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LIFESTYLE ADVICE FOR BETTER PATIENT OUTCOMES



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For more information on smoking cessation, visit www.hpb.gov.sg/smokefree.

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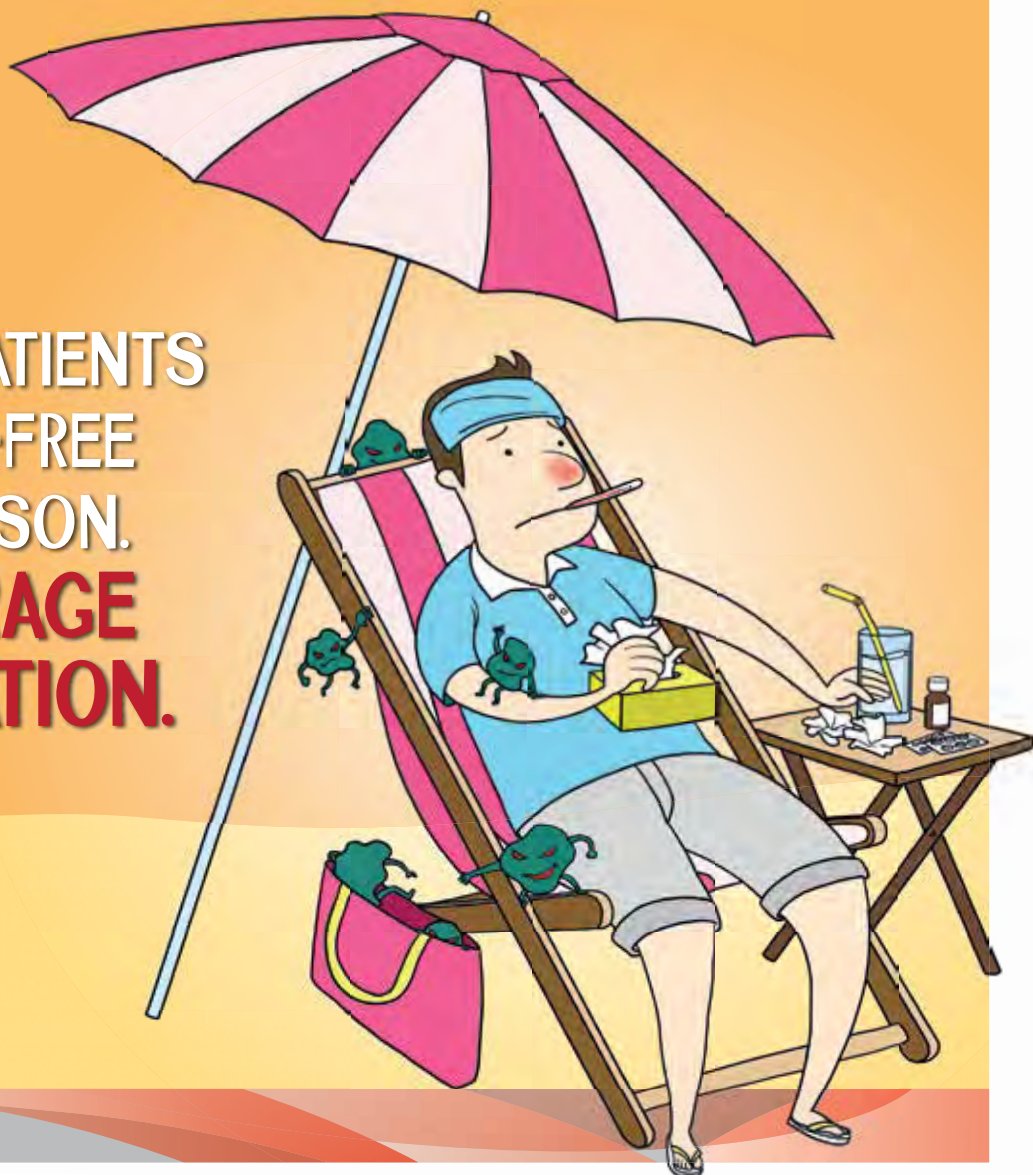
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STAY ALERT THIS
FLU SEASON!
**KNOW
HOW TO
FIGHT
FLU**

HELP YOUR PATIENTS
STAY FLU-FREE
THIS SEASON.
**ENCOURAGE
VACCINATION.**



5 WAYS TO **FIGHT** FLU



PREVENTION IS BETTER THAN CURE

Frequent Hand Washing
Wash your hands with soap and water
or use an alcohol-based hand sanitiser.



Influenza Vaccination
If you belong to a high-risk group,
ask your doctor about flu vaccination.



STOP THE SPREAD

Go to the doctor early
If you experience flu-like symptoms,
seek treatment early and wear a mask.



Stay **H**ome

If you're unwell, rest at home
and avoid school, work, hospital
visits and crowded places.



Use A **T**issue

Cover your nose and mouth with
a tissue when you cough or sneeze.
Dispose of the used tissue into a dustbin.

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LIFESTYLE ADVICE FOR BETTER PATIENT OUTCOMES

A/Prof Goh Lee Gan

SFP2012; 38(3): 4

Chronic diseases continue to cause unprecedented burden of disease globally. Singapore is no exception. Obesity, hypertension, diabetes mellitus, and hyperlipidemia are high risk diseases that can be reduced if not prevented by attention to lifestyle change. Similarly, most of chronic obstructive airway disease is related to cigarette smoking. And bronchial asthma is aggravated by smoking.

Lifestyle advice and lifestyle change is therefore the focus of this Family Practice Skills Course – Three tools will be introduced namely, the Health Choices – Lifestyle Advice Resource for Healthcare Professionals which contains a practice manual for healthcare professionals and flip-chart for patient consultation which contains assessment methodologies such as 3As (ask, advise, action) and 5As (ask, advise, assess, assist and arrange) behavioural change strategy for smoking and obesity, besides stress management and safer sexual behaviour; the motivational interview technique of counselling behaviour change; and the health literacy principles which hopefully will help the patient build the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions including lifestyle change.

In Unit 1, we note that the chronic diseases contribute to 73.8% of the total deaths in Singapore in 2010. We need to work on lifestyle change to reduce the prevalence of the chronic diseases.

In Unit 2, smoking cessation is a most cost-effective medical intervention and helping our patients stop smoking is a highly worthwhile endeavor. A doctor providing smoking cessation counseling will do well to first realise why many smokers are unwilling (or unable) to quit. We should emphasise smoking cessation in the prevention and management of chronic obstructive pulmonary disease.

In Unit 3, the key concepts of motivational interview as a counselling technique for behaviour change is described. Essentially, the doctor needs to make the patient argue for change as he or she sorts out their ambivalence towards the desirability to change and the confidence to do that. The four counselling principles in motivational interview are: Develop discrepancy; Express empathy; Roll with resistance; and Support self-efficacy. Facilitating the patient to process and speak more about why and how to change then becomes one of the strategies to motivate change. In MI, this is known as change talk. Once change talk is elicited, the ways the practitioner can respond are: Elicit more (with open questions); Affirm; Reflect; and Summarise. Once the patient decides to change, goal setting becomes the next important process. Needless to say, the goal setting process must be done in

collaboration with the patient, with the patient having the final say.

In Unit 4, the focus is on health literacy as a concept and the practical points to remember about implementing this concept. Health literacy may be defined as the degree to which people have the ability to find, understand, act and communicate health information to make informed health decisions. To communicate to the level the patient can make use of the health information given, there is a need for the healthcare professional to first be able to identify and understand the patient's health literacy by considering age, gender, cultural background, education level, thoughts and behaviours associated with the topic under discussion, and perceived benefits and barriers towards the topic. Five strategies can then be applied for improving that patient's understanding and self management of his or her medical condition: (1) Assess patients' health literacy using open-ended questions; (2) Speak in plain language; (3) Limit the number of teaching points; (4) Use visual aids, and (5) Incorporate the 'teach-back' method to ensure patient understanding.

In Unit 5, smoking cessation is used to illustrate the application of health literacy principles to meet patients' needs. There are three areas to focus on: developing a health literate patient; presenting information in a way that is easy to understand and use; and creating a health literate delivery system that provides ready access to and delivery of health information and health services. The Health Choices – flip chart tool kit for healthcare professionals launched on 1 September 2012 - illustrates the elements of a health literate tool for communicating smoking cessation.

In Unit 6, enhancing physician skills in health literacy development in the patient and health care system consists of improving on 6 things: Recognise and assist patients with low literacy to overcome their information handling problems; Improve usability of health information; Improve the usability of health services; Build knowledge to improve health decision making; Advocate for health literacy in your organisation; and Learn more about health literacy.

A message from the Honorary Editor

In this issue of SFP in 2012, we publish the first PRISM article, which showcases a young patient who presented with acute eye pain and epistaxis in primary care. There are valuable lessons associated with case studies. We therefore welcome more PRISM submissions from medical students to established Family Physicians in Singapore, who would like to share their learning experiences with fellow primary care physicians. Together we will build up an enquiring and continuing learning culture, in order for Family Medicine to scale to a different pinnacle in Singapore.

Dr Tan Ngiap Chuan

Honorary Editor

The Singapore Family Physician

GOH LEE GAN, Professorial Fellow,
Division of Family Medicine, University Medicine Cluster,
National University Health System Director,
Institute of Family Medicine, College of Family Physicians Singapore



“LIFESTYLE ADVICE FOR BETTER PATIENT OUTCOMES” FAMILY PRACTICE SKILLS COURSE

- Overview Of “Lifestyle Advice For Better Patient Outcomes” Family Practice Skills Course
- Unit 1 : Epidemiology of Chronic Diseases and the Need for Lifestyle Advice
- Unit 2 : Lifestyle Advice and Management
- Unit 3 : Motivational Interviewing (MI) in Behavioural Change
- Unit 4 : Health Literacy – Asking the Right Questions & Broad Concepts
- Unit 5 : Health Literacy – Meeting Patient Needs
- Unit 6 : Health Literacy – Enhancing Physician Skills

OVERVIEW OF “LIFESTYLE ADVICE FOR BETTER PATIENT OUTCOMES” FAMILY PRACTICE SKILLS COURSE

A/Prof Goh Lee Gan

SFP2012; 38(3): 6-7

INTRODUCTION

Chronic diseases continue to cause unprecedented burden of disease globally. Most often, the diseases are preventable and lifestyle-related. Examples are obesity which is a key member of the deadly quartet - the other three being diabetes mellitus, hypertension, and hyperlipidemia. Yet obesity is no easy matter to manage, let alone eradicate. Similarly, most of chronic obstructive airway disease is related to cigarette smoking. And bronchial asthma is aggravated by smoking.

Lifestyle advice and lifestyle change is therefore the focus of this Family Practice Skills Course - Three tools will be introduced namely, the Health Choices - Lifestyle Advice Resource for Healthcare Professionals which contains a practice manual for healthcare professionals and flip-chart for patient consultation which contains assessment methodologies such as 3As (ask, advise, action) and 5As (ask, advise, assess, assist and arrange) behavioural change strategy for smoking and obesity, besides stress management and safer sexual behaviour; the motivational interview technique of counselling behaviour change; and the health literacy principles which hopefully will help the patient build the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions including lifestyle change.

Thanks are due to the Health Promotion Board (HPB) for the sponsorship of this Skills Course as a concerted effort to put together to visit and revisit these lifestyle change tools which we can use opportunistically during our encounters with patients. We look forward to your participation and benefitting from the course.

COURSE OUTLINE AND CME POINTS

This Family Practice Skills Course is made up of the following components. You can choose to participate in one or more parts of it. The CME points that will be awarded are also indicated below.

Components and CME Points

- Distance Learning Course – 6 units (6 Core FM CME points)

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Director, Institute of Family Medicine, College of Family Physicians Singapore

upon attaining a minimum pass grade of 60% in Distance Learning Online MCQ Assessment)

- 2 Seminars (2 Core FM CME points per seminar)
- 2 Workshops (1 Core FM CME point per workshop)

Distance Learning Course

Unit 1: Epidemiology of Chronic Diseases and the Need for Lifestyle Advice

Dr Jonathan Pang, A/Prof Goh Lee Gan,

Unit 2: Lifestyle Advice and Management

Dr Ong Kian Chung

Unit 3: Motivational Interviewing (MI) in Behavioural Change

Dr Tan Yew Seng

Unit 4: Health Literacy – Asking the Right Questions & Broad Concepts

Choo Ren Min

Unit 5: Health Literacy – Meeting Patient Needs

Vasuki Utravathy

Unit 6: Health Literacy – Enhancing Physician Skills

A/Prof Goh Lee Gan

COURSE TOPIC DETAILS

Unit 1: Epidemiology of Chronic Diseases and the Need for Lifestyle Advice

Dr Jonathan Pang, A/Prof Goh Lee Gan

Unit 2: Lifestyle Advice and Management

Dr Ong Kian Chung

Unit 3: Motivational Interviewing (MI) in Behavioural Change

Dr Tan Yew Seng

Unit 4: Health Literacy – Asking the Right Questions & Broad Concepts

Choo Ren Min

Unit 5: Health Literacy – Meeting Patient Needs

Vasuki Utravathy

Unit 6: Health Literacy – Enhancing Physician Skills

A/Prof Goh Lee Gan

COURSE TOPIC DETAILSUnit 1: Epidemiology of Chronic Diseases and the Need for Lifestyle Advice

- The epidemiology of chronic diseases of importance to Singaporeans
- The lifestyle and chronic disease link.
- Health Choices - Lifestyle Advice tools

Unit 2: Lifestyle Advice and Management

- Chronic Obstructive Pulmonary Disease
- Tobacco dependence as a chronic disease
- Conclusions

Unit 3: Motivational Interviewing (MI) in Behavioural Change

- Introduction
- Reviewing our assumptions
- What is Motivational Interviewing (MI)
- Talking about change
- Getting patients to talk about changing
- Piecing things together
- Patients who change their minds
- Concluding comments – it all seems rather difficult for the practitioner

Unit 4: Health Literacy – Asking the Right Questions & Broad Concepts

- Background.
- What is health literacy?
- Health literacy in context.
- Why is health literacy important?
- Effective patient-provider communication.
- Conclusions.

Unit 5: Health Literacy – Meeting Patient Needs

- Background.
- Prevalence of tobacco use in Singapore.
- Majority of current daily smokers wish to quit smoking.
- Cost of tobacco use.
- National framework of tobacco control.
- Opportunistic intervention in smoking cessation.
- The "Let's Quit Smoking" pages in Health Choices tool kit.
- Guideline for opportunistic intervention in smoking cessation.

Unit 6: Health Literacy – Enhancing Physician Skills

- The scope of health literacy demanded of the present day health services user.
- Recognise and assist patients with low literacy.
- Improve usability of health information.
- Improve the usability of health services.

- Build knowledge to improve health decision making.
- Advocate for health literacy in your organization.
- Learn more about health literacy.

FACE-TO-FACE SESSIONS**Seminar 1: 20 October 2012, 2.00pm – 4.00pm**

Unit 1: Epidemiology of Chronic Diseases and the Need for Lifestyle Advice

Dr Jonathan Pang

Unit 2: Lifestyle Advice and Management

Dr Ong Kian Chung

Unit 3: Motivational Interviewing (MI) in Behavioural Change

Dr Tan Yew Seng

Workshop 1: 20 October 2012, 4.00pm – 6.00pm

- Practical Tips – Motivational Interviewing (MI) & Case Scenarios/ Role Play
- Smoking / Overweight Cases

Ms Samantha Bennett

Ms Angela Leow

Seminar 2: 21 October 2012, 2.00pm – 4.00pm

Unit 4: Health Literacy – Asking the Right Questions & Broad Concepts

Ms Shirin Wadia

Unit 5: Health Literacy – Meeting Patient Needs

Ms Vasuki Utravathy

Unit 6: Health Literacy – Enhancing Physician Skills

A/Prof Goh Lee Gan

Workshop 2: 21 October 2012, 4.00pm – 6.00pm

- Practical Tips – Health Literacy & Case Scenarios/ Role Play
- Sexual Health/ Stress Cases

Ms Shirin Wadia

Ms Samantha Bennett

UNIT NO. 1

EPIDEMIOLOGY OF CHRONIC DISEASES AND NEED FOR LIFESTYLE ADVICE

Dr Jonathan Pang & A/Prof Goh Lee Gan

ABSTRACT

Chronic diseases have a serious impact on individuals and on society in general. They affect the quality of life of individuals and can be a financial burden on those who are affected. There is a disease continuum of lifestyle, high risk diseases, and end organ damage. Lifestyle change is necessary if we are to reduce the prevalence of these chronic diseases. The Health Choices – Lifestyle Advice Resource for Healthcare Professionals provides a tool for lifestyle counselling.

Keywords:

Financial burden; disease continuum; high risk diseases; Lifestyle Advice Resource; Prevalence

SFP:2012;38(3): 8-9

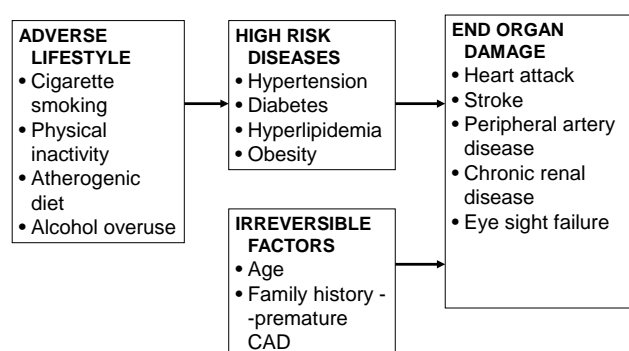
BACKGROUND

Chronic diseases have been defined as medical conditions lasting for longer than 3 months. The list of conditions span many organ systems. These are the major causes of disability and death globally. According to the World Health Organization (WHO), almost half of all chronic disease deaths occur in people under the age of 70.

Chronic diseases have a serious impact on individuals and on society in general. They affect the quality of life of individuals and can be a financial burden on those who are affected.

Most of the chronic diseases that are of large numbers are related to adverse lifestyle. There is a disease continuum of

Figure 1. Inter-related links between lifestyle, high risk diseases, and end organ damage



Source: Goh LG et al. MOH, CPG, 1/2011

lifestyle, high risk diseases, and end organ damage. See Figure 1.

The need for lifestyle change is therefore of great importance if we are to succeed in reducing the prevalence of these conditions and the resultant burden.

EPIDEMIOLOGY OF CHRONIC DISEASES OF IMPORTANCE TO SINGAPOREANS

In Singapore, chronic diseases are a significant cause of illness and death. The common diseases that affect Singaporeans fall into several clusters:

- Diabetes Mellitus, Hypertension (High Blood Pressure), Lipid disorders (e.g. high blood cholesterol), and Obesity and the endstage organ complications – the cardiometabolic group of conditions.
- Chronic Obstructive Pulmonary Disease (COPD) which is caused by cigarette smoking, and Bronchial asthma which is aggravated by cigarette smoking.
- Cancers – many which are due to adverse lifestyles e.g. smoking and lung cancer.
- Others.

Table 1 shows the contribution to the principal causes of death from the non-communicable disease which are made up of the chronic diseases. In 2010, they accounted for 73.8% of the total deaths in Singapore.

In 2010, the prevalence of obesity and type 2 diabetes mellitus (T2DM) had risen to 10.8% and 11.6% respectively. In 2009, of the 17,101 deaths (100%), ischaemic heart disease, cerebrovascular disease, and diabetes mellitus contributed respectively 19.2%, 8%, and 1.7% -- making a total of 28.9% from cardiometabolic deaths.

THE LIFESTYLE AND CHRONIC DISEASE LINK

Excessive food intake, unhealthy diet, and physical inactivity are contributory factors to the high risk diseases of hypertension, diabetes, hyperlipidemia, and overweight & obesity. Smoking has its adverse effects not only to the lungs but several other chronic diseases as well. See Table 2.

Adopting healthy lifestyle practices such as a healthy diet, regular physical activity, and quitting or avoiding tobacco use can prevent or control the onset of debilitating and expensive complications of chronic diseases.

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Table 1. Principal causes of death in Singapore and contribution from the non-communicable diseases				
Year		2008	2009	2010
Total number of deaths		17,222	17,101	17,610
Percentage of total deaths				
1	Cancer [ICD9:140-208]	29.3	29.3	28.5
2	Ischaemic heart disease [ICD9:410-414]	20.1	19.2	18.7
3	Pneumonia [ICD9: 480-486]	13.9	15.3	15.7
4	Cerebrovascular disease (including stroke) [ICD9: 430-438]	8.3	8.0	8.4
5	Accidents, Poisonings & Violence [ICD9: E800-E999]	5.8	5.7	5.5
6	Other heart diseases [ICD9: 393-398, 402, 415-429]	4.0	4.4	4.8
7	Chronic obstructive lung disease [ICD9: 490-493, 496]	2.5	2.4	2.5
8	Urinary tract infection [ICD9: 599.0]	2.1	2.5	2.5
9	Nephritis, Nephrotic syndrome & Nephrosis [ICD9: 580-589]	2.1	2.3	2.2
10	Diabetes mellitus [ICD9: 250]	2.7	1.7	1.0
Total deaths from non-communicable diseases (Total deaths less those due to 3, 5, 6, and 8)		74.2	72.1	73.8

Table 2. Chronic diseases and lifestyle risk factors				
Disease	Lifestyle Risk Factors			
	Excessive food intake	Unhealthy diet (Atherogenic)	Sedentary lifestyle	Smoking
Cancers	Y	Y		Y
Stroke	Y	Y	Y	Y
Ischaemic heart disease	Y	Y	Y	Y
Hypertension	Y	Y	Y	Y
Diabetes mellitus	Y	Y	Y	
Source: HPB (Slightly adapted)				

Impaired fasting glucose and impaired glucose tolerance

Singapore has a high burden of Impaired Fasting Glucose (IFG) and Impaired Glucose Tolerance (IGT) with 12% of its population between the ages of 18 and 69 (NHS 2004) with at least one of these conditions. Poorly controlled IFG/IGT is associated with an increased risk of developing Diabetes Mellitus.

Studies show that with intensive lifestyle change, there is a chance of reversing the impaired glucose state in some 58% of such subjects. To deal with this, an HPB programme consisting of an individual health risk assessment, guidance in setting action plans with targets, referrals to healthy lifestyle programmes and counselling on their progress has been implemented.

The Nurse Educator will follow-up, over the phone, with each participant after a period of 6 months, 9 months and 12 months. Participants will be required to undergo an Oral Glucose Tolerance Test at the end of 1 year to determine whether their condition has improved.

HEALTH CHOICES – LIFESTYLE ADVICE TOOLS

To assist healthcare professionals in providing lifestyle advice, the Health Choices – Lifestyle Advice Resource for Healthcare Professionals. This contains a practice manual for healthcare professionals and flip-chart for patient consultation which contains assessment methodologies such as 3As (ask, advise, action) and 5As (ask, advise, assess, assist and arrange) behavioural change strategy for smoking and obesity, besides stress management and safer sexual behaviour; the motivational interview technique of counselling behaviour change; and the health literacy principles which hopefully will help the patient build the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions including lifestyle change.

REFERENCES

1. MOH. Screening for Cardiovascular Disease and Risk Factors. MOH Clinical Practice Guidelines 1/2011.
2. HPB. Health Choices – Lifestyle Advice Resource for Healthcare Professionals, 1 Sep 2012.

LEARNING POINTS

- Chronic diseases have a serious impact on individuals and on society in general.
- They affect the quality of life of individuals and can be a financial burden on those who are affected.
- There is a disease continuum of lifestyle, high risk diseases, and end organ damage.
- Lifestyle change is necessary if we are to reduce the prevalence of these chronic diseases
- The Health Choices – Lifestyle Advice Resource for Healthcare Professionals provides a tool for lifestyle counselling.

ABSTRACT

Smoking cessation is a most cost-effective medical intervention and helping our patients stop smoking is a highly worthwhile endeavor. A doctor providing smoking cessation counseling will do well to first realise why many smokers are unwilling (or unable) to quit. This article focuses on why a doctor should emphasise smoking cessation in the prevention and management of chronic obstructive pulmonary disease.

Keywords:

Chronic obstructive pulmonary disease; Lung cancer; public health burden; FEV1; shortness of breath

SFP2012; 38(3): 10-11

INTRODUCTION

The most prevalent form of tobacco addiction is cigarette smoking and intuitively, the lungs would have to put up with the brunt of harmful effects of the cigarette smoke that is inhaled.

Among the many lung diseases in smokers, 2 major respiratory diseases are most significant, because these illnesses are almost always caused by or associated with smoking, and these diseases have major impact on the sufferer in terms of quality of life and longevity.

The 2 common and serious lung diseases in smokers are: (1) Chronic Obstructive Pulmonary Disease, and (2) Lung Cancer. While Lung Cancer is garnering a certain amount of and public awareness and media attention, chances are, our patients do not know much about the other smoking-related “lung problem” - Chronic Obstructive Pulmonary Disease (COPD).

This is an inadequate notion - as from a general perspective, more smokers suffer from COPD than lung cancer and COPD is a deadlier disease than lung cancer (i.e. causing more deaths annually).

CHRONIC OBSTRUCTIVE PULMONARY DISEASE**A major public health burden**

COPD is a common disease afflicting millions of people worldwide and exacting a very heavy global disease burden. In America and many developed countries, COPD is the 4TH leading cause of death and, among the top 5 leading cause/s of death in these developed countries, COPD is the only one that is increasing in incidence - a disparity all the more striking amid the

dramatic decline in deaths from heart disease and stroke.

If the present trend continues, COPD is predicted to become the third leading cause of death worldwide by 2020. In 1990, a study by the World Bank and World Health Organisation (WHO) ranked COPD 12th as a burden of disease; by 2020, it is estimated that COPD will be ranked 5th.

Smoking – a major cause of COPD

Smoking is the major cause of this condition with 90% of deaths from COPD directly attributable to smoking. Air pollution, exposure to industrial smoke or dust and long term inhalation of smoke from wood fires in developing countries are other minor causes.

Smoking progressively and gradually destroys the lungs and causes a decline in lung function.

The capacity of the lungs to ventilate can be measured by undergoing a simple lung function test known as spirometry. One of the measurements during spirometry is the FEV1 (Forced Expiratory Volume in One Second), the volume of air exhaled in the first second after a deep inhalation. For COPD patients, FEV1 is used to determine the severity of obstruction in the air passages of the lungs.

In normal people who do not smoke, a loss of lung function (FEV1) is expected as one grows older. In smokers, the rate of decline of lung function (FEV1) is about double that of non-smokers. In smokers who have COPD, the rate of decline can be 4-6 times that of non-smokers, i.e., the patient has greater obstruction in the air passages and less lung function as the patient gets older.

The problem is that the loss of lung function in COPD patients is so gradual that most patients with COPD do not realise that they have the illness till it is severe. By the time most patients are diagnosed to have COPD, they may have lost at least 50% of their pulmonary function. This is exactly why the Chronic Obstructive Pulmonary Disease Association (Singapore) (www.copdas.com) in cooperation with other international agencies such as the Global Initiative for Chronic Obstructive Lung Disease (www.goldcopd.com) strongly encourages smokers, especially those with symptoms such as persistent cough and/or breathlessness to undergo spirometry testing.

Who is likely to have COPD?

The symptoms of COPD can range from **chronic cough** and **sputum** ('phlegm') production to severe disabling **shortness of breath**. In some individuals, chronic cough and sputum production are the first signs that they are at risk for developing the airflow obstruction and shortness of breath characteristic of COPD. In others, shortness of breath may be the first indication of the disease. Individuals with COPD increasingly lose their

ONG KIAN CHUNG,
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ability to breathe.

Acute infections or certain weather conditions may temporarily worsen symptoms (exacerbations), occasionally where hospitalisation may be required. Bear in mind that the progression of the disease and the loss of lung function can be so gradual that, presently, many patients don't realise they have COPD till late. Hence if the patient is a smoker or ex-smoker who is **(A) Above 40 years old**, with **(B) Breathlessness** and/or **(C) Chronic cough**, he or she should undergo spirometry testing to ascertain the diagnosis of COPD and grade its severity.

Double-barrel smoking gun

Smokers with COPD are at least 2 times more likely to develop lung cancer than smokers who do not have COPD. Thus, COPD is an independent risk factor for smokers developing lung cancer! So the 'take-home' message for our patients should be - do not smoke and if you are a smoker, do quit for it may not be just a gun you are holding pointed towards yourself but a double-barrel one at that.

Smoking cessation in COPD management

Just as smoking cessation is the single most effective and cost-effective way to reduce the risk of developing COPD, it is also the single most effective modality to stop its progression. While lifelong smokers have a 50% probability of developing COPD during their lifetime, there is recent evidence that the risk of developing COPD falls by about half with smoking cessation. Brief tobacco dependence treatment is effective and every tobacco user should be offered at least this treatment at every visit to a health care provider. Current evidence as a whole supports the conclusion that, even in severe chronic obstructive pulmonary disease, smoking cessation slows the accelerated rate of lung function decline and improves survival compared with continued smoking.¹

TOBACCO DEPENDENCE AS A CHRONIC DISEASE

Some people view smoking as a lifestyle choice or a 'habit'. As such, smokers and even some healthcare providers think that will-power is all that smokers need to quit smoking and that they do not need any help doing so. Unfortunately the scientific evidence does not support this point of view. Nicotine is one of the most potent central nervous system (CNS)-active drugs: milligram for milligram, it is 10 times more potent a euphoriant than heroin, cocaine, or d-amphetamine. Consequently, in many a smoker, it is not so much a case of "won't quit smoking" but more a case of "can't

quit smoking" without additional help.

CNS sensitivity and responsiveness to nicotine is genetically determined. Without the appropriate genetic make-up, a smoker cannot become nicotine dependent. About 10% of cigarette smokers lack the requisite genes and have no physiological nicotine dependence. These individuals do not experience any of the nicotine withdrawal symptoms shown. Rather, they can smoke cigarettes every now and then, or many on one occasion and then nothing for days or longer, and not even think about cigarettes. These individuals are truly social smokers and do have complete volitional control over when they will smoke tobacco. These people never seek assistance for smoking cessation because they have no difficulty stopping smoking. Unfortunately, about 90% of cigarette smokers are physiologically nicotine addicted. For this 90%, stopping smoking is not a matter of choice or free will. It is a medical and physiological problem that requires accurate diagnosis and appropriate medical treatment. They fall into a spectrum ranging from minimally nicotine addicted to severely nicotine addicted. As a general rule, the more severe an individual's nicotine addiction, the more severe will that person's nicotine withdrawal symptoms be. We as clinicians will do well to first realise the size of the burden when trying to get our patients to quit smoking. Realising this, we can empathise with smoker when he says that he or she is unable to quit smoking, while we maintain a strong insistence on smoking cessation for his or her health benefits. All the time, we must be ready and prepared to help smokers embark and maintain the oft difficult journey freeing themselves from a serious addiction. For the practical aspects of doing so, the reader is referred to a previously written article titled: "Smoking cessation – a practical paradigm for doctors".²

CONCLUSIONS

COPD is rapidly becoming a global public health crisis. The major risk factor for the development of COPD is cigarette smoking. Therefore smoking cessation is the most effective means of halting or slowing the progress of this disease.

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LEARNING POINTS

- **Smoking cessation is a most cost-effective medical intervention.**
 - **Helping our patients stop smoking is a highly worthwhile endeavor.**
- Emphasise smoking cessation in the prevention and management of chronic obstructive pulmonary disease.**

UNIT NO. 3

MOTIVATIONAL INTERVIEWING (MI) IN BEHAVIOURAL CHANGE

Dr Tan Yew Seng

ABSTRACT

Patients are often advised to adopt healthier behaviours or change unhealthy ones on the basis that what they are doing or not doing is detrimental to their health. Some of these changes may include going on a diet, exercising, stopping cigarette smoking and even relaxing and sleeping more. MI was initially developed by Rollnick and Miller as a strategy for addictive behaviour change, but it has found many applications in helping patients change other health related behaviours. MI was initially defined as a client-oriented, directive method for enhancing intrinsic motivation to change by exploring and resolving ambivalence. The guiding stance, whilst respecting the patient's autonomy and the patient as the agency of change, maintain controls of the direction and structure of the consultation to evoke the patient's own arguments and strategies for change. The guiding process thus avoids the struggle or "fights" with the patient over changing behaviour and has been likened more to "dancing" with the patient. The four counselling principles in MI are: Develop discrepancy; Express empathy; Roll with resistance; and Support self-efficacy. Facilitating the patient to process and speak more about why and how to change then becomes one of the strategies to motivate change. In MI, this is known as change talk. Once change talk is elicited, the ways the practitioner can respond are: Elicit more (with open questions); Affirm; Reflect; and Summarise. Once the patient decides to change, goal setting becomes the next important process. Needless to say, the goal setting process must be done in collaboration with the patient, with the patient having the final say.

Keywords:

Ambivalence; change talk; Develop discrepancy; Express empathy; Roll with resistance; Support self-efficacy.

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Patients are often advised to adopt healthier behaviours or change unhealthy ones on the basis that what they are doing or not doing is detrimental to their health. Some of these changes may include going on a diet, exercising, stopping cigarette smoking and even relaxing and sleeping more.

The way in which such advice is given varies – it may be a matter-of-factly professional telling but may also involve persuading, pleading, lecturing, admonishing, preaching, etc. Usually, how the advice is dispensed depends on more on "what the situation calls for", rather than a systematic, evidence-based approach. The process of advising behavioural change may also be considered adjunctive to the more "medical" aspects of diagnosis and treatment, and therefore commanded only cursory attention. At other times, advice giving could take on a defensive element of "I have told you to change, and so I am not responsible for that anymore".

More dramatic occasions could also occur when the practitioner decides to invest in desperate attempts to correct what seemed like incorrigible behaviour. But what often belies many examples of advice giving, especially its exasperation and anguish, is the common belief that as good patients, they should listen to medical advice and comply with what's good for them. Those patients who do not respond accordingly are frequently labelled as "non-compliant", "recalcitrant", or "difficult" – as if these are deficiencies are personal traits and little further could be done about them.

However, what we now know about the processes of change can help resolve many practitioners' conundrum about advising behaviour change. In particular, this paper will present an evidence based approach in counselling behaviour change which can be readily applied in the busy practice. But to begin, let's relook at some of the common assumptions and issues in advising behaviour change in the light of the evidence.

REVIEWING OUR ASSUMPTIONS

Firstly, the task of helping patients change behaviour can no longer be consigned to a secondary role in the modern day clinical practice. Unhealthy behaviours, such as obesity, inactivity, excessive drinking and smoking, matter significantly in disease and death, and may account for as much as 40% of premature deaths¹. But change may also be desired to enhance health related activities such as the use of aids, devices and medicines². Therefore, addressing behaviour change in patients is not an option, because not doing so can be associated with significant negative impact on the patient's wellbeing.

Secondly, there is little evidence that just simply telling patients that they are at risk of developing a disease is sufficient to change behaviour^{2,3}. And it is also not that patients are unreasonable or characterologically deficient of motivation when they don't seem to act in their own health interest either. We need to acknowledge that behaviours are really the products of complex interactions between an individual's biological, social, developmental and psychological processes, and the environment⁴. The biomedical context at the clinic is thus only a part of the wider web of equations that the patient has to navigate consciously or unconsciously when contemplating or attempting behaviour change. Patients, particularly those living in the community, are often required to fulfil roles other than being just a patient, in which he is expected to do all things prescribed in exchange for cure or wellness. Moreover, the incentive for patients with chronic medical conditions to change may be also eroded by the fact that they may not recover or feel better even if they make significant

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changes.

Box 1. Common responses to doctor's advice for behaviour change:

"My grandfather smokes like a chimney and he lived to 93 years old"

"My friend was diagnosed with cancer the year he decided to stop smoking"

"I know it is important for me to watch my diet, but..."

"We only live once, so what's the point of living if you can't enjoy eating"

"Yes, I'll try" (As a somewhat polite way of NOT agreeing but helps avoid an otherwise protracted consultation)

Nevertheless, many practitioners would still be able to cite some successes in convincing patients to change their unhealthy behaviour, in spite of difficulties with others. This may be related to heterogeneity of the patients in their receptivity and readiness for change. Some patients just need affirmation about their intentions or efforts in order to change; while others may require more in-depth clarification and processing of their dilemmas.

Yet others may be totally resistant to change. It is a common experience for many practitioners that patient who are not ready for change seem to come prepared with "scripts" or "set pieces" to respond to whatever the doctor has to say to them about changing (see Box 1). This really shouldn't surprise any practitioner - they have after all, worked through within themselves (and often with other doctors!) the rationale or justifications for the behaviour to persist. In general, practitioners tend to have more tools for those who come motivated to change (think of all the pamphlets, gadgets and medications that can be used by those who are asking for change) but are more ill-prepared for those who are unsure or are not ready to change.

But what is veritable about health behaviour change is that it does require motivation on the part of the patient. Enhancing this intrinsic motivation becomes an important element in effecting lasting change. We will now discuss how the concepts and principles of Motivational Interviewing can help the busy practitioner respond to this aspect of care.

WHAT IS MOTIVATIONAL INTERVIEWING (MI)?

MI was initially developed by Rollnick and Miller as a strategy for addictive behaviour change, but it has found many applications in helping patients change other health related behaviours⁵⁻⁷. MI was initially defined as a client-oriented, directive method for enhancing intrinsic motivation to change

by exploring and resolving ambivalence⁵. This definition highlights the client centeredness as a central tenet in the process of activating intrinsic motivation. It also features the core concept of ambivalence that so often occurs in the change process. Ambivalence often manifest because of discrepancies that patients have between what they want and how their behaviour impacts these goals. In MI, ambivalence is a natural state that patients can be expected to pass through (but not stay) as they change. Ambivalence is therefore not generally interpreted as an undesirable state, and patients (and practitioners) can therefore feel comfortable about discussing about their conflicting issues and dilemmas. Indeed, it is within ambivalence that patients have their own reasons for wanting to change. The work of the practitioner is thus to create a neutral platform that permits the patient to work through their ambivalence, and derive his/her own motivation to change.

The stance that the practitioner adopts is one of collaboration and guiding. This contrasts with the more commonly subscribed role of the practitioner as the "expert" directing the change process. However, this does not imply that the practitioner is wholly submitting to the patient's wishes. The guiding stance, whilst respecting the patient's autonomy and the patient as the agency of change, maintain controls of the direction and structure of the consultation to evoke the patient's own arguments and strategies for change. The guiding process thus avoids the struggle or "fights" with the patient over changing behaviour and has been likened more to "dancing" with the patient⁸.

The four counselling principles in MI are:

- Develop discrepancy
- Express empathy
- Roll with resistance
- Support self-efficacy

DEVELOP DISCREPANCY

By the time patients have established patterns of unhealthy behaviours, they may also have well developed notions about why they should maintain these patterns. These may include arguments for status quo and those against changing. There may also be situations where the pros and cons are so evenly stacked that they just feel "stuck" or immobilised by indecision. The task of the practitioner is to help the patient chalk up more arguments for changing, such that the equilibrium that maintains the state of inertia is tipped towards change. Note that interjecting the patient with the practitioner's own ideas about change will often be met by resistance and is unlikely to succeed in leading to change. This may be because patients may maintain that "you are not me", but the practitioner's iteration for change may prompt the patient to play out the ambivalence by speaking against it (see "Talking about change" later).

Skill	Description	Example
"Asking"	Open questions that invite the patient to consider why and how they might change	"How would you introduce exercise into your evening routine?" "What needs to be done differently in order to ...?" "How do you make sense of the urgency of changing?"
"Listening"	Not only to understand their experience, but also to respond actively with statements of understanding or acknowledgement e.g. with acknowledgement or summaries of what was said, or with reflective listening statements. All of which conveys empathy and encourages the patient to further elaborate, and could also reduce resistance from the patient	"Hmm, please tell me more" "There are many things you wished you could do, and these are _____" "I hear your concerns about how changing the routine may result in disapproval from your friends, and this is something you are trying to avoid..." "You are tired of people expecting you to change_____, you have tried so hard"
"Informing"	Giving information and then asking about the impact of the information on the patient	"There is another way of achieving what you wanted; I am wondering if you would like to hear about it?" (Tell) (And then) "How does knowing _____ affect the way you look at/feel about changing?" "The outcome need not be like that..." "You can bring your own water bottle to work instead of getting soft drinks"

(2) EXPRESS EMPATHY

The process in facilitating change is highly dependent on the quality of the communication. Empathetic statements are useful in validating the experience of the patient about change. They may also help convey the practitioner's understanding and acceptance of the patient. These in turn deepen the rapport between the practitioner and the patient, which promotes the platform for the collaboration, exploration and risk taking necessary to facilitate change.

(3) ROLL WITH RESISTANCE

Resistance may be understood as the patient's way of regulating information – where they resist may be what they are not comfortable or unsure to talk about at the pace in the consultation. However, resistance may also occur when they do not seem to understand fully. Moreover, resistance is often a manifestation of the interpersonal process between the practitioner and the patient – they cannot resist themselves; resistance occurs when there is a difference in the stances. Therefore, the practitioner should consider these aspects upon encountering resistance. Confrontational stance is not

recommended in MI. Instead, a more accepting attitude that also helps both parties explore the difficulties behind the resistance is the preferred approach in MI.

(4) SUPPORT SELF-EFFICACY

Consistent with the key ideas of MI is the concept that the patient is the one who is doing the work on change, not the practitioner. The practitioner expresses and maintains the belief that the patient has the ability to derive and implement their own plans for change. Part of the process therefore involves ensuring that the patient is well-supported and empowered to change. Imparting information and skills to the patient may be required to promote the readiness for change. However, practitioners should be cautious not to inadvertently reduce the patient's sense of efficacy by adopting the role of the "expert". In MI, the agent and "expert" about change remains the patient; the practitioner only facilitates the patient's own plan and pace of change but may occasionally provide professional input when this is invited by the patient.

Abiding by these principles, the practitioner then applies the following core skills in a consultation for change, which includes asking, listening and informing:

Box 2 Talking about change

Practitioner	Patient
Do you smoke?	Yes
How much are you smoking now?	About 20 cigarettes a day
Do you intend to stop smoking now?	Not really
Not really?	Yeah
Why not?	I just don't feel like stopping cigarettes at this time. I tried stopping last time and I can't concentrate at work after that.
I must inform you that the cough and breathlessness that you are having is caused by smoking...	It isn't so bad. It is just a temporary cough; it gets better with the cough mixture. I can still carry on doing my work in spite of the cough.
As your doctor, I must tell you that smoking is harmful to you and your family. Don't you care for them? I think you should start on medication to stop smoking	My family is not really complaining since I cut down from 2 packs to one and a half a day. No need lah! I think I can stop smoking when I really want to.

Using the core skills, MI explores the patients' inner motivations and helps them to recognise and be responsible for it. When the need for change and the plans for change are owned by the patient, and together with the proper skills either inherently derived or imparted by the practitioner, the process of change and the motivation to keep and maintain change becomes the natural outcome.

The core skills look deceptively simple but the challenge is in maintain fidelity with the four key principles as we apply these "simple" skills. This often requires some awareness of our conversation and discipline. When properly applied, what would transpire is "change talk".

Talking about change

What is also known to reflect the patient's motivation to change is the patient's use of commitment language in a dialogue about change⁹. Generally, those who talk about change, in particular the desire, ability, reasons, need, and commitment for change tend to change. Conversely, those who talk against change are less likely to do so.

Change talk

Facilitating the patient to process and speak more about why and how to change then becomes one of the strategies to motivate change. In MI, this is known as change talk. Change talk may not be so peculiar when we reflect that people often self-talk before doing something they are not so confident or capable of doing, such as speaking on stage or an athletic performance. The content of such self-talk often includes expressions of the importance (e.g. "there are many reasons for me to do this") and confidence to change (e.g. "I feel I can do it now"), which are the determinants of readiness to change in the MI model. By utilising the patient's ability to literally talk themselves into or out of behaviour change, evoking commitment language from patients is a key part of MI work.

Righting reflex

Yet, it is also not uncommon that conversations between practitioners and patients often suppress change talk instead. One of the common impediments is the practitioner's behaviour of trying to fix the "unhealthy" lifestyle or behaviour of the patient for "his/her sake". Examples of such behaviour include attempts to convince patients that they have a problem; arguing for the benefits of change; telling clients how to change; and warning them of the consequences of not changing. This behaviour has been termed the righting reflex in MI. And while it may have originated from positive intentions, it failed to recognise the phenomenon of ambivalence - an ambivalent patient would in such circumstances be encouraged to respond by arguing against changing. An example of such a conversation is shown in Box 2.

In MI understanding, the practitioner has played the wrong role by encouraging the patient to speak against change. The person who should argue for change is the patient and not the practitioner. Evoking the patient's own arguments for change is therefore the appropriate role of the practitioner.

GETTING PATIENTS TO TALK ABOUT CHANGING

Maintain a sensitive curiosity about the stage of change or state of readiness that the patient presents with, e.g. Why is it important for them to change now? What's difficult about staying unchanged? How do they think they can change? Understand the motivation of the patient and reflect it back to them. Elicit "change talk", the content of which includes acknowledging the problems of remaining the same, recognising the benefits of change, intent and commitment to change, and optimism for change. Once change talk is elicited, the ways the practitioner can respond are:

- Elicit more (with open questions)

Box 3. Decision Grid (about losing weight)

	No change	Change
Cost/dislikes	e.g. I tire easily; my knees hurt when I walk; I can't get into my dresses; I am embarrassed to wear a swimsuit; I get teased by my colleagues and strangers	e.g. I need to set aside time for exercise; I will miss my favourite snacks; I will have to get a new wardrobe of clothes
Benefits/likes	e.g. I can get up from bed later; I can avoid embarrassing myself in the gym; I can enjoy the food that I like	e.g. I will feel lighter; I can be feel better about my body; I will be able swim again, which I like; I feel healthier and fitter there are more clothes available to me

After listing down in the boxes, ask: “What are your thoughts as you look at the advantages and disadvantages of changing and not changing?” You may also reflect to the patient the considerations involved in changing.

- Affirm
- Reflect
- Summarise

Some other helpful strategies include:

• Providing information

While simply telling or giving advice to patients has not been found to be useful, patients nevertheless need appropriate information in order to self-manage. One technique is the “elicit, provide, elicit” technique where after the patient’s understanding about a matter is elicited, the practitioner provides some other supporting information and then checks back with the patient, the personal implications of the information that has been provided². For example, “Can I check what’s your understanding about the control of your diabetes so far?”; then “You are quite right about... and in addition, other similarly important aspects might be...”; and finally, “So, now knowing these aspects about care, how might that affect the way you deal with your diabetes condition?”.

• Exploring importance

We can explore and assess the importance for change with the following questions:

- o “How important is keeping up with the medication daily for you right now?” (Explores the patient’s sentiments, fears and possible competing issues)
- o “On a scale of 0 to 10, where 0 is not important and 10 is extremely important, what would you say the level of importance for changing is?”
- o “Can you tell me why you have given yourself a score of x instead of 1?” (Elicit patient’s positive reasons for change); “How can you go higher?” (Explores perceived options); “What stops you from moving up from x to [higher number]?” (Explores the perceived obstacles)

• Decisional balance

Another way is to examine the costs and benefits of changing or staying the same. This process helps the patient self-reflect

on the internal-external discrepancies, and the ambivalence about change.

Doing so can generate tensions within the patient’s internal “world views” which can motivate the patient to change⁵. This process may be achieved with the visual aid of a ‘decision grid’ as shown in Box 3.

• Enhancing confidence

The following sequence may help assess and enhance confidence:

- “How confident are you right now in changing?”
- “On a scale of 0-10, how confident would you say you are now?”
- “Why had you scored x instead of 1?”; “How can it go higher?”; “What would help you to become more confident?”; “What stops you moving up from x to [higher number]?”

Another method is to brainstorm with the patient the possible courses of action and then allow the patient to choose what is suitable. The purpose is to help the patient realise that there is choice among the many possible courses of action, while conveying optimism. Sometimes, it may be appropriate to talk about the patient’s past efforts and his or her successes and failures – to affirm previous attempts at change and past successes. It is not about emphasising the success or dismissing the failures. Rather, helping the patient appreciate a balanced appraisal of the past performances (not the person) is the practitioner’s task.

It is however vital not to overinflate the importance of change or the patient’s confidence about change. Premature and ill-prepared attempts may lead to disappointments and a sense of failure. The goals for the patient should be realistic and specific, even if they are “small gains” in the eyes of the practitioner. What is important is that they represent the patient’s choice and context.

• Other related interventions

Sometimes, it is necessary to provide certain specific interventions before the patient can proceed to make specific changes. For example, relaxation techniques may be useful for patients who are under 'stress' or anxiety. Social interventions should also be considered if mundane needs such as housing rental, child care, marital counselling, job placement etc are wanting. Depending on culture and social status, many such basic needs may rank above health concerns. Adopting this stance may be easier said than done, as many practitioners can feel compelled to revert back to the directing style because of time constraints or if they perceive an urgent need to impose change because of dire medical state of the patient.

Some useful questions in talking about change are shown in Box 4.

Box 4. Top 10 useful questions²

What changes would you most like to talk about?
 What have you noticed about ...?
 How important is it for you to change...?
 How confident do you feel about changing...?
 How do you see the benefits of ...?
 How do you see the drawback of ...?
 What will make the most sense to you?
 How might things be different if you...?
 In what way...?
 Where does this leave you now?

PIECING THINGS TOGETHER

One may notice that the MI is a rather principle-driven style of approaching patients rather than a set of techniques. Merely applying MI as a rigid set of techniques would not have been effective in facilitating behaviour change. The rapport with the patient remains critically important for successful change facilitation. As defined, MI is a client-centred approach that respects patient autonomy and efficacy. It requires the practitioner to have genuine curiosity about the patient's circumstances and positive regard for the patient to plan and carry out the change. Creating that safe, non-judgmental and non-confrontational experience during the consultation to enable the patient to explore and process their ambivalence, conflicts and resistance so that they can proceed to change is the desired goal of such sessions. A cookbook or checklist approach is therefore incompatible with this style.

GOAL SETTING

Once the patient decides to change, goal setting becomes the next important process. Goals that are unachievable frustrates and demoralises the patient and discourage them from seeking change. On the other hand, a strategic series of achievable goals can increase the patient's sense of self-efficacy and put the patient on track for a successful change of behaviour. The

following recommendations come from our understanding of how goal-setting affects performance:

- Goals that are specific ("I will walk for 30 minutes on Mondays, Wednesdays and Fridays in the park"), preferably including aspects of what, when, how much and how often, are more likely to succeed than vague ones ("I will try to control my food intake", "I will lose some weight")
- Proximal (short term and specific) goals are associated with better performance than distal (long-term and general goals). Short-term goals, also known as action plans, are more likely to result in early success (which enhances self-efficacy), which in turn leads to setting of higher level goals subsequently. Hence, a proximal goal may be "I will bring my own drinking water to work and not consume any soft drinks during lunch", which while not really achieving a holistic dietary modification, may be more useful in the long run than the goal of "I will lose 10kg of my body weight".

Needless to say, the goal setting process must be done in collaboration with the patient, with the patient having the final say.

PATIENTS WHO CHANGE THEIR MINDS

Some practitioners may find it disheartening to have patients who seemed all motivated to change after a rousing session in the clinic but only to return the next session without having achieved much. While this may be an issue with goal setting, it may also reflect the ambivalence around change or it can be a matter of changing circumstances. It is also realistic to accept that change does not occur just because the doctor wants it to happen, even if we use MI, and at the pace we want. Understanding the complex nature of unhealthy behaviour allows us to appreciate that much psychosocial adjustments may be required before change actually takes place. Change is also not a fixed state in which the patient remains indefinitely. Sometimes, after preliminary attempts to change and even after achieving the initial changed behaviour, a new set of challenges appear in the maintenance of the changed behaviour. In these scenarios and those where the patient seemed to have slipped backwards, the practitioner will do well to stick with the supportive, though directive, stance of MI. The fact that the patient returned allows further opportunity to engage and explore in a non-judgmental, empathetic and respectful way the patient's endeavours in change, no matter how small they may turn out to be. The continued positive experience with the practitioner will go a long way in securing lasting success in change eventually.

CONCLUDING COMMENTS – IT ALL SEEMS RATHER DIFFICULT FOR THE PRACTITIONER

No one says that changing behaviour is easy, but leaving unhealthy behaviours in patients with chronic medical conditions is no longer justifiable. Yet, behaviours are often the complex product of historical, bio-psycho-social and environmental situations such that any change is unlikely to take place just because the practitioner directs the patient to

do so. What we need to do is to understand how change takes place, and to learn new skills of facilitating change in patients.

(1) It's such an unnatural way of communicating

Some practitioners may find applying these ideas and methods awkward. This is to be expected in the initial stages as it requires a different way of thinking about and talking to patients. Such an experience is not so different from learning a new language, learning to swim or cycle (where every movement seems strange to the body). For those who feel these methods are rather “unnatural”, “artificial” or “unreal”, it is probably so because we have long been accustomed to the “usual” doctor-centric relationship which is incidentally more suited to the sporadic and exceptional situations of acute medical care provision and less applicable to caring for patients living in the community. In other words, maintaining the status quo, where patients have to abide by the practitioner's model, may actually be more contrived. Think about it – we will probably not use the usual “doctor speak” with our friends and family! MI on the other hand, may be “friendlier” and socially compatible because of its humanistic origins.

(2) Is there a best way to behaviour change?

No one style fits all patients. Indeed, some patients may respond best with a directing style or relationship. Ultimately, the practitioner needs to have a respectful attitude to the patients and be open to changing styles and methods to be in tandem with the patient's responses. Imposing the practitioner's ideas about change, even if this in accordance with some well used guideline may not necessarily lead to successful change. Duncan and his colleagues have gathered evidence to show that rather than the type of therapeutic intervention provided or the techniques used, the factors that determine outcomes may have more to do with the patient's perceptions of the therapeutic relationship, how consistent the method used is with the patient's own theory about change, whether they feel comfortable and respected, and the level of active participation. Needless to say, the practitioner's ability to find a complementary ‘fit’ with his patient affects these factors¹⁰⁻¹².

(3) Will I be able or have the time to do this?

By now, it should be obvious that it takes time for the patient to change his/her behaviour. It also requires that the practitioner also spend some time in guiding the patient. But this investment in time may be more efficient and sound, when compared with numerous times the practitioner has to spend giving futile advice for patients to change, or the situation where the patient has repeated consultations for complications arising from the failure to change.

Fortunately, the practitioner may find some solace that sometimes, even brief interaction, if done skilfully may have a significant impact on the patient's behaviour change^{7,13}. Understanding and applying what we know about the processes of behavioural change, and making the shift towards a guiding style, which encapsulates principles such as collaboration, negotiation, respecting patients' autonomy, and supporting self-efficacy, might be good beginning steps. The guiding style, on which MI is based, is within the reach of the busy practitioner².

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LEARNING POINTS

- **Patients are often advised to adopt healthier behaviours or change unhealthy ones on the basis that what they are doing or not doing is detrimental to their health.**
 - **MI was initially developed by Rollnick and Miller as a strategy for addictive behaviour change, but it has found many applications in helping patients change other health related behaviours.**
 - **MI was initially defined as a client-oriented, directive method for enhancing intrinsic motivation to change by exploring and resolving ambivalence.**
 - **The guiding stance, whilst respecting the patient's autonomy and the patient as the agency of change, maintain controls of the direction and structure of the consultation to evoke the patient's own arguments and strategies for change.**
 - **The four counselling principles in MI are: Develop discrepancy; Express empathy; Roll with resistance; and Support self-efficacy.**
 - **Facilitating the patient to process and speak more about why and how to change then becomes one of the strategies to motivate change. In MI, this is known as change talk.**
 - **Once change talk is elicited, the ways the practitioner can respond are: Elicit more (with open questions); Affirm; Reflect; and Summarise.**
 - **Once the patient decides to change, goal setting becomes the next important process.**
-

UNIT NO. 4

HEALTH LITERACY – ASKING THE RIGHT QUESTIONS & BROAD CONCEPTS

Choo Ren Min

ABSTRACT

The ability to make informed health decisions is a complex process. Knowing when to consult a healthcare professional, understanding one's medical condition and learning how to take medicines correctly require that health information can be accessed, processed and applied effectively by the individual. These statements underpin the concept of "health literacy" which may be defined as the degree to which people have the ability to find, understand, act and communicate health information to make informed health decisions. To communicate at a level that helps patients to make use of health information, there is a need for the healthcare professional to first be able to identify and understand the patient's health literacy by considering age, gender, cultural background, education level, thoughts and behaviours associated with the topic under discussion, and perceived benefits and barriers towards the topic. Five strategies can then be applied for improving that patient's understanding and self management of his or her medical condition: (1) Assess patients' health literacy using open-ended questions; (2) Speak in plain language; (3) Limit the number of teaching points; (4) Use visual aids, and (5) Incorporate the 'teach-back' method to ensure patient understanding.

Key words: Informed health decisions, Low health literacy, Health literate person, Health literature information providers, Health literate systems,

open-ended questions, plain language, teach-back method.

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"The main problem with communication is the illusion that it has occurred."

– George Bernard Shaw

BACKGROUND

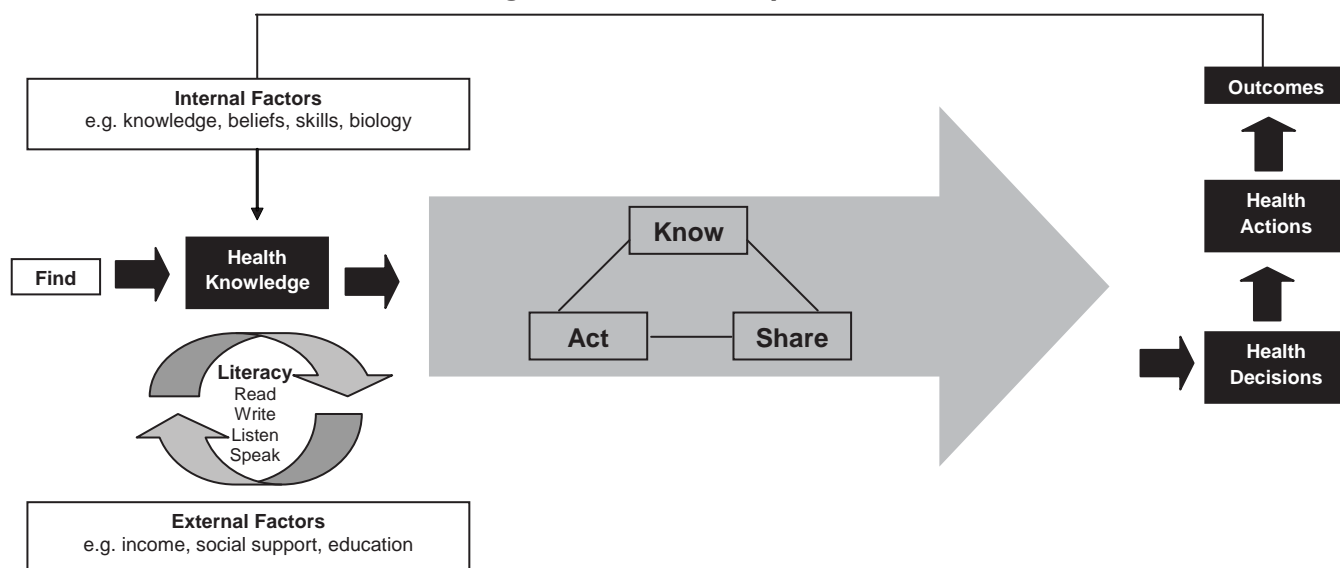
George Bernard Shaw's observation about communication is astute. In healthcare, it is commonplace for patients to lack an understanding of what doctors have explained. Patients are often confused by medical terms, and keep silent rather than ask their doctors questions regarding their health concerns or medical conditions. At the same time, the doctor is under the illusion that he has communicated what needed to be said.

The ability to make informed health decisions is a complex process. Knowing when to consult a healthcare professional, understanding one's medical condition and learning how to take medicines correctly requires that health information can be accessed, processed and applied effectively by the individual.

WHAT IS HEALTH LITERACY?

Health literacy is the degree to which people have the ability to find, understand, act and communicate health information to

Figure 1: Health Literacy in Context



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make informed health decisions^{1,2}. In clinical care, health literacy refers to the set of skills that support the ability to perform reading and numerical tasks for functioning in the health care system and to act on health information³.

HEALTH LITERACY IN CONTEXT

Figure 1 shows the different types of factors that can have an impact on health outcomes.

Health literacy is linked to general literacy skills but evidence has shown there is a large disconnect between both capabilities. For instance, in the US, literacy levels are above 90%, yet the National Assessment of Adult Literacy in 2003 showed that approximately one-third of the population have basic or below basic skills to manage their health.

WHY IS HEALTH LITERACY IMPORTANT?

Research has shown that low health literacy has a significant impact on an individual's health and the healthcare system.

Low literacy

Low health literacy affects as many as 9 out of 10 adults resulting in:

- the poor use of preventive services and management of chronic conditions
- an increase in preventable hospital visits and admissions, and
- misunderstanding of prescriptions, poor compliance and medication errors⁴.

Increased healthcare costs

- A study in the United States estimated that the cost of limited health literacy to the economy was somewhere between US\$106 to \$236 billion dollars, each year⁵.

What does it mean to be health literate?

There are three aspects here.

(1) A health literate person has the skills required to find, understand, evaluate, communicate, and use information to make decisions related to his/her health. Health literacy can be viewed as a personal asset from the public health perspective as it enables individuals to take greater ownership of their health⁶; low levels of health literacy is a risk in clinical care that needs to be addressed, as patients with limited literacy skills have poorer compliance and are less able to self manage diseases⁶. Often this group of patients display no visible signs they are unable to process the health information given to them⁷.

(2) Health literate information providers are able to present information in a way that is easy to understand and improves a person's ability to act on it. Providers of reliable health

information to the public, need to develop a practice that is sensitive to differences in health literacy can lead to improved access to health care, a practice that can have more productive interactions with their patients, that will result enhanced capabilities for self-management, better compliance and ultimately improved clinical outcomes⁶.

(3) Health literate systems provide ready access to and delivery of health information and health services in a supportive environment.

Health literacy beyond words

Health literacy goes beyond words. The ultimate goal of a health literate person is to make informed health choices which requires them to have the skills to do the following:

Access information

- Do I know where to find out more about my health condition?
- Who to ask?
- What questions to ask?

Evaluate information

- What do my results mean?
- Is the information reliable?
- What do I do next?

Communicate information

- Am I able to share what I have learned?

EFFECTIVE PATIENT-PROVIDER COMMUNICATION

First, be able to identify and understand your patients by considering their:

- Age
- Gender
- Cultural background
- Education level
- Thoughts and behaviours associated with the topic
- Perceived benefits and barriers towards the topic.

Second, there are five strategies that can be applied for improving patients' understanding and self-management of their condition:

1. Assess patients' health literacy using open-ended questions,
2. Speak in plain language,
3. Limit the number of teaching points,
4. Use visual aids, and
5. Incorporate the 'teach-back' method to ensure patient understanding⁸.

1. Use open-ended questions

Using open-ended questions can help uncover what the patient already knows about their condition and their attitudes towards it. See Box 1. With a better understanding of your patient's knowledge, attitudes and behaviour, it is easier to provide more personalised advice which can be more effective and produce better results⁷.

2. Speak in plain language

Plain language is a way of organising and presenting information so that it is easy for your patient to understand⁹. See Box 2. When possible, avoid using medical jargon and replace the terms with simpler alternatives like heart disease instead of cardiovascular disease¹⁰. It is also good to use the active voice and personal pronouns when giving instructions so that patients are more likely to understand how the information relates to them⁹.

3. Limit the number of teaching points

Being able to comprehend and encode information is a complex process and individuals only have limited memory storage. For this reason, it may help patients to better recall health information if they are given three teaching points at each appointment¹¹. Two other techniques to help information for patients move from short-term to long-term memory are: associating health information with what patients already know and repeating key messages throughout your interaction with them⁷.

4. Use visual aids

When explaining complex health information, pictures and visual aids can improve comprehension, recall and adherence¹². Sometimes, it may be difficult to find alternative words to replace medical terminology. In such instances, it is particularly useful to use images during explanations. Images should also be accompanied by the appropriate label to avoid misinterpretation¹³.

5. Use the 'Teach-Back' method

The teach-back method is a simple process that allows you to check that the patient has understood what you have explained to them. The four steps of the teach-back method are:

- 1. Explain:** Explain concepts using a caring tone of voice and attitude, and applying plain language
- 2. Assess:** Ask the patients to demonstrate their understanding of the concept using their own words
- 3. Clarify:** Recap any points that the patient may be unclear about
- 4. Understanding:** The patient is able to successfully teach-back the concept

Incorporating teach-back may seem challenging or time-consuming at first, but applying the technique with one or two patients a day can help you to make this method part of your routine⁸. Box 3 shows examples of teach-back questions.

Practical issues related to teach-back method

Box 1. Examples of questions to ask	
Close-ended question	Open-ended question
'So you're still taking medication x and y, right?'	'What are you doing at home? What's your daily routine with your medicines?'
	'Just so I get it right, what are you taking and how much?'

Box 2. Examples of plain language advice	
Non-Plain Language	Plain language
<ul style="list-style-type: none"> × 'Medicine should be taken at mealtimes' × 'The patient will feel better after 24 hours' 	<ul style="list-style-type: none"> √ 'Take your medicine at meal times' √ 'We believe you will feel better after 24 hours'
• Passive voice and third person are used	• Active voice and personal pronouns are used

Box 3. Examples of Teach-back Questions¹³

- "I want to be sure I explained everything clearly. Can you explain it back to me so I can be sure I did?"
- "What will you tell your husband about the changes we made to your blood pressure medicines today?"
- We've gone over a lot of information, a lot of things you can do to get more exercise in your day. In your own words, please review what we talked about. How will you make it work at home?"

- **Issue 1:** The ‘teach-back’ method is very time-consuming and does not work in a very busy clinic-setting.
- **Solution:** With practice, using the ‘teach-back’ can become part of your routine and does not necessarily lengthen the patient-provider interaction.
- **Issue 2:** It may appear condescending or disrespectful if I ask a patient to teach-back what I just taught them.
- **Solution:** Try phrasing the question differently. Instead of saying ‘Now, show me how you will use this at home’ it may be more effective to ask ‘What will you tell your husband/wife/children when you get home?’

CONCLUSIONS

Improving communication with patients is a mutually beneficial endeavour as both physicians and patients will enjoy the benefits of better disease management and meaningful patient-provider interactions. An understanding of the patient’s health literacy level is important. We need to help them use information more effectively using the 5 strategies of effective communication. With a growing ageing population and the rising incidence of chronic conditions in Singapore, seeking to have productive interactions with your patients will help them to manage their conditions better, improve their quality of life and in the long-term, reduce some of the burden on the healthcare system.

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LEARNING POINTS

- **The ability to make informed health decisions is a complex process.**
- **“Health literacy” may be defined as the degree to which people have the ability to find, understand, act and communicate health information to make informed health decisions.**
- **There is a need for the healthcare professional to first be able to identify and understand the patient’s health literacy by considering age, gender, cultural background, education level, thoughts and behaviours associated with the topic under discussion, and perceived benefits and barriers towards the topic.**
- **Five strategies can then be applied for improving that patient’s understanding and self management of his or her medical condition: (1) Assess patients’ health literacy using open-ended questions; (2) Speak in plain language; (3) Limit the number of teaching points; (4) Use visual aids, and (5) Incorporate the ‘teach-back’ method to ensure patient understanding.**

UNIT NO. 5

HEALTH LITERACY – MEETING PATIENT NEEDS

Vasuki Utravathy

ABSTRACT

Smoking cessation is used to illustrate the application of health literacy principles to meet patients' needs. There are three areas to focus on: developing a health literate patient; presenting information in a way that is easy to understand and use; and creating a health literate delivery system that provides ready access to and delivery of health information and health services. The Health Choices – flip chart tool kit for healthcare professionals launched on 1 September 2012 - illustrates the elements of a health literate tool for communicating smoking cessation.

Keywords:

Tobacco use; Prevalence; Opportunistic intervention; WHO-RCTC; Reduce demand; Reduce supply; Smoking cessation.

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BACKGROUND

In this paper, the application of health literacy principles to meet patients' needs is illustrated using smoking cessation. In addition, this paper also discusses how health care professionals can present information in a way that is easy to understand and use; and create a health literate delivery system that provides ready access to and delivery of health information and health services. Finally, the "Let's quit smoking" pages of the Health Choices - flip chart tool kit for healthcare professionals launched on 1 September 2012 - will be used to illustrate the elements of a health literate tool for communicating health behaviour action plans.

PREVALENCE OF TOBACCO USE IN SINGAPORE**Where's Singapore in tobacco control**

The smoking prevalence among Singapore residents aged 18 to 69 years based on OECD 2010 was 14.3%, and this recorded an increase from 12.6% in 2004.

Who are the smokers?

By age specific prevalence – Table 1 shows the age specific prevalence (%) of daily smoking among Singapore residents from the National Health Surveys conducted by the Ministry of Health in 2004 and 2010. The highest prevalence are in the age groups 18 to 29 and 30 to 39 years.

By gender – The prevalence was higher in males in 2004 and 2010. In 2004, the prevalence in males and females was 21.8% and 3.5% respectively. The corresponding figures in 2010, were 24.7% and 4.2% respectively.

Table 1. Age specific prevalence (%) of daily smoking among Singapore residents

Age group (years)	Year – 2004	Year – 2010
18 - 29	12.3	16.3
30 - 39	13.0	16.4
40 - 49	13.5	14.5
50 - 59	12.5	11.4
60 - 69	9.6	11.4
Total	12.6	14.3

Source: National Health Surveys 2004 and 2010, Ministry of Health

MAJORITY OF CURRENT DAILY SMOKERS WISH TO QUIT SMOKING

The National Health Survey 2010 findings showed that more than half of the smokers (58.7%) expressed an intention to quit, regardless of their background, age, or ethnic group. Studies have shown that smokers are twice more likely to succeed with support than to quit by themselves.

COST OF TOBACCO USE

There is strong evidence to show that tobacco use causes many chronic diseases. In Singapore, in 2010, tobacco use was a cause of death for 4 of the top 10 causes of death, namely cancer, ischaemic heart disease, cerebrovascular disease (including stroke), and chronic obstructive lung disease. It was estimated that 7 in 10 Singaporeans die as a result of tobacco-related diseases daily (Quah E, 1998).

NATIONAL FRAMEWORK FOR TOBACCO CONTROL

Singapore rectified the Framework Convention on Tobacco Control (WHO-FCTC), negotiated under the auspices of the World Health Organisation on 14 May 2004. The updated reprint version 2005 can be downloaded (http://www.who.int/tobacco/framework/WHO_FCTC_english.pdf). The WHO-FCTC guides Singapore's National Framework for Tobacco Control, a multi-pronged, multi-sectoral framework that includes:

- Legislation & taxation
- Public education & empowerment
- Partnerships & capacity building
- Smoking cessation services

iQuit Programme – A national support structure for the smoker

The iQuit programme is a holistic smoking cessation system comprising partnerships, collaborations and networks with over 150 touchpoints to assist smokers to quit. The iQuit national support structure consists of:

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- Opportunistic programmes:
 - o Family Physicians/Private GPs
 - o Community pharmacies
 - o Polyclinics
 - o Hospitals
- Planned intervention
 - o QuitLine (phone and online)
 - o Mobile application
 - o Schools
 - o VWOs/Support groups
- Targeted programmes for eg.
 - o uniformed groups
 - o workplaces
 - o low-income smokers
 - o specific ethnic groups at risk of tobacco use

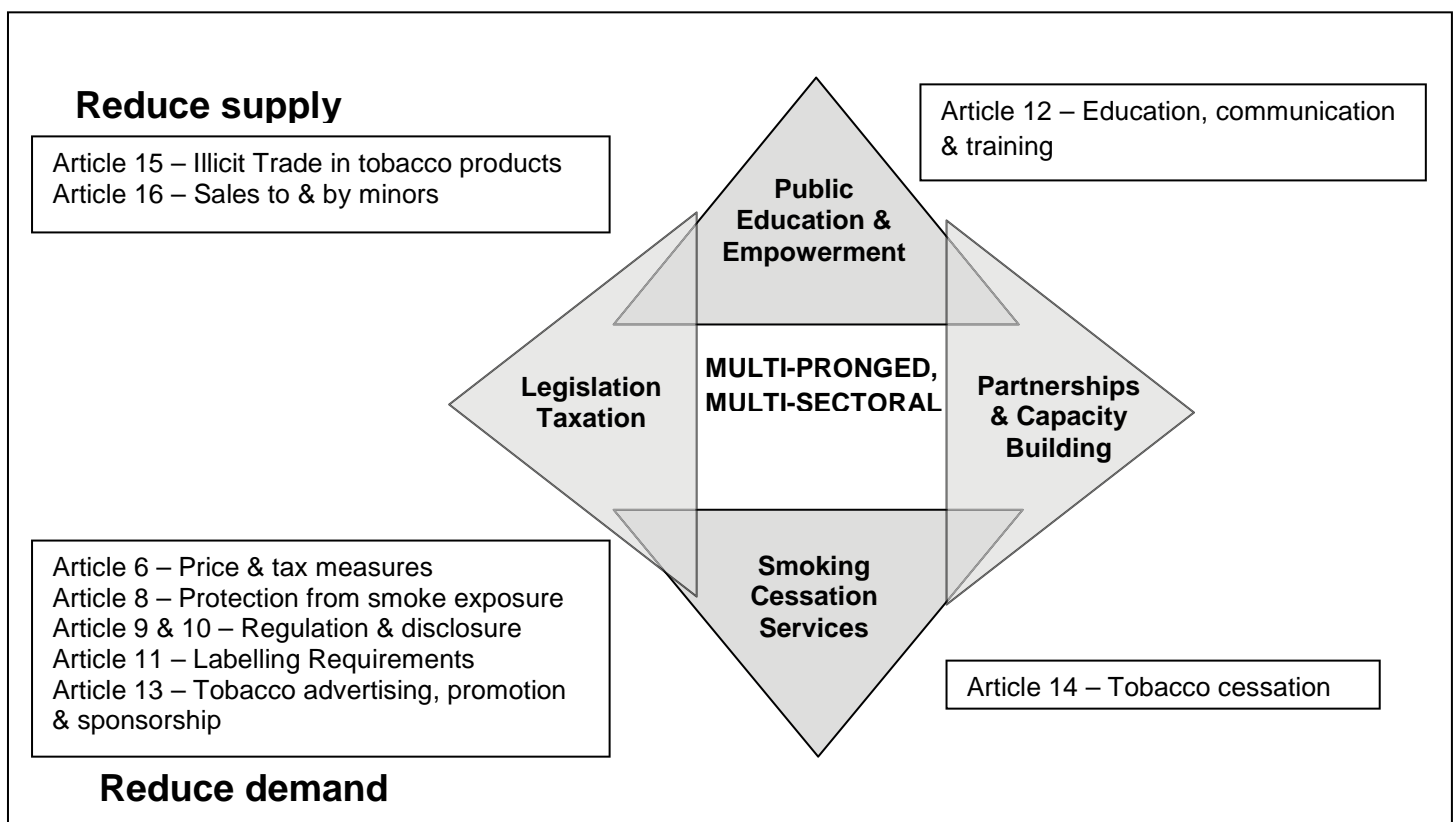
OPPORTUNISTIC INTERVENTION IN SMOKING CESSATION

Opportunistic smoking cessation advice has been found one to be one of the most cost-effective life-sustaining interventions

(Tonnesen, 2009)¹. Opportunistic smoking cessation advice by GPs have been observed to boost patients' smoking cessation rates leading to a sustained (six months - one year) cessation rate of about 2 to 2.5% (Lancaster et al, 2000; Silagy & Stead, 2003)^{2,3}. This appears small, but because it translates into a potentially important decrease in smoking prevalence if all smokers who attended a GP were advised to quit. It was estimated that 20 hours of GP time spent in giving brief opportunistic smoking cessation advice annually will, on average, lead to a gain of more than eight life-years in the practice population (Tonnesen, 2009)¹.

The United Kingdom's British Guidelines (West et al, 2000)⁴ and the American Clinical Practice Guidelines (AHCPRQ, 2000)⁵ urge GPs to utilise their unparalleled access to the community to provide smoking cessation 'opportunistic' during every consultation with patients who smoke. The Health Promotion Board, in partnership with the Ministry of Health, Singapore has called for healthcare professionals to provide opportunistic smoking cessation advice to patients who smoke in the Clinical Practice Guidelines (CPG) on Smoking Cessation. In addition, the Health Promotion Board has included a section on providing opportunistic smoking cessation in the Health Choices Toolkit.

Figure 1: National framework for tobacco control



THE “LET’S QUIT SMOKING” PAGES IN HEALTH CHOICES TOOL KIT

The “Let’s quit smoking” flip chart in the Health Choices tool consists of three pages:

- A brief advice (3As version) that could be conducted over 1 to 5 minutes;
- An intensive advice (5As version) that can be conducted in 5 to 15 minutes; and in addition,
- A page on the flip chart for the patient to see on Let’s quit smoking: why change? And Benefits of change.

When applying health literacy principles in the “Let’s quit smoking” pages in Health Choices flip chart, GPs are encouraged to:

- Assess using open ended questions
- Use plain language
- Limit the number of points - no more than 3
- Use Visual aids - e.g. Life Choices flip chart
- Incorporate “teach-back”

GUIDELINE FOR OPPORTUNISTIC INTERVENTION IN SMOKING CESSATION

- Clinicians and health-care delivery systems consistently identify and document tobacco use status and treat every tobacco user seen in a health-care setting
- Behavioural support including individual, group, and telephone counselling are effective methods for increasing successful cessation attempts
- All tobacco users who are trying to quit smoking should be offered medication, in addition to behavioural support, unless there are contraindications or insufficient evidence of effectiveness in specific populations (e.g. pregnant women, adolescents)

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LEARNING POINTS

- **There are three areas in health literacy: the patient, the provider, and the access to the delivery system.**
- **The smokers in Singapore are more likely to be: males, be in the age groups 18 to 29 and 30 to 39 years.**
- **Majority of current daily smokers in Singapore wish to quit smoking.**
- **The “Let’s quit smoking” pages follow health literacy principles in design.**

UNIT NO. 6

HEALTH LITERACY – ENHANCING PHYSICIAN SKILLS

A/Prof Goh Lee Gan

ABSTRACT

The scope of health literacy demanded of the present day health services user is broad. Enhancing physician skills consists of improving on 6 things: Recognise and assist patients with low literacy to overcome their information handling problems; Improve usability of health information; Improve the usability of health services; Build knowledge to improve health decision making; Advocate for health literacy in your organisation; and Learn more about health literacy.

Keywords:

low literacy; information handling; decision making; “teach-back” method; advocate; healthcare organisation.

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INTRODUCTION

The definition of health literacy and broad concepts has been described in Unit 4 and the application of healthy literacy principles has been described in Unit 5. In this Unit, the focus is on enhancing physician skills in health literacy.

The Scope of health literacy demanded of the present day health services user

There are several abilities needed, namely the ability to:

- Navigate the health system, such as filling out complex forms and locating providers and services
- Share personal information, such as health history, with providers
- Engage in self-care and chronic-disease management
- Understand mathematical concepts such probability and risk
- Calculate cholesterol and blood sugar levels, measuring medications, and understanding nutrition labels and choosing between health plans also require the ability to calculate
- Know health topics including parts of the body structure, function, normality, and abnormality; relationship between lifestyle factors such as diet and exercise and various health outcomes.

Enhancing the physician’s tasks and skills in the context of health literacy

- Recognise and assist patients with low literacy to overcome their information handling problems
- Improve usability of health information
- Improve the usability of health services
- Build knowledge to improve health decision making
- Advocate for health literacy in your organisation
- Learn more about health literacy.

RECOGNISE AND ASSIST PATIENTS WITH LOW LITERACY

Clues that a patient may have inadequate health literacy include bringing a family member to the clinic visit or wanting to discuss materials with the family, claims of forgetting reading glasses, incompletely or inadequately filling out forms, or are poorly compliant to medications.

Ways to improve understanding in patients with low health literacy are shown in Table 1.

IMPROVE USABILITY OF HEALTH INFORMATION

Consider the following questions as you develop and deliver health information:

- Is the information appropriate for the users?
- Is the information easy to use?
- Are you speaking clearly and listening carefully?

(I) Is the information appropriate for the users?***Identify the intended users of the health information and services***

Identify the intended users based on epidemiology (who is affected?), demographics, behaviour, culture, and attitude. Be sure the materials and messages reflect the age, social and cultural diversity, language, and literacy skills of the intended users. Recognise the low literacy user who needs more assistance to navigate the health care system.

Table 1. Ways to improve understanding in patients with low health literacy

- Slow down – Take time to assess patient’s health literacy skills
- Use “living room” language instead of medical terminology; use the language that patients can understand.
- Show or draw pictures – Visual aids enhance understanding and subsequent visit.
- Limit information given at each interaction and repeat instructions.
- Use a “teach back” or “show me” approach to confirm understanding – Ask patients to demonstrate their instructions to ensure that instruction has been adequate. Do not ask “Do you understand?” Typically, patients will say yes even if they don’t understand.
- Be respectful, caring and sensitive – This attitude reassures patients and help them to improve participation in their own health care.

Source: Williams, 2002

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Evaluate users' understanding before, during, and after the introduction of information and services.

Talk to members of the intended user group before you design your communication intervention to determine what information they need to know and how they will use it. Then pre-test messages and services to get feedback.

Test your messages after they have been introduced to assess effectiveness. Refine content when necessary. Use a post-test to evaluate the effectiveness of the information.

Acknowledge cultural differences and practice respect

Ensure that health information is relevant to the intended users' social and cultural contexts. Cultural factors to be considered include ethnic group, language, nationality, religion, age, gender, sexual orientation, income level and occupation.

(2) Is the information easy to use?***Limit the number of messages, use plain language, and focus on action.***

Keep it simple. As a general guide, use no more than four main messages. It is good to keep to three messages most of the time. Give the user specific actions and recommendations.

Use plain language. Use everyday language and an active voice. Avoid long or run-on sentences. Avoid jargon and use everyday examples to explain technical or medical terms the first time they are used.

Clearly state the actions you want the person to take. Focus on behaviour rather than the underlying medical principles.

Supplement instructions with visuals

Individual learning styles differ. For many people, visuals are a preferred style, especially for technical information. Simple line drawings can help users understand complicated or abstract medical concepts. Make sure to place images in context of gender and age. When illustrating internal body parts, include the outside of the body so that the user can grasp the context too.

Use visuals to help convey your message and not just decorate, as this will distract users. Show the main message on the front of the visual materials. For print communication, use captions or cues to point out key information.

Make written communication easy to read.

Use at least 12-point font. Avoid using all capital letters, italics, and fancy script. Keep the length between 40 and 50 characters. Use headings and bullets to break up text. Be sure to leave plenty of white space around the margins and between sections.

Improve the usability of information on the Internet.

Studies show that people cannot find the information they seek on Websites about 60 percent of the time. This figure may be higher for persons with limited literacy skills. Use uniform navigation. Organise information to minimise searching and scrolling. Give users the option to navigate from simple to complex information.

(3) Are you speaking clearly and listening carefully?***Ask open ended questions***

Ask questions using the words “what” or “how” instead of those that can be answered with “yes” or “no”. For example, “What questions do you have?” instead of “Do you have any questions?”

Check for understanding

The “teach-back” method is a technique that healthcare providers and consumers can use to enhance communication with each other. The person receiving the health information is asked to restate it in his or her own words – not just repeat it – to ensure that the message is understood and remembered. When understanding is not accurate or complete, the sender repeats the process until the receiver is able to restate the information needed. Users can also be asked to act out a medication regimen.

Participate in plain language and cultural competency training

Encourage colleagues to do the same. Consider organising a training programme for health professionals and staff in your organisation.

IMPROVE THE USABILITY OF HEALTH SERVICES

Navigation of healthcare systems requires familiarity with the vocabulary, concepts and processes needed to access health services and information. This includes understanding insurance coverage and for some eligibility for public assistance, filling out patient information forms, scheduling appointments and follow-up procedures, and locating services.

Strategies to improve the usability of health services include:

- Improve the usability of health forms and instructions.
- Improve the accessibility of the physical environment.
- Establish a patient navigator programme.

(1) Improve the usability of health forms and instructions

Healthcare and public health systems rely heavily on printed materials such as:

- Medical history forms
- Insurance forms
- Informed consent forms
- Test results
- Directions to the laboratory or pharmacy
- Hospital discharge and home care instructions
- Clinical research protocols and announcements.

Tips for improving the usability of health forms and instructions:

- Revise to ensure clarity and simplicity.
- Test forms with intended users and revise as needed.
- Provide plain language forms in multiple languages.
- Provide clear information about eligibility for public assistance.
- Train staff to give assistance with completing forms and scheduling follow-up care.

(2) Improve the accessibility of the physical environment***Tips for improving the physical environment***

- Include universal symbols and clear signage.
- Promote easy flow through healthcare facilities.
- Train staff to create and maintain a respectful and shame-free environment.

(3) Establish a patient navigator programme

Patient navigators are health professionals, community health workers, or highly trained patient liaisons who co-ordinate health care for patients and help them move through the healthcare system. Patient navigators can help patients evaluate their treatment options, obtain referrals, or apply for financial assistance.

BUILD KNOWLEDGE TO IMPROVE HEALTH DECISION MAKING

Strategies to build knowledge and improve health decision making are:

- Improve access to accurate and appropriate health information.
- Facilitate decision making.
- Partner with educators to improve health curricula

(1) Improve access to accurate and appropriate health information

Healthcare and public health professionals can develop plain language health education materials that can be easily shared among practitioners.

Work with the media

Working with the media to improve health literacy involves: Increasing the media's awareness of health literacy issues, and Making scientific and medical information easier to understand by converting the health information into plain language suitable for a public audience.

Develop new methods for information dissemination

Personal electronic devices such as cell phones, and palm pilots could be new ways of reaching out to people.

(2) Facilitate decision making

Decision making hinges on the way we package health information and services.

We can:

Use short documents that present “bottom-line information, step-by-step instructions, and visual cues that highlight the most important information.

Align health information and recommendations with access to services, resources, and support.

(3) Partner with educators to improve health curricula

Co-develop adult basic education lessons on health content with educators.

Partner schools to improve health education materials.

ADVOCATE FOR HEALTH LITERACY IN YOUR ORGANISATION

We can advocate for health literacy in your organisation:

- Make the case for health literacy improvement.
- Incorporate health literacy into mission and planning.
- Establish accountability for health literacy activities.

(1) Make the case for health literacy improvement.

Include health literacy in staff training and orientation activities. Identify specific programmes and projects affected by low literacy.

Target key opinion leaders with health literacy information.

(2) Incorporate health literacy into mission and planning.

Include specific goals and objectives related to improving health literacy in strategic plans, performance plans, programmes, and educational initiatives.

Convene a work group to develop a health literacy agenda for your organisation.

(3) Establish accountability for health literacy activities.

Include health literacy improvement in programme evaluation.

LEARN MORE ABOUT HEALTH LITERACY

There are many sources of information:

- Articles in PubMed.
- On-line courses.
- Local courses such as this Family Practice Skills Course as well as courses conducted by Health Promotion Board.

REFERENCES

1. Williams MV. Recognising and overcoming inadequate health literacy, a barrier to care. *Cleve Clin J Med* 2002 May;69(5):425-8.
2. US Department of Health and Human Services. Quick Guide to Health Literacy. Office of Disease Prevention and Health Promotion.

LEARNING POINTS

- **The scope of health literacy demanded of the present day health services user is broad.**
- **Enhancing physician skills consists of improving on 6 things:**
 - **Recognise and assist patients with low literacy to overcome their information handling problems;**
 - **Improve usability of health information;**
 - **Improve the usability of health services;**
 - **Build knowledge to improve health decision making;**
 - **Advocate for health literacy in your organisation; and**
 - **Learn more about health literacy.**

ASSESSMENT OF 30 MCQs

FPSC No : 50

MCQS ON LIFESTYLE ADVICE FOR BETTER PATIENT OUTCOMES

Submission DEADLINE: 4 December 2012, 12 noon

INSTRUCTIONS

- To submit answers to the following multiple choice questions, you are required to log on to the College On-line Portal (www.cfps2online.org).
- 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 On-line Portal before the submission deadline stated above.

- About the Health Choices – Lifestyle Advice Resource for Healthcare Professionals, which of the following is a topic in the toolkit?**
 - Let's practice safer sex.
 - Let's practice aerobics.
 - Let's manage our cholesterol levels.
 - Let's manage our blood pressure levels.
 - Let's manage our depressed feelings.
- About ischaemic heart disease as a chronic diseases causing death, in the 2010 Principal Causes of Death in Singapore, ischaemic heart disease contributed to X percent of the total deaths. What is X?**
 - 24.7.
 - 22.7.
 - 20.7.
 - 18.7.
 - 16.7.
- Together as a group, chronic diseases contributed to X percent of the total deaths in Singapore in 2010. What is X?**
 - 60.8
 - 65.8
 - 67.8.
 - 70.8
 - 73.8.
- There is good evidence that intensive lifestyle change in impaired fasting hyperglycemia/impaired glucose tolerance is able to reduce the progression to diabetes in X percent of such patients. What is X?**
 - 38.
 - 48.
 - 58.
 - 68.
 - 78.
- Chronic diseases have been defined as medical conditions lasting for longer than X months? What is X?**
 - 1.
 - 3.
 - 6.
 - 9.
 - 12.
- About Chronic Obstructive Pulmonary Disease, which of the following is CORRECT?**
 - It is not associated with smoking diseases
 - It is not a serious disease among smokers.
 - It is not a leading cause of death in developing countries.
 - It is a deadlier disease than lung cancer among smokers.
 - It is the only lung disease among smokers.

7. About cigarette smoking, which of the following is CORRECT?

- A. It is different from and is not related to tobacco addiction.
- B. It is the major cause of chronic obstructive pulmonary disease.
- C. It is the most common cause of death from COPD.
- D. It instantly and immediately causes lung damage.
- E. It does not affect lung spirometry.

8. About the loss of lung function or FEV₁, which of the following is CORRECT?

- A. It only occurs in smokers.
- B. It is NOT expected to worsen with age.
- C. The rate of decline in smokers who have COPD can be 4-6 times that of non-smokers.
- D. It is usually quite dramatic and can be picked up early.
- E. It is not useful as an early assessment in smokers.

9. About smoking cessation in chronic obstructive lung disease (COPD), which of the following is CORRECT?

- A. It is NOT useful in people already diagnosed with COPD.
- B. It does NOT help in preventing progression of COPD in smokers.
- C. It does NOT help prevent lung cancer in smokers with COPD.
- D. It is MOST effective in reducing the risk of developing COPD.
- E. All of the above statements are true.

10. About the problem of tobacco dependence as a chronic disease, which of the following is CORRECT?

- A. Nicotine is NOT as potent as heroin or cocaine.
- B. About 90% of smokers are physiologically nicotine addicted.
- C. Stopping smoking needs one to make a choice and depends on will power.
- D. The severity of nicotine withdrawal is NOT dependent on the severity of the nicotine addiction.
- E. ALL of the above statements are true.

11. Motivational interview was initially developed by Rollnick and Miller as a strategy for X. What is X?

- A. Increasing physical activity.
- B. Weight reduction.
- C. Addictive behaviour change.
- D. Reducing insomnia.
- E. Stress reduction.

12. About the definition of motivational interview as a behaviour change method, which of the following is a characteristic feature?

- A. It is a doctor-oriented method of behavior change.
- B. It is an indirect method of behavior change.
- C. It is a method that enhances extrinsic motivation to change.
- D. It is a method of behavior change that the autonomy to change is decided by both the patient and doctor.
- E. It is a method that explores and resolves ambivalence towards change.

13. In motivational interview what is the stance that the practitioner adopts?

- A. The stance of controlling the pace of change.
- B. The stance of collaboration and guiding.
- C. The stance of the practitioner is an expert.
- D. The stance of the practitioner wholly submitting to the patient's wishes.
- E. The stance of overcoming patient's resistance through arguing for change.

- 14. Motivational interview is said to have four counselling principles. Which of the following is NOT one of the counselling principles?**
- Develop discrepancy.
 - Express empathy.
 - Roll with resistance.
 - Support self-efficacy.
 - Argue for change.
- 15. In motivational interview, facilitating the patient to process and speak more about why and how to change is one of the strategies to motivate change is called X. What is X?**
- Self-talk.
 - Cross talk.
 - Confidence talk.
 - Change talk.
 - Importance talk.
- 16. The ability to make informed health decisions is a X process. What is X?**
- Continuing.
 - Complex.
 - Collaborative.
 - Slow.
 - Guiding.
- 17. In the United States, literacy levels are above 90%, yet the National Assessment of Adult Literacy in 2003 showed that approximately X of the population have basic or below basic skills to manage their health. What is X?**
- Three quarters.
 - One-third.
 - One-quarter.
 - One-fifth.
 - One-sixth.
- 18. About health literate systems, what should it provide?**
- Ready access to health information in a supportive environment.
 - Information of different complexities to serve different segments of the people.
 - Information that is complete with visual aids.
 - Pamphlets written in plain language.
 - Internet access that is freely available in the environment.
- 19. One of the 5 strategies for effective patient-provider communication that promotes health literacy is the use of open questions. Which of the following is NOT an open question?**
- 'What are you doing at home?'
 - 'What's your daily routine with your medicines?'
 - 'So you're still taking medication x and y, right?'
 - 'Just so I get it right, what are you taking and how much?'
 - 'What questions do you have for me?'
- 20. To help patients to have a better recall health information, it has been suggested that they are given X teaching points at each appointment. What is X?**
- 7.
 - 6.
 - 5.
 - 4.
 - 3.
- 21. Comparing the trend of the smoking prevalence among Singapore residents aged 18 to 69 years based on the OECD figures for 2010 and 2004 there has been X. What is X?**
- A doubling of the rates.
 - A decrease in the rates.
 - An increase in the rates.
 - No change in the rates.
 - Halving of the rates.
- 22. With regards to the smoking prevalence among Singapore residents aged 18 to 69 years based on the OECD figures for 2010, which age group has the highest prevalence rate?**
- 18-29 years.
 - 30-39 years.
 - 40-49 years.
 - 50-59 years.
 - 60-69 years.

- 23. With regards to the smoking prevalence among female Singapore residents aged 18 and 69 years based on the OECD figures for 2010 and 2004 there has been X. What is X?**
- An increase in the rates.
 - A tripling of the rates.
 - A decrease in the rates.
 - No change in the rates.
 - Halving of the rates.
- 24. The National Health Survey Singapore 2010 findings showed that more than X of the smokers expressed an intention to quit, regardless of their background, age, or ethnic group. What is X?**
- Quarter.
 - Half.
 - Two-thirds.
 - Three-quarters.
 - Nine-tenths.
- 25. The WHO-FCTC guides Singapore's National Framework for Tobacco Control, which is a multi-pronged, multi-sectoral framework. The framework that includes the following except X. What is X?**
- Legislation & taxation.
 - Public education & empowerment.
 - Partnerships & capacity building.
 - Smoking cessation services.
 - Negotiation with tobacco companies on tobacco advertising.
- 26. About the recognition of a patient who has low literacy, which of the following is LEAST likely to be a clue?**
- Inadequately filling out forms.
 - Poorly compliant to medications.
 - Bringing a family member to the clinic visit.
 - Bringing Internet printouts to discuss with the doctor.
 - Incompletely or inadequately filling out forms.
- 27. If a patient is recognised to have low literacy, which of the following will be MOST helpful to the patient?**
- Give the patient a book to read.
 - Send the patient to attend a health literacy course.
 - Use the "teach-back" method.
 - Ask "Do you understand?"
 - Administer a health literacy questionnaire.
- 28. You intend to introduce an information brochure on an existing service. Which of the following will be the FIRST thing that you will do?**
- Pre-test your information brochure to get feedback.
 - Talk to users before you design your information brochure.
 - Hire a communication company to design the information brochure.
 - Design your information brochure based on your gut feel.
 - Do a feedback survey after launch of your information brochure.
- 29. It is said that information appropriate to the users need to be relevant to the intended users' social and cultural contexts. Which of the following factors would be LEAST relevant?**
- Personality traits.
 - Sexual orientation.
 - Income level.
 - Occupation.
 - Religion.
- 30. About improving the usability of health forms and instructions e.g. insurance forms, informed consent forms and directions to the laboratory or pharmacy, which of the following would be the LEAST useful tip?**
- Test forms with intended users and revise as needed.
 - Provide a free health literacy course for your clinic users.
 - Train staff to give assistance with completing forms and scheduling follow-up care.
 - Provide plain language forms in multiple languages.
 - Provide clear information about eligibility for public assistance.

FPSC No. 47 “Obesity: Prevention and Management” Answers to 30 MCQ Assessment		
1. C	11. D	21. A
2. A	12. B	22. E
3. E	13. D	23. A
4. A	14. C	24. D
5. D	15. A	25. C
6. E	16. A	26. B
7. B	17. E	27. B
8. E	18. B	28. E
9. A	19. D	29. C
10. D	20. C	30. E

FPSC No. 48 “Management Update on Functional Decline in Older Adults 2012” Answers to 30 MCQ Assessment		
1. C	11. E	21. A
2. D	12. B	22. A
3. E	13. E	23. B
4. C	14. D	24. E
5. B	15. B	25. D
6. A	16. B	26. C
7. D	17. A	27. B
8. C	18. C	28. E
9. B	19. E	29. D
10. E	20. D	30. E

FPSC No. 49 “Update on Function & Disability in Primary Care” Answers to 30 MCQ Assessment		
1. C	11. D	21. C
2. D	12. A	22. A
3. E	13. B	23. A
4. C	14. E	24. B
5. B	15. D	25. E
6. A	16. B	26. D
7. D	17. B	27. C
8. C	18. A	28. D
9. C	19. C	29. C
10. C	20. E	30. D



ORIGINAL PAPER

- A Family Physician's Approach to Sleep Deprivation in Children
- PRISM (Patients' Revelations as Insightful Studies of their Management) SECTION
- Acute Severe Eye Pain and Epistaxis in a 16-year old Male Teenager
- What Clinical Clues May Aid a GP in Diagnosing Acute Sinusitis?

A Family Physician's Approach to Sleep Deprivation in Children

Dr Lee Meng Kam Richard, Dr Lee Eng Sing, Dr Aw Lee Fhoon Lily

ABSTRACT

Sleep deprivation is not uncommon among children in Singapore. Children with deprived sleep may present with poor academic performance, learning disabilities and behavioural disorders. As a result of sleep deprivation, performance in complex tasks involving higher brain functions is affected more than simple memory tasks. Sleep quality rather than sleep quantity is associated with good cognitive learning and memory function. Regular sleep-wake patterns with good sleep schedules will reinforce this. Causes of sleep deprivation include insufficient sleep, fragmentation of sleep and increased need for sleep. The BEARS questionnaire is a useful screening tool for sleep deprivation. A clinical approach to exclude medical conditions that may cause excessive daytime sleepiness should be conducted and focused physical examination be performed. A two-week sleep log about the child's sleep habits and sleep-wake cycles should be recorded. Referrals to a sleep specialist should be made if any sleep disorders is suspected.

Keywords:

Sleep deprivation, learning and cognitive performance.

SFP2012;38(3): 36-43

INTRODUCTION

Sleep is not just simply rest. It is an active process¹. The different aspects of sleep including the continuity, timing and pattern of different stages of sleep are necessary for restorative processes of the body to occur.²

In Singapore where academic excellence is of importance, sleep deprivation is common among school-going students. A survey conducted on 940 students in 28 secondary schools in 2007 revealed that only 2.6% of them were getting the recommended 9 hours of sleep. Up to 80% of the students were getting less than 8 hours of sleep a night.³ This may be due to increasing demands of modern life on children.

A review is conducted on the causes and effects of sleep deprivation and the clinical approach to managing sleep deprivation in children.

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METHODOLOGY

A PubMed search was conducted in April 2011 with the following key words "sleep deprivation", "learning" and "cognitive performance". Citations that were relevant were shortlisted and the full text obtained for further study. Additional articles were retrieved through a manual search of reference lists in the shortlisted papers. A total of 64 articles were included in this review. The majority were observational studies.

SLEEP AND SLEEP DEPRIVATION

What is sleep?

During an average night's sleep, a person will experience about 4 or 5 cycles of sleep. One complete sleep cycle lasts about 90 to 100 minutes. Sleep is divided into Rapid Eye Movement (REM) sleep and non-REM (NREM) sleep. The sleep stages are measured by electroencephalogram (EEG), electro-myogram (EMG) and electro-oculogram (EOG).⁴

REM sleep has a role in memory consolidation.⁵ REM sleep may be suppressed by alcohol, monoamine oxidase inhibitors, tricyclic antidepressants, stimulants, and some hypnotic/sedative drugs. Medications with prominent anti-cholinergic effects may also delay or suppress REM sleep.

NREM sleep represents the deepest sleep in humans and it has three stages. The first stage (N1) sleep is the transition from wakefulness to deeper sleep. It is the lightest stage of sleep. The second stage (N2) sleep, also known as intermediate sleep, is characterised by sleep spindles and k-complexes. The third stage (N3) sleep is frequently referred to as slow wave sleep⁶.

Differences between a child and an adult sleep pattern^{7,8}

During childhood, sleep is characterised by longer sleep duration, REM sleep and larger amount of slow wave sleep. The slow wave sleep gradually decreases as the child gets older. During this deep sleep (usually 1-3 hours after going to sleep) it is extremely difficult to arouse a child. When awakened at this time, the child often appears disorientated, confused and cognitively slow. Confused partial arousals including sleep-walking, talking and night terrors usually emerge from this state.

During puberty, there are some changes in the sleep regulation towards a more adult-like pattern of REM sleep. The number of arousals and wakefulness also increases with age. There is also an increase in daytime sleepiness and a shift in the circadian pattern towards a more owl-like tendency for

later bedtimes and wake-up times.

Normal sleep requirement in children

Epidemiological studies have shown that total sleep duration decreased from an average of 14.2 hours at 6 months of age, to an average of 8.1 hours at 16 years of age. Consolidation of nocturnal sleep occurred during the first 12 months after birth. Subsequently there is a decreasing trend in daytime sleep. An average child of 2 years old would have spent a total of 10,000 hours asleep and about 7,500 hours in all waking activities combined.⁹ The most significant decline in napping habits occurs between 1.5 years of age and 4 years of age.¹⁰ From the age of 2 to 5 years, there will be an approximate even balance between sleep and wakefulness.

Learning and memory formation in sleep

There is a relationship between sleep, memory and learning capacity¹¹. Sleep is important for consolidation of memory after learning and for efficient memory formation subsequently.¹² Pilcher et al¹³ showed that sleep-deprived individuals functioned at a level that is comparable with the ninth percentile of non sleep-deprived individuals.

The human memory is divided into two main types - declarative and procedural memory. Declarative memory refers to memories accessible to conscious recollection ("knowing that"). Procedural memory comprises memories of how to perform specific skills ("knowing how"). These memories may be related to motor, visual or even verbal domains. They are usually unconsciously learned.¹⁴

Undisturbed sleep helps in formation of the declarative memory thereby improving retention rates.¹⁵ This occurs in the early part of the nocturnal sleep.¹⁶ The consolidation of the procedural memory occurs in REM sleep. This takes place in the late part of nocturnal sleep.^{17,18} Improved motor performance skill is proportional to the duration of time spent in REM sleep.¹⁹

Both REM and NREM sleep are necessary for learning and memory. For an efficient consolidation of both knowledge (declarative) and skills (procedural), the worst enemy is sleep deprivation.¹⁶ Some kind of "intentionality" has to be present at learning for later consolidation of the memories during sleep. A sleep-dependent gain in skill occurs only under intentional learning conditions.²⁰

Sleep deprivation

Sleep deprivation exists when sleep is insufficient to support adequate alertness, performance and health. Acute sleep deprivation refers to no sleep or a reduction in the usual total sleep time, usually lasting one or two days. In contrast, chronic sleep deprivation exists when the individual routinely sleeps less than required for optimal functioning.

Sleep reduction affects metabolism of glucose. It also increases ghrelin levels and decreases leptin production thus leading to increased risk of weight gain and obesity.²¹ Sleep deprivation in patients with blocked nasal airway may also lead to hypertension and cardiovascular mortality. It is also observed that sleep-deprived children exhibit hyperactive attention deficit symptoms.²² After sleep deprivation, performance in abstract and complex tasks involving higher brain functions declines more than in performance of simple memory tasks.²³

Common Causes of Sleep Deprivation (Appendix I)

The causes can be divided into three groups:²⁴

i) Insufficient sleep

Insufficient sleep can be due to insomnias and circadian rhythm sleep disorders.

ii) Sleep fragmentation

This includes behavioural disorders, sleep-onset association disorders, respiratory-related disorders, movement disorders, parasomnias, medical causes (e.g., asthma, GERD, eczema) and environmental causes (light, noise, co-sleeping).

iii) Increased need for sleep

This includes temporary hypersomnolence, recurrent hypersomnolence and persistent hypersomnolence, neurologic disorders, medical disorders, drug-related, and narcolepsy.

Appendix I: Common Causes of Sleep Deprivation

1. Insufficient Sleep

1a. Insomnia:

- i) Adjustment
- ii) Psycho-physiological
- iii) Paradoxical
- iv) Behavioural

v) Inadequate sleep hygiene

vi) Insomnia because of alcohol and medications

vii) Mental (depression, bipolar, ADHD)

1b. Circadian rhythm sleep disorders:

- i) Delayed sleep phase syndrome
- ii) Non-24-hour sleep-wake schedule
- iii) Sleep entrainment difficulties
(blindness, developmental delay and mental retardation)

2. Fragmented Sleep

2a. Behavioural Disorders

2b. Sleep onset association disorder

2c. Sleep disordered breathing:

- i) OSA
- ii) Upper airway respiratory syndrome
- iii) Hypoventilation

- iv) Central sleep apnea
- 2d. Movement disorders:
 - i) Periodic limb movement
 - ii) Restless leg syndrome
 - iii) Bruxism
 - iv) Head banging
- 2e. Parasomnias:
 - i) Night terrors
 - ii) Sleep talking
 - iii) Sleep walking
 - iv) Confusional arousals
 - (asthma, eczema, seizures, noise, light, co-sleeping)

3. Increased Need for Sleep

- 3a. Head trauma
- 3b. Increased intracranial pressure:
 - i) Medical (infection, metabolic)
 - ii) Drug related (illicit drugs, medications)
 - iii) Recurrent hypersomnolence
 - iv) Narcolepsy (primary, secondary)

ROLE OF SLEEP IN LEARNING & MEMORY CONSOLIDATION

Evidence of how sleep deprivation affects learning

Sadeh et al did the first study that objectively measured sleep onset and daytime sleepiness using actigraphical monitoring devices. It was found that older children had more sleep fragmentation compared to younger children and they concluded that sleep loss is strongly associated with learning and attention deficits.²⁵

Sleep schedules may affect the academic performance in students. Increased daytime sleepiness as a consequence of poor quality of sleep will impair students' cognitive function and behaviour. Studies have found that students with higher grades reported regular sleep-wake pattern with more total sleep.^{26,27,28} There is an increase in problems of sleep onset, enuresis and night awakening in students with poor academic performance as compared to normal sleepers with higher grades.²⁹

Difficulties in morning arousal and the need for afternoon naps are predictors of poor school achievements. Pilcher et al showed that reduction in total sleep for one night impaired the ability to complete cognitive tasks.³⁰ Students can lose up to 2 hours of sleep per night if there is early starting time of the school. Better neurocognitive performance in these students is seen in the afternoon than in the morning.³¹ The decrease in performance after awakening from sleep only lasted several hours, in line with the concept of sleep inertia.^{32,33}

It is also postulated that sleep quality rather than sleep duration is the component associated with memory performance.³⁴ The amount of time in bed has no relationship with school attentiveness.^{30,35}

Most children are able to compensate for brief periods of sleep restriction with impairment only emerging after prolonged sleep restriction or total sleep deprivation.^{36,37} Learning before sleep enhances memory consolidation.³³ Sleep deprivation in adults was found to affect the mood changes more than the cognitive or motor functions.¹³

Sleep disordered breathing leading to sleep deprivation

Sleep disordered breathing (SDB) is a continuum ranging from primary snoring to severe obstructive sleep apnea (OSA) syndrome. In a study of children between 3 -12 years old, it is reported that up to 25% of them suffered from snoring and 10% had OSA.³⁸ Snoring and intermittent hypoxia in children are significantly associated with school failures. Snorers had twice the risk of poorer school performance and the association became stronger with increased snoring frequency.³⁹

SDB is associated with behavioural problems, reduced academic performance and neurocognitive learning.^{40,41,42,43,44} The consequence of frequent night time arousal resulting in sleep fragmentation impacts greatly on learning and memory tasks.⁴⁵ Gozal et al showed that neurocognitive morbidity from SDB may be only partially reversible. The learning deficit which developed during childhood may hinder school achievement later on.⁴⁶

Improvements in learning and memory achieved after sleep

Children who extended their period of sleep significantly improved their memory performance.⁴⁷ Another study showed that enhanced recall was related to periods of sleep.⁴⁸ Consolidation of the memory is enhanced when the interval of wakefulness between learning and sleep is short. It also did not matter if the learning was done in the morning, afternoon or at night. There is no difference in the rate of forgetfulness as the benefit of sleep on retention recall is stable over 48 hours. The enhanced recall memory was best seen in those who slept after they had learnt a new task.

Declarative memory consolidation is enhanced after periods of night time sleep but a wake period of the same duration does not.⁴⁹ High periods of NREM sleep are important in the consolidation process of declarative memory. Sleep itself allows a qualitative change in memory more than just consolidation.⁵⁰ Learning of new abstract concepts is affected after sleep loss.³⁷

Neural activation in sleep following learning

Functional MRI in sleep-deprived patients using a verbal learning task revealed increased prefrontal activity and decreased hippocampal activity, compared to controls who experienced normal sleep; indicating more effort was required for successfully completing the task.^{51,52} Therefore short duration of sleep or naps in periods of 10 minutes will improve alertness and performance for up to 1 hour. The optimal duration of nap seems to be 10 minutes and if it is any shorter, there is no benefit. There appears to be a need for a fixed period of NREM sleep especially, stage 2 or stage 3 sleep.⁵³ The above findings were noted in adults and whether this finding can be extrapolated to children remains to be seen.

LIMITATIONS OF CURRENT STUDIES ON SLEEP AND SLEEP DEPRIVATION

Most of the studies are small, observational studies rather than large, randomised controlled trials. Some of the studies are based on self-reports and recall questionnaires. This may inadvertently introduce bias. There are different measures being tested hence outcome measures are not comparable. The participants involved in these studies may exhibit the “Hawthorne effect” and limit the accuracy of the results.

MEASUREMENT OF SLEEP DEPRIVATION

i) Sleep deprivation is ascertained by a thorough history and use of a screening questionnaire like the BEARS questionnaire^{54,55} or the Children's Sleep Habit Questionnaire⁴¹.

BEARS questionnaire⁵⁴

Owens and Dalzell developed a quick 5-question screening tool that professionals can use with children and adolescents called the BEARS.

The 5 questions are: (1) Bedtime problems, (2) Excessive daytime sleepiness, (3) Awakenings during the night, (4) Regularity of evening sleep time and morning awakenings, and (5) Sleep-related breathing problems or snoring. Almost twice as many children's sleep problems were identified when the BEARS was used in a clinical setting instead of leaving it up to professionals to ask questions on their own.

Strengths of BEARS

It is easy to remember these brief questions because of the short “BEARS” acronym. It is a quick, simple screening tool for paediatric professionals to use for children from 2 to 18 years of age. This is to determine whether a child needs a more comprehensive sleep-screening inventory.

Limitations of BEARS

Its main shortfall is that it does not ask questions about excessive leg or other movements during sleep and may overlook many children who have Periodic Limb Movement Disorder, Restless Leg Syndrome, or other parasomnias. No validity or reliability studies have been conducted on the BEARS.

Children's Sleep Habit Questionnaire (CSHQ)⁴¹

The CSHQ is a 33-item questionnaire for children from 4 to 10 years of age that is rated by parents on a 3-point scale. It is available only in English. The CSHQ scores the following domains: (1) bedtime resistance, (2) sleep duration, (3) parasomnias, (4) sleep-disordered breathing, (5) night awakenings, (6) daytime sleepiness, (7) sleep anxiety, and (8) sleep onset delay.

Strengths of the CSHQ

Its rating scale is well-defined to prevent misinterpretation by parents, and the cut-off score to refer children for a comprehensive evaluation is clearly defined. It can predict some of the major paediatric sleep disorders, such as SDB and various night-time behavioural problems. It is the only paediatric sleep inventory to date that screens for sleep anxiety.

Limitations of the CSHQ

(i) Children from differing ethnic backgrounds or socioeconomic levels may give different results. The SDB scale has lower than desirable test-retest reliability. The CSHQ is not designed for use with adolescents or in private practices or school settings. It is recommended that CSHQ only be used in research settings by sleep specialists with predominantly Caucasian, English-speaking children.

ii) Sleep deprivation can also be measured more scientifically with a polysomnogram (PSG), Multiple Sleep Latency Test (MSLT) or Multiple Wake Test (MWT)⁵⁶ (Appendix 2). PSG is the gold standard for evaluating sleep disorders and also provides information about the daytime sleepiness in children²⁴. The PSG is abnormal in parasomnias, sleep apnoea and narcolepsy. It will be normal in problems that are of behavioural origin⁵⁷.

iii) It is difficult to determine what constitutes normal quantity of sleep. One approach involves determining how long before a patient would awaken spontaneously if he is left to sleep. An alternative approach involves determining how alert the patient feels after different durations of sleep. Alertness is normal if the patient awakes feeling refreshed and is capable of moving through the day feeling alert without effort, even when placed in boring situations.

Once the normal quantity of sleep for an individual (i.e. the nightly sleep quota) has been determined, the sleep deficit can be

estimated as illustrated by the following example. If a person whose nightly sleep quota is eight hours and sleeps only seven hours, there would be a one-hour sleep deficit. That sleep deficit is carried over to the next day. A seven-hour sleep debt will accrue after seven days if one hour of sleep is lost nightly. Cumulative partial sleep deprivation can be equivalent to acute total sleep deprivation.

Individuals can still be sleep deprived when they sleep for more than eight hours. This is usually because of disturbances in the quality of sleep. Sleep quality is determined by the number of arousals or awakenings, as well as the percentage, duration and type of sleep stages.⁵⁸ As few as five awakenings per hour of sleep can result in daytime sleepiness and/or performance deficits even after a single night of disruption.⁵⁹ Individuals are unaware of the arousals because their duration is only in seconds and the individual then returns to the same sleep stage that was interrupted. Sleep is thus not only important after learning for consolidation of memory, but also in preparing the brain for efficient memory formation.¹²

Appendix 2: Polysomnography⁶²

Sleep is generally measured during an all-night sleep study or polysomnogram (PSG), which involves simultaneous recording of several physiologic variables. Sleep studies require attachment of electrodes to the scalp for recording the EEG, to the face near the right and left eyes for measurement of rapid eye movements, and to the chin for measurement of muscle tone.

Other physiologic parameters, such as airflow and breathing effort, oxyhemoglobin saturation, leg movements, electrocardiogram, and body position may also be measured depending on the purposes of the sleep study. All measurements are performed continuously throughout the patient's usual sleep period. All physiologic tracings are then analysed, and a final report of sleep quantity and quality is prepared and interpreted.

Multiple sleep latency test (MSLT)⁶³

The multiple sleep latency test (MSLT) is an objective measure of daytime sleepiness. It was developed because patients frequently appear to be unaware of just how sleepy they are. The test is based upon an operational definition of sleepiness: the sleepier an individual is, the faster he will fall asleep. The following protocol is typically used:

- The patient is given 4 to 5 opportunities to nap, usually at two-hour intervals during the day.
- On each occasion, the individual is asked to lie down on a bed in a quiet, darkened sleep room and fall asleep as quickly as possible. The EEG, eye movements, and muscle tone are measured during the test.

- The latency from wakefulness to sleep onset is measured to determine the "sleep latency." Each session is terminated after 15 minutes of sleep.

- Generally, a mean sleep latency of 5 minutes or less is considered indicative of severe daytime sleepiness, while a mean sleep latency of 15 minutes or longer is consistent with normal alertness. The abnormal appearance of REM sleep during two or more of the four to five naps is also thought to be consistent with a diagnosis of narcolepsy. MSLT is an objective measure of daytime sleepiness, and is generally performed on the following day of PSG to assess the degree of sleepiness and the timing of REM sleep onset. It is indicated in children with suspected narcolepsy and idiopathic hypersomnolence.

- MWT objectively measures the ability of an individual to remain awake for a defined period of time and mirrors the result of MSLT. It is indicated to assess the efficacy of treatment in patients with narcolepsy.

All these tests are complicated investigations requiring the expertise of the sleep specialists and are beyond the scope of this paper.

Maintenance of Wakefulness (MWT)⁶⁴

The MWT objectively measures the ability of an individual to remain awake for a defined period of time. It is based on the premise that individuals with a greater degree of sleepiness are less likely to remain awake than individuals with less sleepiness.

This test is used to assess a patient's ability to maintain wakefulness throughout the day. This test is helpful in assessing the efficacy of an individual's treatment for sleep-disorders and driving safety.

MWTs are generally performed during the day, immediately following an overnight PSG. It involves four, 40-minute test periods at 2-hourly intervals, throughout the day. Patients are required to stay awake throughout each test period (brain waves and eye movements are recorded to enable wakefulness and sleep-states to be determined).

The MWT should *not be considered a substitute for the MSLT* because the tests can give conflicting results, even when the same individual is given both tests on the same day. There are several several possible reasons for conflicting results. The MWT and

MSLT may measure different processes - the tendency to fall asleep (ie, the MSLT) and the ability to stay awake (ie, the MWT).

Indications - The MWT may be used to assess an individual's response to therapy. It is the direction of change, not the degree of change, that is meaningful in this situation because the degree

of change that is clinically significant has not been established.

Maintenance of wakefulness test - The maintenance of wakefulness test (MWT) is a variant of the MSLT. However, it differs in its goals as well as in the nature of the instructions given to the patient. Patients are typically tested while reclining in a quiet, darkened room. Instead of being asked to fall asleep as quickly as possible, they are requested to stay awake for as long as possible.

Conceptually, the MWT is a test of the individual's ability to stay awake, and it is therefore believed to be a more practical test of whether a person's sleepiness is likely to impair the ability to drive or work. The MWT also allows the element of motivation to enter into the equation, as is likely to be the case in real life situations.

CLINICAL APPROACH TO SLEEP DEPRIVATION IN CHILDREN FOR FAMILY PHYSICIANS

1. A high index of suspicion is needed in order to detect sleep deprivation in children.⁶⁰
2. A systematic approach to exclude conditions causing insufficient sleep, fragmented sleep and increased need for sleep should be conducted (Appendix 1). The commonest are SDB, organ-specific problems, decongestants, caffeine and sweets.
3. The BEARS questionnaire is a useful screening tool to help assess whether the child has any sleep deprivation.^{54,55}
4. A sleep log (Appendix 3) should be recorded. It includes the time of going to bed, time of going to sleep, night wakings and what happens at each waking, what time the child wakes in the morning, whether the child needs to be woken up and if the child is easy or difficult to wake as well as having any daytime symptoms.

5. Focused physical examination including vital signs, ENT and a neurological examination should be performed.

6. Treat the reversible causes if sleep deprivation is confirmed and refer to a sleep specialist for an overnight PSG if SDB or OSA is suspected.

CONCLUSIONS

- Sleep is important for learning and memory. Sleep quality rather than sleep duration is associated with memory performance.
- Sleep deprivation is common in children and SDB must be excluded. Poor sleep quality due to SDB is associated with behavioural problems, reduced academic performance and learning.^{34,40,41,42,39,43,44,61}
- The BEARS questionnaire is a useful screening tool for evaluation of sleep deprivation.
- In the management of sleep deprivation, it is important to uncover the root causes and treat accordingly.

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Appendix 3: Sleep Log

Name: _____ NRIC No.: _____ Age: _____ Sleep ✓ Awake ✕
 Address: _____
 Medications (if any): _____

Day	7 am	8	9	10	11	12	1 pm	2	3	4	5	6	7	8	9	10	11	12 mn	1	2	3	4	5	6

Sleep log - as a physical record of sleep pattern for the patient

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ACUTE SEVERE EYE PAIN AND EPISTAXIS IN A 16-YEAR-OLD MALE TEENAGER - WHAT CLINICAL CLUES MAY AID A GP IN DIAGNOSING ACUTE SINUSITIS?

Dr Marie Stella P Cruz

ABSTRACT

A 16-year-old teenager presented with acute severe eye pain and mild epistaxis. The family physician diagnosed an ophthalmologic emergency requiring evaluation. Acute sinusitis was not entertained. Subsequently, ENT evaluation and CT scan confirmed maxillary and anterior ethmoidal sinusitis. This led to a search for criteria to improve diagnosis of acute sinusitis in the GP setting. Two or more of these symptoms – mucopurulent rhinorrhoea, nasal obstruction/congestion, facial pain/pressure and decreased sense of smell increase its likelihood. Other important issues discussed include differential diagnosis of eyepain associated with epistaxis, potential orbital complications of sinusitis and causes of the quiet, non-red eye

Keywords:

Acute sinusitis, maxillary sinusitis, ethmoidal sinusitis, eye pain, quiet non-red eye, epistaxis

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PATIENT'S REVELATION: WHAT HAPPENED?

WK, a 16-year-old Chinese-Singaporean male teenager presented to a family physician with severe right eye pain and mild right nose bleed.

The right eye pain, of 2 days duration, had rapidly increased in severity, rendering him supine and motionless. It was aggravated by any head or body movement. The eye pain was deep and orbital. Pain was also felt medial to the right eye, just lateral to the nose bridge. There was no redness, discharge, tearing, photophobia, decrease in visual acuity, double vision or history of trauma to the eye. He was not a contact lens user.

The right nose bleed, of 4 days duration, was small in amount but persistent. There was no known nose injury. He noted purulent nasal mucosal discharge prior to the onset of nose bleed, but had no other symptoms of a respiratory tract infection. There was no fever, headache or vomiting. This was his first episode of severe eye pain and persistent nose bleeding.

Significant medical history include myopia of 4 dioptres, an infected right ear polyp removed surgically a year ago, mild allergic rhinitis, mild persistent asthma, red-green colour blindness and G6PD deficiency. The allergic rhinitis did not necessitate treatment while low-dose inhaled beclomethasone dipropionate was used occasionally for the asthma. Both conditions had been present since his primary school days.

Significant family history included allergic rhinitis and eczema in the father, and allergic rhinitis, red-green colour blindness and G6PD deficiency in an elder brother.

On physical examination, WK was conscious, rational and alert. Blood pressure was 120/66 mmHg, pulse rate 72/minute and temperature afebrile. Examination of the right eye did not reveal any abnormality. No photophobia, tearing or discharge was noted. The conjunctiva was not injected and the cornea was clear. The pupil was reactive to light. There was no diplopia or limitation in his visual fields.

A small amount of fresh blood was seen in the right nostril. No tenderness was felt over the cheeks and forehead. Maxillary transillumination was not performed. There were no cranial nerve abnormalities nor neck stiffness and his gait was normal.

The family physician's diagnosis was that of an ophthalmologic emergency requiring evaluation and referred WK to the Emergency Department. The attending doctor referred him immediately to the ophthalmologist on duty at the ED. Thorough evaluation including measurement of intraocular pressure, slit lamp examination, fluorescein staining of cornea and direct funduscopy were normal. The left eye was also normal.

WK was then assessed by an ENT surgeon, who elicited mild facial tenderness just medial to the right eye. Dried blood was noted in the right nostril. Nasoendoscopy revealed pus oozing into the middle meatus.

A diagnosis of acute ethmoidal sinusitis was made and WK was warded. Intravenous Amoxycillin-Clavulanic Acid at a dose of 1.2 grams 8 hourly was instituted and regular paracetamol given as analgesic. Topical oxymetazoline hydrochloride and mometasone furoate sprays were given to alleviate nasal congestion.

CT scan of the nasal cavity and sinuses performed 12 hours after admission revealed sinusitis of both the right anterior ethmoidal and right maxillary sinuses. The right globe was unremarkable.

WK's symptoms improved rapidly after initiation of treatment. The eye pain resolved completely within three days. The epistaxis stopped soon after admission.

WK was discharged from hospital after 2 days with a prescription for Amoxycillin-Clavulanic Acid 625 mg 8 hourly for 2 weeks, steroid nasal spray for 1 month and the antihistamine Cetirizine to be taken when necessary. At review with the ENT specialist 2 weeks later, repeat nasoendoscopy was normal and he was discharged from follow-up.

MARIE STELLA P CRUZ,
Family Physician, Bethany Methodist Nursing Home

GAINING INSIGHT: WHAT ARE THE ISSUES?

Analysis of this clinical encounter brought these questions to the fore:

1. What was the essence of this case? It was that the diagnosis of acute sinusitis was not entertained by the family physician as the overwhelming presenting symptom was severe eye pain.
2. What are the differential diagnosis of acute severe eye pain associated with epistaxis, such as in this patient?
3. What are the important causes of severe eye pain in a non-red eye that a GP should be aware of?
4. What are the symptoms and signs that may improve diagnosis of acute sinusitis in the GP setting?
5. What are the ophthalmic complications of acute ethmoidal and maxillary sinusitis?

STUDYING THE MANAGEMENT: HOW DO WE APPLY IN OUR CLINICAL PRACTICE?

1. The Case in a Nutshell

This 16-year old teenager presented with acute severe right eye pain and mild right epistaxis. Thorough physical examination of the eye was normal. Due to the magnitude of the eye pain that overwhelmed the epistaxis, the author had only considered an ophthalmologic-related diagnosis and had not entertained acute sinusitis. The ENT surgeon diagnosed acute sinusitis based on the clinical picture and nasoendoscopic findings of pus in the middle meatus.

Subsequently, CTscan imaging confirmed the diagnosis as right maxillary and right anterior ethmoidal sinusitis. The right eye globe was normal.

While ruling out an ophthalmologic cause as initial line of management is reasonable, the rationale being loss of vision is a possible and ominous consequence, it is imperative that clinical skills in diagnosing acute sinusitis by the GP also be improved.

2. Differential diagnosis of eye pain associated with epistaxis

In a patient presenting with eye pain and epistaxis, both symptoms may be related to a single diagnosis OR the eye pain and epistaxis may be due to co-existing separate distinct pathologies.

Acute sinusitis ties in the eye pain and epistaxis nicely. In this patient, the background history of allergic rhinitis (a known predisposing factor to sinusitis), the purulent nasal discharge that preceeded the onset of nose bleed, tenderness (elicited by the ENT surgeon) just lateral to the nosebridge and that is a likely sign of ethmoidal sinusitis, are all clues to the diagnosis of acute sinusitis.

How may his eye pain be explained? It is known that acute sinusitis may cause eye pain. Classically, maxillary sinusitis pain extends to the cheek and lower orbit and ethmoid sinusitis pain extends to the orbits or vertex of the skull.¹ Both maxillary and

ethmoid sinusitis being present in the patient resulted in severe eye pain. His eye pain was not due to orbital complications of sinusitis per se, as supported by normal physical examination by the ophthalmologist and CT scan findings of a normal globe.

Eye pain associated with sinusitis may be due to acute sinusitis with orbital complications. Thorough ophthalmologic workup and CT scan is necessary along with prompt institution of antibiotics if confirmed, to avert loss of vision and even life.

Sinus neoplasms, though relatively uncommon, are also causes of eye pain with epistaxis. Workup includes CT scan and nasal endoscopy.

The eye pain and epistaxis could have been due to co-existing distinct conditions. Various ophthalmologic conditions (discussed below) may cause the eye pain. Epistaxis may be due to a variety of local and systemic causes. Besides acute rhinosinusitis and nasal polyps, other common causes include self-induced trauma ie nose-picking, excessive nose blowing, trauma to the nasal bones or septum, rhinitis and topical medications eg topical corticosteroids.

Table 1: Causes of Pain in the Quiet, Non-red Eye

I. Ophthalmologic conditions

Ocular causes

- Acute narrow-angle glaucoma
- Corneal diseases in initial stages eg infection, abrasion, foreign body
- Dry eyes

Orbital causes

- Optic neuropathy
- Orbital inflammation
- Orbital infection
- Orbital tumour
- Primary intraocular tumours eg choroidal melanoma
- Intraocular metastases from breast, lung, gastrointestinal cancers

Cranial conditions

- Paranasal sinusitis
- Cavernous sinus thrombosis
- Tolosa Hunt syndrome

Neurologic conditions

- Cluster headache
- Migraine headache
- Trigeminal neuralgia
- Elevated intracranial pressure

Vascular conditions

- Giant cell arteritis
- Subdural, epidural, subarachnoid or intracerebral haemorrhage
- Carotid artery disease eg inflammation, emboli, thrombosis, dissection

Information from reference 1

Neurologic conditions such as migraine or cluster headaches may also account for the eye pain. The lack of a history of recurrent headaches in this patient made this diagnosis less likely.

3. Important causes of pain in the quiet (non-red) eye

Pain in a quiet, non-red eye such as in this patient, can be the first sign of a vision-threatening condition, a more benign ophthalmologic condition, or a non-ophthalmologic condition. Ophthalmologic causes can be divided into ocular and orbital causes, while non-ophthalmologic causes can be vascular, cranial and neurologic in etiology. As the differential diagnosis is extensive, ophthalmologist evaluation to confirm diagnosis and initiate treatment is warranted.¹

It is to be noted from this table that paranasal sinusitis may present with pain in a quiet, non-red eye. This is because maxillary sinusitis pain may extend into the lower orbit while both ethmoid and sphenoid sinusitis pain may extend to the orbit.

4. What are the symptoms and signs that may improve diagnosis of acute sinusitis in the GP setting?

It is timely to revisit the classification and diagnosis of acute sinusitis at this juncture.

The term rhinosinusitis is used because sinusitis is almost always accompanied by inflammation of the contiguous nasal mucosa. Over the last one and a half decades various international task forces and panels have revised and developed clinical practice guidelines on the classification and diagnosis of rhinosinusitis.²

In a clinical practice guidelines (CPG) illustrating the diagnosis and treatment of rhinosinusitis that was developed in 2007, diagnosis required two or more of the following symptoms³:

- Mucopurulent drainage (anterior, posterior or both)
- Nasal obstruction (congestion)
- Facial pain-pressure-fullness
- Decreased sense of smell

And inflammation by one or more of the following:

- Purulent mucus or edema in the middle meatus or ethmoid region
- Polyps in the nasal cavity or the middle meatus

- Radiographic imaging showing inflammation of the paranasal sinuses

Acute Rhinosinusitis

This is defined as up to 4 weeks of purulent nasal discharge accompanied by nasal obstruction, facial pain, facial pressure or fullness. Viral rhinosinusitis (VRS) can be distinguished from acute bacterial rhinosinusitis (ABRS) in that in viral rhinosinusitis, symptoms are present less than 10 days and are not worsening. In contrast, in bacterial rhinosinusitis, signs or symptoms are present 10 days or more beyond the onset of upper respiratory symptoms, and worsen within 10 days after an initial improvement ie. biphasic illness or double worsening.

In most cases, bacterial sinusitis is preceded by a viral upper respiratory infection. Other common conditions that can predispose to acute sinusitis are cigarette smoke, anatomical factors such as nasal septum deformities, concha bullosa, and allergies. Approximately 2% of VRS progresses to bacterial rhinosinusitis in adults.

Three cardinal symptoms have been found to have high sensitivity and specificity for ABRS. These include purulent rhinorrhoea, facial pain/pressure and nasal obstruction. Secondary symptoms that support the diagnosis include anosmia, fever, aural fullness, cough and headache. The most common organisms responsible for ABRS are Streptococcus pneumoniae, Haemophilus influenzae and Moraxella catarrhalis.²

Chronic Rhinosinusitis

This is defined as an inflammatory condition of the nasal cavity and paranasal sinuses lasting longer than 12 weeks. The pathophysiology is multifactorial, resulting from interactions between host anatomy, genetics and the environment. Contributory factors include biofilms, osteitis, allergy, superantigens from Staphylococcus aureus, fungi and general host factors.

Nasal obstruction is the most common symptom (81 to 95%), followed by facial congestion-pressure-fullness (70 to 85%), discoloured nasal discharge (51 to 83%) and hyposmia (61 to 69%). High fevers are usually absent, although fatigue and myalgias are common.²

Table 2: Classification of Adult Rhinosinusitis

Classification	Duration
Acute	≤ 4 weeks
Subacute	4 to < 12 weeks
Chronic	≥ 12 weeks
Recurrent acute	≥ 4 episodes of acute rhinosinusitis per year, each episode lasting ≥ 7 to 10 days, with complete resolution between episodes
Acute exacerbations of chronic	Sudden worsening of chronic rhinosinusitis with a return to baseline after treatment
Information from reference 2	

MOH Clinical Practice Guidelines on Management of Rhinosinusitis and Allergic Rhinitis 2/2010

Locally, the MOH CPG on Management of Rhinosinusitis and Allergic Rhinitis that was published in February 2010 has advised that diagnosis be based on symptoms, with nasal examination yielding supporting signs.

A sudden onset of two or more of the symptoms^{4,5}:

- Blockage, congestion or stuffiness
- Nasal discharge or post nasal drip, often mucopurulent
- Facial pain or pressure, headache and
- Reduction / loss of smell

Signs include^{4,5}:

- Nasal: swelling, redness, deformity
- Oropharyngeal: postnasal drip
- Oral: dental infection
- Otologic: otitis media

Anterior rhinoscopy remains the basic tool in primary care to determine the existence of pathology, but alone is limited to examining the anterior portion of the sinonasal passages.

Nasal endoscopy helps identify oedema, inflammation, mucopurulent discharge, scarring, crusting and nasal polyps.

5. Ophthalmologic complications of acute sinusitis

There are four pairs of sinuses: frontal, ethmoid, maxillary and sphenoid sinuses. Each of the sinuses is closely related to important structures, which as a result, can become involved in diseases affecting the sinuses.⁶

Table 3: Important Structures Related to the Sinuses

Maxillary	Ethmoid	Sphenoid	Frontal
Orbit	Orbit	Internal carotid	Orbit
Teeth	Cribriiform plate	Cavernous sinus	Brain
Cheek	Optic nerve	Pituitary	

Table from reference 6

Table 4: Potential Complications of Sinusitis

Orbital complications (see Table 5)
Intracranial complications <ul style="list-style-type: none">• Meningitis (extension from ethmoid or sphenoid sinusitis)• Epidural abscess (from frontal sinusitis)
Pott Puffy tumour <ul style="list-style-type: none">• Frontal osteomyelitis (from frontal sinusitis)
Information from reference 2

The progression of sinonasal orbital infections has been divided into five stages. The first stage, periorbital edema, presents with

cellulitis of the eyelids without visual loss or ophthalmoplegia. The second stage, orbital cellulitis describes infection extending through the orbital septum and presents with pain, proptosis and chemosis. There may be ophthalmoplegia related to edema of the extraocular muscles and decrease in visual acuity related to corneal edema. The third stage involves formation of a subperiosteal abscess. The fourth stage is the formation of an orbital abscess. Severe proptosis, chemosis, ophthalmoplegia and visual loss are usually present. The fifth stage results from retrograde thrombophlebitis of the valveless ophthalmic veins that can lead to cavernous sinus thrombosis.²

Table 5: Potential Orbital Complications of Sinusitis

1. Periorbital oedema

Infection is anterior to the orbital septum
No limitation of extraocular movements and vision is normal.

2. Orbital cellulitis

Infection of the soft tissue posterior to the orbital septum

3. Subperiosteal abscess

Pus collection beneath the periosteum of the lamina papyracea
Globe is usually displaced in inferolateral direction

4. Orbital abscess

Pus collection in the orbit
Associated with limitation of extraocular movements, exophthalmos and visual changes

5. Cavernous sinus thrombosis

Septic thrombosis of the cavernous sinuses
Fever, ophthalmoplegia, ptosis, proptosis, chemosis, blindness, meningitis

Table from reference 2

CONCLUSION

The three main lessons learnt by the author from this patient are:

1. Consider acute sinusitis in a patient presenting with eye pain and epistaxis. To do so, a family physician must be familiar with the major symptoms and signs that will aid in making the diagnosis. A high index of suspicion for acute sinusitis at the outset is important as immediate and appropriate treatment will help avert known complications.
2. Diagnostic criteria for acute sinusitis include two or more of these symptoms – mucopurulent rhinorrhoea, facial pain/pressure, nasal obstruction/congestion and decreased sense of smell.

3. Know that the causes of eye pain in a quiet (non-red eye) is extensive and includes both ophthalmologic and non-ophthalmologic causes of cranial, vascular and neurologic conditions. Prompt referral to an ophthalmologist to rule out vision-threatening conditions is warranted.

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THE SILENT RISK OF UNDETECTED

CHRONIC DISEASES

Undetected chronic diseases pose a risk to all Singaporeans. In 2004, 49.4% of the diabetic population was found to be previously undiagnosed and 38.5% of hypertension cases had gone undetected.¹

Chronic diseases affect 1 in 4 people aged 40 or above and if left untreated, can lead to serious health problems. They are also risk factors for Ischaemic heart disease, the second leading cause of death in Singapore.²

To reduce these risks, the Integrated Screening Programme (ISP) recommends important yet simple tests for all Singaporeans and Permanent Residents. Your role as a doctor is vital in reducing the burden of chronic diseases. You can play your part by encouraging your patients to go for regular screening for the chronic diseases below.

For further details on ISP, please visit www.hpb.gov.sg/healthscreening or email hpb_integratedscreening@hpb.gov.sg

1. National Health Survey, 2004.
2. Health Statistics 2005.

DISEASE	SCREENING TEST	AGE TO SCREEN FROM (YEARS)	FREQUENCY OF SCREENING
For men and women			
Obesity	Body mass index Waist circumference measurement	18 and older	Once every year
High blood pressure	Body pressure measurement	18 and older	Once every 2 years
Diabetes	Fasting venous blood glucose	40 and older	Once every 2 years
High blood cholesterol	Fasting venous blood glucose	40 and older	Once every 2 years
Colorectal cancer	Faecal Immunochemical Test (FIT) or Colonoscopy	50 and older	Once every year Once every 10 years
For women only			
Cervical cancer	Pap smear	25 and older who have ever had sexual intercourse	Once every 3 years
Breast cancer	Mammogram	50 and older	Once every 2 years

This table serves as a guide for healthy individuals with average risk.

GUIDELINES AND INFORMATION FOR AUTHORS

THE SINGAPORE FAMILY PHYSICIAN

Authors are invited to submit articles for publication in The Singapore Family Physician on the understanding that the work is original and that it has not been submitted or published elsewhere. Your original article will be considered for publication on the understanding that they have to be approved by the Editorial Board via a double blinded peer review process and subject to revision. Authors are encouraged to consult the recommendations in the Uniform Requirements for Manuscripts Submitted to Biomedical Journals (<http://www.icmje.org/index.html>) which the SFP is in accord with.

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The submission should comprise of the following:

1. Title Page
2. Summary/ Abstract
3. Key Words
4. Text/ Manuscript (anonymised version)
5. Tables
6. Illustrations
7. Authors Agreement/ Copyright Assignment Form
8. Patient's Consent Form, if necessary (including consent for photograph or illustration taken of human subject) and each one of these sections should start on a fresh page.

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 a 1.5 line space.

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- The title should be concise and highlight the key elements of the article.
- Include on the title page first name, qualifications, present appointments, 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.

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- 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.

Key Words

- Add, at the end of summary in alphabetical listing, keywords of up to 5 in number which 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:

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- **Methods:** Describe the selection of the subjects clearly. Give References to established methods, including statistical methods; provide references and brief descriptions of methods that have been published but are not well known. Describe new or substantially modified methods, giving reasons for using them and evaluate their limitations. Include numbers of observations and the statistical significance of the findings where appropriate.

Drugs must be referred to generically; all the usual trade names may be included in parentheses.

Dosages should be quoted in metric units.

Laboratory values should be in SI units with traditional unit in parentheses.

Do not use patients' names, initials or hospital numbers to ensure anonymity.

- **Results:** Present results in logical sequence in the text, table and illustrations.

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Where there are more than three authors, the first three should be named and then followed by et al.

Example:

Tan and Ho. Treat-to-target approach in managing modifiable risk factors of patients with coronary heart disease in primary care in Singapore: What are the issues? *Asia Pacific Family Medicine*, 2011;10:12. doi:10.1186/1447-056X-10-12.

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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.

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Authors planning to submit their case studies to the PRISM section should structure their article according to these headings:

Title

• 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 on 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 not more than three authors. Each article should not exceed 2000 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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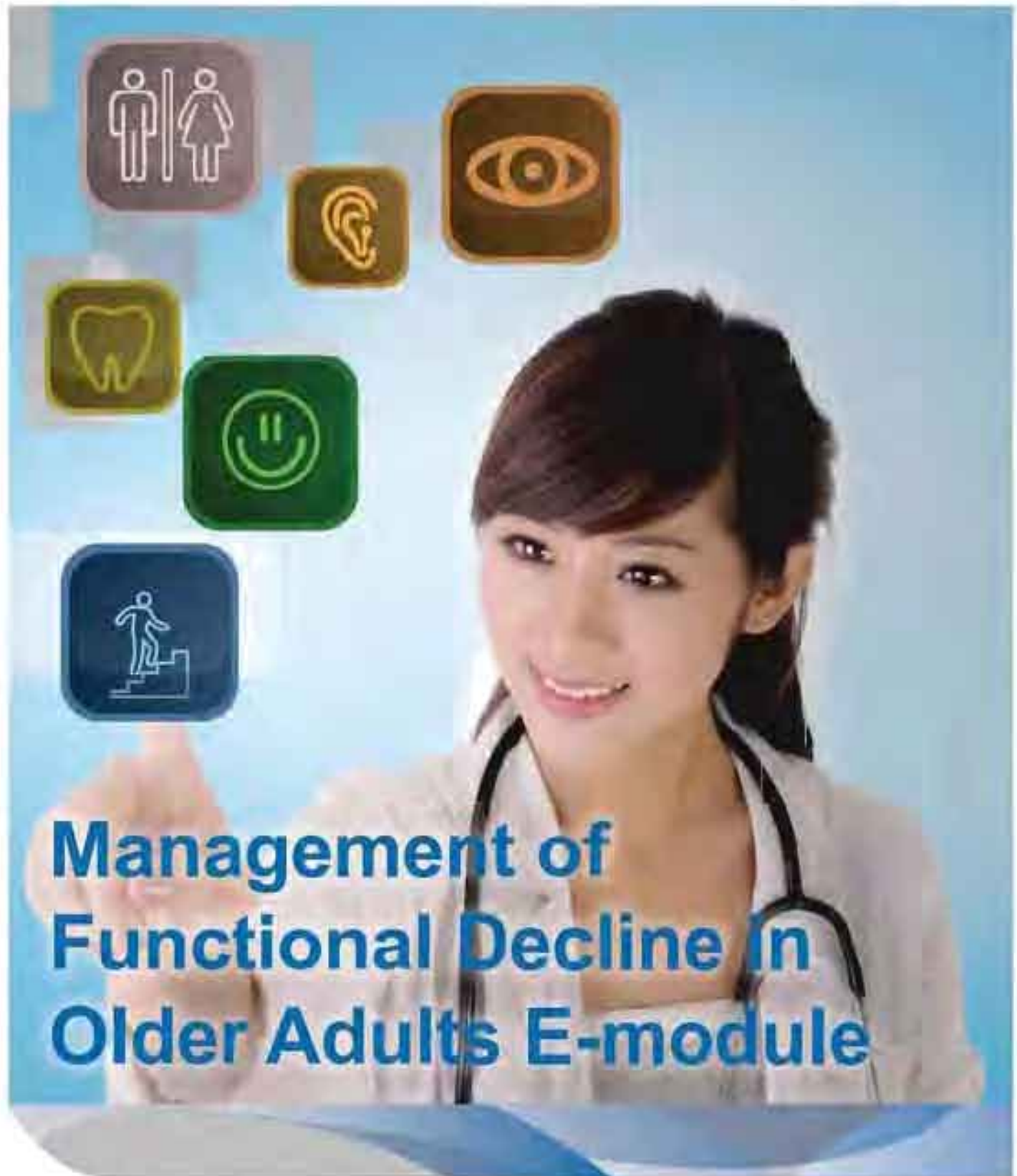
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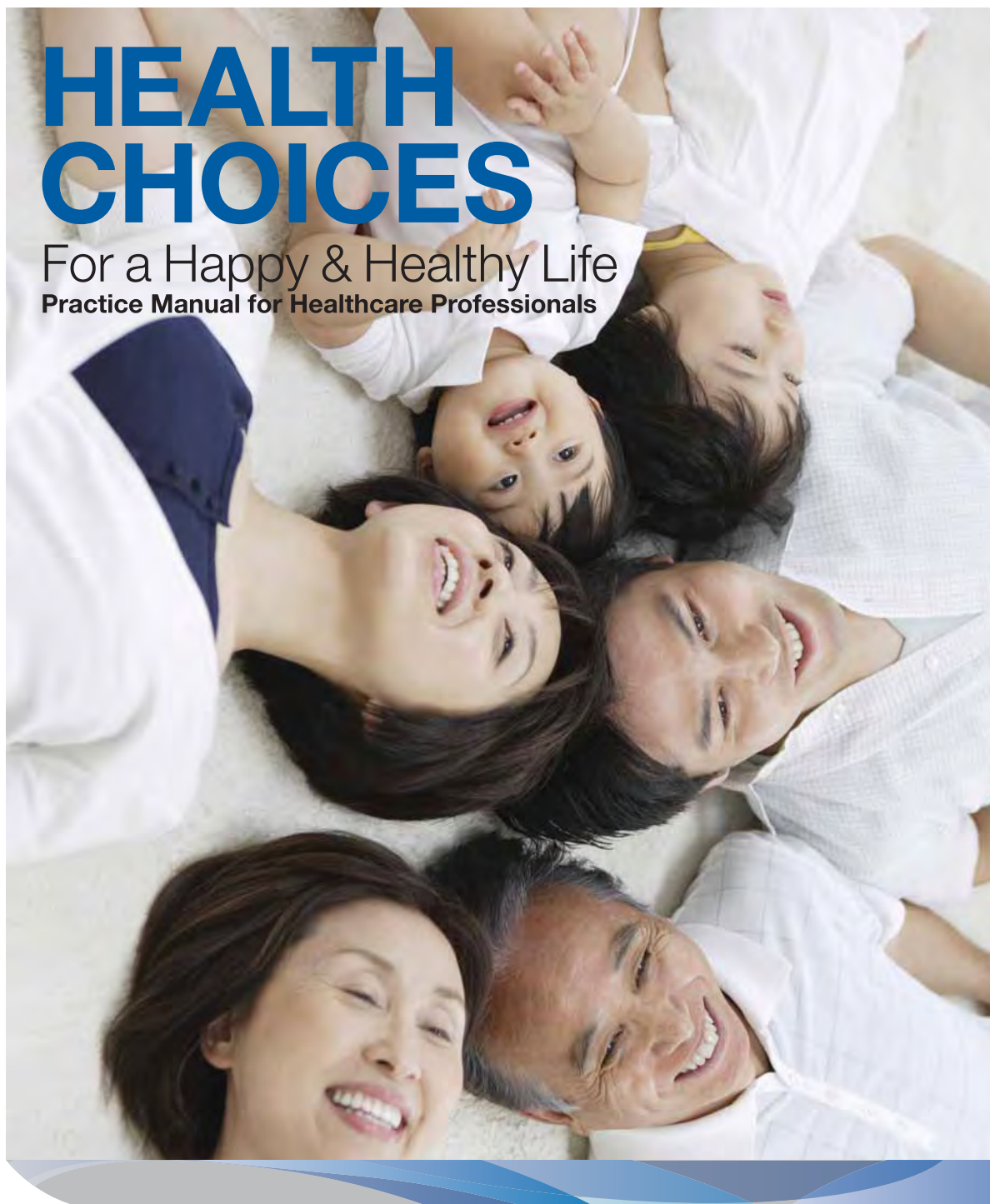
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