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Lifestyle Medicine: The Art and Science of Prescribing Lifestyle Changes in Primary Care

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The Art and Science of Prescribing Lifestyle Changes in Primary Care

Dr Chiang Shu Hui Grace

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Lifestyle medicine is an evidence-based and holistic approach to medicine that encapsulates medical, behavioural, environmental, and motivational principles. It mobilises lifestyle change as a main modality to prevent, treat, and reverse chronic disease by replacing unhealthy behaviours with healthy behaviours.

In 2019, non-communicable diseases made up approximately 80 percent of the total disease burden in Singapore, with chronic disease and mental health conditions accounting for the leading causes of mortality and ill-health.1 The Global Burden of Disease Study 2019 found that an estimated 35 percent of disability-adjusted life years (DALYs) in Singapore could be reduced by decreasing modifiable risk factors such as poor dietary habits, smoking, physical inactivity, obesity, and elevated blood pressure, glucose, and cholesterol through early intervention.[1]

Lifestyle medicine can play an effective and important role by creating personalised and sustainable management plans for patients that focuses on physical activity, nutrition, sleep, stress, and substance use.[2,3] By addressing these domains holistically, multiple modifiable risk factors or chronic diseases can be addressed simultaneously, especially when lifestyle medicine is combined with medical treatment.

Family physicians are well positioned to integrate lifestyle medicine principles in their everyday practice by leveraging on well-established doctor-patient relationships. They can also collaborate with other healthcare professionals to help their patients sustain these healthy behaviours.

This issue of the Singapore Family Physician provides an overview on how family physicians can champion and prescribe lifestyle medicine in their practice to improve patient health and well-being.

In Unit 1, Dr Ng Lee Beng introduces the practice of lifestyle medicine and how it can play an integral part in our practice as family physicians.

In Unit 2, Dr Koh Li Wearn provides behavioural change frameworks for family physicians to adopt in the management of chronic inflammation in non-communicable diseases.

In Unit 3, Drs Shariffa Chishty and Leonard Leng share case vignettes to illustrate how lifestyle medicine can be practised in a family medicine clinic.

In Unit 4, Dr David Teo imparts how family physicians can implement lifestyle medicine to mitigate physician burnout and improve personal well-being.

In Unit 5, Dr Leonard Eng introduces diagnostic and treatment strategies to manage insomnia.

In Unit 6, A/Prof Lee Kheng Hock details how social prescribing can be implemented effectively by family physicians in their daily practice.

In this issue, A/Prof Goh Lee Gan has selected ten current readings on topics related to implementing lifestyle medicine in various patient populations and settings.

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Distance Learning Course on "The Art and Science of Prescribing Lifestyle Changes in Primary Care"

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Unit No. 1

LIFESTYLE MEDICINE: WHAT IT IS AND WHY IT MATTERS

Dr Ng Lee Beng, A/Prof Goh Lee Gan

ABSTRACT

Lifestyle Medicine is an evidence-based approach that uses therapeutic lifestyle interventions as a primary treatment to prevent, manage, and reverse chronic diseases by eliminating root causes rather than managing symptoms. Decades of research have demonstrated that lifestyle interventions can prevent, manage, and reverse chronic diseases such as diabetes mellitus, eye and kidney complications of diabetes, and cardiovascular disease. Intensive lifestyle intervention can also improve cognition and function in patients with mild cognitive impairment or early Alzheimer's disease. Lifestyle Medicine operates through six interconnected pillars (nutrition, physical activity, restorative sleep, stress management, positive social connections, and avoidance of risky substances). Singapore will benefit from the adoption of lifestyle medicine to help control chronic disease. Family doctors are uniquely positioned to integrate lifestyle medicine into clinical practice, both for their well-being, as well as for patient care. Successful implementation of Lifestyle Medicine thus includes several strategies: physician self-care, upskilling behaviour change communication, taking Lifestyle Medicine Vital Signs, partnering patients in lifestyle changes, and team-based care.

Keywords: Nutrition, Physical exercise, Restorative sleep, Stress management, Positive social connection

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INTRODUCTION

Lifestyle Medicine represents an evidence-based approach that uses therapeutic lifestyle interventions as a primary modality to treat chronic conditions, including cardiovascular diseases, type 2 diabetes, and obesity. Clinicians across all specialties can apply evidence-based, whole-person, prescriptive lifestyle changes to not just treat but, when used intensively, also often reverse such conditions.[1]

At its core, lifestyle medicine applies therapeutic lifestyle interventions to treat, reverse, and prevent chronic conditions by empowering patients to make lifestyle behaviour changes across six interconnected pillars: optimal nutrition, physical activity, restorative sleep, stress management, social connectedness, and risky substance avoidance. The approach aims to eliminate the root cause of disease rather than merely managing symptoms.

Lifestyle medicine is not confined to a single specialty but rather provides an essential foundation for clinical practice across all disciplines—from family doctors managing multiple chronic diseases (multimorbidity) to cardiologists addressing coronary disease, endocrinologists treating diabetes, and nephrologists managing chronic kidney disease. Every specialty can benefit from integrating lifestyle interventions as the foundational therapy alongside conventional treatment. The distinctive feature of lifestyle medicine is its evidence-based practice, with recommendations grounded from randomised controlled trials demonstrating reversal of chronic diseases or robust epidemiological studies.[1,2]

WHAT LIFESTYLE MEDICINE IS NOT

To better understand lifestyle medicine's unique position, it is helpful to distinguish it from related but distinct approaches to healthcare:

Figure 1. Characteristics of Systems of Medicine

Characteristic	Lifestyle Medicine	Conventional Medicine	Functional Medicine	Integrative Medicine	Longevity Medicine
Primary Focus	Lifestyle interventions as primary treatment for chronic disease prevention, management, and reversal	Diagnosis and treatment of disease using pharmaco-therapy, surgery, and procedures	Root cause analysis using systems biology approach; biochemical individuality	Combining conventional and complementary alternative therapies	Optimisation of health span and extension of lifespan; preventive ageing interventions
Patient's Role	Active partner in implementing lifestyle changes; expert in their own life	Passive recipient of medical care; follows prescribed treatment regimen	Collaborative participant in identifying underlying dysfunctions	Informed consumer choosing from multiple treatment modalities	Engaged in self-optimisation and monitoring
Core Methods	Interventions in six pillars: nutrition, physical activity, sleep, stress management, social connections, avoidance of risky substances	Diagnostic tests, medications, surgical procedures, radiation therapy	Detailed laboratory testing, elimination diets, targeted supplementation, bioidentical hormones	Conventional medicine plus acupuncture, herbal medicine, mind-body practices, manual therapies	Advanced biomarker testing, senolytics, NAD+ therapy*, metformin, rapamycin analogues
Evidence Base	**RCTs demonstrating disease reversal; alignment with clinical practice guidelines	Extensive RCT evidence for pharmaceutical and procedural interventions; gold standard for acute care	Mixed evidence; some interventions well-studied, others theoretical or based on case series	Variable; conventional components evidence-based, complementary therapies have varying levels of evidence	Emerging research; many interventions based on animal models or short-term human studies
Goal	Treat and reverse chronic disease; achieve remission where possible	Diagnose and manage disease; control symptoms; prevent complications	Restore optimal physiological function	Treat whole person using best of conventional and alternative medicine	Extend healthy lifespan; delay or prevent age-related decline
Clinical Setting	Primary care, specialty care; one-on-one and group visits	Hospitals, clinics, emergency departments; full spectrum of healthcare settings	Usually private practice; extended consultation times	Integrative medicine centres; academic medical centres; private practice	Specialised longevity clinics; concierge medicine practices
Key: *NAD+: Nicotinamide Adenine Dinucleotide (NAD+), a vital coenzyme that declines with age **RCT: randomised controlled trials					
Source: ACLM, 2026,[1] Lippman D et al, 2024[2]					

While overlap exists among these approaches, lifestyle medicine's defining characteristics are its robust evidence-based foundation, focus on the six pillars as primary treatment modalities, and its demonstrated ability to reverse—not merely manage—chronic disease.

EVIDENCE BASE FOR LIFESTYLE INTERVENTIONS IN CHRONIC DISEASE

Decades of rigorous research demonstrate that lifestyle interventions can prevent, manage, and reverse chronic diseases. The following cited studies provide examples of this evidence:

In the **Diabetes Prevention Programme (DPP)**, lifestyle intervention reduced type 2 diabetes incidence by 58 percent overall, and 71 percent in participants aged ≥60, compared to placebo over three years.[3] The intervention targeted 7 percent weight loss and 150 minutes of weekly physical activity. Benefits persisted over 22 years, with 25 percent reduced diabetes risk in the original lifestyle group. Participants who avoided diabetes showed 57 percent lower risk of eye and kidney disease and 39 percent lower cardiovascular disease risk.[4]

The comprehensive epidemiological **China study** examined 6,500 adults across 65 Chinese counties, generating over 8,000 statistically significant associations between lifestyle, diet, and disease.[5] The data indicated that lower animal protein consumption correlated with better health outcomes, with those consuming predominantly plant-based foods showing the lowest chronic disease rates.

Dr Dean Ornish, in over 47 years of research using intensive lifestyle interventions encapsulated in the Ornish Programme,[6] showed the following outcomes:

Cardiovascular disease reversal: Comprehensive lifestyle changes reversed coronary atherosclerosis, with regression increasing progressively over five years.[7] The intervention combined a whole-foods, plant-based diet (10 percent fat), aerobic exercise, stress management, smoking cessation, and group support.

Epigenetic effects and gene expression: The same lifestyle programme altered over 500 genes in just three months, upregulating protective genes while downregulating oncogenes that promote prostate, breast, and colon cancer.[8] This demonstrated that lifestyle changes influence disease not just through behaviour but through fundamental changes in gene expression.

Telomere lengthening: In men with early-stage prostate cancer, the lifestyle intervention increased telomeres (protective DNA caps that shorten with ageing) by 10 percent over five years, while control group telomeres shortened by 3 percent.[9] This marked the first controlled study showing that an intervention could lengthen telomeres. The degree of lifestyle adherence directly correlated with telomere lengthening—greater adherence produced longer telomeres.

Alzheimer's disease and cognitive function: Most recently, a 2024 randomised controlled trial demonstrated that the same intensive lifestyle intervention significantly improved cognition and function in patients with mild cognitive impairment or early Alzheimer's disease.[10] After 20 weeks, 71 percent of intervention participants improved or remained stable compared to baseline, while 68 percent of controls worsened and none improved. Participants reported regaining lost abilities such as managing finances, reading books without forgetting content, and returning to work responsibilities. The intervention showed a clear dose-response relationship: greater adherence to lifestyle changes correlated with greater cognitive improvement.

Dr Ornish's four decades of research led him to propose a **unifying theory of chronic disease** to reiterate what many clinicians engaged in the study of molecular biology, the gut microbiome, and other scientific fields have concluded: the chronic diseases that physicians are trained to view as fundamentally different—heart disease, type 2 diabetes, prostate cancer, Alzheimer's disease—are actually diverse manifestations of the same underlying biological mechanisms.[6]

These shared mechanisms include chronic inflammation, oxidative stress, changes in the microbiome, telomere shortening, altered gene expression, and overstimulation of the sympathetic nervous system. Each of these biological mechanisms is directly influenced by what we eat, how much we exercise, how we manage stress, and the quality of our social connections—in short, the six pillars of lifestyle medicine. The unifying theory explains why the same lifestyle interventions can prevent and reverse multiple chronic diseases simultaneously.[6] It also clarifies why patients often present with multiple chronic diseases (comorbidities) concurrently; diabetes, hypertension, obesity, and cardiovascular disease frequently coexist because they arise from the same disordered pathways, which in turn are fuelled by the same unhealthy risky behaviours.

By addressing the root mechanisms rather than managing individual disease symptoms, lifestyle medicine offers a comprehensive approach that can simultaneously improve multiple conditions. This represents a fundamental shift from treating diseases in isolation to addressing the common biological soil from which they grow. It gives scope for local practitioners to consider simplifying their management of chronic diseases by employing one universal approach, using the lifestyle medicine framework instead of grappling with multiple care protocols for the different chronic diseases.

ALIGNMENT WITH CLINICAL PRACTICE GUIDELINES

The principles of lifestyle medicine align closely with current clinical practice guidelines from major professional organisations such as the American Heart Association (2021 Dietary Guidance): Evidence-based dietary pattern guidance includes adjusting energy intake to achieve healthy body weight, eating plenty of fruits and vegetables, choosing

whole grains, selecting healthy protein sources (mostly plants, regular fish intake, low-fat dairy), and using liquid plant oils rather than tropical oils.[11]

In the American Diabetes Association's 2026 Standards of Care, the DPP lifestyle intervention goals of achieving at least 7 percent weight loss and 150 minutes of moderate-intensity physical activity per week are incorporated into diabetes prevention/delay recommendations. The nutrition guidance has expanded to encourage evidence-based eating patterns that emphasise incorporating plant-based proteins and fibre, such as the Mediterranean diet.[12]

These guidelines reflect a shift toward lifestyle interventions as foundational to chronic disease management, validating the lifestyle medicine approach.

THE SIX PILLARS OF LIFESTYLE MEDICINE

Lifestyle medicine operates through six interconnected pillars, each supported by substantial evidence for effectiveness in chronic disease management and optimising wellbeing.

1. Nutrition (Whole Food, Plant-Predominant Eating Pattern)

Poor diet has surpassed smoking as the leading cause of chronic disease globally, responsible for 11 million deaths annually—one in five deaths worldwide.[13] Lifestyle medicine recommends an eating pattern based predominantly on minimally processed vegetables, fruits, whole grains, legumes, nuts, and seeds, aligning well with Singapore's "My Healthy Plate" framework.[1,14]

However, perhaps in the next reiteration, Health Promotion Board can consider modifying the present plate to reflect the latest nutrition update that "protein does not equal meat", as current nutritional science confirms that plant proteins from legumes, beans, lentils, tofu, tempeh, nuts, and seeds are neither incomplete nor inferior to animal protein, in addition to providing fibre and protective phytochemicals without excess saturated fat.[15] Research has shown that intake of plant protein is associated with a lower risk of mortality from cardiovascular diseases and from all causes.[16]

2. Physical Activity

Sedentary behaviour accelerates metabolic dysfunction, cardiovascular disease, and premature mortality. The Singapore Physical Activity Guidelines (SPAG) align with the American College of Sports Medicine guidelines for physical fitness: at least 150 minutes of moderate-intensity aerobic activity weekly plus resistance training for all major muscle groups 2–3 days per week.[17]

There is irrefutable evidence of the effectiveness of regular physical activity in the primary and secondary prevention of several chronic diseases (e.g., cardiovascular disease, diabetes, cancer, hypertension, obesity, depression, and osteoporosis) and premature death.[18]

The challenge lies in motivating patients to have adequate physical activity, particularly incorporating resistance exercise—crucial for maintaining muscle mass, bone density, and for metabolic and cognitive health. It may be more acceptable for physicians to start the conversation by encouraging non-exercise physical activity (taking the stairs, parking farther, standing while working, vigorous household chores) to reduce sedentary behaviour, as a gateway to structured exercise.

3. Restorative Sleep

Sleep deprivation disrupts metabolic, endocrine, and cardiovascular function, increasing type 2 diabetes risk by 50 percent, while also elevating depression and anxiety risk, impairing cognitive performance, and accelerating neurodegeneration.[19,20] Yet, it is a facet often overlooked in medical consultation for chronic disease management.

Singapore ranks among the most sleep-deprived nations globally—only 44 percent achieve the recommended 7+ hours nightly, driven by intensive work culture and 24/7 connectivity.[21]

Physicians can consider assessing their patients' sleep quantity and quality more intentionally and advising adults to target 7–9 hours of quality sleep nightly through sleep hygiene practices such as consistent sleep-wake times, limiting screen time before bed, creating a cool and dark sleep environment, and addressing sleep disorders.

4. Stress Management

Chronic stress drives inflammation, immune dysfunction, metabolic dysregulation, cardiovascular disease, and poor glycaemic control.[22] Mindfulness-based interventions have been found to reduce blood pressure, improve glycaemic control in diabetes, and decrease anxiety and depression symptoms.[22,23]

A working knowledge of stress management techniques such as mindfulness meditation, progressive muscle relaxation, deep breathing exercises, and cognitive behavioural approaches may improve not only patient care but even physician self-care!

5. Positive Social Connections

Loneliness and social isolation increase premature death risk comparable to smoking and obesity.[24] The Framingham Heart Study showed that happiness spreads through social networks: a happy friend nearby increases your happiness probability by 25 percent.[25] Strong social connections protect against cognitive decline, reduce cardiovascular mortality, and enhance immune function.[25,26]

Reassuringly, this domain is one of the main focus areas under the national Age Well SG initiative, which deploys an army of Silver Generation ambassadors going door to door, and well-being coordinators embedded in care models involving social prescribing, to connect ageing Singaporeans to community programmes and activity centres.

6. Avoidance of Risky Substances

Tobacco use and excessive alcohol consumption drive cardiovascular disease, cancer, liver disease, and premature mortality.[27] Smoking cessation produces immediate cardiovascular benefits, while any level of alcohol consumption increases cancer risk despite potential cardiovascular benefits at moderate intake.[28] Singapore has made significant progress in this area, demonstrated by the reduction in daily smoking prevalence to 8.8 percent in 2023.[29] However, the growing prevalence of vaping has become a significant concern.

There is a need for family doctors, often patients' first contact for healthcare, to continue opportunistic assessment and take tactful steps to help patients move towards complete tobacco avoidance and limit alcohol to moderate levels or abstain entirely.

THE PRESENT SITUATION OF CHRONIC DISEASE IN SINGAPORE

Singapore faces a significant burden of chronic disease despite advances in healthcare delivery.

According to the National Population Health Survey 2024, approximately one in three Singapore residents have hyperlipidaemia and hypertension, with diabetes prevalence at 9.1 percent. While these rates have remained relatively stable, they represent a substantial health burden.[29]

More concerning is the rising obesity trend. The proportion of obese residents (BMI ≥30.0 kg/m^2) increased significantly from 10.5 percent in 2019–2020 to 12.7 percent in 2023–2024. This trend is particularly worrisome given that obesity is a major risk factor for developing diabetes, cardiovascular disease, and other chronic conditions.[29]

THE HEALTH SPAN-LIFESPAN DISCREPANCY

While Singapore boasts one of the highest life expectancies globally, there exists a notable gap between lifespan and health span—the number of years lived in good health. Many Singaporeans spend their later years managing multimorbidity, experiencing reduced quality of life secondary to varying levels of physical or mental functional disability, and requiring extensive healthcare resources.

The challenge is clear: while people are living longer, they are not necessarily living healthier. This discrepancy underscores the urgent need for interventions that not only extend life but preserve functional capacity and wellbeing throughout the lifespan.

THE COMPLEMENTARY ROLE OF LIFESTYLE MEDICINE IN THE CURRENT LANDSCAPE

Singapore has made significant strides in population health initiatives and social prescribing, creating an opportune environment for integrating lifestyle medicine principles more systematically.

HealthierSG (HSG) Initiative

The nationwide HealthierSG (HSG) initiative represents Singapore's shift towards preventive healthcare, enrolling residents aged 40 years old and above with family doctors for personalised health plans addressing chronic disease prevention and management.[30] This population health strategy aims to enable individuals to prevent and manage chronic diseases through a whole-person approach.

However, while HSG provides the infrastructure for preventive care, there remains a gap in systematically equipping family doctors with the clinical competencies to deliver evidence-based lifestyle interventions. Lifestyle medicine offers the structured framework, clinical protocols, and behaviour change skills that can transform the HSG vision into clinical reality at the point of care.

By integrating lifestyle medicine into existing practice, family doctors can become the true drivers of the HSG initiative—engaging more effectively with patients at enrolment and continuing as their ongoing partners through reviews and timely referrals. This partnership approach enhances patient experiences and outcomes, making the adoption of patient-centred outcome measures such as Patient-Reported Experience Measures (PREMs) and Patient-Reported Outcome Measures (PROMs) a more meaningful exercise that demonstrates HealthierSG as a truly successful whole-person, patient-centred strategy.[31]

Social Prescribing in Singapore

Recognising that 80 percent of health is determined by environmental and social factors outside the healthcare system, Family Medicine specialists from SingHealth Community Hospitals introduced social prescribing programmes in 2019.[32] Wellbeing Coordinators were trained to develop personalised care plans connecting patients to community resources post-hospitalisation. There are aspirations of expanding this model to the primary care settings, with the ultimate vision that every resident will have a health plan including both medical and social prescriptions.[33]

Social prescribing excels at addressing loneliness, social isolation, and community connection, but physicians still need training and competencies to prescribe and monitor interventions across all six pillars—particularly nutrition, physical activity, sleep optimisation, and stress management techniques. While social prescribing addresses social determinants of health by linking patients to community resources—such as active ageing centres, volunteer programmes, and social support groups—lifestyle medicine provides the clinical framework to further enhance whole person care.

Current gaps that lifestyle medicine can address are:

- **Clinical competency development:** Many physicians lack formal training in nutrition counselling, exercise

prescription, sleep medicine, and behaviour change techniques. Lifestyle medicine provides standardised competencies and fills knowledge gaps in hitherto neglected or overlooked domains.

- **Evidence-based protocols:** While social prescribing connects patients to resources, lifestyle medicine offers specific, validated protocols (e.g., whole-food plant-predominant eating patterns, adequate sleep, 150 minutes weekly moderate-intensity activity) proven to control and even reverse disease.
- **Measurement and monitoring:** Lifestyle medicine introduces "lifestyle vital signs" that can be routinely assessed alongside traditional vital signs, enabling systematic tracking of intervention adherence and outcomes.
- **Integration across specialties:** Lifestyle medicine provides a unifying framework that different specialists can integrate alongside their current pharmacological and procedural treatments, to enhance the effectiveness of these tools.
- **Continuity of care from specialist to community:** When specialists discharge patients to primary care, lifestyle medicine provides a shared framework for ongoing management. The specialist can document specific lifestyle prescriptions—for instance, "Whole food plant-based diet to achieve LDL-cholesterol of <1.8 mmol/L", "cardiac rehab graduated to 150 min/week brisk walking", "sleep hygiene protocol targeting 7–9 hours". The HSG-enrolled family doctor receives these clear targets, continues monitoring adherence through regular health plan reviews, provides motivational interviewing support, and refers to community exercise programmes and dietitian services as needed through social prescribing. This can prevent the common scenario where patients implement lifestyle changes during acute specialist care and cardiac rehabilitation programme but revert to old habits once back in the community, or resist lifestyle change advice because of over-reliance on the medication prescribed by their specialist who might not have emphasised the importance of ongoing lifestyle measures.

By embedding lifestyle medicine principles and competencies within existing HSG infrastructure and complementing social prescribing initiatives, Singapore can create a comprehensive system where both specialists and family doctors prescribe evidence-based lifestyle interventions, coordinate seamless care transitions, and connect patients to community resources for sustained implementation. This integration strengthens the preventive care ecosystem and transforms the goal from not only chronic disease prevention but also to disease treatment and remission.

THE WAY AHEAD FOR FAMILY DOCTORS IN SINGAPORE

Physician burnout has become a global crisis, with over 60 percent of physicians reporting at least one symptom of burnout—emotional exhaustion, depersonalisation, and loss of meaning in work.[34] This development threatens not only physician wellbeing but also patient care quality, healthcare costs, and the sustainability of healthcare systems. Research demonstrates that 90 percent of lifestyle medicine practitioners report that integrating lifestyle medicine into their practice positively impacted their professional satisfaction, with notable improvements in patient outcomes and more meaningful clinician-patient relationships.[35]

Lifestyle medicine offers a powerful antidote to burnout while simultaneously helping to achieve the Quintuple Aim of healthcare by: (i) improving population health through evidence-based prevention; (ii) enhancing patient experience through collaborative partnerships; (iii) reducing costs by preventing and reversing costly chronic diseases; (iv) supporting clinician wellbeing through meaningful work and personal health; and (v) advancing health equity by providing accessible, foundational interventions that do not require expensive technologies.[35,36]

Family doctors are uniquely positioned to integrate lifestyle medicine into clinical practice. The following steps can facilitate this transformation:

Self-Education in Lifestyle Medicine for Physician Self-Care

Physicians can first apply lifestyle medicine principles to their own health. Incorporating healthy lifestyle behaviours into physicians' own lives significantly reduces burnout, with practitioners who increase physical activity, adopt plant-predominant eating, or implement stress management techniques reporting substantial improvements in wellbeing.[35] Physicians who model healthy behaviours are also more credible and effective in motivating patients to change.[37]

The first action step can be self-education through the American College of Lifestyle Medicine (ACLM) website (https://lifestylemedicine.org), to fill the knowledge gaps in lifestyle domains that many physicians left medical school with. ACLM provides comprehensive online courses, certification pathways, and resources specifically designed for physicians seeking to apply lifestyle medicine to their own lives and in patient care.[1] Locally, the nascent Singaporean Society of Lifestyle Medicine (https://www.lifestylemedicine.org.sg/) holds monthly webinars where notable practitioners from the Global Alliance of lifestyle medicine are invited speakers. It provides information on lifestyle medicine training and relevant resource links and has started the Walk With A Doc (WWAD) movement in Singapore.

Upskilling in Behaviour Change Communication

Effective lifestyle medicine requires mastery of motivational interviewing, shared decision-making, and behaviour change frameworks. Training in "change talk"—communication strategies that enhance patient motivation and readiness to change—is essential. This moves beyond simple advice-giving to collaborative partnership.[38]

The traditional physician role as expert must evolve to include that of a health coach to partner his patient in lifestyle change. This partnership model recognises patients as the experts in their own lives while physicians provide evidence-based guidance and support. Coaching approaches emphasise patient autonomy, self-efficacy, and intrinsic motivation.[39]

Taking Lifestyle Vital Signs

Just as we routinely measure blood pressure and glucose, lifestyle vital signs should become standard practice:

- Dietary pattern assessment
- Physical activity level (minutes per week)
- Sleep duration and quality
- Stress level and coping strategies
- Social connection and support
- Tobacco and alcohol use

Brief assessment guides[1] to be filled prior to consultation and use of transcribing and other AI tools to churn out consultation summaries and personalised care plans can be harnessed to make this efficient. The same assessments can guide personalised lifestyle interventions and track progress over time.

Further Upskilling for the Practice of Lifestyle Medicine

In the local landscape, opportunities abound for the physician to learn the skills that will enhance the practice of lifestyle medicine: exercise prescription courses run regularly by Exercise Is Medicine Singapore (EIMS) team, social prescribing and motivational interviewing workshops run by the SingHealth Community Hospitals Office of Learning (SCHOOL), mindfulness-based stress reduction (MBSR) workshops run by Brahm Centre, etc. Health coaching courses are also available both in-person and online.

The Ministry of Health has also set up a workgroup to produce EatWise SG nutrition materials and map referral algorithms to equip family doctors in nutrition knowledge and escalate patients with significant nutritional needs to dieticians. The College of Family Physicians Singapore (CFPS) has committed to regular reiterations of Lifestyle Medicine skills courses to provide training, especially in overlooked lifestyle domains, to its members from 2025.

Such equipping will enhance the family doctor's competence and confidence in partnering with patients to create personalised health plans to "Create a Healthier You, with HealthierSG" at the point of care.[30] This should in turn increase job satisfaction and physician wellbeing when better patient outcomes are realised, as well as improve patient experiences.

Team-Based Care

Lifestyle medicine is inherently interprofessional. Effective implementation requires collaboration with dietitians, exercise physiologists for empowerment in safe exercise, psychologists and counsellors for mental health and stress management, and health coaches and care coordinators connecting patients to resources.

While not all the pieces are in place presently, under the Healthier SG framework, resources made available to the various Primary Care Networks are already supporting team-based approaches.[30] Some nurses and care coordinators from the Agency for Integrated Care have been trained in the lifestyle medicine approach, and may be able to help family doctors operationalise care plans through referrals and linkages with community resources. There are pathways to empower patients in safe and adequate exercise via referrals to hospital-based sport and exercise medicine centres or the community ActiveSG Healthlabs.

As HSG-enrolled patients establish longitudinal relationship with their family doctors, and the doctors upskill themselves, they can more effectively leverage the existing HSG framework to deliver comprehensive lifestyle medicine interventions, moving from episodic sick care to proactive health optimisation.[30]

CONCLUSION

Studies have shown that lifestyle medicine can impact up to 80 percent of chronic diseases. In the face of rising chronic disease burden and the health span-lifespan gap in Singapore, lifestyle medicine offers a scientifically rigorous, evidence-based approach to prevent, treat, and reverse conditions that diminish quality of life and strain healthcare resources.

For all physicians, the evidence is compelling, the need is urgent, and the infrastructure through Healthier SG is emerging. By upskilling in lifestyle medicine competencies and adopting a coaching approach, physicians can effectively lead a transformation in healthcare—from a system that treats disease to one that creates health.

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LEARNING POINTS

- **Lifestyle medicine uses evidence-based lifestyle interventions as primary treatment to prevent, manage, and reverse chronic diseases by eliminating root causes rather than managing symptoms.**
- **Lifestyle Medicine operates through six interconnected pillars: nutrition, physical activity, restorative sleep, stress management, positive social connections, and avoidance of risky substances.**
- **Singapore has made significant strides in population health initiatives and social prescribing, creating an opportune environment for implementing lifestyle medicine to realise the HealthierSG initiative of transforming sick care to healthcare, and empowering Singaporeans in preserving functional capacity and well-being throughout their lifespan.**

Unit No. 2

DOUSING THE FIRE—MANAGEMENT OF CHRONIC INFLAMMATION IN NON-COMMUNICABLE CHRONIC DISEASE

Dr Koh Li Wearn

ABSTRACT

The 21st-century medical landscape is characterised by a prevalence of non-communicable diseases (NCDs), which now account for approximately 74 percent of global deaths. This article posits that the NCD epidemic stems from a mismatch between human evolutionary biology and the modern "exposome", resulting in systemic chronic inflammation (SCI) and microbiome dysbiosis as the "common soil" of disease. The review advocates for lifestyle interventions to target these root causes, emphasising the six pillars of health, particularly nutrition and physical activity. Evidence highlights that plant-dominant diets (e.g., Mediterranean, DASH) and regular exercise mitigate inflammation through mechanisms such as increased microbial diversity and myokine release. To bridge the gap between knowledge and practice, the article suggests physicians employ behavioural change frameworks like the "5 As" and Motivational Interviewing. Ultimately, it calls for a paradigm shift from a "diagnose and treat" model to one of collaborative coaching, where lifestyle prescriptions are used as precision therapies to extend health span.

Keywords: Systemic chronic inflammation, lifestyle interventions, microbiome dysbiosis

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INTRODUCTION

The contemporary medical landscape is defined by a seismic epidemiological shift. While the 20th century was characterised by the battle against infectious pathogens, the 21st century faces a tidal wave of non-communicable diseases (NCDs). Current data indicates that NCDs—encompassing cardiovascular diseases, type 2 diabetes mellitus (T2D), obesity, metabolic dysfunction-associated steatotic liver disease (MASLD), chronic respiratory illnesses, and various malignancies—now account for approximately 7 out of 10 of main causes of death, accounting for 74 percent of deaths worldwide. This includes more than 15 million people who die prematurely every year from a major NCD between the ages of 30 and 69 years; 85 percent of these premature deaths occur in low- and middle-income countries.[1]

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This burden represents a fundamental challenge to the sustainability of healthcare systems worldwide. The conventional biomedical model, which excels in acute care and trauma, operates primarily on a "diagnose and treat" paradigm, often intervening only after pathology has become symptomatic. However, the aetiology of NCD conditions is not sudden but cumulative, driven by decades of maladaptive interactions between an individual's genetics and immune system in response to environmental factors. This article aims to provide an overview of current understanding of the impact of these factors and potential areas for intervention, with a focus on nutrition and exercise.

INFLAMMATION AND THE CASE FOR LIFESTYLE INFLUENCES

Inflammation is broadly defined as a protective response of the organism to stimulation by invading pathogens or endogenous signals such as damaged cells, resulting in the elimination of the initial cause of injury, clearance of necrotic cells, and tissue repair.[2] In normal circumstances, this response is temporary, and resolves when the threat has passed. However, in the presence of certain factors (e.g., social, psychological, environmental, biological), instead of resolution, there is the promotion of a state of low-grade, non-infective systemic chronic inflammation.

To understand the pathogenesis of NCDs, one must look beyond the genome to the "exposome"—the cumulative measure of all environmental influences (e.g., drugs, toxins, pollutants, nutrients, and physical and psychological stressors) and associated biological responses throughout the lifespan, from conception to death. The modern exposome is characterised by a "mismatch" between our evolutionary biology and our current environment. Humans evolved in an environment of food scarcity and high physical demand; today, we inhabit an obesogenic environment of caloric abundance and sedentarism.

This mismatch manifests physiologically as a breakdown in homeostasis, primarily mediated by two interconnected systems: the immune system and the gut microbiome. The shift from acute, resolving inflammation to systemic chronic inflammation (SCI) is now recognised as the "common soil" from which most NCDs spring. The immune components in SCI are often distinct from those engaged during an acute immune response. They cause breakdown of immune tolerance[2] with increased secretion of pro-inflammatory cytokines, chemokines, and other pro-inflammatory molecules from cells, leading to major alterations in all tissues and organs and changes in normal cellular physiology.

Empirical evidence that SCI plays a role in disease onset or progression is strongest for metabolic syndrome, type 2 diabetes, and cardiovascular disease.[3]

In metabolic syndrome, adipose tissue is the primary driver of SCI. Far from being a passive energy store, adipose tissue is a metabolically active endocrine organ. In states of positive energy balance (obesity), adipocytes undergo structural changes of hypertrophy and hyperplasia. When hypertrophy exceeds the angiogenic capacity of the tissue (the rate at which new blood vessels can form), the adipocytes experience hypoxia, which results in activation of proinflammatory signalling pathway and transcription of pro-inflammatory genes (refer to **Table 1**).

Table 1: Effects of pathophysiological processes triggered by adipose tissue hypertrophy/hyperplasia

Pathophysiological processes triggered by adipose tissue hypertrophy and hyperplasia	**Effect on chronic inflammation**	**Other downstream effects**
Relative hypoxia	Activation of proinflammatory signalling pathways Transcription of proinflammatory genes	Systemic chronic inflammatory state
Release of chemoattractant signals	Macrophages recruited make M1 switch—secrete proinflammatory cytokines	TNF alpha interfere with systemic insulin signalling IL1-beta interferes with pancreatic beta cell function
Adipokine secretion—Leptin chronically **elevated**	Pro-inflammatory—increased TNF alpha and IL-6 Promotes Th1 lymphocyte differentiation	High leptin is mitogenic—increasing cancer risk
Adipokine secretion—adiponectin **reduced**	Usually insulin sensitising and anti-inflammatory, inhibiting macrophage activation and promoting fatty acid oxidation	Reduced levels of a "brake" on systemic inflammation
Adipokine—resistin and visfatin increased	Promotes inflammatory signalling	Promotes insulin resistance

SCI is intimately linked to oxidative stress. Activated immune cells produce Reactive Oxygen Species (ROS) as antimicrobial weapons. In the sterile environment of SCI, these ROS damage host lipids, proteins, and DNA.[1] This damage generates neo-antigens and further damage associated molecular patterns, which bind to PRRs and sustain the inflammatory response, creating a self-perpetuating feedback loop. This oxidative stress is a key mechanism linking inflammation to DNA damage and carcinogenesis, as well as to tissue damage in chronic NCDs. Hence SCI is also increasingly recognised as a driver for chronic kidney disease, various types of cancer,[4] depression,[5] neurodegenerative[6] and autoimmune diseases, osteoporosis,[7] and sarcopenia.[8]

Simultaneously, the modern exposome has resulted in degradation of the human microbiome—an ecosystem of trillions of microbial cells—which has resulted in disrupted critical metabolic and immune-regulatory pathways that further contributes to NCD.[9]

Table 2: Some functions of the human gut microbiome[10]

Function	**Effect of dysbiosis**
Short chain fatty acid (SCFA) production by digestion of dietary fibre	Multiple—may be one of the pathways by which the gut microbiome has systemic influences PYY and GLP1 production—for satiety Effects on mood, asthma control, metabolic syndrome
Synthesis of Vitamin K2 (menaquinone)	Affects blood clotting, cognitive decline, bone density
Regulation of fat storage and the metabolic/immune axis	Insulin resistance Obesity, metabolic syndrome
Modulation of the central nervous system (via SCFA)	Low mood
Control of intestinal angiogenesis and neoplasm development as well as response to checkpoint inhibitor treatment	Influences tumorigenesis and treatment outcomes adversely

Immune system development	Inflammatory bowel disease Atopy Increased risk of spondyloarthropathies
Protection against pathogens—integrity of the gut barrier	Gut infections, effect on immune system development

The visible end result is that NCD rates have increased dramatically for both older and younger individuals living in industrialised countries who follow a Western lifestyle but are relatively rare among individuals in non-Westernised populations whose diets, lifestyles, and ecological niches[11] more closely resemble those present during most of human evolution (e.g., hunter gatherer populations in rural Africa).[12] In addition, in a study of 210 healthy twins between eight and 82 years old, non-heritable factors were found to be the strongest contributors to differences in chronic inflammation across individuals.[13]

Even as the evidence for the influence of lifestyle factors in NCD is increasing and incorporated into virtually every clinical evidence-based guideline for chronic disease,[14] the medical fraternity globally is still ill-equipped to deal with this epidemic of NCD as most undergraduate and postgraduate medical training programmes traditionally focus on pharmacological and surgical treatments of disease rather than habit and behavioural change as therapeutic modalities. This realisation has given rise to the growing interest in the practice of Lifestyle Medicine (LM), a rigorous, evidence-based field defined by the clinical application of environmental, behavioural, and motivational principles to manage, reverse, and prevent lifestyle-related health problems.[15]

THE SIX PILLARS OF LIFESTYLE MEDICINE

LM revolves around six pillars of positive health: nutrition; physical activity; avoidance of risky substances, e.g., tobacco; restorative sleep; stress management; and social connections.[15] Modifications of risk factors for NCD alongside these six pillars are not only critical components for the prevention and adjuvant treatments of chronic diseases but could be an indirect form of reducing the health system costs as well.[16]

Nutrition

Nutrition is the key lifestyle factor influencing every chronic NCD. Short- and long-term dietary changes have been shown to affect the gut microbiome composition and function,[19] which in turn has an impact on human health. There are a multitude of studies showing positive benefits with improved cardiovascular risk profile and insulin sensitivity, and reduction in pro-inflammatory biomarkers with diets high in whole vegetables, fruit, whole grains, and predominantly plant protein sources with low/no intake of red meat, saturated fats, and refined sugars and salt, such as the Mediterranean diet[20,21] and the DASH (Dietary Approach to Stop Hypertension).[22] These positive effects may be due to effects on the microbiome with promotion of increased microbial diversity, increased production of SCFA, and higher level of antioxidants, which modulate intracellular inflammatory signalling and reduce oxidative stress.

The MIND diet (Mediterranean-DASH Intervention for Neurodegenerative Delay) combines elements of the Mediterranean Diet and DASH diet, with emphasis on berries and green leafy vegetables, which are rich in neuroprotective antioxidants (lutein, folate, phylloquinone); high adherence to this dietary pattern reduces the risk of Alzheimer's disease by up to 53 percent and even moderate adherence confers a 35 percent risk reduction.[23] Furthermore, in patients with non-dialysis dependent stages of chronic kidney disease, Whole Food, Plant-Dominant, Low-Protein dietary patterns (PLADO diet) have been shown to be promising in slowing deterioration of disease, by reduction in dietary acid and phosphate load, and reduction in uremic toxin production, without significant risks of hyperkalaemia.[24]

On the other hand, the modern Western diet is calorie-dense, enriched in animal protein, saturated fats, simple sugars, and ultra-processed foods, with inadequate amounts of fibre, fruits, and vegetables. The lower fibre content affects microbial diversity and lowers production of beneficial SCFA.

Specific compounds from red meat, such as choline and carnitine, can also be transformed by the gut microbiome into trimethylamine, which is then converted in the liver to trimethyl-amine-N-oxide (TMAO). High TMAO levels have been shown to be associated with atherosclerotic disease, heart failure, and cardiac arrhythmias.[23]

In addition, regular consumption of ultra-processed foods (industrial food formulations low in fibre, but high in refined starch, sugar, fats, and additives to increase palatability, appearance, and shelf life) negatively affect the balance of the gut microbiome. Emulsifiers like carboxymethylcellulose and polysorbate-80 decrease bacterial diversity, upregulate bacteria with pro-inflammatory potential, alter microbial gene regulation, decrease mucus thickness, and increase gut permeability by having a negative effect on tight junction proteins, which can trigger inflammatory pathways and lead to colitis. Artificial sweeteners can decrease bacterial diversity, reduce SCFA, and increase gut permeability, which can then go on to trigger inflammation. Food colours are metabolised by the gut microbiota, leading to metabolites such as 1-amino-2-naphthol-6-sulfonic acid sodium salt (ANSA-Na), which can trigger IL-23R-dependent inflammation. Nanoparticles (such as titanium dioxide) influence bacterial diversity with reduction in beneficial species and have been shown to trigger the NLRP3 inflammasome, activating pro inflammatory cytokines, and producing reactive

oxygen species, thus causing tissue damage and driving inflammation.[25]

Physical Activity

Skeletal muscle produces and releases cytokines and myokines into the bloodstream during muscle contraction and these small molecules can have the effect of systemically reducing inflammation. For example, muscle-derived IL-6 released during exercise acts as an anti-inflammatory signal, stimulating the production of IL-10 and IL-1 receptor antagonist (IL-1ra), and inhibits TNF-alpha production. Myokines like IL-15 and irisin promote the "browning" of white adipose tissue, increasing thermogenesis and fatty acid oxidation. Exercise also stimulates nitric oxide production, which vasodilates, inhibits platelet aggregation, and prevents leukocyte adhesion to the vessel wall, directly countering the atherosclerotic process.

Within muscle cells, exercise activates PGC1-alpha, which regulates mitochondrial biogenesis and increases the density and efficiency of mitochondria, reducing oxidative stress and improving the cell's ability to oxidise fats and glucose. With ageing or sedentary behaviour, loss of muscle mass (sarcopenia) creates a vicious cycle with reduced myokines and lower mitochondrial capacity, exacerbating inflammation as dysfunctional mitochondria generate excess reactive oxygen species that causes cell damage and senescence ("Inflamm-aging").[26]

There is a strong association between low physical activity and increased risk for age-related diseases and mortality. A meta-analysis in 2016 of studies with over 1.6 million participants the world over found that going from physically inactive to achieving the recommended 150 minutes of moderate-intensity aerobic activity per week was associated with lower risk of CVD mortality by 23 percent, CVD incidence by 17 percent, and type 2 diabetes incidence by 26 percent during an average follow-up period of 12.8 years.[26] Regular physical activity is also associated with a reduced risk of cancers and Alzheimer's disease, and improved mood.

For patients who are unable to hit the recommended WHO guidelines for physical activity,[28] incidental vigorous physical activity during their daily routine, e.g., housework, is able to attenuate cardiovascular and cancer risk.[29]

For sarcopenia, resistance training is the primary intervention to halt and reverse the decline in muscle mass and function, preserving the "sink" for glucose disposal and the source of anti-inflammatory signalling.[26]

Sleep, Stress, and Other Socio-Environmental Factors

In addition to changes in diet and physical activity, life in our contemporary era may have shift work hours, high demands of work with low control, erosion of traditional family and social units, and use of devices and environments with artificial blue light. All of these may add to chronic mental stress and may disrupt sleep and circadian rhythms. Chronic stress and disruption in sleep causes chronic cortisol elevation and reduces its sensitivity in being able to downregulate inflammatory activity, promoting SCI and insulin resistance, in turn increasing risk of metabolic syndrome, cardiovascular disease, cancers, and all-cause mortality.[12] Sleep deprivation and stress can also heighten pain sensitivity in osteoarthritis and rheumatoid arthritis, in addition to its effects in increasing disease activity.[30]

A variety of approaches to ameliorate stress have been studied and found effective. These include the relaxation response and other mind-body therapies, e.g., body-scan mindfulness techniques. One other aspect of modern psychological therapy that has gained increased prominence in the past decade is positive psychology involving modalities and concepts such as gratitude and forgiveness, which may help reduce stress.[14]

IMPLEMENTATION OF LIFESTYLE AND BEHAVIOUR CHANGE

Table 3 below briefly summarises some key lifestyle interventions and the underlying mechanism by which they may effect the desired clinical outcome.

Table 3: Summary of Key Lifestyle Interventions and Mechanistic Targets

Domain	Intervention	Primary Mechanistic Target	Clinical Outcome
Nutrition	Mediterranean/Green-Med Diet	Oxidative stress, TMAO SCFA	CVD risk, Liver fat
	High Fibre/Plant-Based	Microbiome diversity Endotoxemia	T2D risk, Satiety
	PLADO Diet (CKD)	Acid load, Glomerular hyperfiltration	CKD progression

Exercise	Aerobic Training	Nitric oxide production Visceral fat	Blood pressure Fitness
	Resistance Training	Muscle mass Insulin sensitivity	Sarcopenia Metabolic rate
Stress	Mindfulness/CBT	HPA axis activation Vagal tone	Inflammation Mental health

Physicians are constantly challenged by time and resource constraints, hence implementation of the above lifestyle/behavioural intervention may seem daunting in a busy clinic. However, there are structured frameworks that can be considered to increase the feasibility of incorporating the above interventions/effecting behavioural change. Three suggested strategies are listed in the table below:

Framework	Aim	Features
The "5 As" Framework for Behaviour Change[31]	Evidence-based model that provides a structure for brief counselling	**Assess:** Evaluate current behaviours and readiness to change (e.g., "On a scale of 1–10, how ready are you to change your diet?") **Advise:** Provide clear, specific, and personalised medical advice. Connect the behaviour to their specific pathology (e.g., "Increasing your fibre intake can act like a dialysis filter for your kidneys, reducing toxins") **Agree:** Collaboratively set goals. Use the SMART framework (Specific, Measurable, Achievable, Relevant, Time-bound) **Assist:** Identify barriers and provide resources (e.g., referrals to dietitians, prescription for apps, community resources) **Arrange:** Schedule follow-up. Accountability is a "drug" that improves adherence
Motivational Interviewing[32]	Moving from a directive stance towards a collaborative coaching stance	**OARS** technique Open-ended questions ("What concerns you most about your health?") Affirmations ("You've done a great job tracking your blood pressure") Reflections ("It sounds like you're frustrated by the conflicting diet advice") Summaries Goal setting and strengthening commitment to change
The Lifestyle Prescription[33]	A written prescription carries symbolic weight and clarifies instructions	The prescription should be as specific as a drug order: **Rx:** "Moderate-intensity walking" **Dose:** "30 minutes" **Frequency:** "5 days per week, after dinner" **Dispense:** "Indefinite refills" **Signature:** Physician's signature

CONCLUSION

Moving from Illness Care to Health Care

The burden of chronic disease facing modern healthcare systems is largely a product of the mismatch between our evolutionary biology and our modern environment. Systemic chronic inflammation and microbiome dysbiosis are the biological mediators of this mismatch. The evidence reviewed here demonstrates that lifestyle interventions are not merely adjunctive "common sense" advice but are powerful, mechanistically sound therapies that target the root causes of pathology.

For family physicians, the integration of lifestyle interventions offers a path to reduce the burden of NCDs. By understanding the intricate biology of how food, movement, and stress affect the body at a cellular level—from the regulation of macrophage polarisation to the fermentation of fibre in the colon—clinicians can move

beyond symptom management to disease modification and reversal.

The transition requires a shift in practice: from a focus on just pills to a focus on prescriptions for lifestyle change; from the role of the authoritative expert to that of the collaborative coach. As the gatekeepers of health, family physicians have both the opportunity and the responsibility to lead this paradigm shift. By wielding the tools of nutrition, movement, and behavioural science with the same precision as pharmacotherapy, primary care can alter the trajectory of chronic disease, improving not only the lifespan but the health span of the global population.

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LEARNING POINTS

- **The "evolutionary mismatch" of modern lifestyle habits and evolutionary physiology of the human body results in a state of systemic chronic inflammation, which is in turn the cause of the rise in multiple non-communicable diseases such as diabetes, cardiovascular diseases, cancer, and arthritis.**
- **Lifestyle Medicine Interventions are not merely general advice but therapies with evidence basis that aim to treat, reverse, and reduce the risk of development of systemic chronic inflammation-related conditions.**
- **Clinical Care Must Shift from "Just Pills" to include "Behavioural Prescriptions" as the factors that drive chronic inflammation have behavioural origins, e.g., sedentary behaviour, ultra processed food consumption.**

Unit No. 3

LIFESTYLE MEDICINE: PRACTICAL STEPS FOR THE BUSY GP

Dr Shariffa Syahidah Chishty, Dr Leonard Leng

ABSTRACT

Lifestyle Medicine is a clinical approach that uses evidence-based, therapeutic interventions to prevent, manage, and often reverse chronic diseases. Unlike conventional medicine, which often focuses on pharmacological treatments for symptoms, lifestyle medicine targets the root causes of illness through six core pillars: optimising whole-food, plant-predominant nutrition; regular physical activity; restorative sleep; stress management; positive social connections; and the avoidance of risky substances. Utilising a whole-person approach, lifestyle medicine can and should be applied along with pharmacotherapy where needed.

Keywords: lifestyle medicine, practical strategies, healthcare, nutrition, physical activity, stress management, social connections, substance use

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INTRODUCTION

Relevance in Singapore's Healthcare Landscape

In Singapore, lifestyle medicine has transitioned from a "good-to-have" option to a strategic necessity. As the nation grapples with a rapidly ageing population and a rising prevalence of the "Three Highs" (high blood pressure, high cholesterol, and high blood sugar), the healthcare system is undergoing a massive shift through the Healthier SG (HSG) initiative.

This movement marks a departure from reactive "sick care" towards proactive, preventive "health care". Lifestyle medicine is the engine behind this transition, empowering primary care physicians to confidently prescribe lifestyle changes as a first-line treatment. By focusing on these interventions, Singapore aims to improve the "health span" of its citizens, ensuring they remain functional and vibrant well into their later years.

As General Practitioners, we deal with a wide range of diseases in a time-compressed environment. Employing brief assessment and prescription tools in a busy clinic setting can be a useful starting point to implement lifestyle medicine in clinical care to manage, treat, and reverse multiple chronic diseases. Even physicians themselves can undertake these simple strategies to improve their health and burnout risk. Physicians who maintain healthy personal lifestyles are also more likely to discuss and recommend lifestyle modifications to their patients.[1–3]

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Case 1

A 32-year-old male, Mr Lee, presented with newly diagnosed obesity (BMI 33.4 kg/m^2) complicated by multiple comorbidities. Initial laboratory investigations revealed poorly controlled type 2 diabetes mellitus (HbA1c 11.6%), hyperlipidaemia, and evidence of end-organ involvement, including non-alcoholic fatty liver disease (ALT 42 U/L) and early diabetic nephropathy manifesting as microalbuminuria (urinary albumin-to-creatinine ratio 11.7 mg/mmol).

Case 2

Mdm VP, a 54-year-old artist, presented with major depressive symptoms that resulted in her defaulting on her chronic medicines and medical appointments and socially isolating herself. Using the pillars of lifestyle medicine, she was advised to reduce her intake of processed foods, add more wholesome, high-fibre vegetables and wholegrains, encouraged physical activity in her estate's fitness corner, adopt sleep hygiene habits with the aid of melatonin as needed, lean on her family and friends as a motivational pillar of support, and restart her handicraft artwork, which provided a much-needed therapeutic catharsis for her emotional and psychological well-being. She was also referred back to her psychiatrist in view of her PHQ-9 score of 21.

Within a month, her PHQ-9 score had improved tremendously to 3, and she reported feeling "transformed". She felt happier in her mood, lighter in her steps, and more positive all around with the motivational support she received from her family and friends. She took up crocheting, which allowed her to restart her online art business and earn some income. While her sleep latency has improved, sleep maintenance remains an issue, for which she will seek further assistance from her psychiatrist.

QUICK ASSESSMENT TOOLS FOR THE BUSY GP

While comprehensive lifestyle questionnaires and assessments are available (e.g., the Lifestyle Assessment Long Form and the American Academy of Family Physicians Lifestyle Medicine Assessment Tool), their utilisation may not always be practical within the constraints of a time-limited, local healthcare setting.

The following provides examples of brief assessments that a General Practitioner (GP) can utilise for a rapid survey of a patient's lifestyle habits[4]:

Nutrition	**24-hour Diet Recall:** Can you share with me what you ate in the last 24 hours? **Food Diary** (Photographs/Smartphone Applications) **Lifestyle Assessment Short Form dietary questions** • Over the past two weeks, how often have you eaten fast food, sugary drinks, or packaged foods? • On an average day, how many servings of whole fruits and vegetables do you eat?
Physical Activity	**Physical Activity Vital Signs (PAVS):** • On average, how many days per week do you engage in moderate to strenuous exercise? • On average, how many minutes per day do you exercise at this level? **Strength Training:** How many days a week do you perform muscle strengthening exercise? **Sedentary Time:** On a typical day, how much time do you spend sitting (or reclining), including time spent sitting at a desk, with friends, traveling in a car or bus, reading, watching television, or using a computer?
Sleep	**Single-Item Sleep Quality Scale** • During the past seven days, how would you rate your sleep quality overall? **Pittsburgh Sleep Quality Index** **Epworth Sleepiness Scale**
Stress	**Perceived Stress Scale (PSS-10)** **Patient Health Questionnaire 2 (PHQ-2):** Over the last two weeks, how often have you been bothered by the following problems? • Little interest or pleasure in doing things • Feeling down, depressed, or hopeless **Generalised Anxiety Disorder 2 (GAD-2):** Over the last two weeks, how often have you been bothered by • feeling nervous, anxious, or on edge? • not being able to stop or control worrying? **Satisfaction with Life Scale**
Social Connections	**Loma Linda Social Relationship Questionnaire** **Brief Measure of Social Support**
Risky Substances	Smoking: **Fagerstrom Test for Nicotine Dependence** Alcohol: **Alcohol Use Disorders Identification Test-Concise (AUDIT-C)** • How often do you have a drink containing alcohol? • How many drinks containing alcohol do you have on a typical day when you are drinking? • How often do you have ≥6 drinks (in men) OR ≥4 drinks (in women) on one occasion?

Case 1: Part 2

The initial evaluation of Mr Lee's lifestyle identified several suboptimal habits. Key nutritional concerns included stress-related snacking, high consumption of processed carbohydrates, and insufficient dietary fibre. His physical activity was characterised by a sedentary occupation and a lack of regular exercise. Poor sleep hygiene, marked by irregular patterns and chronic sleep restriction (4–5 hours nightly), was also noted. Moreover, occupational stress from the irregular hours typical of the creative industry was found to exacerbate these suboptimal lifestyle choices.

BEHAVIOURAL CHANGE

Before prescribing lifestyle changes, it is essential to first evaluate the patient's readiness for change. Utilising tools like the Transtheoretical Model's stages of change helps ensure that interventions are appropriately tailored to the patient's current stage.

Furthermore, a therapeutic alliance must be established through the application of principles from behavioural coaching, cognitive behavioural therapy, motivational interviewing, and positive psychology. These approaches facilitate collaboration with the patient in formulating their health goals.

Case 1: Part 3

Upon receiving the diagnosis of multiple chronic diseases, Mr Lee acknowledged the significant impact of his lifestyle habits on his weight and overall health. When asked about his readiness to make changes, he expressed an eagerness to begin taking action immediately. He was prescribed both a lifestyle plan and started on appropriate medications.

- Physical Activity: swimming or brisk walking for 20 minutes, three times a week
- Nutrition: swapping out some processed carbohydrates for fibre each meal
- Sleep Hygiene: prioritising a regular sleep routine

He was motivated to continue improving on his lifestyle habits when he saw dramatic improvements in his chronic disease management in the subsequent months. His lifestyle action plan was adjusted during his regular reviews.

LIFESTYLE PRESCRIPTION

A lifestyle prescription is a clear, concise instruction for care or treatment, outlining the specific action or behaviour change required to fully treat or prevent a disease. In contrast, an action plan takes this lifestyle prescription and adapts and personalises it. This modification considers the individual patient's readiness, confidence, and ability to achieve the goal.

A successful strategy for developing an action plan is to employ the SMART goal:

- Specific: Clearly define the exact behaviour that needs to be addressed.
- Measurable: Establish criteria so that progress and achievement of the goal can be tracked.
- Achievable: Ensure the goal can be completed within the proposed timeframe using the resources currently available to the patient.
- Relevant: Confirm the goal aligns with the desired behaviour change and the patient's overall vision for their health.
- Time: Include a definite timeframe for the goal's completion or achievement.

Lifestyle Prescription	Action Plan
150 minutes of moderate physical activity a week	Begin with a 5-minute walk daily, five days a week. Gradually increase this duration as you are able to, working towards the recommended total of 150 minutes per week.

1. Optimising Whole-Food, Plant-Predominant Nutrition

The focus is on adopting a plant-predominant dietary pattern, emphasising whole, unprocessed foods:

- **Positive Prescription (Increase):** Prioritise whole plant foods, including fruits, vegetables, whole grains, legumes (such as beans, soy, and edamame), nuts, and seeds.
- **Negative Prescription (Decrease/Avoid):** Minimise or eliminate animal products, highly processed foods that are energy-dense and nutrient-poor, and fried items.

While every chronic disease guidelines usually contain specific dietary sections, the principles outlined above are common to most dietary guidelines[5] and can help manage multiple conditions concurrently, including obesity, diabetes, and hyperlipidaemia.

Encouraging this dietary shift is often more successful when framed around increasing desirable foods and suggesting practical replacements, rather than focusing solely on complete avoidance or forcing a patient to become a full "vegetarian".

A critical point to communicate is that choosing vegetarian options from local "vegetarian" food stores does not automatically equate to following a whole food, plant-predominant diet. Many of these dishes, such as fried noodles and mock meats, are highly processed, containing simple carbohydrates, unhealthy oils, and are often deep-fried.

Patients can be guided to adopt healthier eating habits through the following strategies:

- **Establish a Consistent Meal Schedule:** Maintain regular mealtimes to prevent excessive hunger, which can lead to overeating as a compensatory action.
- **Enhance Eating Cue Awareness:** Develop a greater understanding of internal signals, including distinguishing between true hunger and false hunger, recognising satiety, and identifying the influence of stress or environmental factors on eating.
- **Practice Mindful Eating:** Encourage slowing down during meals and chewing food thoroughly.
- **Promote Family Involvement:** Since food often serves a communal role in Asia, incorporate family members into the process of creating sustainable dietary changes and meal planning, rather than making the transition in isolation.

Example Prescription: Add 1 cup of blueberries to breakfast and an apple after lunch for at least 5 days this week.

2. Encouraging Physical Activity

Globally, physical inactivity is responsible for more than 7 percent of all-cause mortality and cardiovascular-related deaths. Its impact on non-communicable diseases is equally significant, with attributable risks ranging from 1.6 percent for hypertension to 8.1 percent for dementia.[6]

While inactivity refers to a failure to meet moderate-to-vigorous activity thresholds (≥3 metabolic equivalents), it is clinically distinct from sedentary behaviour, which is defined by low energy expenditure (≤1.5 metabolic equivalents), specifically activities such as sitting or lying down.[7] Notably, prolonged sitting is an independent risk factor for all-cause mortality and cardiovascular disease. Because these metabolic pathways are distinct, simply meeting physical activity guidelines is often insufficient to offset the physiological harms of a sedentary lifestyle.[7,8]

It is possible for a patient to be "physically active" (by exercising 30 minutes a day) yet still be "highly sedentary" (by sitting for the remaining 15 hours). To optimise health outcomes, clinicians should encourage patients to adopt a dual-target approach:

- Physically active = 150 minutes/week of moderate-to-vigorous physical activity
- Strength training at least twice a week focusing on major muscle groups
- Reduce sedentary time = sitting for no longer than 60 minutes without a 5-minute "movement break" (active travel, taking the staircase instead of the lift, using a standing desk, walking to buy groceries instead of using grocery delivery services)
- Incorporating Non-Exercise Activity Thermogenesis (NEAT) into their daily routine

Non-Exercise Activity Thermogenesis (NEAT) encompasses the energy expended through all daily movements that are not formal exercise, such as walking, chores, and maintaining posture.[8] While essential to reduce the risk of non-communicable diseases and countering the harms of sedentary behaviour, NEAT is often undermined by "behavioural compensation"—a phenomenon where individuals unintentionally move less during their free time after starting a new exercise or diet regimen. To effectively improve metabolic health and prevent disease, it is vital to encourage consistent incidental movement throughout the day, ensuring that formal exercise sessions are not offset by a compensatory drop in daily activity levels.[9]

Clinicians can communicate to patients their expectations for physical activity in a specific and meaningful way using the FITT exercise prescription format[10]:

Frequency	How often to exercise throughout the week
Intensity	How hard an individual is working during the session
Time	Duration of each training session
Type	Types of training mode

Example Prescription:

Component	Prescription Detail
Frequency	**2–3 days per week.** Allow at least 48 hours of recovery between sessions for the same muscle groups.
Intensity	**Moderate to High.** Aim for a weight/resistance where the last 1–2 repetitions of a set are challenging but maintain proper form (RPE 7–8).
Time	**20–40 minutes per session.** Consisting of 1–3 sets of 8–12 repetitions for each major muscle group (legs, back, chest, shoulders, and core).
Type	**Resistance Training,** for example, bodyweight exercises (squats, push-ups), resistance bands, free weights, or weight machines.

For more information, clinicians may refer to Singapore Physical Activity Guidelines,[11] or sign up for the "Exercise Is Medicine" course.

3. Stress Management

While lifestyle medicine serves as a foundational component in the long-term management of depression and anxiety, its implementation should be deferred until the patient is medically stable and no longer presents an acute risk of harm to themselves or others. Even while patients deal with a mental health illness, the overarching goal remains fostering positive experiences and enhancing well-being as the patient moves toward stability.

There are 3 types of stress[10]:

Features	Eustress	Neustress	Distress
Perception	A challenge to overcome	An objective event	A threat to well-being
Feelings	Excitement, focus, energy	Neutral, indifferent	Anxiety, dread, fatigue, overwhelming
Duration	Usually short-term	Short-term	Can be acute or chronic
Outcome	Growth & achievement	Minimal impact	Burnout & health issues
Examples	Receiving a promotion at work, planning a vacation	Hearing about a change in workplace policy that does not affect your workplace	Going through a difficult divorce, dealing with a toxic workplace

The Perceived Stress Scale (PSS) is a validated instrument used to assess global psychological stress.[12] It measures three key components: unpredictability, lack of control, and cognitive overload. The scale is designed for general populations (high school education or higher) and focuses on general feelings of stress rather than specific life events. Scoring is straightforward: a higher total score indicates a greater perception of stress.

Perceived Stress Scale (PSS-10)

Instructions:

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way.

In the last month, how often have you...

		Never	Almost Never	Sometimes	Fairly Often	Very Often
1	been upset because of something that happened unexpectedly?	0	1	2	3	4
2	felt that you were unable to control the important things in your life?	0	1	2	3	4
3	felt nervous and "stressed"?	0	1	2	3	4
4	felt confident about your ability to handle your personal problems?	4	3	2	1	0
5	felt that things were going your way?	4	3	2	1	0
6	found that you could not cope with all the things that you had to do?	0	1	2	3	4
7	been able to control irritations in your life?	4	3	2	1	0
8	felt that you were on top of things?	4	3	2	1	0
9	been angered because of things that were outside of your control?	0	1	2	3	4
10	felt difficulties were piling up so high that you could not overcome them?	0	1	2	3	4

Non-pharmacologic stress management plans include:

- Breathing tools: abdominal breathing, box breathing, 4-7-8 breathing
- Movement—Yoga, Qigong, Taichi
- Meditation
- Mindfulness practices/Mindfulness-Based Stress Reduction (MBSR), including referral to HSG healthcare services and COMIT referrals for community mental health services
- Self-expression via musical instruments, art, dance
- Community—volunteering for meaningful causes, engaging in spiritual or religious activities, and spending quality time with family and friends

Example Prescription: For Case 2, Mdm VP was taught box breathing techniques, physical movements in her estate's fitness corner, restarting her artwork, and spending quality time with her family and friends. Her successes were also celebrated.

4. Positive Social Connections

Social connections and relationships affect our physical, mental, and emotional health. Research shows that the single most important predictor of human happiness and long life is having strong social connections.[13] In Lifestyle Medicine, micro-connections are the brief, fleeting, yet positive interactions we have with others throughout the day. Unlike "strong ties" (family and close friends), these are "weak ties"—exchanges with the barista, a neighbour in the lift, or a hawker stall "uncle". While they seem insignificant, research shows they are a potent form of social "vitamin" that reduces cortisol, boosts oxytocin, and creates a sense of belonging that is just as vital to longevity as deep relationships.

Example Prescription: Doctors can encourage patients to practise "micro-bravery"—small, low-risk social goals. Instead of telling a lonely senior to "join a club" (which can be overwhelming), a GP can prescribe a goal to "greet the vegetable seller at the wet market" or "say thank you to the bus captain" three times a week.

Other strategies include:
- Taking more care to quickly connect with people you see often during the week
- When possible, stay positive while connecting with others
- Share new experiences
- Make and spend time with others
- Be there for those who need you
- Be flexible, supportive, and excited about what others are doing in their lives

Restorative Sleep

The American College of Lifestyle Medicine (ACLM) advocates for shifting the clinical conversation surrounding sleep from a narrow "insomnia-centric" approach to a more holistic "circadian-centric" framework.[10] While traditional advice on sleep hygiene focuses on habits like avoiding caffeine, these are often insufficient because they ignore the biological drivers of sleep.

Sleep is emphasised as the "caboose" of the circadian train. To improve rest, clinicians should focus on the 24-hour cycle, particularly the role of consistent morning light exposure and regular meal and sleep timing to anchor the body's internal clock. A misalignment in the circadian rhythm can lead to metabolic dysfunction, increased inflammatory markers, cardiovascular disease, disrupted mood and cognition, and cancer.[10]

Physical activity, or daytime movement, is a powerful "zeitgeber" (time-giver) that helps signal to the brain when it is time to be alert and when it is time to wind down. Additionally, psychological reframing focuses on the quality of the wakeful day, rather than obsessing over "getting eight hours".[10] This naturally helps to lead to better sleep quality and reduced sleep-related anxiety.

Some lifestyle-based interventions for sleep include[10]:
- Sleep patterns
  - Establish regular sleep schedule (same sleep and wake times). Be consistent.
  - Bed is for sleep and sex only.
  - "Find your Goldilocks". Most adults require 7–9 hours of sleep; not too little and not too much.
  - If you can't fall asleep within 15–20 minutes, get out of bed and do a low-key, non-electronic activity. When sleepy, return to bed. Repeat until you fall asleep.
- Sleep environments
  - Power down—follow a bedtime routine of 4–5 activities that ends with a low-key activity to prep for bed
  - Bright lights first thing in the morning to help with awakening, and dim lights in the evening
  - White noise from apps/non-ceiling fans
  - Melatonin to stabilise the sleep-wake cycle
- Daytime behaviours
  - Sleep-promoting foods include those rich in calcium (melatonin), magnesium (restless legs), and potassium (deep sleep).
  - Avoid caffeine, alcohol, sugar, and high-fat and high-sodium foods
  - Increase daytime exposure to sunlight
  - Move at least every hour during the day
  - Stay hydrated during daylight hours
  - Plan a fun activity first thing in the morning to help you get out of bed and stay awake

Example Prescription: In Case 2, Mdm VP was advised on the above interventions, and prescribed melatonin alongside them, to induce sleep latency.

5. Avoiding/Reducing Substance Use

This can come in the form of tobacco smoking, alcohol consumption, recreational drug use, or addictive behaviours such as gambling or excessive screen time. It is well known that tobacco use and drinking too much alcohol increases the risk of many chronic diseases and death.

Treatments often take time, different approaches and many attempts. A Cochrane review of 52 studies demonstrates that a combination of pharmacotherapy and behavioural support significantly improves smoking cessation rates compared to minimal intervention or standard care.[14] The USPSTF therefore recommends that all clinicians ask about tobacco and/or alcohol use for all patients, and prescribe suitable behavioural interventions for cessation, using the screening tools listed above.[10]

For more information on smoking cessation counselling, one can refer to: KC Ong. Smoking Cessation – A Practical Paradigm for Doctors. Singapore Family Physician. 2022 Mar;48(4):19-24.

For more information on alcohol counselling, one can refer to: Lau SSM, Koh SWC, Lui YS. Managing unhealthy alcohol use in general practice. Singapore Med J. 2021 Feb;62(2):69-74. doi: 10.11622/smedj.2021016. PMID: 33655317; PMCID: PMC8027140.

Example Prescription: Identify a habit loop—Map out the trigger, behaviour, and reward (or result if the behaviour is not rewarding anymore) sequence so that you can see the cause-and-effect relationship that reinforces the behaviour.

The "Social Break" Loop (Smoking)

- Trigger (The Cue): Feeling overwhelmed by a specific task at work or finishing a meal.
- Behaviour (The Routine): Stepping outside to smoke a cigarette.
- Reward: A rapid nicotine-induced "calm" combined with the relief of a physical break from the work environment and social connection if others are present.

To change a habit, you must keep the Trigger and the Reward but change the Behaviour.

- If the reward is a "social break", replace the cigarette with a 5-minute walk or a tea break with the same colleagues to achieve the same social reward without the health risk.

Case 1: Part 4

During subsequent reviews, Mr Lee's lifestyle action plan was continuously refined. His commitment to healthier living was reinforced, leading to a total weight loss of 17 kg. This remarkable progress resulted in the reversal of hypertension, fatty liver, and microalbuminuria. His diabetes control significantly improved, with his HbA1c dropping to 5.3 percent, allowing for a gradual reduction in his medications. Ongoing support will be provided during regular reviews to help him stay connected with his health goals and to offer continued encouragement for the progress he has achieved.

CONCLUSION

Lifestyle medicine represents a foundational, evidence-based shift in clinical practice, moving beyond symptom management to target the root causes of chronic disease through its six core pillars. In the context of Singapore's ageing population and the **Healthier SG** initiative, this approach is a strategic necessity for transitioning from reactive "sick care" to proactive "health care".

By utilising brief assessment tools and the **SMART framework**, busy General Practitioners can efficiently translate clinical "lifestyle prescriptions" into personalised "action plans" while respecting a patient's readiness for change. As evidenced by the cases of Mr Lee and Mdm VP, these interventions can lead to the significant improvement or even reversal of conditions like Type 2 diabetes, hypertension, and depression. Ultimately, when physicians model these healthy behaviours and foster strong therapeutic alliances, they not only improve their patients' functional health spans but also enhance their own professional well-being.

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LEARNING POINTS

- **Lifestyle Medicine is foundational for chronic disease management and aligns with proactive healthcare initiatives like Healthier SG. It offers an evidence-based, whole-person approach targeting root causes through six pillars (nutrition, physical activity, sleep, stress management, social connections, substance avoidance), to prevent, manage, and often reverse conditions like Type 2 Diabetes, hyperlipidaemia, and fatty liver disease.**
- **Effective implementation in a busy primary care setting requires the use of brief assessment tools and a structured approach to behavioural change. General Practitioners (GPs) can utilise rapid surveys like the Physical Activity Vital Signs (PAVS) or PHQ-2, establish a therapeutic alliance using motivational interviewing, and formulate patient-specific goals using the SMART framework to transition from a generic "lifestyle prescription" to a personalised "action plan".**
- **Utilise community resources, including Healthier SG healthcare and social support services and maintain a list of local lifestyle medicine resources to assist patients such as SGLM's Walk with a Doc (WWAD) monthly programme, as well as tap on inter-disciplinary teams provided by Primary Care Networks (PCN) and their community resources, such as COMIT.**

Unit No. 4

PHYSICIAN BURNOUT AND WELLBEING: A LIFESTYLE MEDICINE APPROACH FOR SUSTAINABLE PRACTICE

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ABSTRACT

Physician burnout is a prevalent occupational syndrome in Singapore and has important implications for patient safety, quality of care, and workforce sustainability in primary care. Local studies demonstrate high levels of burnout and psychological distress among doctors, reflecting pressures from high patient volumes, administrative workload, and increasing clinical complexity. While system-level interventions remain essential, individual-level strategies are a necessary component of burnout prevention and mitigation. Lifestyle Medicine offers a pragmatic, evidence-based framework for physician wellbeing, addressing modifiable behaviours related to sleep, physical activity, nutrition, stress regulation, social connection, and avoidance of harmful coping strategies. In addition, loss of meaning and professional identity is a key contributor to burnout. Reflective practices such as Balint Groups may mitigate burnout by reducing professional isolation and helping physicians reconnect with their values and professional identity. Applying Lifestyle Medicine principles to physician self-care supports sustainable practice in Singapore's primary care setting.

Keywords: Physician Burnout, Wellbeing, Lifestyle Medicine, Stress Management, Primary Care, Spirituality, Professional Identity, Balint Groups

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INTRODUCTION

Physician stress and burnout are increasingly recognised as important issues affecting patient safety, quality of care, workforce retention, and the sustainability of healthcare systems.[1] Burnout is characterised by emotional and physical exhaustion, cynicism and depersonalisation, and a reduced sense of personal accomplishment. It is an occupational syndrome that results from chronic workplace stress that has not been successfully managed.[2] Burnout manifests as emotional blunting, irritability, reduced cognitive flexibility, impaired judgement, and loss of professional satisfaction.

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In Singapore, studies have demonstrated a high prevalence of burnout and psychological distress among doctors.[3] This reflects the cumulative pressures of balancing high patient volumes, administrative demands, and increasing clinical complexity. These challenges are particularly salient in primary care, where time pressures and continuity of care add further strain.

The consequences of burnout extend beyond physician wellbeing. Physician burnout has well-established associations with medical errors, reduced empathy, poorer patient satisfaction, and premature departure from clinical practice.[4,5] While organisational and policy-level interventions—such as reducing work hours, administrative burden, and patient loads—are essential, individual physicians also play an important role in maintaining their personal wellbeing as part of a comprehensive approach to burnout prevention.

Lifestyle Medicine, defined as the therapeutic use of evidence-based lifestyle interventions to prevent and treat disease, offers a clinically grounded framework that can be applied to physician wellbeing.[6] This paper argues that the same principles used to manage chronic disease in patients provide a pragmatic and evidence-based approach, grounded in Lifestyle Medicine, to preventing and mitigating physician burnout.

LIFESTYLE MEDICINE AS A FRAMEWORK FOR PHYSICIAN WELLBEING

Lifestyle Medicine is commonly described across six pillars: nutrition; physical activity; sleep; stress management; social connection; and avoidance of harmful behaviours.[7] Empirical evidence indicates that core health behaviours—including adequate sleep, regular physical activity, social connection, and avoidance of risky substances—correlate with lower levels of burnout and improved physician wellbeing.[6]

This framework shifts the focus away from individual notions of poor resilience or maladaptive personality traits towards modifiable behaviours and skills grounded in physiology, behavioural science, and psychosocial evidence.

Sleep

Sleep is frequently compromised in medical practice due to long clinic hours, after-hours documentation, administrative work, and prolonged screen exposure. Chronic sleep deprivation is associated with impaired emotional regulation, reduced attention span, poorer executive function, and diminished empathy, all of which may adversely affect the quality of clinical care.[8,9]

Physicians should therefore prioritise sleep as part of self-care and professional responsibility. Practical measures may include setting limits on clinic hours, establishing boundaries around after-hours work, and minimising screen exposure before bedtime.

Physical Activity

Amongst physicians, physical activity is often relegated to a lower priority after work and family commitments. However, from a stress-management perspective, physical activity plays an important role in modulating stress and improving mental wellbeing.

Evidence suggests that even modest levels of physical activity are associated with reduced anxiety and depressive symptoms, as well as improved cognitive function.[10,11] Short bouts of activity—such as walking, stretching, or brief workouts—might be more realistic for busy clinicians and can be incorporated into the workday.

Nutrition

Supporting mental health with good nutrition can be challenging, especially for physicians working in a fast-paced environment. Irregular meals and reliance on caffeine are common among physicians with long clinic hours. Such patterns may contribute to fatigue, irritability, and impaired concentration. Diets high in refined sugars and ultra-processed foods have also been associated with higher perceived stress and depressive symptoms.[12]

Practical nutritional strategies include regular meals, adequate hydration, and prioritising protein intake to stabilise energy levels. Recommendations should remain pragmatic and acknowledge the constraints of primary care practice rather than promote idealised dietary goals that are difficult to sustain.

Stress Management

Medical training often emphasises endurance and emotional containment. While adaptive in acute clinical situations, these strategies may become maladaptive when stress is chronic. Physicians may cope by working longer hours or suppressing emotional responses, inadvertently increasing vulnerability to burnout.

Stress management in this context should focus on building emotional regulation skills. Brief mindfulness-based practices, breathing exercises, and intentional pauses between consultations have been shown to reduce stress and burnout among physicians and are feasible within busy clinical settings.[13] Positive psychological practices such as gratitude exercises and growth-oriented reframing of clinical setbacks can also support emotional resilience and mitigate burnout.[6]

Avoidance of Harmful Coping Strategies

In the absence of effective coping strategies, physicians might turn to alcohol, emotional eating, or excessive digital use to manage stress.[14]

A non-judgemental approach that normalises distress and destigmatises help-seeking from mental health professionals is important. Professional cultures that support openness, reflection, and early intervention facilitate timely support and reduce escalation of difficulties.[15]

Social Connection, Meaning, and Reflective Practice

Wellbeing is not simply the absence of distress; it includes fulfilment derived from purposeful work. Although workload and fatigue are commonly cited contributors to burnout, loss of meaning is often a key underlying factor. Research suggests that physicians who spend less time engaged in work that they find meaningful or aligned with their personal values or professional identity are at higher risk of burnout.[16]

Spirituality—broadly defined as meaning, purpose, values, and connection beyond the self—is increasingly recognised as a protective factor against burnout.[17] This need not be religious and can be operationalised through reflective practice and authentic professional community.

In Singapore, general practitioners may be particularly vulnerable to professional isolation, especially in solo or small-group practices. High patient volumes and time pressures can result in consultations becoming increasingly transactional, with limited opportunities for reflection on the emotional aspects of care.

Social connection within the Lifestyle Medicine framework includes opportunities for reflective and meaning-centred engagement. Balint Groups, for instance, provide a structured forum for clinicians to reflect on the doctor-patient relationship and their emotional responses to clinical encounters.[18] Such interventions offer a safe space for processing moral distress and ethical ambiguity, and may mitigate burnout by reducing professional isolation, normalising emotional experiences, and fostering reflective capacity within a psychologically safe peer environment. They can also help physicians reconnect with meaning and realign work with personal values.

CONCLUSION

Physician burnout is common but potentially preventable. While burnout arises within systemic and organisational contexts, individual factors play an equally important role in its prevention and mitigation. Lifestyle Medicine offers a coherent framework to address the biological, psychological, relational, and existential dimensions of physician stress. Prioritising sleep, physical activity, nutrition, stress regulation, social connection, spirituality, and reflective practice supports sustainable medical practice.

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LEARNING POINTS

- **Physician burnout is a multifactorial occupational syndrome with biological, psychological, relational, and existential dimensions, and is associated with adverse outcomes for both doctors and patients.**
- **Lifestyle Medicine provides a practical, evidence-based framework for physician wellbeing, addressing modifiable behaviours such as sleep, physical activity, nutrition, stress regulation, social connection, and avoidance of harmful coping strategies.**
- **Loss of meaning and professional connection is a key contributor to burnout, and reflective practices such as Balint Groups can help mitigate burnout by reducing isolation, normalising emotional experiences, and reconnecting physicians with their values and professional identity.**

Unit No. 5

THE INSOMNIA TRAP: BREAKING THE CYCLE OF INSOMNIA

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ABSTRACT

Background: Insomnia disorder is distinct from short-term insomnia, affects 7.4–15.3 percent of Singaporeans, and is frequently encountered in primary care. Insomnia disorder is chronic (≥3 nights/week for ≥3 months, with clinically significant impairment or distress), that persists despite adequate opportunity for sleep, even after initial precipitants have abated, due to perpetuating mechanisms. Assessment: Primary care physicians should use structured evaluation including 1–2 week sleep diaries and the Insomnia Severity Index (ISI) to establish patterns and severity. Screen for comorbid conditions such as obstructive sleep apnoea, restless legs syndrome, and mood and anxiety disorders, which frequently co-occur with chronic insomnia. Management: Cognitive behavioural therapy for insomnia (CBT-I) is first-line treatment, targeting perpetuating factors through sleep restriction (prescribing a sleep window after a baseline diary), stimulus control therapy (reconditioning the sleep-bed connection), and cognitive strategies (reducing sleep effort and negative cognitions). Sleep hygiene alone is insufficient for chronic insomnia. When CBT-I is unavailable, pharmacotherapy should be a time-limited, scheduled treatment alongside behavioural interventions. Conclusion: Success requires breaking the "insomnia trap", the cycle where well-intentioned efforts to "catch up" on sleep (extended time in bed, naps, irregular schedules) paradoxically worsen insomnia. Focus on regular sleep-wake timing, addressing perpetuating factors, and relapse prevention through patient education.

Keywords: Insomnia, Primary Care, Cognitive Behavioural Therapy for Insomnia (CBT-I), Sleep hygiene, Sleep medicine

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INTRODUCTION

Insomnia disorder is one of the most common sleep-wake disorders, with local prevalence rates of between 7.4 and 15.3 percent in Singapore.[1,2] Compounding this clinical problem, Singapore faces a societal problem of chronic sleep deprivation, with international data identifying Singapore as having one of the shortest sleep durations and latest bedtimes globally.[3] Sleep is crucial to health, and the growing body of evidence on its importance led the American Heart Association to recently recognise sleep as one of Life's Essential 8 for cardiovascular health.[4]

ACUTE INSOMNIA

Much of the clinical and research focus has been on chronic insomnia (≥3 months). Short-term or acute insomnia (<3 months) is distinct from insomnia disorder, and can evolve into insomnia disorder if not addressed.[7] Strategies are focused on restoring regular sleep and preventing the development of insomnia disorder (or chronic insomnia). This can include sleep hygiene education, maintaining a regular sleep-wake schedule, addressing contributing factors, and short-term pharmacological interventions when required, including hypnotics.[7–9]

THE INSOMNIA TRAP

The various efforts to "catch up" on sleep, and achieve more sleep, invariably contribute to a self-reinforcing loop that blunts the homeostatic sleep drive and creates variable bed and wake times, which disrupt the circadian rhythm. The efforts to achieve more sleep, which may include increased worries, ruminations, and vigilance about sleep, may in turn increase the arousal around sleep, which cues wakefulness and prevents sleep. Breaking this cycle requires an understanding of these mechanisms and how the well-intentioned efforts to get better sleep may in itself be contributing to worse sleep.[9]

ASSESSMENT—IDENTIFYING MECHANISMS AND MODIFIABLE DRIVERS

Patients presenting with insomnia complaints often have multiple precipitating and perpetuating factors. When the insomnia becomes chronic, precipitating factors often abate, and perpetuating factors predominate, which are the focus of treatment. Effective treatment hinges on identifying the dominant mechanism(s) and targeting them.[10]

Sleep Patterns (Homeostatic Sleep Drive)

Our homeostatic sleep drive builds up the longer we are awake and is dissipated during sleep. Take a careful history of habitual sleep-wake patterns and any recent attempts to "catch up". Look for extended time in bed, irregular sleep

windows, and daytime naps. These changes weaken the homeostatic sleep drive and can disrupt circadian timing; prolonged time awake in bed fosters negative conditioning (learned sleeplessness), perpetuating insomnia.[10,11]

Circadian Timing and Misalignment

The circadian rhythm produces an alerting signal that increases during the course of the day and decreases when it is time for sleep, allowing the individual to enter sleep. It is influenced by the presence (or absence) of regular external cues, namely light exposure and a regular sleep-wake rhythm. Common circadian rhythm sleep-wake disorders include delayed sleep-wake phase disorder (DSWPD), where the major sleep period is shifted later than socially required and "insomnia" appears when trying to sleep earlier, and advanced sleep-wake phase disorder (ASWPD), where patients have an early evening sleep and early-morning awakening. When allowed the preferred schedule, sleep duration, quality, and daytime functioning are typically normal, favouring a circadian disorder over insomnia disorder.[6,9,12] Avoid treating circadian delay with hypnotics alone; instead, pair it with morning light exposure, a reduction in evening light, a fixed wake time, and appropriately timed low-dose melatonin.[9,10,13,14]

Hyperarousal

Anxiety and fear can be an evolutionary advantage in preventing sleep when one needs to be alert, but can be counter-productive when one intends to rest. Explore routines and mental health factors. Racing thoughts, ruminations, muscle tension, and clockwatching (the fear of sleeplessness) indicate hyperarousal and inadequate winddown. Identify and treat comorbid anxiety and depressive symptoms; reduce prebed stimulation; and establish positive sleep cues.[9,15]

Sleep Opportunity and Environment

Confirm an adequate opportunity for sleep, a conducive environment (dark, quiet, cool), and a consistent 7-day wake time. Address bed partner disruptions and stimulation from work or device use.[9]

Screen for Other Sleep, Medical, and Psychiatric Disorders

Obstructive sleep apnoea (OSA) is highly prevalent and comorbid with insomnia disorder, and patients with comorbid insomnia might not report excessive daytime sleepiness.[16] Use STOP-BANG to assess the risk of obstructive sleep apnoea (a score of ≥3 suggests a high risk of OSA).[17,18]

Restless legs syndrome (RLS) presents with an urge to move one's legs, worse in the evening, which is relieved with movement and activity. Patients might have periodic limb movements in sleep (PLM), which can disrupt and fragment sleep.[19]

Depressive and anxiety disorders are highly comorbid with insomnia disorder, and they may also present to healthcare providers with sleep difficulties first. Insomnia disorder increases the risk of other psychiatric disorders and influences the treatment response and relapse rates of these conditions, especially in depressive disorders.[20,21]

Many medical conditions have a close relationship with sleep. Pain, breathlessness, gastro-oesophageal reflux, urinary conditions, and many other chronic conditions commonly disrupt sleep and would need to be addressed.[9,10]

Review Medications and Substances

Review the ongoing use of medications or substances, especially those with alerting or sedating effects, that might perpetuate insomnia. Excessive or late-day caffeine and nicotine can delay sleep onset. Alcohol may hasten sleep onset but disrupts sleep architecture and increases nocturnal awakenings.[9,10]

Align medications that are activating towards earlier in the day when clinically appropriate, and likewise, review the effects of sedating drugs especially if taken late, which can increase daytime sleepiness, extend time in bed, and encourage naps, weakening sleep drive. Review the impact of PRN medications, which may be best visualised with a sleep diary record combined with medication routines and timings.[9,10,22]

ASSESSMENT TOOLS

Sleep Diary

A 7–14-day sleep diary is very helpful in establishing habitual timing, total sleep time, time in bed, awakenings, and sleep efficiency, especially when sleep-wake patterns are uncertain or the history is challenging. Use the consensus sleep diary or a simple shaded twoweek sleep log such as the one from the American Academy of Sleep Medicine (AASM) to visualise patterns and difficulties. Reviewing the diary together with the patient aids assessment and guides management.[23,24]

Patients who complete the diary often report that it helps them visualise night-to-night variability, normalise expectations, and identify modifiable patterns (e.g., naps, time in bed, timing regularity). This shared record aids clinical discussion, therapeutic alliance, and engagement in interventions and behaviour change.[9,23,25]

Insomnia Severity Index (ISI)

The insomnia severity index is a brief validated 7-item self-report questionnaire that can assess the severity of insomnia symptoms, impact on daily life, and track the progress of treatment over time.[9,22,26]

Consumer Sleep Trackers

There are validated consumer health trackers that generally do well in identifying sleep-wake and can be helpful in identifying trends in regularity and timings of sleep over weeks. Sleep tracking is generally less accurate in people

with insomnia, and it is important to correlate the data with clinical history and a sleep diary. Do not use "sleep scores" to decide on clinical treatment. Excessive anxiety or fixation on sleep-tracker data ("orthosomnia") may worsen insomnia.[27]

Sleep Studies

Sleep studies such as a home sleep test or a polysomnography are not routinely required for insomnia disorder, unless a comorbidity is suspected. Given the high comorbidity between insomnia disorder and OSA (also known as COMISA), if there is a clinical suspicion of underlying sleep disordered breathing or other sleep disorders, or the patient is refractory to treatment suggesting comorbid sleep pathology, referral for a sleep study can be considered. An actigraphy can be useful when a circadian rhythm disorder is suspected.[9,13]

MANAGEMENT

First-line—Cognitive behavioural therapy for insomnia (CBT-I)[9,13,25]

CBT-I is a structured, sleep-specific, multicomponent intervention that directly targets the perpetuating mechanisms of insomnia disorder. It requires patient engagement with sleep diaries and regular review to prescribe a sleep-wake schedule and behavioural targets. It is the gold standard first-line therapy for insomnia disorder treatment, with robust evidence across comorbid conditions, including OSA and depression.[9,13]

The core components are:

Sleep Restriction Therapy

After a baseline sleep diary, set an initial sleep window close to the average total sleep time across the seven days, with a fixed 7-day wake time. The goal is to raise homeostatic sleep drive and improve sleep efficiency (percentage of time in bed spent asleep) to at least 85–90 percent. Maintain a minimum time in bed of ~5.5 hours for safety, and due to the sleep loss involved, use caution in conditions such as epilepsy and bipolar disorder, or professions when sleep deprivation entails significant risk (e.g., professional drivers, operating heavy machinery). As efficiency improves, the sleep window is expanded by 15–30 minutes at a time (typically after a week of ≥85 percent efficiency). Over time, this is a highly effective intervention that consolidates sleep by harnessing increased sleep drive, leading to more predictable and restorative sleep periods.[9,10,28]

Advise patients to minimise "social jetlag" and keep the weekend bed and wake times within about one hour of weekday schedules to prevent circadian drift and preserve the sleep drive.[9,29]

Stimulus Control

This focuses on extinguishing the insomnia response by conditioning the bed and bedroom environment with sleep. This is achieved by restricting behaviours in the bedroom to sleep and sex, limiting any time spent awake in bed, and complements sleep restriction therapy, which together form the primary behavioural elements of CBT-I.[9,10]

Psychoeducation and Sleep Hygiene

Psychoeducation on the elements of CBT-I, the fundamentals of sleep, and building patients' understanding of the rationale behind interventions are keys to success. Sleep hygiene recommendations are reinforced, but it should be noted that sleep hygiene on its own is not evidence-based treatment for insomnia disorder.[9,10]

Cognitive Therapeutics

Dysfunctional beliefs in sleep and sleep-related negative appraisals (such as catastrophising, sleep effort) are addressed through cognitive strategies, such as cognitive restructuring (challenging negative thoughts), worry time, and paradoxical intention (abandoning efforts to sleep, and attempting to remain awake instead—which can counterintuitively promote sleep).[9,10]

Relaxation Therapy

These are methods aimed at reducing somatic tension or intrusive thoughts at bedtime, and may include techniques such as progressive muscle relaxation and imagery training. Importantly, they are done prior to sleep, as part of winding down, and not part of an effort to "force" sleep. Relaxation should not be used as the sole intervention in insomnia disorder.[9,10]

Delivery of CBT-I

There remain significant gaps in access to trained CBT-I providers, as formal training is limited among many mental health practitioners. CBT-I can be delivered individually or in groups, and telehealth has improved access, but cost and availability remain limiting factors.[9,30]

Validated digital CBT-I programmes—some fully automated, others clinician-assisted—have expanded globally and can increase access within a stepped-care model. Local availability of evidence-based digital CBT-I is currently limited, and clinician oversight may be required for complex comorbidities.[9,30,31]

Unguided bibliotherapy through self-help books are available commercially, which are based on CBT-I principles, but do not do as well as guided interventions and therapy.[9]

PHARMACOLOGICAL INTERVENTIONS

When CBT-I is unavailable, not feasible, or has insufficient response, pharmacological treatment may be considered as an adjunct. Set clear goals and expectations with patients and pair medications with brief behavioural strategies to address perpetuating factors. Use time-limited, scheduled (not PRN) dosing with a defined review/stop plan (e.g., in 2–4 weeks), as PRN use can reinforce sleep-related anxiety and prevent patients from developing confidence in their

natural sleep ability. Consider medication as a complement to ongoing CBT-I rather than a replacement. Use the lowest possible dose and avoid polypharmacy.[9,25,32]

In the choice of medication, consider safety (especially risk of falls given that most medications increase sedation), target symptoms, duration of action (and in turn timing of dose, half-life), comorbidities (such as depression, anxiety), past response, and patient preferences. Counsel on next-day impairment and driving safety for any sedatives. Plan for tapering or deprescribing once behavioural gains are consolidated.[25]

Melatonin

Prolonged-release melatonin (Circadin) is a prescription formulation approved for insomnia in adults aged ≥55 years. It may be useful for sleep-onset and maintenance difficulties. Effects may be modest, and patients should be counselled on timing of dose.[9]

Low-dose immediate-release melatonin can be used off-label for circadian phase advancement in patients with a delayed sleep-wake phase disorder, combined with bright-light therapy interventions.[14]

Dual Orexin Receptor Antagonists (DORA)

Dual orexin receptor antagonists (DORA) (e.g., lemborexant, suvorexant, daridorexant) block orexin receptors to reduce wakefulness and promote sleep, which may be particularly helpful in hyperarousal/conditioned wakefulness. Adverse effects include sedation, abnormal dreams, dizziness, and rarely sleep paralysis. Lemborexant is currently approved and available locally.[9,13,33]

GABAergic Sedative Hypnotic Drugs or Z-drugs

GABAergic hypnotic benzodiazepines (e.g., clonazepam, lorazepam) and benzodiazepine receptor agonists ("Z-drugs"; e.g., zolpidem, zopiclone) can be effective for short-term relief of sleep onset or maintenance complaints. The risk of tolerance and dependence-forming habits are of concern with prolonged use. Benzodiazepines should be used with caution in those with suspected OSA and older adults. Z-drugs have been associated with complex sleep behaviours. Discuss alternatives for persistent insomnia and consider deprescribing trials when appropriate.[9,13,25,33]

Antihistamines

Sedating antihistamines (e.g., hydroxyzine, chlorpheniramine) are accessible and commonly used off-label for insomnia, though data supporting chronic use is limited. Common complaints include over-sedation into the next morning and anticholinergic effects, especially in older adults, such as dry mouth and constipation.[9,25,32]

Antidepressants

Antidepressants may be used off-label especially if there are comorbid mood or anxiety symptoms. Frequently used antidepressants include trazodone, mirtazapine, and tricyclic antidepressants like doxepin and amitriptyline, which can be helpful, although evidence supporting its use is limited. Doxepin has FDA approval at 3 and 6 mg formulations for sleep-maintenance insomnia, but the lowest dose available locally is in 10 mg.[9,25,34]

Anticonvulsants

Gabapentin and pregabalin are not approved for insomnia, but may be useful when insomnia co-occurs with chronic pain, restless legs syndrome (RLS), generalised anxiety disorder, or partial seizures.[22]

Antipsychotics

Antipsychotics (e.g., quetiapine, olanzapine) are sedating but carry additional side effect concerns (metabolic, orthostatic, extrapyramidal). They are usually reserved for patients with comorbid psychotic or bipolar disorders.[22]

APPROVED MEDICATIONS FOR INSOMNIA

The majority of medications used in insomnia disorder are off-label. Prolonged-release melatonin (Circadin) is approved for insomnia up to 13 weeks and only in adults aged ≥55 years. Lemborexant is approved for insomnia (initiation and/or maintenance). Many benzodiazepines and Z-drugs are approved for short-term treatment of insomnia, with cautions regarding chronic use and the risk of dependence, and side effects including next-day impairment and falls as a concern.[35]

Given the chronic nature of insomnia disorder, it can be challenging to treat to remission from pharmacological interventions alone.

FOLLOW-UP AND RELAPSE PREVENTION

The goal of treatment is typically to lessen suffering and improve daytime functioning. Given the chronic, relapsing nature of insomnia disorder, set long-term follow-up and relapse-prevention strategies from the outset, and re-apply core CBT-I strategies if symptoms recur. Reinforcing regular routines and sleep hygiene during sustained remission can help to sustain gains and reduce relapses.[9,10,25,36]

REFERRAL TO SPECIALISTS

Insomnia disorder is often managed in primary care, or in specialist sleep or psychiatry clinics.

Refer to a psychiatrist or sleep specialist when there are suspected comorbid sleep disorders (OSA, RLS/PLM), significant psychiatric comorbidity, complex pharmacotherapy (failed deprescribing), or persistent functional impairment.

Quick tips for a busy clinic

- Frame the problem. Explain the "insomnia trap". Explain how the brain has learnt to associate the bed with being awake and frustrated, and efforts to get more sleep (such as staying in bed longer) are actually making the problem worse. We need to break the cycle.
- Gather data. Prescribe the sleep diary as a diagnostic tool. Hand the patient a sleep diary template. Instruct them: "Fill this out only in the morning. Do not look at the clock at night. We need to see the pattern over two weeks to make a plan."
- Anchor and fix the wake time. Give one clear instruction, start with setting a fixed wake-up time, seven days a week, without exception. This is the anchor that can stabilise the body clock.
- Enforce stimulus control and instruct the patient to only use the bed for sleeping or sex. If they're not able to sleep, do something else in another room or another part of the room, and go back to bed when sleepy. Re-associate the bed with good sleep.
- Establish a shared goal on what remission looks like, e.g., what time is bedtime and wake time, what better sleep is like. It should be realistic. Focus on the impact from insomnia e.g. daytime impairment, and don't focus on the "perfect sleep".

CONCLUSION

Insomnia disorder represents a significant burden in primary care, and may present with other significant comorbid conditions. The key to successful treatment starts with recognising and breaking the "insomnia trap"—the paradoxical cycle where patients' well-intentioned efforts to obtain more sleep actually worsen their condition. Start with sleep diaries, and incorporate behavioural changes or refer them for CBT-I. Pharmacotherapy can help alleviate symptoms and treat comorbidities, but should be time-limited and paired with behavioural interventions. Success depends on patient education about sleep mechanisms and establishing realistic expectations for recovery, with the understanding that breaking long-standing sleep patterns takes time but yields lasting improvements in both sleep quality and daytime functioning.

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LEARNING POINTS

- **Insomnia disorder is chronic, causes clinically significant impairment in functioning, and is often comorbid with other conditions. Screen early for depression, anxiety, OSA, RLS/PLMD, and other medical conditions, and treat them concurrently.**
- **Use a sleep diary and the Insomnia Severity Index to better establish sleep-wake patterns. A simple shaded two-week sleep log is available from the AASM.[24]**
- **CBT-I is first-line treatment, and sleep hygiene on its own is often insufficient for chronic insomnia. The primary focus of treatment is the perpetuating factors for insomnia disorder.**
- **When starting medications, pair them with an emphasis on behavioural changes needed to achieve lasting remission, with planned review intervals and a plan for when to stop medications.**
- **Aim to break the insomnia trap and prevent relapse by equipping patients with the understanding of why "catching up" on sleep, variable schedules, and increased efforts to sleep may actually be perpetuating their insomnia. Anchor them with a regular sleep and wake time and incorporate CBT-I techniques.**

Unit No. 6

SOCIAL PRESCRIBING: HOW TO MAKE IT WORK FOR THE BUSY FAMILY PHYSICIAN?

Associate Professor Lee Kheng Hock

ABSTRACT

Social prescribing is gaining prominence globally as a vital component to personalised care plans for health and wellbeing. It involves connecting patients with non-clinical community resources to address the social determinants of health influencing their medical outcomes. Singapore is rapidly developing a social prescribing ecosystem through community hospitals, regional health systems, and the national Healthier SG initiative. These developments make it timely for family physicians, many of whom practise in high-volume, fast-paced private clinics, to understand how social prescribing can be implemented pragmatically and effectively. This article outlines the concept of social prescribing, its evidence base, and its intrinsic alignment with the foundational values of Family Medicine. It further discusses how social prescribing supports the strategic goals of Healthier SG and offers practical guidance for busy general practitioners seeking to integrate this biopsychosocial approach into everyday practice.

Keywords: Social Prescribing, Family Medicine, Healthier SG, Community Care, Social Determinants of Health

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INTRODUCTION

In their role as clinical experts managing complex chronic diseases in the community, family physicians witness the daily impact of the social determinants of health (SDOH). It is hardwired into the training and ethos of Family Medicine that patients rarely present with purely biomedical concerns. Factors such as loneliness, financial strain, physical inactivity, caregiver fatigue, and limited social support form a web of interconnected biopsychosocial issues that often underlie seemingly straightforward clinical complaints.[1,2] These factors significantly influence recovery, medication adherence, disease progression, and the overall wellbeing of individuals.[3]

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Even the most evidence-based clinical prescription alone cannot adequately address these upstream determinants of health outcomes.[4] Social prescribing offers a structured and intentional approach towards working synergistically with the clinical prescription. While the concept may appear resource-intensive, experience from Singapore's early programmes suggests that even a "small dose" of social prescribing can trigger a virtuous cycle of patient empowerment towards better health.[5] What is required is an appreciation of the principles behind social prescribing and a willingness to reframe patient care to include community partnerships.[6]

WHAT IS SOCIAL PRESCRIBING?

Social prescribing is a person-centred approach whereby health professionals connect individuals to non-medical support in the community to improve health and wellbeing.[7] Unlike a standard referral, these supports are co-designed with the patient to meet their specific interests and needs. Recommended activities often include interest-based groups, physical activity programmes, nature engagement, arts and culture, and heritage activities.[8] It encompasses, yet goes beyond, traditional social services such as befriending, financial counselling, and employment assistance.[9]

Internationally, social prescribing typically adopts a graded model.[10] At its simplest, the clinician provides information ("signposting") or encouragement for the patient to join a community activity. At a more advanced level, a dedicated "link worker" or Wellbeing Coordinator helps the patient explore their needs, co-create goals, and navigate community services.[1,11] The wellbeing coordinator plays a critical role in "closing the last mile", ensuring the patient is safely connected to the community and overcoming motivational barriers that often derail good intentions and a well-designed care plan.[12]

Singapore has made significant strides in building capacity in this domain. Community hospitals and selected primary care teams have piloted structured programmes with promising results.[5,13] The recent designation of SingHealth Community Hospitals as the world's first World Health Organization (WHO) Collaborating Centre for Social Prescribing has further accelerated local expertise, training, and research.[14] Primary care is the next frontier, with private practitioners playing a pivotal role as the main doctors for first-contact and longitudinal care.[15]

BENEFITS OF SOCIAL PRESCRIBING

The benefits of social prescribing extend across multiple dimensions. Patients frequently report improved emotional wellbeing, reduced social isolation, and greater self-efficacy in managing their health.[16] Engagement in meaningful

activities provides structure, purpose, and social connection, which are particularly protective for older adults and those with chronic illnesses.[17]

Chronic disease outcomes may also improve through this approach. Participation in community-based exercise groups or peer support networks enhances lifestyle adherence and improves perceived health status.[18] The sense of belonging developed within community groups often reinforces health-promoting behaviours more effectively than clinic-based counselling alone.[19]

From a systems perspective, social prescribing has the potential to reduce avoidable healthcare utilisation, particularly for "frequent flyers" whose visits are often driven by unmet psychosocial needs and suboptimal social determinants of health.[20,21] For the clinician, it broadens the therapeutic toolkit beyond medications and investigations. Consultations become more focused and meaningful, maximising the utility of the limited time available to busy family physicians.[22] Furthermore, patients often express deep appreciation for being seen as "whole persons", which enhances trust and strengthens the therapeutic alliance central to Family Medicine.[9]

ALIGNMENT WITH FAMILY MEDICINE VALUES

Social prescribing fits seamlessly within the philosophy of Family Medicine. Family physicians inherently practise a biopsychosocial approach, recognising that illness cannot be separated from the individual's lived environment, a concept championed by Engel since the 1970s.[23] Social prescribing allows this theoretical principle to be operationalised in a structured, actionable way.[22]

The preventive mindset of Family Medicine drives physicians to mitigate risk factors for both primary disease and complications. As the majority of these risk factors reside within the social determinants of health,[3] social prescribing enables the discipline to address the "causes of the causes".[8] This moves preventive care beyond standard health screening and immunisation to tackling the root social drivers of chronic disease.[24]

The discipline also values continuity, relationship-based care, and patient advocacy.[25] Social prescribing extends continuity beyond the consultation room by mobilising community partners who reinforce health goals in the patient's daily life. It allows the clinician to advocate for the patient's broader needs including social inclusion, self-care mastery, and access to supportive networks. This aligns closely with the holistic and community-based nature of the specialty.[15]

Most importantly, social prescribing resonates with the shift from asking "What is the matter?" to "What matters most to you?".[5] This reframing honours the patient's agency and acknowledges that wellbeing depends on far more than biomedical parameters.

SUPPORTING THE GOALS OF HEALTHIER SG

Healthier SG aims to transform Singapore's healthcare landscape by emphasising preventive care, strong doctor-patient relationships, and integration with community programmes.[26] Social prescribing and community partnerships are two of the pillars of this policy.[27]

Personalised health plans under Healthier SG frequently include recommendations for lifestyle changes, mental wellbeing, and social participation.[26] Social prescribing provides the mechanism by which patients translate these recommendations into action. For example, a recommendation to increase physical activity is more likely to succeed if the patient is linked to a brisk walking group at a nearby park rather than simply told to exercise more.[18] In this context, a personalised care plan is incomplete without a social prescription.

The initiative also emphasises the role of community partners such as the Agency for Integrated Care (AIC), Active Ageing Centres (AACs), the People's Association, Sport Singapore, NParks, National Arts Council, and a host of social service agencies in supporting population health.[15,26] Family physicians can leverage these partnerships to guide patients toward resources that reinforce their health plans. As Healthier SG matures, social prescribing is poised to evolve into a core component of the national population health strategy.[27]

PREPARING FOR SOCIAL PRESCRIBING IN A BUSY CLINIC

Family physicians, especially those in private practice, often shoulder heavy clinical loads without the extensive support systems found in institutions.[28] Any new intervention must therefore be realistic and time-efficient. Social prescribing can be introduced without major restructuring by making modest changes in three domains: knowledge, consultation skills, and workflow.

Knowledge: Clinicians benefit from a basic awareness of local community assets. Familiarity with nearby AACs, Community Clubs, key AIC services, and even informal neighbourhood assets will be very helpful.[29] However, physicians need not memorise every option; maintaining a small, regularly updated directory or plugging into community asset maps developed by Regional Health Systems and directories curated by various national agencies such as the Health Promotion Board and AIC can bridge this gap.[5]

Consultation Skills: Screening for social needs need not be lengthy. A few conversational questions embedded within routine reviews can uncover issues such as isolation, financial stress, or caregiver burden.[30] Asking "What matters most to you?" often provides a natural opening. Brief motivational interviewing techniques can then encourage patients to consider community involvement. Training resources, such as those offered by the SingHealth Community Health

Office of Learning (SCHOOL), are available to equip primary care teams with these specific skills.[31]

Workflow: A consistent process ensures sustainability. Clinics may designate a staff member (e.g., a clinic assistant) to facilitate information sharing or administrative referrals.[32] Referrals can be documented using a standardised template noting the patient's goals and consent. As relationships with community partners deepen, these processes become more efficient, with partners often going the extra mile to support the clinic's patients.[11]

Starting small is a pragmatic strategy. Clinics might begin with a pilot focused on a specific group—such as older adults living alone or patients with frequent unscheduled visits.[12] This allows the team to refine processes and build confidence before scaling up.

A PRACTICE EXAMPLE

A 72-year-old widow visits a clinic frequently for non-specific symptoms, including fatigue, vague pains, and insomnia. Her chronic conditions are stable, yet she reports little improvement. Consultations are often protracted and focused on her somatic complaints. The medication list grew over time with an increasing number of drugs added to match the litany of symptoms. Attempts at deprescribing were unsuccessful.

Applying a social prescribing approach, the family physician asks about her daily routine. She reveals she spends most of her time at home alone and feels she is "just waiting to die". The clinic visits have become a ritual to break her isolation. With her consent, the physician refers her to a Wellbeing Coordinator at a nearby Active Ageing Centre.

Following up on the social prescription, the coordinator accompanies her to connect to a morning exercise group and a craft session. Over the following months, she makes new friends, attends the centre twice weekly, and eventually begins volunteering. Her mood brightens, her sleep improves, and her frequent clinic visits for non-specific symptoms cease. Most of the medication for symptomatic treatment are discontinued.[13] Subsequent consultations become more efficient, focusing on preventive care and optimising the control of her chronic diseases.

COMMON CHALLENGES AND WAYS THROUGH THEM

The most frequently cited concern among GPs is a lack of time.[28] However, brief enquiries about pertinent social determinants of health can be incorporated into consultations. For a start, simple signposting can be woven into existing workflows without significant delay.[9] Sharing tasks with clinic staff further reduces the burden on the physician. The social prescribing process can be iteratively improved as familiarity with nearby community assets increase over time.

Another challenge is the perceived complexity of the community care landscape.[33] Rather than attempting to master the entire sector, clinics should start with two or three reliable partners. Patient hesitancy is another hurdle; here, the "warm handoff"—where a link worker or coordinator facilitates the introduction—is crucial.[12] Even without a formal link worker, a follow-up call from the clinic can significantly improve engagement rates. Many social services agencies have also adopted the social prescribing paradigm and have staff that can work with family physicians in the neighbourhood. Regional health systems have established community teams that include community nurses and wellbeing coordinators. These teams actively encourage collaboration with general practitioners working in the community.

Finally, boundaries are important. Social prescribing is not a panacea for severe social crises. Acute issues such as social crisis, homelessness, or severe financial distress require referral to social services.[10] A clear distinction between social prescribing (for wellbeing and connection) and social work (for crisis and welfare) ensures patient safety and manages expectations.[1]

CONCLUSION

Social prescribing represents a necessary evolution in how family physicians support patient health in a complex world. By recognising and addressing the social determinants of health, clinicians provide care that is more comprehensive, effective, and meaningful. This approach aligns strongly with the core values of Family Medicine and reinforces the strategic aims of the Healthier SG initiative. Despite constraints, social prescribing is achievable in busy private clinics through small, deliberate steps. As Singapore's community networks grow, family physicians are well-placed to lead this movement toward holistic, community-anchored care.

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LEARNING POINTS

- **Social prescribing enables family physicians to address social determinants of health that heavily influence clinical outcomes, moving beyond a purely biomedical approach.**
- **It aligns naturally with the principles of Family Medicine, reinforcing the biopsychosocial model and strengthening the doctor-patient relationship.**
- **The approach supports Healthier SG by providing the practical mechanism for patients to achieve lifestyle and wellbeing goals through active community participation.**
- **Even in busy private practice, social prescribing can be implemented through brief screening, simple workflows, and collaboration with a few trusted community partners.**
- **Starting small and growing gradually allows clinics to adopt social prescribing sustainably, building confidence and local networks over time.**

ASSESSMENT OF 30 MCQS

FPSC NO : 131
MCQS ON THE ART AND SCIENCE OF PRESCRIBING LIFESTYLE CHANGES IN PRIMARY CARE
SUBMISSION DEADLINE: 31 MARCH 2026, 12 NOON

INSTRUCTIONS

- **To submit answers to the following multiple choice questions, you are required to log on to the College Online Portal (https://lms.wizlearn.com/cfps/)**
- **Please contact sfp@cfps.org.sg if you have not received an email on the new LMS account.**
- **Attempt ALL the following multiple-choice questions.**
- **There is only ONE correct answer for each question.**
- **The answers should be submitted to the College of Family Physicians Singapore via the College Online Portal before the submission deadline stated above.**
- **There will be NO further extension of the submission deadline**

1. A 45-year-old patient with newly diagnosed type 2 diabetes (HbA1c 7.8%) asks about the difference between lifestyle medicine and conventional medicine approaches. Which statement best explains how a lifestyle medicine approach would differ?

A. Start metformin immediately plus extensive supplement testing
B. Prescribe 7% weight loss and 150 min/week exercise first-line, add metformin only if targets not met, aim for remission
C. Detailed laboratory testing before starting any treatment
D. Combine diabetes medications with acupuncture and herbal therapies
E. Optimise anti-ageing biomarkers and prescribe metformin for longevity

2. A 68-year-old man with mild cognitive impairment and early Alzheimer's disease asks whether lifestyle changes could help his condition. His family is sceptical. Based on the 2024 Ornish Alzheimer's trial, what outcome can you share?

A. 71% improved or stabilised with regained function; 68% of controls worsened
B. No significant cognitive benefit, though cardiovascular benefits possible
C. Can prevent Alzheimer's but cannot improve existing symptoms
D. Benefits only in patients under age 60
E. Improved quality of life but no change in cognitive scores

3. A 55-year-old sedentary office worker with prediabetes (HbA1c 6.2%) says he "hates the gym". What is the best initial approach?

A. Tell him he cannot reduce diabetes risk without gym-based exercise
B. Prescribe metformin since he won't exercise adequately
C. Start with NEPA (stairs, parking farther, standing, housework), build up to 150 min/week of enjoyable activities; this reduced diabetes risk 44% even without weight loss
D. Refer immediately to exercise physiologist for supervised resistance training
E. Recommend fitness tracker for 10,000 steps daily

4. A 48-year-old woman with diabetes and hypertension has high caregiving stress. Despite medication compliance, HbA1c rose from 7.2% to 8.1% and BP remains 145/92. Could stress be affecting her conditions?

A. Stress has emotional effects only; her medications need adjustment
B. She needs sick leave from caregiving; no way to manage these diseases while stressed
C. Stress management helps quality of life but lacks evidence for diabetes/hypertension treatment
D. Chronic stress worsens cardiovascular disease and glycaemic control; mindfulness can reduce BP and improve HbA1c
E. Stress is psychological; manage separately from physical conditions

5. A 70-year-old widower with controlled diabetes and hypertension lives alone, rarely socialising since his wife died. His daughter asks if isolation could affect his health. What is most accurate?

A. Social isolation affects mental health only, minimal physical impact with controlled diseases
B. Social connections matter for younger people; medical management more important for elderly
C. Loneliness, like smoking/obesity, increases death risk; quality relationships are top health predictor, protect cognition and reduce cardiovascular mortality
D. Social isolation only matters if it affects medication compliance
E. Encouraging connections is nice but lacks evidence as medical intervention

6. In the context of metabolic syndrome, which of the following mechanisms is described as a driver for the transition of adipose tissue into a pro-inflammatory state?

A. Hyperplasia of adipocytes leading to increased adiponectin secretion
B. Adipocyte hypertrophy exceeding angiogenic

capacity, resulting in hypoxia and activation of pro-inflammatory signalling

C. Increased conversion of white adipose tissue to brown adipose tissue, releasing IL-10

D. Downregulation of the NLRP3 inflammasome due to excessive caloric intake

E. Diet rich in flavonoids, polyphenols, and fibre

7. Skeletal muscle is described as an endocrine organ that releases cytokines during contraction. Which of the following statements accurately describes the function of muscle-derived Interleukin-6 (IL-6) during exercise?

A. It acts as a pro-inflammatory signal that damages joint tissue

B. It inhibits the "browning" of white adipose tissue

C. It acts as an anti-inflammatory signal, stimulating the production of IL-10 and IL-1ra

D. It decreases insulin sensitivity in peripheral tissues

E. It will cause rises in C-reactive protein

8. A patient with high cardiovascular risk consumes a diet high in red meat. Which metabolite, produced by the gut microbiome from dietary choline and carnitine, is directly linked to atherosclerotic disease and heart failure?

A. Short Chain Fatty Acids (SCFA)

B. Trimethylamine-N-oxide (TMAO)

C. Glucagon-like peptide 1 (GLP-1)

D. Menaquinone (Vitamin K2)

E. Leptin

9. According to the article, how does a Whole Food, Plant-Dominant, Low-Protein (PLADO) dietary pattern benefit patients with non-dialysis dependent CKD?

A. It increases glomerular hyperfiltration to improve clearance

B. It raises blood calcium levels

C. It relies on high protein intake to prevent sarcopenia

D. It significantly increases trimethylamine-N-oxide (TMAO) levels

E. It slows disease deterioration by reducing dietary acid and phosphate load

10. A GP is applying the "5 As" Framework for Behaviour Change to prescribe a lifestyle intervention. Which action corresponds specifically to the "Agree" stage of the framework?

A. Collaboratively setting SMART (Specific, Measurable, Achievable, Relevant, Time-bound) goals

B. Evaluating the patient's current behaviour and readiness to change (e.g., on a scale of 1–10)

C. Identifying barriers and providing resources such as referrals or apps

D. Scheduling a follow-up appointment to ensure accountability

E. Going through the benefits of the intervention with the patient

11. In the context of Singapore's Healthier SG initiative and the practical implementation of lifestyle medicine in primary care, which of the following statements is most accurate?

A. The Physical Activity Vital Signs (PAVS) tool assesses a patient's health by measuring the number of days per week and minutes per day spent in moderate to strenuous exercise

B. A "Lifestyle Prescription" and a "SMART Action Plan" are synonymous terms, both representing the standardised, non-personalised clinical instructions for disease treatment

C. Comprehensive assessment tools, such as the Lifestyle Assessment Long Form, are recommended as the primary starting point for all General Practice consultations to ensure clinical rigour

D. To maintain professional boundaries and prevent burnout, clinicians are advised to avoid practising the lifestyle modifications they prescribe to their patients

E. Motivational interviewing and positive psychology should only be employed once a patient has reached the "Action" stage of the Transtheoretical Model

12. Which of the following statements is true regarding lifestyle interventions and the management of mental health and stress?

A. Nutritional interventions have no documented role in the prevention or long-term management of depressive disorders

B. While physical activity is a key component in preventing and treating depression, it has been shown to be consistently less effective than standard pharmacological or psychological therapies

C. Improving social health requires focusing exclusively on "strong ties" (close family and friends), as "weak ties" or micro-connections are considered insignificant for cortisol regulation

D. Supplementation with omega-3 fatty acids, folate, or St John's wort is clinically equivalent to first-line SSRI or SNRI therapy across all severities of depression

E. Lifestyle medicine interventions should be deferred until a patient with mental illness is medically stable and no longer presents an acute risk of harm to themselves or others

13. Which of the following is true about physical activity and exercise prescription?

A. Non-exercise activity thermogenesis (NEAT) tends to increase naturally and unintentionally when a person begins a new weight loss or exercise regimen

B. As long as a person exercises daily, they will not be exposed to the potential risks of a sedentary lifestyle, as the metabolic pathways are identical

C. Sedentary behaviour is clinically distinct from physical inactivity and is defined by activities with an

energy expenditure of ≤1.5 metabolic equivalents

D. The "FITT" framework for exercise prescription stands for Frequency, Interval, Tempo, and Training mode

E. To optimise health, patients should limit sitting to no longer than 120 minutes before taking a 5-minute movement break

14. Which of the following statements best characterises the "circadian-centric" approach to sleep management as advocated by the American College of Lifestyle Medicine (ACLM)?

A. It focuses primarily on "insomnia-centric" interventions, such as the strict avoidance of caffeine and alcohol, to address the underlying biological drivers of sleep

B. It views sleep as the "caboose" of the circadian train, emphasising that rest is optimised by managing the 24-hour cycle through consistent morning light exposure, meal timing, and physical activity

C. It identifies the attainment of a strict 8-hour sleep window as the primary clinical goal to reduce sleep-related anxiety and improve metabolic health

D. It recommends that patients who are unable to fall asleep remain in bed to maintain the psychological association between the sleep environment and rest, regardless of the duration of wakefulness

E. It prioritises evening environmental modifications, such as white noise and dim lighting, as the most powerful "zeitgebers" for anchoring the body's internal clock

15. When advising a patient on transitioning to a whole-food, plant-predominant dietary pattern to manage chronic metabolic conditions, which of the following clinical strategies is most consistent with the provided guidelines?

A. Prioritising a "Negative Prescription" that focuses on the absolute avoidance of all animal products to ensure the patient adopts a strict "vegetarian" identity

B. Implementing distinct and separate dietary frameworks for obesity, diabetes, and hyperlipidaemia rather than using a common set of plant-predominant principles

C. Shifting the clinical focus towards a "Positive Prescription" by emphasising the addition of whole grains, legumes, and fruits rather than focusing solely on restriction

D. Advising the patient to avoid consistent meal schedules and only eat when hunger becomes excessive to prevent the influence of environmental eating cues

E. Recommending that the patient implement dietary changes in isolation to prevent communal family habits from interfering with the transition to plant-predominant nutrition

16. Which of the following best describes physician burnout?

A. A depressive disorder characterised by persistent low mood and anhedonia

B. A normal and unavoidable stage of medical training

C. A personality trait associated with poor coping and low resilience

D. An occupational syndrome resulting from chronic workplace stress that has not been successfully managed

E. A transient stress reaction that resolves with rest alone

17. Which Lifestyle Medicine pillar is most directly associated with preserving executive function, emotional regulation, and empathy in physicians?

A. Sleep

B. Nutrition

C. Physical activity

D. Social connection

E. Avoidance of harmful behaviours

18. Which of the following statements regarding physical activity and physician wellbeing is most accurate?

A. Only high-intensity exercise produces meaningful mental health benefits

B. Physical activity benefits are limited primarily to cardiovascular outcomes

C. Short, regular bouts of physical activity can improve mood and cognitive function

D. Exercise is ineffective for managing occupational stress in physicians

E. Physical activity is beneficial only when performed outside working hours

19. Loss of meaning in clinical work contributes to physician burnout primarily through which mechanism?

A. Increased exposure to medico-legal risk

B. Reduced efficiency and longer consultation times

C. Inadequate opportunities for continuing medical education

D. Poor remuneration relative to workload

E. Misalignment between professional activities and personal values or identity

20. Which of the following best describes the role of Balint Groups in the prevention or mitigation of physician burnout?

A. They provide formal psychotherapy for physicians with mental illness
B. They focus on improving diagnostic accuracy and clinical efficiency
C. They offer a structured forum for reflective discussion of doctor-patient relationships
D. They replace the need for organisational and systemic interventions
E. They are primarily intended for postgraduate examination preparation

21. Which of the following is NOT a criterion for insomnia disorder?

A. Causing clinically significant daytime distress or functional impairment
B. Difficulty initiating or maintaining sleep, or early-morning awakening
C. Not better explained by another sleep-wake disorder, the effects of a substance/medication, or another mental/medical condition
D. Occurring at least three nights per week
E. Ongoing for more than one month

22. A 22-year-old female reports difficulty falling asleep only when trying to sleep before midnight. On weekends, she sleeps from 2 am to 10 am and feels fine. She is starting work soon and has to get up regularly by 8 am. Which management plan is most appropriate?

A. Encourage her to catch up on sleep during the weekends
B. Mirtazapine 15 mg at bedtime
C. Set a fixed earlier wake time (including weekends), add morning bright light exposure, reduce evening light, and use low dose timed melatonin 3–5 hrs before her target bedtime
D. Take an afternoon nap and have an earlier bedtime
E. Zolpidem 6.25 mg at bedtime

23. Which is the most appropriate use of a consumer sleep tracker in insomnia care?

A. Diagnose insomnia using device-reported sleep stages
B. Identify periodic limb movements in sleep from movement metrics
C. Track sleep timing and regularity trends over the weeks, correlated with clinical history and a sleep diary
D. Use medications that increase deep sleep if device reports low deep
E. Use the sleep score to adjust medication doses

24. Which of the following is first-line treatment for insomnia disorder?

A. Cognitive Behavioural Therapy for Insomnia (CBT-I)
B. Hydroxyzine
C. Melatonin prolonged-release
D. Sleep Hygiene
E. Zolpidem controlled-release

25. When is a sleep study indicated in a patient with insomnia complaints?

A. All patients with chronic insomnia
B. Suspected OSA/PLMD or persistent non-response to treatment
C. To correlate with their consumer health tracker
D. To confirm the insomnia diagnosis
E. When the insomnia severity score is in the severe range

26. Social prescribing is described as a person-centred approach connecting individuals to non-medical support. What distinguishes this approach from a standard administrative referral to a community agency?

A. The activities are co-designed with the patient to meet their specific interests
B. It focuses exclusively on financial counselling and employment assistance
C. It is strictly managed by social workers without physician input
D. The primary goal is to increase the volume of patients in community hospitals
E. It is a mandatory requirement for all patients over the age of 65

27. In the graded model of social prescribing, a dedicated "link worker" or Wellbeing Coordinator is described as playing a critical role in "closing the last mile". Which of the following best describes this specific function?

A. Conducting clinical triage to determine the severity of the patient's medical condition
B. Ensuring the patient is safely connected to the community by overcoming motivational barriers
C. Providing strictly financial advice to help patients pay for their medical bills
D. Replacing the family physician for all future longitudinal care consultations
E. Managing the administrative scheduling and billing for the private clinic

28. Social prescribing resonates deeply with the core philosophy of Family Medicine. This alignment is best illustrated by the shift from asking "What is the matter?" to which of the following questions?

A. "What is your pain score?"
B. "What medication do you prefer?"
C. "What is your monthly household income?"
D. "What matters most to you?"
E. "What are your specific symptoms?"

29. Under the Healthier SG initiative, personalised health plans often include recommendations for lifestyle changes. What specific function does social prescribing serve in relation to these plans?

A. It provides the mechanism by which patients translate recommendations into action

B. It acts as a substitute for evidence-based clinical prescriptions for chronic diseases

C. It serves as a tool to strictly monitor patient compliance for insurance purposes

D. It is primarily used to secure funding for the Agency for Integrated Care (AIC)

E. It allows the physician to discharge the patient from primary care services permanently

30. From a healthcare systems perspective, social prescribing is noted to have the potential to reduce avoidable healthcare utilisation. Which specific group of patients is highlighted as likely to benefit most from this reduction?

A. Patients requiring immediate surgical intervention for acute trauma

B. Individuals seeking second opinions for complex oncological diagnoses

C. Young children requiring routine childhood immunisations

D. Patients with purely biomedical concerns such as acute bacterial infections

E. "Frequent flyers" whose visits are driven by unmet psychosocial needs

FPSC 129 "Basic Obesity Management Accreditation 5" Answers to 30 MCQs

1.	D	11.	B	21.	B
2.	E	12.	B	22.	D
3.	C	13.	E	23.	C
4.	E	14.	D	24.	A
5.	B	15.	C	25.	A
6.	B	16.	A	26.	B
7.	D	17.	A	27.	B
8.	E	18.	C	28.	C
9.	A	19.	D	29.	C
10.	C	20.	C	30.	A

FPSC 130 "COVID-19 and Respiratory Virus Vaccination Strategies for Family Physicians (2025 Update)" Answers to 15 MCQs

1.	E	6.	B	11.	D
2.	B	7.	A	12.	C
3.	E	8.	B	13.	C
4.	D	9.	B	14.	A
5.	A	10.	A	15.	D

READINGS

A SELECTION OF TEN READINGS ON TOPICS RELATED TO
THE ART AND SCIENCE OF PRESCRIBING LIFESTYLE CHANGES IN PRIMARY CARE

A SELECTION OF TEN READINGS ON TOPICS RELATED TO THE ART AND SCIENCE OF PRESCRIBING LIFESTYLE CHANGES IN PRIMARY CARE

FPSC131 – SATURDAY, 24 JAN 2026 and SUNDAY, 25 JAN 2026: 2.00pm – 5.00pm (via Zoom)

Selection of readings made by A/Prof Goh Lee Gan

READING 1. LIFESTYLE INTERVENTIONS FOR TREATMENT & REMISSION OF T2DM AND PREDIABETES IN ADULTS

Rosenfeld RM,[1] Grega ML,[2] Gulati M.[3] Lifestyle Interventions for Treatment and Remission of Type 2 Diabetes and Prediabetes in Adults: Implications for Clinicians. Am J Lifestyle Med. 2025 Mar 25:15598276251325802. PMID: 40161282.

doi: 10.1177/15598276251325802. PMID: 40161282.

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ABSTRACT
This review is based on a presentation at the 2024 Annual Meeting of the American College of Lifestyle Medicine (ACLM), which showcased ACLM's first clinical practice guideline on Lifestyle Interventions for Treatment and Remission of Type 2 Diabetes and Prediabetes in Adults.

Our goal is to offer pragmatic implications of the guideline for everyday patient care, including case presentations showing how the guideline recommendations (key action statements) can be implemented. The target audience is any clinician or healthcare professional in a community or outpatient healthcare setting involved in managing non-pregnant adults with T2D, prediabetes, or a history of gestational diabetes mellitus (GDM).

Unique features of the ACLM guideline include placing lifestyle interventions as the foundation of T2D management and prevention, offering strategies for sustained behaviour change, and emphasising all six pillars of lifestyle medicine: plant-predominant nutrition, regular physical activity, restorative sleep, stress reduction, social connectedness, and avoiding risky substances.

This review is not intended to substitute for the full guideline, which should be read before doing the recommended actions.

READING 2. PHYSICAL ACTIVITY IN CHRONIC MUSCULOSKELETAL PAIN

Núñez-Cortés R,[1] Salazar-Méndez J,[2] Nijs J.[3–5] Physical Activity as a Central Pillar of Lifestyle Modification in the Management of Chronic Musculoskeletal Pain: A Narrative Review. J Funct Morphol Kinesiol. 2025 May 20;10(2):183. PMID: 40407467.

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ABSTRACT

Objective: This narrative review aims to analyse physical activity as a central pillar of lifestyle modification in the management of chronic musculoskeletal pain by examining its effects on pain modulation as well as related lifestyle domains, including sleep, stress regulation, dietary habits, and smoking behaviour.

Methods: A narrative structured review was conducted. We searched MEDLINE/PubMed, Embase, and Cochrane Reviews using terms related to chronic pain and lifestyle. Randomised controlled trials, observational studies, systematic reviews, and narrative reviews reporting on the concepts of interest were included. The results were synthesised and described narratively.

Results: Through the release of neuromodulatory compounds such as endorphins, endocannabinoids, dopamine, and serotonin, exercise improves analgesia, promotes emotional resilience, and reduces the reward response associated with addictive behaviours such as smoking. Its effects on the hypothalamic-pituitary-adrenal axis reduce cortisol levels, while melatonin regulation promotes circadian synchronisation and deeper sleep stages. In addition, exercise modulates appetite by increasing insulin sensitivity and altering hormones such as leptin and ghrelin, contributing to appetite control and energy balance. These mechanisms support a comprehensive approach to chronic pain management.

Conclusions: Physical activity is a core component of lifestyle-based chronic pain management, not only because of its analgesic effects, but also because of its positive influence on sleep, stress regulation, dietary habits, and smoking reduction. Although the available evidence is promising, more randomised controlled trials are needed to examine the effects of exercise on other healthy lifestyle behaviours, such as stress reduction, dietary modification, and smoking cessation, to consolidate its role in the comprehensive prevention and management of chronic pain.

READING 3. POSITIVE PSYCHOLOGY AND HEALTH BEHAVIOUR CHANGE IN LIFESTYLE MEDICINE

Matthews SM.[1,2] Positive Psychology and Health Behaviour Change in Lifestyle Medicine: A Narrative Review. Am J Lifestyle Med. 2025 Aug 25:15598276251367691. PMID: 40881258.

doi: 10.1177/15598276251367691. PMID: 40881258. Free full text.

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ABSTRACT

The fields of positive psychology, health behaviour change, and lifestyle medicine have evolved significantly over the past two decades, fostering a growing synergy within healthcare. Positive psychology, rooted in the philosophy of ancient Greeks, emphasises flourishing, resilience, and well-being, while lifestyle medicine, involving the pillars of health-diet, exercise, sleep, social support, mind-body connection, and substance avoidance-focuses on patient-prioritised action for better health.

This paper reviews and explores the intersections of these fields, highlighting positive psychological interventions (PPIs) such as gratitude, savouring, and meaning-making as pathways to enhance health outcomes. Empirical evidence underscores the potential of PPIs, mediated through lifestyle medicine approaches, to influence physical and mental health. Yet challenges in research methodology, systemic barriers, and individual reluctance remain.

By integrating robust psychological constructs with positive psychology and lifestyle medicine strategies, this review advocates for a unified approach that urges a system transition from sickness to flourishing, emphasising both personal and systemic pathways to well-being.

READING 4. A SYSTEMATIC REVIEW AND META-ANALYSIS OF LIFESTYLE MEDICINE EDUCATION IN HEALTH PROFESSIONALS' CURRICULA

Ibrahim S,[1–4] Singh S,[5–8] Senff JR,[5–9] Sivakumar J,[10] Ventresca M,[10] Pikula A,[10–14] Coulson J.[11] Lifestyle Medicine Education in Health Professionals' Curricula: A Systematic Review and Meta-Analysis. Am J Lifestyle Med. 2025 Jul 31. PMID: 40756621.

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ABSTRACT

Non-communicable diseases (NCDs) are the leading cause of mortality and morbidity worldwide. Underlying NCDs are modifiable risk factors, which may be targeted through Lifestyle Medicine (LM). LM is an evidence-based and clinical discipline that supports healthy lifestyle habits. Much of LM integration in practice is rooted in the education afforded within health professionals' curricula.

The study aimed to determine the effectiveness of LM educational interventions within health professionals' curricula on knowledge, competence, self-efficacy/confidence, and skills.

A systematic review and meta-analysis were conducted with data analysed using descriptive statistics and a Random Effect Meta-analysis.

A total of 14 studies were included. Interventions centred around substance use, nutrition, and physical activity with no studies obtained on the sleep health, stress management, and social connectedness pillars. Interventions showed a positive impact on improving knowledge standardised mean difference (SMD): 0.71 (95% CI: 0.25–1.18), self-esteem/self-confidence SMD: 1.34 (95% CI: 0.61–2.07), and outcome practice SMD: 0.78 (95% CI 0.29–1.26). There was insufficient power to provide reliable estimates for the attitude outcome.

Integrating LM educational interventions within health professionals' curricula is promising and recommended to better equip trainees and future healthcare providers to support patients with the adoption of a healthy lifestyle.

READING 5. THE IMPACT OF PHYSICAL ACTIVITY ON WEIGHT LOSS IN RELATION TO THE PILLARS OF LIFESTYLE MEDICINE—A NARRATIVE REVIEW

Niezgoda N,[1] Chomiuk T,[1] Kasiak P,[1] Mamcarz A,[1] Śliż D.[1] The Impact of Physical Activity on Weight Loss in Relation to the Pillars of Lifestyle Medicine—A Narrative Review. Nutrients. 2025 Mar 20;17(6):1095. PMID: 40292556.

doi: 10.3390/nu17061095. PMID: 40292556.

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ABSTRACT
Currently, overweight and obesity are key problems globally. Several modifiable factors influence weight management. The number of obese and overweight people has significantly increased over the past few decades.

Therefore, it is crucial to find effective and tailored strategies for weight management in public health and medicine. It has become necessary to take a comprehensive look at the problem of obesity and the process of weight loss, taking into account various aspects of lifestyle. To date, the effectiveness of dietary interventions, training interventions, or a combination of both has been repeatedly studied, with varying results, but a combination of properly selected diet and physical activity is considered the most effective therapy.

Physical activity is one of the main tools in the treatment of obesity, in part due to its direct effect on body weight by increasing energy expenditure, especially when paired with other elements of lifestyle. The effect of physical activity is broad, and to properly implement it in obesity therapy, it is necessary to understand its impact on aspects such as body composition, food intake, sleep, alcohol use, and mental state.

The primary aim of this review is to present the influence of physical activity on weight loss in combination with the influence of physical activity on other pillars of lifestyle medicine in adults. The secondary aim is to present various dietary, exercise, and combined interventions on weight loss with their efficacies.

READING 6. A SYSTEMATIC REVIEW OF EFFECTS OF THE SIX PILLARS OF LIFESTYLE MEDICINE ON THE PERFORMANCE OF HIGH SCHOOL ATHLETES

Evang L,[1] Lewis JE,[1] Nicanord EJ.[2] Effects of the Six Pillars of Lifestyle Medicine on the Performance of High School Athletes: A Systematic Review. Am J Lifestyle Med. 2025 Oct 14. PMID: 41104072.

doi: 10.1177/15598276251388632. PMID: 41104072.

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ABSTRACT
INTRODUCTION: High school athletes face unique challenges, including balancing academic and athletic demands, addressing mental health concerns, maintaining adequate nutrition and sleep, and mitigating risks such as substance use and maladaptive behaviours. Female athletes frequently encounter additional issues, including amenorrhea and irregular menses. Lifestyle Medicine, encompassing nutrition, sleep, stress management, physical activity, avoidance of risky substances, and social connection, offers a promising framework for addressing these challenges through targeted, evidence-based interventions.

METHODS: A review of peer-reviewed studies from the last 15 years was conducted using databases like PubMed, Scopus, and Embase. Studies focused on athletes aged 14–18 were included, with 1,423 studies screened and 31 meeting inclusion criteria. Studies on nonathlete populations and adults were excluded.

RESULTS: Of the 31 included studies, six addressed nutrition, three physical activity, five sleep, five stress management, seven avoidance of risky substances, and five social connection. Notably, 52.1 percent of female athletes were found to be at risk for low energy availability (LEA), and over 79 percent of athletes reported sleeping fewer than eight hours per night, below the recommended range of 8–10 hours for adolescents. Stress management emerged as a critical gap, with 91 percent of athletes reporting sport-related stress, yet only 27 percent received professional support. High-contact sports were associated with increased risks of substance misuse, including lifetime opioid use rates as high as 46 percent in some cohorts.

CONCLUSION: This review underscores the urgent need for targeted interventions such as nutrition education programmes, sleep hygiene initiatives, and mindfulness-based stress management tailored to high school athletes. Addressing these gaps within the framework of Lifestyle Medicine can enhance both performance and long-term well-being. Future research should evaluate the effectiveness of these interventions and explore their clinical and developmental implications.

READING 7. EVIDENCE OF BENEFITS OF LIFESTYLE MEDICINE INTERVENTIONS IN BREAST CANCER SURVIVORSHIP

Wright LE,[1] Sudheendra PK.[2] Evidence for the benefits of lifestyle medicine interventions in breast cancer survivorship. Oncologist. 2025 Jul 4;30(7):oyae303. PMID: 39656454.

doi: 10.1093/oncolo/oyae303. PMID: 39656454.

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ABSTRACT
There are currently 4 million breast cancer survivors in the United States, and this number is expected to substantially increase in the decades to come. Breast cancer survivors experience treatment- and cancer-related debility, stress, and isolation that exceed rates in the general population.

This review provides evidence for survival and quality of life benefits in patients living with breast cancer with the implementation of the six pillars of lifestyle medicine, which include physical activity, nutrition, social connection, adequate sleep, stress management, and avoidance of toxic substances.

Overwhelmingly, lifestyle modifications and support of psychosocial health improve survival and quality of life in patients living with breast cancer.

Data presented here suggest that patients living with breast cancer would benefit from a comprehensive lifestyle medicine approach to survivorship and formal implementation of such programmes could significantly impact cancer mortality and morbidity.

READING 8. EVIDENCE OF BENEFITS OF LIFESTYLE MEDICINE INTERVENTIONS IN BREAST CANCER SURVIVORSHIP

Do NM,[1] Tolos C.[2] Empowering Fall Prevention Through Integrated Lifestyle Medicine Strategies—From Recognition of Fall Risks to Implementation of Prevention of Falls for All in Practice. Am J Lifestyle Med. 2025 Jan 29. PMID: 39897451.

doi: 10.1177/15598276251316830. PMID: 39897451.

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ABSTRACT

Falls remain the leading cause of unintentional injuries across all age groups, prompting many emergency room visits. The annual estimated cost associated with falls is believed to exceed 100 billion dollars. In addressing this trend, health professional team members emerge as key players and can assume a crucial role in bridging the gap between lifestyle medicine and fall prevention.

By imparting strategies aligned with the six pillars of lifestyle medicine, these professionals can educate individuals on risk factors, assess fall risk, and offer activities to mitigate the likelihood of future falls. This collaborative approach empowers all to take immediate and informed action, fostering a proactive stance against the prevalent issue of fall-related injuries.

Through the background and practical strategies described in this paper, health professionals of various disciplines will have access to tools and knowledge to enhance their role in preventing falls using the lens of lifestyle medicine.

READING 9. WHAT DO WE KNOW ABOUT PREVENTION OF FRAILTY IN WOMEN?

Loewenthal JV,[1] Lee Ivey K,[1,8] Orkaby A,[1,10] Bart NK,[2] Burton W,[3,4] Kamali S,[5] Montgomery E,[6,7] Friedman SM.[9] What Do We Know About Prevention of Frailty in Women? Am J Lifestyle Med. 2025 Aug 29. PMID: 40895501.

doi: 10.1177/15598276251370606. PMID: 40895501.

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ABSTRACT

Frailty is a multidimensional syndrome associated with a state of vulnerability to external stressors. Though women have a longer life expectancy than men, they have a higher risk of frailty. Frailty is prevalent in women, affecting approximately 9–15 percent of community-dwelling older women, and over 50 percent of nursing home residents.

Women have unique risk factors for frailty at distinct life stages such as pregnancy and menopause. Women who have children at a young age and those who experience premature menopause have a higher risk of developing frailty later in life.

Frailty is modifiable, and preventive strategies can be implemented using the framework of the six pillars of lifestyle medicine. Moreover, frailty is also a therapeutic target, with the best approach to prevention occurring earlier in life. Implementation of the six-pillar approach to frailty prevention is best achieved by considering specific benefits and barriers to each pillar for women. For example, implementing strength training alongside diet optimisation while bolstering social connections.

The six pillars are closely interrelated. As such, a holistic approach targeting all six has the greatest potential for success. Future studies are needed to guide therapeutic interventions specific to preventing frailty in women.

READING 10. INTERNATIONAL PERSPECTIVE OF THE CULTURE OF HEALTHY LIVING

Jayasinghe S,[1] Byrne NM,[1] Hills AP.[2] The culture of healthy living—The international perspective. Prog Cardiovasc Dis. 2025 May–Jun;90:51-55. PMID: 39921185.

doi: 10.1016/j.pcad.2025.02.001. PMID: 39921185.

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ABSTRACT

A culture of health or healthy living can be envisioned as a society where well-being, including essential aspects like sleep, stress management, social connections, and leisure, is not merely an aspiration but a tangible reality for diverse communities, free from systemic inequities. However, the concept of a healthy lifestyle, and by extension a culture of healthy living, varies widely across the globe, shaped by cultural norms, government policies, and social structures.

Defining a universally acceptable "culture of healthy living" for every population or subgroup is inherently complex, making it more practical to focus on addressing the barriers and leveraging the enablers associated with leading a healthy life. At its core, discussing the foundational elements of a healthy life—such as diet and nutrition, physical activity, mental health, and access to healthcare—is crucial. To ensure the sustainability of healthy living practices, a multifaceted approach is needed, emphasising these pillars alongside equity.

Existing global initiatives offer promising frameworks to tackle these challenges, highlighting the importance of collaboration, innovation, and systemic change.

By fostering mutual support and collective action, we can advance towards a global culture of healthy living that benefits all individuals and communities, leaving no one behind.

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2. Summary/Abstract
3. Key Words
4. Text/Manuscript
5. Tables (if any)
6. Illustrations (if any)
7. Concluding paragraph
8. Learning Points

Authors are advised to ensure the anonymity of study subjects and patients by removing any and all information that could compromise their privacy from the submission.

The text should be typed in Arial font, 12-point size, with no line spacing.

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The title should be concise and highlight the key elements of the article.

Include on the title page the first and last names, designation, qualifications, present appointments, and type and place of practice of each contributor.

Include name, address, handphone number, and email address of the first author to whom correspondence should be sent.

Insert at the bottom: name and address of institution or practice from which the work originated.

Abstract
The summary should describe why the article was written and present the main argument or findings.

Limit words as follows: 250 words for major articles; 200 words for case reports.

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- **Introduction** – states the purposes/aims of the study/ investigation
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- **Results** – provides specific data and its statistical significance, if possible
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Add, at the end of summary in alphabetical listing, **key words** of up to five in number that will be used for article indexing and retrieval under Medical Subject Headings or MeSH. MeSH is the NLM controlled vocabulary thesaurus used for indexing articles for WPRIM and PubMed. Please refer to www.nlm.nih.gov/mesh/ for details.

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The text should have the following sequence:

- **Introduction:** State clearly the purpose of the article. Summarise the rationale for the study or observation. Give only strictly pertinent information and references, and do not review the subject extensively. Provide a context or background for the study (that is, the nature of the problem and its significance). Cite only directly pertinent references, and do not include data or conclusions from the work being reported.
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- **Selection and Description of Participants (under methods)**
  Describe the selection of the subjects clearly, including eligibility and exclusion criteria and a description of the source population. If the study was done involving an exclusive population, for example in only one sex, authors should justify why, except in obvious cases (e.g., prostate cancer). Authors should define how they determined race or ethnicity and justify their relevance.
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  Drugs must be referred to generically; all the usual trade names may be included in parentheses.

  Dosages should be quoted in metric units.

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  Do not use patients' names, initials or hospital numbers to ensure anonymity.
- **Statistics (if applicable):** Describe statistical methods that can be easily understood and verified by the reader. Use technical terms in its proper place, and where possible quantify readings and indicate errors of uncertainty and confidence intervals.

  Discuss eligibility of experimental subjects. Give details about randomisation. Describe the methods for and success by any blinding of observations. Report treatment complications. Give number of observations. Report losses to observation (such as dropouts from a clinical trial). Avoid non-technical uses of technical terms in statistics, such as "random" (which implies a randomising device), "normal", "significant", "correlations", and "sample". Define statistical terms, abbreviations, and symbols.
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  Give numeric results not only as derivatives (for example, percentages) but also as the absolute numbers from which the derivatives were calculated, and specify the statistical significance attached to them, if any. Restrict tables and figures to those needed to explain the argument of the paper and to assess supporting data. Use graphs as an alternative to tables with many entries; do not duplicate data in graphs and tables.

  Separate reporting of data by demographic variables, such as age and sex. Facilitate pooling of data for subgroups across studies. This should be routine, unless there are compelling reasons not to stratify reporting, which should be explained.

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  Moussavi S, Chatterji S, Verdes E, Tandon A, Patel V, Ustun B. Depression, chronic diseases, and decrements in health: results from the World Health Surveys. Lancet. 2007 Sep;370(9590):851–8. https://doi.org/10.1016/S0140-6736(07)61415-9.

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Tables should be submitted on a separate page. Label them in Roman-numeric sequence [I, II, III, etc] and ensure they are clear and with explanatory legends as required. Give each column a short or abbreviated heading. Place Table explanations in the footnotes, not in the heading. Explain in footnotes all non-standard abbreviations that are used in each Table.

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Illustrations must be submitted in a separate page, and should be provided whenever appropriate. Illustrations should be numbered consecutively in Arabic numerals (e.g., Figure 1, 2, 3) according to the order in which they have been first cited in the text. When required, it is the author's responsibility to obtain permission to reproduce illustrations. Authors need to ensure that photographs, illustrations, and figures do not contain any information that will reveal the identities of the patients and authors. From 1 January 2012, all photographs and illustrations taken from any human subject must be accompanied by the respective endorsed consent form. Clear captions to the figures should be provided.

Concluding Paragraph
Summarise your main findings and its clinical implication, preferably in a single paragraph and no more than 3-4 sentences. Link the conclusions with the goals of the study but avoid unqualified statements and conclusions not adequately supported by the data. In particular, distinguish between clinical and statistical significance, and avoid making statements on economic benefits and costs unless the manuscript includes the appropriate economic data and analyses. Avoid claiming priority or alluding to work that has not been completed. State new hypotheses when warranted, but label them clearly.

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Include a minimum of three (3) Learning Points as a take-home message for readers.

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The Case Records of Family Medicine is a newly created series to encourage submissions from Family Medicine teaching programmes and for Family Medicine departments to submit cases of learning value to the *Singapore Family Physician*. Cases discussed during peer review learning and Family Medicine grand ward round teachings are just some examples of submissions that are suitable for this

series. Authors planning to submit their case studies to the Case Records of Family Medicine section should structure their article according to these headings:

Title
The title should define the key focus of the case study.

Case Presentation
The author(s) will provide a pertinent summary of the medical and/or psychosocial issue pertaining to the health or disease management of the case. It should cover the situation and relevant background of the case. Author(s) should conceal the identity of the subject and/or related or accompanying personnel; abbreviation should be used instead, if necessary.

Diagnoses/Problems identified
The assessment of the diagnoses/problems identified will constitute a problem list and will serve as a focus for the management of the case. If the case was a diagnostic dilemma, the author(s) should showcase the diagnostic challenges and their work in narrowing to the correct diagnosis and/or differential diagnoses.

Management of the case
This section covers the approach to the management of the case by the author(s).

Literature review on latest evidence/guidelines (related to diagnosis and/or management)

The author(s) should provide a literature review of current evidence/guidelines, if any, of the basis of the case's diagnosis/management, or to highlight the gaps of knowledge if such evidence is lacking.

The author(s) will provide a concise summary of the lessons learnt from this case study.

Clinical Practice pointers (up to three (3))
The author(s) will suggest ways to apply the new knowledge in clinical practice or to highlight the limitations of its applications, if any.

RECOMMENDED FORMAT FOR PRISM (Patients' Revelations as Insightful Studies of their Management) SECTION

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The title should be framed into a question to define the key focus of the case study.

Patient's revelation: What happened?
The author(s) will provide a concise description of the setting in which the subject raised his/her medical or psychosocial issue pertaining to their health or disease management. It should cover the background, encounter, and interaction of patient with the healthcare professional (doctor, nurse, or allied healthcare professional).

Author(s) should conceal the identity of the subject and/or related or accompanying personnel: abbreviation should be used instead, if necessary.

Gaining insight: What are the issues?
The issue(s) raised by the patient should be framed into question(s). The question(s) will constitute a problem list and will serve as a focus for the management of this subject.

Study the management: How do we apply in our clinical practice?
This section covers the approach to the management of the subject by the author(s). The author(s) should provide a literature review of current evidence, if any, of the basis of the subject's management, or to highlight the gaps of knowledge if such evidence is lacking. The author(s) will suggest ways to apply the new knowledge in clinical practice or to highlight the limitations of its applications, if any.

Conclusion
The author(s) will provide a concise summary of the lessons learnt from this case study.

The article submitted to the PRISM section should be written by no more than three authors. Each article should not exceed 2,000 words. Photographs or charts may be included but should conform to the specific instructions for any other articles submitted to *The Singapore Family Physician*.

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