It encapsulates our vision; that truly there are no boundaries.
Each of us travel a unique path and can come together to create.
Endless possibilities and potentials exist. The sky is no limit!

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e-magazine

Our cover is suggested by
Dr. Mansoor Ahmed

C O N T E N T S

Connecting the Educational and Clinical Essentials”

DEAR WORLDWIDE COLLEAGUES

Healthcare Worldwide Central e-magazine is an international e-magazine dedicated to publishing high quality articles, review articles, case studies, surveys, commentaries, news, interviews, reports, ethics, pharmaceuticals, and bio-ethics in Healthcare.

This magazine welcomes worldwide contributions. The intention is to distinguish forthcoming vision in the worldwide community. This is an Educational and Clinical

Essentials Community Service Magazine with a Worldwide cooperative reach. The e-magazine is published on a quarterly basis. There are four categories for clear, concise, educational and clinical essentials:

Announcements | Featured Articles | Insight Perspective | Clinical Corner

Please enjoy this issue.

The Featured Article, by Ronnie King, CPhT, offers “Bureaucracy a Debate to Healthcare a Real Concern”. Nutritional supplements, herbs, essential oils, and products used for homeopathic, complementary, or alternative treatments/medicines have been around for years. Initially (1920's) dietary supplements….read more.

Angels Behind the Scenes in Transplant Surgery presents the dedication and expertise of the physicians who carefully prepare patients for organ transplant, and the precise genius of the surgeons performing what is maybe, “just short of a miracle”…read more.

Clinical Corner, **Vitamin B12 Deficiency and Cognitive Decline,** expresses views we gratefully acknowledge from the author and do not represent the views of RxEconsult, LLC.

Healthcare Worldwide Central provides quarterly educational and clinical essentials.

Best wishes,

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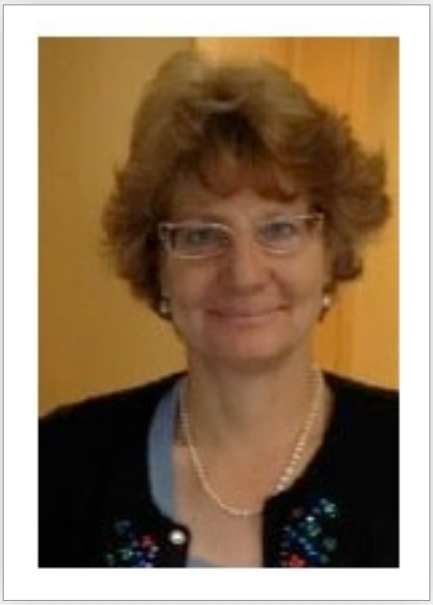

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Mission...

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The mission of Healthcare Worldwide Central e-Magazine is to unite the community for professional collaboration and subject-matter expertise.

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Thank you for introducing and offering a unique opportunity for us to be of service.

Featured Article

To Bureaucracy a Debate
To Healthcare a Real Concern

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INTRODUCTION

Nutritional supplements, herbs, essential oils, and products used for homeopathic, complementary, or alternative treatments/medicines have been around for years. Initially (1920's) dietary supplements or at least those marketed as such in the U.S., consisted of cod liver oil products for their concentrations of vitamin A and D. It wasn't long before the FDA started questioning discrepancies in the amounts of these vitamins that the products actually contained, and what was stated on the labels.
Countless debates between FDA and manufacturers disputing accurate labeling facts lasted for decades, and continue to this day.

It is NOT the intention of this author to argue the significance or the concerns of either the FDA or the manufacturers in regard to the production and marketing practices of supplemental products.

During the years of debates and numerous legislative actions, concerning how nutritional supplements are labeled and marketed; the number of establishments manufacturing and marketing these "self-care" products has grown exponentially. The numbers of products have reached the tens of thousands (from Acai to Zinc), and the range and number of people using these products has been estimated to be 30% to 70% of North Americans, including children and adults.

What do you think? Should Drug-Supplement Interactions be a concern?

The purpose of this article is a "Call to Arms", if you will, to pharmacy workers or all conventional healthcare professionals. "**Drug-Supplement Interactions ARE a Real Concern"**. Once more, due to the numbers of products and people using them, "**The Potential for Drug-Supplement Interactions is Huge"**. Consequently, we as healthcare providers cannot become complacent**!** We can NOT assume patients are aware of all the possible interactions between the drugs they are prescribed and the supplements they are taking simultaneously, or that the prescribers of their medications are aware of the additional supplements their patients are taking for that matter.
Additionally, the software used in most pharmacies today to prevent interactions, cannot be relied upon as the only precaution.
The following information is offered as tools to help identify supplemental products more commonly at risk for potential interactions with certain drugs, categories of patients at a

higher risk for drug-supplement interactions, as well as tips on how to help your patients to prevent possibly and unknowingly harming themselves.

What Exactly is a Dietary Supplement?

FDA defines a "dietary supplement". Through legislation passed in 1994, The Dietary Supplement Health and Education Act (DSHEA), a dietary supplement is: "…a product (other than tobacco) that is intended to supplement the diet that bears or contains one or more of the following ingredients: a vitamin, a mineral, an herb or other botanical, an amino acid, a dietary substance for the use by man to supplement diet by increasing the total daily intake, or a concentrate, metabolite, constituent, extract, or combination of these ingredients."

DSHEA determines how supplements are marketed on the shelves. Unfortunately, our patients/customers assume; because a product is attainable, marketed, and available, it is automatically guaranteed to be of good quality, safe, and effective. This assumption could not be more untrue.

So just how are **supplements** regulated differently? Before a **drug** is marketed, manufacturers must conduct research to determine both safety and effectiveness. Not so with supplements. As a result of DSHEA, it is up to the FDA to prove a supplement is **Unsafe,** before it might be taken off the shelves. We are talking about tens of thousands of products. Here in lies the challenge, though FDA must be notified of new ingredients in a supplement product differences include:

- 1) Proof of safety is not required
- 2) Proof of effectiveness is not required, and
- 3) Post-marketing surveillance is not required, and GMP's are "in development", according to the FDA.

Still, FDA considers DSHEA "adequate" to protect public health in relation to unsafe dietary supplements. Examples of actions taken by FDA supporting these considerations are removal of all; 1.) ephedra-containing products, 2.) supplements that act like "illegal steroids", and 3.) Supplemental products containing "pharmaceutical ingredients".

In addition, there are restrictions to what manufacturers can claim their products "do".

- No claims can be made; to treat, prevent, or diagnose medical conditions.
- Supplements restricted to; "structure/function" claims.
- Able to claim limited **affect** to some structure or function of the body, or
- Can claim nutrient content levels.

***Still many unreliable claims, unmentioned ingredients, and dangerous adulterants exist with unsuccessfully regulated, yet marketed "dietary supplements".**

***Drug substances, products, dietary supplements, and all exipients (inactive ingredients used as medium in a product) stocked in U.S. Pharmacies, according to U. S. Law; conform to the standards of official compendia;**

"The United States Pharmocopeia (USP)" and "The National Formulary (NF)"

Today, DSHEA requires FDA to find safer manufacturing practices and are presently being developed.

Why are some patients more of a concern than others?

Our **seniors/elderly** are probably the fastest growing population taking the largest number of prescription drugs individually. It is also estimated that 30% of this population in addition to taking many drugs take at least one supplement. Taking large number of drugs in combination with supplements make seniors at risk for having a drug-supplement interaction that is much higher. Simply age is a big factor in how drugs or supplements are absorbed in a patient. Elderly patients tend to have more chronic illness which increase the chances of both drug-drug and drug-supplement interactions.

If age is a consideration, it stands to reason and is known that **small children** are at a higher risk as well. Many children are born with illnesses or deficiencies and therefore may be taking medications as well as dietary supplements. We of coarse know about wt/dose issues. It is one thing if children are prescribed dietary supplements and another if parents are just purchasing them as a precaution.

Another group of patients at a higher risk might be **post surgery patients** (orthopedic, organ transplant, etc.) These patients tend to be on multiple prescriptions and are often cautioned about taking supplements/OTC with their medications. Being aware of patient medical history is important; the reality is, in the aforementioned groups, even more precaution and observance of their actions might make a drug-supplement interaction less likely. General considerations for patients' drug-supplement interaction risk might be:

- Allergies
- May interfere with blood work
- Gender (Pregnancy)
- Medical history (interactions w/disease or conditions)
- Therapeutic duplication
- Pharmacokinetic interactions

FYI The Science (Understanding how it works)

Previously we talked about rate of absorption in the elderly or the weight of a child making a difference in how drugs or supplements are affective. More specifically the mechanism of interactions between drugs and supplements can be explained as either: ***pharmacokinetic***

or pharmacodynamic.
1.) Pharmacokinetic interactions: (ADME), kinetic=movement; alterations in the movement of a drug through the body.

- Absorption
- Distribution
- Metabolism
- Elimination

2.) Pharmacodynamic interactions: where interactions are predicted based on pharmacology of the drug and supplement, dynamic=action, changes due to the action of the products

- Oppositional (products have opposite activity)
- Additive (both have same activity)

Both additive and oppositional interactions can be an issue. Additive interaction may result in too much of an ingredient, opposite interactions could decrease the effectiveness of a certain ingredient. Great amounts of information on drug-supplements have not been recorded, but it is important to know, the severity of those interactions known, can range from:

- Insignificant (affecting drug levels, no clinical impact) to -
- High (death, severe harm)
  Other criteria by which known interactions are rated are:
- Likelihood of occurrence
- level of evidence (how much, or what type of research/trial)

Drug-Supplement Interactions FYI

There have been minimal studies done on drug-supplement interactions. Most of the studies that have been done have been in utero or in animals. The actual number of reports of interactions to FDA is minimal. Approximately 1600 plus drug-supplement interactions exists in a system (database) with the criteria spoken about above. This standard is called the **Natural Medicines Comprehensive Database**. Below are some of the better known drug-supplement interactions.

Consider the following; if just one supplement **Ginko** has the possibility of interacting with at least, the following medications mentioned, imagine the number of possible interactions with all drugs and all supplements.

(Example):

Ginko - taken with:
1.) **Warfarin** (Coumadin) - This combination is considered to have

- A **"Major"** interaction rating.
- The **severity** of the interaction is **"High".**
- The **likelihood** of this interaction happening is **probable**

Besides anticoagulants, incidences of bleeding have been reported when;
Ginko has been taken with:

2), **Antiplatelets**

- NSAIDS
- Plavix (clopidogrel)
- Aspirin

Seizures have been reported in people who were otherwise controlled when:
Ginko was taken with:

3). **Anticonvulsants or Seizure (threshold) lowering drugs**

- Tegretol
- Antibiotics
- Penicillin
- Antidepressants
- Bupropion
- Antihistamines

Any of these combinations with Ginko has the potential to be **"High".**

Other drug-supplement interactions to be aware of are:

- **Oral anticoagulants fish oil**
- **Cardiovascular medications St. John's wort**
- **Psychiatric medications Ginseng**

Helping Patients Receive Optimal Drug-Supplement Therapy Outcomes

It is accurate to say, the heading above is the goal of all healthcare professionals responsible for performing any task involved in the overall medication management of a patient. In this article we are concentrating on the concern of potential drug-supplement interactions. More specifically at the point of dispensing, how does "pharmacy" assure the patients best possible drug-supplement therapy outcome. Some general tips may be:

- Recalling as a practice regularly, the range, the magnitude and severity of known or unknown potential drug-supplement interactions is a reality.

  ✓ *Tens of thousands of drugs*
  ✓ *Tens of thousands of dietary supplements*

- *Countless combinations*
- *Millions of patients*
- *Marketed Nationally and Internationally*
- *Available to the public in U. S. in;*
- *Wholesale clubs*
- *Groceries, and*
- *Multitudes of "Other Retail Outlets, including the internet*
- *Limited Research and/or statistics*
- Observe the patient. (Being cognitive of considerations discussed earlier)
- Age
- Medical history etc.
- When receiving a prescription for a dietary supplement, check if this product has been added to the patient's profile. Make sure all profiles are up-to-date.
- If a patient is simply purchasing a supplement from the shelf, check the profile, and inquire if their physician is aware of them taking this product.
- Find out what the patient wants to gain by taking a certain supplement
- Check against claims of achievement on the products label
- Guide patients to products with lesser ingredients
- More likely to have sufficient quantity
- Easier to determine which may cause adverse affect
- Recommend United States Pharmacopeia (**USP**) verified products displaying the mark when available.
- At the least, clinically studied brand name products
- Familiarize workforce with:
- "Natural Medicines Comprehensive Database"; available at workplace
- Section on safety ratings
- Effectiveness ratings
- Quality assessment (see; USP-Verified Mark)

Summary

What else can be done?

Drug-supplement interactions have been a concern and a debate for decades. Unquestionably there has been an enormous increase in the numbers of prescription drugs, dietary supplement products, and growing populations of patients taking the combination of these substances how ever they are made available, since the 1920's. Also, the numbers of professionally trained professionals, the amount of knowledge available to them of these interactions, and the amount of time available to focus on this one of many challenges, are arguably "incompatible".

The question is: Could education, collaboration, and delegation of authority all contribute to a better more efficient pharmaceutical care model?

The roles of pharmacy technicians have been increasing for some time now. Some in this country and others, have proposed that; refined practice standards through standardized education, with task specific entry-to-practice criteria, might give competent pharmacy technicians the ability to provide expanded support to pharmacists with decreased supervision such as; collecting and cataloging data of known and newly discovered patient drug-supplement interactions. To the professionals: Might the policies, practice and professional protocol reflect improvement or even change in the way patient information is given and taken to further this endeavor?

Additionally, with the topic of healthcare change in the forefront, might now be a perfect time for change in policies allowing pharmacists to delegate increased responsibilities or expansion of roles of team members such as certified pharmacy technicians to lesson the burden on R.Ph.s, already short in number and time? The savings in moneys spent for time to complete a task by CPhT rather than R.Ph.s may be considerable.

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Insight Perspective

Our Angels Behind the Scenes in Transplant Surgery

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As it should be, much is said about the dedication and expertise of the physicians who carefully prepare patients for organ transplant, and the precise genius of the surgeons performing what is maybe, "just short of a miracle".

All those involved in the process, patients, doctors, nurses, technicians, and ward assistants become rather well known or "intimate", if you will, to say the least. In other words, you can leave your humility at "Admittance". Every one has "eyes on" and "hands on" during this entire relationship. While, in the background, there is yet another extremely relative member of this vast and diverse healthcare team which we rarely get to meet, but who is also charged with achieving the best possible outcome in their patient's healthcare, our **"Transplant Coordinators"**.

So that these magnanimous and tireless individuals know how humbled we are for their service, they should understand that the scope of their responsibilities is understood. To be clear there are three stages in, or types of transplant coordinating

1. Pre-Transplant - assembling the database for the patients' package to present to the selection committee. All the patients' information (height, weight, disease, labs, test results, medications, etc.) must be updated accurately, in real time, and is decisively important at the time it is presented as to whether or not the patient is selected as a transplant candidate. (*No pressure!*) Once selected, updated information is entered by the coordinator into Unet (UNOS database). The computer then ranks the patient based on data entered and the type of organ needed. At the same time, while managing one patient's data, coordinators are constantly managing the wait list for new patients when their physician orders them to initiate a new evaluation.

2. Inpatient - planning discharge with the physicians in the hospital. This may include the coordination of other professionals who must teach the patient things like their medication treatment (pharmacists), and their diet (dieticians). Also the coordinator must deal with prior insurance approval for medications. While the patient is in the hospital, the coordinator must keep accurate and detailed records of what happened in order to assist follow-up care post transplant.

3. Post-transplant - *(No big deal!)*, keeping the patient alive. Managing post-transplant protocol - tests, labs, and doctors' appointments. Transplant coordinators also help review results lessening the burden on physicians which help them make decisions. Coordinators are liaisons between physicians and patients.

Included, as well as all the aforementioned responsibilities, is the filing of scores of reports under strict operational protocols, quickly and accurately, while assuring compliance with the United Network of Organ Sharing (UNOS), under contract with the federal government. During a patient's "wait", most are up and down with their health. This adds to the stress and uncertainty to the patients and to those caring for them. In most cases this process can take months and even years. Patient or loved one, it is safe to say, no matter the degree of their capability to understand this extremely complex medical challenge, they are most certainly **frightened** and **uncertain**.

So… in their copious amounts of spare time, these transplant coordinators are now tasked to explain to loved ones and/or caretakers how the transplant process works, what is happening to the patient, what will happen to the patient, good news, bad news, while dealing with extremely emotional individuals. Though physicians are absolutely or extremely competent and good at explaining the patient's condition, often due to time constraints, the absence of those others with the need to know during their rounds, some times the personal touch and compassion are lacking in the translation.

Once again, "Enter the Transplant Coordinators!" For all the wonderful and skillful efforts made by the physicians, surgeons, and the entire medical team, if I might get personal, that I knew my loved ones were in the hands of the calm professionalism of my transplant coordinator, might rank right up there at the top! Thank you, Adele, you most definitely helped save my life! You are my angel!

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Clinical Corner

Vitamin B12 Deficiency and Cognitive Decline

Many foods contain Vitamin B12, but this nutrient becomes progressively less available to a lot of people as they age. There are a number of reasons for this, including changes in metabolism. Low levels of B12 have been associated with a number of health conditions, including neurological ones. Cognitive problems can be the result of such nerve damage.

It is not clear whether increasing B12 levels can protect against forms of dementia such as Alzheimer's Disease, but remedying B12 deficiencies have been associated with a reduction in brain shrinkage that can occur with the symptoms of Mild Cognitive impairment. To prevent irreversible damage, it is important to diagnose low Vitamin B12 levels as soon as possible.

The role of Vitamin B12 in halting cognitive impairment

Many people start to display symptoms of forgetfulness and problems with concentration in their 40s and 50s. These symptoms can be due to a condition known as *Mild Cognitive Impairment.* This brain disorder is frequently a precursor to the development of more severe types of dementia such as Alzheimer's Disease.

Brain disorders can be the result of damage to the body's nerves. Such nerve damage can be the result of Vitamin B deficiencies, including B6, B12, and folate. Vitamin B12 is particularly problematic, since its absorption can be affected by metabolic factors. Fortunately, such deficiencies are treatable if diagnosed early enough. Increasing the body's levels of B12 was found to correlate with a reduction in the shrinkage of brain tissues in older adults.

Why you could be deficient in Vitamin B12

Even if you get enough B12 in your diet, your body could still have a deficiency. In the United States, most people consume the recommended amounts of B12. This nutrient is found naturally in animal products such as meat and dairy products. It is often lacking in plant products, which can be a problem for vegetarians and vegans. Fortified breakfast cereals do contain B12, however. Such cereals can provide adequate amounts of this nutrient to people who do not consume meat. Despite this consumption, it is estimated that 1.5-15 % of the US population lacks adequate amounts of B12 in their diet. There are a number of reasons for this. For your body to properly absorb this vitamin, a compound called *intrinsic factor* is required. Many people produce less of this important factor as they age, resulting in decreased absorption of this key vitamin. For intrinsic factor to work, your stomach must be highly acidic. Often, aging causes you to produce less stomach acid. Also, people who take proton pump inhibitor drugs, such as those prescribed to fight ulcers, can have limiting amounts of stomach acid.

If you have pernicious anemia, you can also be deficient in Vitamin B12. This condition often clues in doctors that you may lack adequate amounts of this nutrient. However, you can develop neurological symptoms in response to B12 deficiency even in the absence of

this anemia. It is important to be tested for the amount of B12 in your body if you are displaying symptoms such as forgetfulness. This condition is treatable if caught early enough.

B12 deficiency can lead to homocysteine accumulation

One particular way that having low levels of B12 can be damaging is that it can cause your body to have high levels of a compound called *homocysteine.* Normally, this chemical does not build up in your body. It is used up during a series of chemical reactions resulting in the production of SAM (S-adenosyl methionine). However, if your body lacks adequate amounts of B12, homocysteine can accumulate. High levels of this harmful chemical are associated with increases in the risk of dementia and stroke. Increasing the amounts of B12 in your body can help you to metabolize homocysteine.

About the Author

From time to time Alena Shelly writes for eSupplements. She is very passionate about keeping healthy and fit. She is a nutritional consultant and personal trainer in San Diego, CA.

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