

**The Chinese University of Hong Kong  
The Nethersole School of Nursing  
CADENZA Training Programme**

**CTP 003: Chronic Disease Management and  
End-of-life Care**

**Web-based Course for  
Professional Social and Health Care Workers**

**Module II Chapter 2**

Prepared by Ms. Eva Au (Instructor I)

Copyright © 2009 CADENZA Training Programme All rights reserved.



香港賽馬會慈善信託基金  
The Hong Kong Jockey Club Charities Trust



# CHAPTER TWO

## Contemporary Issues in Geriatric Rehabilitation

# Content

- Special Considerations in Geriatric Rehabilitation
  - ♣ Team Approach
  - ♣ Frailty
  - ♣ Polypharmacy
  - ♣ Variability of older people
  - ♣ Inactivity
  - ♣ Fall prevention
  - ♣ Cognitive impairment
- Rehabilitation of Older People with Common Medical Pathologies
  - ♣ Cardiopulmonary disease
  - ♣ Stroke
  - ♣ Musculoskeletal pain
- Complementary and Alternative Medicine (CAM) in Rehabilitation
  - ♣ Introduction of CAM
  - ♣ Examples of CAM

# **Special Consideration in Geriatric Rehabilitation**

# Special Considerations in Geriatric Rehabilitation

## Team Approach



# Team Approach

- The team approach is regarded as the key ingredient in the provision of rehabilitation services.
- *Multidisciplinary Team Approach*
  - It consists of a group of experts who do not necessarily engage in regularly scheduled discussions with their colleagues to define the techniques and objectives of treatment. This approach may lead to overlapping and fragmentation of services with subsequent lack of co-ordination towards an expected outcome.
- *Interdisciplinary Team Approach*
  - It involves a shared group effort where the whole outcome is greater than the sum of individual treatments. This approach is more effective than the multidisciplinary team approach.

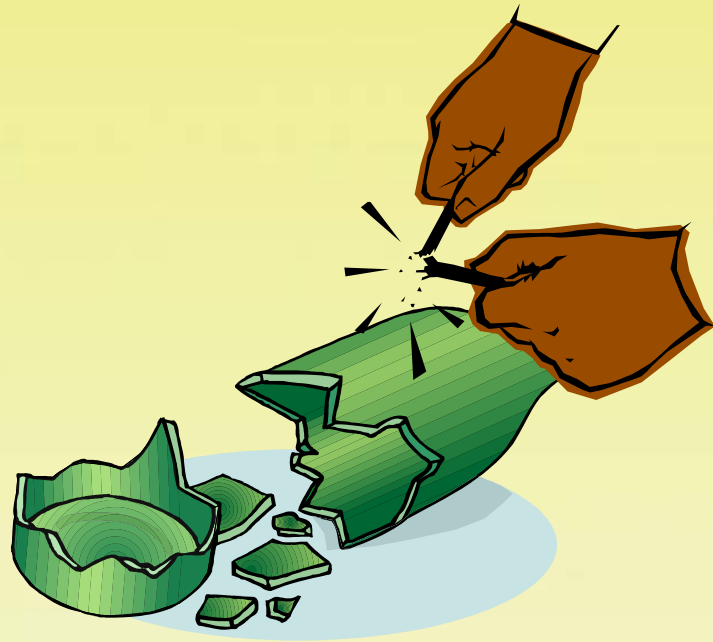
# Benefits of Team Approach

- Comprehensive care
- Efficient mode of health care delivery
- Cost effectiveness
- Increased productivity
- Increased work quality
- Increased job satisfaction of health care provider
- Decreased inpatient stays
- Help in meeting the needs of expanding managed care
- Help in competition for business

(Kumar, 2000)

# Special Considerations in Geriatric Rehabilitation

## Frailty





# Frailty

- **Definition:**
  - Functional dependence from a variety of causes (e.g., dementia, arthritis, stroke, heart disease, sensory changes) and presenting a risk of further functional decline during acute illness.
- **Also known as ‘Geriatric Giants’:**
  - confusion, falls, incontinence, polypharmacy and dependence in activities of daily living

(Kumar, 2000)

# Frailty

- The presence of multi-diagnostic situations such as congestive heart failure, renal disease, osteoporosis, DM or arthritis are common in older people.
- This leads to multiple drug and nutrient interactions and complex medical management.
- This will result in side effects of progressive loss in functional reserve and physiological homeostasis.

# Special Considerations in Geriatric Rehabilitation

## Polypharmacy



# Polypharmacy

- The use of multiple medications is common among older people and raises the common problem of compliance.
- Older people may become confused with their medication regimen, leading to overdose, incorrect scheduling and forgetting to take the medication.
- Older people are more susceptible to adverse effects of drugs and they should closely monitor their response to drugs.
- It is important to be aware of adverse drug effects and drug responses during rehabilitation.

# Examples of Polypharmacy

- Non-opioid Analgesics
  - Non-steroid anti-inflammatory drugs (NSAID)
  - Include aspirin, ibuprofena, ketoprofen, etc.
  - **Clinical effects:** – pain, – inflammation, – fever, – blood coagulation
  - **Sides effects:** hypertension, glucose intolerance, gastric ulcer, glaucoma, breakdown of collagenous tissue leading muscle wasting and osteoporosis

# Examples of Polypharmacy

- Antidepressants
  - Tricyclics, MAO inhibitors, 2<sup>nd</sup> generation drugs
  - **Clinical effects:** increased sensitivity of postsynaptic receptors at synapses
  - **Side effects:** sedation, postural hypotension, decreased acetylcholine function (anticholinergic effects) such as dry mouth, urinary retention, constipation and confusion

# Examples of Polypharmacy

- Antipsychotics
  - Chlorpromazine, clozapine, haloperidol, etc.
  - **Clinical effects:** block postsynaptic receptors in these pathways to help normalise dopaminergic influence
  - **Side effects:** sedation, postural hypotension, anticholinergic effects, movement disorders including dyskinesia, pseudoparkinsonism, severe restlessness (akathisia)

# Examples of Polypharmacy

- Medication for Parkinson's Disease
  - Levodopa (Sinemet)
  - **Clinical effects:** L-dopa will enter brain tissue and convert to dopamine, thus helping to restore the influence of dopamine at basal ganglia
  - **Side effects:** gastrointestinal irritation, hypotension, psychotic-like symptoms, progressively diminishing effect after 4-5 yrs of continual use



# Special Considerations in Geriatric Rehabilitation

## Variability of the Older People



# Variability of the Older People

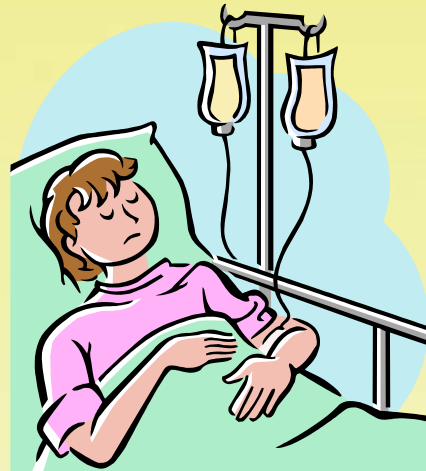
- Variability of functional capabilities within an aged group is much more pronounced than within younger cohorts
  - e.g., two 65 year-old patients, one is severely physically disabled while the other is still building houses and felling trees
- Chronological age is a poor indicator of physical or cognitive function.
- A wide range of rehabilitative services must be provided to address the varying needs of the aged population.

# Aspects of Variability

- The following aspects of variability do not necessarily decline with age but they are greatly influenced by disease
  - 1 Reaction Time - older people with arthritis may react slower as a result of stiffness and painful joints
  - 1 Visual capability – the eyes are affected by factors other than ageing effects, such as nutritional deficits, intense sunlight and air-borne contaminants
  - 1 Strength – muscle strength is dependent on the frequency of physical activity, cardiovascular condition, and hormonal and neural influence
  - 1 Mental ability - the presence of Alzheimer's disease can severely influence the functional ability within an environment and directly affect the rehabilitation potential

# Special Considerations in Geriatric Rehabilitation

## Inactivity



# Inactivity

- ‘Acute immobilisation’ is considered to be accidental immobilisation
  - Trauma, head injury, cerebral vascular accidents, burns, fall accident and fracture, etc.
- ‘Chronic immobilisation’ results from long-standing problems which are undertreated
  - Stroke, amputation, arthritis, Parkinson’s disease, cardiac disease, pulmonary disease and LBP, etc.
- Environmental factors will also lead to immobilization
  - Bedrails, high height of bed, physical restraint, inappropriate height of chair, lack of assistance, etc.
- Psychological problems will also lead to immobilization
  - Depression, anxiety, fear of falling, cognitive impairment, etc.

# Deconditioning (1)

- Immobilization will cause deconditioning in multiple organ systems
- **Neuro-sensory**
  - Sensory deprivation
  - - EEG activity
  - - thermoregulation
  - - cognitive
  - - in reaction time
  - - postural sway
- **Cardiovascular**
  - - cardiac output
  - - resting HR
  - - oxygen uptake
  - - total blood volume
  - - aerobic capacity
  - - HR & BP with inactivity
- **Respiratory**
  - Orthostatic hypotension
  - Venous thrombophlebitis
  - Atelectasis
  - Relative hypoxemia
  - - risk of pneumonia
  - - chest wall compliance
  - - intercostal muscle strength
  - - vital capacity
  - Impaired gas exchange
  - - resting arterial oxygen tension
  - - alveolar-arterial oxygen gradient
  - - peripheral perfusion

# Deconditioning (2)

- **Musculoskeletal**
  - Muscle atrophy
  - - muscle strength
  - - muscle oxidative capacity
  - Bone loss (osteoporosis)
  - - hyaluronic acid
  - - glycoproteins
  - Joint contractures
  - Osteoarthritis
- **Functional**
  - Impaired ambulation
  - - activities of daily living
  - - risk of falls
- **Gastrointestinal**
  - constipation
- **Genitourinary**
  - Urinary tract infection
  - Urinary incontinence
  - Renal calculi
- **Skin**
  - Pressure sores
- **Psychological**
  - Anxiety, fear, depression
  - Mood changes
  - Hallucinations
  - Perceptual disturbances
  - Sleep disturbances

# BED REST

- A mnemonic representation of the effects of bed rest is helpful in remembering the overall effects of immobilization on functional capacities:

<b>B</b>	Bladder and bowel incontinence and retention; bed sores
<b>E</b>	Emotional trauma; electrolyte imbalances
<b>D</b>	Deconditioning of muscles and nerves; depression; demineralisation of bones
<b>R</b>	ROM loss and contractures; restlessness; renal dysfunction
<b>E</b>	Energy depletion; EEG activity decreases
<b>S</b>	Sensory deprivation; sleep disorders; skin problems
<b>T</b>	Trouble

(Bottomley, 2003)

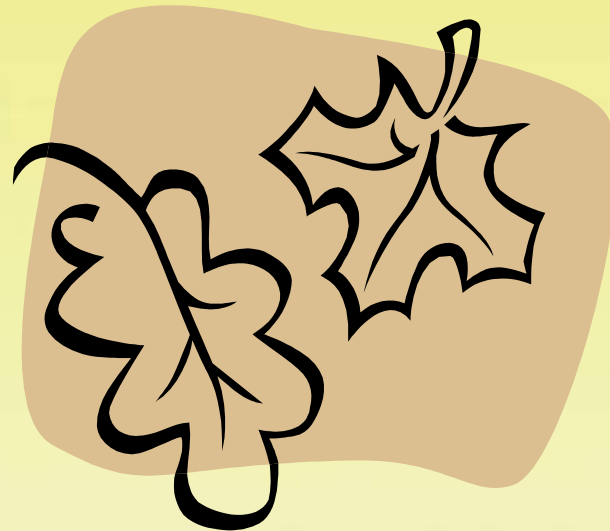


# Inactivity

- Numerous adverse effect of immobilization, bed rest should be prescribed judiciously and with full awareness of its potential complications.
- Older people are more susceptible to the complication of “Bed Rest”. When full activity is not possible, limited activity such as movement in bed, activities of daily living, intermittent sitting and standing will reduce the complication of “Bed Rest”.
- Some complications are irreversible and complete “Bed Rest” should be avoided at all cost. Rehabilitation should be started as early as possible to prevent premature disability.

# Special Considerations in Geriatric Rehabilitation

Fall



# Fall

- Falls are not part of the normal ageing process.
- The ultimate goals of rehabilitation are to combat the inactivity and loss of mobility that predispose falls.
- Assessment of fall should be included in the rehabilitation as older people are highly susceptible to injury from falls.
- Falls are the interactions of underlying physical dysfunction, medications and environmental hazards.
- Safety education is an important first step in fall prevention and many older people are not aware that they are at risk. Caregivers should also be part of the safety education process.

# Causes of Fall

Falls in older people are usually multi-factorial in origin

- 'Accident' or environment-related
- Muscle weakness
- Gait and balance disorder
- Dizziness or vertigo
- Confusion
- Postural hypotension
- Visual and hearing disorder
- Memory impairment
- Medication, specifically psychoactive medication
- Neurological, musculoskeletal, cardio-respiratory problems
- Deconditioning

# Fall Prevention

- Falls in older people are associated with one or more identifiable risk factors.
- It is a combination of high incidence, high susceptibility and delayed recovery to injury.
- Any injuries due to falls will further contribute to the complications of deconditioning, muscle weakness, decreased functional performance and post-fall anxiety syndrome.
- Fall assessment is important to identify any factors which are amenable to improvement during rehabilitation.

# Fall Prevention

- The following link provides an example of fall prevention and assessment:

## *Programme introduction*

– <http://www.no-fall.hk/indexC/indexC.htm>

## *Assessment*

– <http://www.no-fall.hk/08C/08C.htm>

# Special Considerations in Geriatric Rehabilitation

## Cognitive Impairment

# Cognitive impairment

- Cognitive impairment will greatly affect the rehabilitative potential of older people and lead to poor prognosis in relation to the disease.
- It is predicted that older people have poor rehabilitation outcomes as they cannot participate well in therapeutic training. (Lenze 2004)
- Cognitive assessment should be included in the rehabilitation so as to select appropriate candidates for comprehensive inpatient rehabilitation. (Diamond 1996)
- Intellectual decline does not invariably accompany ageing. However, it was recently reported that cognitive impairment is increasingly identified in our local older population. (Chau, 2008)



# Rehabilitation of Older People with Medical Pathologies

# Rehabilitation of Older People with Medical Pathologies

## Stroke

# Stroke

- Positive risk factors for stroke:
  - family history of stroke
  - age > 55; the older the age, the higher the chance
  - HT
  - high cholesterol
  - cigarette smoking
  - obesity
  - cardiovascular disease
  - vascular malformation
  - mini stroke, i.e., Transient Ischemic Attack (TIS)
  - alcoholics

# Stroke

- The goals of rehabilitation of stroke:
  - 1 to treat and recognise comorbid medical conditions such as HT, DM, etc.
  - 1 to prevent complications
  - 1 to prevent recurrent stroke
  - 1 to maximise functional independence
  - 1 to facilitate psychological and social adaptation
  - 1 to enhance community reintegration and resumption of prior life roles
  - 1 to enhance the quality of life for stroke rehabilitation patient

(Garrison, 2003)

# Stroke

- Strokes are common events, but stroke rehabilitation programmes should be uniquely tailored for each patient.
- Characteristics of right and left hemiplegic patients:

---

<b>Right Hemiplegic</b> (Left brain injury)	<b>Left Hemiplegic</b> (Right brain injury)
Communication impairment	Visual or motor perceptual problem
Slurring of speech (aphasia)	Loss of visual memory
Memory problem	Left side neglect
Problems in conceptualising and generalising	Difficulty to judge distance, size and position
	Lacks insight and judgment
	Impulsive

---

# Treatment for Stroke

- Medication:
  - *Ischemic stroke*: anti-platelet drug, anticoagulant, thrombolytic agent
  - *Cerebral edema*: mannitol & glycerol
- Surgery:
  - *Hemorrhagic stroke*: depends on the size, location and depth of hematoma
  - *Ischemic stroke*: remove part of intima of carotid artery
- Rehabilitation by team approach:
  - Maintain the physical and psychological functions
  - Improve the ability to live independently

# Stroke

- It is important to prevent any complications of stroke during the rehabilitation:

1 deep venous thrombosis (DVT)

1 seizures

1 depression

1 dysphagia

1 nutritional status

1 incontinence

1 shoulder subluxation

1 spasticity

1 fall

1 pressure sore

1 constipation

# Stroke

- The following are indicators for poor prognostic of stroke rehabilitation outcome:
  - severe memory problems
  - inability to understand commands
  - medical/ surgical instability
  - previous stroke history
  - advanced age
  - urinary / bowel incontinence
  - visual spatial deficits

(Garrison, 2003)



# Stroke Rehabilitation in Hong Kong

- Inpatient rehabilitation
  - Acute Care: medical ward & geriatric ward
  - Extended Care: extended care hospital, stroke rehabilitation unit
- Outpatient rehabilitation after discharge
  - Geriatric Day Hospital, PT/OT outpatient dept
- Community rehabilitation
  - Day Care Centre for the Elderly
  - Integrated Home Care Services (IHCS)
  - Enhanced Home and Community Care Services (EHCCS)

# Stroke

- The following link provides detailed information about stroke rehabilitation:
- [http://www21.ha.org.hk/smartpatient/en/chronicdiseases\\_zone/details.html?id=97](http://www21.ha.org.hk/smartpatient/en/chronicdiseases_zone/details.html?id=97)

# Rehabilitation of Older People with Medical Pathologies

## Coronary Artery Disease (CAD)



# Coronary Artery Disease

- It is the common form of death in older people, affecting both men and women similarly.
- Older people have a higher frequency of complications of CAD, including arrhythmias, heart failure and cardiac rupture.
- The risk factors for CAD in older people are similar to those for younger people.
- For the symptom of CAD, only about 10% of older people experience angina pectoris and significant CAD can exist without clinically evident symptoms.

# Coronary Artery Disease

- Positive risk factors for coronary artery disease:
  - Age: Men > 45 and women > 55 years old
  - Family history: myocardial infarction or sudden death in first-degree relative
  - Current cigarette smoking
  - Hypertension:  $\geq 140 / 90$  mmHg
  - Hypercholesterolemia
  - Diabetes mellitus: IDDM > age 30 or IDDM >15 years
  - Sedentary lifestyle, physical inactivity: sedentary jobs involving sitting for a large part of the day and no regular exercise

# Coronary Artery Disease

- Symptoms of coronary disease:
  - Pain, discomfort (or other anginal equivalent) in chest neck, jaw, arm, or other areas that may be ischemic in nature
  - Shortness of breath at rest or with mild exertion
  - Dizziness or syncope
  - Orthopnea or paroxysmal nocturnal dyspnea
  - Ankle edema
  - Palpitations or tachycardia
  - Intermittent claudication
  - Known heart murmur
  - Unusual fatigue or shortness of breath in usual activities

# Treatment for CAD

- Medication
  - Thrombolytic therapy: Drug dosages have to be reduced as older people are more sensitive to drugs and side effects
- Surgical Intervention
  - Percutaneous transluminal coronary angioplasty (PTCA)
  - Coronary arterial bypass graft surgery (CABG)
  - Cardiac pacemaker
- Cardiac Rehabilitation
  - Comprehensive care for overall cardiovascular risk reduction and exercise training

# Cardiac Rehabilitation

- The goal of cardiac rehabilitation:
  - Optimise cardiovascular capacity
  - To prevent recurrent myocardial infarction
  - Optimise cardiovascular risk reduction
  - Foster healthy behaviours and compliance with these behaviours
  - Reduce disability
  - Promote an active lifestyle for patients with cardiovascular disease
  - Improve the quality of life



# Cardiac Rehabilitation

- The cardiac rehabilitation consisted of 4 phases:
- Phase 1 (7-14 days):
  - Inpatient ambulating programme
- Phase 2 (lasting 8 weeks):
  - Outpatient education and exercise programme
  - Education class focusing on prevention and treatment of coronary heart disease and risk factors such as smoking, overweight, etc.
  - Aerobic exercise training within 65% to 85% of age-adjusted heart rate reserve
- Phase 3 (6 months):
  - Community based home exercise
- Phase 4:
  - Long term maintenance period

# Cardiac Rehabilitation

- The core components of a cardiac rehabilitation programme should consist of :
  - 1 Patient assessment
  - 1 Nutritional counselling
  - 1 Lipid management
  - 1 Hypertension management
  - 1 Smoking cessation
  - 1 Weight management
  - 1 Diabetes management
  - 1 Psychosocial management
  - 1 Physical activity counselling
  - 1 Exercise

# Cardiac Rehabilitation

- The following link provides detailed information about cardiac rehabilitation:
- <http://www.americanheart.org/presenter.jhtml?identifier=4490>

# Rehabilitation of Older People with Medical Pathologies

## Musculoskeletal Pain

# Musculoskeletal Pain

- The common musculoskeletal pains in older people:
  - Osteoarthritis
  - Osteoporosis
  - Rheumatoid arthritis
  - Gout
  - Tendinitis
  - Fracture

# Musculoskeletal Pain

- Nature of Pain
  - Definition
    - the perception of an unpleasant sensory and emotional experience associated with actual or potential tissue damage 糲
  - Acute Pain
    - recent onset, mostly likely related to injury
  - Chronic Pain
    - pain lasting long than 3 months
    - common in older people

# Musculoskeletal Pain

- Pain in Older People
  - The perception and experience of pain are affected by many factors, including pain sources, cultural background, previous experience and emotion.
  - Pain thresholds and tolerances are quite variable among individuals.
  - Pain will greatly affect the daily activities and functional level of older people.
  - Chronic pain has strong psychological, emotional and sociological components. It is strongly related to depression and anxiety.
  - Older people with chronic pain will be more prone to depression.

# Musculoskeletal Pain

- The goal of pain management:
  - to reduce the pain
  - to restore the functional level
  - to prevent further deterioration



# Pain Management for Older People

- Pharmacological treatment of pain
  - Attention to altered drug response, drug interventions and adverse drug reaction
- Physical therapeutic modality
  - Thermal modality and cryotherapy
  - Electrophysical therapy
  - Acupuncture and massage
- Exercises
  - Improve strength and range of motion
- Joint protection and support
  - Relieve the stress on a painful joint and prevent from worsening
- Education
  - Improves the cognitive understanding and reduction of anxiety
  - Relaxation and distraction technique

# Chronic Pain Management in Hong Kong

- Most cases of chronic pain in Hong Kong are managed by the patient's primary physician or by medical specialists.
- Only cases of difficult pain control are referred to anaesthesiologists who have an interest in pain management. There is no full-time specialist chronic pain unit in Hong Kong.
- Multidisciplinary approach allows accurate diagnosis, a wider array of treatment options, and prompt recognition of treatment failure.
- Multidisciplinary approach will reduce the likelihood of multiple referrals for specialist consultation and ultimately decrease health care use.

(Chen, 1996)

# **Complementary and Alternative Medicine (CAM) in Rehabilitation**

# Complementary and Alternative Medicine (CAM) in Rehabilitation

## Introduction



# Introduction of CAM

- The terms 'complementary' and 'alternative' are often used interchangeably
- The terms 'therapy' and 'medicine' originate from different concepts:
  - Definition of Complementary Medicine
    - medicine that complements conventional medicine
  - Definition of Alternative Medicine
    - the use of CAM as an alternative to conventional medicine

# Introduction of CAM

- The following links provide information on CAM:

*The UK Complementary Therapist & Therapy Guide*

– <http://www.therapiesguide.co.uk/>

*A-Z Directory of CAM*

– <http://www.internethealthlibrary.com/Prime-pages/A-ZDirAltTherapies.htm>

# Why Choose CAM?

- Factors that prompt people to choose CAM:
  - desire to avoid toxicities of conventional therapy
  - ability to provide treatment at home
  - preference for natural over synthetic medicine
  - failure of conventional therapy to provide a cure
  - serious or chronic illness that carries a poor prognosis

(Kline, 2005)

# Types of CAM

- The Five Categories of CAM:

Type of Therapy	Example
Alternative medical systems	Dietary modification, exercise, acupuncture, TCM
Mind-body interventions	Meditation, prayer, mental healing, therapies that use creative outlets such as music, art and dance
Biologically-based treatments	Herbs, foods, vitamins, dietary supplements
Body manipulation	Massage, chiropractic or osteopathic manipulation
Energy therapies	Therapeutic touch, magnetic therapy, electromagnetic fields



# Considerations of CAM

- Special consideration in using CAM:
  - Potential side effects
    - e.g., herbs, risk of serious toxicity with overdose
    - e.g., acupuncture, risk of infection and trauma
  - Interaction in conjunction with conventional treatment
    - Study reported that 40% of patients who used CAM did not disclose that information with their health care provider. (Eliopoulos, 1999)

# Considerations of CAM

- How do we discuss CAM with a patient?
  - Prerequisites: avoid detailed discussion with a patient who:
    - (1) is undergoing a complete conventional medical evaluation and assessment
    - (2) has been advised of conventional therapeutic options
    - (3) has rejected the option of conventional therapy
  - Strategies
    - (1) “Do not harm and monitor for unintentional side effects”
    - (2) review the issues of safety and efficacy
    - (3) examine the license of provider
    - (4) review the response to treatment

(Eisenberg, 1997)

# Complementary and Alternative Medicine (CAM) in Rehabilitation

## Examples



# Examples of CAM

- The following link introduces the use of Tai Chi and Chi Gong as CAM:

<http://www.youtube.com/user/NCCAMgov?blend=23&ob=5#p/u/0/4h4YBDQWQkg>

*by National Center for  
Complementary and Alternative  
Medicine (NCCA)*

# Examples of CAM

- The following link introduces the use of acupuncture as CAM:

<http://www.nccam.nih.gov/health/acupuncture/introduction.htm>

*by National Center for  
Complementary and Alternative  
Medicine (NCCA)*

# End of Chapter Two

# References

- Balady G.J., Ades P.A., Comoss P., Limacher M., Pina I.L., Southard D., Williams M.A. & Bazzarre T. (2000) Core Components of Cardiac rehabilitation/ secondary prevention programs. A statement for health professionals from the American Heart Association and the American Association of cardiovascular and pulmonary rehabilitation. *Circulation*, 102, 1069-1073.
- Bottomly J. M.& Lewis C.B. (2003) Geriatric rehabilitation: a clinical approach. Prentice Hall: Upper Saddle River.
- Chau P.H. & Woo J. (2008) *How well are seniors in Hong Kong doing? An International comparison*. Hong Kong: CADENZA: A Jockey Club Initiative for Senior, The Hong Kong Jockey Club
- Chen P.P. (1996) Multidisciplinary approach to chronic pain management. *Hong Kong Medical Journal*, 2(4), 401-404.
- Diamond P., Felsenthal G., Macciocchi S., Butler O.H. & Lally\_Cassady D. (1996) Effect of cognitive impairment on rehabilitation outcome. *Journal of Physical Medicine & Rehabilitation*, 75(1), 40-43.
- Eisenberg D.M. (1997) Advising patients who seek alternative medical therapies. *Annals of Internal Medicine*, 127(1), 61-69.
- Eliopoulos C. (1999) Using complementary and alternative therapies wisely. *Geriatric Nursing*, 20, 139-143.

# References

- Frengley J. D., Murray P. & Wykle M. L. (1990) *Practicing rehabilitation with geriatric clients*. New York: Springer Publishing Company.
- Hospital Authority (2011) Smart Patient Website. Retrieved on 2 Aug 2011, from <http://www21.ha.org.hk/smartpatient/welcome/>
- Garrison S. J. (2003) *Handbook of physical medicine and rehabilitation* 2<sup>nd</sup> edition. US: Williams & Wilkins.
- Kauffman T. L. (1999) *Geriatric rehabilitation manual*. New York: Churchill Livingstone.
- Kline N.E. (2005) Complementary and alternative therapy. *Pediatric Oncology*, 22(3), 233-238.
- Kumar S. (2000) *Multidisciplinary approach to rehabilitation*. Oxford: Butterworth-Heinemann.
- Lenze E. J. (2004) Adverse effects of depression and cognitive impairment on rehabilitation participation and recovery from hip fracture. *International Journal of Geriatric Psychiatry*, 19, 472-478.
- Rubenstein L. Z. (2006) Falls in older people: epidemiology, risk factors and strategies for prevention. *Age and Ageing*, 35(S2), ii37-ii41.
- Yu C. M., Lau C. P., Chau J., McGhee S., Kong S.L., Cheung B.M.Y. & Li L.S.W. (2004) A Short course of cardiac of cardiac rehabilitation program is highly cost effective improving long term quality of life in patients with recent myocardial infarction or percutaneous coronary intervention. *Archives Physical Medicine Rehabilitation*, 85, 1915-1922.