



## Bruno “Bytes”

May, 2018

**Bits and Tidbits from Dr. Richard L. Bruno, HD., PhD.**

from the Post-Polio Coffee House

Available through a “link” from Dr. Bruno’s website: [www.postpolioinfo.com](http://www.postpolioinfo.com)  
(or) directly through <http://www.papolionetwork.org/bruno-bytes.html>

### On the topic of Polio and Dopamine Producing Neurons (5/3/2018)

Dr. Bruno’s Original Post: Polio survivors, like Parkinson’s patients, make too little dopamine because the poliovirus killed dopamine producing neurons in the brain activating system and causes impaired attention. Along with attention problems, this study may help us understand why polio survivors report trouble with immediate or “scratch pad” memory: “...dopamine neurons play a critical role in the formation of episodic memory, which allows people to remember such things as where they parked the car in the morning and what they had for dinner last night.”

#### **Study Sheds Light on How "Dopamine Neurons" Contribute to Memory Formation in Humans**

Article ID: 693853

Released: 2-May-2018 6:00 AM EDT

Source Newsroom: Cedars-Sinai

Newswise — LOS ANGELES — May 2, 2018 — Research from Cedars-Sinai sheds light on how the human brain rapidly forms new memories, providing insights into potential new treatments for memory disorders.

A new study examined neurons that produce dopamine, a compound that acts as a transmitter for nerve impulses. It found that these dopamine neurons play a critical role in the formation of episodic memory, which allows people to remember such things as where they parked the car in the morning and what they had for dinner last night.

The study, published in the journal *Current Biology*, was co-authored by Ueli Rutishauser, PhD, the senior author and an associate professor in the Department of Neurosurgery at Cedars-Sinai. In the study, investigators observed the response of individual human dopamine neurons in patients undergoing deep brain stimulation surgery to treat Parkinson’s disease. The patients watched a sequence of images: Some had never been seen before and were thus “novel”; others were repeated and were therefore “familiar.” For each image, the patient pressed a button indicating whether it was novel or familiar. This allowed investigators to track the formation of new memories, because an image was only novel once. Afterward, it formed a memory.

“What we discovered was that a subset of the dopaminergic neurons responded only when an image was novel, but not when it was familiar. In other words, it indicated if the image was new, but not if something was familiar,” said Jan Kaminski, PhD, first author of the study and a project scientist at Cedars-Sinai. “This is an important new scientific discovery, because it has so far remained unclear how the dopaminergic system contributes to episodic memory formation.”

This research was conducted while Parkinson’s patients were having a deep brain stimulation device implanted to reduce their symptoms. As part of this procedure, during which patients are awake, an electrode is lowered into the brain to precisely localize the deep brain stimulation electrode. The target of the electrode is deep inside the brain, close to where the dopamine neurons are located. “This procedure is one of the rare opportunities for researchers to observe the activity of dopamine neurons in an area of the brain called the substantia nigra in an awake human being, a type of recording only possible because the patient is undergoing a neurosurgical procedure,” said Adam Mamelak, MD, professor of Neurosurgery at Cedars-Sinai and a co-investigator of the study. “This setup provides extremely valuable new insights into how humans form memories.”

While not directly tied to research on specific ailments, the findings provide new information relevant to the understanding of certain diseases, Rutishauser said. “Dopamine neurons degrade in neurodegenerative diseases such as Parkinson’s, which in addition to motor symptoms is often also accompanied by cognitive issues such as memory

problems," he said. "What this paper shows is that dopamine neurons activate for novel stimuli. This short 'burst' of dopamine is what triggers learning."

A common treatment for patients with Parkinson's, for instance, is to take medications that increase dopamine to a steady level. But those drugs do not facilitate the short bursts that help in the formation of memory. "Our work reveals new avenues for treatments that can be explored, including those that restore short bursts of dopamine or that otherwise increase activity analogous to what dopamine is thought to do," Rutishauser said.

<http://www.newswise.com/articles/view/693853/?sc=mwhn>

### [On the topic of Medications for Osteoporosis](#) (5/7/2018)

Dr. Bruno's Original Post: Osteoporosis meds and drug holidays. This is something to talk to your doctor about.

#### **Fifteen Percent of Osteoporosis Patients Who Take "Drug Holidays" Suffer Bone Fractures.**

Article ID: 694065

Released: 4-May-2018 10:05 AM EDT

Source Newsroom: Loyola University Health System

Newswise — MAYWOOD, IL – Patients who take osteoporosis drugs for long periods typically are advised to temporarily discontinue the drugs to prevent rare but serious side effects to the jaw and thighs.

A Loyola Medicine study has found that 15.4 percent of patients who take so-called "drug holidays" from osteoporosis drugs called bisphosphonates experienced bone fractures. During a six-year follow-up period, the yearly incidence of fractures ranged from 3.7 percent to 9.9 percent, with the most fractures occurring during the fourth and fifth years.

The study by senior author Pauline Camacho, MD, and colleagues was published in the journal *Endocrine Practice*. Patients at high risk of fracture who take drug holidays should be closely followed, especially as the drug holiday lengthens, researchers wrote.

Bisphosphonates are the most common medications prescribed for osteoporosis. The drugs slow down the breakdown of bones, helping to maintain bone density and reduce the risk of fractures. Bisphosphonates have been linked to osteonecrosis of the jaw (ONJ) and atypical femur fracture. ONJ occurs when the jawbone is exposed, typically following a dental procedure, and begins to weaken and die. An atypical femur fracture is an unusual fracture of the thigh bone that can occur even with normal weight bearing. To reduce the risk of these side effects, the American Association of Clinical Endocrinologists and American College of Endocrinology recommend that women at moderate risk for osteoporosis take a drug holiday after five years of oral and three years of intravenous bisphosphonate treatment. Women at higher risk for osteoporosis should take a drug holiday after 10 years of oral and six years of intravenous bisphosphonate treatment.

However, *there is minimal data on how long drug holidays should last*. The Loyola study was designed to further characterize the increased fracture risk in patients taking drug holidays. The retrospective study examined the records of 371 women and 30 men with osteoporosis or osteopenia who began drug holidays. (Patients with osteopenia have weak bones, but not yet osteoporosis.) The patients had taken bisphosphonates for an average of 6.3 years before beginning drug holidays. The two most frequently prescribed bisphosphonates were alendronate (Fosamax®), taken by 62 percent of patients, and risedronate (Actonel®), taken by 34 percent of patients.

Sixty-two patients (15.4 percent) experienced fractures after going on drug holidays. The most common sites were the wrist, foot, ribs and spine. (Foot fractures are not currently considered osteoporotic fractures.) Those most likely to experience fractures were older and had lower bone mineral density at the beginning of the study. Following fractures, patients were put back on bisphosphonates. Drug holidays need further assessment, Dr. Camacho and colleagues wrote. "Patients who begin drug holidays at high risk for fracture based on bone mineral density, age or other clinical risk factors warrant close follow-up during the holiday, especially as its duration lengthens. Fracture risk needs to be regularly assessed during the drug holiday and treatment resumed accordingly."

<http://www.newswise.com/articles/view/694065/?sc=mwhn>

## [On the topic of Pain Medications](#) (5/9/2018)

Original Post: What pain medication do you recommend for polio-survivors? After doing some work outside in my shade garden this year I have developed new pain. Ibuprofen & Acetaminophen aren't helping at all.

Dr. Bruno's Response: You need a diagnosis *before* you would know what medication is needed.

Additional Post: What do you mean by "diagnosis"? Is this done by the process of elimination of other conditions? This new pain is in my joints & lower back on my weaker side, from shoulder on down. I had Polio when I was 10 and developed scoliosis at age 14. I wear a miserable back brace that probably needs to be replaced.

Dr. Bruno's Response: Diagnosis comes BY process of elimination. Typically for Polio survivors, rehabilitation physicians (physiatrists) are best because they are trained to look at the source of the pain. They or an orthopedist may send you for X-rays of your joints and your back, and maybe MRI.

**REMEMBER: NOT EVERY SYMPTOM IS PPS!**

## [On the topic of Sleep Apnea being Worse for Women](#) (5/9/2018)

Dr. Bruno's Original Post: Based on this study, it appears Sleep Apnea effects are worse for women.

### **Is Sleep Apnea Worse for Women? Studies Continue to Say "Yes."**

Article ID: 694246

Released: 8-May-2018 12:05 PM EDT

Source Newsroom: University of California, Los Angeles (UCLA), Health Sciences

Paul Macey, UCLA School of Nursing professor

Newswise — The statistics are startling. According to the American Academy of Sleep Medicine, 26 percent of adults ages 30 to 70 have sleep apnea. Left untreated, its sleep-disturbing effects can lead to life-threatening cardiovascular problems, including high blood pressure, chronic heart failure, atrial fibrillation and stroke. And for women, the impact can be even more severe.

Studies led by UCLA School of Nursing professor Paul Macey have repeatedly shown that there are significant differences between the impacts of sleep apnea on men and women. While men are more likely to have sleep apnea, women with sleep apnea have a higher degree of brain injury. "Because women report different symptoms, they tend to be misdiagnosed," Macey said. "Early detection and treatment is the best way to protect against damage to the brain and other organs."

In his most recent study, Macey and colleagues examined medical records and brain scans of a group of patients who were diagnosed with sleep apnea and a group without sleep apnea. Macey found several apparent connections between thinning of the brain's cerebral cortex and apnea symptoms. The researchers also found distinct changes in brain structures and cognitive symptoms that differed between men and women. For example, in the frontal lobe, which controls cognitive skills and motor function, more regions appear thinner in women with apnea than men or in the group of patients without sleep apnea. That difference might explain the impact on memory and other mental processes among women with the disorder, the researcher said.

The study continues to illustrate the significant clinical differences between men and women with sleep apnea, and points to the need for different treatment approaches to address these varied symptoms. The higher degree of brain injury in women may underlie their more common cognitive problems compared with men, while thinning associated with both men and women who have sleep apnea may be behind the disordered breathing seen between both, the researchers said. It is not clear whether these physical brain changes precede the sleep apnea disorder, or worsen sleep apnea's symptoms as the disorder progresses.

Each study "is like uncovering another piece of what might be going on," Macey says.

<http://www.newswise.com/articles/view/694246/?sc=mwhn>

## On the topic of Obstructive Sleep Apnea (OSA) (5/10/2018)

Dr. Bruno's Original Post: Here's ANOTHER Obstructive Sleep Apnea Warning: "...more than half of persons ages 65 and older have a high risk of OSA, a sleep disorder in which the throat collapses during sleep, causing the patient to repeatedly stop breathing for periods of 10 seconds or longer throughout the night. But only 8 percent of these individuals have been tested for OSA..."

### **OSA in Older Adults: Often Present, Seldom Investigated**

Article ID: 694298

Released: 9-May-2018 3:25 PM EDT

Source Newsroom: Michigan Medicine - University of Michigan

Newswise — Older Americans are often at a high risk for obstructive sleep apnea, yet this illness remains vastly underdiagnosed, a new study finds.

University of Michigan researchers found evidence that more than half (56 percent) of persons ages 65 and older have a high risk of OSA, a sleep disorder in which the throat collapses during sleep, causing the patient to repeatedly stop breathing for periods of 10 seconds or longer throughout the night. But only 8 percent of these individuals have been tested for OSA, a disorder that is associated with significant health risks. An overnight sleep study is necessary to diagnose OSA. "It appears most older adults who are at risk for obstructive sleep apnea may not be getting referred for overnight sleep studies, and we may be missing an important chance for treatment," says co-first author Tiffany Braley, M.D., M.S., assistant professor of neurology at Michigan Medicine.

'Almost always confirmed'. The data, published in the Journal of the American Geriatrics Society, come from 1,052 Medicare beneficiaries who completed a series of sleep questions and other surveys as part of the National Health and Aging Trends Study (NHATS). The NHATS sample is representative of more than seven million Americans. "We see that OSA was rarely evaluated, but when it was, it was almost always confirmed, as nearly all — 94 percent — of those at risk and tested for OSA were diagnosed," says co-first author Galit Levi Dunietz, Ph.D., MPH, postdoctoral research fellow in sleep epidemiology at Michigan Medicine's Sleep Disorders Center. "This suggests an opportunity to increase the evaluation among older Americans."

The NHATS survey questions about sleep resembled STOP-Bang, a popular questionnaire used in the clinical setting to evaluate common OSA risk factors. The survey evaluated whether respondents were at an advanced age, snored, were overweight, were male, had high blood pressure and felt fatigued. Among the 94 percent of those who received a diagnosis after being deemed at risk and given a sleep study, 82 percent of respondents' physicians prescribed the first-line treatment. Continuous Positive Airway Pressure, or CPAP, sends pressurized air through the nose or nose and mouth to the throat, keeping it from collapsing during sleep.

"It was good to see a high treatment rate after diagnosis, so the main concern is the under diagnosis of OSA," Dunietz says.

More research needed. "We know that OSA is quite common, yet often underdiagnosed in adults in the U.S.," Braley says. "But most of the data available are from younger or middle-aged patients." In the young and middle-aged populations, OSA is linked to significant health risks and can worsen quality of life. But in addition to a lack of data on the prevalence of OSA in the older population, Braley says more research is needed to confirm whether the consequences are the same for OSA in older adults.

"This is an important first step in getting to the heart of question: What is the national scope of OSA, and our ability to recognize it, in all age groups?" she says. "If we can assume that older adults are subject to the same risks of OSA as middle-aged adults, then missing a diagnosis could ultimately lead to a higher risk of conditions like hypertension, stroke, heart disease, diabetes and depression, as well as cognitive impairment, which is especially important for older individuals. These conditions have serious impact, and lead to expensive medical care." And some older patients may not realize their snoring, sleepiness, tiredness and other symptoms of OSA could be because of something other than normal aging. Those who are already dealing with health conditions such as obesity, diabetes, stroke, a previous heart attack and high blood pressure are more likely to experience OSA as well.

"The results of this study are impressive," says co-author Ronald Chervin, M.D., M.S., professor of neurology and director of the Sleep Disorders Centers at Michigan Medicine. "They amount to estimates, but even so, they help to

quantify the magnitude of the challenge. “We already know that untreated sleep apnea costs billions each year, with decreased work productivity, impaired quality of life and increased medical costs. We still need to learn more about the impact of OSA in older persons more specifically, but the findings of this study suggest a huge, untapped opportunity to improve lives in older years, and perhaps medical costs as well, through more effective diagnosis, and then treatment, of OSA.”

<http://www.newswise.com/articles/view/694298/?sc=mwhn>

### [On the topic of Sleep Apnea and Daytime Sleepiness](#) (5/16/2018)

Dr. Bruno’s Original Post: This article discusses the reality that Provigil (modafinil, and its relative armodafinil) did not improve driving performance in those with sleep apnea after six months of use and, as in polio survivors, it didn't decrease daytime sleepiness.

**SLEEP: Accept No Substitutes!**

#### **Drug Used to Treat Daytime Sleepiness Does Not Appear To Improve Driving in Those With Sleep Apnea**

Article ID: 694618

Released: 15-May-2018 4:00 PM EDT

Source Newsroom: American Thoracic Society (ATS)

Newswise — May 18, 2018—A drug used to treat excessive daytime sleepiness may not improve driving ability in adults with obstructive sleep apnea (OSA) who cannot tolerate standard therapies, according to new research published online in the American Journal of Respiratory and Critical Care Medicine.

In “Does Armodafinil Improve Driving Task Performance and Weight Loss in Sleep Apnea? A Randomized Trial,” Nathaniel Marshall, PhD, and his colleagues at the Woolcock Institute for Medical Research, University of Sydney, report on their study of armodafinil, which has been approved by the U.S. Food and Drug Administration to treat excessive daytime sleepiness due to OSA, narcolepsy and other conditions.

The researchers found that armodafinil did not improve the driving performance of those with OSA after six months of use, the study’s primary outcome. Nor did those taking the drug report less daytime sleepiness than those receiving a placebo, as measured by the Epworth Sleepiness Scale and the Functional Outcomes of Sleep Questionnaire.

In the study, 113 participants (ages 18 to 70) were randomly assigned to either receive 150 mg of armodafinil daily or a placebo. Participants had moderate to severe OSA, were moderately obese and did not use continuous positive airway pressure (CPAP) or an oral appliance that advances their lower jaw. Both therapies treat OSA by preventing the pauses in breathing that occur in OSA when the back of the throat collapses.

All participants were also randomly assigned to one of two popular diets in Australia: the Australian Guide to Healthy Eating diet, which is similar to the American Dietary Guidelines “Choose My Plate,” or a low-glycemic index, high-protein diet. Driving ability was assessed during a simulated 90-minute drive.

According to Dr. Marshall, a clinical trials epidemiologist, about half of patients seen in sleep clinics fall into the category of having sleep apnea and abdominal obesity but being unable to tolerate CPAP or an oral appliance. “My clinical colleagues and I call these patients the ‘forgotten patients,’” he said. “We felt we needed to help our patients lose weight to address their metabolic risks over the longer term whilst addressing their sleepiness and neurocognitive dysfunction immediately with armodafinil.” He added that sporadic reports indicate that patients using armodafinil and its cousin modafinil to improve wakefulness experienced weight loss, so he and his coauthors wanted to test whether the drugs might increase the success of a deliberate weight loss program.

In the current study, armodafinil did, in fact, have a positive effect on body mass. Participants on the drug lost more body fat on either of the diets, which appeared to reduce weight equally well, than those who received the placebo. At six months, those in the armodafinil arm of the study lost an average of 6.4 pounds more body fat than those receiving the placebo. The researchers said that some of this additional weight loss may be due to the increased activity levels of those receiving the drug, as measured by an activity tracker. Importantly, the authors noted that armodafinil did not appear to increase blood pressure.

Armodafinil also appeared to improve driving ability after three months. The researchers speculate that those taking armodafinil learned their simulated driving tasks faster than those receiving the placebo because by six months there was no difference between the two groups. Even with the improvements that came with practice, the authors noted that, on average, driving ability among these participants with untreated OSA was two standard deviations worse than healthy people without OSA.

<http://www.newswise.com/articles/media-article/694618>

### On the topic of Tired/Painful Legs (5/20/2018)

Original Post: I was lucky and did not suffer paralysis in legs. But now age 73, my Legs hurt. My thigh muscles are sore and becoming painful.

Dr. Bruno's Response: Please remember that your whole body has been affected by the poliovirus. Your muscles have "over-performed" all these years and now the polio-damaged neurons that turn on those muscles are probably "overtired." BUT you always must first rule out other causes for any symptoms

### On the topic of Breathing Issues (5/20/2018)

Dr. Bruno's Original Post: For Everyone Who Has Breathing Questions:

[Dr. John Bach](#) is the world's leading expert on breathing and Polio.

You can email him: [bachjr@njms.rutgers.edu](mailto:bachjr@njms.rutgers.edu).

Dr. Bach's website page "The Breathe BB Forum" is: [www.BreatheBB.com](http://www.BreatheBB.com) or [www.BreatheNVS.com](http://www.BreatheNVS.com).

**\*Editor's Note:** Dr. John Bach, MD. actively participated with Dr. Richard Bruno, HD., PhD., Dr. Selma Calmes, MD. and Dr. William DeMayo, MD. in the creation of an updated Anesthesia Warning Card for Polio Survivors that is available along with the original NJ card [here](#) on our website:

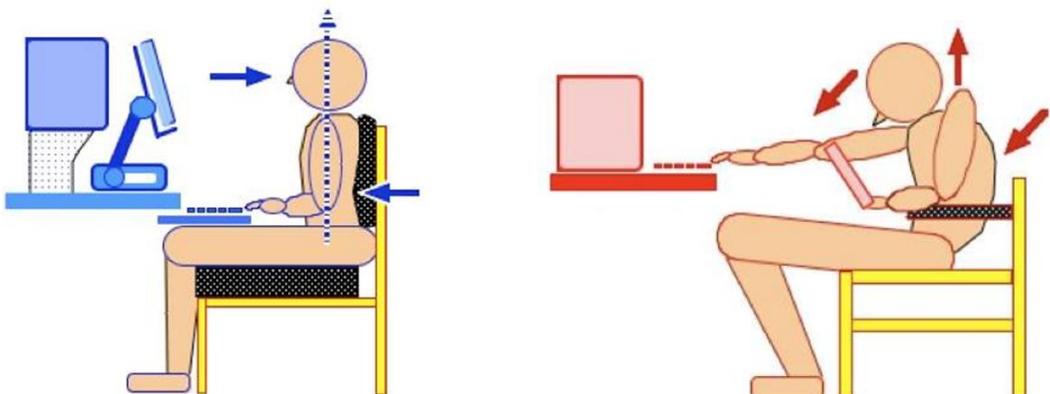
<https://www.papolionetwork.org/-anesthesia-warning.html>

### On the topic of Neck Pain feeling like Swollen Glands (5/24/2018)

Original Post: Can bulbar Polio affect the neck muscles to a point that the glands feel painful? Sometimes it feels as though my gland is swollen, but the pain goes away by the next day.

Dr. Bruno's Response: This is not a bulbar polio issue. Everyone who had polio had some degree of damage to the brain stem "bulb."

Neck and upper back muscle weakness and muscle strength imbalances are very common causes for polio survivors to have neck muscles go into spasm, the result of poor posture during the day or at night, spending too much time at the computer and overusing neck muscles. The muscle will become dense (hard) when it goes into spasm and feels like a neck gland is swollen. And the spasm can bounce back and forth between one side of the neck and the other, between neck and upper back and vice versa.



Using proper posture (see the chapter on “painless posture” in the Polio Survivors Handbook at [postpolioinfo.com](http://postpolioinfo.com)), moving and stretching gently during the day to prevent spasm and the use of heat and massage to reduce spasm are helpful. If the spasm doesn’t relent, deep tissue massage can be helpful as well as a Tylenol, ibuprofen if your tummy can take it and my favorite medication to talk to your doctor about, low dose diazepam (Valium).

Additional Bruno “Bytes” are available for you to share by going to:

<http://www.papolionetwork.org/bruno-bytes.html>

Scroll down the page (through the Current Month posts).

Previous months are located there, and are available by “clicking” on them, in easily printable PDF format

Would you like to see Dr. Bruno in “action”? The video from his 2015 Conference is now available.

Looking for a particular topic? Check out the Bruno Bytes “[Index by Subject](#)”