Family Doctor

A Journal of the New York State Academy of Family Physicians

New York State Academy of Family Physicians

Fall 2023

Volume twelve, Number two

Focus:

Lifestyle Medicine

FEATURE ARTICLES:

13 WAYS MILK CAN HELP YOUR BODY

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CALCIUM

Helps build and maintain strong bones and teeth.

25% DAILY VALUE

PROTEIN

Helps build and repair tissue. Helps maintain a healthy immune system.

16% DAILY VALUE

VITAMIN D

Helps build and maintain strong bones and teeth. Helps maintain a healthy immune system.

15% DAILY VALUE

PHOSPHORUS

Helps build and maintain strong bones and teeth, supports tissue growth.

20% DAILY VALUE

VITAMIN A

Helps keep skin and eyes healthy; helps promote growth. Helps maintain a healthy immune system.

15% DAILY VALUE

RIBOFLAVIN

Helps your body use carbohydrates, fats and protein for fuel.

30% DAILY VALUE

VITAMIN B12

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50% DAILY VALUE

PANTOTHENIC ACID

Helps your body use carbohydrates, fats and protein for fuel.

20% DAILY VALUE

NIACIN

Used in energy metabolism in the body.

15% DAILY VALUE

SELENIUM

Helps maintain a healthy immune system, helps regulate metabolism and helps protect healthy cells from damage.

10% DAILY VALUE

ZINC

Helps maintain a healthy immune system, helps support normal growth and development and helps maintain healthy skin.

10% DAILY VALUE

IODINE

Necessary for proper bone and brain development during pregnancy and infancy; linked to cognitive function in childhood.

60% DAILY VALUE

POTASSIUM*

Helps maintain a healthy blood pressure and supports heart health. Helps regulate body fluid balance and helps maintain normal muscle function.

10% DRI

*Source: USDA FoodData Central. FDA's Daily Value (DV) for potassium of 4700 mg is based on a 2005 DRI recommendation. In 2019, NASEM updated the DRI to 3400 mg. Based on the 2019 DRI, a serving of milk provides 10% of the DRI. FDA rule-making is needed to update this value for the purpose of food labeling.

The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

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From the Executive Vice President

By Vito Grasso, MPA, CAE

In 2018, we selected Dr. Marcus Martinez of Hoosick Falls to receive the Family Physician of the Year Award (FPOTYA). Dr. Martinez was instrumental in exposing widescale pollution of the village water supply which was linked to an unusually high number of cases of cancer and other diseases. This leadership and community activism were cited by many who supported his nomination for the FPOTYA.

The pollution was tied to a man-made chemical, perfluorooctanoic acid, or PFOA, that was used since the 1940s to manufacture industrial and household products such as nonstick coatings and heat-resistant wiring. The chemical, discovered a decade ago in the village's water system, has been linked to kidney and testicular cancer, as well as thyroid diseases.

Dr. Martinez died on August 3rd after a 9-year battle with atypical carcinoid, an aggressive and rare form of cancer that afflicts only one in 100,000 people. He was only 51 years old. I attended his wake and was struck by the enormous outpouring of affection and admiration for Marcus.

I arrived a few minutes early. The line outside the funeral home extended almost two blocks. I estimated 300 people in line. It took more than two hours for me to get to the viewing room and meet Dr. Martinez' family to offer my condolences.

I had never met Dr. Martinez in person. We had spoken on the phone a few times; the last time was when I called to ask if I could deliver his FPOTYA. He was unable to attend our 2018 COD at which we had planned to present him with the award. We never did schedule a time to get together. I brought the award with me to the wake. I had misgivings about intruding upon his family to present it, so I left it in my car as I waited in line.

As I stood in line, I became aware of and participated in several conversations about Dr. Martinez and his impact on the community. The admiration and respect for this incredible person was palpable in the countenances and comments of the people standing with me to pay their respects. Everyone I spoke with seemed to know his story. His father was a family doctor and started the practice which Marcus joined and later took over. His mother was a nurse and worked for her husband for many years and later for her son. Marcus was extensively involved in civic and community affairs and activities.

Among the people I met was an attorney who represented many village residents who became ill and had claims against the three major corporations associated with the water pollution which was linked to the community's exceptional incidence of cancer and other diseases. Many of his clients were also patients of Dr. Martinez and the attorney said they all extolled his virtues as a physician, an advocate and a friend. He was especially impressed with Marcus' advocacy in reaction to initial resistance from village officials and, later, from state officials who did not believe the water was polluted. State and local government officials were reluctant to notify the community about the pollution. Dr. Martinez and others led an effort to publicize the situation and to get the Federal Environmental Protection Agency to intervene. Details regarding the water pollution and Dr. Martinez' role in exposing it are included in this Albany TIMES UNION article: Hoosick Falls doctor who exposed toxic water loses cancer battle (timesunion.com).

I was moved and impressed by the experience of attending Dr. Martinez' wake, learning more about his standing in the community and his role in exposing pollution which threatened the health of his patients and neighbors, and meeting his family. As I went through the receiving line, I introduced myself to his family. His mother, brothers and sisters were aware of the Academy and said they would appreciate having his FPOTYA. I retrieved it from my car and gave it to the funeral home director who came out to the car with me at the request of Dr. Martinez' mother.

I have spoken with many family physicians and medical students during my 29-year tenure with the Academy. Many talk about their motivation in pursuing a career in family medicine. I am never surprised and always impressed when they say the primary reason why they chose family medicine was to help people. The career and life of Dr. Martinez, while extraordinary, is also familiar. I have met many family physicians whose devotion to their patients and communities has been exemplified in extraordinary acts of compassion, courage and tenacious advocacy. Dr. Martinez' death at 51 is truly sad, but his achievements in the time he was alive were a remarkable testament to his personal convictions and the quality of people who are attracted to the specialty. Standing in that line and speaking with those people reinforced my own opinion that family medicine and the people who gravitate to it are truly special.

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President's Post

By Heather Paladine, MD, MEd, FAAFP

Lifestyle Medicine and Health Equity

According to the World Health Organization (WHO), approximately 60% of the factors influencing an individual's health and well-being are related to lifestyle and social determinants of health. The concept of "lifestyle medicine" has emerged as a key factor in promoting wellness and preventing chronic diseases.

The term lifestyle can sometimes be misleading, as it may imply that individuals have full control over their health outcomes. In reality, these outcomes are often influenced by circumstances beyond an individual's control. For instance, a person living in a food desert with limited access to fresh, healthy foods may have a more challenging time making nutritious dietary choices. Similarly, someone lacking access to safe recreational spaces may find it harder to engage in regular physical activity. The prevalence of lifestyle-related diseases, such as heart disease, type 2 diabetes, obesity, and certain cancers, is not a matter of individuals making "choices" to be unhealthy. Rather, it reflects the intricate web of socioeconomic circumstances in which people live. Factors such as income inequality, racism, environmental conditions, and educational disparities all play a pivotal role in shaping health outcomes.

Understanding that these diseases are influenced by complex social and economic factors is crucial for developing effective interventions, both on the level of individual medical care and population health. It underscores the need for addressing disparities, improving access to healthcare and education, and creating environments that support healthy choices for all individuals, regardless of their socioeconomic status. By acknowledging these complexities, we can work towards a more equitable and healthier society where everyone has the opportunity to thrive.

A common scenario we all see in outpatient practice is a person with hypertension who is unable to exercise outdoors because their neighborhood isn't safe and faces limited fresh food choices in their community. This is an opportunity for advocacy, both for us as family physicians and for our patients. We can see this as an opportunity to get involved in street redesign through community boards, to advocate for bike lanes and better street lighting, or to have our practice sponsor a CSA (community supported agriculture) or farmers' market.

The articles in this lifestyle medicine issue demonstrate how family physicians can improve the health of our patients both on the individual and community level. Being an active NYSAFP member is a way to leverage our influence and make changes on a state and national level. If you haven't been to a state Congress of Delegates before, save the dates for May 11th (virtual opening of COD) and May 18th/19th (in person COD in the Albany area). This is your opportunity as a member to speak out on issues of importance to your patients, your practice, and your community. I hope to see you there!

The concept of "lifestyle medicine" has emerged as a key factor in promoting wellness and preventing chronic diseases.


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Email: Francis.Faustino@nyulangone.org (Department Chair)

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Albany Report

By Reid, McNally & Savage

2023 Legislative Session in Review - September 18, 2023

The New York State Legislature adjourned the 2023 session on June 10th. The Senate completed its work around 3am that day with Senate Majority Leader Stewart-Cousins ending the session saying, "see you in 2024!" The Assembly adjournment ended with the caveat that they would need to return to complete unfinished business. On June 20th, Assembly members returned to Albany for a two-day session where they took up a number of additional bills which had already been passed by the Senate and then they adjourned for the year. This included NYSAFP priority legislation authorizing New York clinicians to provide reproductive healthcare via telemedicine for out of state patients. In total, nearly 900 individual bills were passed by both houses during the 2023 legislative session, out of nearly 15,000 bills introduced since the session started in January. At this point, many bills still await action by Governor Hochul.

2023 was a successful session for NYSAFP including a number of successful outcomes in the final budget which dominated the session since it began in January with the budget finally enacted May 2nd, as well as advancement of a number of legislative priorities this year. This would not have been possible without the strong advocacy efforts of the Academy including the Advocacy Day at the State Capitol and various in-person and grassroots advocacy efforts throughout the session.

Below we have provided a summary of the Final State Budget outcomes on NYSAFP priorities, followed by a discussion of the bills of interest passed by both houses, as well as outstanding advocacy issues that we will continue to work on with NYSAFP and address in the coming session which begins in January 2024.

SFY 2023-24 Final State Budget

- On May 2nd, the Legislature passed the Final State Budget, a $229 billion spending plan, over one month after the April 1st deadline. Below is an update on the areas of interest to NYSAFP, including success with a number of the Academy's budget priorities this year, which are **highlighted**. You can view the RMS health/mental hygiene final budget summary here.
- **Physician Assistants:** The Final Budget rejected th e proposal to expand the scope of practice for physician assistants (PAs) and other scope proposals as opposed by NYSAFP.
- **Interstate Licensure Compact:** The Final Budget rejected the proposal to allow New York to join the Interstate Medical Licensure Compact and the Nurse Licensure Compact.
- **Department of Health Oversight of the Professions:** The Final Budget rejected the proposal that would transfer oversight of all licensed professions from the State Education Department to the Department of Health.
- **Physicians Excess Medical Malpractice Program:** The Final Budget extended the program through June 30, 2024. Funding was provided at a level of $78.5 million. NYSAFP is supportive of this program and funding.
- **Prescriber Prevails:** Proposed changes to remove prescriber prevails under Medicaid were rejected. NYSAFP opposes these changes.

- **Tobacco Prevention:** Final Budget includes $7.5 million in additional funding for the tobacco control and prevention program and a $1 tax increase on cigarettes. The Final Budget rejected the Governor's proposal to ban all flavored tobacco products and close e-cigarette law loopholes.
- **Medicaid Coverage Expansion:** Expands Medicaid coverage for nutritionist and dietician services as well as chronic disease management.
- **DANY Funding:** Includes $15.8 million for loan repayment and physician practice support, a priority for NYSAFP.
- **Primary Care Funding:** $17.7 million included to increase Medicaid primary care rates to 80% of Medicare, a priority for NYSAFP.
- **AHEC Funding:** Includes $500,000 in additional funding for AHEC for a total of $2.7 million, a priority for NYSAFP.
- **Abortion Protections:** Includes data privacy protections to safeguard abortion access, includes $25 million in funding for abortion access to expand capacity and includes provisions to require commercial insurance plans to provide coverage for abortion including generic and brand name drugs, even if not approved by the U.S. Food and Drug Administration, as long as the drug is recognized by the WHO Model List of Essential Medicines; the WHO Abortion Care Guidance; or The National Academies of Science, Engineering, and Medicine Consensus Study Report.
- **Preventable Epidemics:** Retains provisions from the Executive Budget regarding routine offering of Hep C screening to those over 18, those under 18 at risk, pregnant people and also screenings for syphilis for pregnant people.
- **Regulation of Major Healthcare Projects:** The Final Budget modifies the proposal to reform the State's oversight of major healthcare projects by requiring any material transaction (mergers, acquisitions, affiliation agreement, formation of a partnership/joint venture, etc.) that exceeds $25 million occurring within a 12-month time period to be disclosed to DOH by the involved health care entities with appropriate documentation. DOH may then post a summary of the proposed transactions on its website.
- **Commercial Insurance Coverage of Behavioral Health Services:**
  - Final Budget includes commercial insurance coverage requirements within 30 days of hospital discharge of crisis stabilization and mobile counseling services and accepts provisions on school- based mental health clinic reimbursement to be negotiated or Medicaid rates regardless of whether they are a participating provider with the insurer.
  - No preauthorization/concurrent utilization review for certain BH services (in network hospital, crisis residence) including telehealth parity- rejected.
  - Commercial insurance coverage for SUD meds including naloxone without prior authorization included.
  - Calls on the superintendent of DFS, in consultation with OMH and OASAS to develop regulations to set network adequacy standards for SUD/MH by December 31, 2023.
- **Insurance Clinical Peer Reviewer Standards:** Includes updates to insurer clinical peer reviewer standards, as supported by NYSAFP.
- **Daniel's Law Task Force:** Creates a 10-member task force established by OMH and OASAS to look at the effectiveness of crisis response and diversion services and to issue recommendations for expansion by 12/31/25.
- **Maternal Mental Health Work Group:** Creates a workgroup within OMH to study and issue recommendations related to maternal mental health, perinatal and postpartum mood and anxiety disorders. Report with recommendations to be issued by 12/31/24.

2023 Legislative Update

Shield Laws: On the legislative front NYSAFP spearheaded successful advocacy campaigns to enact "shield laws" for NY physicians and other authorized clinicians providing medication abortion care via telemedicine as well as gender affirming care, including for individuals outside the state. Both have been signed into law by Governor Hochul and took effect immediately.

Adult Vaccine Reporting: NYSAFP also prioritized legislation during the annual Advocacy Day in late February and during the post-budget session to require adult reporting to the state/NYC vaccine registries. For the first time, this legislation was passed by the Assembly this session and picked up strong active support from the NYSDOH including the Commissioner. We can now focus advocacy efforts in the coming session on the Senate to seek the bill's advancement.

Wrongful Death Bill: Unfortunately, an amended version of the "wrongful death" bill vetoed late last year by Governor Hochul was reintroduced and passed by the Legislature in the final days of the session. NYSAFP is now working in coalition with MSSNY, other specialty societies, and hospitals to register strong opposition and ask the Governor to again veto the bill. We will be using a new and easy-to-use NY grassroots system that RMS and NYSAFP have put in place to help with member advocacy this fall to urge Governor Hochul to reject this legislation.

Linked here is a sector-by-sector summary of the bills passed by both the Senate and Assembly in the Health and Mental Hygiene areas this session. We have noted the legislation that has already been acted on by Governor Hochul. Below are the bills passed by both houses which we thought would be of particular interest to NYSAFP, with priorities highlighted. The bill text for any bill can be viewed at: https://nyassembly.gov/leg/.

Looking to 2024

Single Payer: Legislation S7590 Rivera/ A7897 Paulin has been introduced to establish the New York Health Act for single payer health coverage. The bill was introduced after the 2023 session ended by the Senate and Assembly Health Committee Chairs and includes some changes from the 2022 version in an effort to pick up allies and address opposition from certain unions. The 2023 bill retains provisions allowing physicians to collectively negotiate with the single payer.

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Medical Aid in Dying: NYSAFP has been supporting legislation to authorize medical aid in dying in NYS and was active this session discussing the bill with legislators as well in participating in public relations activities in support. We have met with Assembly Health Chair Amy Paulin who has asked for NYSAFP's support for increasing the bill cosponsors to demonstrate sufficient support to advance the bill in the coming session. We will be using a new NY grassroots system that RMS and NYSAFP have put in place to help with such advocacy going into the next session.

Let's Get Immunized NY: NYSAFP and RMS continue to lead a vaccine coalition in New York to help support education and advocacy around immunizations for children and adults. We are continuing to grow both the partners and funding for this important effort as we move into year 3 in 2024. In 2023, this campaign had its own dedicated lobby day focused on vaccine education and advocacy with NYSAFP and a number of partners. We anticipate doing so again in the coming session.

Insurance & Payment Reforms: We are continuing to pursue greater investments in primary care as well as insurance simplification and reforms in New York State. We have also worked not only to support increased funding for primary care recruitment and retention efforts but improvements in how the Doctors Across NY program operates to support private practices, as well as an improved and timelier approval/award process for eligible physicians.

Bills Passed by Both Houses of Particular Interest to NYSAFP:

Awaiting Action by Governor Unless Noted- All bills must be sent to her desk by the end of the calendar year and she has 10 days (not including holidays/Sundays) to act once transmitted.

Non-Patient Specific Orders for Registered Professional Nurses (S6886-C Rivera/A6030-C)

This bill authorizes physicians to prescribe non-patient specific orders that a registered professional nurse may perform including electrocardiogram tests to detect signs and symptoms of acute coronary syndrome, administering point-of-care blood glucose tests to evaluate acute mental status changes in persons with suspected hypoglycemia, administering tests and intravenous lines to persons that meet severe sepsis and sepsis shock criteria, and pregnancy tests. This bill was signed into law 7/19/23, chapter 193 of the laws of 2023 and took effect immediately.

Temporary Licensure for Nurses/Physicians Licensed Outside NYS (S7492-B Stavisky/ A6697-B Fahy)

This bill would authorize certain out-of-state nurses and physicians who practice in NY under Executive Order 4 to temporarily practice in New York State pending a determination on licensure. If signed, the law would be repealed one year after it shall have become law. This bill was signed into law 6/22/23, chapter 136 of the laws of 2023.

Wrongful Death (S6636 Hoylman-Sigal/ A6698 Weinstein)

This bill would expand the possible damages in a wrongful death action to include compensation for grief or anguish, the loss of love or companionship, loss of services and support, and the loss of nurture and guidance.

Secondary Coverage Requirement for Excess Medical Malpractice Insurance (S7057 Breslin/ A7255 Anderson)

This bill is a chapter amendment to Chapter 673 of the Laws of 2005 to extend from July 1, 2023, to July 1, 2028, the statutory clarification that the Medical Malpractice Insurance Pool (MMIP) is not required to offer a second layer of excess medical malpractice insurance coverage. This bill was signed into law 6/30/23, chapter 156 of the laws of 2023 and took effect immediately.

NYS Medical Indemnity Fund Definitions (S1324 Krueger/ A 4131 Paulin)

This bill is a chapter amendment to Chapter 517 of the Laws of 2016 which would repeal the recently enacted clarifications as to covered services under the Medical Indemnity Fund by amending the definitions of qualifying healthcare costs and extend the enhanced rates until December 31, 2025. This bill was signed into law 3/24/23, chapter 112 of the laws of 2023.

Right of Affirmation of a Health Care Practitioner (S2997 Rivera/ A6065 Dinowitz)

This bill provides that an affirmation of a health care practitioner by an attorney may be served or filed in an action in lieu of and with the same force and effect as an affidavit. The law changes the reference from "physician, osteopath, or dentist" to "health care practitioner."

Telehealth for Reproductive Healthcare (S1066-B Mayer/ A1709-B Reyes)

This bill establishes protections for NY physicians and other authorized health care providers to offer reproductive health care services including medication abortion care to patients via telehealth regardless of the patient's location, including those who may be located outside New York State. Under the bill, New York State would not comply with extradition, arrests, and coordination with any out-of-state investigations or evidentiary requests to operate as a shield to New York health care practitioners who perform any legally protected health activity against states who want to impose disciplinary actions upon them. The bill also prevents New York and prevents medical malpractice insurers from taking adverse action against or failing to issue a policy to health care practitioners for legally protected health activity. Signed into law on 6/23/23 and effective immediately.

Legal Protections Against Arrest/Extradition of Abortion Providers (S1351 Krueger/ A1005 Lavine)

This bill is a chapter amendment to Chapter 219 of the Laws of 2022 to clarify and expand provisions that shield New Yorkers from civil and criminal consequences for abortions that are lawfully performed in New York State. All reproductive healthcare services lawfully performed in the state are now included. New York police are prohibited from arresting anyone who participates directly or indirectly in an abortion that is lawfully performed in NYS and New York police are also prohibited from cooperating with out-of-state investigations related to abortions lawfully performed in NYS. This bill was signed by the Governor on March 3, 2023, Chapter 101 of the Laws of 2023 and shall take effect on the same date and in the same manner as the same chapter of the laws of 2022.

Providing Medication Abortion Prescription Drugs at SUNY/CUNY (S1213-B Cleare/ A1395-C Epstein)

This bill provides access to medication abortion prescription drugs at SUNY and CUNY campuses by employing or contracting with individuals authorized to prescribe such drugs, or by providing referrals. This bill would provide medication to all enrolled students. This bill was signed into Chapter 129 of the Laws of 2023 on May 2, 2023, and will take effect on August 1, 2023.

Legal Protections for Gender Affirming Care (S2475B Hoylman-Sigal/ A6046B Bronson)

This bill would prohibit the arrest, extradition, and loss or suspension of license of authorized health care providers in New York who perform lawful gender-affirming care to individuals from states with restrictions on gender-affirming care access. Signed into law 6/25/23 and effective immediately.

Physician Coursework or Training in Nutrition (S4401-A Webb/ A5985-A Rosenthal)

This bill requires DOH to develop, maintain, and distribute to NYS practicing and licensed physicians a resource library related to continuing medical education and training opportunities regarding nutrition.

Establishment of a Nursing Certificate and Education Programs (S447-C Stavisky/ A3076-A Lupardo)

This bill would allow nursing professionals to complete up to one-third of their clinical training through simulation experiences and defines acceptable simulation experiences including requirements of such experiences. This bill was signed into law 5/15/23, chapter 134 of the laws of 2023 and takes effect 11/11/23.

Required Protocols for Fetal Demise (S4981-B Brouk/ A1297-B Bichotte)

This bill requires hospitals to adopt, implement and periodically update standard protocols for the management of fetal demise. This act will be known and may be cited as "Mickie's law." The bill establishes protocols for fetal demise including determining whether a pregnant person is experiencing an emergency medical condition in relation to fetal demise, admitting the pregnant person to the hospital and/or treat them in the emergency room for close observation, monitoring, and stabilizing treatment. The protocols shall be in accordance with the federal EMTALA statute.

Licensure of Athletic Trainers (S942-A Bailey/ A219-A Solages)

This bill relates to the licensure of athletic trainers; adds athletic trainers to the list of persons and officials required to report cases of suspected child abuse or maltreatment. This bill aims to create licensure for the profession of athletic training.

5-Year Extension of Emergency Technician Recertification (S7463 Mannion/ A7426 Stern)

This bill extends the underlying statute established by Chapter 563 of the laws of 2001, by 5 years, effectively extending the EMS recertification demonstration program. The Pilot Recertification Program allows an EMT, EMT-intermediate, EMT-critical care or paramedic, who is in continuous practice, demonstrates competency and completes appropriate continuing education, to renew their certification without taking a certification exam. This bill was signed into law 6/30/23, chapter 166 of the laws of 2023 and took effect immediately.

Educational Requirements for Licensed Physical Therapists (S6220B Stavisky/ A6696 Fahy)

This bill amends the education law, in relation to the practice of physical therapy. This bill updates the educational requirements for licensure as a physical therapist to require a doctoral degree in physical therapy for licensure.

Newborn Screenings (S6542 Rivera/ A7338 Paulin)

This bill requires glucose-6-phosphate dehydrogenase deficiency testing for all newborns as part of newborn screening requirements in public health law.

MSSNY Committee for Physicians' Health Liability Immunity (S3449 Rivera/ A6017 Paulin)

This bill seeks to make a technical correction following a recent court decision that interpreted liability protections to not apply to the entity that creates a physician committee. The legislation clarifies authorization of the Medical Society of the State of New York's Committee for Physicians' Health program and clarifies that the liability protections offered in the statute for physician participants in the program extend to the organizations themselves as well as their employees acting without malice and within the scope of its functions for the committee.

Limitations on Mandatory Overtime for Nurses (S850 Jackson/ A970 Gunther)

This bill would amend Chapter 815 of the Laws of 2022 by requiring health care employers to notify the Department of Labor (DOL) when utilizing an exception to the limitations on mandatory overtime provisions and make a good faith effort to have overtime covered on a voluntary basis. A DOL enforcement officer will be charged with investigating complaints/ violations. This bill was signed into law by the Governor on March 3, 2023, Chapter 27 of the Laws of 2023 and shall take effect on the same date and in the same manner as the same chapter of the laws of 2022.

Non-Compete Agreements (S3100-A Ryan/ A1278-B Joyner)

This bill prohibits employers, or their agents, or the officer or agent of any corporation, partnership, or limited liability company from seeking, requiring, demanding or accepting a non-compete agreement from a covered employee. Also, it would allow an employee to bring a civil action in a court of competent jurisdiction against any employer or persons alleged to have violated these provisions, within two years of: (i) when the prohibited non-compete agreement was signed; (ii) when the employee learns of the prohibited non-compete agreement; (iii) when the employment relationship is terminated; or (iv) when the employer takes any steps to enforce the non-compete agreement.

Medical Debt (S4907-A Rivera/ S6275-A Paulin)

This bill prohibits hospitals, health providers, or ambulance services from furnishing any portion of a medical debt to a consumer reporting agency. Also, it requires such health providers to include a provision in any contracts entered with the collection entity for the purchase or collection of medical debt that prohibits

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the reporting of any portion of such medical debt to a consumer reporting agency. The bill defines "medical debt" as an obligation or alleged obligation of a consumer to pay any amount whatsoever related to the receipt of healthcare services, products, or devices provided to a person by a hospital licensed under article twenty-eight of public health law, a health care professional authorized under title eight of the education law or an ambulance service certified under article thirty of public health law.

Self-Administered Contraceptives (A1060-A Paulin/ S1043-A Stavisky)

This bill authorizes non-patient specific order for the dispensing of self-administered hormonal contraceptives by pharmacists prescribed or ordered by a licensed physician, nurse practitioner, or the Commissioner of Health. It further provides that prior to dispensing, and at a minimum of every twelve months for returning patients, the pharmacist shall provide the patient with a self-screening risk assessment questionnaire, developed by the Commissioner of Health, in consultation with the Commissioner of Education. The pharmacist shall also provide the patient with a fact sheet developed by the Commissioner of Health, in consultation with the Commissioner of Education. Licensed pharmacists would be required to receive training satisfactory to the Commissioner of Education and shall notify a patient's primary care provider when self-administered hormonal contraceptives are dispensed under this section unless the patient opts-out. The bill makes it clear that pharmacists retain the ability to refuse to dispense a prescription if in their professional judgment, potential adverse effects, interactions or other therapeutic complications could endanger the health of the patient. This bill was signed into law on May 2, 2023, Chapter 128 of the Laws of 2023 and takes effect November 2, 2024.

Matthew's Law (S2099-C Harckham/ A5200-B McDonald)

This bill authorizes pharmacists and prescribers to dispense drug adulterant testing supplies. It states that testing supplies shall be stored at a licensed pharmacy, hospital, clinic, or other health care facility in a manner that limits access to health care professionals. Retail stores containing pharmacies may dispense testing supplies from the pharmacy department only. No quantity of drug adulterant testing supplies greater than necessary to conduct five assays of substances shall be dispensed in a single transaction.

Coverage for Biomarker Testing (S1196A Persaud/ A1673A Hunter)

This bill requires that every state-regulated insurance plan, including Medicaid, provide coverage for biomarker testing for the purposes of diagnosis, treatment, appropriate management, or ongoing monitoring of an individual's disease or condition when the test provides clinical utility to the patient as demonstrated by medical and scientific evidence, including, but not limited to:

- labeled indications for a test approved or cleared by the federal Food and Drug Administration or indicated tests for a Food and Drug Administration approved drug;
- Centers for Medicare and Medicaid Services national coverage determinations and Medicare administrative contractor local coverage determinations; or
- nationally recognized clinical practice guidelines such as, but not limited to, those of the National Comprehensive Cancer Network or the American Society of Clinical Oncology.

We would like to thank the NYSAFP Board, Advocacy Commission, home office and the full membership for your strong advocacy this year. We look forward to continuing to work with you to pursue priorities of import to family physicians and your patients.

Upcoming Events

2023

Nov. 5, 2023
Fall Board Meeting

2024

Jan. 11-14, 2024
Winter Weekend

Feb. 25-26, 2024
Winter Cluster
Albany Renaissance

May 11 (Open virtually)
May 18-19, 2024
Reconvene Congress of Delegates
Albany

July 27-28, 2024
Summer Cluster
Troy
Hilton Garden Inn

Nov. 3, 2024
Fall Board Meeting

For updates or registration information for these events go to www.nysafp.org

TWO VIEWS: Insomnia

VIEW ONE

REVIEW OF PHARMACEUTICAL AND DIETARY SUPPLEMENT TREATMENT OPTIONS

By Melissa Sussman, DO, MPH; Adarsh Pillay; Eleni Efstathiadis, DO; Mary Ellis, MD and Mark Maloof, DO

INTRODUCTION

Insomnia, affecting roughly 10% of all adult populations, is a common sleep disorder characterized by difficulty falling asleep, staying asleep, or experiencing non-restorative sleep.[1] An additional 20% of adult populations report experiencing occasional insomnia symptoms.[1] Older adults, women, and those with socioeconomic hardship have been found to be more susceptible to suffer insomnia,[1] with prevalence on the rise. One study revealed an 11 fold increase in insomnia between 1993 and 2015, from 800,000 office visits in the United States, to 9.4 million.[2] Another study found the COVID-19 pandemic resulted in a 37% increase in reported insomnia.[3] Insomnia not only affects day time productivity, it can significantly impact an individual's quality of life and overall health in the form of increased risk for diabetes, obesity, falls, and depression, among other health risks.[4] Due to the importance of sleep and sleep quality, many Americans look for medications, treatments, and dietary supplements to improve their sleep health.[5]

The first approach to treating patients with insomnia symptoms is education on sleep hygiene. This includes education on factors such as room temperature, adequate darkness, noise, reduction of screen time and meals before bed, comfort of bed and pillows, and other actions to ensure a healthy environment, and healthy lifestyle in relation to bedtime.[6] Additionally, cognitive behavioral therapy for insomnia (CBTI) is considered an effective approach and first line treatment[7] for this chronic condition as well as its symptoms. A meta-analysis of 20 randomized controlled studies of cognitive behavioral therapy for patients with chronic insomnia found an average of 19- minute reduction in sleep latency and 26 minute reduction in time awake after sleep onset.[8] CBTI focuses on exploring the connection between our thoughts, actions, and how we sleep. During treatment, typically ranging from 6-8 sessions,[9] a trained CBTI provider helps to identify thoughts, feelings, and behaviors that are contributing to the symptoms of insomnia, explores the many factors in individual patients' lives which may contribute to insomnia, with the goal to clarify and reframe issues or misconceptions which may impact sleep.[10] Relaxation training is also a part of CBTI and is administered to increase the body's natural affinity for relaxation.[11]

While patients are often counseled on sleep hygiene and other non- invasive lifestyle approaches to mitigate insomnia,[12] many of these lifestyle approaches are used in conjunction with medication and supplements.[13] Many patients look for alternative treatments for

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VIEW TWO

VIEW TWO: LIFESTYLE MEDICINE TREATMENT

By Jennifer Baker-Porazinski, MD

There has been a welcome shift in the medical field and public opinion about the importance of sleep. Previously considered a waste of time and a barrier to productivity, experts now agree that sleep is a performance enhancer as well as an integral part of health and well-being. Despite this change in perception, busy doctors sometimes neglect to ask their patients about sleep quality.

There are many reasons family doctors may avoid the topic of sleep. Some doctors don't feel confident that they can provide meaningful advice in the short time that they have with these often complex patients. Patients suffering from sleep deprivation may also demand a quick fix, and doctors may be hesitant to prescribe medication that can be addictive and harmful to health, particularly for older adults. Insomnia is a very common sleep disorder seen in a primary care office, though, and the consequences of poor sleep can be life-shortening. Therefore, family doctors should become familiar with diagnosis and management.

DEFINITION

The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) defines insomnia disorder as a dissatisfaction with sleep quantity or quality associated with difficulty initiating and maintaining sleep three or more nights a week for at least three months accompanied by daytime impairment [Table 1]. Insomnia causes significant distress or difficulty performing daily activities, including functioning at work, school, and in social life. While estimates of prevalence vary widely and depend on both the population studied and the definition criteria used, a general consensus from different countries concluded that approximately 30% of adults sampled reported difficulty with initiating or maintaining sleep, early morning awakening, or poor sleep quality.[1] Despite this, only 4 out of 10 people with insomnia seek help from their primary care doctors, and these are mostly patients who take sleep medication.[2]

RISK FACTORS

Co-morbid illnesses are present in approximately 75-95% of patients with insomnia.[1] Reflux, chronic pain, heart disease, prostate disorders, and respiratory diseases pose a significant risk for insomnia.[3] Medications commonly prescribed in primary care can also lead to disruptive sleep, including beta blockers, antidepressants, corticosteroids, diuretics, and stimulants.[4] In addition, 40% of insomniacs have a coexisting psychiatric disorder, most commonly anxiety and depression. In fact,

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insomnia on their own, in the form of dietary supplements.[14] In fact, in a subgroup of participants in one study with other medications, 84.5% reported that the use of the supplement led to a stop or decrease in the uptake of additional medications.[15] Unlike pharmaceutical medications, dietary supplements do not undergo clinical trial, or an official approval process under the FDA. In the United States, dietary supplements are regulated as a subcategory of food under the Dietary Supplement Health and Education Act of 1994 (DSHEA) 103rd Congress. Dietary supplements can be formulated with active pharmacological ingredients and marketed with a variety of health claims.[16] The label entrusts manufacturers of dietary supplements to ensure the safety and accuracy of supplements.[17]

As more patients look for alternative treatments for insomnia, it has never been more important for family medicine physicians to understand and educate their patients on the available pharmaceutical treatments as well as dietary supplement options for insomnia for best shared decision-making purposes. Here we review five common pharmaceutical treatments (zolpidem, ramelteon, temazepam, eszopiclone and doxepin) and five common dietary supplements (melatonin, magnesium, valerian root, L-theanine, and chamomile) used to treat insomnia, including their mechanism of action, risks, and adverse events associated.

PHARMACEUTICALS

Zolpidem (Ambien®) is the most widely used sedative-hypnotic in the United States, initially approved by the FDA in 1992 for the short-term treatment of insomnia.[18] Zolpidem is a non-benzodiazepine receptor modulator and acts as a gamma-aminobutyric acid (GABA), a receptor chloride channel agonist which increases GABA inhibitory effects leading to sedation.[19] In clinical trials, zolpidem decreases sleep-onset latency, and improves sleep quality significantly, compared to placebo.[20] For immediate release formulations, women should be started on 5mg and men 5 or 10mg immediately before bedtime. For extended release, 6.25mg for women and 6.25mg or 12.5mg for men, respectively.[21] Dose of 5 mg in elderly individuals has been found to be clinically effective.[22]

Common adverse effects include daytime drowsiness,[20,23] dizziness, headache, gastrointestinal symptoms, memory problems, nightmares, and confusion.[23] Other side effects include increased risk of falls, sleepwalking, seizures, and suicidality.[21] Zolpidem has also been implicated in effects such as changes in behavior, withdrawal, and central nervous system (CNS) depression, and angioedema.[19] Zolpidem is not recommended for the general population as a first-line treatment because of its high potential for abuse, and is considered a controlled substance class C IV medicine.[19] Patients with alcohol or drug toxicities have been noted to experience auditory and visual hallucinations associated with unusual behavior and agitation. Consumption of alcohol or any other CNS depressant was found to increase these events as they enhance sedation when combined.[19]

Zolpidem should be used for short-term treatment of insomnia, taken when the patient has 7 to 8 hours to sleep before being active again. Caution should be used when prescribing this medication to patients taking other therapeutics, especially medicines for seizures, sleep, anxiety, muscle relaxants, or opioids.[2]

One should evaluate for co-morbid diagnosis if insomnia persists after 7-10 days of use. When prescribing zolpidem, dosage should be changed in patients with hepatic impairment as the half-life of zolpidem was found to be increased by multitudes compared to patients with normal health.[19] Pediatric patients should not be prescribed zolpidem as its effectiveness is currently undetermined. Limited published literature reported that zolpidem is excreted in human milk and lacks information on its effects on milk production, though there have been reports of excessive sedation in infants exposed to zolpidem through breast milk. Infants exposed to zolpidem through breastmilk should be monitored for hypotonia, excess sedation, and/or respiratory depression.[19]

Ramelteon (Rozerem) was the first melatonin receptor agonist FDA approved for the treatment of insomnia, in 2005 at a dose of 8mg.[24] Ramelteon is a MT(1) and MT(2) melatonergic agonist that has specific effects on melatonin receptors in the suprachiasmatic nucleus (SCN) and has been found to be effective in promoting sleep in animal studies. In clinical trials, ramelteon was shown to reduce sleep onset latency and promote sleep in patients with chronic insomnia, including an older adult population.[25] Ramelteon has also shown to have a longer half-life than melatonin.[26] And unlike traditional hypnotics, ramelteon does not demonstrate affinity for CNS receptors commonly associated with sedation (GABA, dopamine, opiate, serotonin),[27] and is not designated as a Schedule IV controlled substance.[28] Ramelteon has also demonstrated low potential for abuse in clinical trials, including those with a history of substance abuse.[27] Ramelteon has also been successfully used in elderly insomniacs.[29]

In clinical trials, ramelteon was generally well tolerated. Compared to placebo, common reported adverse events were somnolence, fatigue, and dizziness.[30] In long term trial with different dosages, adverse events include nasopharyngitis (10.5% in the 8mg group, 14.9% in the 16mg group), somnolence (9.5%, 8.1%), upper respiratory tract infection (7.6%, 11.1%), and sinusitis (1.9%, 7.8%).[27]

Similar to melatonin supplements, ramelteon should not be used by patients on fluvoxamine treatment, which can inhibit the ramelteon metabolism, due to CYP1A2 inhibition, or by patients who have severe hepatic impairment.[28] Use of ketoconazole (CYP3A4) or fluconazole (CYP2C9) may increase serum levels of ramelteon, which may increase the risk of side effects or impact therapeutic effect.[31] Of note, ramelteon has not shown significant additive effect when taken with alcohol. It has not been studied in children and is therefore not recommended for adolescents or children. Ramelteon is pregnancy category C; therefore, not recommended for nursing mothers.[28]

Temazepam is an orally available benzodiazepine used as a sleeping aid for those with insomnia.[32] The sleep-inducing effect of benzodiazepines is achieved by augmenting the inhibitory action of gamma-aminobutyric acid (GABA) in synaptic

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insomnia occurs in a large majority of patients with depressive disorders, likely due to an increased vulnerability related to underlying pathophysiological mechanisms of both conditions.[5] Finally, female sex, advanced age, lower socioeconomic status, substance disorders, and shift work are risk factors that should prompt a sleep assessment.

CONSEQUENCES

Insomnia increases morbidity and mortality. In addition to the emotional and mental health consequences, sleep disorders also increase the risk of many chronic diseases including heart disease, dementia, cancer, and diabetes.[6] Sleep experts recommend 7-9 hours of sleep every night but according to Gallop polls, Americans average less than 7. The Center for Disease Control and Prevention (CDC) reports that 2/3 of teenagers do not achieve the recommended amount of sleep. One of the more immediate and often fatal consequences of sleep deprivation is motor vehicle accidents. Insomniacs are 2.5 to 4.5 times more likely to have an accident while driving than people who don't have sleep disorders.[1]

Sleep deprivation impacts hormones and circadian rhythms. The lack of sleep increases the hunger hormone ghrelin and decreases the satiety hormone leptin, potentially contributing to weight gain. Poor sleep also affects the hypothalmic-pituitary-adrenal (HPA) axis and cortisol, increasing sympathetic nervous system activity and the inflammatory response.[7] Researchers hypothesize that these disturbances may cause increased caloric intake, poor diet quality, and unhealthy eating patterns - all of which contribute to obesity and other risk factors for diabetes and cardiovascular disease.[8] Because nutrition patterns often start in childhood, family doctors are in a unique position to intervene.

Finally, disruption of the circadian rhythm and dietary patterns of shift workers leads to higher rates of obesity, diabetes, and metabolic syndrome. It is postulated that dysbiosis may be an underlying cause of metabolic imbalances contributing to these health issues in shift workers. Disturbances in the microbiome cause inflammation, metabolic disorders, nervous system dysfunction, and an impaired immune response which may exacerbate sleep and psychiatric problems, leading to a cycle of dysfunction.[7] Clearly, sleep is a critical aspect of wellness and, although it is arguably as important as diet and exercise in chronic disease prevention, it is frequently not granted the same priority.

3P BEHAVIORAL MODEL

The 3P behavioral model is a framework to understand the causes of insomnia and assist in treatment. This model examines three different factors contributing to dysfunctional sleep: predisposing, precipitating, and perpetuating. Predisposing factors include genetic and personality traits as well as a tendency toward hyper-arousal. Precipitating factors are stressors that can led to insomnia in someone who is predisposed. For example, the stress brought on by the pandemic led to a significant escalation in sleep complaints. Perpetuating factors include maladaptive behaviors leading to conditioned wakefulness, such as rumination about sleep or dysfunctional expectations causing anxiety and hypervigilance, which further impede sleep.

SCREENING

Quality of sleep can be assessed by simple questionnaires completed in the waiting room. Sleep questionnaires are often more valuable than a patient's subjective recall of sleep, particularly if they are already sleep-deprived. Regular use of such questionnaires may also help raise awareness of the importance of sleep for health. The SATED sleep questionnaire is a self-reporting tool that evaluates Satisfaction, Alertness, Timing, Efficiency, and Duration of sleep and can be used for screening the general population. When insomnia is suspected, the Insomnia Severity Index (ISI) can be used for both screening and monitoring treatment. The ISI is a 7-item questionnaire that assesses the nature, severity, and effect of insomnia on daily living. The Pittsburgh Sleep Questionnaire (PSQI) is a more comprehensive questionnaire with complex scoring, making it more useful for research. The PSQI evaluates subjective sleep quality, sleep latency, duration, efficiency, sleep disturbances, daytime dysfunction, and use of medication.

Screening for sleep apnea should be considered in all patients with insomnia as there is considerable overlap in these two conditions. Between 29% and 67% of patients with insomnia meet the criteria for sleep apnea.[9] These conditions also share many common symptoms, making clinical treatment challenging [Figure 1]. Several quick screening tools, including the Epworth Sleepiness Scale and STOP-Bang questionnaire, can help determine if a patient needs referral for a home sleep study or polysomnogram.

Finally, because of the high co-morbidity of insomnia and mood disorders, screening for depression and anxiety as well as assessing stress is crucial for all patients complaining of sleep dysfunction. Depression and anxiety are routinely screened in primary care using tools like the Patient Health Questionnaire (PHQ-2) and Generalized Anxiety Disorder (GAD-7), respectively. If restless leg syndrome is causing sleep disruption, blood testing for iron deficiency should be considered.

MANAGEMENT

Because many conditions contribute to sleep disruption, appropriate management of other medical conditions is critical. Optimizing treatment of cardiopulmonary disorders, chronic pain, prostate disease, overactive bladder, reflux, and vasomotor symptoms of menopause can improve sleep. Assess whether current medications might be contributing to sleep problems.

While proper sleep hygiene alone is not likely to cure insomnia, basic education on what helps and hinders sleep can be beneficial. *Is the bedroom cool, quiet, and dark? Is a snoring spouse, child, or pet contributing to poor sleep? Is the patient engaging in stimulating activities, such as vigorous exercise or screen usage, right before bed?* A one to two-week sleep diary completed each day before bed and on wakening can help identify contributing factors and reveal patterns (sleep-wake time, napping) and is more accurate than patient recall. The National Sleep Foundation has a free downloadable sleep diary for patient use (www.thensf.org).

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communication through interaction with the GABA A receptor.[32] Temazepam indications are limited to the short-term treatment of insomnia and are available in capsules of 7.5, 15, 22.5 and 30 mg under the brand name Restoril.[32] The recommended initial dose for insomnia is 7.5 mg before bedtime, increasing as needed to a maximum dose of 30 mg.[32] Long-term use of benzodiazepines or benzodiazepine receptor agonists is widespread, though guidelines recommend short-term use.[34] Compared to a placebo, a 15 mg dose of temazepam led to reduction in perceived time to fall asleep by 20 minutes and actual time to fall asleep by 37 minutes, and an increase of 64 minutes in perceived total sleep duration and 99 minutes in actual total sleep duration.[33] Meta-analysis of total sleep time showed improvement in subjective total sleep time which exceed the threshold for clinical significance.[36]

Common side effects of temazepam are dose related and include daytime drowsiness, lethargy, ataxia, dysarthria and dizziness. Rare but severe adverse events include hallucinations, restlessness, agitation, and hypersensitivity reactions including angioedema.[32] The most frequently reported adverse events include gastrointestinal complaints, headache, dreams or nightmares, and residual sedation.[35] Like other oral benzodiazepines, temazepam carries a significant warning on its label, cautioning against severe sedation and potential life-threatening respiratory depression when combined with opioids. It highlights risks of misuse, abuse, and addiction with extended use, potentially leading to overdose and mortality. Unlike many benzodiazepines, temazepam has shown no substantial connection to elevated serum aminotransferase or alkaline phosphatase levels.[32]

Eszopiclone is a non-benzodiazepine, benzodiazepine receptor agonist[37] approved by the US Food and Drug Administration on December 15, 2004, for the treatment of insomnia in patients aged ≥18 years.[39] Eszopiclone was approved for short- or long-term treatment of sleep onset and sleep maintenance insomnia in adults.[38] Eszopiclone is the cyclopyrrolone class that acts by binding to the benzodiazepine site on the GABA receptor complex, causing neural inhibition and helping to induce sleep.[37]

Eszopiclone, or brand name, Lunesta is offered in 1 mg, 2 mg, and 3 mg tablet forms; suggested dose 1 to 3 mg orally just before going to bed.[37] On average, individuals taking eszopiclone experienced a 12-minute quicker onset of sleep compared to those receiving the placebo. Additionally, they were awake for approximately 17 minutes less during the night and obtained around 30 minutes more sleep in total when contrasted with the placebo group.[38] In nonelderly adults, rapid sedation was achieved, with peak levels observed within 1 to 2 hours following the ingestion of 3 mg eszopiclone. These levels returned to baseline within 5 to 6 hours after the dose.[39] Across numerous placebo-controlled trials, eszopiclone demonstrated the ability to reduce the time it takes to fall asleep and enhance the perceived quality of sleep.

Tolerance with long-term exposure (6 months) and rebound insomnia were not observed.[40] Similar to other benzodiazepine receptor agonists, eszopiclone is categorized as a schedule IV controlled substance, indicating a low likelihood of abuse and minimal potential for physical or psychological dependence. Adverse effects, although infrequent, include an unpalatable taste (bitterness), headaches, nausea, dizziness, dry mouth, and drowsiness.[37] Clinical studies did not find evidence that eszopiclone was causing serious harm or withdrawal symptoms.[38] Individuals should be advised to avoid engaging in risky activities or occupations that demand mental vigilance or motor coordination, such as driving a vehicle or operating machinery, after taking eszopiclone.[39] Therefore, the drug appears to be efficient with moderate effects on sleep onset and maintenance. There was little or no evidence of harm if taken as recommended.[40]

Doxepin, a tricyclic antidepressant class of medication, is commonly used in the treatment of major depressive disorder, anxiety, pruritus, and insomnia.[41] Doxepin works by increasing the concentration of the neurotransmitters serotonin (5-HT) and norepinephrine (NE) in the brain, thus prolonging the availability of 5-HT and NE within the synaptic cleft, and enhances their neurotransmission by preventing their reuptake back into the presynaptic terminal.[41] During the specific phase of the circadian cycle when histamine-related wakefulness is decreasing, low-dose doxepin has the ability to precisely target the histamine H1 receptors. This action has the potential to support and uphold the overall quality and quantity of sleep.[42] Among adults experiencing primary insomnia, doxepin at doses of 1 mg, 3 mg, and 6 mg demonstrated favorable tolerability and led to enhancements in both objective and subjective measures of sleep maintenance and duration that were sustained through the final hour of the night.[43] The most favorable therapy for extending both objective and subjective total sleep time (28.19 minutes) compared to a placebo was found to be low-dose doxepin (<10 mg).[42]

Adverse effects of doxepin are based on the receptors it antagonizes. It may cause orthostatic hypotension and should be carefully monitored in those with cardiovascular disorders due to the blockage of alpha-adrenergic receptors. It may cause anticholinergic side effects such as dry mouth, constipation, dizziness, lightheadedness, tachycardia, and prolonged QT interval due to the blockage of muscarinic receptors. It also has the potential to cause a significant increase in weight.[41] Despite the notable serious side effects associated with TCAs, evidence indicates that doxepin was comparatively safe for utilization. Studies showed no instances of anticholinergic effects, memory impairment, or significant hangover/next-day residual effects; thus, these findings serve to illustrate the effectiveness of doxepin at doses of 1 mg, 3 mg, and 6 mg in enhancing the sleep quality of individuals with chronic primary insomnia.[43] Low-dose doxepin exhibited a modest to moderate effect size in terms of improving sleep maintenance and duration, but not for sleep initiation. Notably, there were no significant residual effects on the following day; headache and somnolence were the most common side effects present.[44]

DIETARY SUPPLEMENTS

Melatonin is a neurohormone produced by the pineal gland. The suprachiasmatic nucleus (SCN) located in the hypothalamus regulates melatonin synthesis [45,46] in direct response to darkness,

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DIET

Evidence suggests there is a bidirectional relationship between sleep and diet, which also impacts chronic disease risk.[8] Not surprisingly, protective lifestyle factors, including a healthy diet and regular physical activity, are associated with better sleep quality.[10] In addition, poor sleep influences lifestyle behaviors that contribute to the risk of chronic diseases, particularly cardiovascular disease. Therefore, promoting healthy food choices is an effective strategy for improving sleep.

Researchers hypothesize that healthy food choices, such as a heart-healthy plant-based diet, may improve sleep because of high isoflavone and tryptophan content.[11] Tryptophan, a precursor of the sleep-regulating hormone serotonin, may help improve sleep quality and enhance morning alertness.[8] While one study found that eating a high-glycemic index carbohydrate meal four hours before bed decreased the time to fall asleep (likely related to tryptophan),[8] an analysis of the Women's Health Study showed that high-glycemic index diets might be a risk factor for insomnia in postmenopausal women.[12]

A review published in the *Frontiers of Neurology* presented evidence from multiple studies on the role of macronutrients in sleep. In an inpatient crossover study, a low fiber diet with high saturated fat and sugar intake was associated with lighter, less restorative sleep. Another study showed that a high-carbohydrate, low-fat diet was associated with poorer sleep quality.[8] Both of these studies point to potential improvements in sleep by replacing the Standard American Diet (SAD) to one that is more plant-based.

The health benefits of a Mediterranean diet are well-documented. A Mediterranean diet focuses on whole foods and includes nutrient-dense fruits and vegetables, plant-based proteins, fiber, and unsaturated fats. There is evidence that some whole foods, including milk, fatty fish, cherries, and kiwis, may improve sleep.[8] A Mediterranean diet is rich in sleep-promoting compounds and may also help with weight management and decreasing cardiovascular risk.[13] Following a DASH (Dietary Approaches to Stop Hypertension) diet can also improve sleep quality.[10] Both diets provide further evidence of the connection between diet, sleep, and cardiovascular health. The potential weight loss experienced by many who follow a healthy diet can also improve sleep in those with sleep apnea. Four randomized controlled trials showed that weight loss through behavioral or surgical interventions was effective in the management of sleep-disordered breathing.[6]

The *Frontiers of Neurology* review also included an analysis of micronutrient intake and sleep. Researchers postulated that certain nutrient deficiencies contribute to shorter sleep duration (vitamin B1, folate, phosphorus, magnesium, iron, zinc, and selenium), difficulty falling asleep (alpha-carotene, selenium, and calcium), staying asleep (low intake of vitamin D and lycopene) and may cause non-restorative sleep (calcium and vitamin C).[8] A double-blinded, placebo-controlled randomized controlled trial (RCT) in healthy adults supported consumption of zinc-rich foods for improved sleep onset and efficiency.[8] While the general consensus is that it is best to obtain nutrients through a healthful diet, short-term trials suggest nightly supplementation of melatonin, magnesium, or zinc may improve sleep.

Finally, some beverages adversely affect sleep so it is important to ask about their use in people suffering from insomnia. Caffeine is a competitive antagonist of adenosine, a component of sleep drive. Caffeine has a long half-life and can alter sleep patterns for many hours after consumption. Caffeine is frequently found in over-the-counter pain medications and weight loss pills and in chocolate, ice cream, and even decaffeinated coffee.

While generally regarded as a sedative, alcohol also negatively impacts sleep by influencing levels of serotonin and norepinephrine, which can lead to nighttime awakening.[8] Alcohol also relaxes the airway so should be avoided by people with sleep apnea.

EXERCISE

Americans struggle to meet the daily recommendations for physical activity. Over half of American adults fail to satisfy aerobic recommendations and only one-fifth meet guidelines for aerobic and strength training.[14] There is mounting evidence that exercise is an effective intervention for insomnia. RCTs confirm exercise's positive effects on sleep parameters, including PSQI and ISI scores.[15] Aerobic exercise is strongly recommended in patients suffering from insomnia yet, despite being readily available and affordable, exercise is an underutilized nonpharmacological therapy.

The Physical Activity Guidelines for Americans recommend a minimum of 150 minutes of moderate physical activity or 75 minutes of vigorous activity per week or any combination of the two. Moderate activity includes any exercise that causes the exerciser to feel a little winded (they can talk but not sing). A vigorous activity level is when the exerciser can't talk or sing. Every minute of vigorous activity is equivalent to two minutes of moderate activity. Fitness guidelines also include recommendations for strength training and balance activities.

An exercise prescription can be extremely helpful in getting patients started on an exercise regimen. An exercise prescription for aerobic activity (FITT) typically includes *frequency* (days/week), *intensity* (light, moderate, vigorous), *time* (minutes/day), and *type* (walk, run, swim, bike), but can also include non-exercise activity thermogenesis (NEAT), such as daily steps. A FITT prescription can also be used for resistance training with a *frequency* goal of 2-3 times a week, *intensity* varying according to fitness goals (for example exercising until the last few repetitions are difficult versus unable to lift anymore), *time* (as determined by the number of repetitions and sets), and *type* (resistance bands, free weights). An example of a FITT prescription can be found at exerciseismedicine.org. For a review of exercise recommendations for specific populations (elderly, pregnant) and those with chronic conditions or health concerns (diabetes, lung disease, heart disease, osteoporosis), check out Medscape's excellent resource at emedicine.medscape.com/article/88648-overview#a3.

STRESS MANAGEMENT

Because stress and anxiety are present in the majority of patients suffering from insomnia, stress management is an important component of sleep disorder treatment. For many, physical activity can be helpful in reducing stress. Biofeedback, or

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and plays an important role in regulating our circadian rhythm, or sleep/wake cycle.[47,48] Synthesized by pinealocytes from amino acid tryptophan, it is then hydroxylated, and then decarboxylated in serotonin. Then enzymes transform serotonin to melatonin.[49] Studies have suggested that melatonin, elevated at night, has the capacity to reduce sleep onset time and increase sleep duration.[45,48] Melatonin supplements can be made from microorganisms or animals, but most often they are made synthetically.[50]

The sleep-promoting and sleep/wake rhythm regulating effects of melatonin are attributed to its mechanism of action which is the activation on MT(1) and MT(2) melatonin receptors present in the suprachiasmatic nucleus (SCN) of the hypothalamus.[45] It is thought that as melatonin levels rise in the evening, supplementing our levels of melatonin help to promote sleep. Melatonin does not cause hangover or withdrawal effects and does not have addictive potential.[51] Clinical studies suggest common adverse events such as headache, dizziness, nausea and daytime sleepiness.[46,52] It has been noted that adverse side effects such as extreme sedation may result when combined with certain medications. One example, melatonin in combination with antidepressant, fluvoxamine. Fluvoxamine is an inhibitor of CYP1A2 and may result in the elevation of melatonin levels due to reduction in metabolism. Caffeine, also metabolized through CYP1A2, may also increase melatonin levels.[53] Due to the potential for drug interactions, it is therefore important for patients to work with their healthcare professionals before supplementing melatonin. There has not been sufficient research into the safety of melatonin for pregnant patients, therefore those who are pregnant or breastfeeding should consult their healthcare professional.[54] There is no official recommended dosage for adults, however, 1 to 5 mg appears to be effective and may be taken a 1-3 hours before bed.[53]

Magnesium is an essential mineral which contributes to heart, bone, brain and muscle health and function.[55,56,57] In addition to magnesium supplements, magnesium can be found in foods such as green leafy vegetables like spinach, collard greens, and swiss chard; legumes such as black beans, lima beans, and edamame; fruit such as blackberries, papaya, and bananas, and nuts such as almonds, chia seeds, cashews, flaxseed and peanuts[58] with a dietary recommended daily allowance of 310-420 mg per day for adults.[56] In relation to sleep, magnesium is thought to be involved in neurotransmitter regulation, and muscle relaxation. The current understanding for the mechanism of action of magnesium is that it acts as a gamma-aminobutyric acid (GABA) receptor agonist, stimulating GABA, the chief inhibitory neurotransmitter for the central nervous system, thus reducing neuronal excitability, ultimately promoting relaxation.[59,60] A randomized controlled trial in elderly populations found that magnesium supplementation significantly improved sleep time and efficiency compared to placebo group.[61]

Common adverse events to magnesium supplementation include nausea, vomiting, diarrhea, flatulence, abdominal pain, hypotension, hypocalcemia, hyperkalemia, and hypermagnesemia.[56,62] More serious adverse events include respiratory depression, depressed cardiac function, pulmonary edema and hypothermia.[62] It is important to assess and monitor kidney function in patients before administering magnesium supplementation. Those in renal failure may experience magnesium excretion impairment leading to toxicity.[62,63] Monitoring magnesium levels in patients should be done through serum magnesium, calcium and/or potassium.[62]

Valarian root is derived from the root of the V. officinalis plant and is sold as a dietary supplement for calmness and to improve sleep quality.[64] This herb is thought to act via gamma-aminobutyric acid (GABA) mechanisms.[65] Studies have shown binding of valerian extract to GABA receptors,[65] agonizing the inhibitory neurotransmitter, thus favoring sleep. Another proposed mechanism of valerian is that it increases GABA availability in the synaptic cleft by causing GABA to be released from brain nerve endings, by blocking GABA from being taken back into nerve cells, and by inhibiting an enzyme that destroys GABA.[66] Valerian and its constituents are also partial agonists of the 5-HT(5a) receptor which is involved in the sleep wake cycle.[67]

In a randomized, double-blind, placebo-controlled trial, as well as a study that looked at 14 random controlled trials it was found that those receiving valerian and placebo had similar improvements in sleep.[68,69] In some study measures including subjective sleep latency, polysomnogram and patient reported total sleep time and sleep efficiency, there were improvements with valarian root, however the difference between treatment and placebo did not meet clinical significance thresholds.[70] Interpretation of inconclusive studies are complicated by the fact the studies have small sample sizes, used different amounts and sources of valerian, measured different outcomes, or did not consider potential bias resulting from high participant withdrawal rates.[66]

The most common side effects of valarian root reported in clinical trials are headaches, dizziness, pruritus, and gastrointestinal disturbances, but similar effects were also reported for the placebo.[66] Case reports have shown delirium (secondary to valerian root withdrawal), hepatotoxicity, and acute pancreatitis.[64] There is the theoretical possibility of additive sedative effects if taking alcohol or drugs like barbiturates and benzodiazepines while taking valerian root.[66] Furthermore, abrupt discontinuation may cause a benzodiazepine-like withdrawal. Valerian should be stopped one week before surgery because it has possibility of reacting with anesthesia.[64]

L-theanine is an amino acid naturally found in green tea, black tea and mushrooms, that is also available as a dietary supplement to promote sleep and decrease anxiety, amongst other things. L-theanine is a water-soluble amino acid that is able to cross the blood brain barrier.[71] L-theanine is thought to increase dopamine and serotonin production in the brain. Structurally, theanine is similar to the excitatory neurotransmitter glutamate, and inhibits glutamate transporters causing a block in the reuptake of glutamine and glutamate.[72] It also enhances alpha wave activity in the brain, mediating a relaxed state.[72,73]

There is limited data regarding the efficacy of L-theanine on sleep. Small studies suggest improvements in sleep.[71,72,74] There has been a prior established relationship with L-theanine significantly

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using visual or auditory feedback to control physiologic parameters and reduce somatic arousal, can help patients with insomnia. In addition, relaxation methods such as breath work, meditation, and progressive muscle relaxation, may benefit patients with sleep disorders. While a comprehensive review of stress management is beyond the scope of this article, for those interested in more information, I recommend exploring Mindfulness-Based Stress Reduction (MBSR). MBSR is an evidence-based approach developed by Jon Kabat-Zinn that uses mindfulness meditation, body awareness, yoga, and tools of cognitive behavioral therapy (CBT), including examining thoughts, behaviors, feelings, and actions without judgment, to reduce stress and anxiety and improve well-being.

CBTI

Cognitive behavioral therapy for insomnia (CBTi) is the gold standard treatment for insomnia, receiving the highest level of support in the American Academy of Sleep Medicine clinical practice guidelines for the initial management of chronic insomnia.[16] CBTi shows sustained benefits in sleep without the risk of tolerance or side effects commonly associated with drugs. While CBTi is traditionally done with a therapist, some providers offer a telemedicine option. For those unable to access a therapist, there are online programs and apps offering a cost-effective alternative. The biggest limitation to CBTi use, however, is the lack of providers implementing it.

CBTi involves education on sleep hygiene, challenging dysfunctional sleep beliefs, and exploring how a person's thoughts, behaviors, and feelings can negatively impact sleep. A CBTi therapist explores relaxation techniques since hyper-vigilance and muscle tension are incompatible with good sleep. CBTi also uses stimulus control to help patients re-associate their bed with sleep and intimacy rather than with frustration and worry about sleep. Patients are advised to get out of bed if they can't fall asleep (or fall back asleep) after 30 minutes. Once up, they should engage in non-stimulating activities under dim lighting until they feel sleepy.

Finally, CBTi therapists sometime use sleep restriction, or limiting the amount of time in bed to the amount of time a person actually sleeps. This creates mild sleep deprivation which, after several days, often results in a patient falling asleep and staying asleep for the entire allotted time. This increases sleep drive and reinforces circadian rhythms by maintaining consistency in wake time. It may also provide confidence in a patient's ability to fall asleep on their own. Sleep time is gradually lengthened as sleep efficiency improves.

REFERRING TO A SLEEP SPECIALIST

Primary care doctors should consider consulting with a sleep specialist if the diagnosis remains unclear, therapy isn't effective, or testing for comorbid sleep disorders is needed.

Asking patients about their sleep shows patients we care about their well-being, strengthening the doctor-patient relationship. As a bonus, increased awareness and attention to sleep may even help you improve your own.

Table 1 – Insomnia Disorder

DSM-5
Name: Insomnia Disorder
Disorder Class: Sleep-Wake Disorders
A. A predominant complaint of dissatisfaction with sleep quantity or quality, associated with one (or more) of the following symptoms: 1. Difficulty initiating sleep. (In children, this may manifest as difficulty initiating sleep without caregiver intervention.) 2. Difficulty maintaining sleep, characterized by frequent awakenings or problems returning to sleep after awakenings. (In children, this may manifest as difficulty returning to sleep without caregiver intervention.) 3. Early-morning awakening with inability to return to sleep.
B. The sleep disturbance causes clinically significant distress or impairment in social, occupational, educational, academic, behavioral, or other important areas of functioning.
C. The sleep difficulty occurs at least 3 nights per week.
D. The sleep difficulty is present for at least 3 months.
E. The sleep difficulty occurs despite adequate opportunity for sleep.
F. The insomnia is not better explained by and does not occur exclusively during the course of another sleep-wake disorder (e.g., narcolepsy, a breathing-related sleep disorder, a circadian rhythm sleep-wake disorder, a parasomnia).
G. The insomnia is not attributable to the physiological effects of a substance (e.g., a drug of abuse, a medication).
H. Coexisting mental disorders and medical conditions do not adequately explain the predominant complaint of insomnia.
Specify if: • With nonsleep disorder mental comorbidity, including substance use disorders • With other medical comorbidity • With other sleep disorder • Coding note: The code 780.52 (G47.00) applies to all three specifiers. Code also the relevant associated mental disorder, medical condition, or other sleep disorder immediately after the code for insomnia disorder in order to indicate the association.
Specify if: • Episodic: Symptoms last at least 1 month but less than 3 months. • Persistent: Symptoms last 3 months or longer. • Recurrent: Two (or more) episodes within the space of 1 year.
Note: Acute and short-term insomnia (i.e., symptoms lasting less than 3 months but otherwise meeting all criteria with regard to frequency, intensity, distress, and/or impairment) should be coded as another specified insomnia disorder

https://www.ncbi.nlm.nih.gov/books/NBK519704/table/ch3.t36/

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increasing activity in the alpha wave band in patients with anxiety, however in these studies the concentration of L-theanine was greater than one would consume in a cup of tea.[74] Another similar study in healthy patients was conducted by observing EEGs, but this time using a dose of L-theanine at a dietary level, resulting in statically significant difference in the alpha wave activity increase in the L-theanine group compared to placebo.[74] These studies show L-theanine significantly modulates the resting state of brain activity. These findings are significant because this compound relaxes the mind without inducing drowsiness or cognitive impairment[74] like benzodiazepines would.

Side effects of L-theanine are not well studied. In animal studies, it was found to be non-carcinogenic and non-mutagenic.[72] If L-theanine is being consumed via tea, side effects may include headaches, trouble staying asleep, irritability, and stomach pain, but it is important to note that these effects are not thought to be due to the amino acid itself, just the overall tea.[71] In theory, taking this supplement with sedative medications like lorazepam or zolpidem may increase overall drowsiness.[71]

Chamomile is an herb that has feathery foliage with white flowers that resemble daisies, widely used in teas for its relaxing effects, with two main species used medicinally, M. chamomilla and Chamaemelum nobile. The components of this plant that are responsible for its medicinal properties are flavonoids, terpenoids and coumarins.[75] This herb is held in high esteem in various cultures,[75] and is used for anxiety, depression, mucositis, GI disorders and insomnia.[76] It plays a role as an anti-inflammatory, antioxidant, analgesic, antimicrobial, anticancer, antihypertensive, hepatoprotective and antiallergic agent.[77] The main bioactive components of chamomile are flavonoids, which include apigenin. One proposed mechanism of chamomile is flavonoid apigenin interacting with and agonizing GABA(A) - benzo receptors.[76] US Pharmacopoeia says that dried chamomile flowers should have at the absolute minimum 0.3% in apigenin-7-glucoside and 0.15% bisabolan derivatives.[75]

Some clinical data shows modest benefits when oral chamomile is taken in those with chronic insomnia,[76] however the studies are scarce. In one randomized controlled pilot study it was found that chamomile did decrease sleep latency and night time awakenings, however it was not statistically significant.[79] In a quasi-experimental clinical trial done in the elderly population in nursing homes there was a statistically significant difference in sleep quality between experimental groups receiving chamomile supplements and control groups who did not.[78]

German chamomile is categorized as GRAS (Generally Recognized as Safe) as a food product, an essential oil, extract, and distillate under sections 201(s) and 409 of the Federal Food, Drug, and Cosmetic Act.[75] There is a risk of allergic reactions to chamomile (such as asthma, contact dermatitis, anaphylaxis) that are more likely to happen in people who are allergic to similar plants like ragweed, chrysanthemums, marigolds and daisies. Those who have allergies to mugwort pollen should avoid chamomile due to multiple cases of cross-reactions to chamomile.[76] Chamomile may increase risk of bleeding and bruising due to coumarin content, so it should be used in caution in people who are on blood thinners. Those taking this herb should not be on any sedative drugs, as the effect can be exacerbated, and they should proceed with caution if on cyclosporine because concurrent use elevates the level of the drug.[76]

DISCUSSION

When determining the best individualized treatment for insomnia, it is important to weigh the general risks and benefits, as well as individualized risk factors, comorbidities, and medications. While a benefit of supplements, such as those mentioned in this paper, is that they can more quickly reach the shelf of stores, and are readily available for consumers, a downside is that supplements do not have to undergo clinical trials to test the efficacy and safety through the FDA.[66] Many clinical trials that look at the efficacy and safety profile for supplements are limited in size, and are often done in vitro or in animals. As a result, one cannot definitively say the same findings can be applied to humans. Furthermore, there can be a large discrepancy in manufacturing consistency. Levels of constituents vary significantly among plants depending on multiple factors such as the species of plant used, the environment the plant is in, etc.[75] Supplements are also not required to be composed of the same constituents nor have a consistent percentage of specific ingredients that make up the supplement. Furthermore, the processing conditions of the herbs affect phytochemical composition. If there is standardization of herbal extracts it can prevent batch to batch variations.[75] Alternatively, many of the pharmaceuticals listed above, though proven to be safe and effective through the regulatory process, are noted to have drug interactions, not safe in children, pregnant patients, or those who are nursing, and many have severe adverse events noted such as respiratory depression, risk for abuse, seizures, and suicidality.

Though many people self-diagnose their insomnia symptoms and search for medication and/or supplements to treat this issue, patients may not realize that insomnia is considered a contributing risk factor for many health issues such as cardiovascular disease, asthma, diabetes, obesity, chronic pain syndrome, depression and anxiety.[80] Thus, it is ever more important for physicians to inquire about sleep habits and duration of insomnia of their patients on evaluation. On review of both the pharmaceuticals and supplements listed, there are notable adverse events and risks for both types of treatment for insomnia. Drug interactions and specific comorbidities are imperative to note for all patients, again, emphasizing the importance of patients reviewing the above therapeutics or supplements with a healthcare professional, to mitigate patient risk and optimize patient safety and care.

CONCLUSION

As the prevalence of insomnia rises, it is imperative for physicians to evaluate this health issue, and work alongside their patients for shared decision making on education and treatment options. Though patients may attempt to supplement on their own, drug-drug interactions are possible and insomnia may be a risk factor for other serious comorbidities, emphasizing the importance for diagnosis and treatment by a health professional. For the treatment of insomnia, evaluation of risk factors, and individualized treatment will determine the best therapeutic option.

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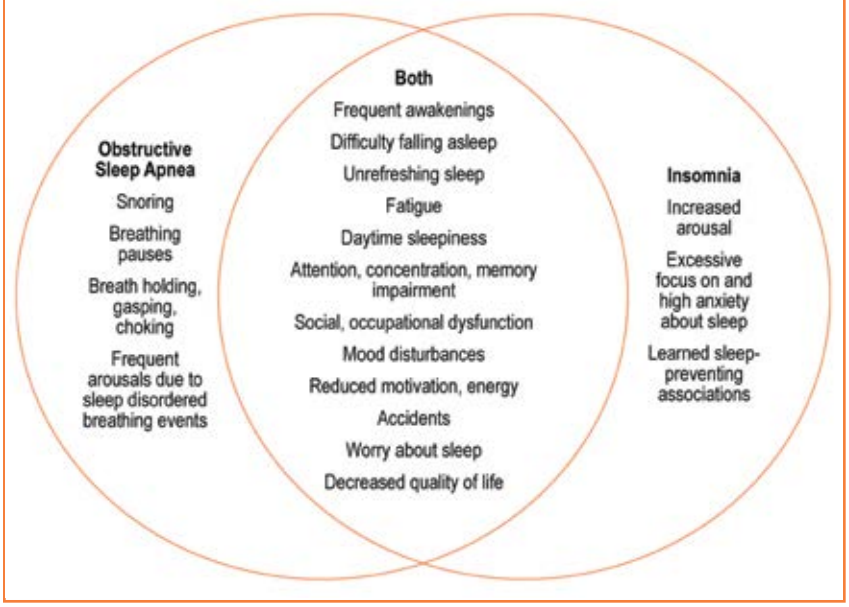
Figure 1: The interrelationship between symptoms and clinical factors associated with obstructive sleep apnea and insomnia[9]



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Resistance Training for Resilient Patients

By Saskia Levine, MD

Introduction

A study from 2015 showed that exercise performed just as well and sometimes better than pharmacological interventions at reducing mortality from coronary heart disease, diabetes, and stroke.[1] It is hardly news to anyone that exercise, like other lifestyle interventions, such as healthy diet and stress management, has a substantial benefit for morbidity and all-cause mortality, however, simply telling a patient to exercise ends up being a nebulous concept with no specific actionable steps, leaving all but the most motivated of patients with no plan for success.

Resistance training is a particular form of exercise focused on muscle mass and strength. The importance of muscle mass and strength has been demonstrated by multiple studies, including a Chilean study that divided study participants into quartiles based on appendicular lean mass index and showed that after 12 years, 50% of those in the lowest quartile had passed away while only 20% in the highest quartile had passed away.[2] If a patient successfully implements resistance training, they could potentially improve insulin sensitivity, decrease visceral fat, decrease their risk of injury from a fall, lower their blood pressure, increase their bone density, decrease chronic back pain, improve sleep, improve mood disorders and possibly reduce cognitive decline. A medication that could do all those things would certainly get put into the "magic pill" category. There is hardly a patient of any age or background who would not benefit from resistance training. This lifestyle intervention has the potential to address many of the bread-and-butter ailments seen in the outpatient office. It is, without a doubt, worth a clinician's time to familiarize themselves with resistance training in order to empower patients through education and specific, actionable steps. This article will describe resistance training, the benefits of this intervention, patient education, and how this information may change practice.

Defining Resistance Training

Resistance training (also called strength training) is a type of exercise intended to increase muscular mass, strength, and anaerobic endurance. This can be accomplished through the use of body weight, free weights, weight machines, resistance bands, and isometric exercises (static contraction of the muscle). The goal is to put the muscle under load to stimulate growth. Variables to consider when putting together resistance training exercises are sets, repetitions, types of exercise, intensity (weight or level of resistance used), frequency of exercise sessions, length of rest between sets, and length of rest between sessions. A set is a group of repetitions ("reps") performed without rest. Two sets of squats by 10 reps would mean doing 10 squats and then resting before performing another 10 squats. For maintaining muscle growth and increasing strength over a long period of time, the concept of progressive overload is crucial. This refers to the goal of adjusting the intensity of exercise over time so that the last few repetitions of each set continue to be challenging. Finally, recovery is vital so that muscles can rest and recover in order to maximize the effectiveness of training. The Victoria State Government public health website has a page clearly explaining these definitions along with other instructions regarding resistance training that could be a useful guide for patients.[3] Additional information and guidelines for clinicians are available on UpToDate.[4]

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Benefits of Resistance Training

In a healthcare system where a primary care provider with an average 2500-patient panel requires an average of 26.7 hours per day to provide preventive, chronic, and acute care with documentation and inbox management, providers are faced with an impossible task.[5] Counseling patients on resistance training may seem like yet another undertaking to add to an endless list of guideline-based care, but if it is successfully implemented by a motivated patient, it could benefit an impressive catalog of pathologies.

Muscular strength, often measured by grip strength, has been proven useful as a predictor of all-cause mortality in multiple studies. A systematic review and meta-analysis from 2018 looking at data from nearly 2 million adults came to this same conclusion.[6] Higher levels of grip strength were associated with a reduced risk of all-cause mortality compared with lower muscular strength, with a hazard ratio of 0.69 and a 95% confidence interval of 0.64-0.74. This association was stronger in women (HR=0.60). The same association was found when assessing strength by knee extension, showing a 14% lower risk of death in adults with higher muscular strength (HR=0.86) compared to adults with lower muscular strength. These findings were consistent regardless of age.

Interestingly, increased muscular strength appears to benefit all-cause mortality in individuals who have other risk factors working against their favor. Hypertension is well-known for its association with all-cause mortality and cardiovascular disease mortality, however, a study looking at men with hypertension in the bottom half of cardiorespiratory fitness and in the top third of muscle strength enjoyed a 48 percent lower risk of all-cause mortality compared to those in the bottom third of muscle strength.[7] Though one might attribute many of the benefits of resistance training to the synergy between multiple lifestyle interventions and a more health-conscious patient, it is clear that increasing muscle mass and strength alone is significantly advantageous for all patients, even those with significant negative predictive markers for health.

Geriatric Population

Muscle mass decreases after the age of 30 with about a 3-8% loss per decade and a more rapid rate of decline after age 60.[8] This is implicated in much of the disability and functional decline seen in elderly patients. Decreases in strength increase issues with balance and gait, increasing the occurrence of falls.[9] Per the CDC, more than one out of four older adults fall each year.[10] More than 800,000 patients are hospitalized due to a fall injury each year. Head injuries and hip fractures are commonly caused by falls, leading to increased morbidity and mortality. One-year mortality after a hip fracture is 21% for those undergoing surgical repair and an alarming 70% for those without surgical repair.[11]

Resistance training can be used to counteract the decline in muscle mass and strength that leads to frailty in our aging patients. It is capable of inducing muscle hypertrophy and increasing strength in elderly adults.[7] Sarcopenia should not simply be accepted by patients as an inevitable part of aging when the consequences can be dire and the solutions as simple, though not easy, as exercise.

Osteoporosis is another age-related decline, characterized by decreased bone mass which increases risk of fractures. Exercises, such as walking and swimming, which seem suitable for an elderly patient, are often recommended as a buttress against bone mass loss, however, low-impact exercises appear to not provide adequate stimulus to counteract the effect of osteoporosis. Resistance exercise, however, has been shown to increase or maintain bone mineral density.[12]

Though certain individuals of the geriatric patient population may not be good candidates for resistance training due to other medical conditions, the general approach should be to encourage this patient population to engage with this intervention. Notions about elderly individuals being too frail for this type of exercise and about leaving strength-training to the younger and more vigorous youth often seen at gyms should be challenged by clinicians. Additionally, it should be made clear to patients that it is never too late for them to benefit from a resistance training program.

Insulin Resistance

Insulin resistance, where more insulin is required to drive glucose into cells, occurs prior to the development of type 2 diabetes. Type 2 diabetes is currently the 8th leading cause of death in the USA, and it is heavily implicated in other leading causes of death, such as heart disease and stroke.[13] Though checking patients for insulin resistance is not part of routine screening, it would be wise to address it prior to the development of type 2 diabetes through exercise, weight loss, and medications.

Physical activity activates GLUT-4 vesicles, allowing glucose to be transported from the blood into cells.[14] This increased uptake of glucose in muscle cells occurs during exercise and for several hours afterwards. There are immediate improvements in insulin sensitivity after one session of exercise, and repeated exercise leads to long-term improvements in insulin sensitivity.[15] It is important to note that these changes in insulin sensitivity by physical activity appear to only affect skeletal muscle and not hepatic insulin sensitivity or glucose uptake by adipose tissue.

A study looking at young adults who were overweight or obese but metabolically healthy revealed that in young men, muscle mass was associated with greater insulin sensitivity independent of detrimental adipose depots (visceral adipose tissue and intrahepatic lipids which are strongly associated with cardiometabolic risk factors and type 2 diabetes).[16]

In type 2 diabetes, fatty acid metabolism in muscle cells is dysregulated with an accumulation of lipids in the cells, and these lipids interfere with insulin signaling.[17] There is also evidence of impaired glycogen synthesis and mitochondrial function in the skeletal muscle cells of patients with type 2 diabetes. Fortunately, many of these impairments are counteracted by resistance training.[18]

Basically, what a clinician can help their patients understand is that resistance exercise pushes glucose into muscle cells and improves insulin sensitivity, decreasing circulating blood glucose. More muscle mass is like having more parking space for glycogen, the storage form of glucose and the combined effects will lower their hemoglobin A1c. Resistance training can also help burn away their visceral ("bad") fat.

Hypertension

Managing high blood pressure is a routine part of patient care, with high blood pressure being linked to millions of deaths each year, with strong associations with cardiovascular morbidity and mortality. Oftentimes, initial attempts to control hypertension are with lifestyle changes, such as weight loss, dietary changes and increased physical activity, with an emphasis on aerobic activities. Resistance training has been an underappreciated component of lifestyle interventions for lowering blood pressure, but some studies have found significant benefit.

One study from 2011 looked at the effects of dynamic resistance training and isometric handgrip training on blood pressure and found that both forms of exercise had blood-pressure lowering potential, though especially so in the isometric handgrip training group.[19] A more recent study looked at several forms of exercise, including aerobic exercise, dynamic resistance training, combined training, high-intensity interval training, and isometric exercise training, and the study found significant reductions in systolic blood pressure and diastolic blood pressure with all forms. Isometric exercise, such as a wall squat, was particularly effective.[20]

Depression, Anxiety, and Insomnia

Clinicians often manage depression, anxiety, and insomnia in their clinics. Cognitive behavioral therapy and medications used in combination are often the ideal management strategy, but progress with symptom management is often slow and frustrating for patients. There is potential for resistance training to help manage and prevent these disorders as well.

Resistance training has been shown to reduce depressive symptoms among adults, and this was regardless of health status, total prescribed volume of resistance training, or improvements in strength.[21] This type of exercise has also been proven to be useful in decreasing anxiety.[22] Additionally, long-term resistance training improves all aspects of sleep, especially sleep quality.[23]

Grip Strength as a Prognostic Value

Grip strength is often used to measure strength in studies. It is a simple and relatively inexpensive measurement that could be obtained in an outpatient setting. Grip strength is largely consistent with overall strength, bone density, fractures, falls, cognitive impairment, diabetes, depression, sleep problems, and quality of life. In some cases, it is not always reflective of overall strength and so may be measured in conjunction with lower limb strength. The Jamar Hydraulic Hand Dynamometer is the gold standard for accurate grip strength measurements, but other hand dynamometers are available as well.

Grip strength is significantly associated with all-cause mortality and disease-specific mortality, and it has been argued that grip strength be used as a biomarker of aging.[24] To support this point, a study found that grip strength was inversely associated with all-cause mortality (with a hazard ratio of 1.16 per 5 kg reduction in grip strength), cardiovascular mortality, myocardial infarction, and stroke, and even more incredibly, grip strength was a stronger predictor of all-cause mortality and cardiovascular mortality than systolic blood pressure.[25]

Conclusions

Due to its impressive beneficial effects in many areas of health and quality of life, resistance training should be seen as more than an interest or hobby or just one of many potential ways to engage in physical activity. It may be more appropriate to compare it to brushing one's teeth, a necessary form of health maintenance. The same way that astronauts are expected to exercise to combat the long-term effects of exposure to low-gravity environments, the average person should engage in exercise to increase muscle mass and strength to combat the effects of our modern sedentary lifestyle.

Grip strength has the potential to be used as a simple and inexpensive method for risk-stratifying patients in clinic. This could help in assessing their current health status as well as predicting future outcomes, which could serve as helpful motivation.

The question of when to educate patients about resistance training is a difficult one to answer, as clinicians are already overburdened with too few minutes spent in direct patient care. Patients of all ages and presentations could benefit from implementing resistance training, so there is no simple guideline for when to bring it up in clinic. It would be helpful for a clinician to become familiar with local resources, such as gyms, fitness trainers, and physical therapists, as well as online resources, such as educational videos and exercise apps. Now, many qualified fitness professionals and physical therapists have made themselves accessible through online programs and videos. Familiarizing oneself with the many resources at a patient's disposal would help decrease barriers to patients engaging with resistance training and would take some of the burden off clinicians.

Regarding specific recommendations about how to engage in resistance training, this should be individualized for each patient, however, a good recommendation is to begin with two or more resistance training sessions per week.[26]

A generally good idea with patients is to discuss their long-term health goals, which allows for individualization of care. Due to the fact that muscle mass and strength decrease with age, the higher the starting point in this decline, the more muscle mass and strength preserved by the end-point. By understanding long-term health goals, a clinician can help patients understand what needs to be done now to intervene to increase their odds of meeting those goals.

Finally, patients should be told that it is never too late to reap the benefits of resistance training. Much of the randomized-controlled trials examining resistance training are done with elderly patients over short periods of time and showing much benefit. Considering that the older patient population is most at risk from the effects of decreased muscle mass and strength, they should be aware that implementing this intervention now could still have significantly helpful outcomes.

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A Review of Healthy Eating:
In Support of a More Whole Foods, Plant-based Diet

By Rebecca Kobos, MD

Introduction

The six pillars of lifestyle medicine lend themselves not only to the prevention but also the treatment of common conditions, such as cardiovascular disease and type 2 diabetes which are frequently encountered in family medicine offices. As primary care physicians we are uniquely poised to counsel patients on prevention as well as treatment, and having an evidence-based option that may not involve prescription medications is a novel approach. Finding available time in an already rushed office visit is challenging. However, when armed with a basic knowledge of the tenants of lifestyle medicine, particularly as it relates to a whole food, plant-based diet, one can begin to introduce these concepts and work with our patients on a lifestyle intervention proven to help treat and prevent disease.

The American College of Lifestyle Medicine has tremendous resources for physicians looking to introduce diet and evidence based healthy eating into our patient visits. This article will review some great pearls of healthy eating and discuss how folks in the "blue zone" are living so well.

What is Lifestyle Medicine?

Evidence-based lifestyle medicine is based on six tenants which include: following a whole food, plant-based diet, ensuring regular physical movement and restorative sleep, decreasing stress, avoiding substance use like smoking, and promoting social connectivity. It does not replace traditional allopathic or osteopathic medicine and is not meant to supplant critical surgical or pharmacologic interventions. Instead, if followed correctly, lifestyle medicine has been shown to not only prevent but treat chronic diseases while encouraging patients to take an active role in their health.[1]

Lifestyle medicine necessitates a holistic approach including the entire physical, mental, and social health of a patient while also addressing the social determinants of health. Success in one tenant frequently leads to success in other tenants, while struggles in one area often negatively impact adherence to the other tenants. While this article will primarily focus on healthy eating, it's worth noting that connection with others is a critical piece.

A Note from the US Surgeon General

Dr. Vivek Murthy, the US Surgeon General, recently discussed the impact of loneliness in America and how it affects our mental and physical health in a May 2, 2023, New York Times article. He notes that more than "half of Americans are lonely" and "young adults are twice as likely to report feeling lonely" than older adults over 65 years of age. He outlines simple key steps to help combat loneliness which are worth our consideration as we see and treat patients. Brief highlights for all of us include taking 15 minutes a day to briefly contact a friend, actively decreasing screen time when present in real life with others, volunteering to serve in our communities and finally asking for help if these feelings persist.[2]

The Happiness Challenge

In the New York Times Jan 1, 2023 article entitled, "The 7-Day Happiness Challenge" author Jancee Dunn reviews the findings from the Harvard Study of Adult Development, that started in 1938. The biggest finding? "Strong Relationships are what make for a happy life." Dunn goes on to present a 7-day challenge focused on connecting with others.[3] It's worth a read.

A Look at the Blue Zones

In his book, *The Blue Zones: Lessons for Living Longer from the People who've Lived the Longest*, Dan Buettner, profiles some commonalities among those who live long and well and presents them as lifestyle habits.[4] Here are the habits followed by those who are the longest lived from around the globe including, Sardinia, Italy; Ikaria, Greece; Nicoya Peninsula, Costa Rica; Loma Linda, CA and Okinawa, Japan: ***move, maintain a right outlook, eat wisely, and connect***.[5]

It's probably no accident these habits echo the six tenants of lifestyle medicine noted above. Adherence to a whole food plant-based diet, movement, less stress, and sense of belonging to a community seem to help one's life and promote longevity. More information on the blue zones can be found on the website: bluezones.com.[6] There is a lifestyle quiz and many resources, including an interesting article in support of a four-day work week leading to happier, more productive workspace.

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Where's the Evidence?

The American College of Lifestyle Medicine (ACLM) website has tremendous resources and links reviewing the evidence in support of each of the pillars of lifestyle medicine. In addition, there is a free CME option (free with code available from endnote #6) for 5.5 CME hours that comes highly recommended.

A paper published by Dr. Ornish in JAMA 1998, reviewed his research on lifestyle interventions in patients with moderate to severe coronary artery disease. This study followed patients with heart disease and demonstrated improvements in symptoms of angina, improved perfusion and quality of life and well-being after following lifestyle changes. What were the changes? They followed a 10 % fat, whole foods vegetarian diet, aerobic exercise, and had stress management, smoking cessation, and group psychosocial support over a 5-year interval.[7]

The Complete Health Improvement Program (CHIP) and Reduction of Chronic Disease Risk Factors in Canada, published on 19 May 2014 was the first certified ACLM program.[8] Noteworthy findings showed that in just 30 days, the patients studied (n was over 1,000) lowered their BMI, blood pressure, cholesterol, triglycerides, and fasting blood glucose. What were they doing? They were following a whole food, plant-based (WFPB) diet and participating in daily activity. Thirty days is both impressive and inspiring for our patients and worth a deeper dive.

In 2017 the American College of Preventive Medicine announced support for lifestyle medicine education in undergraduate, graduate and CME education to help promote evidence-based solutions to noncommunicable chronic diseases (NCDs).[9]

Where Do We Start?

As family physicians we are well versed in the American Heart Association recommendations for adults to strive for at least 150 minutes/week of moderate aerobic activity or 75 minutes/week of vigorous exercise.[10] While these are great numbers to quote, they are possibly a bit daunting (and defeating) as many may struggle to reach that goal. Blue Zone research uncovered that the movement in the centenarians that were studied was intentional but not defined by minutes or intensity and was simply moving, and walking in their environment.[11] Perhaps instead of encouraging our patients to adhere to a specific timed exercise regimen, we might have better success by reframing the message to just encourage daily movement. A written "prescription" for getting up and walking to refill a water bottle every hour is an example of a SMART goal we might quickly dispense in a pressured time-limited office visit.

Unlike exercise guidelines and AHA recommendations which are easily top of mind, nutrition counseling is an area where physicians historically struggle and it's not exactly our fault. Medical school curriculums didn't particularly prepare us for a whole- foods, plant-based (WFPB) "food as medicine" lifestyle medicine script.[12]

Many of us had limited lectures on nutrition in medical school. I remember only having a ONE-hour lecture on nutrition throughout my entire four years of medical school. I'm paraphrasing here, but the 'pearl' was along these lines: "when you eat a hot dog at a barbeque, be sure to eat an orange afterwards to offset the damage done to your DNA by the nitrites in the processed meat."

So just how many other "food as medicine" pearls are out here? Countless!! And they can be life changing for us, for our patients and for our community.

And as for medical schools, residency programs, and post-graduate CME programs, they are making vast strides to correct these deficits, some even adopting lifestyle medicine fellowships, and in October 2017 the American Board of Lifestyle Medicine certification exam launched.[13,14]

Counseling Patients on Nutrition

The following pearls are taken from the ACLM Lifestyle Medicine and Food as Medicine Essentials online CME course[15] and other references as noted, including the article, "Plant-Based Diet: A Physician's Guide from 2016."[16]

1. Eliminating a poor diet, sedentary behavior and smoking are three of the most important modifiable risk factors for prevention of common chronic diseases according to the World Health Organization.
2. Look at food labels:
   a. High fiber carbohydrates are GOOD. They decrease risks from heart disease, T2DM, colorectal CA.
      i. If the first word is "whole" ie: whole oats, it's made from whole grains. Good!
      ii. Increasing servings of whole grains/day decreases risk of chronic disease.[17,18]
      iii. Every serving of whole grains/day decreases the risk of Type 2 DM.[19]
   b. If the first word is "enriched", it is made from refined flour and not whole grains. Not as good!
      i. Highly processed refined foods are low in fiber and have added sugars.
   c. Limit or avoid anything that starts with "partially hydrogenated oils."
      i. These are found in fried foods and margarines, are trans-fat, and increase the risk of heart disease.
3. Limit animal fats – Focus on plant sources of fat:
   a. Decrease/avoid saturated animal fats. These are solid at room temperature and increase cardiovascular risk. (Butter, coconut and palm oil, meats.)
   b. Avoid trans-fats, partially hydrogenated oils. They are ultra-processed with a high risk of heart disease.
   c. Replace with:
      i. Poly-unsaturated fats (omega-3 and omega-6) like nuts and seeds, tofu, fish. These are essential and help lower LDL cholesterol by increasing LDL receptor activity. I.e.: ALA (Alpha-linoleic acid, short chain) EPA eicosapentaenoic acid, DHA docosahexaenoic acid (longer chain). ALA is converted to EPA and DHA in our bodies.

1. **Consume Omega-3 fatty acids.**
    a. Fish obtain omega 3 from algae. They don't make it.
    b. Look for fish low in mercury.
    c. 1-2 tablespoons of ground flaxseeds or chia seeds daily
  ii. Mono-unsaturated (ie: olives, olive oil, avocados, peanut butter.) These help decrease insulin resistance. These are not essential fats but helpful to eat in place of saturated or trans fat.
  iii. Whole grains and plant protein to help to lower risk of heart disease.

4. **Increase fiber:**
    a. Whole grains, legumes, fruits, and vegetables. Only found in plant- based foods.
    b. Goal for daily fiber intake: females >=25mg/day and men >=38gm/day.
    c. Increasing fiber decreases cholesterol as fiber helps lower LDL, binds bile salts, and helps excrete cholesterol and decreases the risk of heart disease and diabetes.
    d. It also lowers the glycemic index of sugary foods.
5. Eat a variety of plant protein: beans, lentils, tofu, nuts.
    a. Plant protein - Replacing 3% of calories from animal sources to plant protein is linked to a decrease in mortality in those with one or more lifestyle risk factors.[20]
    b. Animal protein like eggs, fish, dairy are less healthy and are inflammatory.
    c. High level of egg consumption, > 5/week is associated with an increased risk of Type 2 DM.[21]
    d. Good plant protein foods:
      i. Red lentils, edamame, black bean, almonds, peas, baked potato, spinach.
      ii. Look for plant protein high in lysine (ie: tofu, edamame, soy milk, legumes- beans, peas and lentils, almonds, pumpkin seeds, quinoa).
6. Processed meat is associated with highest (food) risk of Type 2 DM, followed by red meat and sugar added beverages. In one study, just one serving/day of processed meat increases the risk of Type 2 DM by 37%.[22]
    a. Lipotoxicity is behind some of this, as lipids build up in skeletal muscle and inhibit the GLUT 4 vesicles from working. If GLUT 4 isn't working, glucose isn't brought into the muscles cells and blood glucose levels rise.[23]
7. Consider supplements with vitamin B12 if someone is following a completely plant-based diet, as B12 is not found in plants.
8. Calcium absorption from a plant-based diet is better when eating plants with lower oxalate levels (broccoli or kale) versus those with higher oxalate levels (swiss chard, spinach, beet greens).
9. Iron from a plant-based diet is non-heme iron and best absorbed when eaten with vitamin C rich foods, like citrus fruits or peppers. Plants rich in iron include broccoli, lentils, beans, and spinach.
10. Not all plant-based diets are healthy. If they are **processed**, they are **not healthy** and pose an increased risk of heart disease.
11. Limit sugar. AHA recommends 6 teaspoons of sugar/day for women and 9 teaspoons for men.
    a. One teaspoon of sugar = 4 grams
    b. Just one soda will eclipse the recommended daily sugar intake!
    c. Avoid high fructose corn syrup (HFCS). This has a high glycemic index (glucose appears quicker in blood stream) and increases insulin resistance. HFCS is processed and/or lab made and unlike natural sugars it lacks the fiber to help with glycemic load.
12. Drink water! About 9 cups/day for women and 12 cups/day for men.
13. Eat the RAINBOW. Different colored fruits and vegetables provide different phytonutrients and antioxidants that help repair damage to our cells.[24,25] Remember the orange after a hotdog.
    a. The biggest risk reduction in all-cause mortality was noticed when moving from zero servings/day to 2-3 servings/day of fruits and vegetables/day.[26]
    b. Top antioxidant foods: acai, goji berries, cinnamon, apples, pears, blueberries, cranberries, plums, pomegranate, cocoa powder.[27]

How can we do all this in the Time Limited, Pressure Cooker that is an Office Visit?

Well, we can't. But what we can do is start small and meaningfully begin to address the social determinants of health that affect our patients.

We can familiarize ourselves with the Healthy People 2030 definitions of the social determinants of health that include: economic stability, education access and quality, health care access and quality, neighborhood and built environment and social and community context. The neighborhood and environment determinant specifically address the importance of and the inequities that exist in access to foods that support healthy eating. Under social and community context, the importance of relationships and social support is highlighted.[28] Many of the social determinants of health mirror the salient points emphasized in the Blue Zone research and the ACLM pillars of health.

We can acknowledge the barriers. Processed foods are everywhere. Healthy food is expensive and it takes time to find and prepare. Finances and time are luxuries not everyone has. Having a team with a behavioral specialist, a dietician and an exercise specialist is the key to promoting lifestyle medicine, but that's a glorious luxury few of us have in our current health care delivery systems.

Yet, we as family physicians know how to talk to people. We know about motivational interviewing.

In the 2017 JAMA article, "Nutrition Counseling in Clinical Practice, How Clinicians can do Better", the authors outline some streamlined approaches. The Five A's (assess, advise, agree, assist,

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arrange) initially indicated for smoking cessation can help guide the conversation to healthy eating.[29]

In the ACLM free, online CME, Dr. Michelle McMacken, MD, FACP, DipABLM NYU Langone Health presents the Food as Medicine Nutrition for Treatment and Risk Reduction Module and outlines examples of how to implement the Five A's in a busy office visit to help specifically address healthy eating options with our patients. Some of her suggestions are summarized below.[30]

To help ***assess*** where our patients are at, we can ask about nutrition, exercise, and smoking at each intake visit, indicating how much we value these topics. We can ***advise*** that even small changes can have meaningful impacts on overall health. However, motivated we are as providers, it's important to note that the patient must also ***agree*** to implement lifestyle changes. If they do, ACLM has a FOOD AS MEDICINE resource for motivated patients that includes recipes and a roadmap for healthy food changes.[31] To help ***assist*** with compliance in lifestyle medicine, SMART goals: Specific, Measurable, Action-Oriented, Realistic and Time-connected might be encouraging options. In lieu of a general recommendation to eat less sugar, a SMART goal outlines a specific goal, ie: I'll eat oatmeal for breakfast three times a week instead of a sugary cereal. Here's where a written "prescription" might be useful as a takeaway from the office visit. Finally ***arrange*** follow-up to review goals and if possible, refer to other team members like a nutritionist.[32]

Conclusion

Lifestyle medicine is good stuff. It's rooted in evidenced- based medicine and offers a comprehensive, non-pharmacologic approach to prevention and treatment of disease. As primary care physicians who see and treat non-communicable chronic disease daily, it's imperative that we familiarize ourselves with the research and the pearls of lifestyle medicine. The ACLM is an incredible resource for physicians and patients alike as we work together to help achieve good health and well-being.

Endnotes

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Collaborative Caregiving:
Student Involvement in Preventative Geriatric Care

By Meghan Goddard; Hyun Ah Yoon; and Kevin Costello, MD

Introduction

Social isolation and loneliness pose two major public health crises for older adults. While these two states are often used interchangeably, they are unique states of being. Social isolation is the *objective* state of a lack of social contacts and having few people to interact with regularly.[1] Meanwhile, loneliness is the *subjective* feeling of being alone or separated. It is important to note that neither are mutually exclusive nor synonymous. A person can be surrounded by others and still feel lonely. Approximately 25% of older adults are socially isolated and 43% reported feelings of loneliness.[2] Older adults are defined as those who are 65-years-old or older.[1] Social isolation and loneliness have a profound impact on the physical and mental health of this population.

Social isolation and loneliness are associated with many of the leading causes of death for this population. There is a 29% increased risk for coronary artery disease and a 32% increased risk for stroke in older adults with poor social relationships.[2] These factors also have a significant impact on the mental health of older adults and have been found to increase the risk for depression, anxiety, and suicidal ideation.[3] Among all these health complications, social isolation and loneliness appear to have the most profound effect on dementia. There is a 50% increased risk for dementia in older adults who are socially isolated or lonely.[2] Dementia is the fifth leading cause of death among older adults, affecting one in ten, and demonstrating the impact these variables can have on the lives of older adults.[4,5] Additionally, high levels of social contact significantly reduce the risk of dementia, and may be a protective factor for dementia, further emphasizing its importance in this population.

In addition, social isolation and loneliness can impact healthcare utilization and patient endpoints. Older adults with Medicare who reported themselves as "sometimes" experiencing social isolation were the most likely to have at least one hospital admission and emergency department visit when compared to those who reported "never" or "rarely" feeling isolated.[6] Loneliness has also been associated with a 29% increase in all-cause risk mortality.[2] The effects of isolation and loneliness on mortality are comparable to or greater than risk factors such as smoking, obesity, and physical inactivity.[2]

The geriatric population is growing rapidly with one in every seven Americans older than age 65.[7] Against this backdrop of a burgeoning geriatric population with often complex care needs, there is a shortage of geriatric providers. Between 2001-2002 and 2017-2018, there was a significant decline of 23.3% in the number of geriatric provider positions filled.[8] Furthermore, the number of students enrolled in geriatric medical programs, excluding palliative/hospice care, only increased by a mere 1.1%.[9] With this shortage, much of the care for geriatric patients falls on primary care physicians. We must draw professionals into geriatric care fields, while also developing preventive care approaches to managing the health of this population within primary care. This shortage was exacerbated with the pandemic due to decreased exposure to geriatric medicine among medical students, decreased competitiveness for pay, and a negative reputation of long-term facilities.[9]

Providing social support resources in our communities carries the potential to prevent or slow the progression of certain diseases and relieve some of the burdens in this sector of medicine. Stronger social support has been associated with 50% greater odds of survival,[2] and resources aimed at social connectedness are crucial for the health of older adults. It was also the leading intervention when comparing the odds of decreased mortality from other well-known interventions like smoking cessation tactics, air pollution reduction, and physical activity.

A variety of activities that boost social connectedness have been shown to decrease loneliness and social isolation.[10] Examples include tai-chi classes, wellness education classes, and social support groups. However, many of these activities rely on in-person attendance or an online presence. The COVID-19 pandemic highlighted that in-person activities cannot always occur safely. It is also important to note that a variety of barriers, including availability and accessibility for this population have always been present. Many older adults are unable to drive, may be in an area that is far from these types of activities or may have limited access to the internet. In addition, older adults who are not in community living or nursing homes may be unaware of the existence of such activities. As the pandemic forced us to isolate in our homes, one solution became a clear way to address this health crisis. Friendly phone calls are a low-tech method to increase connectivity. Most

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older adults have access to a telephone making this a more readily available resource. The effectiveness of friendly phone calls was assessed and was found to reduce social isolation and loneliness in older adults.[11,12] In addition, older adults who received more frequent friendly phone calls had a significant improvement in their depression, anxiety, and energy levels.[11,12]

We propose that integrating medical students within their local community of older adults and having them perform these friendly phone calls could be a potential solution to tackle this problem in a multifaceted manner. In addition, increasing exposure of medical students to the barriers that older adults face early in their medical education could potentially foster interest in geriatric care and help students refine how they care for this population as they develop into clinicians.

Design & Methods: Community Caregivers as a Model

Community Caregivers (CC) is a local nonprofit organization that provides free, non-medical services like transportation to medical appointments or grocery drop-off to residents of the Albany, New York area. Albany Medical College offers a service program with CC to connect medical students with older adults through weekly visits and phone calls. This provides students with the opportunity to connect with someone in their community, fostering a deeper understanding of the concerns of this population. In return, clients have someone to talk with regularly, forming lasting relationships and reducing social isolation.

Much of our volunteer work sheds light on the impact of isolation during the pandemic. However, it quickly became evident that clients were barely coping with isolation before the 2020 shutdown. We encountered individuals who received terminal diagnoses alone and clients who had fallen and were left without anyone to check on them for days. One client even adopted a pet bird to break the silence in their home. With the onset of the pandemic, there was further deterioration in well-being as many clients became fearful of contracting COVID-19 and postponed necessary medical care, leading to further social isolation and progression of chronic disease. Community Caregivers was forced to suspend visits, while family member visitation and assisted living facility activities were eliminated. In this older generation, limited technological literacy and affordability made it difficult for clients to access online classes, telehealth appointments, and video calls. Fortunately, CC continued to provide essential services such as grocery shopping, medication delivery, transportation to appointments, and phone calls. During the pandemic, they also expanded their reach into nearby counties prompted by the discovery of many older adults who had died alone in their homes and found weeks later due to a lack of social support and resources.[13] Since expanding, CC has received an abundance of positive feedback about the phone calls. One woman shared, "These phone calls saved my life." Nonetheless, this program serves a limited community and is only accessible to those who are aware of it.

Since 2020, up to 11 students have been admitted to the service learning program at the start of the fall semester at Albany Medical College. Students undergo an orientation held by the liaison of Community Caregivers or the service learning student leader. Students are then randomly matched with one community member. Students coordinate with their match for weekly or bi-weekly calls, depending on each other's availability. At the end of each semester, students are asked to meet with the service-learning student leaders to reflect on their experiences and partake in a bi-annual reflection meeting. The following are reflections from the authors who both participated in the service-learning program.

Reflection #1 Volunteer: *In volunteering with these programs, I spent time with Carrie, an older woman who faced multiple health conditions and limited ability to perform activities of daily living. Carrie, like many others, had been experiencing isolation long before the pandemic struck. Despite assistance from nurses each week, Carrie felt these nurses, as the only people coming to her home, were often unwilling to engage in conversation. As a wheelchair user living on the second floor of a duplex, she was confined to her one-bedroom apartment except for emergencies, having to call EMS for transport. Her sister lived downstairs, but also used a wheelchair, limiting their communication to phone calls. Carrie was trapped in her home and disconnected from society, with numerous mental and physical health concerns and minimal financial or social resources to aid her. As a result, she would engage in conversation with phone scammers just to connect with someone. During the two years that I visited Carrie, she had numerous hospital stays, and confided in me about her declining mental health. Despite my efforts to empathize with her situation, I didn't comprehend the extent of her loneliness and hardship until the pandemic. The lockdown resulted in widespread isolation, but I still had the privilege of living with my parents and connecting with friends virtually. While lonely at times, I was never entirely alone. This was not the case for Carrie and other older adults who faced isolation before and after the pandemic. I believe the general population has become more empathetic to the plight of social isolation since the pandemic. It is crucial to recognize their reality and prioritize support and resources for them.*

Last year, I spoke with Maggie, a CC client. She was at high risk for falls, but she was reluctant to take preventative measures due to her distrust of the medical system. With each call, I worried she wouldn't answer, but she always did. Our conversations were important to her, even if just to discuss that evening's soap opera. I reflect on my experiences with Carrie and Maggie and the difference in their access to resources. Maggie, an affluent white woman, had the financial means to hire people to help with daily activities and build her a ramp to go outside. This was vastly different from Carrie's world. As a black woman living below the poverty line, she did not have the same access to resources. However, both women experienced intense loneliness, and both longed for friendship.

Understanding both women's circumstances, distrust of the medical system, and lack of access to care will make me a better physician. I learned to listen more effectively and developed an understanding of our healthcare system's failure to provide for those in need and benefit those who can afford it. My frustrations with these disparities have motivated me to work toward change. I made two friends while helping to combat social isolation. Many of the family medicine physicians I worked with during my clinical years here in Albany had never heard of CC or similar programs in the area. I was able to share the resources with many of my patients who were suffering from depression as an added support to their care plan.

Reflection #2 Volunteer: *In the summer of 2021, I began interning for Community Caregivers and was matched with a client named Valerie. Before COVID-19, Valerie lived a fulfilling life. The home that she was living at hosted a plethora of activities. You could often find Valerie at coffee socials or in the evenings, playing bingo with her friends. Valerie would visit her neighbors' homes and chat over tea. Her son would visit almost every day after his job to see how his mother was doing or take her to the grocery store to pick up what she may need. Life wasn't perfect, but it was filled with both friends and family. When the pandemic began, Valerie experienced a complete 180 in her life. With the lockdown, her community stopped all social programming. Valerie could no longer visit her friends and she only saw her son from a distance when he dropped off groceries. Her interactions were reduced to phone calls which were further complicated by Valerie's hearing impairment. She often had trouble traversing through telephone directories to reach her pharmacist or her friends. This limited her ability to connect with people and her access to her own healthcare.*

While visiting Valerie she discussed her loneliness and depression. With each visit, her disposition became brighter. A few weeks later, she shared with me that this had been the happiest she had felt since the pandemic started. As time went on, life returned to normal. Her son began visiting again and activities resumed. Yet, the isolation had a resounding impact on her health. Valerie suffered from a stroke and transitioned into assisted living. While it may not be entirely due to isolation, it became increasingly difficult for her to access medical care and she had fewer people monitoring her health. Perhaps her symptoms would have been noticed sooner if she had the same social support. This experience broadened my understanding of an overlooked population that faces challenges I was unaware even existed. The CC clients have shown me the value of social connectedness: we all need it, young and old. A sense of community is invaluable to our health. As a future physician, I plan to facilitate this for my patients.

Reflection #3 Client: *"I did not have a very dull life, but now it is dull." Sheila is an 84-year-old woman living in the Albany area who has been a client of Community Caregivers for several years. During her call with the interviewers, she recalled fondly her upbringing in Harlem. Because of her health, she was forced to move upstate, closer to her daughter. She has persevered through several health complications that have left her with multiple disabilities. When she left her hometown, she was welcomed by the community, but still missed her city life. She jokingly stated "I am up here 'under duress' because I'm really from Harlem. That's my stomping ground but in this life, we have to make adjustments." She was in a rehabilitation center after one of her strokes. She shared she could not afford to live in a full-time nursing home or older adult living community, despite the doctor's recommendations. She also wanted to remain independent and was not ready to rely on others completely. The rehab facility connected her to resources for food security and Community Caregivers. She has since talked regularly with different medical students over the past several years, "They are so kind to me, so beautiful. I really got to know them. They're all so nice and tell me about school. We had a nice relationship."*

Sheila also shared how much she loved working with people and giving back, "I'm not socially awkward, I like people…I become very attached to people who are nice to me." She worked in communications for various hospitals and loves advocating for education. She discussed how since being outside of the city, she is now motivated to give back and help others, "I want to feel needed again." She plans to volunteer at a local shelter, despite her limitations, and even become a caller herself for CC. She currently speaks to Emma, a third-year medical student, regularly, "You tell her [Emma] that I love her, and I can't wait to talk to her again." She concluded by thanking CC volunteers, "Thank you for all that you do for me, and those people who are in the same position as me." This social program helped her adjust to a new community.

Conclusion

Based on our experiences and literature review, it is evident that resources like Community Caregivers are essential in addressing the dual public health crisis of social isolation and loneliness. As future healthcare providers, it is our goal to encourage students and providers to share resources with their patients, with the hope of reducing health conditions and improving quality of life. We hope this can alleviate the burden placed on the geriatric and primary care workforce, which is expected to grow with the rapidly increasing aging population. Sharing stories, as demonstrated here, shows the impact social programs have on both clients who are similar to our patients and medical students entering the field.

We hope that practicing family medicine physicians will explore the available resources within their local communities and share them with patients who might benefit. These programs can offer social connectedness that helps their patients thrive outside of the medical office. Often, our patients would cite their primary care physician as the only person they would see outside their home for weeks. Primary care physicians have the unique ability to bridge the gap between the older adult population and their communities. A simple step that New York family physicians could consider is nyconnects.ny.gov, to discover local programs to help older adults who lack internet access or skills to locate resources. Having a handout with some resources for patients could also be a potential benefit. If their facility is associated with a medical school, the Community Caregivers service-learning program can act as a model to include students in the care of patients in their communities. Early exposure to medical training can nurture an interest in the field of geriatric medicine. Even those who do not specialize in this field will likely work with older adult patients and benefit from understanding the effects of isolation on physical health and the barriers older adults experience.

In summary, implementing these programs into medical education and expanding knowledge of resources amongst physicians can help address the issue of social isolation in each community and meet the emotional and physiological needs of older adults. We encourage primary care providers to research programs in their areas to share with patients for the benefit of their health.

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Hyun Ah Michelle Yoon *is a fourth-year medical student at Albany Medical College. She volunteered as an intern and then co-leader for the Community Caregiver service-learning program in Albany, NY from 2021-2022. From 2021-2022, she worked as a consultant for Community Caregivers' Lunchtime Chat program, a low-tech live "podcast" that brought different speakers to talk about their expertise on a variety of topics.*

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Restoring the Mind-Body Connection for Nutritional Well-Being

By Dina Elnaggar MD, MS, CAQSM

Diet has been published as the most consequential risk factor with regard to disability and premature death.[1,2] Recent studies have reported that diet related diseases such as type II diabetes, cardiovascular disease, and some cancers affect over 50% of Americans.[3] The percentage of New York State adults who are classified as overweight or obese increased from 42% in 1997 to 63.6% in 2021.[4] Approximately 1,717,067 people in New York State, or 10.7% of the adult population, have diagnosed diabetes. 33.5% of the adult population of New York state have prediabetes.[5] Less than 50% of US primary care physicians reported always providing specific guidance on diet, physical activity, or weight control.[6] Success has been reported when physicians target dietary behaviors and use therapeutic intervention in a team-based approach versus addressing weight and BMI.[7] The main pillars of a healthy diet are why we eat, when to eat and what to eat. Restoring the mind-body connection of eating based upon hunger and satiety, and eating foods that are healthy themselves such as whole, unprocessed foods has been found to contribute to the health and wellness of patients.[8]

When we eat and why we eat is dynamic and heavily driven by top down forces such as hormones, cravings, habits, and external factors such as work constraints and social settings. The American Gastroenterological Association recommends avoiding large meals 3 hours before bedtime in order to prevent conditions such as acid reflux.[9] With this in mind, a tool that can help patients understand when to eat is the 0-10 Hunger-Satiety scale. This tool allows patients to be mindful about why they eat in order to guide them on when to eat. The Hunger-Satiety scale has been endorsed by national and international associations such as the American Diabetes Association, Queensland Health, Johns Hopkins All Children's Hospital, and several other healthcare associations and institutions.[10,11,12] The University of Birmingham has published success using a picture rating scale for small children.[13] The scale for adults and older children ranges from 1 being extremely hungry and 10 being extremely full. The University of California Berkeley encourages patients to stay within the 4-7 range by eating when they reach a hunger level of 3-4 and eating until they just reach satiety at a level of 6 anticipating that they will reach a level of 7 in 15-20 minutes after they finish eating.[14] The scale allows patients to focus on what their mind and body are telling them. Patients who struggle with disordered eating may realize that their body and their mind are not in sync. They may feel the urge to eat due to habits, societal factors, cultural factors, emotional stressors, or other triggers.

Kaiser Permanente advises patients to be in tune with how they are feeling, what they are doing when they eat, and what external or internal signals are queuing them to eat. To better understand this, patients are advised to keep a food journal for at least two weeks tracking how they were feeling on the hunger scale when they start and finish eating, how they feel emotionally, and what they are doing when they eat.[15] In addition to the 1-10 hunger fullness scale, Alberta Health Services encourages patients to realize their signals by asking themselves some the following questions:[16]

- How can you tell when you first start feeling hungry? Are you getting hungrier?
- What happens when you wait too long to eat?
- How can you tell when you first start feeling full?
- Do you eat when you're not hungry? What do you notice about your feelings or what is happening in your life?
- What things seem to affect your body signals from day to day?

Patients are also encouraged to ask themselves how they feel after eating certain foods and why. They may be aware that they feel out of control with certain foods, food in general, or feel guilty about eating. Therapy to address the core issues that patients have is an essential component of the top down solution to restore the mind-body connection when it comes to disordered eating.[17,18]

What to eat is the second pillar of creating healthy eating habits from a bottom up approach. The Mediterranean diet has been extensively studied and it has been found to have an inverse relationship with cancer, diabetes, obesity, depression, renal disease, and other diseases.[19] The antioxidant rich diet has been found to promote healthy aging, sleep quality, cardiovascular health, satiety, and many other benefits.[20,21,22] It consists of whole foods, whole grains, fresh fruits and vegetables, proteins high in omega-3 fatty acids, and minimally processed foods. Many foods that comprise the Mediterranean diet are themselves alive and healthy. The concept of the plant rich Mediterranean diet extends to cultures around the globe such as the Japanese diet that consists of calcium rich bok choy and fish, the plethora of fruits and vegetables found in Africa, Australia, Southeast Asia, Central America, and farm belts across the US and other Western Countries.[23] As obesity is a relatively recent global phenomenon over the past few decades, it has been suggested that deviation from the farm-to table cuisine towards processed foods has been the culprit.

A high fiber diet that is found in whole grains, fruits, and vegetables has been found to have a positive perception of satiety, aid in digestion, attenuate blood glucose responses, and assist with cholesterol lowering.[24,25] Many patients have become exposed to diets that target calorie counting and restricting or increasing macronutrients such as fat, carbohydrates, and protein. Several of these diets have lured patients to consuming cleverly packaged and labeled processed foods. The AAFP published an article in 2022 that guides patients towards a whole food diet and provides suggestions on how to substitute processed foods for whole foods.[26] For example, patients that are "carbohydrate conscious" may be advised that a whole food diet rich in fruits, vegetables, proteins, and whole grains helps promote long lasting satiety and may decrease cravings for

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heavily processed foods and refined sugars. Packaged foods and bars that claim that they are "low carbohydrate," "low fat," or "high protein" lack the nutrients in a whole food diet which promotes satiety and decreases disordered eating.

Why patients eat, when patients eat, and what they eat are three main components of diet that physicians may assess in order to target and address disordered eating. Physicians may offer a questionnaire from the Hunger- Satiety- Scale in order to assist patients to in thinking about why they eat and track their habits over time. The questionnaire may also be considered during a well visit initially with a follow- up appointment recommended in 2-3 weeks in order to review the results and offer resources and recommendations if disordered eating is suspected. This can be accessed via https://www.health.qld.gov.au/__data/assets/pdf_file/0019/152812/wtmgt_hungerscale.pdf.

Physicians might also request a 2- week food diary before a well visit in order to have an idea of the quantity of processed foods that a patient may be consuming. Certain patients may not understand what processed foods are and images may be helpful in that case. Handouts and resources focusing on whole foods and plant- based foods versus processed foods may be useful for guiding patients towards a diet rich in fiber, healthy fats, lower glycemic index, and high in nutrients.

Hunger, satiety, and food choices are visceral and dynamic based upon a multitude of factors that are unique to each individual. Encouraging the mind-body connection when it comes to hunger and satiety, educating patients on the difference between whole foods versus processed foods and encouraging a plant rich diet with minimal processed foods may help our patients become more resilient to the barrage of fads and food marketing and may, in turn, help them successfully reach their goals. Restoring the mind-body connection can also improve other parts of wellness such as sleep, self- care, stress, and exercise for the most holistic approach to overall wellness for our patients.

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Hunger and Fullness Signals

Our bodies can give us important signals telling us when and how much to eat. This handout has information about our hunger and fullness signals. Listening to these signals can help you get the amount of food you need.

What are hunger and fullness?

- Hunger happens when our body needs food. Your stomach may growl. If you're very hungry, you may feel weak, dizzy, or irritable. These signals remind us to eat.
- Fullness is the relief we feel when hunger goes away. It reminds us to stop eating.
- Hunger and fullness signals vary from person to person and from day to day.
- It can take time and practice to listen to your body's signals.

What can change my hunger and fullness signals?

Certain things may increase or reduce body signals:

- Eating more food than your body needs.
- Eating less food than your body needs, which can cause cravings or overeating.
- Skipping meals or going for long periods of time without eating.
- Certain mental or physical illnesses or medicines.
- Strong feelings.

What is emotional eating?

Emotional eating means eating to manage feelings instead of eating to end hunger. Some emotional eating is normal, but it can be a problem if you eat more than you want or need.

Signs of emotional eating include:

- eating until uncomfortably full
- having sudden food cravings
- eating when upset or to feel happy
- eating impulsively

Tips for managing hunger and fullness

There are many ways to manage hunger and fullness:

- Space what you eat over the day, such as eating 3 meals with snacks as needed.
- Let yourself feel some hunger between meals; this is normal.
- If you feel less hungry at a meal, try taking smaller portions.
- It's okay to leave some food on your plate. If this bothers you, try taking smaller portions.
- If you tend to eat past fullness, try taking smaller portions and eating more slowly.
- Eat with fewer distractions. Notice how your food tastes during your meal.
- Choose foods you enjoy. Eat portions that leave you feeling satisfied and comfortable after eating.

More support

Talk to your healthcare provider if you:

- tend to eat until extremely full
- feel out of control around food
- feel guilty after eating
- have concerns about other things that may interfere with hunger and fullness signals (for example, medicines you take)

How can I learn more?

A hunger and fullness scale can help you listen to your body's signals and make you more aware of why you are eating.

- It can help you detect the difference between eating for hunger and eating more than you want or need for emotional reasons.
- It can also help you detect when you're eating less than you need to feel comfortable or satisfied.

There is a hunger and fullness scale on the next page. You can make copies of the scale to write on.

Alberta Health Services

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Hunger and fullness scale

Before you eat your meal or snack, decide where you would place yourself on the scale below. During and after eating do the same thing. The numbers you choose at any one time do not mean your eating is right or wrong.

Before eating	During or after eating
Aim to start eating around a **3 to 4** when hunger starts.	Consider stopping around a **5 to 6** (satisfied, comfortable).
Try to limit extreme hunger (around a **1 to 2**) to avoid overeating.	Try to limit fullness getting to an **8 to 10** (extremely uncomfortable and full).

At first, it can be hard to detect and understand your body signals. Answering the questions below may be helpful. There is space to write your own notes.

Questions	Notes
How can you tell when you first start feeling hungry? As you get hungrier?	
What happens if you wait too long to eat?	
How can you tell when you first start feeling full?	
What does it feel like to be satisfied and comfortable?	
What does it feel like to be comfortably full? Do you feel satisfied?	
If you eat until you are extremely full, what do you feel?	
Do you eat when you're not hungry? What do you notice about your feelings or what's happening in your life?	
What things seem to affect your body signals from day to day?	
Do you see any patterns, such as the amount of time between eating? How is this affected by what or how much you've eaten?	

The Hunger-Satiety Scale

Use this Hunger-Satiety Scale to get in touch with your hunger and satiety cues. Aim to stay within the blue zone, 4-7, as much as possible.

10 -- Extremely stuffed, nauseous
9 -- Stuffed, very uncomfortable
8 -- Overfull, somewhat uncomfortable
7 -- Full but not uncomfortable
6 -- Satisfied, but could eat a little more
5 -- Starting to feel hungry
4 -- Hungry, stomach growling
3 -- Uncomfortably hungry, distracted, irritable
2 -- Very hungry, low energy, weak and dizzy
1 -- Starving, no energy, very weak

When you reach 3 or 4...
Aim to start eating when you reach a 3-4. By not waiting too long, it may make it easier to thoughtfully choose what you'd like to eat and eat until you are satisfied, rather than overly stuffed. Keeping nutritious snacks available, especially while running errands, can help tide you over until your next meal if necessary. Some tasty snack ideas include whole fruit, nuts, hard-boiled eggs, veggies and hummus, or plain yogurt with fruit.

When you reach 6 or 7...
Once you reach a 6, you would be just about satisfied. Within 15-20 minutes, you will likely be at a 7, full but not uncomfortable. To make this a bit easier, check in with your hunger cues before and/or during meals and snacks, keep serving dishes on the counter rather than on the dinner table, and take your time while eating by engaging all of your senses.

Be Well at Work
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Integrating Lifestyle Medicine within a Medical School Curriculum and Clinical Practice: The Stony Brook Family Medicine Experience

By Ghazal Sinha, MD; Anupam Mahadeo; Jack Scheutzow; Jeanine Morelli, MD; Sotiria Everett, EdD, RD and Raja Jaber, MD

Introduction

In the United States, approximately six out of every ten adults have a chronic illness.[1] The prevalence of chronic disease comes with a significant economic burden as the United States spends 3.7 billion dollars, which is 90% of its annual healthcare expenditures on people suffering from chronic health conditions.[2] Despite spending more of our gross domestic product on health care than any other country, we have the lowest life expectancy at birth compared to nations of similar wealth.[3]

To combat this health and economic crisis, the Center for Disease Control and Prevention offers the following tips to prevent chronic disease: don't smoke, eat healthy, be active, and limit drinking.[4] There is a plethora of evidence that applying these tips will nearly eliminate diabetes and cardiovascular disease and markedly decrease the incidence of cancer.[5] These suggestions align with four of the six pillars of lifestyle medicine, a burgeoning field for the future of primary care. Yet only 3% of Americans adopt the behaviors leading to a "healthy lifestyle."[6]

Lifestyle medicine is an evidence-based, clinical discipline that promotes therapeutic lifestyle interventions as the primary approach to prevent, manage, and potentially reverse chronic disease. The field of lifestyle medicine is especially important for primary care physicians as they commonly manage patients with lifestyle-related conditions such as type II diabetes, hyperlipidemia, and heart disease. Lifestyle medicine aligns itself with the biopsychosocial model of care as healthy lifestyle habits profoundly change our biology, alter our psychological state, promote good coping strategies, and are shaped by family, communities, societies, economics, and public policy.

Additionally, there is a large amount of physician burnout[7] that only worsened after covid.[8] Physicians who practice lifestyle medicine do not experience as much burnout and are more satisfied with their work.[9] *The Journal of Family Practice* has devoted a whole supplement to introduce family physicians to the practice of lifestyle medicine[10] and the American Academy of Family Physicians created an implementation guide to aid physicians in incorporating the principles of lifestyle medicine into their practices.[10]

In 2017, the American Medical Association stated it was supporting policies and mechanisms that incentivize and/or provide funding for the inclusion of lifestyle medicine education and social determinants of health in undergraduate, graduate and continuing medical education.[11] While many residency programs in preventive medicine, internal medicine, and family medicine have implemented a lifestyle medicine curriculum,[12] fewer medical schools have implemented lifestyle medicine education. Limited time for curriculum development and implementation, a lack of trained faculty, and students' perception that lifestyle medicine is not testable content on the United States Medical Licensing Exam (USMLE) and the Comprehensive Osteopathic Medical Licensing Examination (COMLEX-USA) are barriers to the inclusion of lifestyle medicine in undergraduate medical education. The American College of Lifestyle Medicine (ACLM) is actively working with the USMLE boards to include evidence-based lifestyle related questions.

The Current State of Lifestyle Education in Medical Schools.

Integration of lifestyle medicine (LM) into undergraduate medical education manifests as one of three forms: materials in the required curriculum, elective curriculum, and parallel curriculum. A required curriculum is the most intensive type by which lifestyle medicine education is integrated into all preclinical courses and weave tenets of lifestyle medicine into all levels of medical school. This has been done at the University of South Carolina Greenville which provides upwards of 80 hours of formal lifestyle education in both preclinical and clinical sciences throughout all years of medical school.[13] In addition, a culinary medicine longitudinal elective is

offered to first- through third-year students, and shorter culinary medicine and exercise as medicine 4-week electives are offered to students in their final year of medical school.[14]

The University of South Carolina also supports LMed at https://lifestylemedicineeducation.org/, an open access collection of evidence-based curricular resources to train future clinicians in prevention and treatment of lifestyle-related diseases.

At the University of Oklahoma, students enrolled in the School of Community Medicine track have required lifestyle medicine education during their preclinical years.[15] In their first year, medical students enroll in the first part of a two-part Lifestyle Medicine & Health Promotion course, which provides students with a foundational knowledge of LM.[16] In their second year, medical students build upon their foundational education and begin to develop clinical skills in counseling patients on factors such as nutrition, physical activity, sleep hygiene, and stress management.[17] During their clinical years, students can choose to register for a LM elective and to partake in faculty-mentored research.[14] Materials include education regarding self-care practices such as meditation and mindfulness exercises, culinary medicine sessions, community outreach, and simulated patient assignments.

An elective curriculum allows medical students an opportunity to register for optional courses, usually during times between larger blocks of preclinical courses and core clerkships. An example of this is the Harvard experience which started in 2009 when the Lifestyle Medicine Interest Group (LMIG) initiated lectures and workshop series discussing specific diets, exercise, psychology, and physical activity for patients[18] and later, student leaders investigated areas in the already existing curriculum to integrate LM education into the curriculum.[14] Faculty leadership at this program used the contributions from this interest group to launch a 3rd and 4th-year clinical elective in 2019 entitled Metabolism, Nutrition, and Lifestyle Medicine.[19] To ensure all students have an equal opportunity to learn about lifestyle medicine, the elective offers no limit to the class capacity.

Finally, a parallel curriculum provides medical students with exposure to lifestyle medicine outside of the structured curriculum. This typically entails the creation of an LMIG in which students, alongside a faculty member, organize information sessions for other students.[20] Culinary medicine has become a parallel curriculum in many medical schools[21,22] and the interest in learning to cook a mostly plant based unprocessed food continues to rise.[23]

The ACLM task force established tiered approaches to evaluate curriculum integration based on the number of hours spent in LM training, the percentage of competencies set, and extraneous enrichment opportunities that may be available. Institutions are ranked on a scale of 4 tiers to assess the amount of LM integration, with designations of platinum, gold, silver, and bronze based on the amount of curriculum hours designated for LM education, the amount of ACGME (Accreditation Council for Graduate Medical Education) competencies covered, and whether integration occurs across all 4 years of medical school. The ACLM encourages implementation into the curriculum throughout all 4 years of medical school, with didactic education being emphasized in the first 2 years and clinical application being developed in the final 2 years of schooling.[24]

The Lifestyle Medicine Curriculum at the Renaissance School of Medicine at Stony Brook

The Lifestyle Medicine Interest Group and LM selective were started in 2017, followed by the lifestyle medicine initiative at Stony Brook in 2019 under the leadership of the Department of Family Population and Preventive Medicine with the purpose of expanding our curriculum and community presence. The initial activity was to launch the "Walk with a Doc Program."

Our department is multidisciplinary and includes family medicine with a lifestyle and integrative medicine group, preventive medicine, public health, and a nutrition division. The outpatient clinic is a medical home with embedded dietitians, social workers, and a psychiatrist. Our curriculum is implemented longitudinally and includes many elective courses.

Students are introduced to lifestyle medicine in their first week of medical school during the Transition to Medical School course where an introductory lifestyle medicine lecture reviews a few landmark studies demonstrating dramatic health benefits: The Diabetes Prevention Program showing that lifestyle changes are more successful at preventing diabetes than metformin;[25] The European Prospective Investigation into Cancer and Nutrition showing dramatic decrease in risk of developing diabetes, myocardial infarctions and all cancer when individuals adopt 4 healthy behaviors and keep their BMI under 30;[5] and finally the dramatic increase in life expectancy free of chronic diseases when individuals adopted four similar healthy lifestyle behaviors with a BMI of less than 25.[26] The discussion branches into self-care and resilience, the importance of maintaining a healthy lifestyle in medical school and

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becoming a role model to partner with patients to facilitate their lifestyle changes. Students who are inspired by this introduction to LM often join our LMIG and Walk with a Doc program. In the Themes in Medical Education class, students are introduced to models of behavioral change and motivational interviewing[27] and get a 2-hour nutrition lecture followed by Nutrition Over Lunch, a 2-hour small group session where medical students prepare whole-food, plant-based meals to share with the group. During Nutrition Over Lunch, students discuss the healthful properties of the ingredients used and their experience preparing the meals. Nutrition and family medicine faculty facilitate discussions on how students can increase their competence in addressing diet with patients.

Medical students in their third year are scheduled for a week of translational medicine pillar. This is an opportunity to reinforce the knowledge gained in the preclinical years with their clinical experience. They can choose from several disciplines, but our lifestyle medicine pillar is unique as its content is a radical departure from the traditional preclinical, translational courses in which students learn to modulate physiology solely with pharmacotherapy, procedures, or surgery. In addition, it is led by family physicians, thus offering more contact with our discipline, and adding a solid scientific basis to primary care and lifestyle medicine. It is usually attended by 20 students. The first day is a plenary lecture given by a family physician certified in lifestyle medicine. This lecture reviews the pathways through which unhealthy lifestyles lead to the development and maintenance of a chronic inflammatory state through LAMPS (lifestyle associated molecular patterns) such as advanced glycation end products (AGES) and oxidized LDLs (low density lipoproteins) and DAMPS (damage associated molecular patterns).[28-39]

This is followed by 4 short lectures by basic science and other clinical faculty reviewing: 1) insulin resistance with emphasis on the role of fat and mitochondrial stress in the development of insulin resistance and fatty liver; 2) lifestyle factors and their impact on the microbiome, and the development of colonic carcinogenesis including protective effects of short chained fatty acids and noxious effects of toxic bile acids; 3) the role of inflammation in depression and the resistance to usual pharmacological treatment, and 4) dementia and neurogenesis and the protective effect of a healthy lifestyle on decreasing brain inflammation and insulin resistance in the brain.

The students are then divided into four groups, assigned articles and asked to expand on how lifestyle interventions (Mediterranean-style, whole food plant-based nutrition, MIND diet, exercise, sleep, mind-body interventions and stress reduction) modify physiology and then translate this knowledge by reviewing the clinical trials that have demonstrated the efficacy of lifestyle interventions in preventing, managing and/or improving the outcomes of diabetes,[40-44] colon cancer,[45,46] dementia,[47-50] and depression.[51-56] They are asked to pay special attention to the methodology used to facilitate behavior change and whether the trials address social determinants of health and include underserved and poor communities. They meet in person with their group and faculty facilitators and work together on a presentation. The last day is devoted to student presentations and discussion of the findings and providing feedback.

Selectives are offered during year 4 of medical school or phase 3 of medical education. The Lifestyle Medicine Selective, capped at 10 students, are 4-courses, centering on the clinical application of lifestyle medicine and covering five out of the six pillars: food, movement, sleep, mind body/stress reduction and changing behavior. It is designed to equip students with the knowledge, skills, and confidence to reflect upon and improve their own lifestyle, and to teach lifestyle interventions to patients as the first-line management for disease prevention, chronic-disease management and if possible, reversal of chronic disease.

Students are given teaching materials- articles, lectures, movies, and videos including the ACLM free course: Lifestyle Medicine & Food as Medicine Essentials.

The sessions are kept interactive with case discussions and practice exercises. Nutrition discussions are led by our nutrition faculty and focus on understanding physiological and clinical benefits of an unprocessed, whole food, mostly plant-based diet and to review principles of metabolism and strategies to help patients lose and maintain weight loss, including a deep dive into lifestyle interventions to improve appetite regulation and insulin resistance. Sports nutrition discussions address movement and fitness, review exercise guidelines and physiological and clinical benefits of aerobic, strengthening and stretching exercises. Sleep discussions review physiology of healthy and unhealthy sleep patterns and their impact on health and disease and take a deep dive into sleep hygiene and cognitive behavioral therapy for insomnia. Mind-body discussions review the physiological consequences of the stress and relaxation response and introduce students to cognitive behavioral therapy, dialectical behavioral therapy and positive psychology and gratitude. Behavior discussions review principles of behavior change and motivational interviewing. Students also review the models of care, sustainability and reimbursement models for a practice engaged in lifestyle medicine and its impact on decreasing health care costs. Case discussions review applications of multiple lifestyle interventions to diabetes, cardiovascular diseases, multiple sclerosis, renal failure, and cancer.

The selective is experiential and includes shadowing a lifestyle medicine centered primary care practice. Students work with physical therapists, participate in exercises classes to bring awareness to alignment and muscle and joint function at rest and in motion, and develop skills to assess muscle weakness, tightness, imbalances and teach corrective exercises. They participate in yoga and tai chi classes and assist with the Rock Steady Boxing program for patients with Parkinson's and in the cardiac rehabilitation program where they coach interested patients in making shifts towards a more whole food, plant-based diet. They have culinary sessions where they learn to cook plant-based meals and enjoy a teaching supermarket tour. They are taught relaxation response training and various mindfulness techniques. Students demonstrate behavioral change strategies and motivational interviewing during role play skits. The final days consists of a visit to an organic farm and a nature bathing walk.

Finally, we offer a popular 2-week elective in lifestyle and integrative medicine that always fills and attracts around 20 students a year. One or two students rotate in our lifestyle and integrative medicine division, observe and research a subject related to lifestyle or integrative medicine and draft a small paper on the subject. They have the opportunity to shadow other clinical practitioners, like acupuncturists, dietitians, physical therapists, or lifestyle coaches. Most students choose to shadow us and learn to take a lifestyle centered medical history, conduct a lifestyle centered physical exam and negotiate patient centered goals, with attention to reinforcing patients' strengths and self-efficacy.

In addition to clinical and teaching activities, the nutrition division manages a rooftop farm on the medical school campus. The Stony Brook Heights Rooftop Farm offers a hands-on approach to understanding the connection between food, health, and wellness. Medical students and residents are invited to volunteer on the farm and work side by side with nutrition faculty, learning about planting, harvesting, and maintaining crops. Over time, we hope to integrate the rooftop farm into the curriculum. Some of the produce grown on the farm is donated to patients of Stony Brook Home, a clinic for underserved patients run by medical students with attendings as preceptors. Along with produce, patients at Stony Brook Home receive nutrition education from medical students and dietetic interns.

The Lifestyle Medicine Website[57]

The lifestyle medicine website for Stony Brook Medicine was initiated during the pandemic and continues to be updated routinely by faculty and students. Built along the 6 pillars of lifestyle medicine, our website's aim is to offer materials for practitioners, staff, and patients to enhance lifestyle optimization and, consequently, health optimization. Launched in 2021, it is a repository of resources within Stony Brook Medicine, our local communities, and virtual online resources including websites, blogs, and apps.

The resources range from free resources such as the community Diabetes Prevention Program, Tai Chi and a virtual fall prevention program, free local YMCA and yoga classes, to fee for service programs such as Target Fitness for adults, Fit Kids, stress and weight management groups, and cognitive behavioral therapy for insomnia, among others. Additionally, the website contains links to external websites and apps for activities such as workouts, culinary guidance, mindfulness practices, support for substance use disorders, and connections to local and national lifestyle coaches.

The website is accessible directly from the patient portal and we have developed flyers with QR codes to encourage physicians and patients to utilize it. Our vision extends beyond the scope of providing mere information; it encompasses the creation of skill-building opportunities that can be practiced and strengthened by patients in between appointments. https://www.stonybrookmedicine.edu/lifestyle-medicine

Next Steps and Conclusion

Our next steps are to increase our presence in the medical school curriculum by embedding lifestyle medicine related content in all preclinical courses and have added content to the lipid, insulin resistance and oncology content. To be effective, we will need to expand our faculty and create faculty development courses. We now have faculty in family medicine, internal medicine and pediatrics that are also board certified in lifestyle medicine, and our family medicine residency is considering implementing the lifestyle curriculum. We are working on adding exercise as a vital sign to our electronic medical record (EMR),[58] creating lifestyle-based patient education, formulating osteoporosis strengthening initiatives connected with YMCAs, establishing virtual shared medical appointments with a focus on lifestyle and planning to provide training for staff members to become lifestyle coaches.

Improving the adoption of lifestyle medicine within the American medical system is a complex task that requires concerted efforts from various stakeholders in addition to the practice of LM. This includes:

- Population strategies such as increased labeling and consumer information, innovative taxation efforts, changing agricultural subsidies, personalization to cultural culinary backgrounds, school, and workplace initiatives and more.[59]
- Reimbursement models that incentivize healthcare providers to spend time on lifestyle counseling. Shared medical appointments that are lifestyle based are an ideal way to have time to deliver lifestyle content to a group of people, ideally 10-12.[60] Longer individual visits in non-fee for service models are ideal but it is also possible to add a membership fee to a fee for service model and or leverage codes such as chronic care management, smoking cessation, and obesity counseling.
- Integrating lifestyle assessment tools and intervention resources into EHR systems[61] including the involvement of a lifestyle coach and outcome tracking of LM behavior adoption and patient progress. Prominent political leaders can become role models to endorse and practice lifestyle medicine. This can inspire their peers and followers to follow suit.[62]

Ultimately, changing the healthcare system's approach to prioritize lifestyle medicine requires a combination of education, policy changes, cultural shifts, and collaboration across sectors. It's a long-term endeavor that demands commitment from healthcare professionals, institutions, policymakers, and the public.

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Obesity in Healthcare Workers

By Sheila Ramanathan, DO

Obesity is a global health challenge that affects millions of people, including healthcare workers. Despite being aware of the health risks and consequences of excess weight, many healthcare workers struggle to maintain a healthy lifestyle and diet. This is partly due to the environmental and organizational factors that influence their food choices and behaviors, such as hospital cafeterias, staff appreciation events, and medical conferences. These settings often offer low-cost but high-calorie foods that are convenient but not nutritious. Moreover, healthcare workers in lower-paid health service positions are more vulnerable to obesity due to their socioeconomic status and work stress. This poses a serious problem for the healthcare system, as obesity can impair work performance, increase workplace injury risk, and lead to disability. How can we address this issue when it seems so pervasive and entrenched in the healthcare culture? How can we inspire and empower other sectors of society to adopt healthier habits when we cannot do so ourselves? Medical societies advocate for health and nutrition reforms in schools and workplaces, but they often neglect to implement them within their own field. We need to overcome the cost barrier and the inertia that prevent us from providing healthy and sustainable food options for our healthcare workforce. We need to lead by example and show that we care not only for our patients but also for ourselves, particularly as healthcare is the largest employer within the United States private sector.

Obesity is a staggering national health crisis. Rather than a beacon of light, the healthcare industry presents a risk factor for increased weight and poor health. This tends to follow current trends between high and lower paying fields within healthcare as to which employees are most at risk. The health service arm when compared to the health diagnosing arm has substantial variation in weight distribution. Nationally however, the obesity prevalence is >30% for healthcare workers.[2] Obesity management from an employer's mentality makes sense in an effort to reduce a major factor of disability, increased health system use, decreased productivity, and increased absenteeism.[1] Obesity is a clear risk factor for back related injury among nursing staff due to inappropriate positioning and mechanics while heavy lifting.[1] The risks of obesity and obesity related illnesses are second only to smoking when reviewing employee risks to health.

Americans spend roughly one-third of their life at work. Employers have recognized the complexity of obesity management and understand that it is no longer a matter of strictly personal choice but rather an understanding of genetics, environment, and behavior (Figure 1). As such, the answer needs to reflect the individual nature of obesity. Eighty-three percent of hospitals in the United States have wellness programs, compared to forty-three percent of other organizations.[3] Not only are there a plethora of wellness programs, sixty-three percent of hospitals offer biometric screening, thirty- one percent offer health coaches, and fifty-six percent of hospitals have stress management programs.[3] So why is healthcare still as badly or worse off than other industries despite an exponential growth of wellness programs?

The reality is that wellness programs tend to only benefit wellness vendors and fail to address the multiple causes of obesity in an employee. Wellness programs as a whole tend to have little to no impact on healthcare costs of the average employee.[4] Yet billions are spent on health screenings that go far beyond what is recommended by the US Preventative Services Task Force. Furthermore, those who are participating in wellness programs

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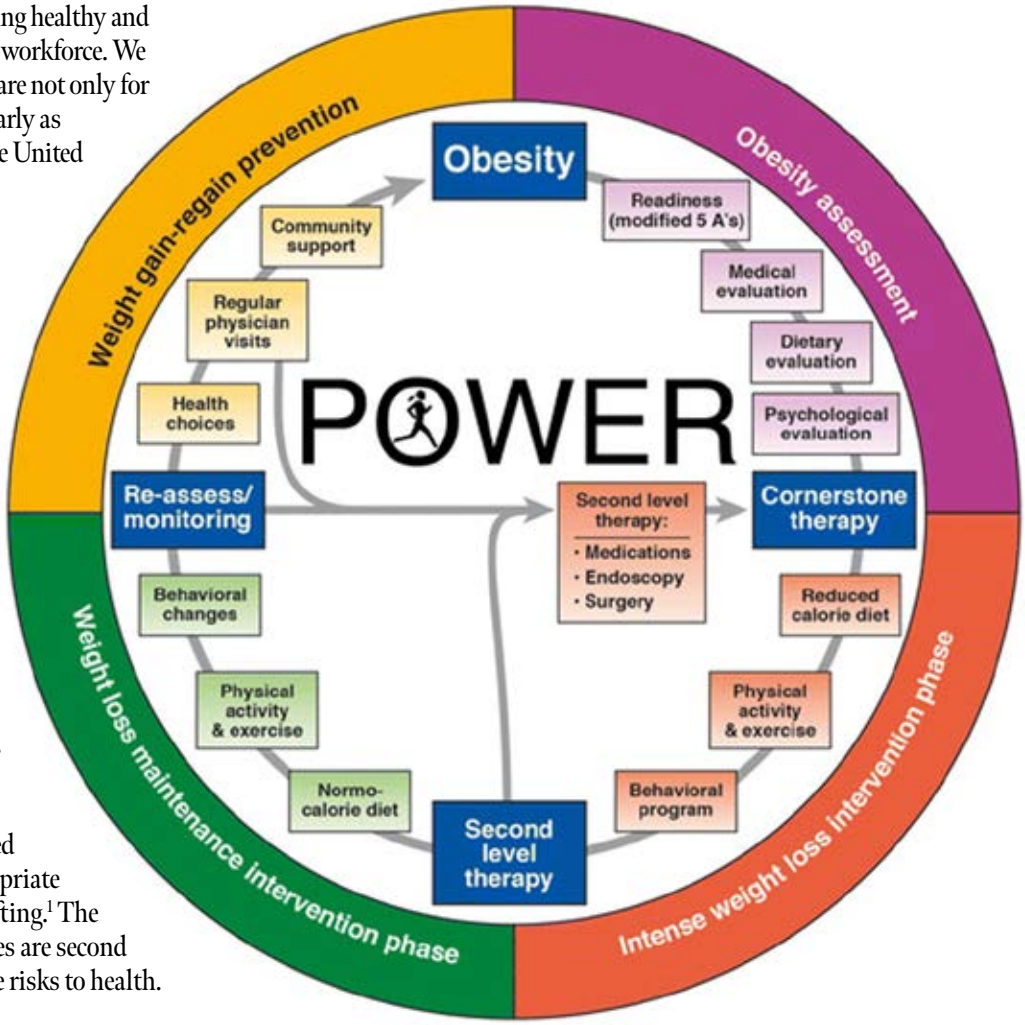
Figure 1. The Continuum of Care of Obesity[5]



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are likely already healthy. These individuals already go to doctor's appointments, go to the gym, and have an existing focus on their health. The incentives to improve health merely reward those who are already doing well. There should not be a redistributing of incentives from unhealthy to the healthy without any real behavior change in either group. This canned approach fails to benefit those within the medical profession who are most vulnerable. Hiring an external consulting company to improve employee health is all too common for a quick fix. The checkbox, quick fix approach to weight loss has never led to sustained weight loss, nor has a one- size- fits-all approach ever been successful for long-term weight management.

Obesity is not due to a singular cause, rather, a continuum of care is the approach currently adopted by public health officials and clinicians as seen in Figure 1.[5] This focuses on nutrition, weight procedural intervention, medication management, behavioral modification through patient engagement, and activity encouragement. These need to be maintained and reinforced through different phases including assessment, active weight loss, subsequent weight maintenance, and weight gain prevention.

Facilitating a nonjudgmental environment is important and is the first step that needs to be taken by clinicians before any patient steps into the room. A majority of individuals with a history classed as overweight or obese have felt stigmatized within the health care system. To truly address the obesity epidemic, the medical community must address the crippling stigma that prevents patients from seeking care for their obesity. Blaming and isolating individuals for their weight does not help them lose weight or result in behavior modification. And health care workers may feel added pressure to model the highest standard of health. Only when patients feel a true partnership with the medical profession in addressing obesity, can lasting success be achieved.

The key to patient and employee engagement is the five A's of ask, assess, advise, agree, and assist with a compassionate initial assessment. This protocol applies to healthcare workers as well as general patients. After gauging where the patient is regarding addressing their weight, a medical evaluation for secondary causes of excess weight should be conducted. Once a workup has excluded alternative causes for obesity, a clear diet, psychiatric, and behavioral history should be performed.

Healthcare worker behavioral histories are plagued by long work hours, irregular rotating shifts, intense physical and emotional labor, as well as increased risk of exposure to illness and death. These specific challenges to the medical community can make meal preparation, regular exercise, and mental health concerns a sizable barrier to treatment. Some of these issues can be addressed systematically by health systems, while some require an individual approach. A well-rounded approach to weight treatment should explore the overall impact of mental exhaustion and burnout from being a healthcare worker, as well as the more specific individual symptoms of attention deficit disorder and obsessive-compulsive eating disorder as possible contributing factors to obesity, for example. Understanding that shift workers in medical fields suffer disproportionately due to their scheduling and dietary limitations should also be acknowledged and addressed.

Following a workup and thorough history, and depending on readiness, patients move into the intensive weight loss phase. This has a high targeted behavioral focus with dietary changes, a focus on physical activity as well as behavioral modification, i.e. avoiding stress eating, mindfulness, etc. As a means to support patients in these efforts, medication management as well as surgical intervention if indicated, should be offered as part of comprehensive individual treatment. Following significant weight loss, patients should be counseled that plateauing is not a moral failing.

Weight maintenance is as important as weight loss. It is equally important for patients to understand what their diet should consist of in order to simply maintain the weight they are at, prior to starting another cycle of intense weight loss. This should be reinforced to healthcare workers, as setbacks may be inevitable with the shifting schedules and work demands that are typical of this field.

The last part of this process is weight gain prevention when a patient has successfully maintained their weight. This focuses on community support as well as regular preventative visits to try and address the risks of a return to obesity. Healthcare workers have a unique camaraderie specific to medicine and have a strong team-based mentality. This could be harnessed to change the course of weight management in individual employees. For instance, employees participating in wellness programs at Mount Sinai produced a cookbook with healthy recipes donated from employees across the health system, while others have focused on healthy eating during specific internal events. In order to continue healthy eating over the holidays, healthy recipes and alternative ways to prepare festive dishes were shared and prepared by departments at Vanderbilt University Medical Center. This effort helped address a challenging time when overeating is the norm as departments often celebrate with food-related gatherings. The sense of community by this kind of practice helps support the obesity prevention goals for health care workers struggling to maintain their weight loss throughout a holiday season. Using any one of these steps, employers can support employees in reaching their goals regardless how large or small a health system may be.

Community and individual engagement is only one piece of the puzzle. Advocating for systemic changes in employee benefits and insurance coverage for comprehensive obesity treatment should be considered. One such initiative launched in 2017, My Healthy Weight, was created to improve consistency by insurance coverage in the treatment of obesity. It was the first initiative to offer insurance benefits that would cover preventative obesity treatments, which currently is not the case. One of its aims was to create a consistent set of reimbursable services by primary and specialty medicine in the treatment of obesity. Although success has been limited, addressing the lack of reimbursement and funding for treatment of obesity is a step in the right direction.

Consistent obesity coverage is only one component on the employer's side of the aisle. Reducing out of pocket expenses for individuals is important as well. This would involve creating a

health saving account and eliminating copays to reduce the financial barrier that is common in high deductible plans, particularly among the most vulnerable in healthcare professions. The financial incentives of reduced insurance premiums, gym membership rebates, and wearable wellness devices rarely are of much benefit to most lower-income employees and are unlikely to be utilized effectively in a way that translates to improved weight managment.[4]

The few programs that have demonstrated statistically significant results have only done so with enthusiastic support among multiple hospital departments and firm funding and support from management. This is a far cry from the hiring of an external consulting company to impose wellness measures on employees that have little to no vested interest in participating. The Medical University of South Carolina embraced changes that were reflective of worksite culture. The hospital set up employee advisory boards or committees to help determine what behavioral interventions were desired and which had been the most successful. These hospital employee health champions would then propagate initiatives and obtain feedback, as well as contribute successes via hospital wide communication channels.[8] This is part of the community support focus which is integral to maintaining weight loss for healthcare employees.

Lastly, not all interventions need to be time consuming, labor intensive, or particularly expensive. Consider hiring a nutritionist to reassess hospital cafeteria options to focus on reducing calories in servings as well as reducing portion sizes, while retraining staff to reinforce established protocols. Employees that make healthy choices at the cafeteria or vending machines could be rewarded with free meals. Limiting vending machine offerings to better comply with sodium and saturated fat limits and healthier choices is another option. Some hospital cafeterias such as Massachusetts General, have created a color-coded system to assist in making healthier choices, designating foods as red, yellow, and green to represent the health content of the food.[6] This practice reduced unhealthy, red food purchasing by 14% and reduced overall calories purchased.[6] Not only did this improve excessive caloric intake, but it also successfully targeted less educated and minority employees to choose more "green" foods.[9] At the end of the day, decision fatigue as part of burnout can overpower reason in regard to health, and removing that variable can make a difference in encouraging healthy choices to prevent weight gain

Reducing food costs in hospital cafeterias and vending machines also helps address the bias that healthy food is expensive. Sometimes a ten percent reduction in cost is all that is needed to move to more "green" food in the hospital cafeteria.[10,8] Changing the mindset that unhealthy food will cost a person more can be helped by taxing the hospital vending machine. The Medical Center of South Carolina donated proceeds from vending machine snack sales which didn't meet improved nutritional requirements to obesity related chronic illness programs.

An additional method for encouraging hospital and healthcare employees to make healthy choices is to provide direct access to farmers markets, farm stands, and community agricultural sources in hospital parking lots, which helps improve access to fresh foods and makes healthy food visible and approachable. This measure was carried out as part of an employee wellness program at the Medical University of South Carolina in Charleston. These approaches which utilized the environment of employees and increased food choices successfully led to a reduction in the number of healthcare workers that were overweight or obese by nine percent.[7]

The elevated risk for obesity in healthcare workplaces must be addressed and is vitally important when discussing the future of the medical workforce. Obesity can be treated successfully when leveraging community, personal, and workplace initiatives through a comprehensive approach.

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"Man Versus Men and Woman Versus Women": Gender Roles in a Vigorous Society

By Thomas C. Rosenthal, MD

Gender and sexuality; sexuality versus gender. In the nineteenth century men held authority over both. At least that is what Thomas Carlyle said in his 1829 essay, *Signs of the Times*. Carlyle proposed that *men*, guided by their self-interest, viewed the world as a machine that needs a little oil here and there. He worried this simplistic view ignored the true dignity of the human soul, but none-the-less society's structure was arranged as it was meant to be.[1] Years later, Lucien Febvre, a historian of the French Revolution, proposed that history is made from below, not from above. The names of leaders populate the archives, but history is created by the sweat of the common man.[2] Both men referred to the power of *men*, giving little attention to the critical role women play in a vigorous society.

Portrait of Margaret Fuller in public domain. Original was the front piece in her book.

In July 1843, Margaret Fuller published a series of articles titled "The Great Lawsuit. Man versus Men. Woman versus Women", in *The Dial*, the transcendentalist journal for which she was editor. The articles were later expanded and republished in book form in 1845.[3] Fuller sought a time when men and women could be equals, motivated by the inherent goodness of people and nature.

Fuller, a confidant of Ralph Waldo Emerson, believed that nineteenth century America hindered itself by placing virtually all burdens outside the home only on the shoulders of men. She went so far as to blame the mistreatment of Native and African Americans on selfish desires that arose out of the unopposed male dominated society. Humankind needed an awakening that could be energized only if women assumed equality in both family and society. The lives of both men and women would reach fulfillment when families moved beyond demanding that men stand alone as the head of the house, and woman stand alone as the heart.

Romance dominated the theme of most nineteenth-century novels, but marriage was generally a union of convenience, limited by parental arrangement and community availability. Fuller wrote that the husband/wife relationship existed as one of four types, the most common being the household partnership. The partnership was built on a shared commitment to mutual dependence, with the man providing a house and the woman tending to it. Her second type was mutual idolatry, in which both husband and wife find the other more near perfection than all others in the world. Fuller's third type was the intellectual companionship, where the man and woman are confidants in thoughts and feelings that are governed by a trusting friendship. Her fourth type was a union encompassing the best of the first three, but advanced to mutual dependence and respect. This latter arrangement, a union of equal souls, was not only the most satisfying and successful, but it had the potential to create a more perfect society. To be achieved, both men and women needed intellectual and spiritual resources that are attained through education and experience.

As a transcendentalist, Fuller hoped to convince Americans that the intuitive and spiritual should guide the empirical and material. She admitted to differences between masculinity and femininity, but postulated that, at the level of the human soul, men and women were the same. Greater differences exist between individuals than between genders and that no man is wholly masculine, nor any woman purely feminine.

Fuller argued that a more perfect union could not be achieved by simply directing men to cease their domineering behavior. Change required modern nineteenth-century women and men to view themselves as 'self-dependent', not independent. They must become fully formed individuals capable of sharing in an alliance of equals. To accomplish this, Fuller proposed women teach other women to be personages in their own right. Such an effort could enlighten all of humankind within a generation.

In his work as a literary critic, Edgar Allan Poe noted Fuller's "unmitigated radicalism," as that "which few women in the country could have written, and no woman in the country would have published, with the exception of Miss Fuller."[4]

Fuller's view of gender roles built on the work of Mary Wollstonecraft, one of the first to argue that women must be educated to fulfill the essential role as a child's first teacher. She redefined women's sensitivity as a strength that naturally made them essential partners to their husbands. Gender equality, she declared, was a natural and inalienable right given by God, therefore treating women as ornaments or property was a sin. To Wollstonecraft, the only reason women seemed inferior to men was their limited access

to education.[5] Sadly, Mary Wollstonecraft would die of childbed fever following the birth of her second daughter.

Medical education first crossed the gender line with the admission of Elizabeth Blackwell (1821–1910) as the first female student in 1847. Every medical school in the United States had rejected Blackwell until the students at Geneva Medical College in New York voted in favor of her admission as a joke played on the faculty. She became a noted physician in both New York and London. Blackwell's graduation thesis on typhoid fever, published in the 1849 *Buffalo Medical Journal*, was the first medical article authored by a woman in the United States.[6] Her highly regarded paper portrayed a sensitivity for human suffering, as well as advocacy for economic and social justice.

The first women's rights convention was held in Seneca Falls, NY in 1848. Over the next 70 years, several states would extend the right to vote to women, but women's suffrage did not become national policy until passage of the nineteenth amendment in 1920. The empowerment of wives and mothers within the family has been much more difficult to track.

In the twenty-first century, gender and sexuality remain as separate, and as inseparable, as they were to Fuller and Wollstonecraft.

In 2022, 53.8 percent of American medical students were women, 60 percent of family medicine residents were women and the specialties of obstetrics/gynecology, and pediatrics are now dominated by women. About 30 percent of family medicine department chairs are women, but the number is growing.[7]

Family medicine is the practice of medical care in the context of family, making relationships and gender organization central to the effective delivery of health and wellness. In the two centuries since Wollstonecraft and Fuller, we have made headway, and lifestyles continue the reformulation set in motion by these two thoughtful women. We must strive to replace the self-interest of partners with Fuller's concept of self-dependency and seek empowerment within the unique nature of each family under our care.

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A Weighty Issue:
Achieving and Maintaining a Healthy Body Composition

By Cheryl Martin, MD

Overview

Our post-COVID world is struggling with what to do with the weight gained during the lockdown world. News articles, social media, and celebrity gossip all fill our telephone screens with wonder drugs, exercise challenges, and yet another round of fad diets. As primary care physicians, more of our patients are asking what is the best way for me to lose weight, feel healthier, and like myself again. Is Ozempic really the only answer? Effective weight management includes assessments of the whole person and provides assistance to overcome each of the challenges that contribute to the behaviors that sustain our lifestyles.

Background

The Centers for Disease Control (CDC) National Center for Health Statistics (NCHS) conducts a yearly National Health and Nutrition Examination Survey (NHANES), which showed the obesity prevalence increased from 30.5% to 41.9% from 1999 to March 2020.[1] In New York State, the percentage of adults considered overweight or obese increased from 42% to 63.6% from 1997 to 2021.[2] The prevalence of obesity nationally is highest among Black, American Indian or Alaska Native and Hispanic adults without a high school diploma or the equivalent due to barriers in access to healthcare, healthy food and beverage affordability, and safe spaces for physical activity that are conveniently located.[3]

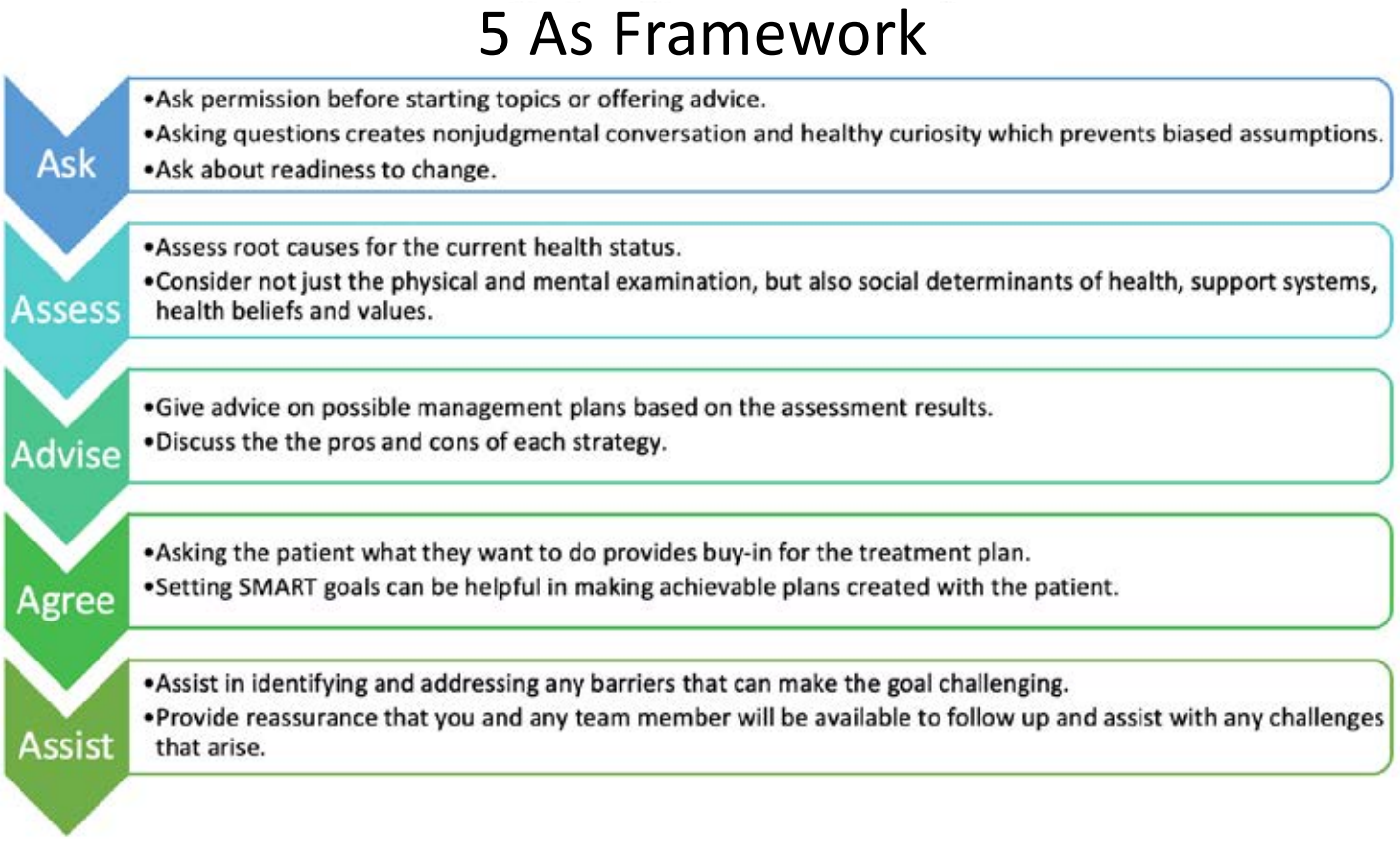
The medical cost of obesity in the United States was estimated to be nearly $173 billion in 2019.[4] Medical costs for adults who had obesity were estimated to be $1861 higher than for people with a healthy weight.[5] Screening for obesity in adults is a grade B recommendation by the United States Preventative Services Task Force (USPSTF). Hence the Centers for Medicare & Medicaid Services (CMS) covers intensive behavioral therapy for obesity, defined as a body mass index (BMI) greater than or equal to 30 kg/m^2, for counseling provided by a qualified primary care physician in a primary care setting.[6] Per CMS, intensive behavioral therapy for obesity should consist of: (1) screening for obesity in adults using BMI, (2) dietary/ nutritional assessment, and (3) intensive behavioral counseling and behavioral therapy to promote sustained weight loss through high intensity interventions on diet and exercise.[7] The intensive behavioral intervention should be consistent with the 5-A framework.[8] The 5-As (Ask, Assess, Advise, Agree, Assist) framework is a behavior modification technique that was originally developed to address smoking cessation and has since been adapted to address behavior change for many chronic conditions, including counseling for obesity.[9]

Where to Start?

The first task in any lifestyle plan is to assess where the person is right now and where they want to be. The "Ask and Assess" functions in the 5-A framework encourage patient driven change through asking permission to engage in a discussion about weight, inquiring what is important to the person, identifying possible root causes for behaviors and gauging readiness for change. Conducting a personal health inventory provides that overview. Generally, personal health inventories assess a person's nutrition, movement, sleep, and stresses along with other lifestyle measures. Table 1 provides resources for personal health inventories.

Most changes that happen will be slow and gradual. Keeping track of where we start helps make changes identifiable as well as fostering a sense of achievement that might otherwise seem out of reach. While weight loss is often our patient's goal, achieving a healthy weight may lead to significant change in body composition, functionality and disease markers without providing a large change in overall weight.

Being able to directly focus on those positive changes will aid in promoting a healthy body image and in sustaining motivation towards maintaining new lifestyle changes.



How to Encourage Changes?

Once the overall assessment is complete, analyze the areas of health for strengths and weaknesses. The areas of strengths provide support to build confidence and comfort with making small initial changes in areas where they are most likely to obtain success. Utilize motivational techniques of "Advise, Agree, Assist" from the 5As framework to provide buy-in from the patient by asking to provide advice on areas for identified intervention, gaining their agreement with a treatment plan in one area, and providing assistance in addressing any foreseeable barriers. Incorporating goal setting techniques like SMART goals help the patient make measurable and achievable progress toward their goals. Building on the initial successful changes coupled with the patient's personal values can help ease into making changes in areas of weakness. Areas of weakness may need further assessment to determine the contributing factors and identify the need for additional support services. If there are deficits more severe than can be handled within your clinical environment, outside referrals may be necessary. Table 2 provides examples of assessment tools, red flag triggers for referral, and some referral resources.

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How to Maintain Successes?

Frequently checking-in with the patient at regular intervals is key to success. Not every check-in needs to be with the physician. Other team members (i.e. nurses, medical assistants, health coaches, behavioral therapists, nutritionists) following up on goals and needs are a helpful part of maintaining the motivation and providing support. In addition to individual visits, group visits have also been effective in providing education and support. In children and adolescents, intensive behavioral interventions with a total of 26 or more contact hours over a period of 2 to 12 months resulted in weight loss with the greatest weight loss seen in interventions with 52 or more contact hours.[10] In adults, intensive behavioral interventions lasted for 1 to 2 years with 12 or more sessions within the first year.[11] See Table 3 for suggested timeline.

Practice Management

CMS covers one face-to-face visit every week for the first month. Then one face-to-face visit every other week for months 2-6. Finally, CMS covers one face-to-face visit every month for months 7-12 if the beneficiary meets the 3 kg weight loss requirement during the first six months. At the six-month visit, there needs to be a reassessment of obesity and documented amount of weight loss must be performed. If 3 kg of weight loss has not been achieved in six-months-time, a reassessment of readiness to change and BMI is recommended.

Areas for Future Advocacy

Whenever changes are made to dietary habits and eating patterns, eating disorders can be unmasked. Changes in any lifestyle area can also uncover traumas that had been managed by the prior lifestyle habits. Many of our current screening tools were not developed with a broad cultural understanding and can therefore miss the diagnosis of eating disorders, especially in people of color and non-American cultural traditions. Additionally, there are challenges in access to mental health services for people with low income and insufficient medical coverage, with especially limited services available to persons with eating disorders in general.

For patients that would benefit from the addition of pharmacological assistance, many insurance companies still do not cover most medications for the indication of weight loss. For patients dependent on Medicaid, this is a significant barrier to medication for a chronic condition.

Conclusion

Obesity as a chronic disease disproportionately affects people of color without a high school educational level due to barriers in healthcare access, healthy food and beverage affordability, and safe spaces for physical activity. As with any chronic condition, obesity can be managed and reimbursed in the primary care setting by family physicians as the main facilitator. Utilizing a team approach and group visits can be helpful in maintaining frequent check-ins to bolster success in making lifestyle changes. When additional pharmacological assistance to supplement lifestyle changes arise, it becomes important to advocate for equitable access to medications that aid in weight loss.

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Further Professional Development Resources

Billing and coding tips for lifestyle medicine-related services can be found on AAFP site at lifestyle-reimbursement-coding.pdf.

Table 1 – Resources for Personal Health Inventories

Area to Assess	Free Assessment Tools	Paid Assessment Tools
General Health	lifestyle-medicine-assessment-color-codes.pdf or windows-lifestyle-combined-instructions.xlsm (live.com)	RAND 36-Item Short Form Survey (SF-36) May need to apply for permissions to use depending on the circumstances https://www.rand.org/health-care/surveys_tools/mos/36-item-short-form/survey-instrument.html
	Personal Health Inventory https://healingworksfoundation.org/wp-content/uploads/2019/09/PHI-Flyer-V11-Color.pdf	
	VA Personal Health Inventory Long Form https://www.va.gov/WHOLEHEALTH/docs/PHI-long-May22-fillable-508.pdf	
	VA Personal Health Inventory Short Form https://www.va.gov/WHOLEHEALTH/docs/PHI_Jan2022_Final_508.pdf	

Table 2- Assessment Tools, Red Flag Triggers and Referral Resources

Areas to Assess	Free Assessment Tools	Red Flags	Where to Refer
Physical Well-Being	Complete Physical Examination		
Mental/ Emotional Well-Being	Patient Health Questionnaire-9 (PHQ-9)	Moderate or greater depression should be addressed prior to continuing lifestyle changes	Mental Health Professionals, if suicidal a Psychiatric Emergency Facility
	Generalized Anxiety Disorder (GAD-7)	Moderate or greater anxiety should be addressed prior to continuing lifestyle changes	Mental Health Professional
	lifestyle-medicine-assessment-color-codes.pdf or windows-lifestyle-combined-instructions.xlsm (live.com)		
Nutrition	24 hour food & drink recall or daily food diary	Signs of eating disorder	Mental Health Professional
	SCOFF Questionnaire	2 or more Yes answers	Specialist for Eating Disorders
	Eating Disorder Screening Tool for Primary Care (ESP)	2 or more Yes answers	Specialist for Eating Disorders
	lifestyle-medicine-assessment-color-codes.pdf or windows-lifestyle-combined-instructions.xlsm (live.com)		

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Endnotes

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Table 3 – Behavioral Interventions Timeline

Visit Number	Time Frame	Suggested Assessments	Suggested Discussion Topics	Documentation
1	Initial Visit	Personal Health Inventory, initial weight and BMI	Personal goals and explore what brings you joy	Weight, BMI, patient goals
2-4	Weekly for first month	Individualized assessment of areas of health, social determinants of health screen, eating disorders	Support systems, Nutrition, Sleep	Food Diary or 24 hours food recall, PHQ-9, GAD7, Sleep Diary
5-8	Every two weeks for months 2-3	Identify areas of success and troubleshoot difficulties, monitor for disordered eating	Mind-Body Techniques for relaxation, Movement	Food Diary or 24 hours food recall, movement log, Weight, BMI, SMART goals
9-10	Monthly for months 4-5	Identify areas of success and troubleshoot difficulties, monitor for disordered eating	Environment, Relationships	Food Diary or 24 hours food recall, movement log, Weight, total weight lost since start of program, BMI, SMART goals
11	6 month visit	Identify areas of success and troubleshoot difficulties, monitor for disordered eating	Support Systems, Nutrition	Weight, percentage of initial weight lost, Total weight lost since start of program, BMI, SMART goals
12-18	Monthly for months 7-12	Identify areas of success and troubleshoot difficulties, monitor for disordered eating, at 12 months consider repeating Personal Health Inventory	Sleep, Movement, Mind-Body Techniques for relaxation, Nutrition, Support systems	Food Diary or 24 hours food recall, movement log, Weight, BMI, SMART goals, at 12 months also include percentage of initial weight lost, Total weight lost since start of program
19+	Monthly for months 13+	Identify areas of success and troubleshoot difficulties, monitor for disordered eating, at 12 month intervals consider repeating Personal Health Inventory	Sleep, Movement, Mind-Body Techniques for relaxation, Nutrition, Support systems	Food Diary or 24 hours food recall, movement log, Weight, BMI, SMART goals, at every additional 6 months include percentage of initial weight lost, Total weight lost since start of program

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