 2017 nationwide report measured use of electronic devices for children 8 years and younger (26)
 - It was determined that the average child is spending 48 minutes per day on a mobile device, which is up from 15 minutes per day in 2013
 - It was also found that these children had an average of 2 hours and 19 minutes per day of screen time (includes mobile devices, TV, videos, video games, iPods, and virtual reality headsets)

Special Considerations: Children

- ❖ Children are using mobile devices at an increasing rate
- ❖ 48 minutes of mobile time per day is an average, which means some kids may not be using a mobile device at all whereas others could be spending upwards of 2 hours a day on a device!!!
- ❖ In fact, mobile device usage tripled between 2013 and 2017 between kids ages 8 and under
- ❖ That is a HUGE jump in a very short amount of time!
- ❖ We do not yet fully know the consequences of this

Decreasing EMF Exposure For Kids

- ❖ If at all possible, do not allow kids to use mobile devices
- ❖ If they do use a mobile device, download a few games for them that can be played on airplane mode (no cell signals, wifi, or bluetooth)
- ❖ Do not allow kids to put the phone to their ear
- ❖ Encourage them to play outside, use their imaginations, make friends with the neighbors, and play games
- ❖ Limit TV time as much as possible! (ideally under 30 minutes per day)

Additional Tips For Device Safety for Kids



**Are your kids
obsessed with
your phone?**

Watch this for some
quick kid-friendly cell
phone safety tips!

Click this link to watch: <https://youtu.be/vzkHdxwK6Q4>

One More Thought On Kids

- ❖ Kids thrive on fresh air, dirt, running around barefoot on the grass, digging for worms, and learning how to do summersaults and handstands
- ❖ If instead we stick them on the couch and place a tablet in their hands, because its more convenient for us as parents, aren't we taking away the fundamentals of what made our childhood so great?

“EMFs play a role in all patients. We need to minimize all stressors to empty their toxic stress buckets as EMFs contribute to filling them.”

–Dr. Dan Pompa DC, Ps.CD

Lifestyle Changes to Decrease EMF Harm

❖ Avoid toxins:

- Air: recycle air in your car when air quality is low, avoid going outside especially exercising outside when air quality is low, air purifiers can be helpful, changing your filter in your HVAC system every 3-6 months
- Home: use natural cleaning products, natural detergents, take off shoes inside the house

Lifestyle Changes to Decrease EMF Harm

- ❖ Exercise: 3-4 moderate workouts per week, sweating is important to help to detox your body from toxins that could be weakening your body thus making you more susceptible to EMF damage
- ❖ Grounding: adding a grounding protocol daily of walking barefoot in grass, sand, or dirt for 15-20 minutes per day can help to discharge your body from negative ion buildup from EMF exposure (we all know how good this feels, we just need to do it more often!)

Lifestyle Changes to Decrease EMF Harm

- ❖ Hydration: drinking 6-8 glasses of filtered water(using a quality water filter) will help to flush toxins out of the body
- ❖ Sunlight: spending 15-20 minutes daily outside around noon without sunglasses, while facing the direction of the sun can help boost melatonin production which is depleted by EMFs (can be done the same time as your grounding)

Lifestyle Changes to Decrease EMF Harm

- ❖ Infrared Sauna: A combination near and far infrared sauna protocol can help with detoxification of heavy metals which react with EMF waves
- ❖ Epsom Salt Baths: boost magnesium levels which help to decrease the leak of intracellular calcium caused by EMF radiation and also helps with detoxification

Diving Deeper

- ❖ If a patient finds that they respond positively to reducing their exposure and they want to dive deeper into EMF mitigation here are some things to check out
 - Hire a building biologist
 - Diet changes to boost anti-oxidant levels to help fight free radicals

What is a Building Biologist?

- ❖ A certified building biologist is expertly trained in identifying and mitigating pollutants, toxins, and electromagnetic emissions in homes, the workplace, and schools
- ❖ There are 8 building biologists currently in California that specialize in EMF mitigation, you can find one in your area by going to The International Institute for Building Biology and Ecology www.hbelc.org
 - Be sure to choose one that is an Electromagnetic Radiation Specialist with an 'EMRS' certificate

Building Biologist Consultations

- ❖ The building biologist will come to your home and take readings on the 4 main types of EMFs (electric, magnetic, radio frequency, and dirty electricity)
- ❖ Once the readings are completed, they will give you advice and recommendations on how to decrease EMF frequencies in your space
- ❖ They also can do pre home purchase inspections before you decide to buy a particular home

Supplements That Can Help Reduce EMF Damage

❖ Magnesium:

- Natural Ca^{2+} ion channel blocker, can help with the Voltage Gated Calcium Ion Channel leakage
- Magnesium Threonate is a great form of magnesium that helps with brain function
- Magnesium Malate is another great form of magnesium as well

Supplements That Can Help Reduce EMF Damage

- ❖ Vit D3: In a study done by Dr. Belpomme, 70% of his electrical sensitive patients had a severe vitamin D deficiency. (27)
 - D3 is neuro protective
 - Best absorbed through the skin from the sun (without wearing sunscreen)- 15-20 minutes daily
 - Supplementation in winter months or when adequate daily sun time has not been achieved

Supplements That Can Help Reduce EMF Damage

- ❖ Melatonin: As noted earlier, EMF exposure decreases your body's natural melatonin production (27)
 - Exposing yourself to sunshine at noon for approximately 15-20 minutes without your sunglasses on, helps to boost your melatonin production
 - If this is not possible melatonin can be supplemented
 - Melatonin is released in your body while sleeping, so boosting melatonin can help give better quality sleep

Foods That Help Reduce EMF Damage

- ❖ Organic is always BEST!
- ❖ Reducing the body's toxic load helps the body to have greater efficiency at protecting against EMFs
- ❖ If organic isn't possible, keep in mind the 'Dirty Dozen' and the 'Clean Fifteen'
 - The Dirty Dozen are the foods that are most contaminated and should only be eaten when you can find them organic
 - The Clean Fifteen are the foods that are less likely to be contaminated by pesticides and can be eaten in moderation even if organic is not available



EWG's 2018

Dirty 12™

1. STRAWBERRIES
 2. SPINACH
 3. NECTARINES
 4. APPLES
 5. GRAPES
 6. PEACHES
 7. CHERRIES
 8. PEARS
 9. TOMATOES
 10. CELERY
 11. POTATOES
 12. SWEET BELL PEPPERS
- 



EWG's 2018

Clean 15™

1. AVOCADOS
 2. SWEET CORN
 3. PINEAPPLES
 4. CABBAGES
 5. ONIONS
 6. SWEET PEAS
 7. PAPAYAS
 8. ASPARAGUS
 9. MANGOES
 10. EGGPLANTS
 11. HONEYDEWS
 12. KIWIS
 13. CANTALOUPE
 14. CAULIFLOWER
 15. BROCCOLI
- 

Foods That Help Reduce EMF Damage

- ❖ Raw leafy greens help to boost detox pathways within the body
 - Kale
 - Spinach
 - Microgreens
 - etc.
- ❖ Uncooked leafy greens contain folate which helps to push methylation pathways
- ❖ MUST be uncooked to receive the maximum benefit (smoothies are a great way to get large amounts of leafy greens daily)

Foods That Help Reduce EMF Damage

- ❖ If EMF exposure is high around the abdominal area, the gut bacteria can be effected (holding cell phone near abdomen, laptop or tablet use)
- ❖ Adding probiotic rich foods to your diet can help!
 - Raw sauerkraut
 - Raw kombucha
 - Low sugar or no sugar kefir

Foods That Reduce EMF Damage

- ❖ Antioxidant foods can help to fight the free radicals that are produced by EMFs
- ❖ These are the top 10 free radical fighting foods in 2018 that can help combat some of the negative effects of EMFs (28)
- ❖ Many spices and herbs have great antioxidant potential, adding fresh herbs and spices to food can greatly boost the body's ability to fight free radicals
- ❖ ORAC (Oxygen Radical Absorbance Capacity) score quantifies the antioxidant capacity of different foods
- ❖ Top foods based on their ORAC score (always try to buy organic)

Top 10 Antioxidant Rich Foods

- Dark Chocolate: 20,816 ORAC score
- Pecans: 17,940 ORAC score
- Elderberries: 14,697 score
- Wild blueberries (found frozen): 9,621 ORAC score
- Artichoke (boiled): 9,416 ORAC score

Top 10 Antioxidant Rich Foods

- Cranberries: 9,090 ORAC score
- Kidney Beans: 8,606 ORAC score
- Blackberries: 5,905 ORAC score
- Cilantro: 5,141 ORAC score
- Goji Berries: 4,310 ORAC score

Should We All Try To Limit Our Exposure?

- ❖ Even if your patients aren't 'sensitive' to EMFs, it is still a really good thing to encourage EMF moderation and mitigation
- ❖ The research is showing the negative health effects of EMF radiation therefore, we are learning that it is NOT good for any of us
- ❖ In my opinion, EMF reduction measures should be a part of a wellness based, healthy, lifestyle. But at the moment, many of us are not addressing this major issue in our patients overall wellness plan!

Should We All Try To Limit Our Exposure?

- ❖ EMFs are just like air pollution, heavy metals in drinking water, chemicals in our food, pesticides, etc.
 - ❖ Even if they don't seem to be impacting us symptomatically on a daily basis, doesn't mean we shouldn't reduce our exposure to these toxic substances
 - ❖ None of these things are 'good' for us including EMFs
 - ❖ The problem is, we limit and reduce our exposure to all of them the best we can... but most of us don't limit our EMF exposure!
 - ❖ Start thinking about how you can cut down on your exposure

Talking To Patients About This Issue

- ❖ Most people will be somewhat resistant to the idea of reducing electronic use: remember technology brings convenience to their life
- ❖ Starting small with the basic protocol is best (slide 51)
 - If a patient notices a reduction in their symptoms or an improvement in their health, when making one or two small changes, then they are more likely to make some of the other bigger changes
- ❖ Understand that technology is here to stay and we have to learn how to use it in a safe manner, its effects are cumulative over time

Talking To Patients About This Issue

- ❖ Getting in the habit of regularly giving your patients different tips / tricks on how to reduce exposure can be a great wellness tool!
- ❖ Post information on social media or in your practice newsletter. If you need ideas or content to share, take a look at this YouTube channel. (search 'EMF-Detox' in YouTube)
- ❖ Create a challenge of the week / month to help encourage safer technology habits

Challenge Of The Week Ideas

- ❖ No placing your cell phone next to your head for a week
- ❖ No electronic use while in a moving vehicle (that goes for anyone that is in that vehicle with you)
- ❖ No electronics on the body (laptops on lap, phones in pocket, wearable trackers, etc)
- ❖ No screen time two hours before bed
- ❖ The options are endless!

5G Cell Phone Service

- ❖ The U.S. is currently going through a transition from 4G to 5G service, what does this mean?
- ❖ 5G is supposed to be upwards of 100x faster than our current data speed however, the frequencies used in 5G have trouble penetrating walls and therefore the 5G cell towers will need to be located in much closer proximity to us and a high concentration of 5G towers will be needed

Placement Of 5G Cell Towers

- ❖ These cell towers will be placed on existing infrastructure such as street lights, utility poles, etc.
- ❖ The telecommunications companies estimate that these 5G cell towers will be placed between every 2 and 10 homes (this is in addition to the cell towers that we already have)
 - These can be placed on your property WITHOUT your consent (since its considered a utility)
 - What we need to ask ourselves is what will the health implications of this be?!
- ❖ 5G Towers have begun to be built already in parts of the US and 5G compatible phones will be available in the early part of 2019
- ❖ This is ALREADY underway

The New 5G Cell Towers

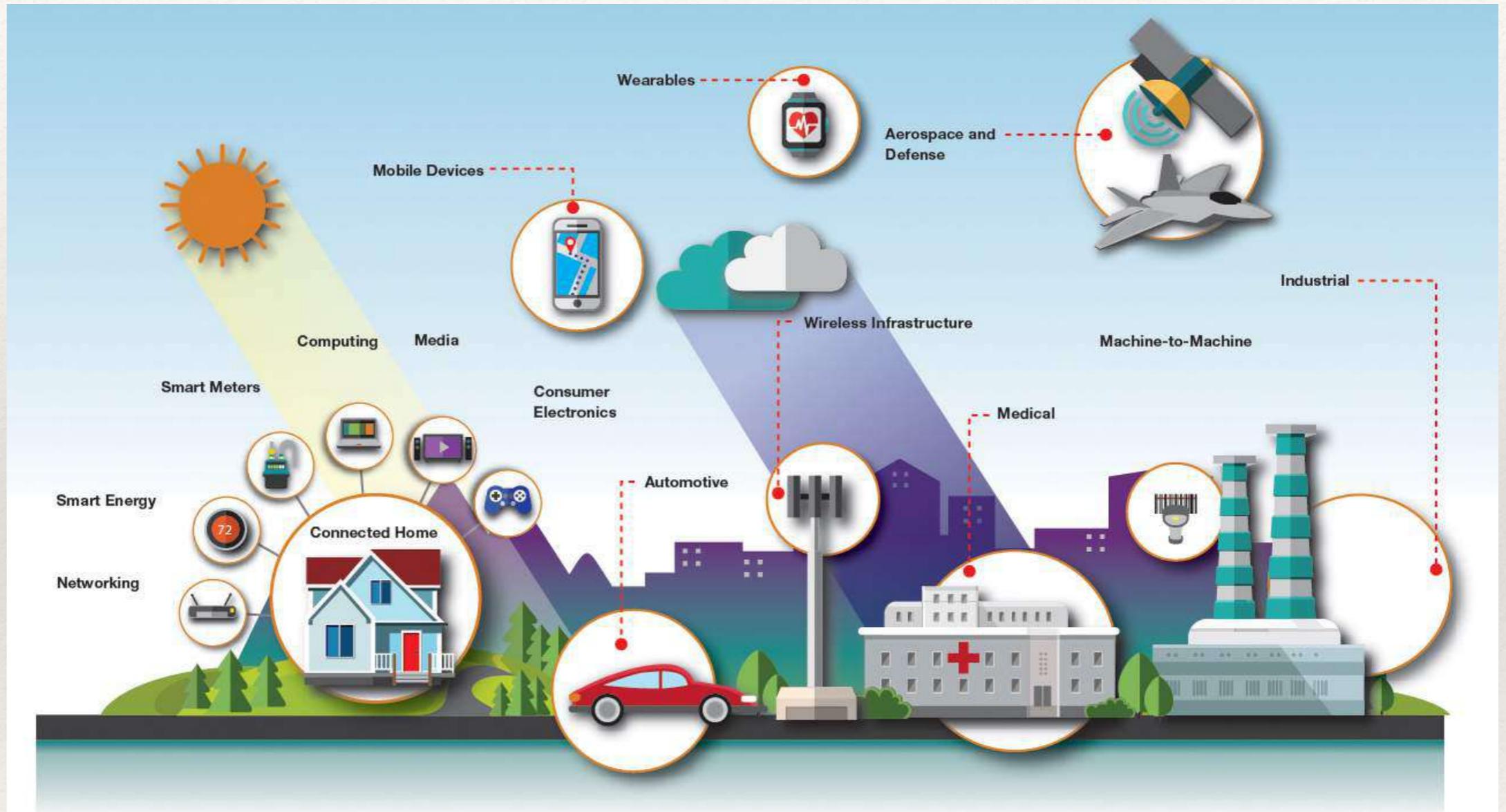


One example of the 5G towers will take a street light such as the image on the left and turn it into a cell tower like the image on the right

The Internet Of Things

- ❖ We will soon have the capacity for all of our electronics in our homes to ‘talk’ to one another, this has already started, but is about to explode once 5G get implemented, this will be called “The Internet Of Things”
 - ❖ Pros: Convenience
 - ❖ Cons: Potential health risk from the significant increase in EMFs in and around your home

The Internet of Things



Every device we will own will connect to the grid and transmit bluetooth, wifi, and potentially cell signals. The amount of EMF exposure will grow exponentially over the next 10-20 years.

The Internet of Things

- ❖ The fridge, oven, dishwasher, TV, car, thermostat, light bulbs, computer, sprinkler system, washing machine, doorbell, security cameras, etc., will all be interconnected and will be able to communicate with each other.
- ❖ I have even heard reports of 'smart' bluetooth sensors to place on plants to let you know when they need to be watered. As well as 'smart' clothing. Tommy Hilfiger is creating a line of clothing with bluetooth chips in the tag to track movement and play movement based video games... IS THIS REALLY NECESSARY?!?!

Are You Concerned About 5G?

- ❖ If you are concerned about 5G and the potential adverse health effects of having a cell tower in close proximity of your home, the best thing to do is reach out to your local city council members
- ❖ Currently, each city in California will have the rights to welcome 5G or potentially heavily restrict it
- ❖ As of September 2018 Mill Valley, CA voted to heavily restrict 5G towers and hopefully communities will follow suit

More Information On 5G



Would you want
a cell phone
antenna placed
in your yard?

*5G is coming to a
neighborhood near
you!*

Click this link to watch the video: https://youtu.be/tOK_4sPIQN0

What I Say To The Critics

- ❖ In this course I have presented many scientifically based research studies that show great harm from EMF frequencies, sticking with the studies is always best!
- ❖ For the critics, I first off encourage them to find scientifically based research (that has not been funded by the telecommunications companies) that show the safety of EMFs, there are many studies out there but every one that I have seen has in some way or another been backed by telecom companies
- ❖ Lastly, no one can dispute the health implications from the poor postures that technology is creating, as well as the financial implications of having a 5G cell tower placed on your property. Thus driving real estate priced down on the properties where these are placed.

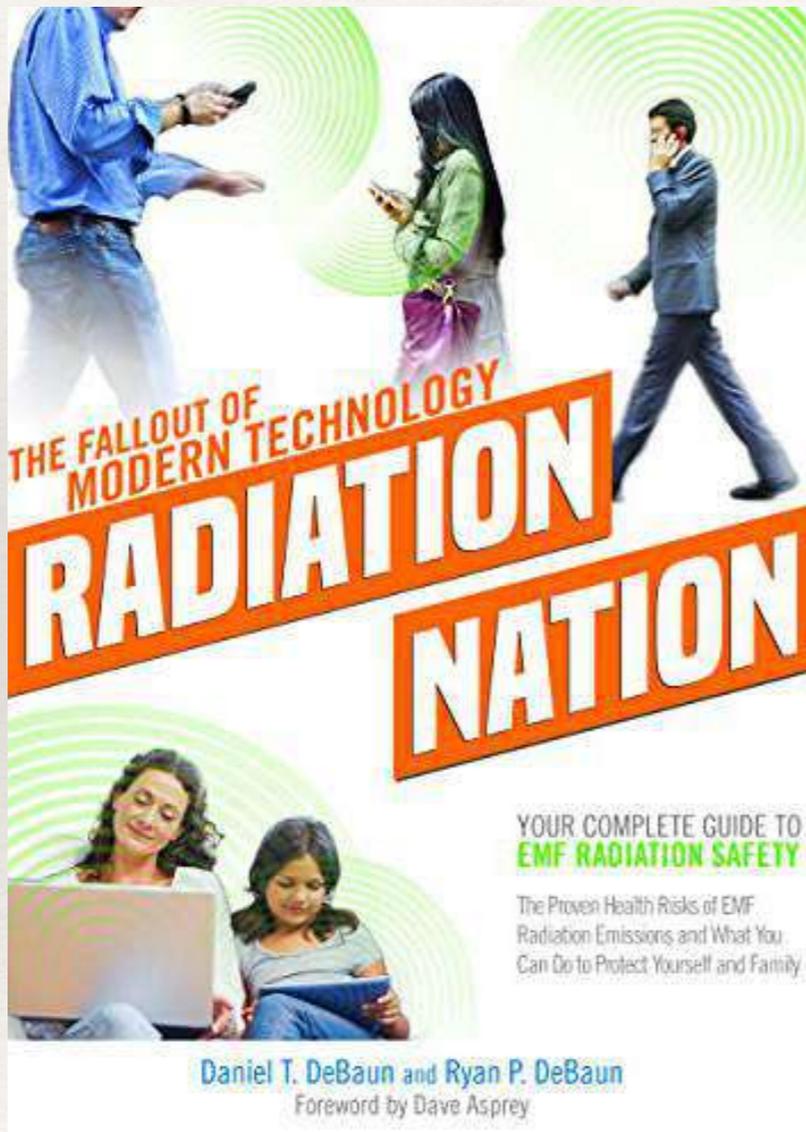
Additional Resources

❖ YouTube Channels:

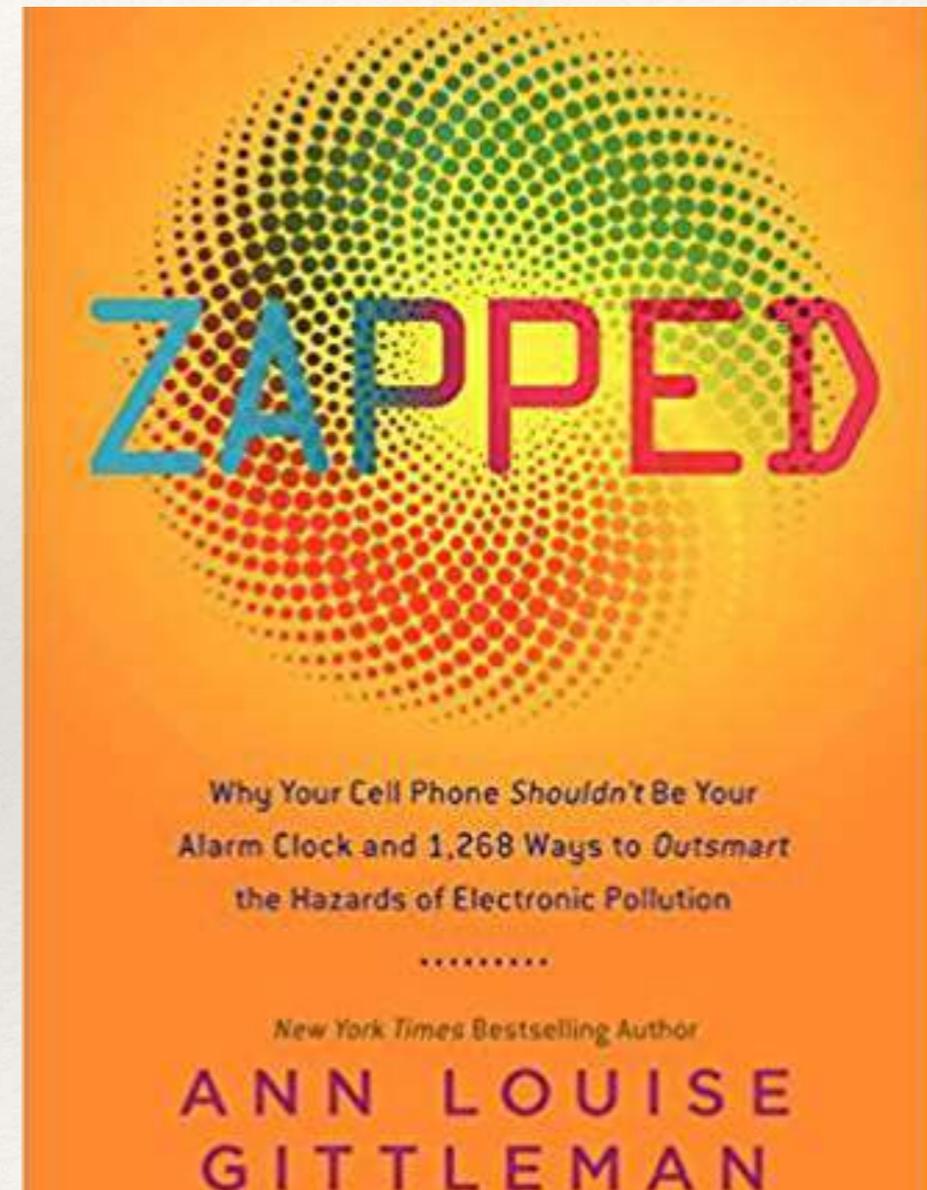
- EMF-Detox: bite-sized helpful tips and tricks to slowly decrease your exposure to EMFs (great for practitioners and patients)
- Bulletproof: often discusses topics related to EMFs, better for practitioners only or the very educated patient
- Nick Pineault: Heavy research based videos, best for practitioners only

Additional Resources

❖ Books:



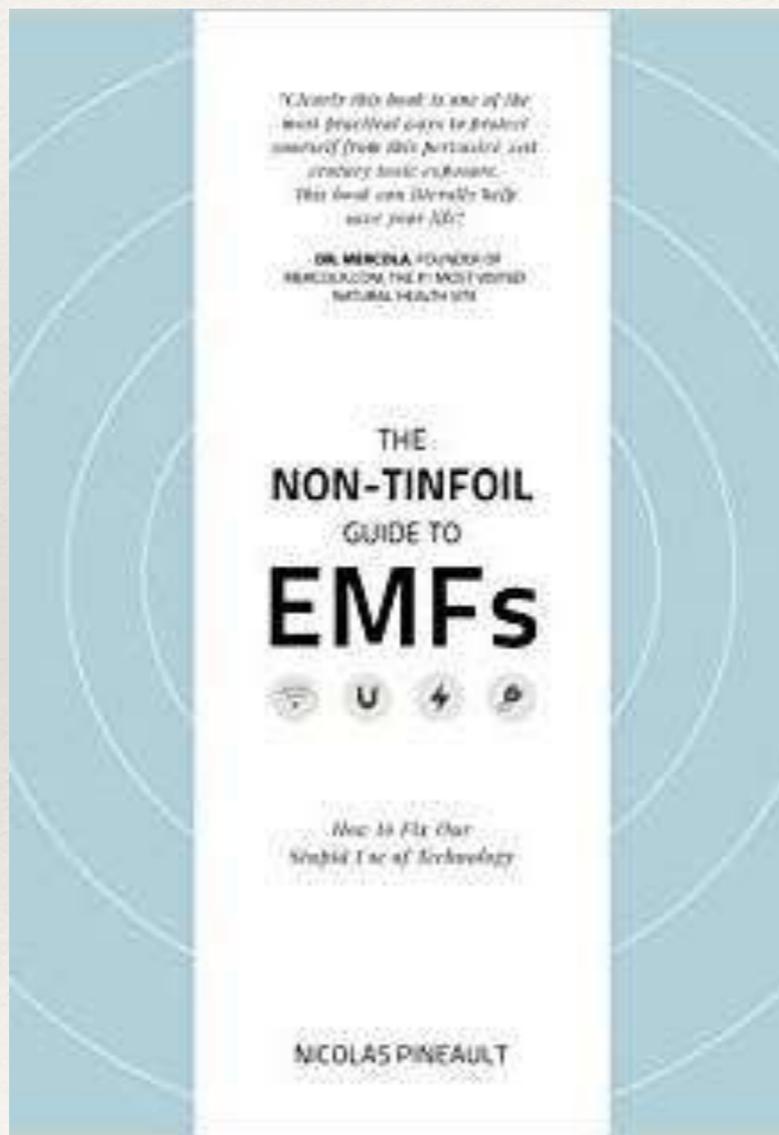
Radiation Nation By Daniel DeBaun and Ryan DeBaun



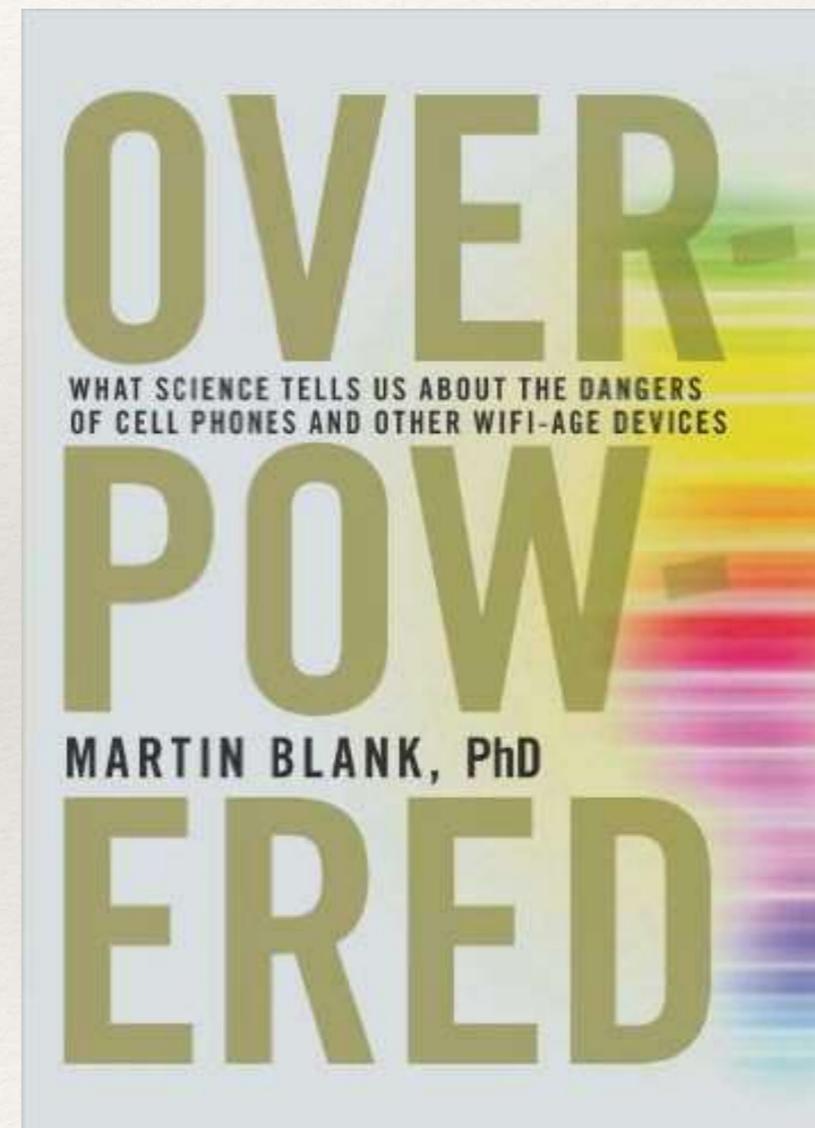
Zapped by Ann Louise Gittleman

Additional Resources

❖ Books:



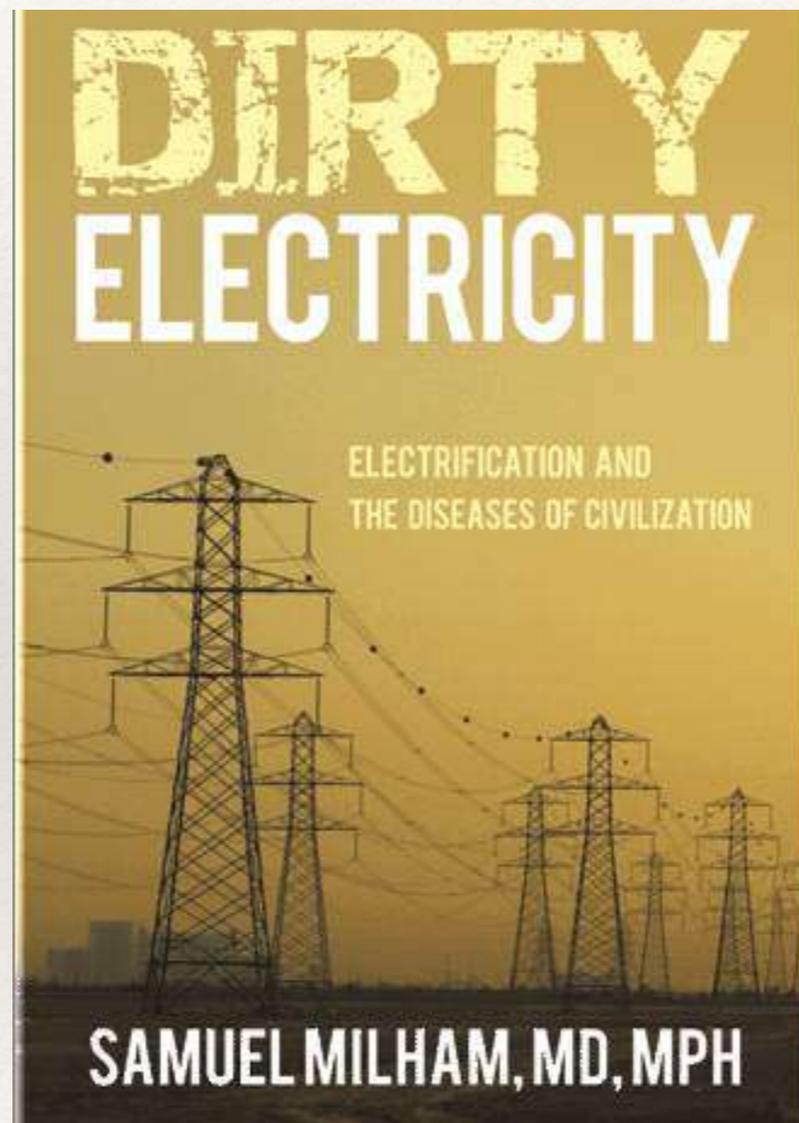
The Non-Tinfoil Guide To EMFs By Nicolas Pineault



Overpowered by Dr. Martin Blank

Additional Resources

❖ Books:



Dirty Electricity by Dr. Samuel
Milham

Additional Resources

❖ Websites:

- Antenna locations: www.antennasearch.com
- Pregnancy & EMFs: www.babysafeproject.org
- Building biologists: hbelc.org
- Essential Guide To Mobile Radiation: mobileradiation.com
- Scientific Research: www.mdsafetech.com
- Bio Initiative Report: www.bioinitiative.org

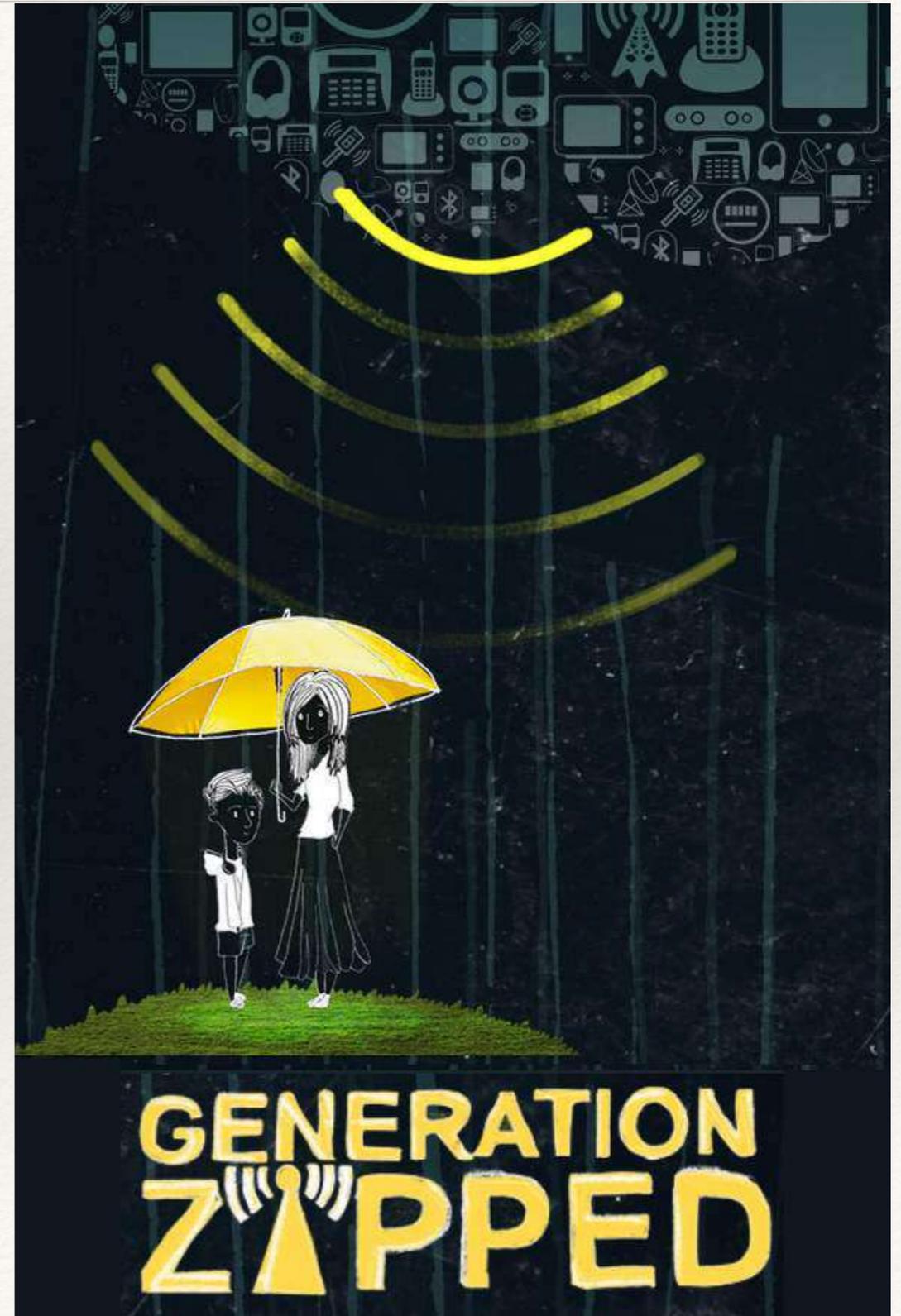
Additional Resources

- ❖ Blogs that frequently discuss EMF issues:
 - EMF-Detox: www.emf-detox.com
 - Dr. Mercola: www.mercola.com
 - Dr. Axe: www.draxe.com

Additional Resources

- ❖ “Generation Zapped investigates the potential dangers of prolonged exposure to radio frequencies from wireless technology; its effects on our health and well-being, as well as health and development of our children.” (29)
- ❖ Generation Zapped is a documentary that WON the 2017 Silicon Valley International Film Festival (ironic isn't it!)

(29) <https://generationzapped.com/about/>



Knowledge is POWER

- ❖ Make the most of what you have learned from this 6 hour course!
- ❖ Share this information with others
- ❖ Just encouraging others to think about their electronics in a different way, is a great start!
- ❖ Not everyone will embrace it, but those who do will be so grateful for the insight!

Thanks for taking CE Seminars with Back To Chiropractic. 😊
I hope you enjoyed the course. Please feel free to provide feedback.

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[Marcus Strutz DC](#)

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marcusstrutzdc@gmail.com

[707.972.0047](tel:707.972.0047)

