

# What's the buzz around 'lifestyle medicine'?

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A shift in prevalence from infectious to lifestyle-related chronic diseases in developed societies requires a modified approach to clinical management and health policy. The emerging practice of lifestyle medicine draws on existing strategies as well as developing new knowledge, skills, procedures and tools to help manage the modern tsunami of lifestyle-related chronic diseases. It bridges clinical practice and public health using a four-tiered, multisystem approach.

The 20th and 21st centuries have seen big changes in the nature and prevalence of disease. In developed countries like Australia, the shift has been from a predominance of infectious diseases to a predominance of noncommunicable, chronic diseases;<sup>1</sup> a cross-over now accepted as an almost inevitable 'rite of passage' in developing countries. This disease cross-over, called the 'epidemiological transition',<sup>2</sup> occurred in the third quarter of the 20th century in Australia, heralded by the rise in overweight and obesity at population levels.

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## KEY POINTS

- Lifestyle medicine extends current medical principles by striving to modify the behavioural, environmental and social determinants of lifestyle-related chronic disease rather than just the risk factors and symptoms of the disease.
- Crucial to achieving this is establishing the determinants ('cause of the causes' or 'upstream determinants') of lifestyle-related disease as the first step in a four-tiered approach.
- The remaining three steps involve: developing the skills required for clinical practice; using technology to assist behaviour change; and applying procedures that are specific to a lifestyle/environmental approach to care.

Clinical practices and healthcare systems, however, have been unprepared for dealing with these changes and remain largely unchanged. In a medical benefits environment that rewards quick consultations between a single 'expert' and the patient, the chronic disease problem is not being optimally managed. Tinkering around the edges, such as through the chronic disease management system introduced in Australia in 1999, has failed to arrest the problem. Hence, alternative approaches need to be considered. To this end, since its genesis towards the end of the millennium, over a dozen professional colleges and societies in lifestyle medicine have arisen around the world. Postgraduate training is currently offered in several tertiary institutions worldwide, and a growing number of texts are now available.<sup>3-6</sup>

Here we discuss a four-tiered approach used in the developing discipline of lifestyle medicine for dealing with chronic diseases



related to lifestyle, society and the environment. We hope this provides direction for clinicians when managing the modern tsunami of lifestyle-related chronic disease.

### Lifestyle modification in chronic disease

The value of a healthy lifestyle for the primary prevention of chronic disease has been demonstrated in large-scale epidemiological studies including the Framingham Heart Study, the Nurses' Health Study and the European Prospective Study into Cancer and Nutrition.<sup>7-9</sup> Indeed, an estimated 90% of cardiovascular disease and type 2 diabetes mellitus, as well as one in three cancers, have been estimated to be at least somewhat preventable through healthy lifestyle practices.<sup>10,11</sup>

But while primary prevention is most desirable, patients are often not motivated by the possibility of future pain (physical or emotional), which may account for why lifestyle as 'medicine' has not been historically emphasised. However, individuals are motivated by present pain, and a growing body of evidence is showing lifestyle interventions to be efficacious for the management and, in some instances, treatment of chronic conditions – that is, for secondary prevention. Indeed, intensive lifestyle change has been shown to:

**TABLE 1. DIFFERENCES BETWEEN CONVENTIONAL MEDICAL PRACTICE AND LIFESTYLE MEDICINE APPROACHES IN PRIMARY CARE<sup>3</sup>**

Conventional medicine	Lifestyle medicine
Treats individual risk factors	Treats lifestyle/environmental causes
Patient is more often a passive recipient of care	Patient is more often an active partner in care
Patient is not often required to make big changes	Patient is often required to make big changes
Treatment is often short term	Treatment is usually long term
Responsibility is more on the clinician	Responsibility is also on the patient
Medication is often the 'end' treatment	Medication may be necessary, but the emphasis is on lifestyle/environmental change
Emphasis on diagnosis and prescription	Emphasis on motivation and adherence
Goal is often disease management	Goal is primary/secondary/tertiary prevention
Less consideration of environment	More consideration of environment
Side effects are balanced by the benefits	Side effects that impact on lifestyle require greater attention
Other medical specialties and allied health professionals may be involved	Allied health professionals are more often involved
Doctor generally acts independently using a one-on-one approach	Doctor is part of a team of health professionals, with the potential for alternative clinical interactions, e.g. shared medical appointments, telephone triaging

- reduce vascular stenosis and associated disorders<sup>12</sup>
- normalise blood sugar levels without the need for medication<sup>13</sup>
- regress markers of early stage prostate cancer.<sup>14</sup>

Hence, the view of therapeutic lifestyle change is shifting from that of a nicety – something that might produce better health in years to come – to a necessity. Of course, facilitating patient receptiveness and long-term adherence to therapeutic lifestyle change can be challenging. However, comprehensive lifestyle interventions have reported high levels of engagement and low levels of recidivism by applying an array of strategies for behaviour change including education, social support, self-monitoring, problem solving and nurturing self-efficacy.<sup>14-16</sup>

### Role of lifestyle medicine

Lifestyle medicine has been defined as: 'The application of environmental, behavioural, medical and motivational principles to the management (including self-care and self-management) of lifestyle-related health problems in a clinical and/or public health setting.'<sup>3</sup>

Lifestyle medicine adds to conventional medicine in that it focuses on the upstream and midstream conditions for disease, as well as proximal risk factors and the disease itself. It differs from nonmedical clinical practice, that is, practice by clinical allied health professionals, in that it may include medication (e.g. for smoking cessation or hunger control) and even surgery where appropriate (e.g. for weight control) as in standard medical care. It also differs from purely behavioural approaches in

that it examines the social and environmental aetiologies as well as individual behaviours. Some of the other main differences between the two approaches are shown in Table 1.<sup>3</sup>

**Lifestyle medicine in practice**

The problem for clinicians is how to facilitate patient receptiveness and long-term adherence to therapeutic lifestyle change. From the beginning of this century attempts have been made to develop a structure and pedagogy for lifestyle medicine that define its operational processes. In Australia, this is a four-tiered approach (discussed in more detail in the next section) involving the:

- determinants of lifestyle-related disease (the ‘science’)

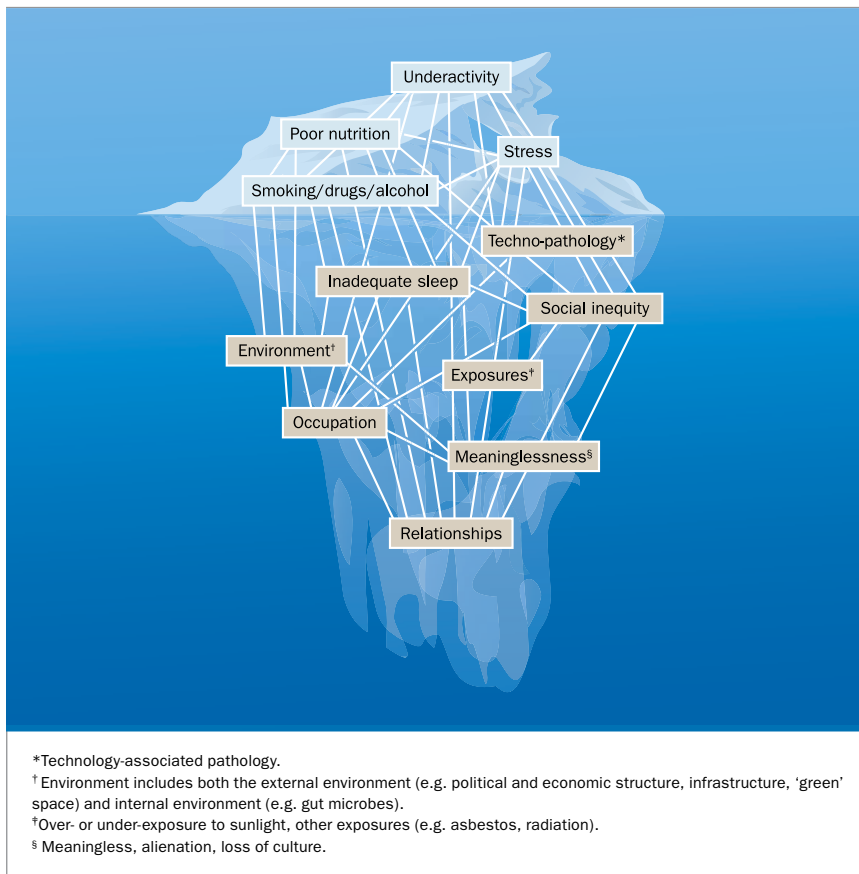
- skills required for clinical practice (the ‘art’)
- use of technology to assist behaviour change (the ‘tools’)
- procedures applicable for a lifestyle and environmental approach to care (the ‘actions’).

Several draft practice principles have also been formulated by the Australasian Society of Lifestyle Medicine and some are documented in the Box.<sup>3</sup> These principles may change with time, but they offer a starting point for practice in the field.

**Four-tiered approach of lifestyle medicine Determinants**

By determinants we mean the ‘causes of the causes’. Fifteen key determinants for

chronic disease (often incorrectly called ‘causes’) have been identified in previous publications.<sup>3,17</sup> Suffice to say that in the mainstream literature these are usually confined to a few behavioural ‘causes’, namely poor nutrition, inactivity, smoking, excessive alcohol intake and stress. However, these ‘causes’ are also the product of societal and environmental factors. We have provided evidence for at least 11 other determinants for chronic disease, including inadequate sleep, the environment, a loss of purpose or identity and social inequity. All these determinants interact with each other in a ‘systems’ fashion as illustrated in Figure 1. This suggests that a total approach to management is needed that avoids simplistic linear approaches such as a lone diet or an exercise program.



**PRACTICE PRINCIPLES FOR LIFESTYLE MEDICINE<sup>3</sup>**

- Consider the lifestyle and environmental influences on chronic diseases
- Regard obesity (and other known risk factors) as signs for further investigation for chronic disease risk (but don’t disregard those who are not overweight)
- Engage individuals with chronic disease in some level of self-management
- Adopt a client-centred, counselling style, in either a one-on-one or shared format, that focuses on increasing motivation, health efficacy and health literacy
- Provide a user-friendly practice environment, with team-care involvement and understandable health information
- Consider nutrition, exercise, and stress management as the core of lifestyle medicine
- Do not ignore underlying social, economic, and environmental factors in chronic disease
- Consider lifestyle measures in addition to drug or surgical therapy in patients with later-stage lifestyle diseases

**Figure 1.** A ‘systems’ approach to chronic disease showing the inter-relatedness of lifestyle and environmental determinants. The most obvious determinants (poor nutrition, underactivity, smoking, excess alcohol and stress) are only the ‘tip of the iceberg’.

### **Lifestyle medicine skills**

The skills involved in conventional medical practice including diagnosis, prescription and counselling, are also appropriate and necessary for any practice of lifestyle medicine. However, the reach is a little wider when considering upstream behavioural and environmental determinants of disease in lifestyle medicine. Obesity for example, is clearly a function of energy imbalance. However, energy intake (food and drink) and components of energy expenditure (metabolism, physical activity) can be influenced by a range of other, less obvious factors, which should be considered in any 'systems model' approach. Stress, for example, can influence energy intake and metabolism positively or negatively as well as activity levels. Inadequate sleep can lead to low activity levels during the day, which can then impact on diet and relationships, which can ultimately affect body weight outcomes.

### **Diagnosis**

Chronic disease diagnosis depends on the identification of the underlying determinants and social mechanisms that are driving unhealthy behaviours as much as the disease itself. In clinical practice most chronic diseases share common dysfunctions or mechanisms (e.g. low-grade inflammation also called 'metaflammation') and signs (e.g. elevated inflammatory markers, gut dysbiosis).<sup>18</sup> Addressing the upstream determinants causing these dysfunctions can often alter the outcomes of several chronic disease processes.

### **Prescription and deprescription**

Prescriptions can be for both pharmacological and nonpharmacological interventions, but in lifestyle medicine they are used more as an adjunct to a therapeutic lifestyle intervention than as a primary treatment. Medications are directed more upstream to the cause and the 'cause of the cause' rather than aimed at disease or risk modification, which is generally the medication focus of conventional medicine. Deprescription, in response to the frequent overuse of polypharmacy that

may cause harm but also result in limited benefit–cost outcome, is also likely to become a standard procedure in managing lifestyle-related problems in the future.<sup>19</sup>

### **Counselling**

Counselling in lifestyle medicine involves the usual array of skills, but potentially draws more from the behavioural and environmental literature. This includes a greater reliance on motivational interviewing and principles; mechanisms of influence as used by advertising and social marketing; and the arts of coaching, coaxing and nudging patients from extrinsic (external) to intrinsic (internal) motivation to drive long-term behaviour change. There is also a greater reliance on public health and health promotion for major environmental change as an upstream determinant, like those used in the anti-smoking and now obesity debates.

### **Technology or tools to assist change**

Rapid advances in modern technology have provided tools to assist both behaviour change and monitoring in lifestyle medicine.<sup>20</sup> These include new devices and developments in telemetry for self-monitoring, often called mHealth (mobile health), or advances in health care and public health practices. mHealth includes wearable sensing devices, such as blood pressure monitors; mobile connective technology such as smartphone food tracking for weight loss; specific telemetry devices or special phone apps; plus wireless or Bluetooth compatible devices. A nonexhaustive (and rapidly changing) list of these is shown in Table 2.

### **Procedures**

Examples of evidence-based procedures specific to a lifestyle medicine approach to patient care are weight-loss programs, quit smoking programs, drug or patch therapy, meditation classes, art therapy, sleep hygiene, light therapy, chronic pain management and self-help programs such as Alcoholics Anonymous and Narcotics

Anonymous. Possible future procedures include faecal microbial transplants or diet therapy for recolonisation of the gut microbiome. Some of the other new or innovative procedures currently entering lifestyle medicine are summarised here.

### **Shared medical appointments**

Shared medical appointments involve clinical consults with several patients at a time (10 to 12), each providing peer support and contributing their experiences to the consult. Meanwhile, a doctor moves around the group, supported by a trained 'facilitator' (usually a practice nurse or other allied health professional) consulting patients individually. These have been used as an adjunct to the clinical process in several countries including Australia. They provide more time with the doctor, faster access to care, increased peer support and greater opportunity for self-management. As such they have been rated highly by both patients and practitioners as a form of clinical practice.<sup>21</sup> Shared medical appointments are likely to become a standard procedure in a lifestyle medicine approach to chronic disease management, particularly if, and when, the Health Care Home model is introduced into the Australian health system.

### **Programmed shared medical appointments**

Programmed shared medical appointments are an Australian innovation involving a set program for specific chronic disease management over a limited number of sessions (e.g. six to eight). These are an advance on group education programs because they involve medical input. They are also an advance on one-on-one clinical consultations in that they involve a set educational 'course,' and utilise a multidisciplinary approach. A trial of this approach is currently being carried out in Southern New South Wales for weight control. Other obvious programs for development are diabetes care, unsettled babies and postoperative rehabilitation as well as other areas that benefit

**TABLE 2. LIFESTYLE MEDICINE ‘TOOLS’**

Device	Uses	Clinical applications
<b>mHealth (mobile health)</b>		
Mobile phone	<ul style="list-style-type: none"> <li>• Receive messages (SMS)</li> <li>• Set reminders (SMS or calendar)</li> </ul>	<ul style="list-style-type: none"> <li>• Health promotion and education</li> <li>• Appointment or medication reminders</li> </ul>
Clinically approved smart phone applications (apps) ± Bluetooth connected device	<ul style="list-style-type: none"> <li>• Measure blood pressure, heart rate, blood concentrations (e.g. glucose, INR), temperature, oxygen saturation</li> <li>• Provide alerts on environmental factors such as air pollution, pollen levels</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor chronic conditions to follow progress or identify exacerbations (e.g. hypertension, arrhythmia, diabetes, COPD)</li> <li>• Track menstrual cycle (temperature)</li> <li>• Monitor environmental factors for susceptible individuals (e.g. COPD, thunderstorm asthma)</li> </ul>
<b>Telemetric monitoring</b>		
Accelerometer sensors, inertial sensors	<ul style="list-style-type: none"> <li>• Detect tilt, inertia</li> </ul>	<ul style="list-style-type: none"> <li>• Record/assess gait and balance (e.g. in a rehabilitation setting)</li> <li>• Detect gait, paralysis (e.g. early Parkinson's disease)</li> </ul>
Movement sensors, breathing sensors	<ul style="list-style-type: none"> <li>• Detect movement, breathing, sleep</li> </ul>	<ul style="list-style-type: none"> <li>• Record activity levels (may aid weight loss)</li> <li>• Detect apnoea (e.g. sleep apnoea)</li> <li>• Monitor sleep quality (e.g. insomnia, restless legs)</li> </ul>
ECG vest, ECG monitor	<ul style="list-style-type: none"> <li>• Collects cardiac rhythm information</li> <li>• Some vests will defibrillate when indicated</li> </ul>	<ul style="list-style-type: none"> <li>• Identify arrhythmia</li> </ul>
Neurological sensors	<ul style="list-style-type: none"> <li>• Record brain wave patterns</li> </ul>	<ul style="list-style-type: none"> <li>• Assess sleep-cycle patterns</li> <li>• Pre-screen for epilepsy</li> </ul>
<b>Implantable devices</b>		
Implantable cardiac devices	<ul style="list-style-type: none"> <li>• Identify arrhythmia</li> <li>• Cardiac resynchronisation, pacing</li> </ul>	<ul style="list-style-type: none"> <li>• Cardiac arrhythmias</li> </ul>
Defibrillator	<ul style="list-style-type: none"> <li>• Identify ventricular fibrillation, defibrillate</li> </ul>	<ul style="list-style-type: none"> <li>• Various cardiac conditions</li> </ul>
<b>Self-monitoring</b>		
Bioelectrical impedance analysis scales	<ul style="list-style-type: none"> <li>• Measure body fat, lean tissue mass</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor body composition (e.g. overweight/obesity, sarcopenia)</li> </ul>
Dynamometer	<ul style="list-style-type: none"> <li>• Measures grip strength</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor strength (e.g. post injury, fitness)</li> </ul>
Handheld expiratory devices	<ul style="list-style-type: none"> <li>• Measure FEV<sub>1</sub>, FEV<sub>6</sub>, lung age</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor lung function (e.g. COPD, asthma)</li> </ul>
Sphygmomanometer	<ul style="list-style-type: none"> <li>• Measures blood pressure</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor blood pressure (e.g. to establish diagnosis, if starting a new medication)</li> </ul>
<b>Brief assessments</b>		
Short diet questionnaire	<ul style="list-style-type: none"> <li>• Collects information on basic diet quality</li> </ul>	<ul style="list-style-type: none"> <li>• Dietary assessment</li> </ul>
Diet, activity and behaviour questionnaire	<ul style="list-style-type: none"> <li>• Collects information on diet and activity</li> </ul>	<ul style="list-style-type: none"> <li>• Diet, activity and behavioural assessment</li> </ul>
Subjective physical activity level questionnaire	<ul style="list-style-type: none"> <li>• Collects information on physical activity</li> </ul>	<ul style="list-style-type: none"> <li>• Estimate VO<sub>2</sub> max</li> </ul>
<b>Information sources</b>		
Internet use and support groups; other reading material/bibliotherapy	<ul style="list-style-type: none"> <li>• Share information</li> <li>• Provide support</li> </ul>	<ul style="list-style-type: none"> <li>• Chronic disease (e.g. arthritis, asthma)</li> <li>• Psychological illness and issues (depression, anxiety)</li> <li>• Age-specific or rare disease (e.g. cystic fibrosis)</li> </ul>

Abbreviations: COPD = chronic obstructive pulmonary disease; FEV<sub>1</sub>, FEV<sub>6</sub> = forced expiratory volume in one second or six seconds, respectively; INR = international normalised ratio; VO<sub>2</sub> max = maximum rate of oxygen consumption.

from group support, such as chronic pain management.

### **Self-management training**

Self-management is an important part of chronic disease care. Self-management training is a process carried out at different levels from individual assistance by a health professional to group learning processes.

### **Telephone triaging**

Telephone triaging is being used increasingly in the UK to speed up the process

of consulting with a doctor or appropriate allied health professional. Because health matters relating to lifestyle require more than a cursory 10-minute consultation, screening by phone using a questionnaire similar to the one in Figure 2 enables others in the medical centre to triage cases into different levels of need or assistance at all stages of the healthcare process. Initially the first triage point might be the receptionist, then a nurse or allied health professional. This allows medical issues to be assessed before utilising valuable resources but still ensures patients get the

required level of help, including and up to medical attention if necessary.

### **Community referrals**

Lifestyle medicine-related chronic disease patients can also benefit from referrals to programs and services in the community that are either broadly or narrowly related to their issues. An example of this is Act-Belong-Commit (ABC), which is a community mental health initiative developed in Western Australia.<sup>22</sup> A list of community services is combined with a screening process to enable referral from lifestyle medicine practitioners, either through shared medical appointments or in standard consultations. Referrals can be to professional internet sites, such as [www.blackdoginstitute.org.au](http://www.blackdoginstitute.org.au) or [www.beyondblue.org.au](http://www.beyondblue.org.au) for depression, or in the form of a 'green prescription' for physical activity like that developed in New Zealand.<sup>23</sup>

### **Summary**

Is the buzz around lifestyle medicine justified? Irrespective of the answer, there is an obvious need for a range of new approaches to standard clinical and public health practice to help manage the new wave of chronic diseases that appear inevitable with economic development. Although not a major departure from conventional practice, lifestyle medicine reframes the debate, bridges clinical practice and public health in a multisystem approach. It also aims to provide the knowledge, skills, tools and procedures as a vital addition to current practice. As shown in Table 1, the field is too broad to be dealt with by one profession alone and requires a new approach to clinical teamwork involving several levels of medicine and allied health. MI

### **References**

A list of references is included in the online version of this article ([www.medicinetoday.com.au](http://www.medicinetoday.com.au)).

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<b>LIFESTYLE SCREENING QUESTIONNAIRE</b>			
Patient instructions: For each question, give a score from 1 to 5 in the score column using the following scale: 1 = never do; 2 = rarely do; 3 = sometimes do; 4 = often do; 5 = very often do. Also tick the relevant column if you would like us to help you with any of these issues.	Score	Would you like help with this?	
		Yes	Later
Do you ever feel the need to cut down on your smoking?			
Do you ever feel the need to reduce your alcohol intake?			
Do you ever feel the need to cut down on other drug use?			
During the past month, have you often been bothered by feeling down, depressed, or hopeless?			
During the past month, have you often been bothered by having little interest or pleasure in doing things?			
Have you been worrying a lot about everyday problems?			
Do you spend most days being physically inactive?			
Are you concerned about your current weight?			
Are you unhappy with the quality of your sleep?			
Do you eat less than three servings of fruit and five servings of vegetables each day?			
Do you experience side effects from any medications you take?			
Do you have concerns about the state of your skin or hair?			
Are you concerned in any way about your sexual performance?			
Are your teeth or gums causing you any problems?			
Do you regularly drink large amounts of soft drinks or fruit juices?			

Adapted from Goodyear-Smith F, Arroll B, Sullivan S, et al. Lifestyle screening: development of an acceptable multi-item general practice tool. *NZ Med J* 2004; 117(Pt 1205): U1146.

**Figure 2.** An example of a lifestyle questionnaire.

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