

RETURNING TO OUR ROOTS:

Integrating Functional Medicine Into Pharmacy Practice

Suzanne Keyes, Pharm.D., FACA Keyes' Compounding & Specialty Drug



Keyes' Compounding Email: suz.keyescompounding@gmail.com Office: 580-225-5273 Cell: 580-799-1499

https://www.facebook.com/keyescompounding&specialtydrug

OBJECTIVES:

Upon completion of the session, the participant shall be able to:

- Distinguish the difference between the (learned, traditional) allopathic medicine and functional medicine models
- Utilize the basic tools to determine root causes of common chronic diseases
- Recognize the advantages of diversifying the practice with FM consultations
- Discuss why Functional Medicine is critical to your practice



What is FUNCTIONAL MEDICINE?

"Functional Medicine is defined as a HEALING-ORIENTED MEDICINE that takes into account the whole person, including

all aspects of lifestyle. It emphasizes the THERAPEUTIC

RELATIONSHIP between the patient, the practitioner and the

pharmacist; it is informed by **EVIDENCE**, and makes use of

ALL APPROPRIATE THERAPIES"



How Relevant is Functional Medicine?

| Google | FUNCTIONAL MEDICINE | Q | | | | | | | | |
|--------|---|---|--|--|--|--|--|--|--|--|
| | All News Books Maps Videos More - Search tools | | | | | | | | | |
| | About 28,800,000 results (0.52 seconds) | | | | | | | | | |
| | Institute for Functional Medicine > What is Functional Medicine? https://www.functionalmedicine.org/about/whatisfm/ 	✓ Institute for Functional Medicine 	✓ Functional medicine addresses the underlying causes of disease, using a systems-oriented approach and engaging both patient and practitioner in a You've visited this page 2 times Last visit: 5/4/16 | | | | | | | | | |
| | Institute for Functional Medicine > Home https://www.functionalmedicine.org/ ▼ Institute for Functional Medicine ▼ Information and educational seminars and conferences on functional medicine. Find a Practitioner . Log in . Upcoming conferences . About Functional Medicine You've visited this page many times. Last visit: 6/2/16 | | | | | | | | | |
| | Find a Practitioner - Institute for Functional Medicine https://www.functionalmedicine.org/practitioner_sear Institute for Functional Medicine Our goal is to help patients find healthcare professionals familiar with Functional Medicine. Before your first visit to see a Functional Medicine practitioner, learn | | | | | | | | | |
| | Institute for Functional Medicine > About Functional Medicine https://www.functionalmedicine.org/What_is_Functi 	Institute for Functional Medicine Functional Medicine addresses the underlying causes of disease, using a systems-oriented approach and engaging both patient and practitioner in a | | | | | | | | | |
| | People also ask | | | | | | | | | |
| | What is a functional medicine practitioner? | ~ | | | | | | | | |
| | What is functional health? | ~ | | | | | | | | |



"It is much more important to know what sort of a patient has a disease than what sort of a disease a patient has."

William Osler

"The good physician treats the disease; the great physician treats the patient who has the disease."

"If you listen carefully to the patient, they will tell you the diagnosis."



Sir William Osler, one of the first professors at Johns Hopkins University School of Medicine and later its Physician-in-Chief

Why Did You Become a Pharmacist?

Insert CLASS PARTICIPATION here



What Were We Taught in School?

(excluding chemical structures & the Krebs Cycle)

- We were taught how to IDENTIFY potential side effects of medications
- We were taught to MAKE RECOMMENDATIONS based on patient symptoms
- We were taught to MANAGE/TREAT diseases; not PREVENT them





But What If There Was <u>MORE</u>?

- What if the *methylation pathway*, that is so intricately involved in common diagnoses like, depression, miscarriage, anxiety and insomnia was emphasized as much as the Krebs Cycle?
- What if you were trained on *genetic SNPs* and the triggers that express them?

What if you knew of *more advanced testing* that might uncover underlying problems?



But What If There Was <u>MORE</u>?

What if you could empower patients by bringing them the latest studies that may discredit current treatment guidelines?

What if you could teach patients how lifestyle and nutrition could arrest if not reverse some chronic diseases?

• What if you became an expert in *optimal reference ranges*?





ROOT CAUSE MEDICINE



Functional medicine hopes to reduce these costs:

Total costs of heart disease and stroke (2010): \$315.4 billion Total national health expenditures (2011): \$2.7 trillion

> Total estimated cost of diagnosed diabetes (2012): \$245 billion

Total estimated costs linked to obesity: (2008): \$147 billion Per capita national health expenditures (2011):



of all health care spending in 2006 was for the 50% of the population who have one or more chronic medical conditions

Differences Between Allopathic and Functional Medicine

ALLOPATHIC MEDICINE:

- Based on SYMPTOMS
- Treats the DISEASE
- DOCTOR centered
- Cost effective
- INSURANCE model
- Focuses on ADDING
- Asks WHAT?



FUNCTIONAL MEDICINE:

- Based on SYSTEMS
- Treats the UNDERLYING CAUSE
- PATIENT centered
- More expensive
- CASH model
- Focuses on REMOVING
- Asks WHY?

Obstacles That Independents Face Today

- Historically, independent pharmacists have profited from **PRESCRIPTIONS and FRONT END MERCHANDISE**
- Under current economic conditions, patients are easily persuaded to use MAIL ORDER or big box stores to save money

Profits are decreasing due to poor reimbursements and DIR Fees





The Benefits of Functional Medicine

Advantages to Integrating Functional Medicine into Pharmacy Practice

- Functional Medicine strengthens the patient pharmacist relationship
- Functional Medicine bridges the gap in the continuum of care that traditional roles have created
- Functional Medicine positions pharmacists as an equal partner in the physician-pharmacist relationship



Advantages to Integrating Functional Medicine into Pharmacy Practice

- Functional Medicine creates diversification
- Drastically increases vitamin/supplement sales
- Creates MORE opportunity for custom compounds



Barriers to Integrating Functional Medicine into Pharmacy Practice

- Changing YOUR thought process
- Changing the perception of **YOUR WORTH**
- Creating an OPERATIONALMODEL/WORKFLOW in your practice setting
- BUDGETING for the time and expense of a more specialized continued education





Where Do I Start?

Rediscover your PASSION & become an EXPERT in that area

 If THYROID has always interested you then take a new approach when dispensing levothyroxine

Start asking your patients questions

- When was the last time you felt *GOOD*?
- What do your labs look like?
- How have your symptoms changed since you've received therapy?



Where Do I Start?

Recognize trends & ask YOURSELF "WHY?"

- Why does everyone have the same 'catch-all' diagnosis?
- Why is hypothyroidism more common in women?
- Why do patients remain symptomatic despite therapy?
- Why have so many patients remained on the SAME dose for SO many years?

(What are we **ALL** doing, eating, breathing or ingesting that is common to **ALL** patients with thyroid imbalance?)

Where Do I Start?

Equip yourself with the proper tools & resources to answer those questions

- Find free webinars
- Find *credible* sources that use *credible* studies
- Find supporting studies on your own
- Become an expert in testing
- Find & enroll in a certification program
- Read, READ, READ!!!



Where Do I start?

Assign a value to the effort you put forth in acquiring the answers

Re-brand your image

Be prepared to defend yourself with studies in hand



The DO's of Re-Branding

- Have an office procedure on how to handle questions about your new practice features
- Train support staff to uphold your *new* image

- Empower & equip your staff to answer questions
- Have a packet that goes into further detail (your mission statement, why you are changing your practice, pricing, time frame, etc.)

The DON'Ts of Re-Branding

Don't be the first one to answer the phone

- Don't rush to the counter for anything more than a direct answer to a specific medication related question (excluding your obligations to OBRA)
- Don't give away your specialty for free



Let's Get This Started

KNOW the TRIGGERS

KNOW the PATIENT

KNOW the LABS

KNOW the DRUGS

KNOW the DIAGNOSIS







AVERAGE HISTORY & PHYSICAL

Hx: 44yo peri-menopausal, wife and mother of a teenager and a pre-teen; c/o chronic fatigue, daily headaches and unable to lose weight; debilitating joint pain. She was an emergency room RN by trade – quit her job 5 years ago when trying to juggle caring for ailing mother and aging step-dad

• **Social Hx:** Smoker (1/2 ppd); occasional etoh; sedentary; multiple drug allergies

- Medical Hx: Mononucleosis (at 16yo); cholecystectomy (at 22yo); 2 C-sections
- FmHx: Mother died at 67 d/t sepsis (complications from a 40 year old mesh bladder sling)
 Significant for: obesity; diabetes; hypertension; hyperlipidemia; thyroid imbalance; depression, CVD
- Meds: phentermine 37.5mg QD; IBU 800mg Q8h prn HA; Excedrin Migraine 2 po q6-8h prn HA; omeprazole 20mg QD-BID prn



DOB: 10/21/1971 AGE: 44 Gender: Fasting: U Phone:

Patient ID: NG

03/01/2016 Collected: 03/01/2016 / 22:00 CST Received: Reported: 03/02/2016 / 03:43 CST

Standard lab tests ordered:

| Test Name | In Range | Out Of Range | Reference Range | e Lab | |
|--|-------------------------------|----------------------------------|--------------------------------------|----------------|------------------|
| LIPID PANEL WITH REFLEX TO DIREC | T LDL | | | | |
| CHOLESTEROL, TOTAL | 165 | | 125-200 mg/dL | DLO | |
| HDL CHOLESTEROL | | 41 L | > OR = 46 mg/d | L DLO | |
| TRIGLYCERIDES | 105 | | <150 mg/dL | DLO | 2 |
| LDL-CHOLESTEROL | 103 | | <130 mg/dI (ca | DLO | |
| | 105 | | and my up (ou | | 68 |
| Desirable range <100 mg/dL diabetes and <70 mg/dL for known heart disease. | for patients diabetic pati | with CHD or ents with | | | |
| CHOI (HDIC DITIO | 1.0 | | < 0P - 5 0 (02) | DIO | |
| CHOL/HDLC RATIO | 4.0 | | < OR = 5.0 (Ca. | IC) DLO | |
| NON HOL CHOLESTEROL | 124 | | mg/dL (Calc) | DTO | |
| Target for non-HDL choleste | erol is 30 mg/ | dL higher than | | | |
| LDL cholesterol target. | | | | | |
| COMPREHENSIVE METABOLIC | | | | DIA | _ |
| PANEL | | | | | |
| GLUCOSE | 97 | Gluco | $se \cdot \frac{9}{1}$ | 65-99 mg/dl) | |
| 0100001 | 5. | Giuco | $\mathcal{I}_{\mathcal{I}}$ | | |
| | | | | | |
| | | ΟΡΤΙΛΛ | ∆ <i>I· <8</i> 5 | | V |
| UDEA NITTOOCEN (DUN) | 15 | | ¬L. \05 | | |
| OREA NIIROGEN (BUN) | 15 | | 0.50.1.10 | | |
| CREATININE | 0.61 | | 0.50-1.10 mg/d | | |
| eGFR NON-AFR. AMERICAN | 110 | | > OR = 60 mL/m | in/1.73m2 | |
| eGFR AFRICAN AMERICAN | 128 | | > OR = 60 mL/m | in/1.73m2 | |
| BUN/CREATININE RATIO | NOT APPLIC | ABLE | 6-22 (calc) | | |
| SODIUM denudration | | 133 L | 135-146 mmol/L | | |
| POTASSIUM | 3.9 | | 3.5-5.3 mmol/L | | |
| CHLORIDE | 104 | | 98- | | |
| CARBON DTOXTDE de hudvation | | 16 L | 19- | | 1/ 1 1 - |
| CALCTUM | 9.4 | | | n_{n_1} | <i>niit</i> thic |
| PROTEIN TOTAL | 7 4 | | | Only nonne | |
| ALDIMIN, IOTAL | 1.4 | | 2.6 | · · | • |
| CLODUL IN | 4.5 | | | • • • • • | |
| GLOBULIN | 3.1 | | 1.9 | ic actually i | |
| ALBUMIN/GLOBULIN RATIO | 1.4 | | 1.0 | is accountly v | |
| BILIRUBIN, TOTAL | 0.3 | | 0.2 | / | |
| ALKALINE PHOSPHATASE | 86 | | 33-115 U/L | | 50 C |
| AST | 18 | | 10-30 U/L | | |
| ALT | 17 | | 6-29 U/L | | |
| TSH | 1.77 | | mIU/L | DLO | 100 |
| | | Ret | ference Range | | |
| | V | | | | |
| | | > (| r = 20 Years 0. | 40-4.50 | |
| | | | | | |
| | | | Pregnancy Rang | 88 | |
| | | Pit | Fleghancy Rang | 0 26 2 66 | |
| | | 117 | LSC CIIMESCEI | 0.20-2.00 | |
| | CUNONIU | ill. | cond trimester | 0.55-2.73 | |
| | Charles in of | In | ird trimester | 0.43-2.91 2 | |
| CBC (H/H, RBC, INDICES, | 5 | 1 | Smoker stro | SS ADDALAS TLO | 66 |
| WBC, PLT) | | | Siloni, Sile | ss, une yes | |
| WHITE BLOOD CELL COUNT | | 16.3 H | 3.8-10.8 Thousa | and/uL | |
| RED BLOOD CELL COUNT | 4.87 | | 3.80-5.10 Mill: | ion/uL | 1 |
| HEMOGLOBIN | 14.5 | | 11.7-15.5 g/dL | | |
| HEMATOCRIT | | 45.1 H | 35.0-45.0 % | | - |
| | | | | | |
| | | 175mile | - | | |
| CLIENT SERVICES, 800 801 2017 | CDECH (E) | 1 YOODODEY | A | | |
| CLIENT SERVICES: 800.891.2917 | SPECIMEN | . A0030935 Y | | PAGE 1 OF 2 | 15 |
| DLO, Diagnostic Laboratory of Oklahoma, the associated logo and all associated | ted DRIGHUSSIEL GURAREN APE | reactive an rearies and a second | Pof Diagnostic Laboratory of Oklahon | na. | |

See? ALL NORMAL; "You're just fine!"





PERFORMING SITE:

DLO DIAGNOSTIC LABORATORY OF OKLAHOMA. 225 NE 97TH STREET, OKLAHOMA CTTY, OK 73114-6302 Laboratory Director; JENNIFER A MULHOLLAN MD, CLIA: 37D0960030

See? ALL NORMAL; "You're just fine!"

BUT WAIT!!!



REMEMBER:

"ABNORMAL" is DYSFUNCTIONAL and "NORMAL" is ONE step away from chronic disease

ABNORMAL



- 44yo peri-menopausal, wife and mother of a teenager and a pre-teen; c/o chronic fatigue, daily headaches and unable to lose weight; debilitating joint pain. She was an emergency room RN by trade – quit her job 5 years ago when trying to juggle caring for ailing mother, aging step-father and the family farm
- Social Hx: Smoker (1/2 ppd); occasional etoh; sedentary; multiple drug allergies
- Medical Hx: Mononucleosis (at 16yo); cholecystectomy (at 22yo); 2 C-sections
- FmHx: Mother died at 67 d/t sepsis (complications from a 40 year old mesh bladder sling)
 Significant for: obesity; diabetes; hypertension; hyperlipidemia; thyroid imbalance; depression, CVD

• SUMMARY:

- Mother's health declines rapidly (uncontrolled DM & obesity) after knee replacement (over 1.5 years)
- Aging step-father had a stroke
- Tragically loses step-brother in MVA
- Mother is placed in a nursing home; becomes unresponsive shortly after arrival; is hospitalized and within 24 hours dies from sepsis (culprit: mesh bladder sling from 40 years ago)
- Tragically loses niece in MVA

Meds: phentermine 37.5mg QD; IBU 800mg Q8h prn HA; Excedrin Migraine 2 po q6-8h prn HA; omeprazole 20mg QD-BID prn



Married, mother of two teenagers, sole care-taker for step-dad (bills, laundry, groceries, cooking, etc.), helps on family farm, endured significant loss in the last 4 years, responsible for the 'closing' of her mother's estate

new SUMMARY Born by C-Section Bottle fed Colic Tonsillitis – multiple Axb Mononucleosis Gall bladder dysfunction Reflux Diarrhea Constipation IBS Joint stiffness/muscle pain Headaches CT Scan / MRI Fatigue – no energy Interrupted sleep Weight gain Spontaneous urticaria

...more More & MORE Exposures: mold, cigarette smoke, BPA, MRI, root canals, Standard American Diet, chlorine, pesticides, etc.

WHAT STANDS OUT?





We have evolved to accept symptoms that are "COMMON" as "NORMAL".

When referring to labs results - there are several opinions & authorities on '**what is optimal '**— I encourage you to **find your comfort zone** when defining these ranges



CURRENT GUIDELINES

<u>American Diabetes Association</u> - Blood glucose goals for people with diabetes:

- Before eating (pre-prandial) 70-130mg/dl
- 1-2 hours after eating (peak post-prandial) <180mg/dl
- A1c blood glucose test (3 month blood glucose indicator) <7 percent

<u>American Association of Clinical Endocrinologists</u> - Blood glucose goals for people with diabetes:

- Before eating (pre-prandial) <110mg/dl
- 2 hours after eating (post-prandial) <140mg/dl</p>
- A1c blood glucose test < 6.5 percent</p>

Read more: <u>http://www.diabetescare.net/management/blood-glucose#ixzz4FiWa84wo</u>



CURRENT GUIDELINES

Information obtained from Joslin Diabetes Center's Guidelines for Pharmacological Management of Type 2 Diabetes.

| Time of Check | Goal <u>plasma blood</u> <u>glucose</u> ranges for people without diabetes | Goal <u>plasma blood</u> <u>glucose</u> ranges for people with diabetes |
|--|---|--|
| Before breakfast (fasting) | < 100 | 70 - 130 |
| Before lunch, supper and snack | < 110 | 70 - 130 |
| Two hours after meals | < 140 | < 180 |
| Bedtime | < 120 | 90- 150 |
| A1C (also called glycosylated hemoglobin A1c, HbA1c or glycohemoglobin A1c) | < 6% | < 7% |



| 145 81 AC 145 81 AC 1900 120 AC 2215 109 H | , , S | | NO ⁻ | t / O | U ba | a, RI | GHI |
|--|--|--|-----------------|---|--|----------------------|-------------|
| 0715 1130 1830 1830 2300 1830 1830 1930 1120 1915 1950 2200 | 100 AC 98 AC 98 AC 110 HS 016 AC 016 AC 88 AC 122 0 92 | 0745 102 AC 1200 111 AC 1200 111 AC 1830 100 AC 2230 103 HS 0800 82 AC 1130 98 AC 1830 85 AC 2230 108 NS | | 07100 1100 1800 2300 2300 1000 1113 1900 1230 | FSBS 105 AC. 101 AC 108 AC 99 HS 980 AC 153 - OFTer 112 AC 110 AC 95 HS | l coerco pancakes | |
| | FALL PHA CONFE | | | | ©2016 Americ | can College of Ap | pothecaries |

Keyes' Compounding & Wellness Center

2103 S Main Street Suite K Elk City, OK 73644 (O) 580-225-5273 (KCSD) (F) 580-303-4483 suz.keyescompounding@gmail.com

REVIEW OF SYSTEMS: Please mark the box for any **PERSISTENT SYMPTOMS** you have had in the past few months. Read through every section & check the symptoms that apply to you.

SKIN:

- Eczema / Psoriasis
- Skin rashes
- More acne than normal
- Hives

THYROID:

- 🙀 Exhausted ALL day
- Cold hands & feet
- Lold intolerance
- Difficulty losing weight
- Losing hair
- 🙀 Trouble getting up in the morning
- Puffy eyes / face in the morning
- Eyebrows thinning on outer corners
- 🙀 Dry skin
- Goiter

ADRENALS:

- 🙀 Afternoon fatigue
- Frequently ill
- K Frequently feel overcommitted
- Increased aggression
- Increased sugar craving
- A Increased salt craving
- Poor endurance
- Decreased ability to handle stress
- to 50% of your daily calories consumed after 5PM
- Type A personality (used to function BETTER under stress)
- Stress)
- Can't MULTI-TASK like I used to
- NERVOUS/MUSCULOSKELETAL:
- Weakness
- Joint pain / arthritis
- Swelling of fingers / ankles
- 🕱 Back pain
- Muscle cramps
- Numbness
- Carpal tunnel
 Fainting
- Dizziness
- Dizziness

GLUCOSE / METABOLISM:

- I get shaky if I don't eat for long periods of time
- Random BOOSTS & DROPS of energy all day
- I feel tired 1-3 hours after eating

GASTROINTESTINAL:

- Chronic sinusitis
 Indigestion / heartburn
- Trouble swallowing
- Nausea / vomiting
- Changes in appetite
- Bloating / distension of abdoment
- Frequently constipated
- Diarrhea frequently
- Charlies hequently
- Stool contains mucus
- Stool contains blood / black tarry stool
- Frequent UTIs / cystitis
 Intolerant to greasy foods
- SLEEP:
- Difficulty FALLING asleep. _____ x per week
- Difficulty STAYING asleep. x per week
- k Not well rested in the morning
- □ I go to bed late / wake up late
- 💆 I feel hot at night
- Very affected by jet lag
- Difficulty going BACK to sleep if I wake up
- I go BACK to sleep easily if I wake up
- On average, I get LESS than 7-8hrs of sleep every
- night

MOUTH / THROAT:

- Canker sores
- Cold sores
- Loss of taste
- □ Gum disease or bad breath
- Hoarseness
- □ History of root canals
- COGNITIVE / FOCUS:
- Brain fog
- Decreased mental sharpness
- Poor short term memory
- Fool democratic "demo"
- Feel depressed or "down" more than 10% of the time
- Trouble sitting for more than 15 minutes
- □ History of anti-depressants or depression
- Recent onset of anxiety or WORSENING of anxiety LIBIDO:

LIBIDO

- 🛍 I am still Sexually active
- I am sexually active but have decreased sex drive
- 🙀 I am STILL attracted to my mate
- Sex isn't as important as it was previously

Review of SYMPTOMS:

At first glance – these symptoms look **"normal"** for someone in perimenopause

5

| | Saliva Hormone Test | Result | Units | L | WR | н | Reference Range | |
|-------------|---------------------|--------|--------|---|----|---|---------------------------------------|---|
| - [| Estrone (E1) | | pg/ml | | | | | |
| | Estradiol (E2) | 4.41 | pg/ml | | • | | 1.0-10.8 pre menopausal (1.5-10.8 su | IF: We lose 1-3% of our testosterone |
| Ш Ш | Estriol (E3) | | pg/ml | | | | | production each year after we hit our 30s |
| No. | EQ (E3 / (E1 + E2)) | | | | | | | ΛND (11-12% reduction for this nt) |
| RN | Progesterone (Pg) | 222.17 | pg/ml | | • | | 127.0-446.0 pre menopausal (luteal) | (|
| 오 | Ratio of Pg/E2 | 50.41 | | + | | | 200-600 pre; post with supplementat | · |
| | Testosterone | 43.97 | pg/ml | | • | | 6.1-49.0 female (30.0-60.0 supplement | IF: OCPs (and a history of OCPs) |
| | DHT | | pg/ml | | | | | suppross our natural barmona production |
| | | | | | | | | suppress our natural normone production |
| ω | DHEA | 149.64 | pg/ml | | • | | 106.0-300.0 female | AND increases SHBG (sex hormone |
| AL | Cortisol Morning | 23.03 | nmol/L | | • | | 5.1-40.2; optimal range: 18-35* | BINDING globulin) AND |
| N N N | Cortisol Noon | 3.61 | nmol/L | | • | | 2.1-15.7; optimal range: 6-12* | |
| DF | Cortisol Evening | 1.22 | nmol/L | + | | | 1.8-12; optimal range: 4-8* | |
| 1 | Cortisol Night | 2.11 | nmol/L | | • | | 0.9-9.2; optimal range: 2-6* | IF: SHBG has a higher attinity for |

Cortisol Graph

Hormone Interpretations:

- Progesterone to estradiol (Pg/E2) ratio and reported symptoms are cons Supplementation with topical progesterone to correct this relative deficie
- The upper range testosterone level and reported symptoms are suggest resistance). Serum vitamin D, fasting glucose and insulin testing may be
- AM cortisol level appears adequate, although the suboptimal diurnal cor are suggestive of early (Phase 1) adrenal gland dysfunction and concorr insufficiency cannot be ruled out.

WHY does this patient have **higher than optimal estrogen levels** (*optimal <2.5*) *AND an* **above average testosterone** *level for her age*?

androgens (but will also bind

estrogens)THEN...

THINK BACKWARDS!!



Hormone testing can help us get to a ROOT CAUSE



SIX WEEKS LATER





| Know Your Health, One Lab Test at a Time! | DOB: 10/21/1971 Age Gender: Female | : 44 Report Status Complete Ordering Physician Matadeen | ı-Ali, Chandra | Ano R/Ano A | 1 |
|---|--|---|----------------|-------------|-----------|
| Result | Value | Reference Range | Lab | | <u> </u> |
| APOLIPOPROTEIN B | 69 Apr/2016 | 49-103 mg/dL | AMD | | |
| APOLIPOPROTEIN B/A1 RATIO | 0.56 | *** | AMD | | |
| | Apr/2016 | S NCBI Resources | s 🖸 How To 🖸 | | |
| Comments | <pre>*** Unable to flag abnormal result(s to reference range(s) below:</pre> | Public ed.gov US National Library of Medicine National Institutes of Health | PubMed | Advanced | Search |
| | High Risk: >0.95 | Format: Abstract - | | | Send to . |

Apolipoprotein Al Risk Categor > or = 115 mg/dLOptimal High < 115 mg/dL Cardiovascular event risk category c (optimal, high) are based on the AMO Walldius and Jungner, J Int Med. 200

B/A-1 ratio: 0.56

OPTIMAL: <0.6

J Intern Med. 2004 Feb;255(2):188-205.

Apolipoprotein B and apolipoprotein A-I: risk indicators of coronary heart disease and targets for lipidmodifying therapy.

Author information

Abstract

Lipid Association recommendations -J Clin Lipidol. 2011;5:338

Apolipoprotein B/A1 Ratio: Risk Category Male Optimal < 0.77 mg/dL receiving lipid-m Moderate 0.77 - 0.95 mg/dL High > 0.95 mg/dI Cardiovascular event risk category c PMID: 14746556 (optimal, moderate, hgh) are based o study, Walldius and Jungner, J Int Med. 2006;259:493

Walldius G1, Jungner I.

119 mg/dL 120 mg/dL

Although LDL cholesterol (LDL-C) is associated with an increased risk of coronary heart disease, other lipoproteins and their constituents, apolipoproteins, may play an important role in atherosclerosis. Elevated levels of apolipoprotein (apo) B, a constituent of atherogenic lipoproteins, and reduced levels of apo A-I, a component of anti-atherogenic HDL, are associated with increased cardiac events. Apo B, apo A-I and the apo

B/apo A-I ratio h

...apo B, apo A-1 and the apo B / apo A-1 ratio have been reported as better predictors of cardiovascular events than LDL -C..."

| W Know Your Health, One Lab Test at a Time! | | Gender: Female Ordering Physic | cian Matadeen-Ali, Chandra | |
|---|----------------|--------------------------------|--|------------------|
| Blood Health | Valuo | Iron: OPTIMAL: | 132 (40-190 mcg/dL) 110-130 | Iron & Vitamin D |
| % SATURATION | Apt/2016 | 11-50 % (cale) | DLO | |
| FERRITIN | Apr/2016 | Ferritin: | 38 (10-232 ng/mL) | Search |
| IRON, TOTAL | Apr/2016 | OPTIMAL: | 70-80 | Send to - |
| Vitamins, Minerals | s & Dietary Fa | tty Acids | B- 131-4- 2010 E-b-102/41-540 55 4-1-10 1017/00207444500002017 | Enub 2000 San 25 |

Vitamins

| VITAMIN D, 25-OH, D2 | Apr/2016 | SEE BELOW n | in |
|-------------------------------------|----------------------------------|--------------|-----------|
| Comments VITAMIN D, 25-OH, D3 | Reference Range: Not established | SEE BELOW r | <u>vo</u> |
| Comments VITAMIN D, 25-OH, TOTAL | Reference Range: Not established | 30-100 ng/mL | A |
| Vit D 25(ab) | . 20 /20 100 | ng/ml | |

50-60

Apr/2016

VIL D 25(01): **OPTIMAL:**

Other

Other

APOLIPOPROTEIN A1

30 (30-100ng/mL)

Br J Nutr, 2010 Feb;103(4):549-55. doi: 10.1017/S0007114509992017. Epub 2009 Sep 28

Vitamin D supplementation reduces insulin resistance in South Asian women living in New Zealand who are nsulin resistant and vitamin D deficient - a randomised, placebo-controlled trial.

on Hurst PR1, Stonehouse W, Coad J.

Author information

bstract

101-198 mg/dL

ow serum 25-hydroxyvitamin D (25(OH)D) has been shown to correlate with increased risk of type 2 diabetes. Small, observational studies ggest an action for vitamin D in improving insulin sensitivity and/or insulin secretion. The objective of the present study was to investigate the ect of improved vitamin D status on insulin resistance (IR), utilising randomised, controlled, double-blind intervention administering 100 microg D00 IU) vitamin D(3) (n 42) or placebo (n 39) daily for 6 months to South Asian women, aged 23-68 years, living in Auckland, New Zealand. ibjects were insulin resistant - homeostasis model assessment 1 (HOMA1)>1.93 and had serum 25(OH)D concentration < 50 nmol/l. Exclusion teria included diabetes medication and vitamin D supplementation >25 microg (1000 IU)/d. The HOMA2 computer model was used to calculate outcomes. Median (25th, 75th percentiles) serum 25(OH)D(3) increased significantly from 21 (11, 40) to 75 (55, 84) nmol/l with supplementation. Significant improvements were seen in insulin sensitivity and IR (P = 0.003 and 0.02, respectively), and fasting insulin decreased (P = 0.02) with supplementation compared with placebo. There was no change "Optimal vitamin D concentrations for (OH)D reached > or = 80 nmol/l. Secondary outcome variables reducing insulin resistance were shown to be supplementation. In conclusion, improving vitamin D status in it insulin secretion. Optimal vitamin D concentrations for reducing 80-119 nmol/l, (around 50ng/mL) providing recommended adequate levels. Registered Trial No. ACTRN12 further evidence for an increase in the

PMID: 19781131 DOI: 10.1017/S0007114509992017 [PubMed - indexed for MEDLINE]

recommended adequate levels."

| Know Your Health, One Lab Test at a | LS ⁻ Time | DOB: 10/21/1971 Age: 44 Gender: Female | Report Status Complete Ordering Physician Matadee | n-Ali, Chandra |
|---|---|---|---|----------------|
| Spocimen XO326949Y Requisition 13813 Lab Ref No | Collected Date 04/21/2016 12:00 Received Date 04/22/2016 01:43 | Ulta Lab Tests, LLC 8436 E. Shea Blvd, Suite 102 Scottsdale, AZ 85260 <u>UltaLabTests.com</u> | | |
| (Abovo Normal) Above Normal | | | | |
| (Balow Normal) Below Normal | i - | | | |
| Result | Value | | Reference Range | Lab |
| Cardiovascular Vitamin Deficiency | Health | | | |
| | - | | | |
| HOMOCYSTEINE | Apr/2016 | | <10.4 umol/L | DLO |
| Comments | Homocysteine is inc folate or vitamin B differentiates betw of increased homocy antageniate such as | reased by functional d 12. Testing for methy een these deficiencies steine include renal f umethotrexate and phen | eficiency of Imalonic acid . Other causes ailure, folate vicin. and | |

exposure to nitrous oxide.

Metabolic & Endocrine Health

Thyroid

| FREE T4 INDEX (T7) | 2770 Apr/2016 | 1.4-3.8 | DLO |
|--------------------------|---------------------------|-----------------|-----|
| T3 REVERSE, LC/MS/MS | (1B) Apr/2016 | 8-25 ng/dL | EZ |
| T3 UPTAKE | 26) Apr/2016 | 22-35 % | DLO |
| T3, FREE | 2297 Apr/2016 | 2.3-4.2 pg/mL | DLO |
| T3, TOTAL | 411) Apr/2016 | 76-181 ng/dL | DLO |
| T4 (THYROXINE), TOTAL | 410.43 Apr/2016 | 4.5-12.0 mcg/dL | DLO |
| T4, FREE | 0.9 Apr/2016 | 0.8-1.8 ng/dL | DLO |
| THYROGLOBULIN ANTIBODIES | Apr/2016 | < OR = 1 IU/mL | DLO |

Thyroid Panel

Free T4:0.9 (0.8 - 1.8)**OPTIMAL:1.55**

| Free T3: | 2.9 (2.3 – 4.2) |
|----------|-----------------|
| OPTIMAL: | 3.73 |

| Reverse T3: | 18 |
|-------------|-----|
| OPTIMAL: | <11 |

| fT3/rT3 ratio: | 16.1 |
|-----------------|------|
| OPTIMAL: | >20 |



Inflammatory **cytokines** (IL-1, IL-6, CRP, TNF-α, **SIGNIFICANTLY DECREASES** D1 activity & reduces tissue T3

WHAT BLOCKS THYROID FUNCTION?

D1 is suppressed & downregulated by physiological and emotional stress; depression; dieting; weight gain and leptin resistance; insulin resistance, obesity and diabetes; inflammation from autoimmune disease or systemic illness; chronic fatigue syndrome and fibromyalgia; chronic pain and exposure to toxins and plastics

In addition, D1 activity is also lower in females, making women more prone to tissue hypothyroidism, with resultant depression, fatigue, fibromyalgia, chronic fatigue syndrome, and obesity despite having normal TSH levels. Whereas D2 *is stimulated and upregulated* (increased activity) in response to such conditions, increasing intrapituitary T4 to T3 conversion while the rest of body suffers from diminished levels of active T3. This causes the TSH to remain normal despite the fact that there is significant cellular hypothyroidism present in the rest of the body As T4 decreases, D2 activity increases D2 converts intrapituitary T4 to T3 – leaving TSH to appear normal

Thyroid stimulating hormone (TSH) is produced in the pituitary and is regulated by intra-pituitary T3 levels, which often does not correlate or provide an accurate indicator of T3 levels in the rest of the body. Using the TSH as a indicator for the body's overall thyroid status assumes that the T3 levels in the pituitary directly correlate with that of other tissues in the body and that changes directly correlate with that of T3 in other tissue of the body under a wide range of physiologic conditions. This, however, is shown not to be the case; the pituitary is different than every other tissue in the body.

| Know Your Health, One Lab Test at a Timel | | DOB: 10 Gender: | /21/1971 Age: 44 Female | Report Status Complete Ordering Physician Matadee | n-Ali, Chan | dra |
|---|---|---|--|--|-------------|-----|
| Result | Value | | | Reference Range | Lab | |
| THYROID PEROXIDASE ANTIBODIES | Apr/2016 | | | <9 1U/mL | DLO | |
| TSH | 2.53 Apr/2016 | | | mIU/L | DLO | |
| Comments | Refe | erence Range | | | | |
| | > 01 | r = 20 Years | 0.40-4.50 | | | |
| | Pirr Seco This | Pregnancy Ra st trimester and trimester and trimester | nges 0.26-2.66 0.55-2.73 0.43-2.91 | - | | |
| Diabetes & Insulin Resistance | | | | | | |
| GLUCOSE | (110Abova Nor Apr/2016 | mal | | 65-99 mg/dL | DLO | |
| Comments | Fai | sting reference | e interval | | | |
| HEMOGLOBIN A1c | 60 Apr/2016 | | | <5.7 % of total Hgb | DLO | |
| Comments | According to a represents opt patients. Diff patient popula Diabetes-2013 | ADA guidelines timal control ferent metrics ations. Stands . Diabetes Can | a, hemoglobin A in non-pregnam a may apply to ards of Medical re. 2013;36:81 | Alc <7.0% ht diabetic specific L Care in L-s66 | | |
| | For the purpose of screening for the presence of diabetes | | | | | |
| | <5.7% C | onsistent with onsistent with prediabetes) | the absence of increased right | of diabetes sk for diabetes | | |
| | >or=6.5% C | onsistent with | 1 diabetes | | | " |
| | This assay read of diabetes. | sult is consis | stent with an : | increased risk | | 9 |
| | Currently, no Alc for diagno | consensus ext osis of diabet | ists for use of tes for childre | f hemoglobin 2n. | | n |
| INSULIN | (18.6) Apr/2016 | | | 2.0-19.6 ulU/mL | DLO | r |
| Comments | This insulin a some insulin a and much lower glulisine). | assay shows st analogs (lisp r cross-react: | crong cross-rea no, aspart, and lvity with othe | activity for i glargine) ers (detemir, | | r |



TSH: 2.53 (increased from 1.77) OPTIMAL: between 1.5-1.9 mIU/L

Excerpts from STOP THE THYROID MADNESS:

"Most labs sample the last 100 people that had any given test and assume that 95% of them are "normal" and just post the bell curve data as the range..."

"...Most labs set the normal result range for a particular test so that 95% of their healthy patients fall **WITHIN** the normal range. This means that 5% of the healthy subjects fall **OUTSIDE** the normal range even when nothing is wrong with them. Thus, a "normal" result does NOT necessarily mean that nothing is wrong with you..."

Our patients are NOT 22,000 SYMPTOMS; they are 7 biological SYSTEMS



44 years

Female

😤 Matrix 🛛



🌊 Imbalance

Communication: cancer, heart disease, obesity, diabetes, kidney disease, thyroid problems, psychiatric disorders, depression, irritable bowel syndrome, substance abuse, anxiety, ovarian cysts, irritable bowel syndrome, chronic pain, Breast feeding issues, Hot flashes, Mood swings, Concentration or Memory problems, Weight gain, cold intolerance, daytime sleepiness, fatigue, can't remember dreams, migraine, muscle spasms, difficulty concentrating, difficulty with thinking, difficulty with memory, irritability, leaking or incontinence, can't lose weight, salt cravings, caffeine dependency, pre-menstrual bloating, pre-menstrual breast tenderness, pre-menstrual carbohydrate craving, pre-menstrual fatigue, pre-menstrual irritability, menstrual cramps, menstrual heavy periods, breast tenderness, Current Smoker, Regular Exposure to Second-Hand Smoke

Structural Integrity: stroke, arthritis, ovarian cysts, gerd or reflux, gallstones, chronic pain, migraines, Breast feeding issues, Headaches, Weight gain, Loss of control of urine, cold hands & feet, ear ringing or buzzing, headache, migraine, back muscle spasm, joint stiffness, muscle pain, muscle spasms, leaking or incontinence, foods repeat-reflux, hemorrhoids, cellulite, lackluster skin, smokers, Tylenol

Assimilation: allergies, irritable bowel syndrome, adhd, irritable bowel syndrome, gerd or reflux, chronic pain, Weight gain, fatigue, muscle pain, muscle spasms, constipation, diarrhea, passing gas, foods repeat-reflux, hemorrhoids, easy bruising, salt cravings, frequent dieting, sweet cravings, caffeine dependency, pre-menstrual bloating, bitten nails, brittle nails, ragged cuticles, soft nails, thickening of toenails, dryness of skin, scalp or hair, NSAIDs, Tylenol, Acid Blocking Drugs, Bottle-fed



PLAN:

PHASE I

Support adrenals

Balance Pg/E2 ratio

Support liver detoxification

Focus on sleeping

Encourage patient to draw boundaries

Add T3

Add thyroid-boosting micro- & macronutrients

PHASE II

Focus on *'nutritional RE-balancing'*

Moderate exercise

Fix gut

Calm inflammation

SIBO & Comprehensive GI (plus parasitology) stool testing

IgG Food Sensitivity testing

PHASE III

...TO BE CONTINUED









