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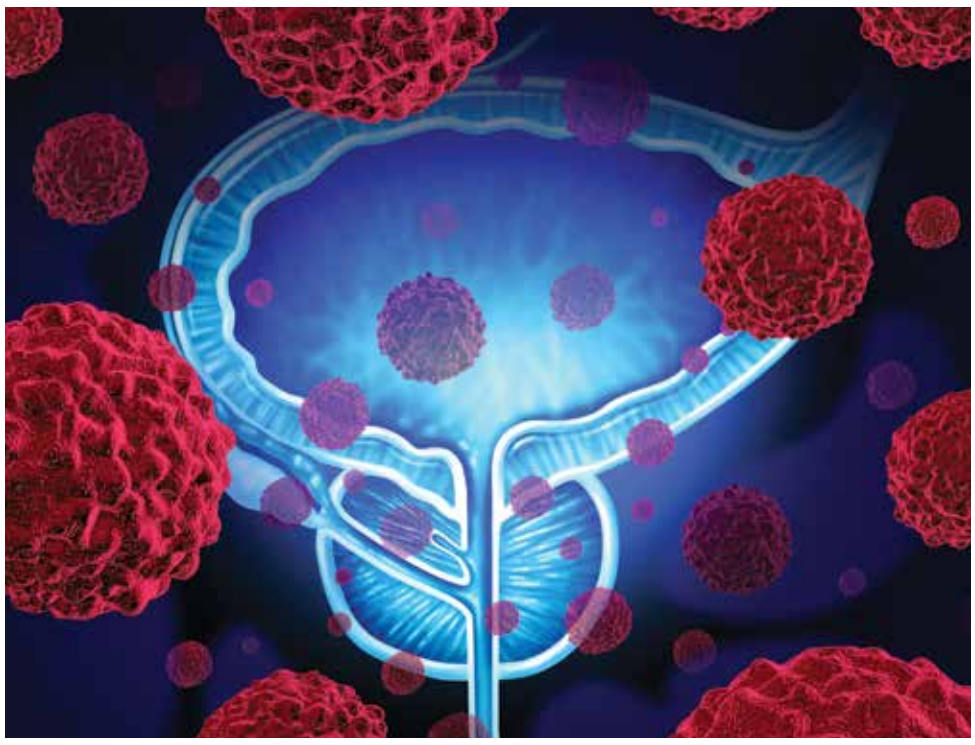
CaP Update 2018

When to Pull the "Ripcord"?

PHRANQ D. TAMBURRI, NMD

This article will:

- Explain why prostate cancer (CaP) treatment *objectives* are more important than specific treatments
- Outline the objectives for Active Surveillance
- Clarify how to determine when, *specifically*, a patient should abandon natural treatments and/or Active Surveillance and instead pursue conventional treatments. This is a critical determination for both patient safety and physician liability.



Part 1: Responsible Active Surveillance

Defining Goals & Strategy

The experienced physician will know

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Insulin Resistance

Comprehensive Evaluation

TEERAWONG KASIOLARN, ND, MSAC, LAC

According to the World Health Organization, the global obesity rate has nearly tripled since 1975: In 2016, 39% (over 1.9 billion) of adults aged 18 years and over were overweight, and 13% (over 650 million) were obese.[1] In the United States, the incidence of obesity has significantly increased over the past 30 years; currently, approximately 60% of adults are either obese or overweight.[2] According to the Centers for Disease Control and Prevention (CDC), 39.8% (about 93.3 million) of US adults were obese in 2015-2016.[3] The worldwide obesity epidemic has given rise to a higher incidence of insulin resistance.[2] The most alarming statistics came from a recent large population-based study published on September 8, 2015 in *JAMA*, which

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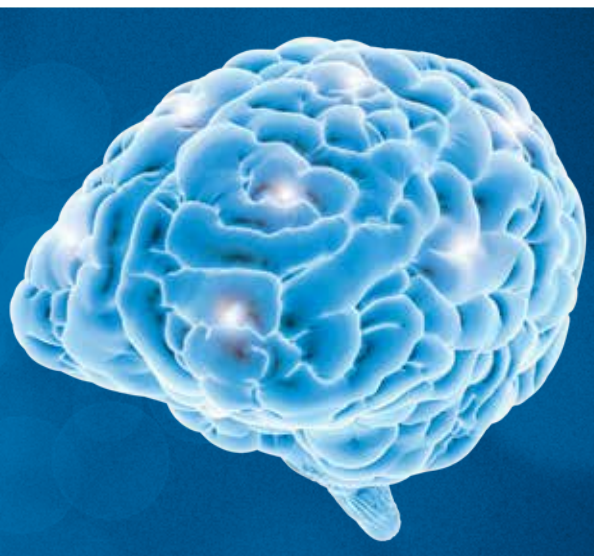

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that throwing treatments at a patient who has initially been diagnosed with CaP may both satisfy his initial expectation in seeking a naturopathic doctor and reduce his initial anxiety by immediately "doing something." Anxious patients with a new cancer diagnosis are more than willing, especially with less scrupulous practitioners, to throw money at their problem to make it "go away." They often present with a list of treatments that they or their wives studiously found online, often including the typical vitamin C IVs, ketogenic diets, prostate herbal products, expensive 2-week retreats of IVs, and juicing in Mexico, etc. They yearn for an expert to confidently proclaim which of these treatments are the "best" so that they can immediately get started. However, this approach will only be an expensive Band-aid – not that different from the conventional medical model – *if a forward-reaching treatment strategy and goals are not first defined*. In other words, rather than focus on *what* treatments to follow, instead answer the following questions: *What are we treating? What are the specific goals of treatment?* and, most importantly: *When will their (potentially expensive) treatments end?* These are the questions that define a proper Active Surveillance protocol.

Admittedly, some patients are confounded by a physician who does not immediately sell them supplements and a "1-size fits all" anti-cancer protocol. When they present with an elevated PSA and a legal diagnosis of CaP on a piece of paper from their urologist, they sincerely don't understand what more there is to discuss. Why discuss long-term goals when they've just been handed a scary CaP diagnosis? It took years of experience to finally learn to avoid this reactionary approach ("saw palmetto and vitamin C IVs to the rescue!") when considering the long-term welfare and finances of my patient. Remember that most men with CaP die *with* it, not from it. Active Surveillance must be viewed as a marathon, not a sprint. If your patient is overly anxious, or if his CaP is at a high risk of metastasis, then he is likely not a good candidate for Active Surveillance in the first place.

What Are We Treating & What Are the Goals?

Slow down the interview to ask your patient, "What are we treating?" and "What are your goals?" Your patient may reply, "I told you already, Doc! My urologist *said* I have prostate cancer, and my goal is to kill it! What else is there to talk about? Let's not wait! If we delay in 'analyzing' my problem, I am worried the prostate cancer will 'get me.'"

Although my prior contributions to *NDNR* have detailed these initial questions, for the better understanding of this article let us review an actual case study to refresh the importance of refining the diagnosis before a torrent of CaP treatments begin.

CASE STUDY

A 60-year-old patient with 10 years of PSA values under 1.0 ng/mL takes a 2-week motorcycle sojourn that leads to sudden and complete urinary retention secondary to a prostate spasm from the extended sitting and vibration. The ER inadvertently injures the prostate further during an aggressive catheterization. This is followed by a PSA that is now at 16 ng/mL. A reflex biopsy is automatically performed, revealing a small, indolent CaP (1 out of 12 cores positive, Gleason 6(3+3), <5% of the core).

Superficially, this patient is warned that he has "prostate cancer" with a very hIgh PSA and that it should be treated immediately. However, assuming that we have random cancer in us all the time, this latent CaP was discovered accidentally because of a recently injured prostate. The small CaP had likely been present in this patient not just during the 2 weeks of the trip, but for years and while the PSA was under 1.0 ng/mL. Considering this, should we really be treating this "legally confirmed" CaP, or should we instead be treating the cause of the elevated PSA?

Although this example emphasizes the need to critically refine the diagnosis, for the remainder of this article we will discuss scenarios in which PSA contributors such as urinary tract infection, prostatitis, and benign prostatic hypertrophy (BPH) have each been accounted for and the nominal PSA levels have been linked directly to CaP activity.

Guiding Your Patient from Anxiety to Empowerment

When CaP is initially confirmed on a biopsy, many questions arise for the anxious patient and his partner. I have found that they generally evolve into 3 levels of questions that represent the patient's evolution from initial anxiety, to understanding his diagnosis through education and, finally, self-empowerment.

Level 1: Defining the Problem

A newly diagnosed CaP patient is typically very anxious. Common patient questions include: *Do I really have cancer? Is it aggressive? What does the prostate do, anyway? Was the biopsy accurate? Am I going to die soon? Do I need surgery? What are the side effects of surgery and radiation? Are there any natural treatments that will make this go away?* These questions must initially be addressed on the patient's terms; however, the substantive answers they truly seek come next.

Level 2: Analysis of the Problem

After the patient weeds through his initial shock, he often begins to ask more pragmatic and analytical questions, typically fueled by internet investigation. For example, the reactionary Level-1 *How did I get this cancer?* evolves into: *Don't we have cancer in us all of the time, anyway?* The immediacy of his elevated PSA recedes when he learns that all sort of things can

make the PSA go up. Other examples include: *What does "aggressive" really mean, anyway?* and the important *How much will natural treatments cost me?* The evolution into this Level-2 analysis will often change how your patient pursues his treatment. Unfortunately, it is also a time that can become rife with oversaturation of often-conflicting information as he inquires into more and more sources.

Level 3: Synthesis of the Problem – Empowerment

Your anxious patient will (almost) never initially articulate the following questions as written. However, as with the saying from antiquity, "All roads lead to Rome," so too will your patient's treatment journey inevitably lead to the following questions:

1. *If I decide against surgery in lieu of natural options, when am I done?* (aka, *When is the cancer "gone"?*)

…followed by the most important question:

2. *If my prostate cancer worsens, when should I "pull the ripcord" and finally have my urologist remove or radiate the gland?*

Importantly, responsible, long-term Active Surveillance cannot be followed without these Level-3 questions and goals in place. Some patients will intuitively understand them immediately. Some will understand them from prior experience, such as watching a loved one's long battle with cancer. I have found that many refuse to acknowledge these for fear that they are "giving power over to the CaP" or that I will not vigilantly fight for them with natural means if they confront a possibility for conventional treatments. However, even if your patient is initially too anxious or inexperienced to have this Level-3 discussion and he demands that you immediately "throw the kitchen sink" treatments at him, you can proverbially "set your watch" that he will eventually come around. Typically, this occurs after the patient spends a year or more of time and money taking countless supplements while waiting for some doctor to declare that his "cancer is gone!" This is because he eventually learns that a lowered PSA or a second biopsy found to be "negative" will not legally confirm absence of the disease. Frustration at this realization is common. The patient has to mentally transition from the concept of "killing the CaP" to "outliving the CaP." At this point your patient is mentally and emotionally ready for the CaP marathon of Active Surveillance, regardless of the treatments selected.

Part 2: Defining Goals & Limits of Responsible Active Surveillance

Here we discuss each of the Level-3 questions from above. Note that the first one is from the patient's perspective and is more qualitative, whereas the second one – the physician's perspective – is rooted in a specific quantitative triangulation ("3 canary" model). We will discuss both perspectives and then how they each contribute 50% to the final (patient-empowered / "physician liability") decision to, if absolutely necessary, abandon Active Surveillance.

1. Pulling the Ripcord – The Patient's Perspective

If I decide against surgery in lieu of natural options, when am I done? (aka, *When is the cancer "gone"?*)

This Level-3 question was discussed in detail in my 2017 *NDNR* article, "A Prostate Cancer Discussion: Just What is Aggression?"[1] The short answer is that a contained CaP is never officially "gone" without removing one's prostate, and, even still, the cumulative incidence of PSA recurrence (PSA-R) after radical prostatectomy is still 13.6% at 5 years and 19.9% at 10 years, as revealed by the 2014 CaPSURE study.[2] Furthermore, a low PSA or subsequent negative biopsy will no more mean the CaP is gone, as an elevated PSA or positive biopsy means that the patient has a "real" CaP that is capable of killing him.

A patient will *next* often ask, therefore, if his cancer is "aggressive." Although *legal* CaP *aggression* is technically a function of Gleason Score on biopsy, I use a more pragmatic, qualitative interpretation when defining it for patients and within this article. I define *qualitative* "aggression" as an amalgam of the *personality of the cancer* (based upon numerous physical factors: PSA kinetics, family history, prostate ultrasound/MRI imaging, new genetic molecular testing, etc) with the *personality of the patient* (ie, his preference for longevity of life vs quality of life, his current general health, life expectancy, and even the money he has to spend on it). One can easily realize how individualized and personal each CaP case is. Histological oncologists have now identified over 50 variants (personalities) of CaP that combine with the infinite but individual personality of the patient.

If the patient is too anxious to live with the disease, is hemorrhaging his financial nest egg on treatments, or simply does not have the lifelong commitment to CaP-tracking and lifestyle changes, then I would recommend definitive conventional treatment. Otherwise, *the patient is "done" with Active Surveillance when the physical risk that the patient's CaP will become metastatic* (discussed below in the physician's perspective) *outmatches his emotional and philosophical risk tolerance*.

For example, if the CaP's personality is a low-aggressive "poodle," but the patient's personality is an affluent, quality-of-life-seeking, high-risk "pitbull," then he is a perfect candidate for Active Surveillance. However, if it is the other way around – eg, a high-metastasis-risk CaP in an anxious patient, perhaps on Medicare, with a priority to watch his grandchildren

marry, then conventional treatments might be a better option.

The CaP patient should consider the following facts when assessing his risk tolerance (as discussed in prior *NDNR* November issues):

- One in 9 men will be diagnosed with CaP during his lifetime.[3] However, the 5-year survival rate is almost 100% for diagnosed men, and even the 10-year survival is 98%.[4] Early detection is obviously important.
- Most PSA elevations between 2.0 and 10.0 ng/mL are more often linked to BPH and/or prostatitis than to CaP,[5] even in cases where CaP has been confirmed on biopsy.[6] In my experience, *sharp increases* in PSA are particularly suggestive of non-cancer causes such as prostatitis.
- CaP mortality does not even begin to occur until the cancer starts to metastasize[7]
- Although survival rates for metastatic CaP will vary depending on the site of metastasis,[7] metastatic CaP still typically takes many years – typically over a decade – before reaching the point of mortality. An important point, and one not reflected in available survival tables, is that it takes 5 or so years before a CaP becomes large enough to detect. For a patient to decide how many years he may have, this 5-year buffer should be taken into account.

This last point bears repeating, since it is critical when answering the question, "Should I treat my CaP?" Even if CaP does escape the gland, the patient typically still has 10 to 15+ years to live, and most of that time is with high-to-reasonable quality of life.

Consider the influence of these points for a sexually active 68-year-old CaP patient with other health problems (most commonly cardiac) and limited funds. If the CaP is assumed to be currently contained, then not only does risking lifelong suffering from surgically imposed side effects (erectile dysfunction, incontinence, etc) seem foolish, *so TOO could following expensive naturopathic treatments.*

2. Pulling the Ripcord – The Physician's Perspective

When are my natural treatment protocols "not working well enough" and I need to send my patient to a urologist for surgery/radiation?

Skydiving is an excellent metaphor for initially explaining Active Surveillance principles to your patient. Like a tandem skydiver team, however, deciding when to pull their ripcord is a question caught between the *longevity*-biased urologist who warns, "Pull it now!" and the *quality of life*-biased alternative practitioner who argues "CaP rarely kills men, so keep free-falling!" [sexual function usually being top of mind]

Evaluating a patient's initial mortality risk (initial altitude) is the first step. This involves determining how far "off the ground" he is, starting from what is represented by his initial CaP biopsy report (ie, number of cores, Gleason aggression value), his current PSA, and his family history. The next step is to evaluate his PSA momentum (ie, PSA velocity, PSA density, PSA pattern), color Doppler flow, and molecular qualitative testing, which dictate their "falling velocity." Sometimes the patient is plummeting fast (eg, quick PSA Doubling Time) while another might be "floating like a seagull on updrafts" with mildly vacillating lab work over the years. Of course, the patient's risk tolerance is akin to the skydiver's experience (patient's assessment discussed above). *What is finally required to pull the ripcord is the exact "altitude" limit, reflecting the patient's current metastatic risk.*

Three Critical Factors for Determining Metastasis Risk

How do we decide when a prostate cancer is nearing the threshold probability for eventual or current early-stage metastasis? There are 3 critical metrics to assess. I categorize each metric as Green (the official "normal" per the lab), Yellow (intermediate risk that is common with Active Surveillance patients), or Red (findings often concomitant with aggressive or early metastatic CaP).

1. **PSA Density (PSAD)[1]:** This is the only metric utilizing the questionable PSA, since it reflects the PSA that is specific to the patient, as opposed to a lab standard. It is the nominal serum value relative to the gland volume. Since PSA is specific to the prostate gland (not to prostate cancer), the more cells contained in a man's prostate, the more PSA can be produced. *In other words, despite a lab's "normal" PSA cut-off of 4.0 ng/mL, the larger the gland, the higher the acceptable PSA value*. Therefore, a PSA of 7.0 ng/mL would be considered too high in a normal-sized gland of 30 mL but perfectly average for a larger (BPH) gland of 80 mL. Prostate imaging, through ultrasound or MRI, is required to generate this accurate volume. Divide the PSA by this measurement to calculate the PSAD. An acceptable "green zone" is 0-0.15. I consider the "yellow zone" to be 0.15-0.30, which could imply an early CaP or an active prostatitis. [Note: prostatitis typically causes urinary symptoms.] The "red zone" is thus 0.30+, over double the normal value and indicative of risk of early metastasis. In theory, a density this high suggests metastasis because the maximum PSA per volume limit has been maxed out, thus suggesting that PSA-producing cells are outside the prostate.
1. **Prostatic Acid Phosphatase (PAP)[1]:** This serum test was in use prior to the PSA, but is still available through most labs. The PAP was originally used *after an unspecified* metastatic cancer was diagnosed, in order to determine whether it was prostate cancer in origin. This determination allowed for focused treatment – typically hormone ablation via orchidectomy. Of course, since the test was positive only *after* the cancer had already metastasized, it was not useful as a screening tool. Because imaging, such as CT bone scans, typically don't pick up very early prostate cancer metastasis, *some* urologists today still use this test, often when a PSA is over 10.0 ng/mL, before advising a radical prostatectomy. The PAP, however, could help a doctor advise against prostate removal, and related side effects, if the cancer possibly had already escaped the gland. The "green zone" is 0-2.0 ng/mL; the "yellow zone" is 2.0-3.0 ng/mL; and the "red zone" is 3.0+ ng/mL or if the PAP is quickly accelerating toward 3.0 ng/mL. Understand that a nominal value slightly over 3.0 ng/mL does not necessarily mean that the cancer has metastasized; however, this amount of

Sidenote About Natural CaP Treatments:

Although treatment is not the theme of this article, I want to be clear that I am not stating that natural treatments are not warranted. Diet, nutrition, water, hormone-modulating botanicals, lymphagogues, immune stimulation, pelvic-opening exercises, and other treatments are highly recommended for prostate health, as they encourage the immune system to manage the CaP. These should be recommended in almost every case.

However, when a patient asks, "When do I stop?" he is essentially asking, "When is the cancer gone?" This question infers, "What natural treatments will 'kill' the cancer?" What most patients do not initially realize is that natural treatments, with a few exceptions, do not directly "kill" the CaP. Rather, they create a proper milieu for the body to heal and facilitate its own immune response geared toward neutralizing the CaP threat. With this in mind, the goal stops being "When is the CaP gone?" and instead becomes, "How can I outlast the CaP?" This is a very important point that I recommend reinforcing to your patient.

In summary, besides diet and lifestyle changes, the ideal goal of the patient with stable lab values might be to track the CaP rather than engage in active treatments such as weekly IVs, short-term intense diets, etc. Again, manage CaP as a realistic marathon, not an unrealistic, never-ending sprint.

STAFF

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Publisher
Razi Ann Berry
publisher@ndnr.com

Founders
Razi Ann Berry
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publisher@ndnr.com

Medical Editor
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Vanessa Wiley
editor@ndnr.com

Director of Sales and Marketing
Matthew Knapp
ads@ndnr.com

Circulation Manager
Tara Hall
circulation@ndnr.com

Creative Direction
Jaclyn Threadgill
jaclyn@ndnr.com
www.jthreadgill.com

Foreign Correspondent
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positive combined with its acceleration, concomitant with an accelerating PSA, is highly worrisome. *Note: Each lab has a slightly different reference range for "normal." I use an average 3.0 ng/mL for teaching purposes.*

2. **T Status[8]:** This is a common conventional nomenclature for classifying the location and prevalence of a prostate cancer being close to or at the edge, or pushing outside of the gland. ("T" refers to "tumor.") This determination may be initially deceptive for a naturopathic physician, but can be inferred from an imaging report or sometimes found in the biopsy report. **T1** represents the "green zone" and suggests a minimal cancer, often not palpable, contained within the gland, and with clear (negative) margins. **T2** is the "yellow zone" and suggests a cancer at the capsule wall without noted extensions. **T3** is the "red zone," indicating that the cancer has a defined extension noted on prostate ultrasound, MRI, DRE, or on the biopsy itself, and accompanied by phrases such as "perineural invasion" or "extra-capsular extension." There is also a T4 classification, which suggests overt metastasis.

3 Caged Canaries in the Coal Mine

Now let's (finally!) put this all together. Although skydiving is a good analogy for explaining the larger concepts of Active Surveillance strategies (initial starting risk and acceleration), I find "descending into a mine shaft" a more apropos analogy to help determine when to consider abandoning primary natural treatments for conventional ones.

Imagine you are descending a mineshaft, looking for gold. Anxious about noxious gases, you bring along a cage containing 3 canaries (each representing 1 of the 3 critical indicators discussed above). The birds initially are singing (representing the "green zone"). However, as you continue to descend, the birds may become sick. When do you turn back? When the first canary begins to cough ("yellow zone")? If you are anxious or you value longevity over quality of life, then you should turn back at this first warning. Or, do you perhaps continue until 2 of the birds are coughing? If *quality of life* is your absolute priority, then perhaps you wait until 2 birds are deceased ("red zone") and the third is coughing ("yellow zone").

Most patients appreciate this example and find their risk sustainable when each value is in the green or yellow zone. A reassessment of the goals and life expectancy should be made when a value first enters the "red zone." However, many patients who lean towards quality of life are comfortable with a low, stable "red zone" value when the other 2 are "yellow" and "green," respectively.

Personally, I've found this "3 canary" risk assessment system highly effective in giving a patient understandable and hard values representing their quantitative metastatic risk – values that they can track with me. A conventional nominal PSA value or routine biopsy finding is often not enough to explain or convince a skeptical patient the risk of a CaP problem that is *relative to them.*

Conclusion: A 50/50 Shared Determination

After 18 years in practice, this article represents the most succinct and distilled summary of how I determine when an integrative-medicine-minded patient, who is understandably resisting a urologist, should consider conventional treatments. Keep in mind that most naturopathic patients are not truly opposed to drugs, biopsy, or surgery if these options are used after all other less-invasive options have been tried. *In actuality, patients are usually only opposed if they are not used as a last resort.* This article has taught you to advise them about when that point is reached.

If longevity of life is the patient's clear goal, or the physician is being pressured to take a liability risk on behalf of the patient, then use the static line common to many urologists that pulls the parachute when first out of the plane! But if the patient is educated and comfortable with the specific treatment goals discussed in this article, and the quantitative "canary" markers (PAP, PSA Density, and T-Status) are generally stable around the "yellow zone," then the naturopathic doctor should have enough information to keep the patient safe as he continues his natural treatments, thoroughly researches conventional options (just in case), or simply tracks it as he enjoys his years to come. This is the physician's 50% obligation when advising responsible Active Surveillance.

The patient, however, although expected to be open and honest with his physician, is obligated to be honest *first to himself.* A patient may need time, after an initial CaP diagnosis, to delve within. He may become initially frustrated that you are not taking his case seriously by immediately throwing the kitchen sink of internet-endorsed natural treatments at him. He may not understand at first why you want him to speak to other CaP survivors, read books, talk with loved ones, and determine *their* priority in terms of longevity vs quality of life. But once he does, encourage him to grasp that the ultimate answer of when, *or if*, to undergo conventional treatment comes almost *always from within. At the end of the day, the responsible Active Surveillance physician is not treating a CaP patient with supplements and protocols, but rather treating him through* ***empowerment***.

Now… go protect a man's (quality of) life.

References available online at ndnr.com

Phranq D. Tamburri, NMD, is founder of Prostate Second Opinions, with an international patient clientele in Phoenix, Scottsdale, and Seattle. Dr Tamburri has been Professor of Urology at his alma mater, Southwest College of Naturopathic Medicine (SCNM), for 17 years, and educates in all media forums for both patients and physicians on pragmatic approaches to refining the diagnosis and tracking of prostate cancer. He was uniquely cross-trained, from western Mayo Clinic surgeons to Buddhist monks, while graduating from Kansai Gaidai, Japan. When not conducting digital exams, Dr Tamburri loves Arizona desert rides on his green Kawai while blaring Tangerine Dream.

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revealed that more than half (about 52%) of US adults (aged 20 years and older) either have full-blown type 2 diabetes or prediabetes. Unfortunately, most of these individuals were unaware of their disease.[4]

Insulin Resistance

Insulin resistance is an impaired biological response to insulin stimulation of target tissues, primarily liver, muscle, and adipose. Insulin resistance is considered a key cellular defect, as it reduces glucose disposal and leads to hyperinsulinemia, which can in turn promote hyperglycemia, metabolic syndrome, and type 2 diabetes mellitus.[5] Insulin resistance is a strong risk factor for 2 of the leading causes of death in the United States: cardiovascular disease (CVD) and cancer.[2,5,6]

The gold standard for insulin resistance assessment is the hyperinsulinemic-euglycemic glucose clamp technique.[7] In this procedure, a fasted non-diabetic patient is given a constant-rate infusion of insulin for the purpose of maintaining insulin levels. Glucose is infused at variable rates to keep blood glucose in the euglycemic range. As the steady state is reached, it is possible to directly measure total body glucose disposal and calculate the degree of insulin resistance.[5] However, this specific method of evaluating insulin resistance is invasive and non-practical in a broad clinical setting. Therefore, other accurate and non-invasive diagnostic biomarkers for insulin resistance are crucially needed to enable early diagnosis of diabetes, prevent progression to diabetes, and reduce complications from the disorder (mainly vascular and nervous system diseases such as stroke, CVD, dementia, chronic renal failure, ophthalmological small vessel disease, and neuropathy).[5]

Insulin resistance is a strong risk factor for 2 of the leading causes of death in the United States: CVD and cancer.

This article reviews basic glucose assessments (eg, plasma glucose test, hemoglobin A1C, and fructosamine), but also presents various functional and notable insulin resistance biomarkers, including fasting insulin, HOMA-IR, adiponectin, Anti-GAD, C-Peptide, proinsulin, and leptin. These insulin resistance biomarkers can be ordered by healthcare practitioners from various laboratories in the United States at affordable prices to comprehensively assess insulin resistance status in their patients. As a naturopathic doctor using a variety of natural non-invasive treatments and therapeutic lifestyle change plans, identifying and addressing insulin resistance early can help combat the diabetes epidemic and the steady rise in our healthcare costs related to the management of diabetes and prediabetes – costs that have drastically increased, from $245 billion in 2012 to $327 billion in 2017, representing a 26% increase over a 5-year period.[8]

Basic Glucose Assessment

The diagnosis of diabetes has traditionally been based on the detection of elevated plasma glucose levels, primarily as a fasting glucose measurement, but also as a 2-hour post-prandial measurement during an oral glucose tolerance test (OGTT) or as a random glucose check. Studies have shown that a fasting blood glucose level is predictive of all-cause and cardiovascular-related mortality risk below the diabetic threshold.[9,10] Although these tests are readily available, they can miss early signs of insulin resistance, especially fasting glucose, as it only provides a snapshot of blood glucose at the specific time of the blood draw. Studies have shown that the β-cell dysfunction that is characteristic of diabetes occurs much earlier and is more severe than previously thought.[11,12] At the stage of impaired glucose tolerance (IGT), individuals have typically lost over 80% of their β-cell function, while those with prediabetes have lost about half of their β-cell volume.[11,12] Optimally, fasting plasma glucose (after 8 hours of fasting) should fall within 70-85 mg/dL.

Hemoglobin A1C (HgbA1C, or A1c), commercially available since 1978, is another standard biomarker for glycemic control and can be used to diagnose prediabetes and diabetes.[13] HgbA1C is an excellent biomarker of overall glycemic control during the time-frame of the 120-day lifespan of a normal erythrocyte; it is also a very convenient test, since fasting is not required.[13] Among adults without diabetes, elevated glycated hemoglobin levels have been shown to be associated with an increased risk of cardiovascular events and death.[14,15]

However, HgbA1C has several limitations, and healthcare practitioners must be vigilant in their interpretation of results. "Any condition that prolongs the life of the erythrocyte or is associated with decreased red cell turnover exposes the cell to glucose for a longer period of time, resulting in higher A1c levels."[13] This can include anemia (deficiencies in iron, B12, and/or folate), asplenia, severe hypertriglyceridemia (concentrations >1750 mg/dL), severe hyperbilirubinemia (concentrations >20 mg/dL), uremia, lead poisoning, alcohol, and some medications (eg, salicylates and opioids).[13,16] On the other hand, "any condition that reduces the life of the erythrocyte or is associated with increased red cell turnover shortens the exposure of the cell to glucose, resulting in lower A1c levels."[13] This can include acute and chronic blood loss, hemolytic anemia, splenomegaly, end-stage renal disease, and pregnancy (through the 2nd trimester, though it may rise during the 3rd trimester).[13] Moreover, hemoglobin variants (most commonly, hemoglobin S and hemoglobin C) can have either falsely elevated or falsely lowered A1c levels.[13]

Since HgbA1C has several limitations, fructosamine may be considered in a diabetes evaluation. Commercially available since 1980, fructosamine is formed by the non-enzymatic reaction of sugar and albumin protein, and reflects a shorter period of glycemic control (2-3 weeks) than A1c, since albumin has a half-life of about 20 days.[13,16,17] However, because it depends on albumin concentrations, the fructosamine test also has limitations, especially for patients with hypoproteinemia or hypoalbuminemia, such as in nephrotic syndrome or severe liver disease.[17]

Advanced Biomarkers for Insulin Resistance

Fasting Plasma Insulin & HOMA-IR

The simplest and most widely acceptable method of estimating insulin resistance is the Homeostasis Model Assessment of Insulin Resistance (HOMA-IR), which is calculated using a formula based upon values of fasting plasma glucose (FPG) and fasting plasma insulin (FPI) concentrations.[18] Researchers have found a highly significant relationship between FPI concentration and a direct measure of insulin-stimulated glucose disposal.[18] It is well understood that "insulin resistance leads to a hyperinsulinemic state that eventually results in diabetes when

hyperinsulinemia cannot be maintained to meet the progressively increasing demands for insulin."[19] Researchers have also demonstrated that individuals with "a fasting insulin concentration of 24.87 μIU/mL were 5 times more likely to have prediabetes than those with a fasting insulin concentration of 4.94 μIU/mL."[19] Using a combination of FPI and HOMA-IR along with traditional blood glucose tests can provide clinicians with early signs of insulin resistance. Optimally, the FPI level should be less than 5 μU/mL, and HOMA-IR level should be less than 2.

Adiponectin

Adiponectin, a secreted protein comprising 247 amino acids, is produced exclusively by mature adipocytes and is involved in several antioxidant, anti-inflammatory, and anti-arteriosclerotic processes.[20,21] The half-life of adiponectin in serum is estimated to be 2.5-6 hours,[20,22] and circulating adiponectin levels display diurnal variation, with a nocturnal decline and maximum levels in the late morning.[20,23] Decreased adiponectin plasma levels are associated with insulin resistance, obesity, type 2 diabetes mellitus, and cardiovascular diseases.[20,24] Women tend to have about 40% higher circulating levels of adiponectin than men, in whom androgens appear to have an inhibitory effect on adiponectin.[20,25] Plasma adiponectin levels have been found to be lower in individuals with obesity, visceral adiposity syndrome, metabolic syndrome, CVD, diabetes, fatty liver, hypertriglyceridemia, and dyslipidemia.[20] Adiponectin also has a glucose-lowering effect and has been shown to reduce plasma concentration of free fatty acids (FFA) and hepatic fat content.[20] Moreover, adiponectin is "directly involved in atherosclerosis by increasing nitric oxide, preventing endothelial dysfunction, and by local inhibition of inflammatory molecules."[21] Researchers have found that "subjects with total adiponectin level ≤6.2 μg/mL developed metabolic syndrome more rapidly than did those with total adiponectin level >6.2 μg/mL."[26] Optimally, the adiponectin level should be >12 μg/mL.

Anti-Glutamic Acid Decarboxylase

Anti-Glutamic Acid Decarboxylase (Anti-GAD) can be used to detect an autoimmune form of diabetes, ie, latent autoimmune diabetes of adults, or LADA.[27,28] Anti-GAD antibodies are found in both type 1 and 2 diabetes.[28] Autoantibodies to GAD are detected in around 80% of type 1 diabetes mellitus patients.[28] The antibody essentially attacks the GAD enzyme, which is crucial in the formation of gamma-aminobutyric acid (GABA), an inhibitory neurotransmitter found in the brain.[28] Anti-GAD-positive individuals can present with motor and cognitive deficits due to low levels or lack of GABA.[28] The anti-GAD antibody is found in some neurological syndromes, including stiff-person syndrome, paraneoplastic stiff-person syndrome, Miller Fisher syndrome (MFS), limbic encephalopathy, cerebellar ataxia, eye movement disorders, and epilepsy.[28] In the UK Prospective Diabetes Study, the GAD antibodies were also present in 15-35% of patients with type 2 diabetes mellitus diagnosed at an age younger than 45 years, compared to only 7-9% of older patients.[28] GAD antibody positivity predicts diabetes independently of family history of diabetes, and this risk is further increased with high anti-GAD concentrations.[27]

Fasting Proinsulin & C-Peptide

Connecting peptide (C-peptide) and proinsulin can be used to evaluate β-cell dysfunction of the pancreas, which is one of the major pathophysiological disturbances in type 2 diabetes.[29] Proinsulin, the precursor of insulin, is synthesized in the pancreatic ß-cells of the Islets of Langerhans and is subsequently cleaved enzymatically, releasing insulin into the circulation along with C-peptide.[29] Hyperproinsulinemia is an indicator of β-cell dysfunction, and fasting proinsulin levels are elevated in patients with hyperglycemia.[29] Fasting proinsulin levels have been associated with insulin resistance and type 2 diabetes.[29-32]

Serum C-peptide level, a surrogate marker for endogenous insulin secretion, was highly associated with all-cause mortality, as well as with cardiovascular-related and coronary artery disease-related mortality, among participants without diabetes at baseline.[33] Moreover, among patients with type 2 diabetes, studies have shown that C-peptide induces smooth muscle cell proliferation (increased intima-media thickness), causes human atherosclerotic lesions, and is highly correlated with metabolic syndrome markers (including triglyceride level, HDL-cholesterol levels, leptin levels, and body mass index).[34,35]

Leptin

The adipocytokine, leptin, discovered in 1994, "is produced mainly by adipocytes and in low levels by the gastric fundic epithelium, intestine, placenta, skeletal muscle, mammary epithelium, and brain."[36] Leptin is a 167-amino-acid-protein hormone that regulates body weight, metabolism and reproductive function.[36] Leptin can represent the fat mass in the body, as obesity is associated with leptin production and high plasma leptin concentration; subcutaneous fat has been considered a major determinant of circulating leptin levels.[36] Women are found to have higher levels of leptin compared to men, and this difference has been found to persist even after controlling for differences in age or body mass index (BMI).[37] Hyperuricemia and gout have been significantly associated with higher leptin levels, even after controlling for BMI.[37] Leptin and adiponectin have opposite effects on inflammation and insulin resistance.[38] "Leptin upregulates proinflammatory cytokines such as tumor necrosis factor-α and interleukin-6; these are associated with insulin resistance and type 2 diabetes mellitus."[38-40] Studies have revealed that leptin can be an independent risk factor for CVD and represents an important link between obesity and cardiovascular risk.[38,39] Chronically elevated leptin levels can be associated with obesity, overeating, leptin resistance, and inflammation-related diseases including hypertension, metabolic syndrome, and CVD.[38-40,41] Optimally, the leptin level should be <15 ng/mL.

Conclusion

In tandem with the worldwide obesity epidemic, an explosive increase in insulin resistance cases (including prediabetes and full-blown diabetes) certainly constitutes a global health crisis. It is alarming to know that 60% of US adults are either obese or overweight[2] and that more than half of US adults either have full-blown type 2 diabetes or prediabetes, with most of them being unaware of their medical condition.[4] The traditional blood glucose tests are not sufficient; clinicians should consider adding advanced biomarkers that can comprehensively assess early signs of an insulin resistance process, including fasting insulin, HOMA-IR, adiponectin, Anti-GAD, C-Peptide, proinsulin, and leptin. To effectively counteract the insulin resistance epidemic, key steps include early detection of the disease process and addressing it with non-invasive naturopathic therapeutics.

References 14-41 available online at ndnr.com

Teerawong Kasiolarn, ND, MSAc, LAc, received his Doctorate of Naturopathic Medicine and Master of Science in acupuncture from Bastyr University in 2005. After graduation, he served as a naturopathic resident at UBCNM in CT, Yale-Prevention Research Center, and the Integrative Medicine Center at Griffin Hospital, a teaching facility affiliated with Yale University. For the 10 years since his residency, Dr Kasiolarn has been practicing at Nova Medical Group, the largest integrative primary care practice in Northern VA, as a naturopathic doctor and licensed acupuncturist. Dr Kasiolarn focuses on CVD, metabolic syndrome, diabetes, thyroid disorders, weight management/obesity, chronic pain, chronic fatigue, digestive disorders, anxiety/depression, and autoimmune diseases.

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A History of Naturopathy in South Africa

WENDY ERICKSEN-PEREIRA, ND
NICOLETTE V. ROMAN, PHD
RINA SWART, PHD

A huge growth in complementary and alternative medicine (CAM) took place in South Africa in the 1960s that paralleled what was happening in other parts of the western world. Naturopathy has been practiced in South Africa for over 60 years, and the history of naturopathy is entwined with the broader history of CAM. No laws existed at that stage to regulate the curriculum, education, and training of CAM practitioners. With the passage of time, various statutes were introduced, which eventually led to changes in legislation and the establishment of a recognized training program. Naturopathy became a legally regulated profession, the full history of which has never been documented.

This article explores the history of naturopathy in South Africa. A 2-phase qualitative research design was used, consisting of a document search and semi-structured interviews with key informants who were identified through a process of snowballing. Information collected from the naturopaths that participated in the interviews was triangulated with documentation uncovered in the archives of the Allied Health Professions Council of South Africa (AHPCSA) and other available literature. The result is a history of events that took place and which reveals the effect of various legislation on the profession. Changes in the political system paved the way for changes in legislation that allowed for the registration and training of naturopathic practitioners. However, the lack of a functioning association and the small number of naturopathic graduates has hampered the growth of the profession, preventing it from becoming a significant contributor to the healthcare system.

Introduction

An emerging trend is to use the term "traditional and complementary medicine" (T&CM), as it encompasses the practices, practitioners, and products of both traditional and complementary medicine.[1] For the purposes of this investigation, the term CAM has been used since research by Ng et al (2016)[2] showed that CAM was the most commonly used term to describe complementary medicine. CAM has been identified as "a group of diverse medical and healthcare systems, practices, and products that are not presently considered to be part of conventional medicine."[3]

The last few decades have seen exponential growth in the use of CAM products and therapies, with Fischer et al (2014)[4] suggesting that CAM will play an important role in addressing the rise in chronic diseases due to aging in Europe. Proposed reasons for this shift towards CAM have included growing disillusionment with the biomedical model of medicine,[5] overprescription of drugs and the impersonal approach to patients within western medicine, and the inability of the mainstream biomedical model to successfully treat chronic diseases.[6] South Africa has also experienced a growth in the use of CAM. In 1999, it was estimated that turnover from the use of CAM products was R1.29 billion.[7] In 2014, this figure was estimated to be R8 billion.[8]

The history of CAM in South Africa goes back centuries. The early Dutch settlers brought their traditional medicines with them. By the 19th century there was a small number of CAM practitioners[9]; however, after World War II, South Africa experienced an increase in immigrants, which included CAM practitioners. Old Dutch medicines and homeopathic remedies were already in use in the country, but the new wave of immigrants – especially those from Germany – used homeopathy, naturopathy, and herbal medicines to treat various illnesses.[10]

Medical practitioners began to campaign against the growing number of CAM practitioners. This resulted in the Medical Association of South Africa declaring CAM to be "illegal and unscientific" in 1953,[10] and any cooperation between allopathic and CAM practitioners was prohibited in their medical code.[11] This meant that CAM practitioners could neither share premises with biomedical practitioners nor refer patients to them. CAM practitioners were therefore excluded from the public healthcare system. As a result, all CAM modalities were forced into a private healthcare setting.[10] The Health Professions Act 56 (South Africa) 1974 No. 31825 was amended in 2009 with the insertion of rule 8A, which states that practitioners are only allowed to share rooms with others who are registered under the Act. Thus, through regulation, all CAM practitioners were legally prevented from working in or making a contribution to the public healthcare system.

As a system of CAM, the history of naturopathy is reflected in the history of CAM in South Africa. Dr William Henry Lilley emigrated to South Africa from the United Kingdom and in 1951 started training the first group of homeopaths.[9] He was instrumental in establishing Lindlhar College, which trained homeopaths, naturopaths, and osteopaths.[9,12] Lilley was one of the founders involved in the formation of the South African Naturopathic and Homeopathic Association[9,12]; this was the start of the training of naturopaths in South Africa.

Naturopathy in South Africa is defined as a "system of healing based on promoting health and treating disease using the body's inherent biological healing mechanisms to self-heal through the application of non-toxic methods" (Regulation 127 of 2001). Naturopathic medicine is viewed as a system of primary healthcare based on the philosophy and principles of naturopathy.[13,14] These principles include: the healing power of nature; the naturopathic doctor as teacher; finding the root cause of an illness; treating the patient holistically; health promotion and prevention of disease; and encouraging overall wellness.[15]

To comprehend how a once burgeoning CAM profession was prevented from training new practitioners for close to 30 years owing to legislative enactments, it is necessary to trace the history of naturopathy in South Africa.

As a system of medicine, naturopathy is well suited to address the disease challenges of the 21st century, as it focuses on preventative medicine through the use of education. By empowering patients to understand the cause of their illness, it encourages a change in lifestyle. Treatment is non-invasive and can be low-cost. Naturopaths are well placed to participate in and contribute to the public healthcare system on a primary healthcare level. However, at present, the small number of registered naturopathic practitioners, together with the legislature, presents a challenge for integration. To understand the current situation and comprehend how a once burgeoning CAM profession was prevented from training new practitioners for close to 30 years owing to legislative enactments, it is necessary to trace the history of naturopathy in South Africa. The history of naturopathy in South Africa is a story that has never been fully explored.

Methodology

In order to research the history and development of naturopathy in South Africa, a qualitative design was employed, with the research being divided into 2 phases. The first phase consisted of a document search, while the second phase consisted of interviews with practitioners who were either students during the early years of naturopathy in South Africa or were practicing at the time.

Phase 1: Document Search

Permission was obtained from the Registrar of the Allied Health Professions Council of South Africa (AHPCSA) to search their archives, per a request for Access to Record of Public Body (section 18[1] of the Promotion of Access to Information Act2 [South Africa] 2000 No. 20852).

Available records were accessed May 3-5, 2015. The researcher had access to all documents available at the AHPCSA office up to the period that the current registrar took over in 2009, consisting of over 30 files and record books. Records included registration documents as well as minutes of meetings. It should be noted that there might be gaps in information owing to old documents that had not been accessed for many years by the AHPCSA due to having been disposed of during a recent move to new premises. Registration records of people deceased or deregistered for longer than 10 years were among the documents not retained, although the original registration applications along with identity document copies were retained. Documentation of all active registrations, regardless of the duration of registration, were also retained.

Documents was separated into 2 main themes. The first theme was registration, as it involved the files of the first practitioners registered as a result of the implementation of the Homeopaths, Naturopaths, Osteopaths and Herbalists Act 52 (South Africa) 1974 No. 4441. The second theme was that of minutes of meetings of the different boards within the AHPCSA, starting with the establishment of the first council to regulate natural medicine in South Africa in 1983.

Phase 2: Interviews

Inclusion criteria for the interviews were determined as all naturopaths that are either currently registered with the AHPCSA or had been registered as naturopaths between the period of 1974 to 2005. Any other registered CAM practitioner that had been registered at any point between 1974 and 1983 was also considered, due to the overlaps in training that took place in the 1960s and 1970s. All naturopaths that graduated from the tertiary training institution after the passage of Regulation 127 of 2001 were excluded.

The researcher went through the list of registered naturopaths on the AHPCSA website and listed all naturopaths with the earliest registration numbers, starting with double-zero (00). This process was repeated for registered chiropractors, homoeopaths, osteopaths, and phytotherapists, to establish whether multiple registrations were held. A list was then compiled of the naturopaths that had registered under Act 52 of 1974. By searching the internet – including the Medline directory and the Therapists Online site, as well as the telephone directory – the contact details of these early naturopaths were obtained. Contact was made via phone and/or email. The purpose of the communication was explained and the naturopaths were asked if they were willing to participate in the research project.

Five people were identified, of whom 4 were contacted by phone. One refused to

be interviewed, 1 agreed to be interviewed, while the receptionists at the practices of the other 2 advised that the request be sent via email. The fifth person was not contactable via telephone and was emailed. However, none of the emails was responded to. As a result of this low response, a snowball sampling technique was used to identify further participants for the research; this resulted in a total of 8 people being interviewed. One person was no longer registered, and another was not a naturopath but, because of that person's involvement in the 1960s and 1970s, s/he was interviewed in order to develop a history of CAM in South Africa. Semi-structured interviews were conducted, as this allowed the interviewer the opportunity to explore responses in greater detail – this being a necessary consideration, given the age of some of the key informants. Interviews were conducted at the convenience of the participants. Three interviews were conducted face-to-face, 3 were conducted via Skype, 1 telephonically, and one participant requested the interview questions and provided a written response to the questions via email. All interviews, except for 1, were recorded.

They were then transcribed verbatim and, along with the response received electronically, were thematically coded based on the interview questions, and analysed manually.[16]

Participants were all emailed the information sheet, ethics clearance document, and interview questions prior to the interview. The identities of the participants were protected through the use of a coding system known only to the researcher. All information gathered in the process of research was securely kept in a password-protected computer and a back-up external hard drive, which, along with other documents collected, is kept under lock and key and is accessible only to the researcher.

Through triangulation of the interviews with the document search and available literature, a history of naturopathy in South Africa was constructed.

Results

The following themes and subthemes emerged:

- Phase 1: Document Search – registrations and minutes of meetings
- Phase 2: Interviews – early history, effect of legislation, activism

Document Search

Registrations

Act 52 of 1974 was promulgated in Parliament on October 16, 1974. Section 3(a) of this Act required practitioners to register with the Department of Health within a 6-month period from the date of publication of the gazette. It allowed for the registration of CAM practitioners that were already in practice, provided that they could show proof of their training in the form of a certificate issued by a training institution. Students who were still studying and provided proof of the institution at which they were studying were registered as students. Foreign practitioners were additionally required to submit proof of permanent residency or proof that they were "capable of acquiring South African citizenship" (Act 52 of 1974 3[b i]). Failure to register either as a practitioner or student meant that the practitioner would not be allowed to continue practicing or that the student would not be allowed to register once s/he had completed their studies.

A summary of practitioners that registered with the Department of Health as a result of the promulgation of Act 52 of 1974 is listed in Table 1.

Table 1. **1974 Practitioner Registrations**

Age Group: Year Born	Naturopathy	Homeopathy	Osteopathy	Herbalism + Homeopathy	Naturopathy + Osteopathy	Naturopathy + Homeopathy	Naturopathy + Herbalism	Homeopathy + Osteopathy	Naturopathy, Homeopathy + Osteopathy	South African	Foreign
Up to 1910		5	1		1	6		1	1	11	4 (American, British + German)
1911-1920	3	18				8		4	10	38	6 (British, Cyprian, German, Indian , Irish, Italian)
1921-1930	1	20			1	17	1		11	40	11 (British, Dutch, German, French, Portuguese, Rhodesian)
1931- 1940	1	16	1	1		12		3	14	40	8 (American, Dutch, German, Greek, Indian, Swiss, Portuguese)
1941-1950		5				3			5	12	0
Totals	5	64	2	1	2	46	2	8	41	142	29
Percent-age	2.9	37.4	1.2	0.6	1.2	26.9	1.2	4.7	23.9	83	17

Table 1 is not conclusive, as it could not be ascertained if all the applications had been forwarded to the Council by the Department of Health in 1983 or if any of the files had been disposed of by the AHPCSA. Gower puts the number of registered homeopaths at 350.[9] It should be borne in mind that these files only recorded practitioners and not students. The registration process divided applicants into 2 groups: practitioners and students. Students were allowed to continue with their studies and were registered after 1974 if they had registered as students in 1974.

The data available indicate that the majority of the practitioners who were registered in 1974 were South African, confirming the presence of training institutions in South Africa for each of these professions at the time. It must be noted that multiple registrations predominated, with practitioners registered for both homeopathy and naturopathy being the most common combination (26.9%), followed by homeopathy, naturopathy, and osteopathy (23.9%). The various combinations with naturopathy account for 53.2% of registrations, while registration for naturopathy alone accounts for only 2.9%. The number of homeopaths who registered only for homoeopathy were 37.4%. From these figures, it can be seen that the number of homeopaths registered were in the majority.

Minutes of Meetings

The Chiropractors, Homeopaths and Allied Health Service Professions Council became the Allied Health Professions Council of South Africa in 2000.[7,9] The Chiropractors, Homeopaths and Allied Health Service Professions Amendment Bill was first published in Government Gazette No. 21825 of 2000 and was later promulgated as the Allied Health Professions Act 63 (South Africa) R127 2001 No. 22052. This provided for the establishment of professional boards that enabled naturopaths and other diagnostic and therapeutic professions to be registered with their respective professional boards. Since no specific system had been used to sort through the files before discarding them, the available files were not in chronological order. Minutes of the meeting of the Public Board of Homeopathy, Naturopathy and Phytotherapy (PBHNP) ranged from 2002 to 2005. One of the major issues that appeared the most frequently on the agendas of the PBHNP meetings was the registration of naturopaths and phytotherapists. At one PBHNP meeting in 2002, the list of registered naturopaths was charted (Appendix A). The registration list contained the names, colleges trained at, year of completion of studies, and year of first registration as naturopaths. At least 18 naturopathic training colleges existed in the 1960s and 1970s, with 100 registered naturopaths at the time.

From the minutes of PBHNP meetings held in May 2003, the outcome of applications from naturopaths for registration was also charted. Of the 76 applications, 3 were approved to sit for the Council Regulated Examinations (CRE) and 73 were conditionally approved to sit for the examination – on condition of submission of proof of a certificate that the naturopathic studies were completed. Not all documents indicated the place of study of the applicants. However, the known institutions of training are summarized in Table 2.

Of this list of applicants that were conditionally approved to write the CRE, no further minutes were found relating to the number that finally wrote the examination or to the outcome of these examinations. However, in minutes tabled in 2003, concerns were raised about the legitimacy of some of the documents that had been submitted.

Interviews

Early History

A detailed history of the early years of naturopathy was developed as a result of the input from all participants. One

participant chose to email the response because the person did not wish to be recorded and was only prepared to divulge certain information. However, the information which was provided corroborated the information provided by other participants.

The period from the 1950s to 1974 showed rapid growth and training of CAM practitioners in the areas of chiropractic, homeopathy, naturopathy, and osteopathy. Private training colleges flourished, as there was no control over the registration of these colleges or the curriculum taught. One of the more highly regarded training facilities at the time was Lindlahr College in Johannesburg. The college offered training in homeopathy, naturopathy, and osteopathy.[9] Naturopaths trained at Lindlahr College, and records indicate that by 1957 naturopaths were graduating from the college.[12] By the 1960s, many training schools of varying quality were flourishing all over the country. One of the interviewees referred to these as the "fly by night" schools.

Interviewees reported that many practitioners were trained through "apprenticeships" with other practitioners. Evidence also suggests that there were a number of practitioners from England who either came over for periods of time to teach or who settled in the country. In the Cape Town area, Dr Oliver Lawrence, who was a British naturopath, set up a practice at his home where he taught his students after hours and on weekends. He taught the same curriculum as at Lindlahr College, which included subjects such as anatomy, physiology, hygiene theory, and homeopathy, among others. Dr Stanley Dean was an herbalist who had a practice on the Foreshore in Cape Town in the late 1960s; he taught the herbal component of the course. All the interviewees agreed that there was an abundance of training facilities available at the time. There was a considerable degree of overlap in the training of students in homeopathy, naturopathy, herbal medicine, and osteopathy; this explains why the early practitioners used a broad range of modalities in practice, and it is the reason for such a high number of dual or multiple registrations (Table 1). On qualification, many of these practitioners went on to establish training centers, where they trained, in turn, other practitioners.

Effect of Legislation

With the introduction of Act 52 of 1974, all CAM training facilities were to be phased out and shut down. Practitioners were given a period of 6 months to register with the Department of Health. Students who were still training also had to register as students and were allowed to register upon completion of their studies. As a result of this Act, hundreds of practitioners were not registered, either because they were not aware of the legislation or because their applications were not approved owing to lack of certification to prove training.

Absence of registration did not stop people from practicing, and interviewees confirmed that, with the appointment of the first chairperson of the Chiropractors and Homeopaths Association, a serious effort was made to clamp down on unregistered practitioners in practice. If any practitioner was reported to the chairperson, the chairperson reported to the police to follow up. If practitioners were caught in the act of practicing, they were arrested and charged with practicing unlawfully. This punitive measure did not stop many practitioners who used euphemisms for their practices rather than the term "naturopath," although, in essence, they still continued to practice as naturopaths. This is evidenced by the number of applicants who applied for registration as a result of the passage of Act 40 of 1995. If there was a lack of certification, it meant they could not write the CRE and were still excluded from the registration process.

The Associated Health Service Professions Act 63 (South Africa) 1982 No. 8160 provided for the establishment of the Associated Health Services Professions Board. As a result of the passing of this Act, all practitioners that had registered in 1974 were required to register again. However, no new registrations were allowed; according to the legislation, there were to be no new registrations of naturopaths after 1982, while the register was opened to chiropractors and homeopaths with the establishment of the Associated Health Service Professions Amendment Act 105 (South Africa) 1985 No. 9867. This Act also gave the new board the power to control and regulate the education of allied registered practitioners. According to minutes from 1987, training for chiropractors and homeopaths was approved by the Minister of Education in 1987 and courses officially started in 1989.[17] No other training institutions for other professions were allowed.

Activism

The situation caused dissatisfaction among the other professions and led to the formation of the Confederation of Complementary Health Associations of South Africa (COCHASA). The South African Naturopathic Association (SANA) was formed in the early 1990s and lobbied as one of the members of COCHASA to open the register. In 1994, after the first democratic South African elections, there was a re-examination of laws in the country, including healthcare laws. This created an opening for COCHASA to lobby the Minister of Health to launch an investigation into the Chiropractors, Homeopaths and Allied Services Professions Council; as a result, the Chiropractors, Homeopaths and Allied Health Service Professions Amendment Act 40 (South Africa) 1995 No. 16643 was enacted, which allowed practitioners that had previously not been able to register to now apply for registration. This led to the institution of what was termed the "grandfather" clause, which allowed practitioners to undergo a 2-year period of training to upgrade their training to a level determined to be acceptable to the Council. They then wrote a CRE; if they passed, they were registered.

The Chiropractors, Homeopaths and Allied Health Service Professions Second Amendment Act 50 (South Africa) 2000 No. 21825 led to the establishment of the Chiropractors, Homeopaths and Allied Health Service Professions Interim Council, which operated from 1995 to 2000. Despite these concessions, COCHASA continued to lobby for the opening of the register, which would effectively mean that the training of naturopaths and other allied diagnostic professions would become a possibility. Members of COCHASA presented their case in November 2000 to the Parliamentary Portfolio Committee on Health, which subsequently voted for the registers to be opened. This led to the promulgation of Regulation 127 of 2001, which provided for the opening of the register for the diagnostic professions of Ayurveda, Chinese medicine and acupuncture, naturopathy, osteopathy, phytotherapy, and Unani Tibb.

SANA members became actively involved with the AHPCSA to determine the scope of practice and – through a comparative analysis of established international training institutions – drew up the curriculum required for the training of naturopaths. They also sought to actively engage with tertiary institutions to establish training facilities for naturopaths and other diagnostic professions that were not offered in South Africa. A School of Natural Medicine, which offered training in naturopathy, phytotherapy, traditional Chinese medicine, and Unani Tibb, was opened at a tertiary institution in the Western Cape in 2002 and currently provides what is still the only training for these diagnostic professions in South Africa.

Discussion

The present article explores the development of naturopathy as a system of CAM in South Africa. The findings of the research study outlined in this article show that the history of naturopathy is closely aligned with the history of CAM in this country. One of the challenges experienced in conducting this research was finding participants who met the inclusion criteria. Naturopaths who either practiced or studied between the 1950s and 1974 are now few in number, as many are now deceased, or no longer in practice, or were unwilling to speak about this period, especially the period following the passage of Act 52 of 1974. Although participants remembered the events that took place, they might have forgotten the precise dates when they occurred. Through the process of triangulating, the validity of the information was established.[18]

The passage of Act 52 in 1974 has had a long-term effect on practitioners. One of the participants chose to respond to the interview questions via email so that the content of the response could be controlled by the participant. Others asked questions about confidentiality, and the researcher had to explain in detail the ethical and confidentiality procedures. There still exists a sense of distrust and fear of being identified by peers.

No documentation of the number of practitioners that registered as a result of this Act could be found. The original registration forms were kept by the Department of Health and, with the establishment of Act 63 of 1982, the documentation was sent to the Council. AHPCSA disposed of some of the archived documents. This decision was made on the basis of the legal precept that permits documentation older than 5 years to be destroyed. No record was kept of which documents were disposed of, so there is no exact record of the number of registered practitioners. Information provided by the interviewees suggests that the number ran into the thousands. One of the shortcomings in this research is lack of certainty of the exact numbers of practitioners registered in the years leading up to the establishment of the AHPCSA in 2000.

After 1982, the records show that 17 naturopaths were registered between 1984 and 1996. Nine of these had dual registration as homeopaths and naturopaths, 2 had dual registration as osteopaths and naturopaths, and 5 were only registered as naturopaths. Missing information on the CRE and registration and discrepancies in registration numbers and years of qualification appear to confirm allegations by some practitioners of selective and preferential deviations from the regulations. The document search supports some of these claims. Act 63 of 1982 made provision for the establishment of the South African Associated Health Service Professions Board,[9] which had several objectives. The most important objective was to "assist in the promotion and protection of the health of the population of the Republic" (1[3a]) and to "control the registration of persons in respect of any profession and to set standards for the training of intending

Naturopaths trained at Lindlahr College, and records indicate that by 1957 naturopaths were graduating from the college.

Table 2. **Training Institutions**

Name of training institution	Medical doctors	Heilpraktiker (Germany)	Belcher College (USA)	Clayton College of Natural Health (USA)	SA College of Herbal Medicine	SA College of Natural Medicine	SA College of Naturopathic Medicine	Webber Natural Medicine Institute	World Correspondence College
Number of graduates	2	2	2	2	3	8	11	4	5

practitioners" (1[3c]). The evidence available appears to suggest that this council failed in fulfilling these objectives. Practitioners were registered with a minimum of training as doctors and were legally allowed to practice.

Act 40 of 1995 allowed for the "grandfather" clause, which made provision for practitioners that had not previously been registered to undergo a 2-year period of training to upgrade their training before writing a CRE. The qualifications of some of the applicants is of concern, since there was no clear indication that they studied any naturopathy courses. There were no minimum criteria set for entry into the CRE, and one sees training colleges springing up to provide this training. This undermined the objective of the council to set appropriate standards for the training of practitioners that would safeguard the health of the public.

According to some of the interviewees, it was after the establishment of the naturopathy training course in 2002 that SANA gradually became less functional. By the time naturopathic students graduated, they found themselves with no functional association able to support and guide their professional development; this has had an adverse effect on the growth of the profession. Drawing from the North American situation, one finds organizations such as the Canadian Association of Naturopathic Doctors actively promoting and advocating for the professionalization of, and regulatory changes for, naturopathy.[19] This activism has resulted in an increase in the number of naturopathic students. In 2009, this advocacy resulted in registered naturopaths being granted the right to prescribe certain categories of pharmaceuticals,[20] which essentially placed them on the same level as general practitioners. In 2016, naturopathic graduates become actively involved in relaunching SANA. This may herald the start of another chapter in the history of naturopathy in South Africa.

Appendix A. Details of 2002 Registration

Year of Registration	Number Registered	Year of Completion of Studies	Site of Training (Institution)
1980	1	1972	Naturopathic College of SA
1982	22	1954, 57, 58, 61, 62, 63, 64, 1967, 1969, 1970(x2), 1972, 1973(x2), 1074(x4), 1976, 1980	Lindlahr College, Canyon College, College of Natural Sciences, Naturopathic College of SA, Lindstrrom, SA Faculty of Naturopathy and Osteopathy
1983	6	1969, 1974, 1972, 1974(x2),1975	Canyon College, College of SA, Lindlahr College, Naturopathic Association, SA Foundation of Natural Therapies
1984	5	1967, 1972, 1974	Lindlahr College, SA Faculty of Homeopathic Medicine
1985	8	1965, 1972, 1974	College of SA, Naturopathic Association of SA, SA Faculty of Homeopathic Medicine
1987	1	1967	Lindlahr College
1990	2	1973, 1975	College of Natural Sciences, SA Institute of Homeopathy
1993	1	1974	Canyon College
1996	23	1957, 1971, 1973(x2), 1974(x7), 1976, 1982, 1989, 1993(x7)	African Herbal College, Bantridge Forest School, Transkei, Lindlahr College, SA Foundation of Natural Therapies, SA Homeopathic Association, World Correspondence College
1997	7	1973, 1974, 1995	College of Natural Therapy, College of Natural Science, Lindlahr College, Naturopathic College of SA
1999	2	1978, 1981	Naturopathic College of South Africa, Bantridge Forest School
2000	1	1972	Naturopathic College of South Africa

Note: The number of registered naturopaths totaled 100. However, not everyone on the registration list recorded the year of completion of training or the institute at which the training was undertaken.

Conclusion

The history of naturopathy in South Africa has not been recorded prior to the present article. This research has revealed a period of rapid growth of CAM in the period from the 1950s to 1974, which was abruptly halted through the introduction of legislation. As a direct result of continued activism by naturopaths and other CAM practitioners, legislation was changed and has led to legal recognition. This was a time of huge optimism for the CAM sector, as it saw the legitimization of CAM professions through the establishment of the AHPCSA as the start of a period of growth for these professions. This in turn resulted in establishing training programs at tertiary institutions.

However, this has not resulted in an increase in numbers of registered naturopaths. If naturopaths are to make a significant contribution to the healthcare system, there has to be a substantial increase in the number of naturopathic graduates as well as a strong association to promote public awareness of naturopathy. Growth and professionalization of the profession should ultimately lead to a change in legislation.

Acknowledgements to the registrar of the AHPCSA who granted permission to access the archives, and to all participants in the research who offered up their time to be interviewed. And a special Thank You to those who were in possession of documentation and made it available to the researcher.

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References available online at ndnr.com

Medical Resources for NDs

A review of current publications for the naturopathic industry

KRISSY HAGLUND, ND

Beyond the Label: 10 Steps to Improve Your Mental Health with Naturopathic Medicine

"At the end of the day, all we have is love," writes Christina Bjorndal, ND. She would know. She's been at the bottom of her well. She has battled self-worth issues, bulimia, anxiety, depression, bipolar disorder type 1, and had several suicide attempts. She's fallen down, picked herself up, and taken steps forward into a meaningful, balanced life. Her account of her own journey through decades of mental health struggles is riveting! Her words and descriptions are raw and they cut through to the core of the reader. Before picking up this book, I knew little about this Canadian naturopathic doctor. But after reading her personal account of life with a bipolar type 1 diagnosis, I've concluded that everyone should know about Dr Christina Bjorndal. This powerhouse doctor has turned around her life and now treats patients with mental illness, brain issues (ADD/ADHD), and eating disorders.

I believe there is something for everyone in this book. It is helpful for any person with a diagnosis of a mental disease, for it offers root-oriented naturopathic treatments that are achievable, proven, and effective. Her personal story can help both medical practitioners and laypeople who have an interest in mental health. The CDC website states, "Half of all Americans will be diagnosed with a mental disease or illness within their lifetime." This is a staggering statistic that should launch many to seek information regarding mental health.

There are many roads to wellness. The important thing is to pick a path and follow it wholeheartedly.
(Dr Chris)

This book starts off with a bang as Dr Bjorndal takes off her mask and bravely details her own life struggles with bipolar disorder. Following this she discusses how there are 4 aspects that must be addressed in mental health: physical, mental, emotional, and spiritual. Our Western medical system focuses mostly on the physical level – which is important; however, if that's all we focus on, then we miss 75% of the puzzle. To speak to that physical level, Dr Bjorndal explains that there are 3 macrosystems we need to address: one's neurotransmitters, the neuroendocrine system, and the organs of detoxification.

To help patients achieve balance in everyday life and "make peace with the present moment," Dr Bjorndal recommends that patients follow a specific 10-step program:

1. Diet
2. Sleep
3. Exercise
4. Stress management
5. Thoughts
6. Emotions
7. Your behaviors and reactions to the world
8. Exposure to environmental toxins
9. Spirituality
10. Love and compassion for yourself and others

The more of this book I read, the more joy I was able to unearth. Dr Bjorndal is clearly on a mission to help those who are needing assistance and a way to find their way back to normalcy. I found her personal journey extremely relatable, as I'm the daughter of a mother with mental illness who went undiagnosed for her entire life. As with many patients in the medical system who seek health, they often only encounter palliative or emergency care. My mom, like the author, had numerous ups and down in mental health. She was taken in by the police when she was out on the town during a manic period. In fact, her 125-pound body had to be held down by 2-3 policemen, to secure her into a police car or into a hospital ward – a similar fate experienced by Dr Bjorndal. She slept away much of her life, slacked at housework, and was alone in much of her world. She ultimately drowned in her bathtub due to ineffective epileptic medications that failed to address the cause.

Having a doctor like Dr Bjorndal would have raised my mother's happiness quotient and might well have saved her life. Given how many people are potentially affected by these issues, I hope you will take the time to read *Beyond The Label* and help those who are worth saving. For, ultimately, at the end of the day, all we have is love.

Just the FACTS

Title:	*Beyond the Label: 10 Steps to Improve Your Mental Health with Naturopathic Medicine*
Author:	Christina Bjorndal, B Comm, ND
Publisher:	Natural Terrain, Inc
Available from:	Barnes & Noble; Target; Amazon (widely available)
Pages:	379
Style:	Trade Paperback
Copyright:	2017
MSRP:	$11.50

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A Relaxed Person

JOSEPH KELLERSTEIN, DC, ND

Geraldo is 55 years old and of Spanish descent. He is tall and has an athletic build – an imposing presentation. His intake form does not list any chief complaint.

The Case

Geraldo speaks openly and comfortably:

"I am a relaxed person but I feel a kind of anxiety. I am getting older. I have worked for 30 years in the same firm. What's next? After all, my peers are retiring. Perhaps it is a question of being able to fill the time."

I asked him to describe his anxiety.

"It is a tension across the chest. It seems better when I am occupied."

He also gets pain in the hip region, which is worse from lying on the painful side.

Reflecting further on aging, he says, "It is always a concern that I will be left alone. Will I have enough money to support the family? This is major. I do see what it is like. My parents are older."

Geraldo continues: "I like it cooler, but in general I adjust to temperature well. It has not changed. I do sweat a lot from the armpits, going to work.

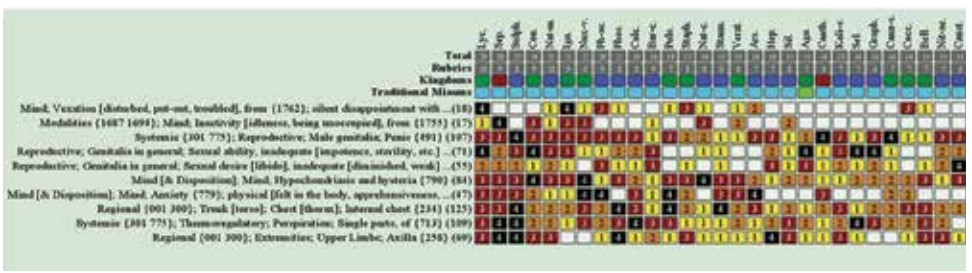
"My eating is routine, healthy. I have an aversion to slimy textures. I like salty flavors.

"In general, my nature is to show control. I am not emotional. I do not verbalize anger. I keep emotions inside.

"Some time ago my wife noticed a Peyronie's curvature in my penis. It is substantial. For the past year my sex drive has been down. I do not react as fast in sexual situations. My erections are not as hard. It seems to me that my penis is smaller. It is, however, very sensitive, and there may be premature ejaculation.

"For the past year, I've felt very tired despite good sleep."

Figure 1. **Repertorization**



(Source for repertorization: George Dimitriadis' edited version of the TBR2)

Repertorization & Remedy

The rubric "hypochondriasis" was used in my analysis, not because of undue concern over health, but rather in the broader meaning of great concern over his general condition and of preoccupation with his future.

Geraldo is very reserved with his emotions, in general, and especially when upset. He likes salt and is averse to slimy. This makes me consider Natrum muriaticum.

On consulting the chart, we see only 2 remedies that have all the features: Lycopodium and Nat mur (Figure 1).

On reading about Nat mur in Allen's materia medica, we find the following under "Systemic, Genitalia, sexual desire diminished":

Lack of erections (first day)

Voluptuous irritation suddenly while sitting, disappearing on walking about

The sexual desire was unusually weak during the whole proving

Coition weak; emission speedy, and rather cold (seventh day)

This sounds quite similar to my patient.

Plan: Natrum muriaticum 30C, 2 pellets once daily

Two-Month Follow-up

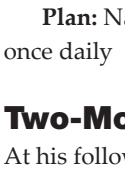
At his follow-up appointment 2 months later, Geraldo reported that his erections were definitely "better" and that there had been no premature ejaculation. He also reported increased stamina. Perspiration in the axillae was even far less. His tiredness had persisted.

Plan: Continue Nat mur for 2 more months and follow progress related to his tiredness

Closing Comments

This is a very routine case. And I think it demonstrates the immense utility of homeopathy in naturopathic practice. When practiced according to Hahnemann, nothing we do is actually more scientific than this. Nothing is more precise. It is evidence-based and more.

The trend we see these days towards marginalizing homeopathy in our schools is regressive and very harmful to our profession. In fact, it strikes at the heart of our holistic tradition.



Joseph Kellerstein, DC, ND, graduated as a chiropractor in 1980 and as an ND in 1984. He graduated with a specialty in homeopathy from the Canadian Academy for Homeopathy, and subsequently lectured there for 2 years. He also lectured in homeopathy for several years at CCNM; for 8 years at the Toronto School of Homeopathic Medicine; and for 2 years at the British Institute for Homeopathy. Dr Kellerstein's mission is the exploration of natural medicine in a holistic context, especially homeopathy and facilitating the experience of healing in patients.

Adjunctive Zinc for Major Depression

A Systematic Review of RCTs

GEORGI STOYCHEV, BSC
BALJIT KHAMBA, ND, MPH

Mental disorders are the leading cause of non-fatal disease burden, globally and nationally. It is estimated that 1 in 4 adults in the United States suffers from anxiety and depression disorders.[1] Major depressive disorder (MDD) is the most common type of depression, affecting 6.7% of the population in a given year.[2]

Depression is related to chronic disease. Clinical obesity raises the risk of developing MDD by 55%.[3] Individuals who are depressed are more likely to subsequently develop obesity, type 2 diabetes, and coronary heart disease.[3-5] MDD is also independently associated with poor treatment adherence, which is crucial to the success of naturopathic recommendations.[6-8]

The *Diagnostic and Statistical Manual of Mental Disorders* (DSM) sets diagnostic criteria for mental disorders in the United States. MDD is characterized by the following: (1) persistent low mood and (2) loss of interest or pleasure, and accompanied by somatic symptoms such as significant changes in (3) weight, (4) appetite, (5) sleep, and (6) cognition.[9]

The monoamine deficiency hypothesis is a widely accepted explanation for the pathophysiology of depression. Low levels of serotonin, norepinephrine, and dopamine are characteristic of depression, and replenishment with antidepressants improves symptoms in severe MDD.[10,11] However, minimal benefit is reported in mild-to-moderate depression.[12] This is further complicated by low response and remission rates and high recurrence ("treatment-resistance").[13-15]

Rationale for Using Zinc in MDD

Zinc saturates the hippocampus and the grey matter of the cerebral cortex.[16] In MDD, moderate-to-severe shrinkage of these areas is observed on imaging studies.[17,18] On a molecular level, zinc is a partial N-methyl-D-aspartate (NMDA) receptor antagonist, thus preventing the excessive neuron stimulation that may be present in MDD.[19] Individuals with depression have lower plasma zinc levels compared to healthy controls.[20] An earlier systematic review found adjunctive zinc administration with antidepressants to be beneficial in improving depressive symptoms; however, conclusions were limited by inadequately powered randomized controlled trials (RCTs).[21]

> Zinc is a partial NMDA receptor antagonist, thus preventing the excessive neuron stimulation that may be present in MDD. Individuals with depression also have lower plasma zinc levels compared to healthy controls.

Literature Review

In order to assess the effects of zinc compared to placebo as an add-on therapy to antidepressants for treating MDD in adults, we conducted a systematic-type review of existing research. Table 1 lists our criteria for selecting studies in our review. Consistent with an evidence-based medicine approach, we utilized a PICO approach in our analysis (**P**=population; **I**=intervention; **C**=control; **O**=outcome).

Search Methods

Seven databases were searched, from all years of record until January 2017 (Figure 1). The databases included the Cochrane Central Register of Controlled Trials, the Cochrane Database of Systematic Reviews, PubMed, Web of Science, Google Scholar, PsychINFO, and Trip. International trial registries, including ClinicalTrials.gov and WHO International

Table 1. **PICO Analysis & Eligibility Criteria for Review**

Category	Inclusion/Exclusion Criteria
Study type	RCTs with human subjects, published and unpublished ≥1 week English language studies
P (Population)	Men and women ≥18 years MDD diagnosis, with or without psychosis and other comorbidities, according to DSM-IV/V or International Statistical Classification of Diseases and Related Health problems, 10th revision (ICD-10)
I (Intervention)	Zinc as add-on therapy to antidepressants Excluded zinc as monotherapy or as part of multivitamin or mineral complex
C (Control)	Placebo as control
O (Outcome)	**Primary outcomes:** 1. Changes in mean score on depression scales, from baseline to end 2. Participant dropout rates **Secondary outcomes:** 3. Response (50% or greater reduction in depression score at study endpoint) 4. Remission (depression score within normal range at study conclusion) 5. Number and nature of adverse effects

Table 2. **Findings & Quality of Evidence**

Outcome	Number of Participants in Studies	Result (Zinc compared to placebo)	Quality of Evidence (GRADE)
Change in mean scores on depression scales	103 (3 studies)[24-28]	Zinc significantly superior	⊕⊕⊖⊖ low
Participant drop-outs	103 (3 studies)[24-28]	Non-significantly lower in zinc	⊖⊖⊖⊖ very low
Response rate	52 (1 study)[26,27]	No significant difference	⊕⊖⊖⊖ very low
Remission rate	52 (1 study)[26,27]	No significant difference	⊕⊖⊖⊖ very low
Adverse effects	52 (1 study)[26,27]	No significant difference	⊖⊖⊖⊖ very low

Table 3. **Completeness & Applicability of Findings**

Category	Comments
P	Studies conducted in Poland and Iran only Depression subgroups not considered Treatment-resistant subgroup explored in only 1 study Male-to-female ratio in studies matched depression gender distribution in general population No ICD-10-diagnosed depression; however, high concordance between DSM-5 and ICD-10[29]
I	Only zinc hydroaspartate and sulphate examined Limited classes of antidepressants used
C	Compared to placebo in all studies
O	Insufficient information on clinically relevant outcomes, eg, response and remission rates, adverse effects

Clinical Trials Registry Platform, were also searched for unpublished or ongoing trials. Reference lists were checked and experts in the field were contacted.

Data Collection & Analysis

One author independently conducted data extraction, risk of bias, and quality-of-evidence assessment. This was done through the Cochrane Collaboration's data extraction form, risk of bias tool, and the GRADE framework.[22,23] Studies were judged as high, low, or unclear risk of bias (Figures 2,3). Evidence for each outcome was graded as high, medium, low, or very low quality.

Three studies were selected for review. Most of these studies were determined to be at low risk of performance, detection, and attrition bias, unclear risk of selection bias, and mixed risk of reporting bias. Two trials ensured rigorous measures of minimizing bias overall,[24-27] while the third study had poor reporting of methodology and was ascribed unclear risk of bias for most categories.[28] The quality of evidence[23] for all outcomes ranged from low to very low (see Table 2).

Discussion

The quality of the evidence for every outcome was rated as follows: risk of bias, indirectness, inconsistency, imprecision, and publication bias. (See Table 3)

Points were downgraded for risk of bias (high for 2 categories), indirectness (only 2 countries represented), and imprecision (small sample size and number of events).

Biases in Review Process

- **Strengths:** Detailed search strategy; use of "gold-standard" methodology for data extraction, risk of bias, and quality-of-evidence assessment; multiple outcome measures; Cochrane Collaboration Group structure
- **Limitations:** No grey literature search; single study author (limits search, data extraction, risk of bias, and quality-of-evidence assessment); no meta-analysis; however, mini meta-analysis informed quality-of-evidence assessment

Agreement with Other Reviews/Studies

- **Similarities:** Similar PICO, eg, adults with MDD, zinc as add-on therapy, placebo as comparator, reduction in scores on depression scales[21]
- **Differences:** 2012 review also examined zinc in healthy adults and as part of multivitamins; this review included 1 new study[24,25]; more clinically relevant outcomes (Table 2); more rigorous and up-to-date methodology for risk of bias and quality-of-evidence assessment

Conclusion

Given the absence of moderate-to-high-quality evidence, firm conclusions about zinc as an add-on therapy to antidepressants for treating MDD cannot be made at this time. Further evidence from larger, higher-quality RCTs is necessary, with particular focus on adequate sequence generation, allocation concealment, handling of missing data, and avoidance of selective outcome reporting. Trials should encompass a variety of participants, settings, antidepressant subclasses, and patient-centered outcome measures. Healthcare professionals in mental health, including naturopathic doctors, should be mindful of zinc status in patients, given the higher prevalence of zinc deficiency in MDD, and address any imbalances found.

Healthcare professionals in mental health, including naturopathic doctors, should be mindful of zinc status in patients, given the higher prevalence of zinc deficiency in MDD, and address any imbalances found.

References 12-29 available online at ndnr.com

Acknowledgements: Thanks to Dr Dimple Radia, lecturer at London Metropolitan University, for her extensive support and supervision while conducting this undergraduate research project.

Figure 1. **PRISMA Diagram of Search & Study Selection Process**

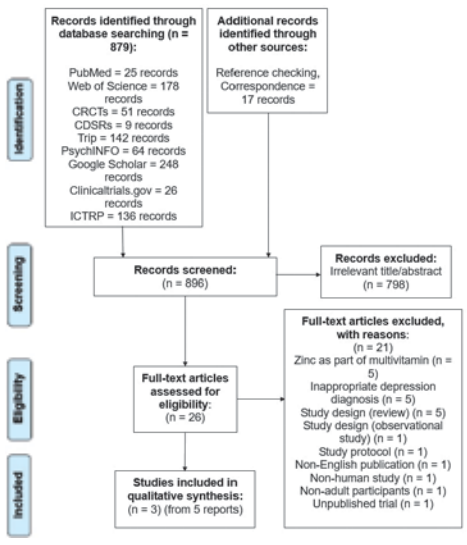


Figure 2. **Risk of Bias: Category Judgments**

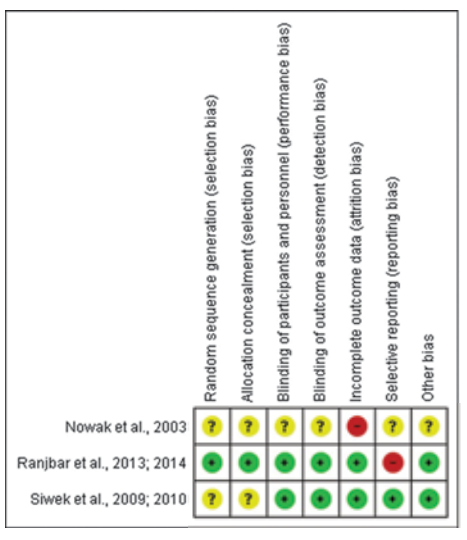
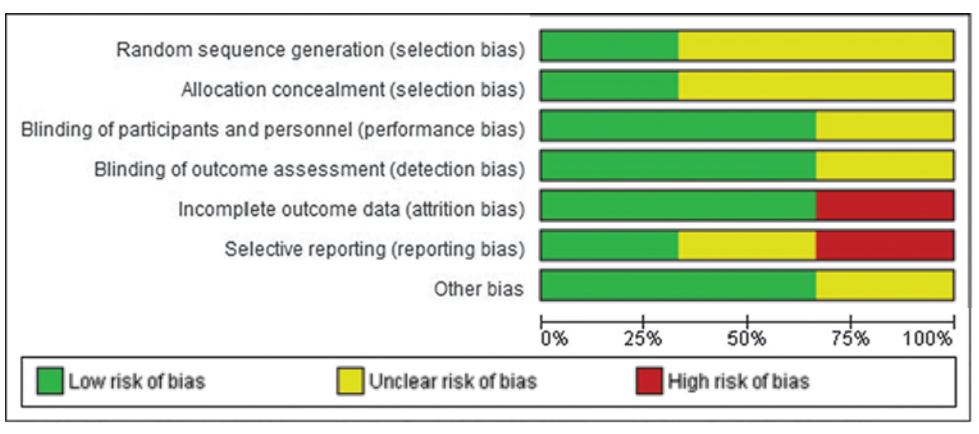


Figure 3. **Risk of Bias; Percentages**



Georgi Stoychev, BSc, is a dietetics graduate from London, UK; he obtained his BSc at London Metropolitan University. While working toward his dietetics degree, he was able to see a variety of patients with nutrition-related disorders. Presently, Georgi is a student of naturopathic medicine at Bastyr University California. He has a particular interest in naturopathic approaches to mental health. As part of broadening our understanding in this area, he stays abreast of research on naturopathic treatment options for mental health conditions.

Baljit Khamba, ND, MPH, is a licensed naturopathic doctor in California. Dr Khamba completed her (honors) Bachelor of Science degree (specializing in psychology), as well as her Masters in Public Health degree, at York University in Toronto, Canada. She received her naturopathic doctoral degree from the Canadian College of Naturopathic Medicine (CCNM), also in Toronto. She was also involved with research projects at the University of Alberta on natural health product safety. Dr Khamba is a member of the American Osteopathic Association of Prolotherapy Regenerative Medicine. Email: bkhamba@bastyr.edu

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CBD for Mental Health

PETER BONGIORNO, ND, LAC

Cannabidiol (CBD) oil is probably the coldest "new" supplement that is out there. Many of my patients have expressed both interest and concern about it. Besides wondering if it is the new wonder cure for their condition, they are concerned about its legality, its safety, and whether it could get them into some sort of trouble.

History & Lineage of Cannabis

Both marijuana and hemp plants are types of *Cannabis* plants. The medical benefits of *Cannabis* were probably first recorded around 2900 BC in the Chinese Medicine tradition. Historically, the plant has been a part of many cultures and nations, including the Jewish tradition, ancient Egypt, the Greek medical tradition, India, and Persia.

In 1762, *Cannabis* was mandated in the colony of Virginia for farmers to grow hemp, as it was a strong plant that had many uses, such as the manufacture of rope and clothing. In 1851, the United States Pharmacopeia (USP) recognized *Cannabis*, in the form of marijuana, as a useful medication. From the mid-1800s through the 1940s, *Cannabis* populated most pharmacies, to be used for a plethora of conditions, including epilepsy, migraines, and pain. The advent of medications like phenytoin, along with the oppression of natural medicine education by the American Medical Association and the Flexner Report[1] in the early 1900s, contributed to the burial of documentation supporting the use of *Cannabis* – a suppression that lasted throughout the 1900s. During World War II, the popular phrase "hemp for victory" caught on, for hemp had a multitude of industrial uses (although medicine was not one of them). Years later, hemp found its demise when synthetic nylon made it obsolete. Only recently, as states are becoming legal for marijuana use, has interest in the use of hemp for CBD become more common.

What CBD Oil Is Not

Some patients tell me, "I am not interested in CBD oil. I'm not interested in taking marijuana and feeling drugged all the time." As mentioned, *Cannabis* refers to 2 plants: marijuana and hemp. Although CBD, like other cannabinoids, is found in all *Cannabis* plants (ie, both hemp and marijuana), commercial CBD oil for supplemental use derives only from the hemp plant. Although marijuana and hemp are close cousins, supplemental CBD from hemp must contain less than 0.3% tetrahydrocannabinol (THC). THC is the psychoactive component of marijuana, the chemical that creates a euphoric "high." THC can also impair memory and coordination, increase a person's appetite, and contribute to paranoia in some people.

If your patient wants to take CBD oil to feel "high," he or she will be disappointed. But, if your patient is looking to improve mental health, the research I discuss in this article suggests that CBD oil might be a good choice. As a side note, hemp seeds and hemp oil, although very nutritive, contain no CBD and will therefore have no direct therapeutic effect on mental health. Any product labeled "CBD" is sourced from hemp leaves and other plant parts.

How CBD Oil Works

Like bioflavonoids, CBD is a chemical the plant makes for its own protection. CBD oil contains natural phytocannabinoids, which are fats that bind to cannabinoid receptors in both the brain and the nervous system throughout the body. Cannabinoid receptors have been found both in the central nervous system (CB1 receptors) and throughout the body (CB2 receptors) including on cells of the immune system.[2] Cannabinoids send signals to the body to calm the stress response, lower inflammation, and even reduce pain.

Endocannabinoids are the feel-good molecules our bodies naturally secrete when we feel safe or are doing something we love to do. Endocannabinoids are even found in breast milk, and are produced by the mother that is ready to feed her baby.[3] These natural endocannabinoids will calm the baby's system as it responds to the new world it is trying to understand (just another reason to support breastfeeding). CBD is a plant cannabinoid that appears to support our natural endocannabinoid system. While CBD has extremely low affinity for CB1 and CB2 receptors, it enhances the actions of the endocannabinoid, anandamide, by inhibiting its degradation.[4] It may also affect function of adenosine receptors, which play a role in cardiac arrhythmias and wakefulness.[5] CBD may bind to serotonin receptors.[6] It also affects vallinoid receptors, which regulate inflammation and pain[7] and will bind to nuclear peroxisome proliferator-activated receptors (PPARs), which play a strong role in areas such as energy, insulin regulation, metabolism, and proliferative mechanisms.[8]

CBD Clinical Research

CBD oil has been studied for a wide variety of health issues. Most of the research has been conducted using cell lines and animal

models. Cell research, for example, has demonstrated a protective effect of CBD on the endothelial linings of coronary arteries in hyperglycemic models, where it was shown to attenuate various inflammatory responses to high glucose.[4] Animal studies have revealed CBD's ability to protect beta cells of the pancreas, as well as to protect the eyes from diabetic retinopathy due to hyperglycemia.[9] In other animal models, topical CBD has been shown to reduce pain.[10] CBD has been shown in rat studies to prevent weight gain,[11] and shown in human subjects taking marijuana to suppress brain appetite centers and lower food cravings.[12] CBD has also modulated thermogenic dynamics by favoring conversion of white fat to brown fat.[13] There is also animal research suggesting benefits in arthritis.[14] Another animal study suggests that CBD may also have applications in reducing nausea and vomiting, due to its ability to agonize 5-hydroxytryptamine receptors.[15]

Recent human clinical trials indicate that CBD may have a significant anticonvulsant effect. For example, CBD was found to reduce seizure frequency and increase quality of life in pediatric patients suffering from treatment-resistant epilepsy.[16] A testament to its efficacy, in June 2018 the FDA approved the drug Epidiolex (an oral cannabidiol) for 2 types of epilepsy.[17] This includes patients 2 years and older, suggesting its safety for kids as well as adults. Recent studies suggest that CBD may not only help in palliative care, but also possibly function as an anti-cancer agent via direct anti-proliferative actions.[18]

Anxiety

A growing body of significant research suggests CBD oil can function as a strong component of a natural plan to alleviate anxiety. Strong preclinical evidence suggests positive mental health benefits of CBD oil that include decreased feelings of social isolation, improved autistic tendencies, and a lessening of posttraumatic stress disorder (PTSD) symptoms.[19] Some of the first studies examining CBD's possible anxiolytic benefit evaluated its ability to decrease the anxiety-producing effects of THC when patients smoke marijuana. Subsequent studies have looked more closely at this and found that CBD not only inhibits THC's anxiety effects, but also protects the hippocampus (a central brain region for emotion and memory) from long-term THC-induced neurotoxicity.[20] In a small human trial, CBD significantly reduced the social anxiety associated with a simulated public speaking test in healthy subjects.[21] CBD was found to affect the amygdala (fear center) and hippocampus (memory and emotion) areas of the limbic system – an effect that was considered comparable to the anxiety medications, ipsapirone and diazepam.

CBD has been found to affect the amygdala (fear center) and hippocampus (memory and emotion) areas of the limbic system.

Psychosis

This category of mental health disorders includes both schizophrenia and bipolar disorder, and represents the most challenging type of mental health disorder that a clinician can face. Interestingly, marijuana (containing THC) can induce psychosis, thus is not recommended for those at risk of psychosis.[22] Patients who are prone to schizophrenia are more vulnerable to psychotic breaks under the influence of marijuana.[23] CBD has been shown helpful to significantly minimize this effect.[24]

A 2012 double-blind, randomized clinical trial examined the potential benefits of CBD for psychosis in schizophrenics.[25] In this study, 40 patients were given either 800 mg of CBD or an antipsychotic. Both treatments improved patient symptoms, with no significant differences in effectiveness. The CBD group, however, enjoyed significantly fewer side effects commonly associated with antipsychotic medications, such as motor issues, hormonal fluctuations, and weight gain.[25]

In 2018, the *American Journal of Psychiatry* published a study that enlisted 88 schizophrenic patients with psychotic tendencies who were prescribed, alongside their existing antipsychotic medication, either 1000 mg CBD or placebo.[26] After 42 days, the CBD group showed minor improvements in cognitive performance (though not statistically significant) as well as significantly fewer psychosis symptoms (such as hallucinations, delusions, and paranoia).[26] The authors of this article suggested that because CBD did not appear to blunt dopamine's action (one of the main mechanisms of antipsychotic drugs), it may qualify as a new class of treatment for schizophrenia. The study's lead author, Dr Philip McGuire, was interviewed by the website Herb.co, and said the following:

> *[I]f trials of CBD as a monotherapy are positive, it would be reasonable to consider using it alone, particularly in patients in whom antipsychotic medication hadn't worked.*[27]

Safety of CBD Oil

It has been shown that CBD is very well tolerated and does not have psychoactive effects.[28] A major concern of drugs that calm or block pain is that these can often suppress the breathing centers in the brain stem. This is the common fatal effect that occurs in deaths from opioid medications. Since cannabinoids do not affect this part of the brain, this is not a concern for CBD oil (or for marijuana).

Since the 1960s, data have been collected regarding the safety of CBD oil. While dosing seems to vary greatly from clinical study to clinical study, a typical dosing I have gleaned and prescribe to my patients is usually in the range of 10-100 mg per day. At this dosing, CBD has been shown to have no side effects or toxicity. One small study of 3 schizophrenic patients who took up to 1280 mg/day of CBD over 4 weeks experienced no adverse effects.[29] The studies cited above examining patients with psychosis also did not note any major side effects. While the FDA still considers CBD oil to have no medicinal value, the World Health Organization's Expert Committee on Drug Dependence recently detailed a variety of conditions that may benefit from its use.[30]

CBD & Marijuana Drug Tests

The urine test for marijuana looks for THC's main metabolic byproduct (ie, 11-nor-delta9-caboxy-THC). Since CBD contains essentially no THC, there is supposedly little to no chance it will produce a positive drug test. Furthermore, the standard follow-up verification screen, (a gas chromatography/mass spectrometry test), is too specific to measure components from CBD as positive.[31]

Of course, if CBD is not manufactured as required from the lowest-THC varieties of hemp, then there could be an issue. There are companies that verify CBD as 100% THC-free. To be safe, it may be best to discuss this with your patient, especially if he or she is taking a CBD manufactured by a company you cannot verify for strict quality control.

Politics of CBD Labeling

From what nutraceutical company representatives have told me, it sounds like the newly approved CBD-based drug for epilepsy may change the nutraceutical game regarding CBD. The powers at large may try to regulate CBD as a drug and remove it from the market. Some companies are now choosing to sell "hemp" oil, and remove dosages of CBD from the label, which of course is not ideal for either practitioner or patient, both of whom need this information when using CBD therapeutically. Quietly, the Food and Drug Branch (FDB) of the California Department of Public Health released a fact sheet in July 2018, effectively banning hemp-derived CBD,[32] and other states are moving to regulate CBD like marijuana. Although not really enforced yet, the stage is set to effectively stop over-the-counter sales. While this seems absurd, remember what happened with red yeast rice when it was banned in 1998 by the FDA.

Conclusion

When treating mental health naturopathically, a comprehensive approach involves treating the whole person by addressing sleep, exercise, stressors, spirit, foods, hormonal imbalance, blood sugar dysregulation, genetic susceptibilities, and nutrient deficiencies, etc. In my practice, I have been using CBD successfully over the past few years with this approach, especially to help calm the stress response, support digestive function, and calm inflammation. I have seen that CBD as a monotherapy has significant value. As part of a comprehensive naturopathic approach, CBD will be a valuable tool that can help catalyze the tipping point your patients are looking for to feel better. Please also stay aware of the emerging politics surrounding CBD in order to maintain its accessibility and to make sure your practice does not suffer from any legal ramifications.

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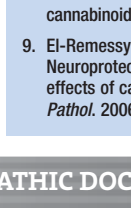

Peter Bongiorno, ND, LAc, is the immediate past-president and board member of the New York Association of Naturopathic Physicians. Dr Bongiorno authored the book, *How Come They're Happy and I'm Not?: The Complete Natural Guide to Healing Depression for Good* (Red Wheel); and the practitioner guide, *Holistic Therapies for Anxiety and Depression* (WW Norton). His newest book is *Put Anxiety Behind You: The Complete Drug-Free Program.* Visit drpeterbongiorno.com, InnerSourceHealth.com, and www.3UNeed.com, and join him on Facebook and Twitter @drbongiorno for updates on naturopathic mental health.

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Estrogen Dominance in Men

SERENA GOLDSTEIN, ND

We are now in a day and age where many of our concerns, such as heart disease, obesity, cancer, and autoimmune conditions, are due to a variety of causes and therefore require a variety of therapies. This is in contrast to around 100 years ago, when cure usually meant 1 treatment for 1 disease. A few decades into the 1900s, pesticides, hormones, and antibiotics were introduced into food. Several decades later, we now live more sedentary, stressed-out lifestyles that are contributing to a myriad of health concerns, including estrogen dominance. Over the past 30 years, testosterone levels in men have been declining.[1] This is most likely due to the rise in obesity over the past few decades,[2,3] since fat cells contain aromatase, an enzyme that converts testosterone to estrogen, and estrogen levels are positively correlated with body fat mass.[4]

A Brief Review of Hormone Physiology

Men naturally have both estrogens and androgens; however, for optimal function, they must stay in proper balance. Estrogen in men contributes to the growth and maturity of sperm, libido, bone health, cardiovascular health, and prostate health.[5] After the age of 30, testosterone levels slowly decline, partly due to increased aromatase activity and partly due to the fact that estrogen also binds to androgen receptors. This binding inhibits gonadotropin-releasing hormone (GnRH), which would otherwise tell the body to make more testosterone by increasing production of luteinizing hormone (LH) in the testes.

Estrogen is made in the adrenal glands, fat cells (adipose tissue), and testes. There are 2 receptors for estrogen – alpha and beta – with alpha exerting stronger estrogenic effects than beta. Alpha receptors are found in the prostate (stroma), testes (Leydig cells), epididymis, bone, brain, liver, and white adipose tissue, whereas beta receptors are expressed in the colon, prostate (epithelium), testes, bone marrow, salivary gland, vascular epithelial, and brain.[6]

Estrogen metabolites, such as 2-hydroxy (OH), 4-OH, and 16α-OH, derive from the parent hormones, estradiol and estrone. These 2 estrogens can convert back and forth to each other via hepatic hydroxylases, and are then prepared for elimination from the body by being metabolized through glucuronidation, sulfation, and/or methylation. The enzyme responsible for methylation – catechol-O-methyltransferase (COMT) – converts 2-OH-estrogen to 2-methoxy-estrogen, which is a protective form of estrogen. The metabolites 4-OH and 16α-OH are generally not regarded as favorable estrogens, especially in terms of cancer risk. Estrogen is bound to carrier proteins such as sex hormone-binding globulin (SHBG) and, to a lesser extent, albumin. Bound hormone is not active.

Sources of Additional Estrogens

Although the body employs quite a number of dedicated processes for keeping estrogens in balance, via production and metabolism, exogenous estrogens have become extremely prevalent in our society, especially through diet and environment. Significant dietary sources include estrogens added to meats and dairy.[7] Xenoestrogens, which bind to estrogen alpha receptors, are non-physiological compounds that can also evoke estrogen responses. They are present in diethylstilbestrol (DES), coumestrol (a phytoestrogen), bisphenol A (BPA), dichlorodiphenylethylene (DDE, a metabolite of DDT), nonylphenol, endosulfan, and dieldrin. They can interfere with endogenous estrogen actions and may also cause increased prolactin secretion.[8] These endocrine disruptors are prevalent in skin, cleaning, and beauty products; plastic food containers; orthodontia materials[9] (eg, clear aligners, retainers, adhesives), pollution; pesticides; and artificial preservatives. Research suggests that these environmental estrogens may be contributing to increased risks of testicular cancer, cryptorchidism, hypospadia, and decreased semen quality.[10]

Hormone Interrelationships

Hormones are pulsatile but are nicely regulated in the body. Although not extensively researched, progesterone may have a role in balancing estrogen dominance in men. Progesterone, which derives mostly from the adrenals in men,[11] is a precursor to both estrogens and androgens, and has an influence on testosterone production, sperm function, and several other functions in the body.[12] Estrogen (and possibly xenoestrogens) may be a driving force in prostate cancer, and progesterone has been proposed as a possible protective factor.[13,14]

Elevated estrogen can also contribute to obesity by increasing the concentration of thyroid-binding globulin (TBG), which binds thyroid hormone. Lower thyroid activity slows metabolism, leading to weight gain. Because aromatase in fat cells turns testosterone into estrogen, an increase in adipose exacerbates the problem.

Melatonin, our sleep hormone, can help counteract estrogen's actions. However, a stressful lifestyle, bright lights at night (including electronic devices), and dietary factors such as alcohol, sugar, and caffeine[15] can decrease melatonin production and therefore its protective effects. Melatonin has been found in animals to modulate steroid synthesis in Leydig cells (eg, increase testosterone production and inhibit aromatase activity), and may have similar effects in humans.[16]

COMT, the enzyme that converts estrogen into 2-methoxy-estrogen, is also responsible for degrading dopamine, norepinephrine, and epinephrine. Since COMT mutations may contribute to higher serum estradiol levels due to a less efficient degradation of estrogens, and because of its role in degrading catecholamines, variations in COMT may predispose individuals toward high estrogen and anxiety.[17] Needless to say, someone who's constantly anxious is not going to be sleeping well. Sleep also regulates the hormones related to satiety, so poor sleep can place people at risk of eating unhealthier foods, which can lead to weight gain and even insulin resistance – another factor possibly linked to elevated estrogen in men.[18]

Hormone Testing

Hormone testing can be performed using serum, saliva, or urine, each with its own characteristics. Blood is convenient in that it can also be used for other basic blood work (eg, CBC, CMP, vitamin D) that provides additional information about other factors that can affect hormone imbalance, such as blood sugar or thyroid issues. However, a blood test for hormones is only a snapshot in time. It also often only reflects total sex hormone levels, which don't differentiate between bound hormone and free (unbound) hormone. This means that hormone levels may appear normal despite the patient being symptomatic. Measuring "free" fractions of hormone and/or adding SHBG and cortisol-binding globulin (CBG; transcortin) can provide a more accurate picture.

Saliva and urine are great non-invasive tests that measure the unbound hormones, and the latter goes a step further to reflect hormone metabolites, as well as cortisol and melatonin. Salivary testing provides a more accurate read of the pulsatile nature of hormones relative to our diurnal rhythm. Salivary and urinary options can be limited by the amount of saliva made by the patient, or by significant liver or kidney disease; urine testing is also limited by dehydration or excessive fluid intake.[19] Genetic tests for MTHFR, COMT, SULT, and CYP can offer a more in-depth picture and understanding of various hormone metabolites.

Therapeutic Approach

The rise of estrogen dominance in men is likely strongly influenced by the presence of chemicals in foods and the environment that mimic the effects of estrogen. Encourage patients to strip their cabinets of chemical-laden products and to replace them with more natural and organic options. Also encourage them to reduce foods that contain estrogen or raise estrogen activity and to focus instead on the consumption of dark leafy greens and cruciferous vegetables that will help reduce estrogen and promote more optimal metabolites. Due to their selenium content (also a great nutrient for thyroid), indole-3-carbinol (helps promote production of the 2-OH metabolite), glucosinolate hydrolysis, and sulforaphane (binds, then inactivates estrogen), cruciferous vegetables are highly protective against cancer, possibly more than the total intake of fruits and vegetables.[20] Furthermore, crucifers' high vitamin and mineral content promotes competent phase 1 and phase 2 liver detox pathways that ensure the safe excretion of compounds.

Cholesterol is the building block of sex hormones, so healthy, cholesterol-rich foods should be encouraged. Vitamin and mineral-rich foods such as avocados can help support liver detox pathways including methylation; high-fiber foods can also help regulate bowel movements. Ground flax seeds (have weak estrogen content, promote healthy gut bacteria, and bind estrogen in the liver), nuts, wild-caught fish, and olive oil all help optimize production (provide nutrients for detox pathways and testosterone production, and promote healthy cell membrane function), as well as provide satiety and help balance blood sugar.

Recommend intake of high-fiber foods, such as vegetables, ground flax or chia seed, apples, legumes, and berries, in amounts of 25-30 grams per day for healthy bowel movements, since constipation allows toxins and hormones to recirculate in the body. Have patients aim for water intake that equals at least half their body weight in ounces. Encourage a regular bedtime, ideally before 11 PM, in order to optimize melatonin production, as most of it is produced between 11 PM and 3 AM.

Resistance training is an effective way to boost testosterone,[21] reduce body fat, increase basal metabolic rate, and improve insulin sensitivity.[22] Consider mixing it up with more vigorous-intensity exercise (eg, high-intensity interval training) to further reduce the effects of insulin resistance and promote weight loss.[23]

Supplements

Supplements to focus on for balancing hormones include those that act on hormone production and metabolism and which support hepatic health, as the liver is such an important organ in hormone health. Some specific supplements to consider include calcium-D-glucarate (inhibits bacterial beta-glucuronidase in the gut,[24] which would otherwise cleave estrogen from a bound molecule, allowing it to recirculate), saw palmetto (decreases 5α-reductase),[25] grapeseed extract (decreases aromatase[26]), and *Vitex agnus castus* (boosts progesterone). Support the liver with bitter herbs, as well as quercetin, alpha-lipoic acid, and N-acetylcysteine. Optimize 25-OH-vitamin D levels to around 40-50 ng/mL, and perhaps higher in patients with cancer or autoimmune conditions.

It's important to keep the big picture in mind when supplementing, as there may be other concerns, eg, sleep problems or mood issues, which could also be contributing to hormone imbalances and present themselves as obstacles to cure in balancing hormones.

Conclusion

In my practice, I've seen many men younger than 40 years of age with a testosterone level lower than that of men over the age of 40 or even 50. This likely reflects differing exposures in each generation. Our environment today is very different from our environment decades ago, which may necessitate greater attention to a health maintenance routine that can enable us to achieve health goals as well as live a long, quality life. Fortunately, many of the nutritional and lifestyle therapies described here help to balance hormones, while also helping to prevent a future recurrence of estrogen dominance as well as many other lifestyle-based diseases.

References available online at ndnr.com

Serena Goldstein, ND, is a naturopathic doctor in New York City who specializes in hormonal concerns such as weight, mood, stress, PMS, peri/menopause, and andropause. Dr Serena has been published in well-known health and wellness resources, such as MindBodyGreen, Consumer Health Digest, and the Hearty Soul. She has appeared on Sirius XM NYU Doctor Radio, and has lectured at Lehman College and the American Cancer Society. Dr Serena is also on the Advisory Board for Natural Practitioner Magazine and lends her expertise to fellow doctors at NYU-Hospital Poison Control Center. Contact Dr Serena at: www.drserenagoldstein.com.

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A Comparative Analysis of Gout

SUSSANNA CZERANKO, ND, BBE

Gouty subjects, who could find no relief whatever in medicine, were those that Priessnitz cured the quickest, however violent the disease.

Joel Shew, 1845, p.231

If patients have been ten, twenty, or fifty years getting sick, they want to be cured in a month, and often think it very hard if the water cure physician will not promise them a cure, of perhaps a life-long disease, in that time.

Mary Nichols, 1848, p.44

More than any other systemic poison, uric acid has probably figured as the originator of primary acute diseases in the human family.

Henry Lindlahr, 1910, p.461

Gout was common in the days of Vincent Priessnitz and continues to be. In fact, the prevalence of gout is on vthe rise. It has been increasing over the past 2 decades, affecting 5.9% of men and 2% of women in the United States. (Zhu, 2011, p.3136) Factors such as obesity and hypertension are likely contributing to the rise of gout. In this article, we will compare the treatments offered by Vincent Priessnitz and Sebastian Kneipp and the followers of both.

The etiology of gout has not changed over the centuries. In the 18th century, doctors attributed gout to the consumption of rich foods and alcohol. (Smith, 1723, p.36) John Smith writes almost 3 centuries previously, "Gout is generally caused by drinking [too much] fermented liquors and is never said to have assaulted any drinker of water." (Smith, 1723, p.12) An early Naturopath, Joseph A. Hoegen, attributed gout to excessive, rich, and albuminous foods, as well as to too little or poor nourishment. He adds, "The stomach is not in the best of condition, owing to the fact that the food is improperly cooked and not properly assimilated. Too many spices spoil the stomach, as does the use of strong wines." (Hoegen, 1916, p.125) Even today, food and alcohol are the first factors to be blamed for gout.

The symptoms of gout included pain, swelling, and redness of the skin. In the literature of the "Water Curists" of the 19th century, gout had many names, depending upon where the symptoms were found. Gout was called *chiragra* if found in the hands, *podogra* if found in the feet, and *gonagra* if the knees were affected. (Shew, 1845, p.230) In any case, gout is commonly localized in the lower extremities, especially the feet. Sometimes, however, the whole body shows symptoms.

Hoegen describes the typical gout patient: "Stout persons as a rule are troubled some time before the outbreak [of gout] with piles [hemorrhoids], poor sleep, palpitations of the heart, a feeling of fullness, loss of appetite, easy perspiration, thickened urine, etc." (Hoegen, 1916, p.126) Then the real pain of gout appears. Hoegen's description is rich with detail:

After the warning becomes more severe and oftener, the first gout attack appears in the form of a severe, boring pain in the ball of the large toe which swells, becomes red through inflammation, and also feels as if it contained a watery fluid. The urine becomes a deep red color and has considerable sediment. The pain can be so severe that the patient will tremble with anguish, perspiration breaking out on the forehead, the skin is hot and dry, and there is rapid pulse, great thirst and sometimes high fever. (Hoegen, 1916, p.126)

The Influence of Priessnitz

So effective were water-cure methods for gout that Dr Thomas Nichols thought it superfluous to write about cures of gout in his treatise. He writes, "The cases of relief are so numerous that there can be very few who have not had some within the sphere of their own personal observations." (Nichols, 1851, p.39) Nichols was a follower of Priessnitz and is credited with establishing in 1851 the country's first hydropathic medical school, The American Hydropathic Institute, with the help of his talented wife, Mary Nichols.

The practice of doctors in the 18th century was to recommend drinking copious amounts of water to alleviate gout pain. (Smith, 1723, p.37) Joel Shew, one of Priessnitz's most prolific students, wrote an introduction to John Smith's treatise, which was featured in the third volume of the *Water Cure Library* series. Shew reports, "The editor of *The Lancet*, about four years since, said: If we could always persuade a patient who consults us for the first fit of the gout, to drink water for the rest of his life, to take exercise, and to diminish by half the amount of animal food he is in the habit of taking, there would be but little chance of a return of the attack." (Shew, 1855, p.13) Shew's interest in hydrotherapy was instrumental in gathering historical treatises on the subject that were re-published in *Water Cure Library* publications.

In Volume III of the *Water Cure Library*, Russell Thacher Trall (1812-1877) provides his theories on the treatment of gout. He emphasizes treating the whole body rather than just the painful parts aggravated by gout. Trall followed in the footsteps of Priessnitz and opened up the pores of the skin with a sweating treatment, followed by cold water immersion. The whole body treatment is begun "by the sudorific process, or baths, to relieve that excessive irritability of the skin, which is the source of so much pain." (Trall, 1855, p.173) Another water therapy used by Trall

included douches, beginning with as much of the body that could tolerate the douche, and when the affected parts were able, to include the whole body. "Cold water must be drunk freely; the diet must be vegetable and scanty; much exercise in the open air, and friction, by rubbing and brushing the whole body, and of the affected parts particularly, are very necessary." (Trall, 1855, p.174)

One of Priessnitz' followers, Mary Nichols [1810-1884], specialized in gynecology using water cure. Her treatment of gout used Priessnitz' signature water application, the wet bandage. Wet bandages would be worn constantly on the affected part, and if the inflammation and pain were intense, the thickness of the linen compress would be greater. She used wet sheet wraps or packs, local cold water bandages, and fasting to cure patients. She writes of patient compliance: "The patient must have the same will as his physician, or he may undo a week's work or make it of no avail by one 'good' dinner or other excess, such as has caused his disease." (Nichols, 1848, p.104)

Warm water, considered to be equivalent to dead water, was not employed at Gräefenberg. Shew outlines the merits of cold water used by Priessnitz. He writes:

> *Priessnitz's method of cure unites all the advantages of the cure by warm water, without its inconveniences; like the latter, it attacks and raises the vitiated juices, and expels them from the system with advantage; it fortifies the system in hardening it, and by re-establishing the digestive functions; whilst warm water ruins them completely. (Shew, 1845, p.231)*

One of the cardinal features of the Priessnitz treatment plan was the sudorific process. "The process of strong perspiration is of the greatest importance in cases of gout, particularly for those who have tried other remedies." (Shew, 1845, p.232) Shew is referring to emetics, purgatives, and mercury that were destructive to the digestion of patients under allopathic care. Rausse compares water therapies with drawbacks of drugs:

> *The administration of medicaments is absurd, because it effects a suppression of the indications of reaction of the organism against the matters of disease, that is a suppression of the endeavor of the body to excrete the matters of disease; whereas the administration of water for the purpose of a radical cure, arouses the dormant (that is, mucous enveloped) matters of disease and brings them into immediate contact with those parts of the body endowed with organic life. (Rausse, 1851, p.11)*

The sweating blanket treatment was often combined with cold compresses placed on the affected parts. (Please refer to my June 2017 *NDNR* article on Priessnitz and his sweating blanket bath.) (Czeranko, 2017)

Shew explained that if gout is mostly in the lower extremities, "cold foot baths are a quick and powerful remedy. The water for the foot baths should be deeper than up to the ankles." (Shew, 1845, p.234) An important precept was that people with cold feet do not take cold foot baths. The feet must be warm. Those with cold feet were advised to wash their feet while applying wet friction to them in preparation for cold foot baths. This period might take a few weeks before the patient would be able to be exposed to cold foot baths. (Rausse, 1851, p.49) Sitz baths were prescribed for those with gout symptoms in the hips. Besides the various baths, bandages made of cold, wet linen cloths were wrapped around the affected parts.

CASE STUDY 1

A clergyman arrived at Gräefenberg with gout in his hands and feet so painful that he was unable to function. Fifteen days after he had commenced the treatment, boils appeared. The clergyman was suddenly called home during this phase of boils, a sign of the healing crisis and the disease resolving. He continued his treatments at home, and within 6 weeks all of his gout symptoms were gone and his asthma was completely cured. (Shew, 1845, p.238)

Kneipp's Gout Cures

Kneipp, although renowned for his short, cold water applications, also used warm water baths with herbal decoctions. To be clear, warm water used by Kneipp was only employed if herbal decoctions were added. Examples of herbs used by Kneipp included hay flowers, shave grass [*Equisetum arvense*] and oat straw. "The sitting bath with oat straw is an excellent bath for all complaints of gout." (Kneipp, 1896, p.52)

Kneipp saw gout as an unequal distribution of food to the body, that is, some parts getting an over-abundance and other parts not getting enough. Using an analogy from Nature, Kneipp writes, "What must be the consequence if the body by means of very nourishing and strengthening food is supplied with so much building up material as would suffice for the construction of two or three other bodies. Swamps (thick blood) will form in one place, bogs (bad juices) in another, and the bones will be encumbered by heaps of sand, lime and stones." (Kneipp, 1896, p.313)

Gout is very often associated with decadent overeating of rich foods that are only available to those with means and wealth, but in Kneipp's experience the poor were not spared. Some of the other causes of gout included "over-exertion, dampness and cold." (Kneipp, 1896, p.314) The poor willingly obeyed Kneipp's recommendations of water cure, unlike those of noble pedigrees, who were too often weak and cowardly. Here are some cases to illustrate the treatments used for people with gout.

CASE STUDY 2

Kneipp recounts a case of "a gentleman of high rank [who] had suffered from violent pain in his feet for about four weeks." (Kneipp, 1896, p.314) The man had undergone a sweating cure, which gave him temporary relief. The following year the gout returned, resulting in his being bedridden for 12 weeks. The sweating cure would imply that for the gentleman who used Priessnitz's sweating blanket bath, there had been no effect the second time, so he consulted Kneipp. The patient, eager to rid himself of gout, agreed to do anything and everything to rid himself of the affliction. In a few weeks, the compliant patient was free of all his pains and stayed well by periodically resorting to some of Kneipp's treatments.

CASE STUDY 3

A despaired priest consulted Kneipp and described his feet as "burning as if containing real fire." (Kneipp, 1896, p.315) Kneipp advised the priest to boil some hay flowers in water. The hot hay flowers were laid onto a linen cloth and the priest was to lay his feet on the hot hay flowers and wrap them up as a pack. "After two hours the hay flowers were to be re-dipped in the infusion, squeezed out and put on again. It is of no importance whether the hay flowers are cold or warm for this renewed application." (Kneipp, 1896, p.315) After the first few hours, the priest had improved, and in 2 or 3 days he was completely pain-free.

When pain lessens or disappears, Kneipp noted that patients often believed themselves to be perfectly cured. However, even with pain gone, Kneipp knew that the waste products and morbid matter still must be removed from the body. Thus, he cautioned his patients to continue with the water applications to remove all of the morbid matter from the body. To facilitate depuration and the removal of morbid matter, there were 2 additional water applications that gout patients would do after the pains were allayed with the wraps and baths. First, patients would be advised to use foot packs that were followed with the Spanish mantle 2 or 3 times a week for the first 3 weeks. (Kneipp, 1896, p.315) Additionally, Kneipp recommended warm baths, using either hay flowers or oat straw. (Kneipp, 1896, p.316)

Kneipp's motivational impetus, in his work as a priest who dispensed water cure for those in need, had an intractable commitment of service to his parish who were so often poor and lacking the means for basic necessities. Kneipp loved water and herbal remedies because both of these therapies were easily accessible and free for the taking.

CASE STUDY 4

In another case of a worker who suffered from severe gout, the suggestions made to him included herbal baths and herbal wet-sheet wraps. Two hot baths [104° to 110°F/40° to 43°C] made with pine sprigs were taken each week. To make an herbal sheet pack, a sheet was dipped into a hot decoction of oat straw that would be renewed and changed 3 times. This patient would have this hot herbal wrap twice a week. Additionally, each week this man had 2 cold water ablutions in bed. He regained his health in about 3 weeks and continued to do the water treatments. One week he would do an herbal wet sheet pack, and the following week a warm herbal bath. (Kneipp, 1896, p.316)

CASE STUDY 5

A case of a man who dug wells came to Kneipp with swollen fingers and toes caused by constant damp exposure. His treatment plan involved hot pine spring baths every other day, and every 3 or 4 days he had an oat straw sheet pack. During the night, his hands were wrapped up with boiled hay flowers. These simple water treatments restored this man so that he could return to work. (Kneipp, 1896, p.316)

Boiling in a Haystack

A poor farmer had incapacitating piercing joint pains and was unable to work. Because it was haying season, Kneipp told the man to go to his haystack, which was fermenting, and make a hole so that he could be immersed in the haystack with only his head protruding. He did as he was told, and within 15 minutes he was swimming in his own perspiration. The farmer had 6 hay baths over the next 10 days and was completely relieved of his pain. (Kneipp, 1896, p.316) The "hay vapor bath" is a novel treatment that had powerful outcomes. To maximize the benefits of a hay vapor bath, it was immediately to be followed by a cold half-bath with ablution of the upper body. (Kneipp, 1896, p.317)

Alexander Haig's Contributions

These examples indicate how frequently the Naturopaths of the early 20th century turned to Kneipp for an array of water-cure applications for gout. They also relied on Dr Alexander Haig, who wrote, *Uric Acid as a Factor in the Causation of Disease* (1892). Haig identified uric acid as a culprit for many diseases, and studied the impact of food. Haig's views of dietary choices in the 19th century are applicable even today: "Diet, as at present used, is the product of a vast amount of ignorance. It is the cause of a hideous waste of time and money; it produces mental moral obliquities, destroys health and shortens life, and generally quite fails to fulfill its proper purpose." (Brook, 1905, p.321)

Two book reviews of Haig's book by Harvey Brooks and Henry Lindlahr appeared in *The Naturopath and Herald of Health*. Lindlahr's interest in Haig's theories of uric acid confirmed his own on dietary contributions to disease. Haig identified coffee, tea, nicotine, and animal proteins as contributors to uric acid excess, one of the most common causes of diseases.

Haig divided uric acid diseases into 2 groups: Collaemic and Gouty. The *collaemic* diseases occurred when uric acid "circulating in the blood in large quantities forms a glue-like (colloid) substance, which clogs and obstructs the … capillaries." (Lindlahr, 1910, p.461) Blood backs up to the heart and the blood pressure rises. Lindlahr explained Haig's work: "This results in the congestion of the blood in internal parts and organs and in obstruction of the surface circulation. In such cases, the surface of the skin and extremities are cold and clammy, while the inner temperature may be above the normal." (Lindlahr, 1910, p.461) Symptoms of *collaemia* include "lassitude, headache, palpitation of the heart, irritation in the muscular tissues, etc." (Lindlahr, 1910, p.462) Uric acid in small amounts results in the symptoms described with colloid substance in the blood. A common symptom experienced by Haig himself – a 1-sided headache – was the impetus for discovering uric acid and its effect of causing high blood pressure.

Haig discovered that once the uric acid is increased and continues increasing, "the congestive and irritating symptoms [of collaemia] diminish and disappear." (Lindlahr, 1910, p.462) This contradiction has an explanation. Lindlahr continues, "The blood, which is a natural solvent for acids, loses its power of holding acids in solution when charged with them

As Lindlahr explained, the irritation caused by acid deposits is not just limited to the joints in gout, but can affect "chronic inflammation of the heart, kidneys [stones], stomach, intestines, ovaries, uterus and bladder."

beyond a certain limit. It will be seen that low amounts of acids in the circulation are normal, that higher amounts create collaemic symptoms, and that still higher percentages cause the precipitation of all the acids from the circulation into the tissues." (Lindlahr, 1910, p.462)

The Skin Test for Uric Acid

A simple test was devised by Haig to determine high levels of uric acid without resorting to chemical lab tests. "If a white spot is made by pressure with the finger tip on the back of the hand, the color will take from three to four seconds or more to return; while where there is no excess or uric acid in the blood, it may only take from one and a half to two seconds." (Brooks, 1905, p.321)

Uric Acid and Gout

The alkalinity of the blood is maintained by sodium, magnesium, and potassium, and prevents uric acid from causing damage by precipitating into the tissues and joints. "If alkalinity is too low, and acidity too high, then the 'Gouty' symptoms begin to manifest because high acidity completely overcomes the solvent power of the blood for acids and the latter become precipitated from the circulation into the tissues and joints." (Lindlahr, 1910, p.462) In other words, if uric acid is higher than what the blood can neutralize, then over time uric acid deposits into the joints that become well known as gout and rheumatism, and can affect all of the organs. As Lindlahr explained, the irritation caused by acid deposits is not just limited to the joints in gout, but can affect "chronic inflammation of the heart, kidneys [stones], stomach, intestines, ovaries, uterus and bladder." (Lindlahr, 1910, p.462)

Naturopathic Treatments

Carl Strueh provides a simplified and readily understandable explanation of gout: "A considerable number of persons will store up the surplus of food in the form of fat, while others who do not possess very active eliminating organs will retain the half digest food as uric acid." (Strueh, 1908, p.177)

The objective of naturopathic treatment of gout was first to dissolve the salts of uric acid in the tissues. Benedict Lust explains the procedure: "The sole logic and natural way of treatment to effect a dissolution of the uric acid salt deposits can consist only in artificially inducing the same process to take place again, but this time in the reverse order." (Lust, 1903, p.90) To prevent the formation of new uric acid, a vegetarian diet was the first step. Gout caused by too rich of a diet was countered with one that increased the consumption of vegetables. "The following articles must be completely eschewed: eggs, cheese, legumes, heavy farinaceous foods, too rich and especially heavily spiced meats; then also, wine, beer, coffee, chocolate, spices of all kinds, sour fruit and acid foods." (Lust, 1902, p.349) To aid the blood in dissolving uric acid salts, higher temperatures were used. Lust used the same treatment that Kneipp had used: warm hay flower bandages. "After the removal of the bandages, it is very advisable to give a cold local application, either by an ablution or by a cold local gush." (Lust, 1903, p.91) Hoegen included similar treatments used by Lust and added, "hot full baths, dry heat baths, and Epsom salts baths are very beneficial in eliminating poisons from the body." (Hoegen, 1916, p.126)

Gout, as a topic in the Lust publications, does not resurface for 10 years. Dr Schoenberger outlines his treatment protocol for acute symptoms of gout: absolute rest, and evacuation of the bowels followed by a 24-hour fast with copious amounts of water to drink. Inflamed parts are wrapped in hot poultices, followed by hot showers and salt water rubs and massage. He provides instruction for galvanic current: apply the anode to the inflamed joint and the cathode to a healthy spot of the body. (Schoenberger, 1926, p.390)

Gout as a disease has existed for centuries, and although the science of Haig's research would confirm that diet was indeed implicated, the early practitioners of Water Cure and Naturopathy had simple methods providing relief for many suffering from this recurrent and painful condition.

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Sussanna Czeranko, ND, BBE, graduate of CCNM, is a licensed ND in Oregon and has developed an extensive armamentarium of traditional nature-cure tools for her patients. Especially interested in balneotherapy, botanical medicine, breathing, and nutrition, she is a frequent presenter. As Curator of the Rare Books Collection at NUNM, she has completed *Hydrotherapy in Naturopathic Medicine*, the tenth book of the 12-book series in the Hevert Collection. Her next large project is the completion of her new medical spa, located in Manitou Beach, Saskatchewan – a magical, saline lake. Come join her for the Inaugural "Finding Our Roots Again Retreat," August 2019.

Shifting East

Naturopathy Recalibrates

DAVID J. SCHLEICH, PHD

Naturopathic medicine is a profession that is busy crafting and holding space in an expensive, eschewing healthcare landscape where orthodox allopathic medicine holds the key cards. It is also an idea, though, quite unlike biomedicine, rooted as it is, epistemologically, in biology; rather, naturopathic medicine pays attention to the non-material elements in health outcomes, understanding the need for the mind and the spirit to have as much shelf space in protocols and therapies as in chemical pathways and symptoms. Lately, biomedicine has adopted "Mind-Body," not only into its parlance but also into its billable hours, despite having been its detractor in living memory. Such is the arrogance of a controlling clan.

There is no credible rival to naturopathic medicine (in terms of comprehensive care and life-long well-being). It is one of this continent's best answers to the horrific challenges of chronicity and healthcare services cost. If it were just a matter of muscling through the biomedicine-controlled turnstiles of Medicare, these days would be cause for cheer, given the tangible, steady progress on so many fronts: more and more states with a regulatory framework for naturopathic medicine, improved regulatory frameworks, accredited education and professional preparation programs, and, above all, growing public interest and trust in things natural. Alas, the truth is, as usual, happy and unhappy at the same time.

A More Level, Less Level Playing Field

Overall, the playing field for acceptance of naturopathic medicine, especially its educational preparation standards and performance in North America, is becoming more level and less level at the same time. As Roszak put it, back in 1969, in his classic, *The Making of a Counterculture*, the dominant market players assimilate what is usable from what is new. Except that naturopathic medicine is not new. In a milieu where assimilation accelerates, even for naturopathic doctors for whom the chances for a successful clinical startup are increasingly stressful in a context of "integrative" and "functional" and "holistic" allopathic medicine, the payoffs feel not so very different from a regular salaried gig at the local multi-discipline MD's clinic or in a regional system with dollops of the natural in the brand.

In living memory there are many developments which tip to optimism about the growth of naturopathic medicine. Even though there are events that worry us, such as the recent derogatory polemic of a former ND (which had, for a while, wide circulation on the web), or the decision by MUIH and SCUHS to not start new ND programs before the end of the decade. Even so, the launch in recent history of organizations focused on integration and a more patient-centered approach to care – such as the Academy of Integrative Health & Medicine (AIHM) just a few years ago, or the American College for the Advancement of Medicine (ACAM) a few decades ago – bodes well for inter-professional respect. The data show that the overall trend for our medicine is growth. Since 1978 the number of programs and students has grown, despite the current (likely) half-decade slump in the matriculation pool. Persistence and graduation rates are strong and holding. Loan default rates are minimal in the ND field among graduates.

Persisting Enigmas in Mainstream Medicine

Mainstream biomedicine leaders know that their epistemology and reductionist gestalts have limitations that are not cryptic; in fact, they were foretold by pioneering naturopaths a century back, who were as befuddled then as modern naturopathic physicians are today by the enigmatic political and media responses to, say, iatrogenic disease, or the latest pharmaceutical damage (eg, massive cost to the nation's treasury and to the family budget; or opioid over-prescribing, to name just 2). Notwithstanding conflicting projections and the ambiguities of allopathic detraction concerning the scientific validity and clinical effectiveness of naturopathic medicine, we are systematically forming a profession which should have had better legs by now (the better to stand up with, the better to run with), but whose muscles are stronger by the year and whose agility is improving.

Accompanying this confusing tension are the vicissitudes and steep, unforgiving learning curves associated with accessing the bounty of key mainstream organizations such as the National Institutes of Health (NIH), Medicaid, Medicare, the Match, and other health-funding systems. The NIH is fair game for us to flex our new muscles, particularly since its funding is increasingly available to the worthy and the organized. If we are to persist, research and publishing constitute an essential leg of professional formation.

Meanwhile, there are intermittent and remarkable flares which call attention to one of the many roots of the problem of interrupted and repressed access to naturopathic medicine; that is, the discriminatory lack of insurance coverage for CAM/Integrative Therapies. As a case in point, Mathew Bauer (President of the Acupuncture Now Foundation) took note of this wretched disparity and took the time to check out the CDC's opioid investigation, as a case in point, and discovered just how little there was. (Weeks, 2016)

Central to the whole cascade of factors affecting the future of naturopathic medicine is education. Where strong schools emerge and thrive, the profession grows. The data tell us that this has been the case and continues to be so. Where branding of naturopathic medicine is consistent and generated by excellent spokespersons, the profession grows. Where the accreditation track record is stable and reliable, the profession grows.

A central question in our time is: where is the growth likely to happen? After Flexner, in the first 2 decades of the last century, the medicine took up refuge in the Pacific Northwest and persisted. Back in the heartland of America and in the Northeast, things fizzled. Only Connecticut hung on after the hopeful days of the early 1920s.

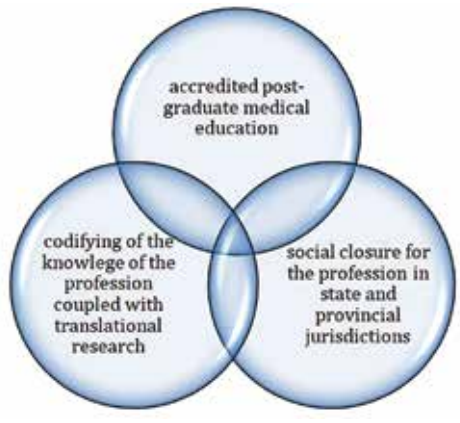
Going Back to Where It All Started

Even though the literature shows that Naturopathy began with Lust and others in New York and migrated to the Midwest with other champions, historically the largest concentrations of licensed naturopathic doctors have been along the North American west coast, curling like a backward "J" over into Arizona and Utah. Significantly, strong schools have existed in these latitudes and longitudes for decades: NCNM, John Bastyr College, and Southwest College. By 1978 OCNM had begun back in eastern Canada, and the growth of the profession in southern Ontario was stimulated. This has not occurred in French-speaking Quebec. There emerged, though, a program at Bridgeport University in Connecticut in the late 1990s, again with incubational results. The number of naturopathic doctors in the Northeast began to stabilize and grow, such that by the beginning of the second decade of the new century, a shift east in terms of potential and enduring growth rates was palpable. At Boucher Institute, out on the Canadian west coast in Vancouver, another program began also in the late 90s which has added to the growth in the Canadian West. The accumulation of new programming, then, grew the number of naturopathic doctors, stimulated accompanying legislative efforts, grew public awareness, and incubated energy for growth elsewhere.

Today, though, there is another concentration of naturopathic doctors emerging in the heartland and in the Northeast that is exciting, promising, and inevitable. The aggregate population of the region is in excess of 37 million people. The Great Lakes (H.O.M.E.S.: Huron, Ontario, Michigan, Erie, and Superior) touch Ontario, Minnesota, Wisconsin, Michigan, Illinois, Indiana, Ohio, Pennsylvania, and New York. This area of North America contains 20% of the world's fresh water supply and is the continent's most powerful economic engine. At the same time, the Great Lakes Basin is one of the planet's most environmentally sensitive zones. The presence of over 2000 NDs in the Great Lakes area is exciting and signals a shift. What has long been a north-south axis, is now becoming an east-west one. There are more naturopathic doctors, more naturopathic students, more clinics, and more demand for naturopathic medicine in the Great Lakes Basin than ever.

In any case, critical to the professional formation of naturopathic medicine in North America is a collaborative, coordinated approach which has to include the 3 key legs of professional formation: *social closure* for the profession (licensing), *accredited schools housing accredited programs* (preparation for entry to practice that is housed in post-secondary and post-graduate education), and *research* (codifying the content of the profession's knowledge and practice) (Figure 1). When these dimensions of professional formation are strong – and are accompanied by strategic attention paid to preparatory and continuing medical education, naturopathic services public education, regulatory lobby efforts, enhanced licensing, registration, certification, and scope expansion efforts – the numbers of NDs rise arithmetically and will not abate, despite the best efforts of biomedicine to stall and stop all competitors.

Figure 1. **The 3 Pillars of Professional Formation**



The actual largest concentration of licensed NDs in the world is in Ontario, Canada, although the American Southwest is growing rapidly as well, in sheer numbers. Longer term, however, the Great Lakes heartland and the Northeast will overtake those West Coast and Southwest numbers. Oregon and Washington are growing too, but at rates slower than has been the case since the early 1970s.

There are strong ND programs in the Great Lakes (NUHS, CCNM) and in the Northeast (UB). We need to generate 2 more schools quickly – one in New York or Pennsylvania, and one in Maryland or North Carolina to consolidate this trend and benefit from the strong growth in population and economic strength.

Factored into this equation, too, are recent successes in licensing in Pennsylvania, with Massachusetts, Maryland and Rhode Island nearby. Note, though, that there are recent successes in Minnesota, North Dakota, and Colorado too. Add in continuing modifications and enhancements to that legislation (eg, California, Oregon, Washington, Utah) and there is little doubt that, overall, the profession continues to form, and not recede. Consumers find licensed naturopathic doctors practicing in professional clinical teams at medical centers all over the place these days. Twenty-eight prominent health systems, hospitals, and cancer treatment centers employ 1 or more licensed naturopathic doctors. These trends are strong and will persist because the fundamentals are already in place.

David J. Schleich, PhD, is president and CEO of the National University of Natural Medicine (NUNM), former president of Truestar Health, and former CEO and president of CCNM, where he served from 1996 to 2003. Previous posts have included appointments as vice president academic of Niagara College, and administrative and teaching positions at St. Lawrence College, Swinburne University (Australia) and the University of Alberta. His academic credentials have been earned from the University of Western Ontario (BA), the University of Alberta (MA), Queen's University (BEd), and the University of Toronto (PhD).

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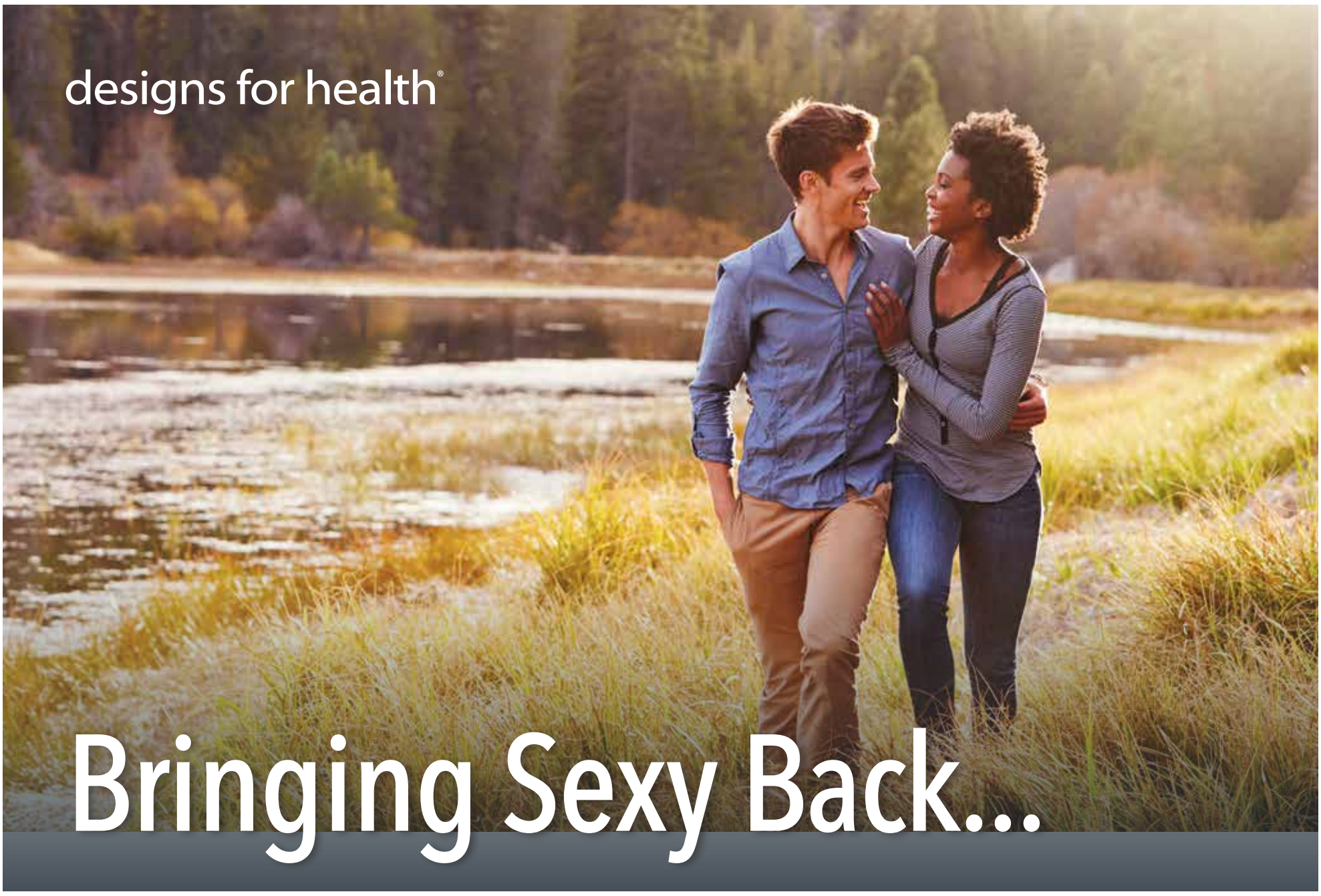

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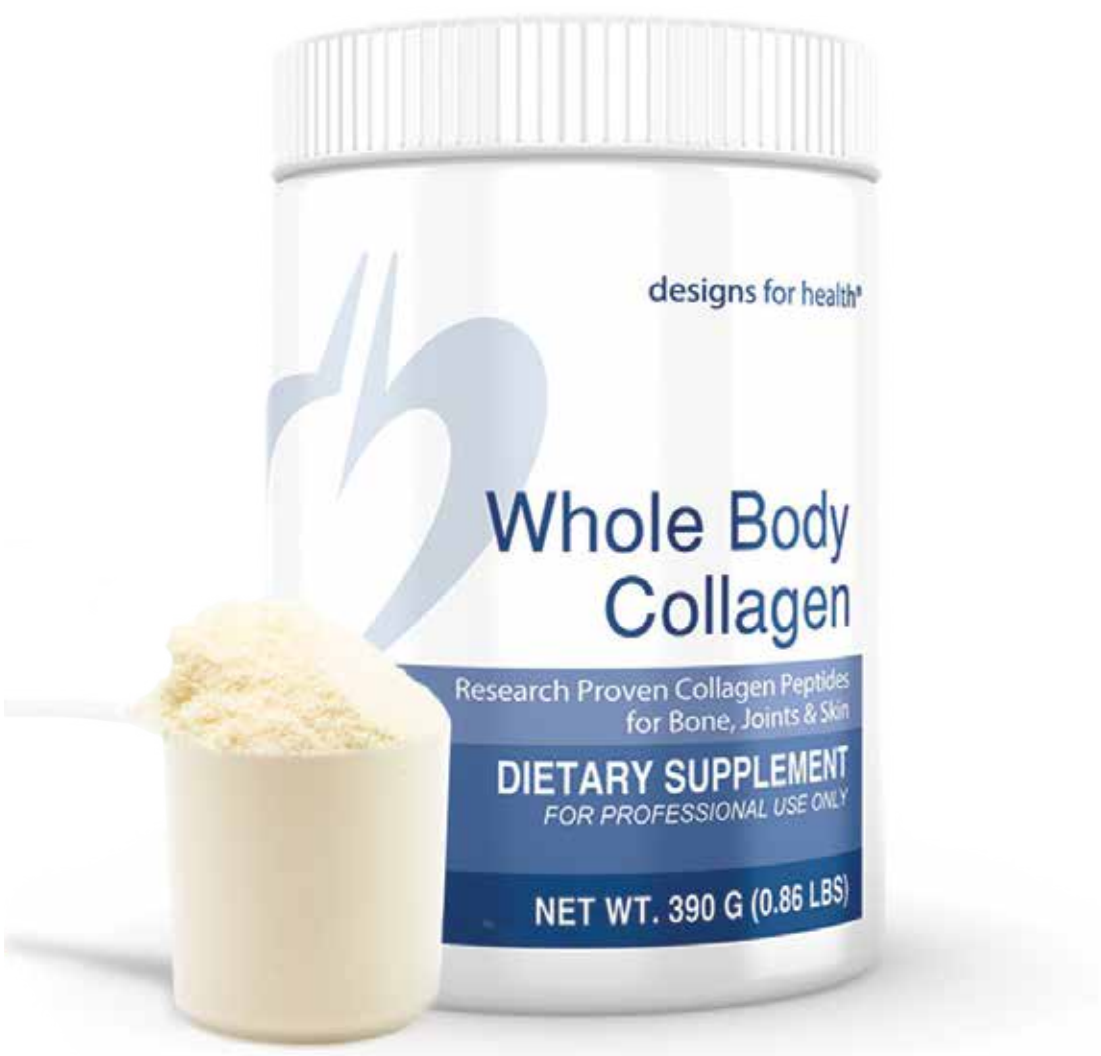

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