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A Lifestyle Medicine Approach to Diabetes Reversal through Nutrition

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23 June 2022

1330 - 1500 ET

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SAUSHEC Endocrinology Fellow, PGY5

Brooke Army Medical Center, San Antonio, TX

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Air Force Col Mary Anne Kiel, M.D., F.A.A.P., Dip.A.B.L.M.



Air Force Colonel Mary Anne Kiel, M.D., F.A.A.P., Dip A.B.L.M. is currently the Chief of Air Force Medical Home, Air Force Medical Readiness Agency, Falls Church, Virginia. She leads a team of professionals to optimize patient centered care for 218 outpatient clinics across the Air Force. She is the Air Force representative for primary care to the Defense Health Agency, collaborates with other service leads on policy for the Military Health System and advises on the standards for primary care execution.

Col Kiel entered the Air Force as a Health Professions Scholarship Program recipient in May 2000 as she was attending medical school at the University of Texas Health Science Center at San Antonio. After graduation from medical school, she was selected to attend Pediatric Residency with the San Antonio Military Pediatric Center at Lackland AFB, Texas, and graduated in May 2006. Since then she has held element and flight leadership positions as a pediatrician in assignments at both inpatient and outpatient locations, including a residency program affiliation at Nellis AFB, Nevada. Prior to her current position, Col Kiel served as the Chief of Medical Staff at Whiteman AFB, Missouri, where she advised executive leadership on healthcare management and served as the Commander's strategic advisor regarding the clinical capability of more than 150 Total Professional Force personnel.



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Air Force Lt Col Amanda Denton, B.S.C., M.S.H.S., R.D., R.N., L.D., C.H.E.S., F.A.N.D. is the Director of Operations with the 382d Training Squadron at Joint Base San Antonio (JBSA)-Fort Sam Houston. She is the Executive of the 59th Training Group Senior Biomedical Sciences Corps and serves as the Air Education and Training Command Nutrition Consultant.

Lt Col Denton is a Fellow of the Academy of Nutrition and Dietetics and a founding member of the AF Lifestyle & Performance Medicine (L&PM) Work Group. She led pilot L&PM Clinic with the 88th Medical Group at Wright-Patterson Air Force Base. She has been an advocate and a Subject Matter Expert for Plant-based nutrition for 28 years and counting.



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Air Force Capt Courtney Clutter, M.D.



Captain Courtney Clutter, M.D. is a second year endocrinology fellow at Brooke Army Medical Center. She graduated medical school from the University of Texas Health Science Center at Houston in 2017 and completed her internal medicine residency at Brooke Army Medical Center in June 2020. She enjoys caring for patients at the Diabetes Center of Excellence.



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Disclosures

- The presenters have no relevant financial or non-financial relationships to disclose relating to the content of this activity.
- The views expressed in this presentation are those of the authors and do not necessarily reflect the official policy or position of the Department of Defense, nor the U.S. Government.
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Learning Objectives

At the conclusion of this activity, participants will be able to:

- 1) Describe and define Lifestyle Medicine (LM) and Lifestyle & Performance Medicine (L&PM).
- 2) Summarize the impact of L&PM on diabetes and other chronic diseases.
- 3) Illustrate the evidence-based eating pattern guideline for treating, managing, and reversing diabetes.
- 4) Identify strategies to apply L&PM in clinical practice and outline professional resources.



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Lifestyle Medicine vs Lifestyle & Performance Medicine



Lifestyle Medicine (LM) is the use of evidence-based lifestyle therapeutic approaches, such as a whole-food, plant-predominant dietary lifestyle, regular physical activity, adequate sleep, stress management, avoiding use of risky substances and pursuing other non-drug modalities, to prevent, treat and reverse chronic disease.

- Validated as **highly effective**
- Addresses the root-cause** of disease
- Better outcomes and lower cost... **value-based care**
- Engaging / affordable / patient-centered / healing**

(ACLM, LM in the Workplace Toolkit, 2020)
(AF L&PM WG Charter, 2020)



- The Air Force's branding of LM to **maximize performance of the warfighter**
- Improved **readiness**
- Prevention, chronic disease reversal**, enhanced quality of life
- Decreased healthcare costs**



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Simple (yet) Powerful Therapy



NUTRITION

Choose predominantly whole, plant-based foods that are fiber-filled, nutrient dense, health-promoting and disease-fighting



SLEEP

Lack of, or poor quality sleep can lead to a strained immune system. Identify and alter dietary or environmental habits that may hinder healthy sleep



EXERCISE

Regular and consistent physical activity is an essential piece of an optimal health equation



SUBSTANCE
ABUSE

The well-documented dangers of any addictive substance use can increase risk for many cancers and heart disease



STRESS
MANAGEMENT

Identify both positive and negative stress responses with coping mechanisms and reduction techniques for improved wellbeing



HEALTHY
RELATIONSHIPS

Social connectedness is essential to emotional resiliency and overall health

(ACLM, LM in the Workplace Toolkit, 2020)



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World Health
Organization



Centers for Diseases Control and Prevention (CDC) and the World Health Organization (WHO) state that aging-related diseases, such as cancer, type 2-diabetes, and coronary heart disease, could be reduced between 40% and 80% just by **changing one's lifestyle.**

(WHO, 2022)
(CDC, 2022)



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Whole-food, plant
predominant diet

1 

150 mins/wk of
moderate exercise

2 

8 hours of restful sleep

3 

Daily relaxation time
to lower stress

4 

No Smoking

5 

Regular connection to
positive people

6 

**6 LM pillars that
prevent, treat,
and reverse
major chronic
diseases**

(ACLM, LM in the Workplace Toolkit, 2020)



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Traditional vs Lifestyle Medicine

Traditional/Conventional medicine

Treats individual risk factors
Patient is a passive recipient of care
Patient is not required to make major changes

Treatment is often short term
Responsibility is on the clinician
Medication is often the 'end' treatment

Emphasizes diagnosis and prescription
Goal is disease management

Less consideration of environment
Side effects are balanced by benefits
Involves other medical specialties
Doctor generally operates independently, on a one-to-one basis

Lifestyle medicine

Treats lifestyle causes
Patient is an active partner in care
Patient is required to make major changes

Treatment is always long term
Responsibility is also on the patient
Medication may be needed, but the emphasis is on lifestyle change
Emphasizes motivation and compliance
Goal is primary/secondary/tertiary prevention

More consideration of environment
Side effects that impact lifestyle require greater attention
Involves allied health professionals
Doctor is part of a team of health professionals

(Yeh, et al., 2013)



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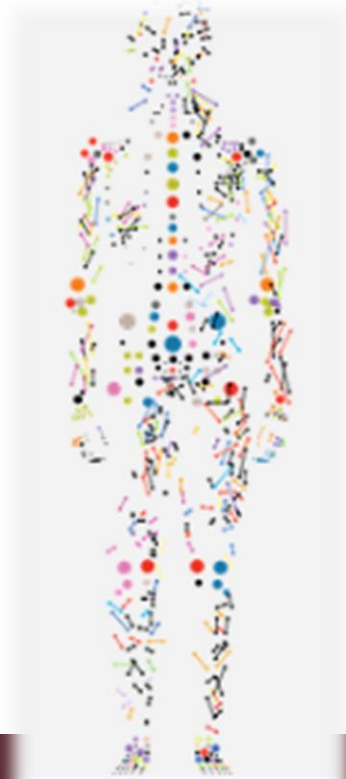
How is L&PM Different?

Other Non-Conventional Approaches to Patient Care: (Integrative Medicine / Functional Medicine / Naturopathy / Homeopathy)

- Not always evidence-based lifestyle interventions
- Patient may be an active or passive recipient
- Treats symptoms/signs of disease but not always the underlying lifestyle causes

Slide content adapted from:
(ACLM's Lifestyle Medicine 101, 2020)
(Egger, 2010)

(Photo CC0 / Pixabay)



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Differences Between Alternative/Integrative Medicine & LM



- **Alternative** medicine (AM) - 5,000 years
- Millions still use AM and have found relief and healing.
- Some areas overlap: focus on whole person, whole-foods, physical movement, etc.

(Photo source: <https://ricecatalyst.org/volume-10/2017/6/east-joins-west-the-rise-of-integrative-medicine>)



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Life Expectancy

- 1900--- about 50 years old
- Now--- about 80 years old



Frates B, Bonnet JP, Joseph R, Peterson JA. Understanding lifestyle medicine. In: Frates B, ed. *Lifestyle Medicine Handbook: An Introduction to the Power of Healthy Habits*. Monterey, CA: Healthy Learning; 2019:20.

(Fahey, 2014)

(Slide courtesy of ACLM Lifestyle Medicine 101 Curriculum, 2020)



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AUDIENCE POLLING QUESTION #1

Although life expectancy in America has improved, about how many years does an average individual suffer impaired quality of life due to health problems as they grow older?

- A. 5
- B. 8
- C. 12



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Quantity of Life versus Quality

- Life Expectancy-- 77.9 years
- Healthy Years-- 66.2 years
- Impaired Life Years-- 11.7 years



Fahey T, Insel P, Roth W. *Fit and well: Core concepts and labs in physical fitness and wellness*. McGraw-Hill Education; 2014.


Slide courtesy of ACLM Lifestyle Medicine 101 Curriculum - 2020



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“Genes constitute about one-third of the factors leading to long life,” he said. “The other two-thirds have to do with lifestyles and chance.”

- Howard S. Friedman, The Longevity Project



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“Make Health Last”

19

Video

<https://www.youtube.com/watch?v=qNkzVz5Aljk>



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Why Now? Our Chronic Disease Epidemic

- Healthcare in US costs \$3.3 trillion annually
- 90% of these costs are attributed to the treatment of chronic conditions
- Lifestyle Medicine addresses the root cause to both improve health and reduce costs

Six in ten adults in the US have a chronic disease and **four in ten adults** have two or more.



HEART
DISEASE



CANCER



CHRONIC LUNG
DISEASE



STROKE



ALZHEIMER'S
DISEASE



DIABETES



CHRONIC
KIDNEY DISEASE

(<https://www.cdc.gov/chronicdisease/about/costs/index.htm>, 2022)

(Slide content courtesy of American College of Lifestyle Medicine, LM in the Workplace Toolkit, 2020)



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CHRONIC DISEASE EPIDEMIC

**POOR DIET IS THE #1 LEADING CAUSE OF
DEATH AND DISABILITY IN THE US**
(Surpassing Tobacco Use)

Top killers related to LIFESTYLE:

- Heart Disease
- Diabetes
- High Blood Pressure
- Cancers
- High Cholesterol
- Stroke

(The Lancet, 2019)



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CHRONIC DISEASE EPIDEMIC

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(The Lancet, 2019)



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UNSUSTAINABLE HEALTH TRENDS IN THE DoD

- **Overweight and Obesity Rates in the Military:**

1995 → 51%

2008 → 61%

2017 → 69%



(Meadows, 2018)
(Reyes-Guzman, 2015)
(CDC, 2020)

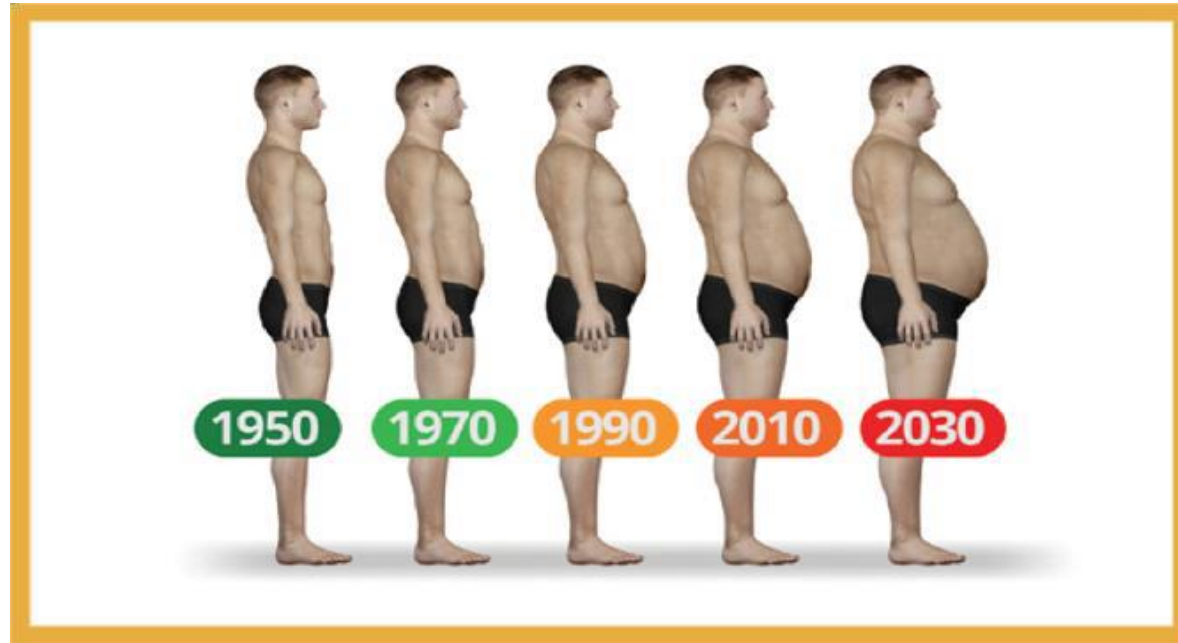


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Unsustainable Health Trends



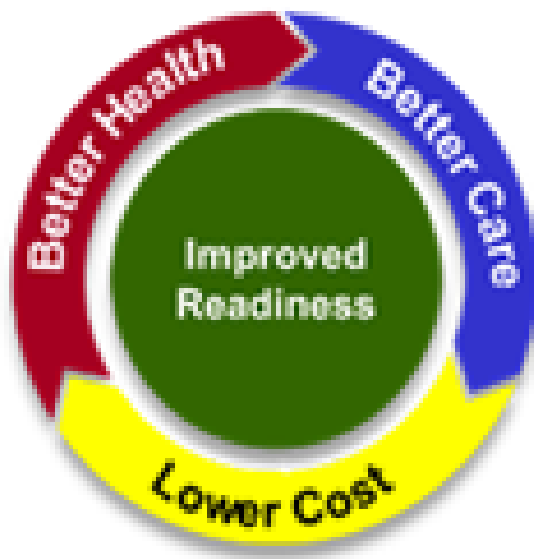
The Department of Defense spends \$1.5 billion annually on obesity-related healthcare costs for current & former service members and their families. (CDC, 2020)

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L&PM Concepts Align with Quadruple Aim



(Defense Health Agency Quadruple Aim;
American College of Lifestyle Medicine, n.d.)



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Lifestyle Medicine REVERSES Disease

NEW YORK TIMES BESTSELLING AUTHOR
Dean Ornish, M.D., and Anne Ornish

UnDo It!



"Dr. Ornish presented the revolutionary kind of medicine using lifestyle changes to prevent and reverse (undo) heart disease, diabetes, prostate cancer, high blood pressure, depression, osteoporosis, and other chronic diseases, by reversing the underlying causes and restoring your health and your life."
—DR. WILLIAMS, M.D., President, American College of Surgeons

Disease Reversal and Prevention DIGEST
A publication of The Nutrition Project

ISSUE 1 - SPRING 2018
A Community Approach To Health In Midland, Texas

America's Protein Obsession

Weight Loss On A Plant-Based Diet

PLUS
How to go plant-based, improve your sleep and be more mindful



Evidence-based
Disease Reversal Program

Obesity | Type 2 Diabetes | Heart disease

Stop Managing. Start Healing
stylemed.org/diseasereversal

Reversal of coronary artery disease⁴



Coronary angiography reveals a diseased distal left anterior descending artery (A). Following 32 months of a plant-based nutritional intervention without cholesterol-lowering medication, the artery regained its normal configuration (B).

(Esselstyn, 2014)

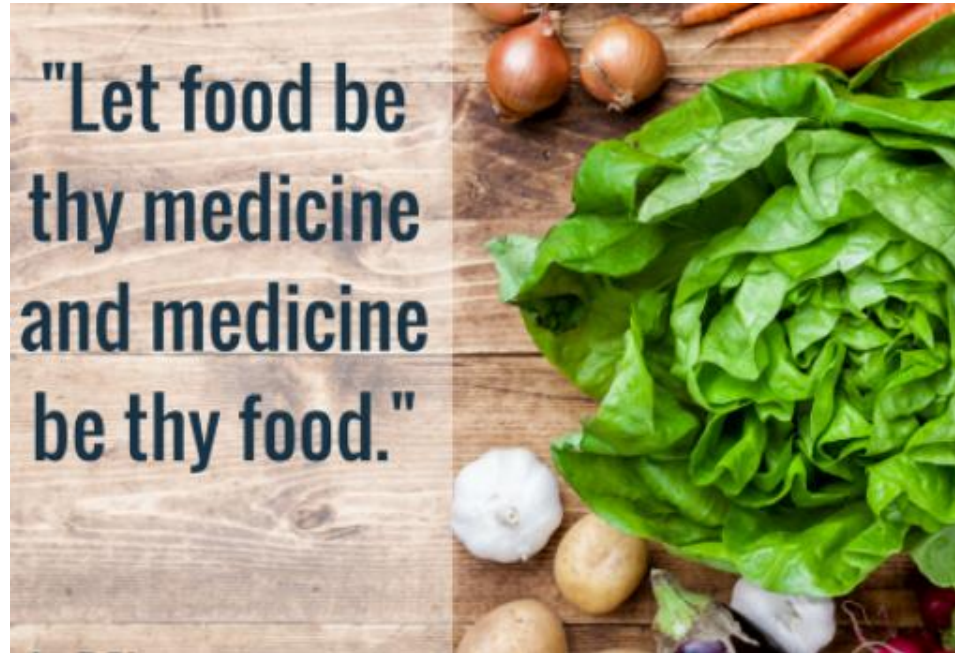


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Using FOOD As Medicine



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The Power of Plants

**THE ONLY EATING PATTERN
SHOWN TO REVERSE DISEASE IS A
WHOLE FOOD, PLANT-BASED DIET**



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What is the Primary Care Manager's Role?

“We found that primary care physicians provide better care to diabetes patients when compared to other providers in a primary care setting because they were more likely to alter medications and consistently provide lifestyle counseling.”

-- Alexander Turchin, M.D.

Physician & Researcher

Division of Endocrinology



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Screen, Screen, Screen

1

Screen at-risk individuals:

- Cast a broad net based on guidelines:
 - U.S. Preventive Services Taskforce (USPSTF)
 - age 35-70 with overweight/obesity¹
 - American Diabetes Association (ADA) – **age 35** for all; consider in adults of any age who are overweight and who have one or more additional risk factors² (see next slide)
 - VA/DoD Clinical Practice Guidelines (CPG) for Overweight & Obesity – consider in anyone with overweight or obesity³
- Early screening & intervention is key:
50% loss of beta cell function at diagnosis⁴

(USPSTF, 2021)
(ADA, 2022)
(VA/DoD, 2020)
(Wajchenberg, 2007)

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ADA Screening of Asymptomatic Patients

- **Overweight or obese** (BMI >25 kg/m² or > 23 kg/m² in Asian Americans) adults with one or more of the following risk factors:
 - First degree relative with diabetes
 - High-risk race/ethnicity (e.g. African American, Latino, American Indian, Alaska People, Asian American, Pacific Islander)
 - History of Cardiovascular disease (CVD)
 - Hypertension
 - HDL Cholesterol Level <35 mg/dL (0.90 mmol/L) and/or a triglyceride level >250 mg/dL (2.82 mmol/L)
 - Women with polycystic ovary syndrome
 - Physical inactivity
 - Other clinic conditions associated with insulin resistance (e.g., severe obesity, acanthosis nigricans)
- **Prediabetes** (A1C $>5.7\%$) should be tested yearly
- Women who were diagnosed with **gestational diabetes** should have lifelong testing at least every 3 yrs
- **For all other patients, testing should begin at age 35 years**
- If results are normal, testing should be repeated at a minimum of 3-year intervals, with consideration of more frequent testing depending on initial results and risk status

(ADA, 2021)

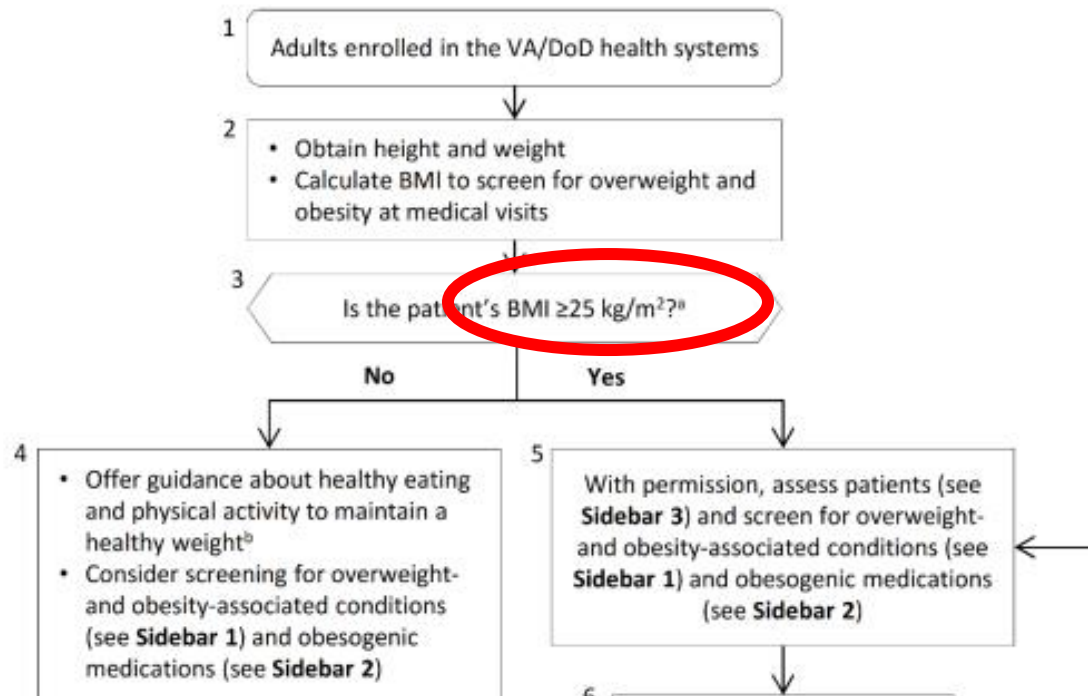


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VA/DoD CPG for Management of Overweight & Obesity



- HTN
- T2DM and prediabetes
- Dyslipidemia
- Metabolic syndrome^a
- OSA
- OA/degenerative joint disease
- NAFLD
- GERD
- Cancer [5]

HTN = Hypertension

T2DM = Type 2 Diabetes Mellitus

OSA = Obstructive Sleep Apnea

OA = Osteoarthritis

NAFLD = Non- alcoholic Fatty Liver Disease

GERD = Gastroesophageal Reflux Disease

(VA/DOD, 2020)

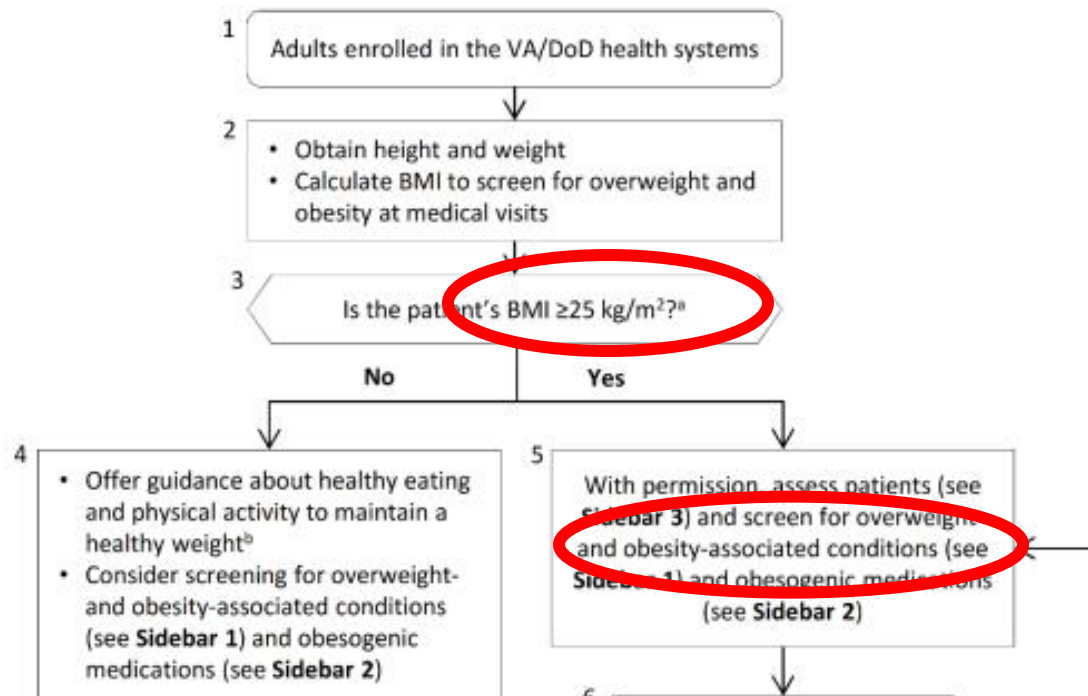


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(VA/DoD, 2020)

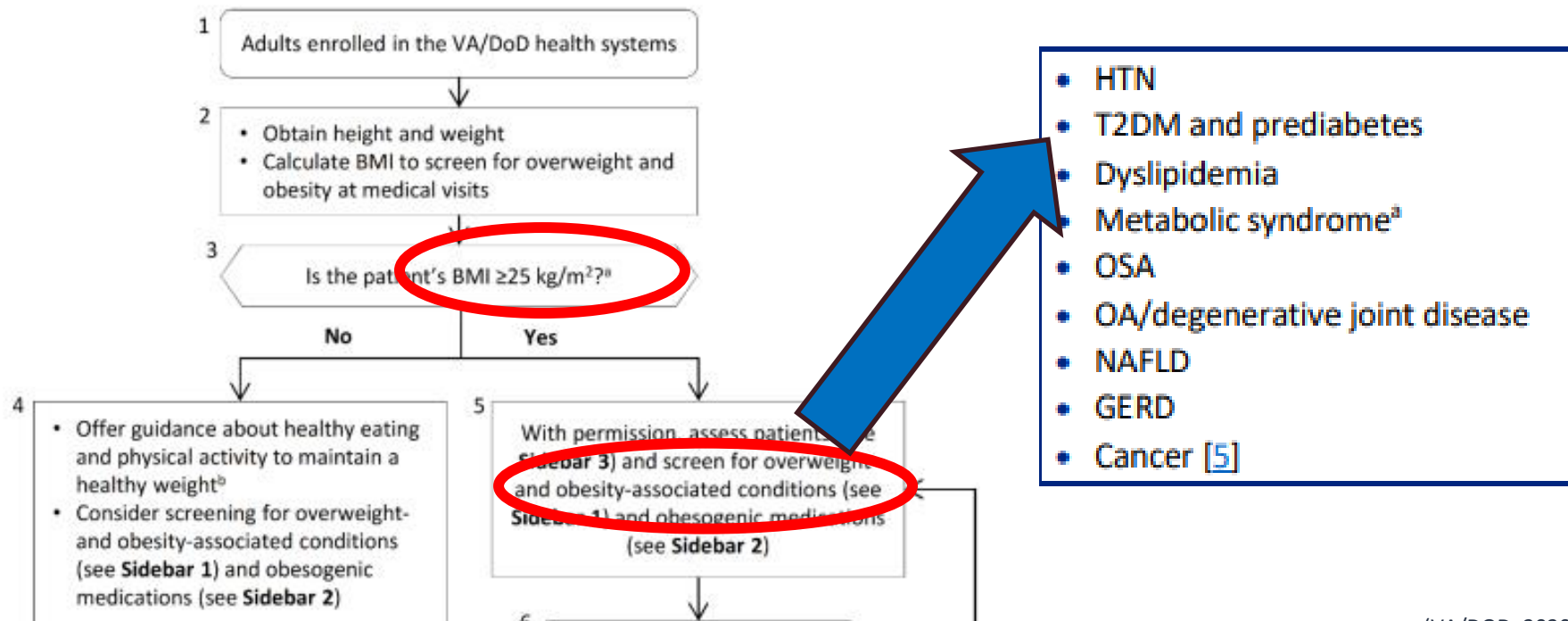


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VA/DoD CPG for Mgmt of Overweight & Obesity



(VA/DOD, 2020)

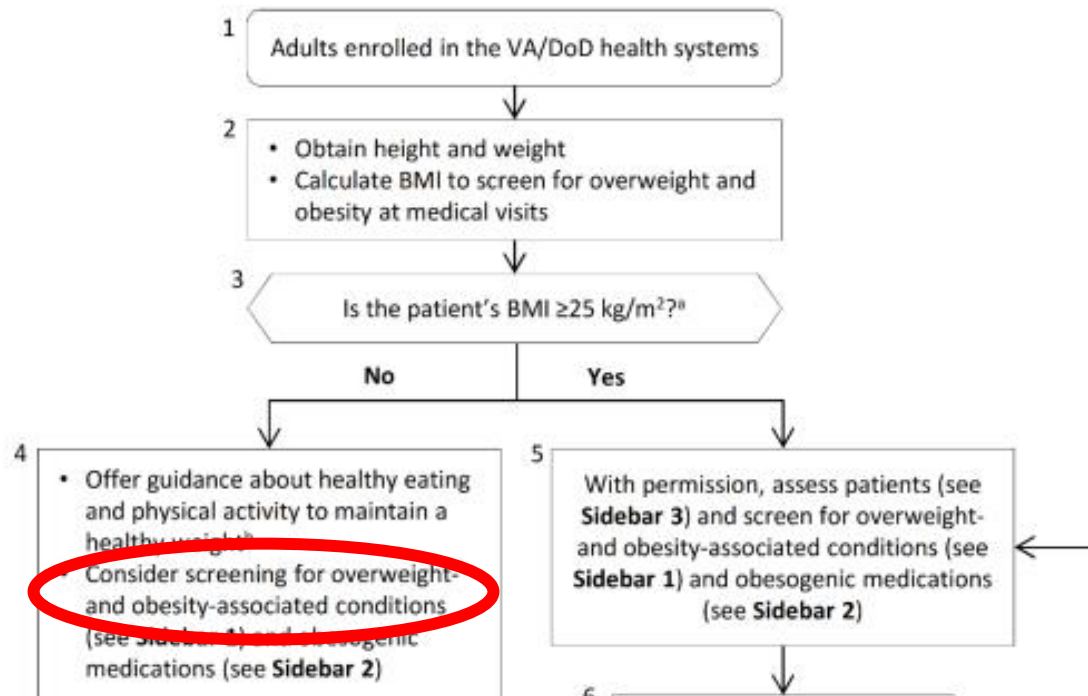


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(VA/DOD, 2020)



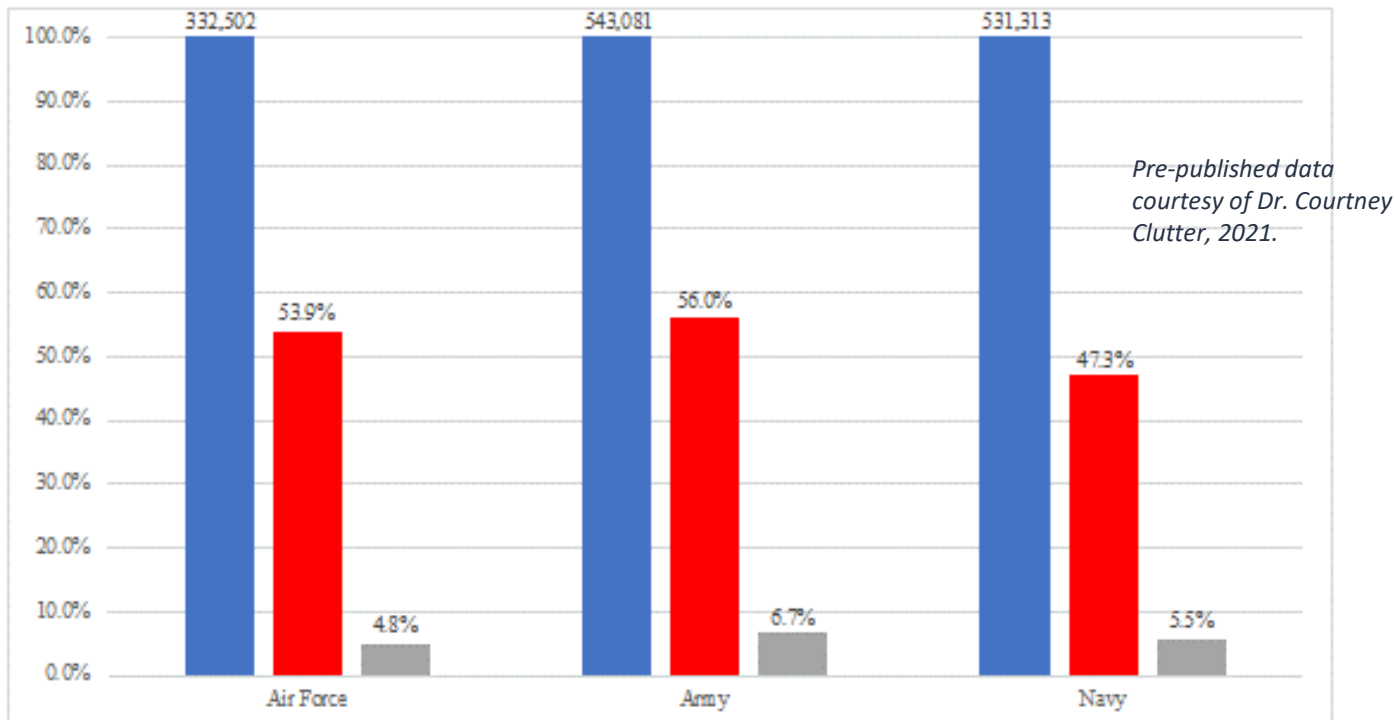
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PreDM Screening of ADSMs 2014-2018

- Total % of service members
- % meeting criteria for preDM screening
- % actually screened for preDM



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Screen, Screen, Screen

1

Screen at-risk individuals:

- Overweight or obese
- Women with history of gestational diabetes mellitus (GDM)
- Human immunodeficiency virus (HIV) positive on treatment
- 35 years and older

(VA/DOD, 2020)
(ADA, 2021)



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Be Savvy with Labs

2

Follow Up Results:

- Fasting vs. non-fasting values
- Know the implications of sub-optimal results
- Make contact with the patient and establish a plan



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10 Stages of High Blood Sugar

	Optimal	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7	Stage 8	Stage 9	Stage 10
	Optimal	Above Optimal	High	Pre Diabetes	Adv Pre Diabetes	Initial Diabetes	Adv Diabetes	Adv Diabetes	Severe Diabetes	Severe Diabetes	Critical Diabetes
Fasting BS	70-84 mg/dL	85-94	95-99	100-109	110-125	126-139	140-169	170-199	200-249	250-299	300+
1 Hour BS	80-119	120-139	140-159	160-199	200-239	240-279	280-319	320-359	360-299	400-439	440+
2 Hour BS	80-99	100-119	120-139	140-159	160-199	200-234	235-269	270-304	305-339	340-374	375+
A1C	4.7-4.9	5.0-5.3	5.4-5.6	5.7-6.3	6.3-6.4	6.5-7.1	7.1-8.2	8.2-9.3	9.3-10.9	10.9-12.6	12.6+
Heart Attack Risk Increase	None	Minor	20-40%		40-60%	50-80%	60-90%	60-100%	90-130%	100-250%	250%+
			Increased Heart Disease Risk				Increased Heart Disease Risk, Kidney Failure, Blindness, Amputation				

V1.6 © 2016 E4 Diabetes Solutions

*Blood glucose in mg/dL. Divide by 18 to determine value in mmol/L

(ACLM, Diabetes Reversal, 2021)



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10 Stages of High Blood Sugar

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1 Hour BS	80-119	120-139	140-159	160-199	200-239	240-279	280-319	320-359	360-299	400-439	440+
2 Hour BS	80-99	100-119	120-139	140-159	160-199	200-234	235-269	270-304	305-339	340-374	375+
A1C	4.7-4.9	5.0-5.3	5.4-5.6	5.7-6.3	6.3-6.4	6.5-7.1	7.1-8.2	8.2-9.3	9.3-10.9	10.9-12.6	12.6+
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10 Stages of High Blood Sugar

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A1C	4.7-4.9	5.0-5.3	5.4-5.6	5.7-6.3	6.3-6.4	6.5-7.1	7.1-8.2	8.2-9.3	9.3-10.9	10.9-12.6	12.6+
Heart Attack Risk Increase	None	Minor	20-40%		40-60%	50-80%	60-90%	60-100%	90-130%	100-250%	250%+
			Increased Heart Disease Risk				Increased Heart Disease Risk, Kidney Failure, Blindness, Amputation				

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(ACLM, Diabetes Reversal, 2021)



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Plant the Seed

3

Offer Lifestyle Changes

- Offer as a legitimate option for management as well as reversal
- Don't assume the patient won't change - **let the patient make the choice!**
- Write Lifestyle Prescriptions



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AUDIENCE POLLING QUESTION #2

What do you think is the biggest obstacle patients face when transitioning to a more plant-based diet?

- A. They think it has to be all-or-nothing
- B. They don't know how to shop for or cook plant-based meals
- C. They don't want to eat a more plant-based diet
- D. They don't want to give up their meat/cheese/dairy/junk food



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This supplement was sponsored by
American College of Lifestyle Medicine.
It was edited and peer-reviewed by
The Journal of Family Practice.

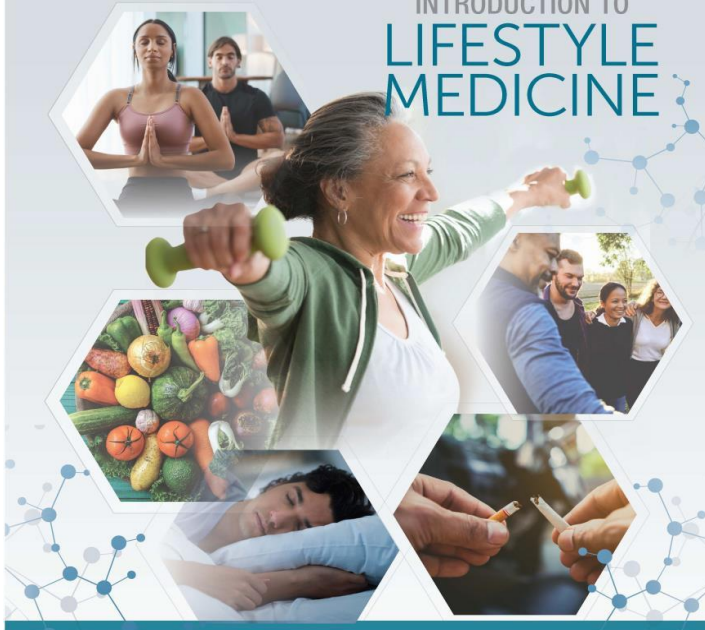
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SUPPLEMENT TO
THE JOURNAL OF
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VOL 71, NO 1 | JANUARY/FEBRUARY 2022 | MDEDGE.COM/FAMILYMEDICINE

A FAMILY PHYSICIAN'S
INTRODUCTION TO
LIFESTYLE
MEDICINE



THE JOURNAL OF FAMILY PRACTICE®

J Fam Pract. 2022 January;71(1)



(Fields, et al, 2022)



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A FAMILY PHYSICIAN'S
INTRODUCTION TO
**LIFESTYLE
MEDICINE**



Type 2 Diabetes Prevention and Management With a Low-Fat, Whole-Food, Plant-Based Diet

Casey Spiro Linke, FNP-C; John Kelly, MD, MPH, LM Specialist; Micaela Karlsen, PhD, MSPH; Kathryn Pollard, MS; Caroline Trapp, DNP, ANP-BC, CDCES, DipABLM, FAANP

doi: 10.12788/jfp.0252

Consider prescribing a plant-based diet to all patients for diabetes prevention or treatment.

Reframe treatment goals to focus on quality of life and medication reductions.

Reframe treatment strategies with a patient centered approach to focus on lifestyle instead of medication.

Provide education to patients on benefits and how to eat a Whole-Food, Plant-based (WFPB) diet.

Support long-term adherence with ad libitum recommendations.

- Facilitate social support groups.

(Linke, et al, 2022)



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American College of Lifestyle Medicine.
It was edited and peer reviewed by
The Journal of Family Practice.

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SUPPLEMENT TO THE JOURNAL OF FAMILY PRACTICE

VOL. 71, NO. 1 | JANUARY/FEBRUARY 2022 | MDEEDGE.COM/FAMILYMEDICINE

A FAMILY PHYSICIAN'S INTRODUCTION TO LIFESTYLE MEDICINE



A Lifestyle Medicine Approach to Medication Deprescribing: An Introduction

Denise Fields, PharmD, BC-ADM, LDE, FASHP, Dip IBLM/ACLM; Matthew Arnold, PharmD, BCACP;
Micaela Karlsen, PhD, MSPH; John Kelly, MD, MPH

doi: 10.12788/ffp.0259

TABLE 1. **Considerations for commencing deprescribing based on patient preferences**

Patient Experience With Medication	Possible Deprescribing Priority
Low perceived benefit	Medications devalued by patient as a source of motivation
Cost reduction	Most expensive medications first to save money for patient
Daily pill burden feels high	Medication with multiple doses per day to reduce pill burden
Negative side effects	Medications with negative side effects to improve quality of life

4-STEP DEPRESCRIBING PROCESS⁸

- Review all current medications
- Identify any inappropriate, unnecessary, or harmful medications
- Plan deprescribing with the patient
- Regularly re-review medications

PLANNING FOR MEDICATION DEPRESCRIBING IN LM

- Review all medications and adherence prior to deprescribing
- Consider patient values, goals, and motivating factors
- Review current disease status and symptom control
- Identify intensity of lifestyle intervention planned
- Consider involving a clinical pharmacist for additional support
- Establish expectations for patient self-monitoring
- Communicate expectations for patient follow-up

(Linke, et al, 2022)



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Therapeutic Dosing

Appropriate dosing of
Lifestyle Medicine is key
for disease reversal

Lifestyle Medicine Prescription

Name: _____ Date: ____/____/____

NUTRITION

PHYSICAL ACTIVITY

SLEEP

STRESS MANAGEMENT

SOCIAL CONNECTION

**AVOIDANCE OF
RISKY SUBSTANCES**



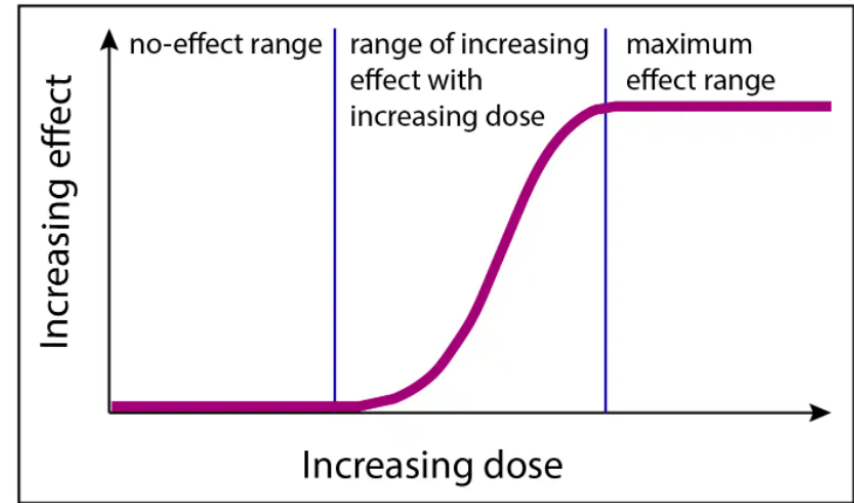
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Dosing appropriate for T2DM remission

- Remission has not been reported without adequately dosed lifestyle changes.
- Remission is achievable for majority of short duration (<8 years) diabetes patients (and many with longer duration)
 - With intense and sufficient LM interventions



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Tips for Clinical Practice Integration

- 1) Ask permission
- 2) Explore their ultimate goal: “What would life be like?”
- 3) Plant the seed about lifestyle changes
- 4) Refer for assistance with behavior changes
 - RD/MNT
 - Disease Manager
 - Behavioral Health Consultant
 - Health coach
- 5) Incorporate health equity



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Tips for Clinical Practice Integration

WHAT ABOUT YOU? 😊



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American College of Lifestyle Medicine

- Founded in 2004, 501(c) 3 status in 2016
- 7,284 members. 1000% growth in last seven years
- 50+ corporate members
- Representing all 7 continents, 26 international societies form the Lifestyle Medicine Global Alliance
- 3,254 providers certified across the world
- One of the fastest growing health care career fields globally



www.lifestylemedicine.org

<https://lifestylemedicine.org/ACLM/About/ACLM/About/About.aspx?hkey=4697cec6-fc2c-4738-834a-2df3cfe2278d>



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The American College of Lifestyle Medicine (ACLM) is the medical professional society providing quality education and certification to those dedicated to clinical and worksite practice of Lifestyle Medicine as the foundation of a transformed and sustainable health care system.

Patient Resources

- Food as Medicine Jumpstart Guide (21-day)
- Nutrition Myths
- ACLM WFPP Plate (Adult and Pediatric)
- Type 2 Diabetes Bill of Rights
- Calorie Density
- Green Smoothie Guide
- Nourish Bowl Guide
- Food as Medicine Grocery Store List
- 6 pillar Resource/Tips pages

Provider Resources

- ACLM Dietary Spectrum
- Patient Lifestyle Assessment Form (Long)
- Consent Form for Group Visits
- Lifestyle Medicine Shared Medical Appc
- Food Frequency Questionnaire
- Physical Activity Assessment
- Preventive Services Assessment
- Social Relationships Assessment
- Stress Assessment
- Substance Abuse Assessment

ACLM Videos

- **Benefits Videos**
 - **ACLM Academic Programs:** Learn more about how ACLM is incorporating Lifestyle Medicine into education.
 - **ACLM Continuing Education:** Learn about ACLM's continuing education offerings.
 - **ACLM Membership:** Learn more about membership at ACLM.
- **Course Videos**
 - **ACLM Reversing Type 2 Diabetes and Insulin Resistance Course:** The Reversing Type 2 Diabetes and Insulin Resistance with Lifestyle Medicine course, offered by the American College of Lifestyle Medicine (ACLM), and led by founding president, John Kelly, MD, MPH, ABLM certified LM Specialist, reviews the epidemiology, risk factors, and current medical approach to preventing and treating all forms of diabetes.
 - **ACLM Physician Well-Being Course:** This course, led by Liana Lianov, MD, MPH, FACLM, FACP, DipABLM, and funded through the generous support of the Ardmore Institute of Health, was created to describe and apply approaches that support health professionals in achieving and sustaining a total healthy lifestyle, including eating a whole food plant-based diet, being physically active, and engaging in mindfulness and positive psychology activities.
- **Story Project Videos/Other**
 - **Adams Suds:** Learn about Adam's Lifestyle Medicine transformation.
 - **Lifestyle Medicine with Dr. George Guthrie:** Learn about Lifestyle Medicine from ACLM's founder, George E. Guthrie, MD, MPH, CDE, FACLM, FAAFP, DipABLM.



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Resources



<https://lifestylemedicine.wufoo.com/forms/k11pvla413800if/>



lifestyleperformancemed@gmail.com



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Air Force Lt Col Amanda Denton, M.S., R.D., C.H.E.S., F.A.N.D.



Air Force Lt Col Amanda Denton, B.S.C., M.S.H.S., R.D., R.N., L.D., C.H.E.S., F.A.N.D. is the Director of Operations with the 382d Training Squadron at Joint Base San Antonio (JBSA)-Fort Sam Houston. She is the Executive of the 59th Training Group Senior Biomedical Sciences Corps and serves as the Air Education and Training Command Nutrition Consultant.

Lt Col Denton is a Fellow of the Academy of Nutrition and Dietetics and a founding member of the AF Lifestyle & Performance Medicine (L&PM) Work Group. She led pilot L&PM Clinic with the 88th Medical Group at Wright-Patterson Air Force Base. She has been an advocate and a Subject Matter Expert for Plant-based nutrition for 28 years and counting.



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Diabetes + Nutrition

Presented by:

Lt Col Amanda Denton, M.S., R.D.,
C.H.E.S., F.A.N.D. *in collaboration with*
Sahra Pak, M.S., R.D., DipACLM



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Goals of Nutrition Therapy for Adults With Diabetes

1. To promote and support healthful eating patterns, emphasizing a variety of nutrient-dense foods in appropriate portion sizes, to improve overall health and:
 - achieve and maintain body weight goals
 - attain individualized glycemic, blood pressure, and lipid goals
 - delay or prevent the complications of diabetes
2. To address individual nutrition needs based on personal and cultural preferences, health literacy and numeracy, access to healthful foods, willingness and ability to make behavioral changes, and existing barriers to change

(Standards of Medical Care in Diabetes, 2021)



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Goals of Nutrition Therapy for Adults With Diabetes

3. To maintain the pleasure of eating by providing nonjudgmental messages about food choices while limiting food choices only when indicated by scientific evidence
4. To provide an individual with diabetes the practical tools for developing healthy eating patterns rather than focusing on individual macronutrients, micronutrients, or single foods

(Standards of Medical Care in Diabetes, 2021)



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AUDIENCE POLLING QUESTION #3

What is the average daily intake of fiber in the U.S.?

- A. 26 grams
- B. 23 grams
- C. 12 grams
- D. 14 grams



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Treating + Reversing Diabetes via Nutrition

- “Side” effects of a plant-based diet are all positive:
 - Protective factors to prevent comorbidities (kidney disease, CVD, obesity, dementia, Alzheimer’s (at times coined as Type 3 DM), etc.
- Has the ability to reduce the use of medications, or for some, eliminate the need
- Improves other aspects of health other than “just” treating diabetes such as improvement in mood, digestion/gastrointestinal (GI), reduce risk of cancer, positive changes in telomere, and more.



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Dietary choices and insulin resistance

- Calorie dense foods
- Fast foods
- Highly & Ultra Processed foods
- Animal protein, animal fats, particularly processed meats
- Highly refined grains
- Low to no fiber
- Sugar sweetened beverages
- “SAD” diet – Standard American Diet



**Critical role in
increasing
risk/rates of
T2DM**

(Ley, et al., 2014)



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America's Fiber Intake Gap

- 2017 analysis in the American Journal of Lifestyle Medicine concluded:
 - 95% of adults and children do not consume recommended amount of fiber
 - Average intake – 14g/day



(Quagliani, et al. 2017)



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Key Drivers of Disease

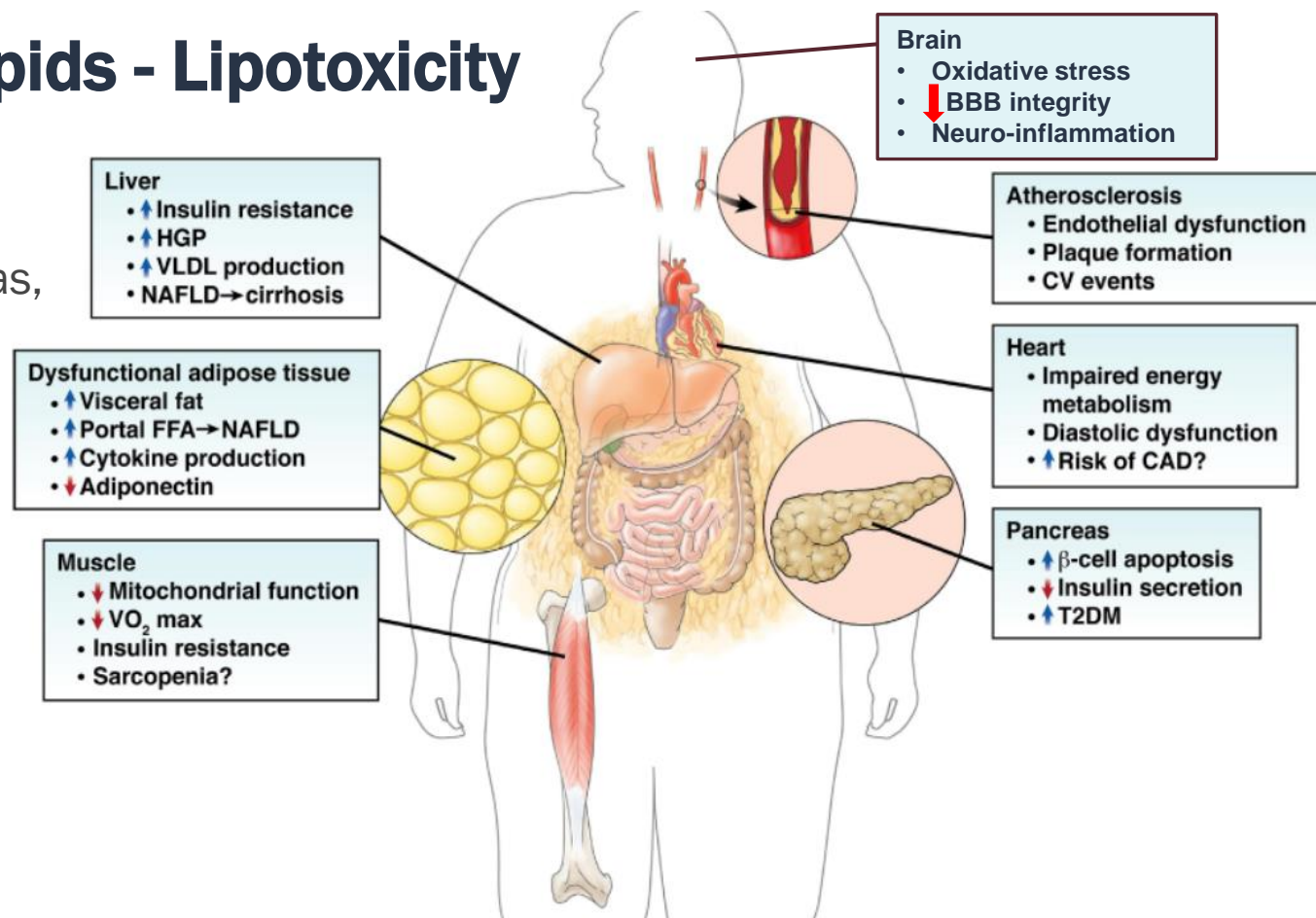
- Obesity
- Insulin resistance
- Inflammation
- Oxidative stress
- Lipotoxicity
- Glucotoxicity
- Dysbiosis



DISEASE

Intracellular Lipids - Lipotoxicity

- Excess calories
- Fat in liver, pancreas, muscles
- Inhibits beta-cell function by reducing insulin production
- Intracellular fat – blocks glucose uptake



(Cusi, 2012)



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Plant Foods vs. Inflammation

- 100 people with heart disease
- 1/2 random selection → 100% plant-based diet
- 1/2 followed the America Heart Association (AHA) diet
 - Includes lean poultry, fish, low fat dairy products and plant-based foods
- 24-hour diet recall, 2 x week
- Eight weeks
- C-reactive protein levels:
 - 32% lower in 100% plant-based group compared with the AHA diet group.



(Shah, et al. 2018)

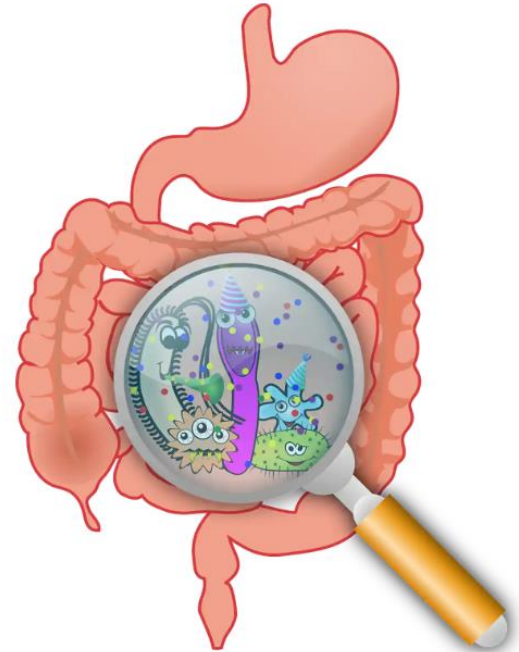


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Inflammation and the Microbiome

- High fat – low fiber SAD diet promotes overgrowth of gram-negative pathogens → affect microbiome
 - Endotoxemia
 - Inflammatory cascade
 - ✓ Increase risk of:
 - Insulin resistance
 - Obesity
 - Diabetes
 - CVD
- 2014 Harvard study – found total red meat consumption increased biomarkers of inflammation by changing gut microbiome.



(Festi, et al., 2014)
(Ley, et al., 2014)



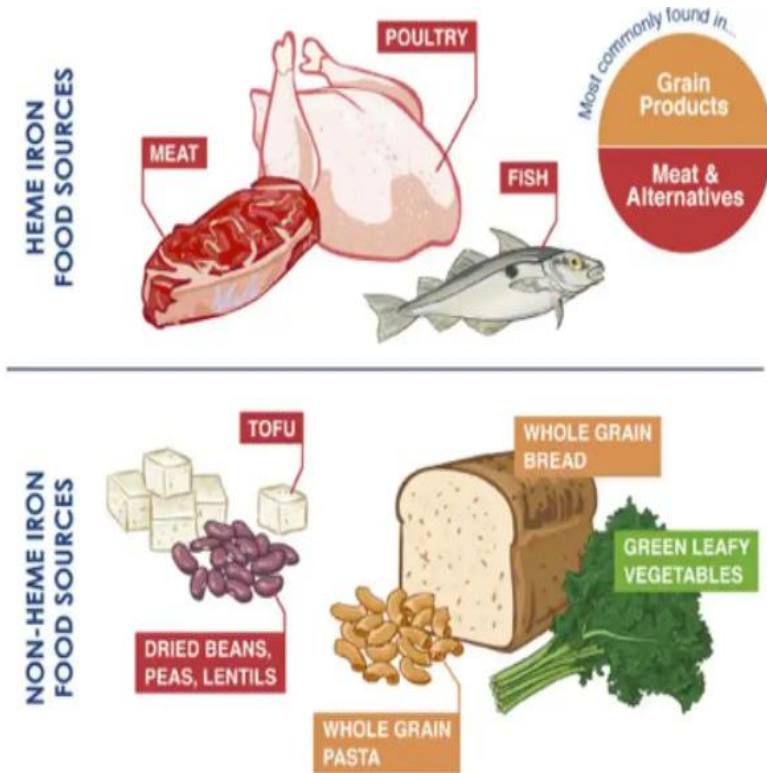
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Heme Iron

- Heme iron found in animal based protein acts as pro-oxidant
 - → reactive oxygen species (ROS)
 - ✓ Damages insulin-producing pancreatic cells
 - ✓ Can promote insulin resistance
- Elevated iron stores associated with increased risk for diabetes
- Iron overload increased risk for diabetes and CVD due to increase in fatty acid oxidation
- Reduction in stored iron found to increase insulin sensitivity by 40%



(Zhao, et al., 2013)



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What works?



Adventist Health Study 2

Loma Linda U. School of Public Health

- >96,000 SDAs from North America
- Start: 2002 – ongoing
- Results:
 - CVD:
 - ✓ 23% lower among vegetarians (lacto-ovo) men
 - ✓ 42% lower among 100% plant based men
 - ✓ No significant difference in women
 - HTN:
 - ✓ 55% lower among vegetarians (lacto-ovo)
 - ✓ 75% lower among 100% plant based
- Diabetes:
 - ✓ 51% semi-vegetarians
 - ✓ 38 % lower among vegetarians (lacto-ovo)
 - ✓ 62% lower among 100% plant based
- Chronic Kidney Disease (CKD):
 - ✓ 52% less CKD in vegetarians + 100% plant based compared to omnivores

(Tonstad, et al., 2013)
(Segovia-Siapco, et al., 2018)



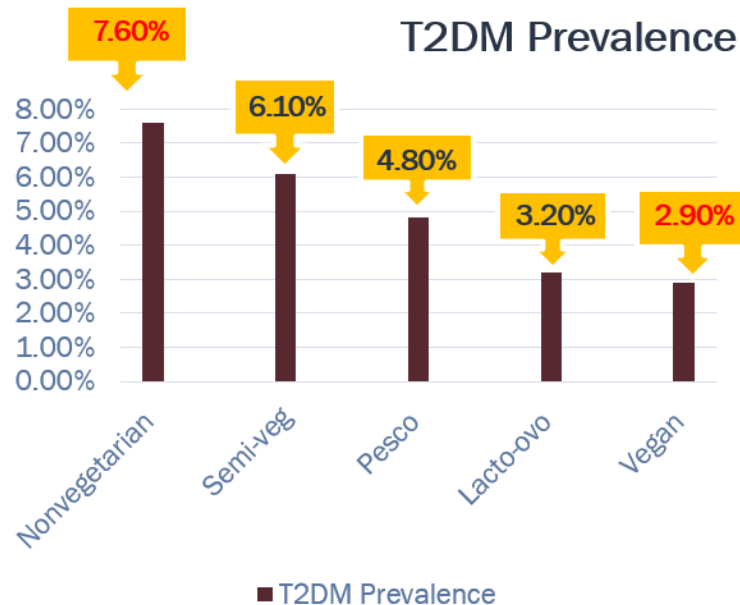
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Adventist Health Study 2

Loma Linda U. School of Public Health



- 60,903 participants
- 3,430 (5.6%) reported T2DM
- Cross sectional study
- Body Mass Index (BMI):
 - Lowest in vegans (23.6 kg/m²)
 - Lacto-ovo (25.7 kg/m²)
 - Pesco-veg (26.3 kg/m²)
 - Semi-veg (27.3 kg/m²)
 - NonVeg (28.8 kg/m²)
- Vegan/Lacto-ovo → nearly ½ reduction in risk of T2DM cf nonveg diets

(Tonstad, et. al., 2009)



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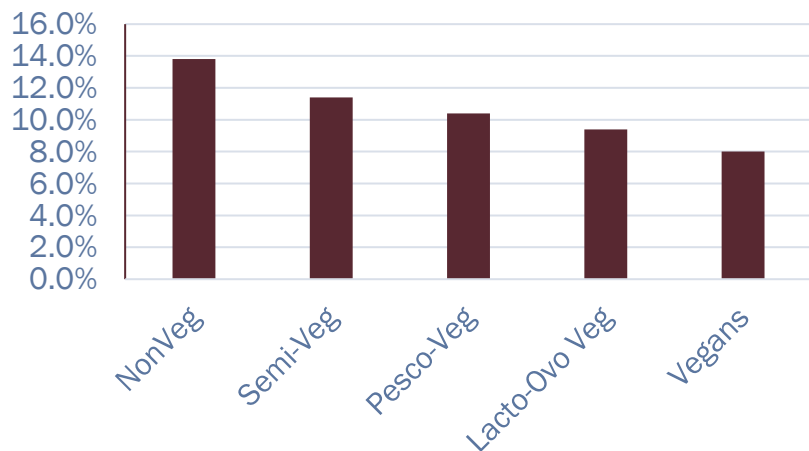
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Adventist Health Study 2 – BMI

Loma Linda U. School of Public Health

Prevalence of T2DM for BMIs
 ≥ 30 kg/m²



■ Prevalence of T2DM for BMIs ≥ 30 kg/m²

(Tonstad, et. al., 2009)

- Even in higher BMI, benefits of dietary pattern were found:
 - Vegans: 8.0% prevalence
 - Lacto-Ovo: 9.4%
 - Pesco-Veg: 10.4%
 - Semi-Veg: 11.4%
 - Non-Veg: 13.8%
- For <30 BMI, prevalence was 2.0, 2.1, 3.3, 3.7, 4.6% in groups, respectively



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EPIC-Oxford Study, United Kingdom



- ~65,500 participants from UK.
- Start: 1993 and ongoing
- Pop: Recruitment targeted to identify as many vegetarians as possible, and 50 % of the participants do not eat meat.
- Results compared to omnivores (>50 g meat/day):
 - CVD: 32% lower among vegetarians (lacto-ovo) and vegans
- Diabetes (before BMI adjustment):
 - 37% lower in vegetarians + vegans combined
 - 47% lower in 100% plant based
- Kidney Stones:
 - 31% less CKD in vegetarians + 100% plant based compared to those high meat intake (>100g/3.5oz/day)
- Cancer (all cancers combined):
 - 10% lower in vegetarians
 - 18% lower in 100% plant based

(Key , et al. 2021)
(Turney, et al. 2014)



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Tzu Chi Health Study



The Da Ai Farm in the Dalin Tzu Chi Hospital compound where the hospital cafeteria's organic produce is cultivated. (Image: greenhospitals.net)

- 6002 Taiwan Buddhists
- Prospective cohort study
- Pop: Female to male ratio – 2:1, ~30% vegetarians
- Start: 2007 ~ ongoing
- Results:
 - Diabetes:
 - ✓ 51% lower among near 100% plant based men
 - ✓ 74-75% lower among near 100% plant based women

(Chiu, et. al., 2014)



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Power of Plants

- Dietary components most strongly tied to risk reduction of diabetes (and other comorbidities) are concentrated in plants.
- Disable the key drivers of the disease process



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Benefits of Plant Based Nutrition

- **Protective Nutrients:** Plant based diets are rich in vegetables and fruits → reduce oxidative stress and chronic inflammation
 - Veg group in AHS-2 consumed ~650 g/day of fruits/veg (1/3 more than non-veg)
 - Veg diets contain < saturated fat than non-veg; saturated fat shown to reduce insulin sensitivity
 - Plant foods are higher in magnesium, phytochemicals/antioxidants, fiber, improves gut microbiome (prebiotics) all reduce insulin resistance and lower risk of diabetes.
- **Weight Management:** those who consume a plant-based (dietary pattern) have lower BMI. Weight loss reduces insulin resistance, also even higher BMI plant based group = saw less prevalence vs. non-veg group (AHS-2)
 - WFPB foods are high in fiber, high in volume, high in nutrients (nutrient-dense), low in kcal (less calorie dense) leading to natural and sustainable weight management for many
- **Plant vs. Animal Protein:** 2017 study effect of protein sources in men followed for ~20 years found that replacing 1% energy from animal protein with plant protein decreased risk of T2DM by 18%

(Virtanen, 2017)



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AUDIENCE POLLING QUESTION #4

What food(s) contain protein?

- A. Apple
- B. Potato
- C. Black Beans
- D. Pasta
- E. Broccoli
- F. Quinoa



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Calorie Density vs Nutrient Density

- WFPB diets are nutrient-dense
 - Allows ad libitum eating – unable to consume excess kcal due to volume/water content
- SAD diet and meat-heavy diets that are high in saturated fat and highly processed foods/ingredients are energy-dense
- Low total kcal intake via WFPB dietary pattern lead to sustainable and realistic weight loss and management leading to better glycemic control.

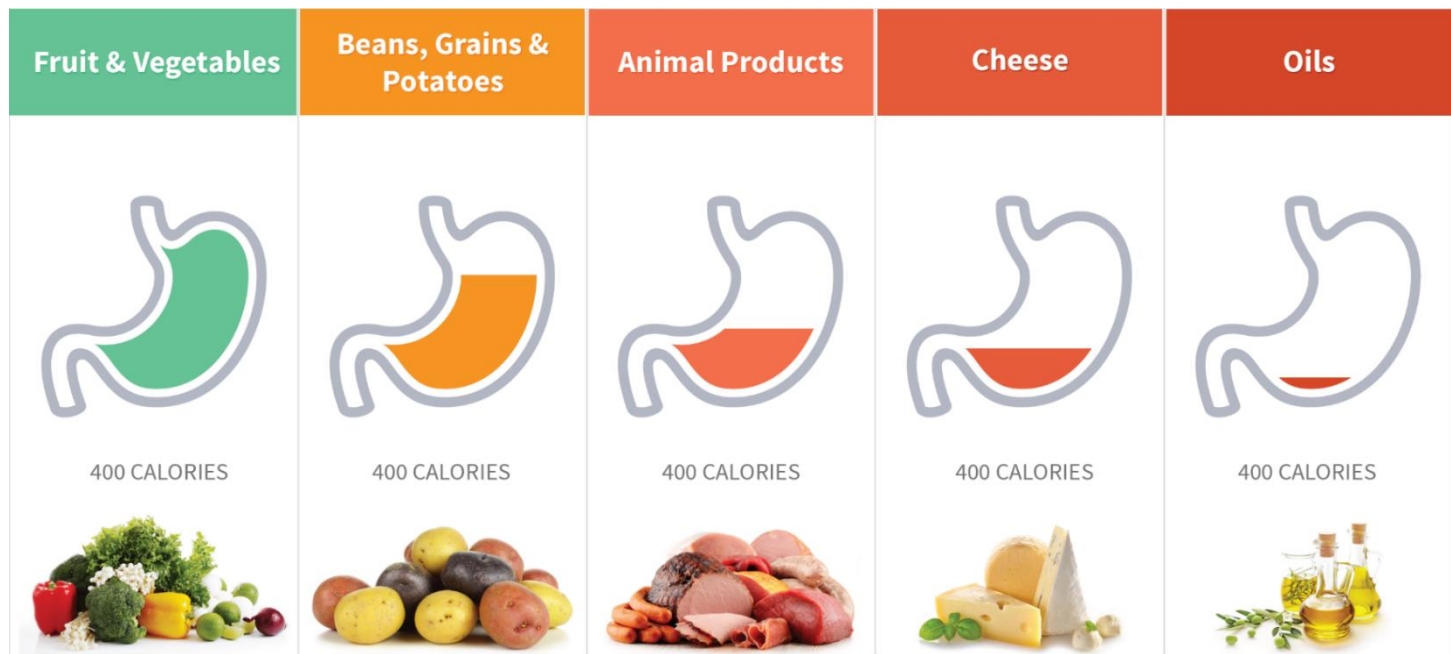


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Calorie Density



(<https://nutritionstudies.org/whole-food-plant-based-diet-guide/> , n.d.)



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Nutrient Density

The amount of nutrients you get for the calories consumed.



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Nutrient Density



9 or 20g
potato crisps

or



2 punnets
strawberries

1870 calories



1870 calories



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So...what to eat?

Dietary pattern to BEAT diabetes!

Focus on nutrient-dense, low kcal foods

- Fills you up without excess kcal, fat, sugar, chemicals/preservatives.
- **Large amounts (unlimited):** Lowest caloric density = non-starchy vegetables (100 kcal/pound)
- **Medium amount:** Moderate caloric density = fruits, legumes, starchy veg, whole grains (400-600 kcal/lb)
- **Small amounts:** kcal dense plant foods such as nuts, seeds, avocados
- **AVOID:** calorically dense, nutrient lacking unhealthy foods (refined foods, sugars, flour products, fried foods, processed meats, full fat dairy, etc.)

(Davis, 2019)

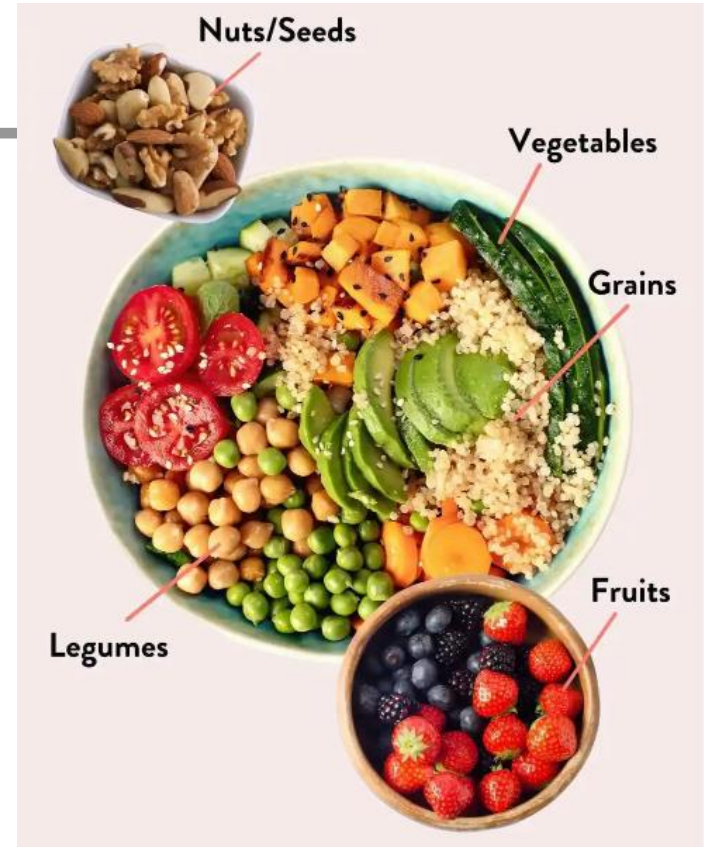


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Fill plate with whole plant foods

- Whole plant foods do not have nutrition labels or ingredients list
- Aim for at least 5-7 servings of non-starchy vegetables
- Three servings of legumes
- Three servings of fruits
- Moderate portion of grains/starchy vegetable
- Small portion (1-2 servings) of nuts/seeds



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“Crowd Out” and “Swap Out”

- **Protein:** Choose fiber-rich sources that are minimally or less processed (legumes, whole grains, nuts, seeds, tofu, edamame, some less processed meat alternatives.)
- **Refined grains:** Add whole grains, especially intact grains.
- **Sugary beverages:** Sparkling water with hint of juice or flavor (fresh lime, sliced fruit); unsweetened teas, water.
- **ADD 1-2 cups** of veggies: steamed, roasted, sautéed are best - to lunch and dinner.
- **ADD whole fruit** snacks if hungry in-between meals with nuts/nut butter (e.g. banana with peanut/almond butter)



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Minimize added sugar and artificial sugars

- Sugar – the more intense it is, the desire for sweetness increases (taste bud changes)
- Artificial sugar – may negatively affect metabolism, microbiota, appetite control
- Monk fruit, stevia → best options



(Davis, 2019)



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Minimize Concentrated fats and oils, avoid solid fats

- Fats and oils → extracted (processed) from whole foods
- During this process, fat-soluble vitamins, minerals, phytochemicals, fiber are lost
- Extracted oils = white flour in the carb group
- Both are highly processed, most nutrients removed
- Fats/oils = 120 kcal/Tbsp
 - 2.5 X more kcal than Pro or CHO



(Davis, 2019)



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Focus on fiber at EVERY meal (just like you do protein!)

- Keep you satiated, regular, feeds but microbes, moderates BS.
- Foods highest: legumes
- Others: whole grains, vegetables, fruits, nuts, seeds



(Davis, 2019)



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How much fiber?

- 2020-2025 U.S. Department of Agriculture (USDA) Dietary Guidelines for Americans (DGA):
 - 25 g women, 38 g men
- For halting the progression and reversing diabetes:
 - 40-60 g/day from minimally processed foods (not supplement such as Metamucil)
 - Therefore, 15-20 g fiber per meal



(Davis, 2019)



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What about fruits? Won't they raise my blood sugar since it's full of sugar?

- Meta-analysis of 10 studies
- For each serving, risk was reduced by:
 - 13% for green leafy vegetables
 - 10% for other vegetables
 - 7% for fruits
- **Conclusions:** Higher fruit or green leafy vegetables intake is associated with a significantly reduced risk of type 2 diabetes.



Rather than focusing on avoiding fruits – try to lower the intake of animal-based foods, oils, highly or ultra-processed foods.

(Li, et. al. 2014)



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Where's the fiber?

YES! (many grams)	NO (zero grams)
Vegetables	Animal protein (beef, chicken, fish, pork, eggs, dairy)
Fruits (whole/dried, not juiced)	Sugar
Legumes (beans, peas, lentils)	Oil
Whole Grains	Refined grains
Nuts	Fast food
Seeds	Ultra-processed foods
Nut milk (e.g. soymilk)	Dairy milk



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Optimal Serving/Serving Sizes for Diabetes Treatment

FOOD GROUP	OPTIMAL SERVINGS PER DAY	FOOD EXAMPLES + SERVING SIZES	CALCIUM-RICH FOODS 5-8 SERVINGS/DAY
Nonstarchy Vegetables	5 or more 7+ even better!	Raw or cooked vegetables, ½ cup; raw leafy veg, 1 cup; vegetable juice, ½ cup	Bok choy, broccoli, collard greens, kale, napa cabbage, okra, 1 cup cooked, or 2 cups raw
Fruits	3 or more	Whole fruit, medium-sized; fruit, raw or cooked, ½ cup; dried fruit, ¼ cup	Oranges, 2; dried figs, ½ cup
Legumes	3 or more	Cooked beans, peas, lentils, bean pasta, tofu, tempeh, ½ cup; raw peas or sprouted lentils, mung beans, or peas, 1 cup; vegetarian meat-substitute, 1 oz; fortified soymilk, 1 cup	Black or white beans, 1 cup; calcium-set tofu, ½ cup; fortified soymilk or soy yogurt (unsweetened), ½ cup
Whole Grains Starchy Veg	2 or more	Cooked whole grains or starchy veg, ½ cup; 1 oz very dense whole-grain bread	-----
Nuts + Seeds	2-3 servings	2 Tbsp nuts or seeds; 1 Tbsp nut or seed butter	Almonds or chia or sesame seeds, ¼ cup; almond butter or tahini, 2 Tbsp
Herbs + Spices	3 or more	¼- ½ tsp ground spice; 1 tsp dried herbs; 1 Tbsp fresh herbs	

(Davis, 2019))



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50/25/25 Healthy Plate

Have plenty of
vegetables and fruits

Eat protein foods

Make water
your drink
of choice

Choose
whole grain
foods

Step 1

Make half your plate vegetables and fruits. Vegetables and fruits should always make up the largest proportion of the foods you eat.

Step 2

Choose whole grain foods.

Step 3

Include protein foods. Choose protein foods that come from plants more often.

(www.food-guide.canada.ca, n.d.)



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50/25/25 Healthy Plate – 2.0

Have plenty of
vegetables and fruits

Eat protein foods

Make water
your drink
of choice

Choose
whole grain
foods

Choose **fiber-rich**,
minimally processed
protein sources
more often!

(www.food-guide.canada.ca, n.d.)



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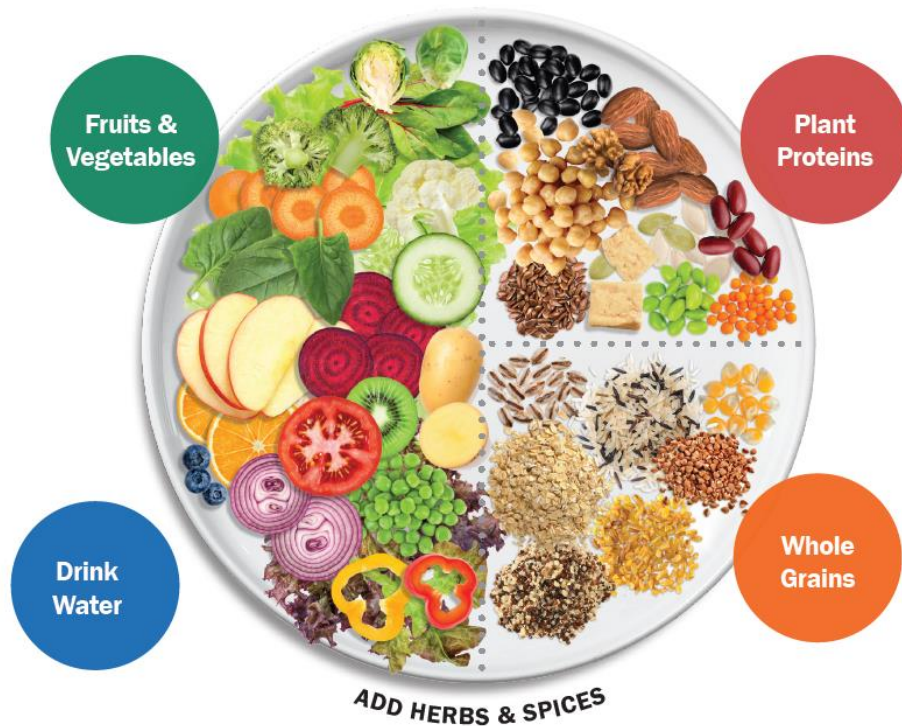
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A WHOLE FOOD, PLANT-BASED PLATE

Nutrition Prescription for Treating & Reversing Chronic Disease

The American College of Lifestyle Medicine Dietary Lifestyle Position Statement for Treatment and Potential Reversal of Disease: ACLM recommends an eating plan based predominantly on a variety of minimally processed vegetables, fruits, whole grains, legumes, nuts and seeds.



Prevent, treat,
manage, and
REVERSE chronic
disease – just by
changing what’s
on your patient’s
plate.



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Sample Menu

Meal	Protein
Breakfast: 1 cup oatmeal with blueberries, walnuts and 1 cup unsweetened soymilk	17 grams
Lunch: Split pea soup, whole grain bread with hummus and a garden salad	21 grams
Snack: Apple and peanut butter	4 grams
Dinner: Mexican black beans and brown rice in corn tortillas with avocado and salsa	18 grams
TOTAL	60 grams



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Whole Foods Plant-Based Diet Sample Menu

<https://nutritionstudies.org/whole-foods-plant-based-diet-sample-menu/>



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The Blue Zones Challenge

<https://www.bluezones.com/2021/12/10-things-that-will-happen-to-you-in-a-day-week-or-month-when-you-eat-a-whole-food-plant-based-diet/>



BENEFITS TO EATING A WHOLE FOODS, PLANT-BASED DIET



Within 1 Day

You'll be more satisfied

Within 1 Week

You'll be in a better mood
and have more energy

Within 3 Weeks

You may sleep better

Within 4 Weeks

You'll likely lose 5-8
pounds and your sex life
may improve



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Indian curry, plant-based sushi, plant-based bibimbap, Ethiopian injera w/beans



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Plant based pozole, tostadas/tacos, Mexican rice soup, breakfast burrito



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Vegetarian fajita's and tamales...the list goes on. Plant-Based choices are becoming a trend across main stream food establishments everywhere!



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When eating out...

MINIMIZE OR AVOID



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MINIMIZE OR AVOID



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MINIMIZE OR AVOID



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Choose minimally processed meals...



Choose sides, minimally processed meal options...

6. Taco Bell Veggie Power Bowl



8. Starbucks Hearty Blueberry Oatmeal



Courtesy of Starbucks

12. Panda Express Super Greens



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Key Points for Practitioners



- ✓ Whole food, plant-based diets can be used not only for prevention but also for the **treatment** of T2D.
- ✓ The attributes of whole food, plant-based diets that are particularly helpful for diabetes treatment include the lower fat content, **high fiber content**, and high water content, leading to overall lower energy density.
- ✓ **Appropriate dosing** of intensive, therapeutic lifestyle change is essential in using diet for diabetes treatment. Transitioning to a low-protein, low-fat, plant-based diet has delivered better results than simply reducing meat and adding more vegetables.

(American College of Lifestyle Medicine, 2020)



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Key Points for Practitioners

- ✓ Due to the potentially **rapid effects** of plant-based dietary treatment for T2D, caution and close glucose monitoring with patients on medications are advisable, as there is the potential for sudden drops in blood glucose and blood pressure levels.
- ✓ Using a plant-based diet to restore insulin sensitivity and treat T2D has the potential to improve other chronic conditions as it **reduces inflammation**, the unifying mechanism in metabolic, obesity, and cardiovascular disorders.



(American College of Lifestyle Medicine, 2020)



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MANY VOICES, ONE THEME



AMERICAN COLLEGE OF
Lifestyle Medicine
#EATMOREPLANTS

For optimal health, major scientific and
medical organizations agree:
eat more unrefined plant foods!



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Air Force Capt. Courtney Clutter, M.D.



Captain Courtney Clutter, M.D. is a second year endocrinology fellow at Brooke Army Medical Center. She graduated medical school from the University of Texas Health Science Center at Houston in 2017 and completed her internal medicine residency at Brooke Army Medical Center in June 2020. She enjoys caring for patients at the Diabetes Center of Excellence.



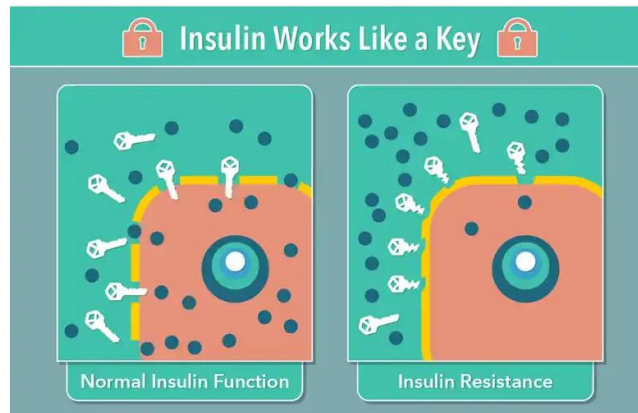
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Diabetes Mellitus Pathophysiology

- Defined by hyperglycemia existing on a continuum
- Relative or absolute impairment in insulin secretion
- Peripheral resistance to the action of insulin



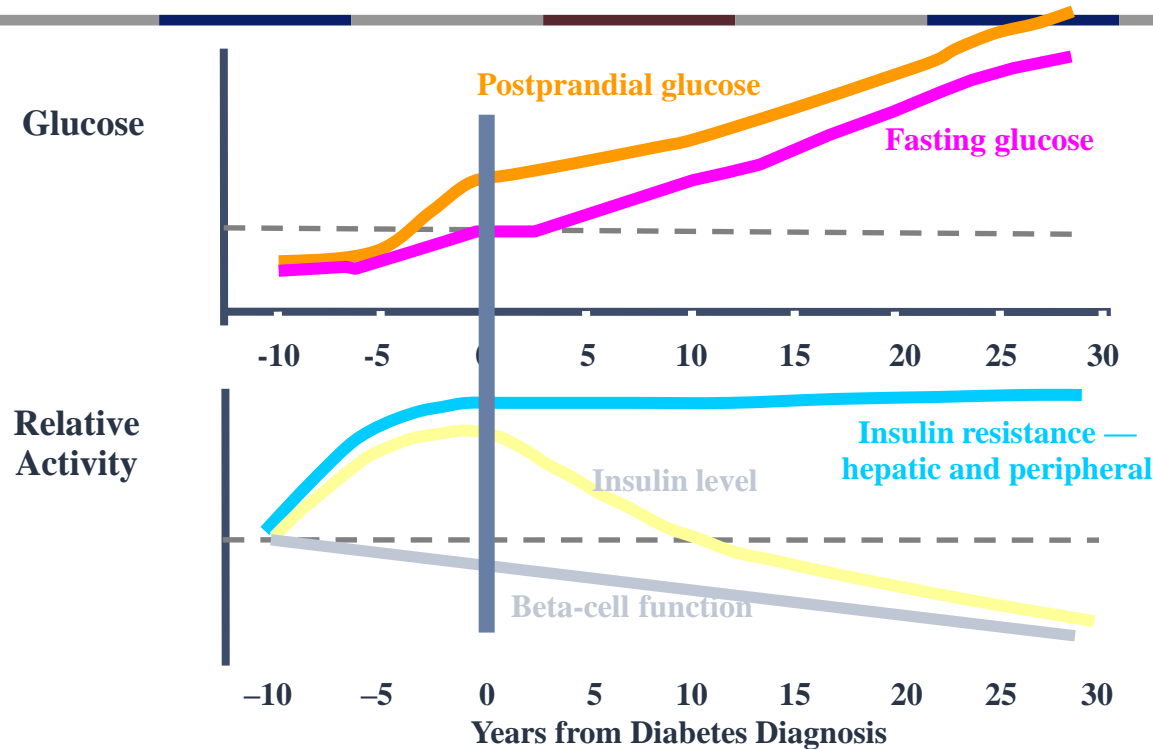
(<https://mydoctor.kaiserpermanente.org/ncal/article/insulin-helps-control-your-diabetes-843695>, n.d.)

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Development and Progression of T2DM



NGT=normal glucose tolerance;
IGT=impaired glucose tolerance;
IFG=impaired fasting glucose.

(Kendall, et. al. 2005)

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Diabetes Remission

- Consensus Report published in Diabetes Care in 2021
- Involved an international, multidisciplinary expert group
 - American Diabetes Association, European Association for the Study of Diabetes, Diabetes UK, the Endocrine Society, and the Diabetes Surgery Summit representatives
- Definition: HbA1c <6.5% for at least 3 months without antihyperglycemic agents
 - Glucose management indicator (GMI)
 - FPG <126 mg/dL



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Glucose Management Indicator

- Metric from Continuous Glucose Monitoring (CGM)
- Estimate of HbA1c based on average glucose
- Ideally based on 14 days or more

Overview

14 days |

Glucose

Average Glucose

151 mg/dL

Standard Deviation

52 mg/dL

GMI

6.9%



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DIABETES REMISSION

Remission: (must meet ALL criteria)

- 1) Glycemia below the diabetic range
- 2) absence of active pharmacologic or surgical therapy
- 3) for at least 1 year

- Partial remission:

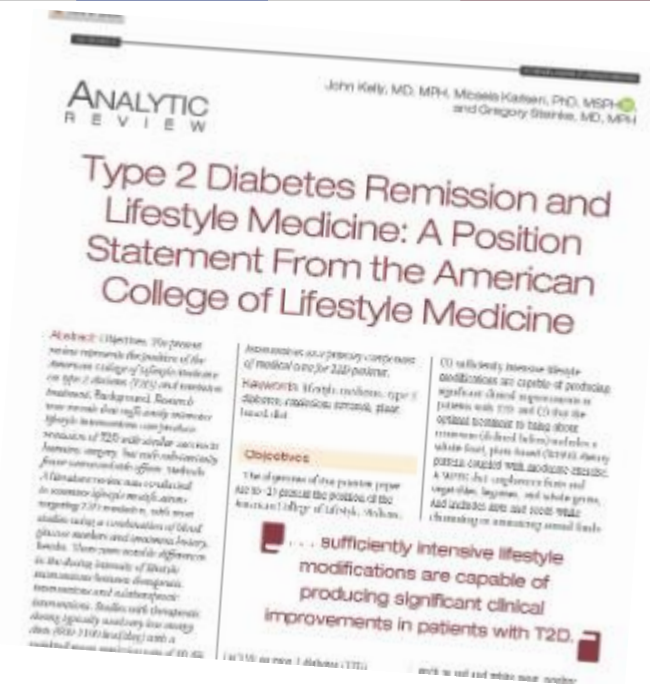
Sub-diabetic hyperglycemia

- A1c not diagnostic of diabetes (<6.5%)
- fasting glucose 100 to 125 mg/dL

- Complete remission:

Return to “normal” measures of glucose metabolism

- A1c in the normal range (<5.7%)
- fasting glucose <100 mg/dL



(Kelly et al, (2020))

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Diabetes Remission Monitoring

- At least annual HbA1c
- Risk of recurrence: Weight gain, stress from other illness, continued decline of beta cell function
- No evidence to safely discontinue monitoring for complications
 - Regular retinal screening
 - Foot exam
 - Renal function
 - Blood pressure
 - Weight assessment



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Case 1

- 42 yo active-duty male with BMI 28 is evaluated for right knee pain. A knee magnetic resonance image (MRI) with contrast is ordered. An Estimated Glomerular Filtration Rate (eGFR) is required prior to the study, so a renal function panel (RFP) is ordered.
- The RFP is performed at 0700:
 - GFR 95 mL/hr
 - Glucose 111 mg/dL

Should we be concerned about his glucose?



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AUDIENCE POLLING QUESTION #5

Should we be concerned about his glucose?

- A. Yes
- B. No



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AUDIENCE POLLING QUESTION #6

The patient has:

- A. Normal glucose metabolism
- B. Prediabetes
- C. Type 2 Diabetes Mellitus



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Recommendation Summary

- Discuss diagnosis of prediabetes with the patient
- Code for the diagnosis
- Consider Group Lifestyle Balance program (in MTF or community) and RD (Registered Dietitian) referral
 - **Note:** May require appropriate medical necessity coding & verbiage
- Repeat testing annually



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Diabetes Prevention Program



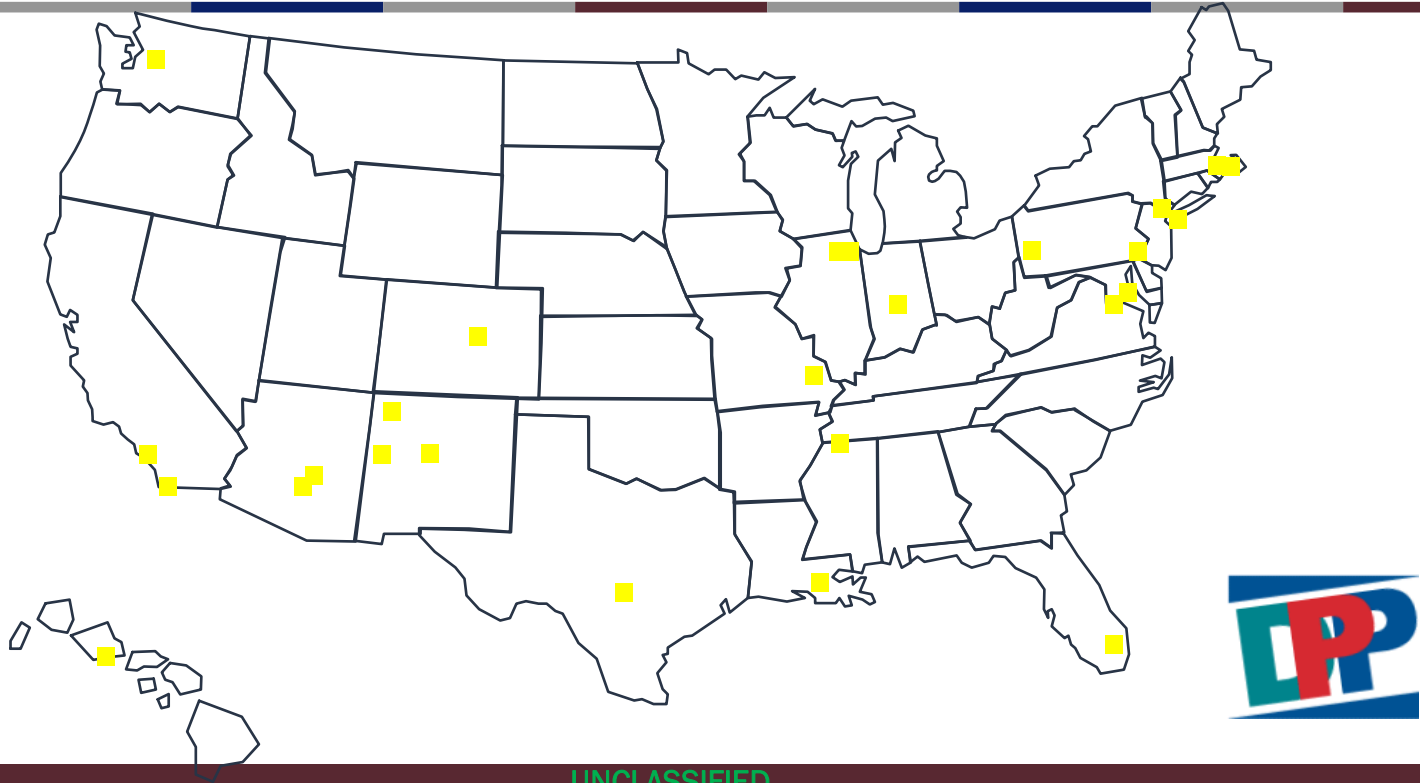
Diabetes Prevention Program

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Diabetes Prevention Program Clinics

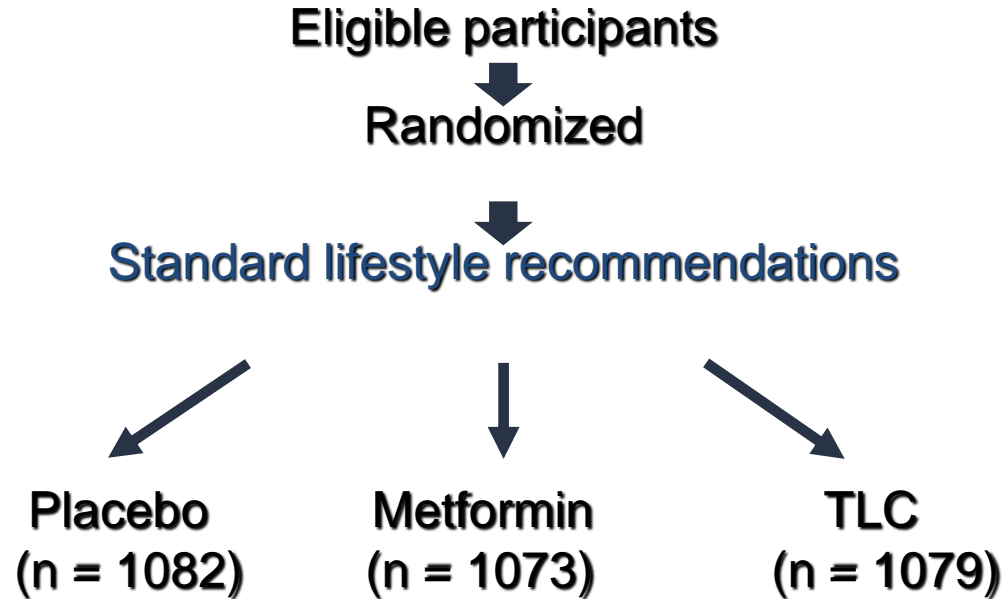


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Study Interventions

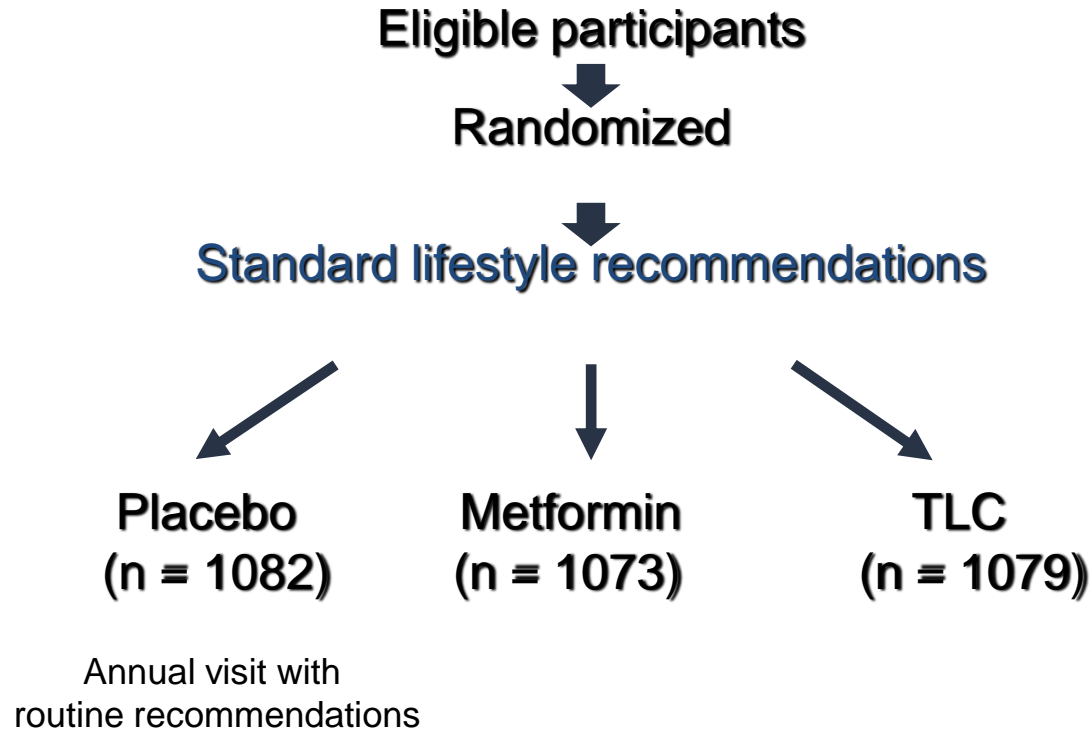


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Study Interventions

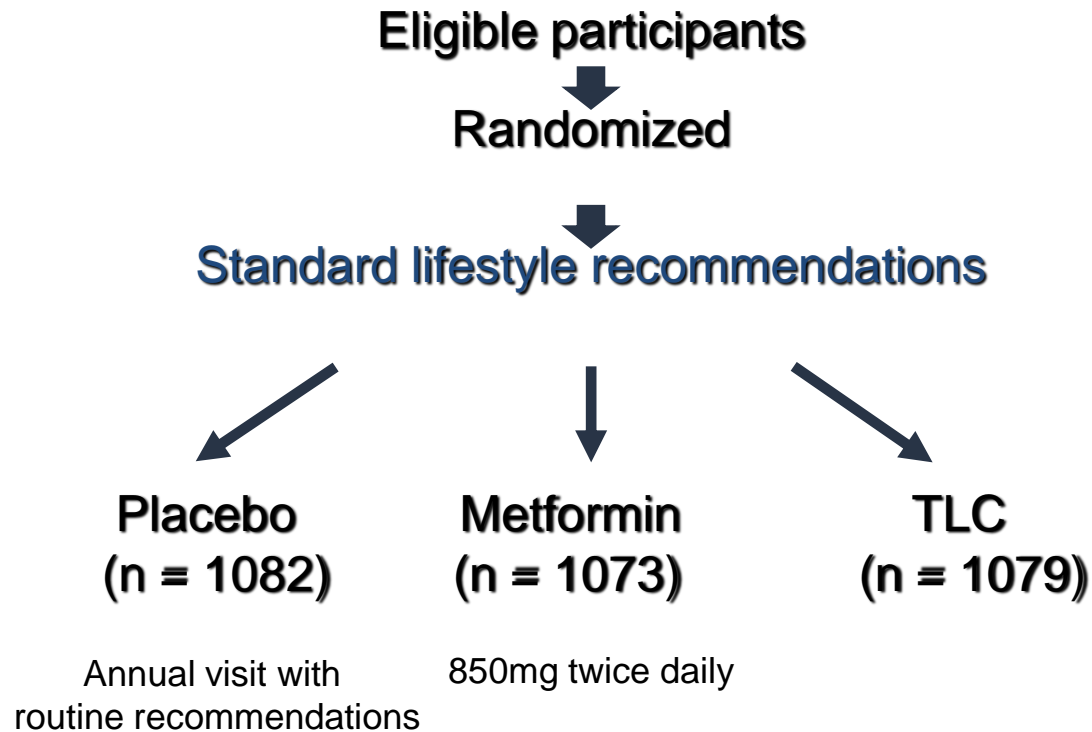


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Study Interventions

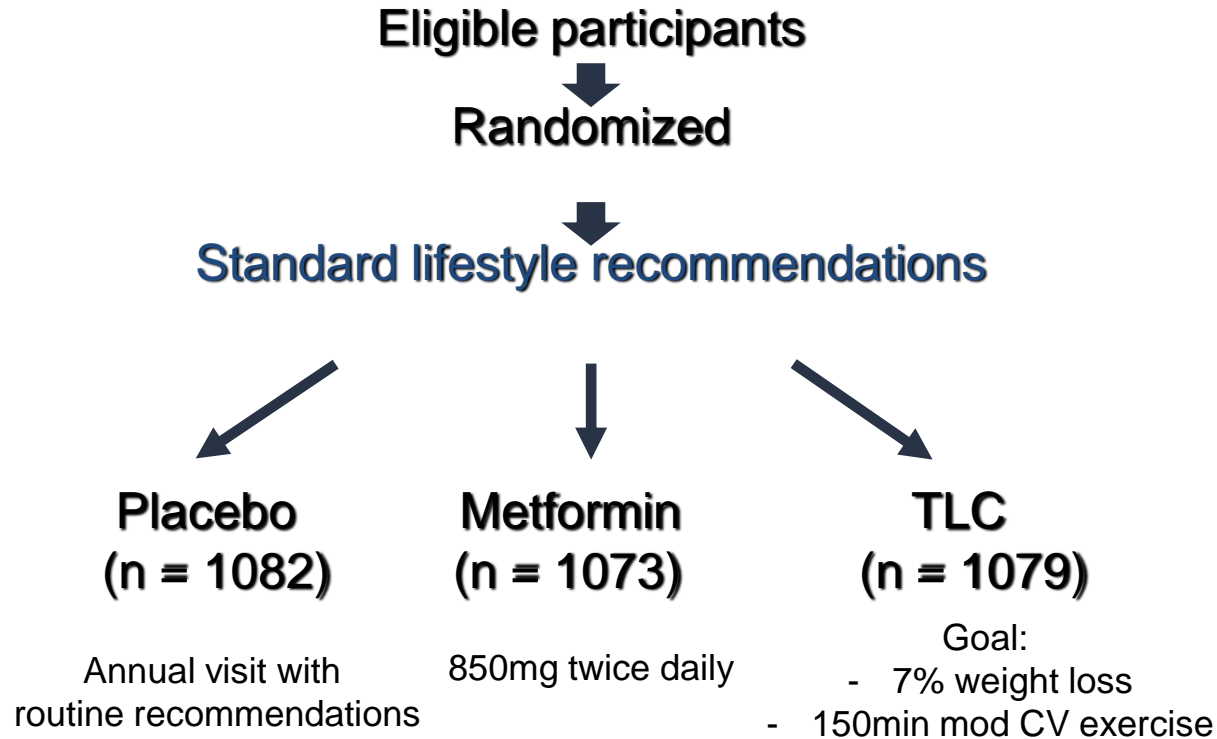


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Study Interventions

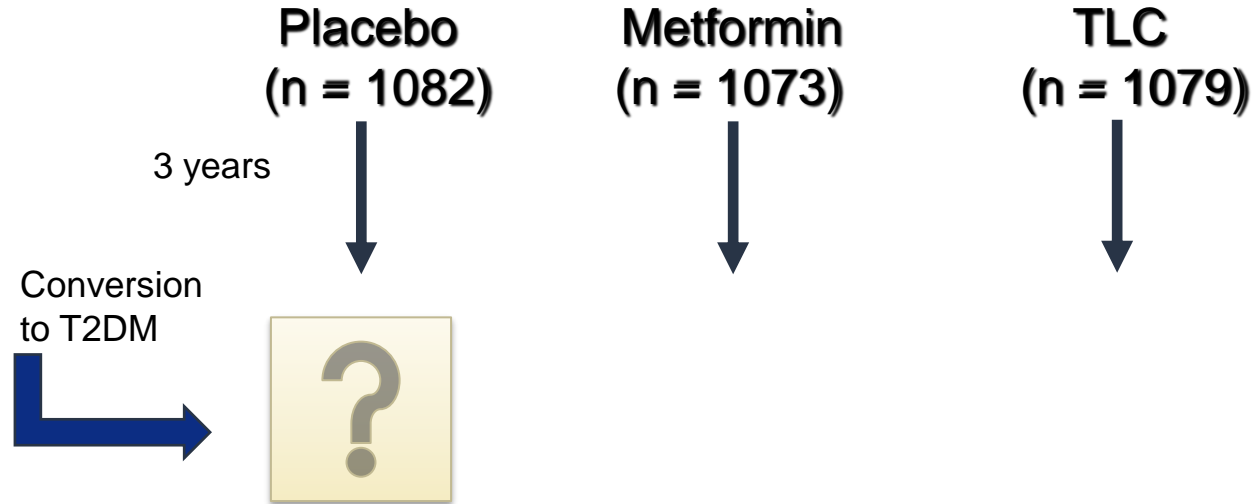


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Study Interventions

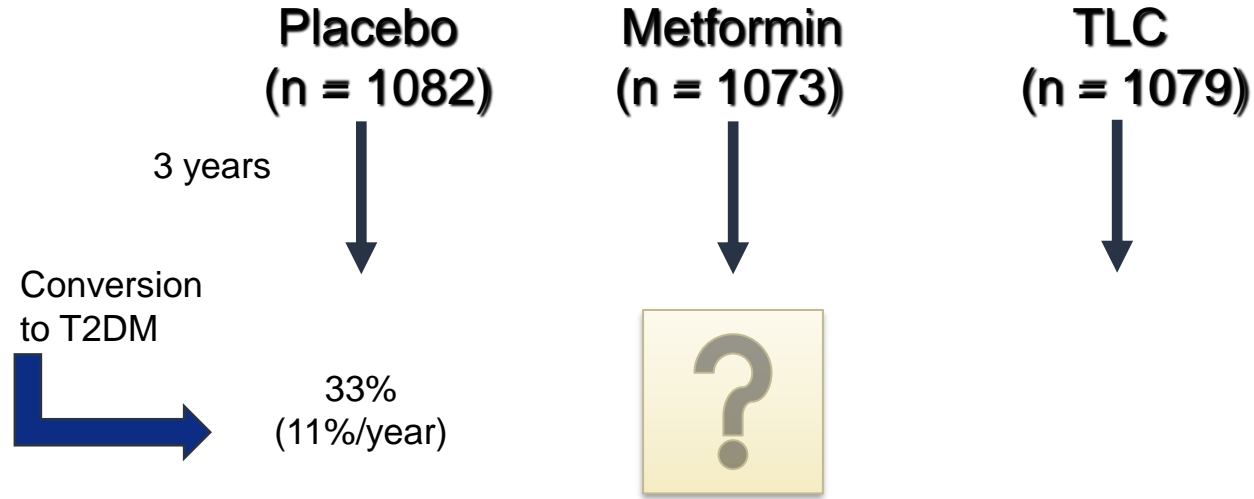


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Study Interventions

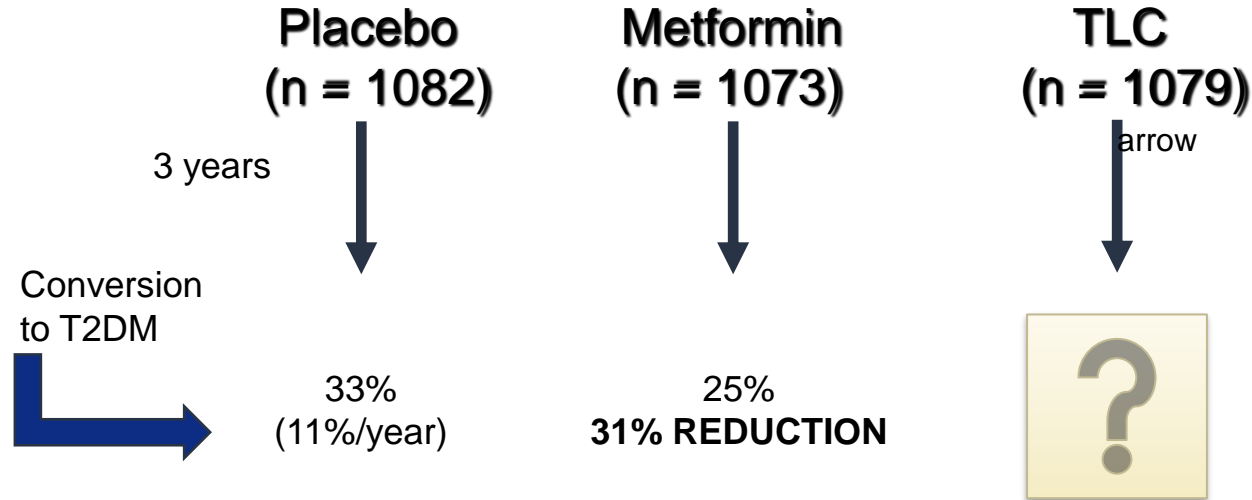


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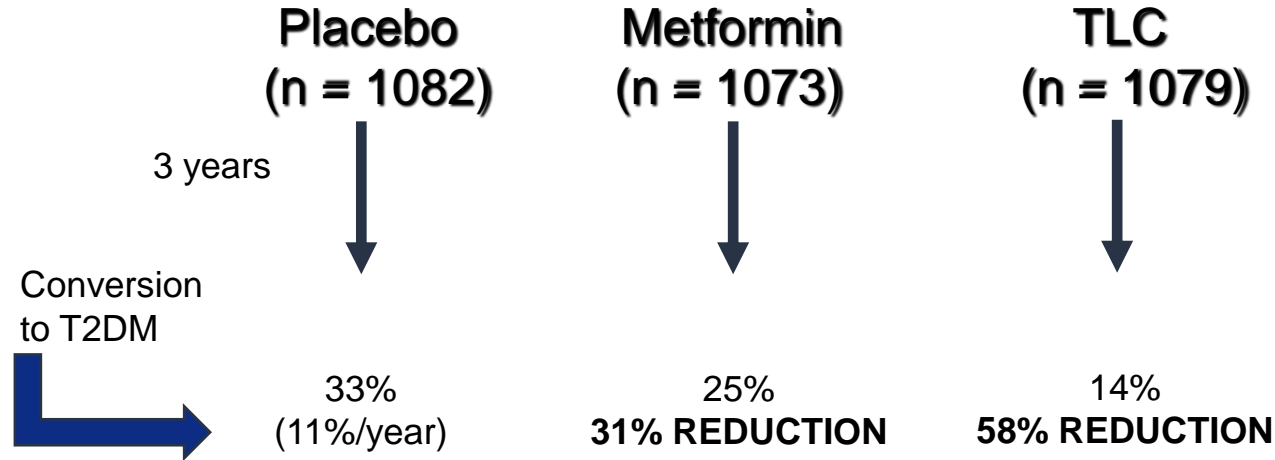


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Study Interventions

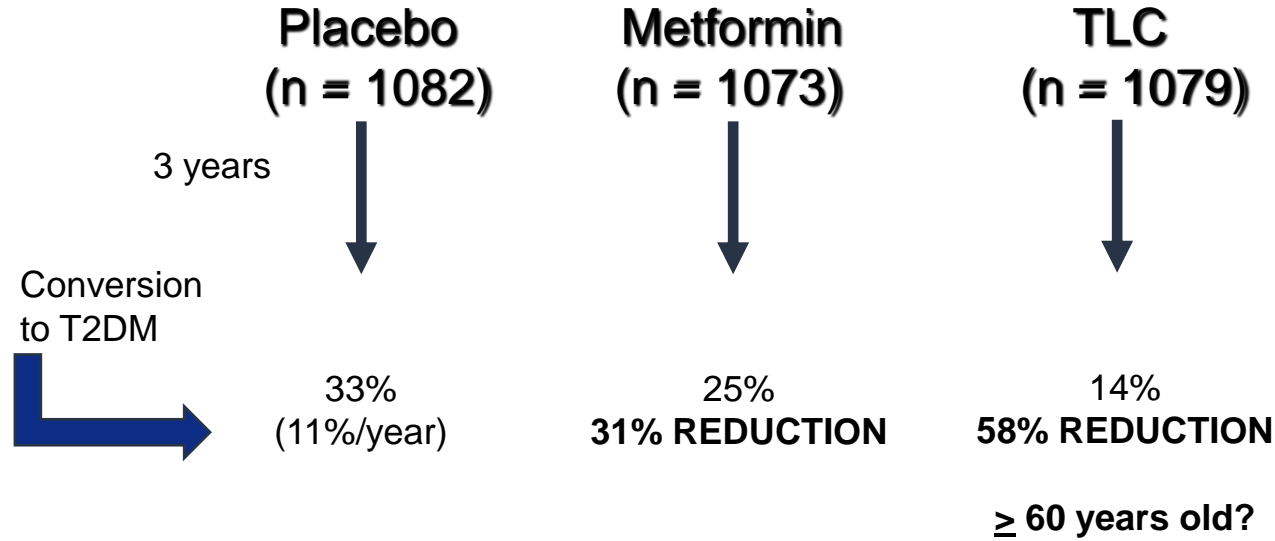


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Study Interventions

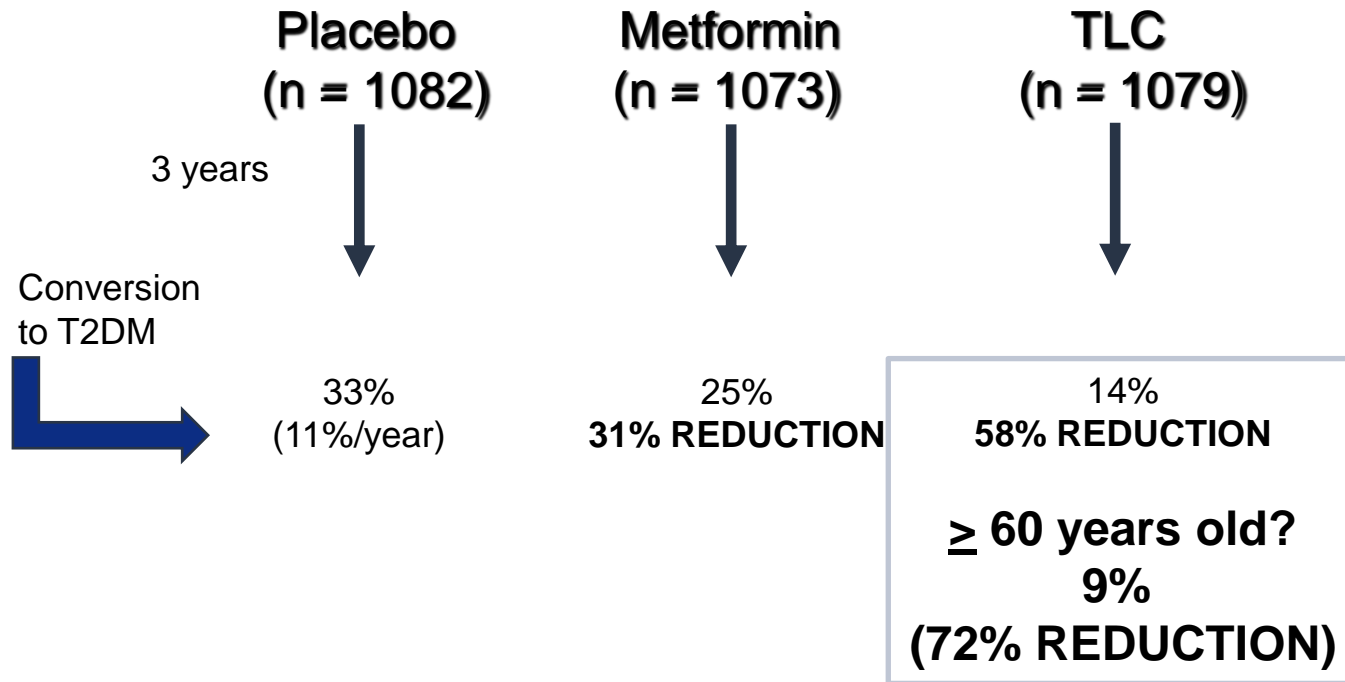


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Study Interventions



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Case 2

- 60-year-old female diagnosed with T2DM (HbA1c 11.3%) in Nov 2021
- Initial weight 250 lbs (BMI 41)
- She was started on metformin 500 mg twice daily
- Over the course of four months, she lost 70 lbs with lifestyle changes. Current weight 180 lbs.
- Current HbA1c is 5.3%

What would you recommend?



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AUDIENCE POLLING QUESTION #7

What would you recommend?

- A. Continue metformin 500 mg twice daily
- B. Increase metformin to 1,000 mg twice daily
- C. Discontinue metformin 500 mg twice daily



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Recommendation Summary

- Congratulate the patient on her progress!
- Discontinue metformin
- Repeat HbA1c in three months
- Recommend annual check-up if meeting diabetes remission criteria



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Case 3

- 58-year-old retired male with history of insulin-dependent T2DM, obesity (BMI 34), HTN and diastolic heart failure presents for follow up.
- Current medications:
 - Lantus 30 units at night
 - Empagliflozin 10 mg daily
 - Metformin 1,000 mg twice daily
 - Lisinopril 5 mg daily
- He vocalizes frustrations with his weight, fatigue and multiple medications.



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Case 3

- On further interviewing, he shares his daughter's wedding is in nine months and he wants to feel better physically and mentally walking her down the aisle.

What would you recommend?



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Case 3

- At three month follow up, he has lost 40 lbs. He reports three episodes of nocturnal hypoglycemia and blood pressure averaging 100s/60s.

What would you recommend?



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Recommendation Summary

- Decrease Lantus to 20 units and provide self-titration instructions
- Discontinue Lisinopril and advise at home blood pressure monitoring
- Consider combination Synjardy (empagliflozin/metformin)



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Key Takeaways

- The six pillars of Lifestyle & Performance Medicine include whole food, plant-predominant nutrition, sufficient and restorative sleep, regular aerobic and strength-training activity, avoidance of risky substances, stress management, and developing healthy relationships.
- Multiple studies have shown that Lifestyle & Performance Medicine prevents, treats and reverses chronic disease, including type 2 diabetes.
- Primary care practitioners should take steps to integrate Lifestyle Medicine into their own lifestyle habits and care/treatment of patients and refer to enhanced access team members for additional support.



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Key Takeaways

- Prescribing a predominantly whole food plant-based, low fat eating pattern can improve diabetes control, and in many cases may allow patients to reduce their medication load or reverse their disease process altogether.
- Fiber from whole foods is a key component that makes a whole food plant-based eating pattern successful in reducing risk of chronic disease.
- Appropriate dosing of intensive, therapeutic lifestyle change is essential in using diet and other lifestyle medicine interventions for diabetes treatment, management, and in particular, reversal.



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Key Takeaways

- Using a plant-based diet to restore insulin sensitivity and treat diabetes (of all types) has the potential to improve other chronic conditions as it reduces inflammation, the unifying mechanism in metabolic, obesity, and cardiovascular disorders.
- The Diabetes Prevention Program is a partnership of organizations that assists individuals at risk for type 2 diabetes to participate in evidence-based lifestyle change programs to reduce their risk of diabetes progression.
- Patients who are successful in making profound lifestyle changes should be monitored closely for medication de-prescribing opportunities.



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Questions?



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How to Obtain CE/CME Credits

To receive CE/CME credit, you must register by 0745 ET on 24 June 2022 to qualify for the receipt of CE/CME credit or certificate of attendance. You must complete the program posttest and evaluation before collecting your certificate. The posttest and evaluation will be available through 7 July 2022 at 2359 ET. Please complete the following steps to obtain CE/CME credit:

1. Go to URL: <https://www.dhaj7-cepo.com/content/jun-2022-ccss>
2. Search for your course using the Catalog, Calendar, or Find a course search tool.
3. Click on the REGISTER/TAKE COURSE tab.
 - a. If you have previously used the CEPO CMS, click login.
 - b. If you have not previously used the CEPO CMS click register to create a new account.
4. Follow the onscreen prompts to complete the post-activity assessments:
 - a. Read the Accreditation Statement
 - b. Complete the Evaluation
 - c. Take the Posttest
5. After completing the posttest at 80% or above, your certificate will be available for print or download.
6. You can return to the site at any time in the future to print your certificate and transcripts at: <https://www.dhaj7-cepo.com/>
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