Mx of Physiotherapy for Elderly with Cardiovascular Disease (CVD)

Azran Ahmad

Physiotherapy & Rehabilitation Department

Kuala Lumpur, Malaysia

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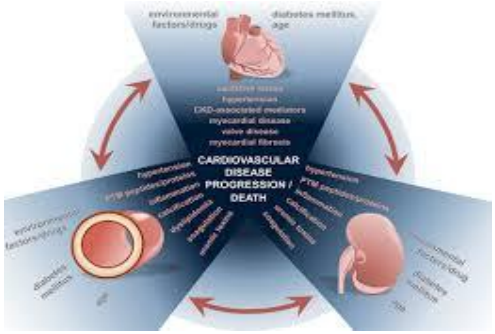
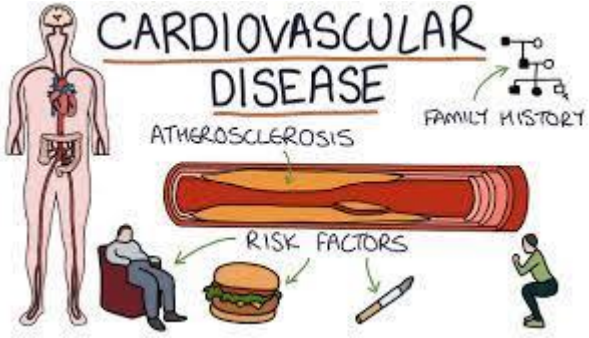
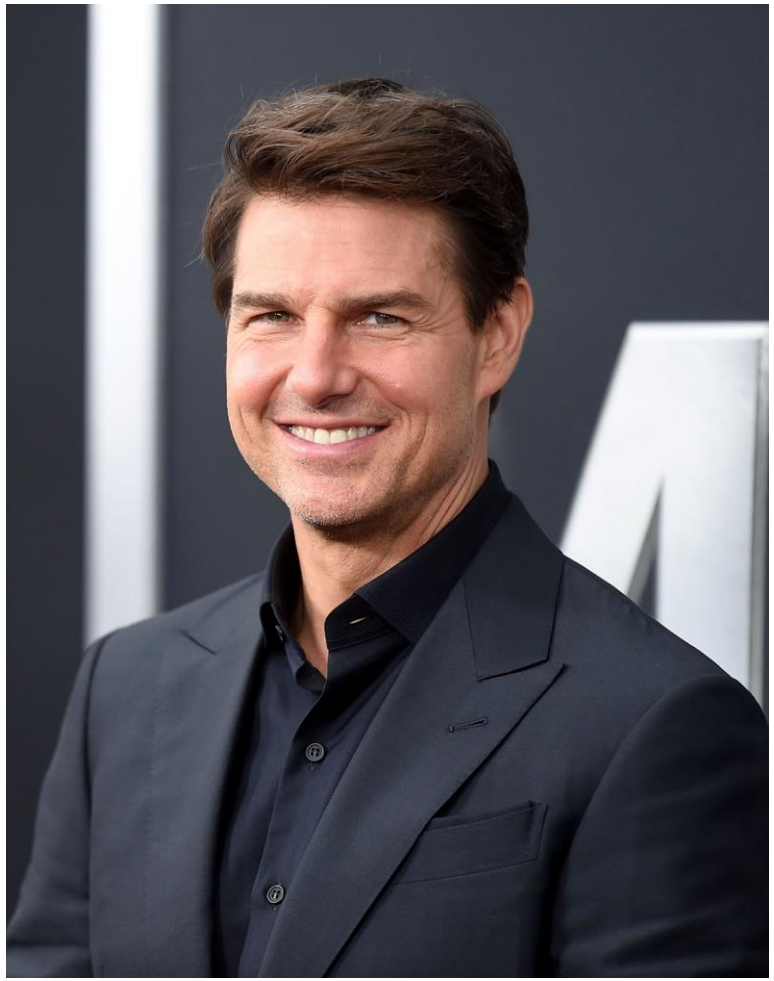
CVD





- Major burden for individual pts and societies - health care costs and organization.
- Strongly related to age and in view of the worldwide aging populations- older pts with CVD is increasing rapidly.
- Particular challenge for cardiac rehabilitation (CR) of older pts, hospitalized for CVD.
- Often accompanied by other age-related problems that could interfere with rehabilitation.

How old are they?



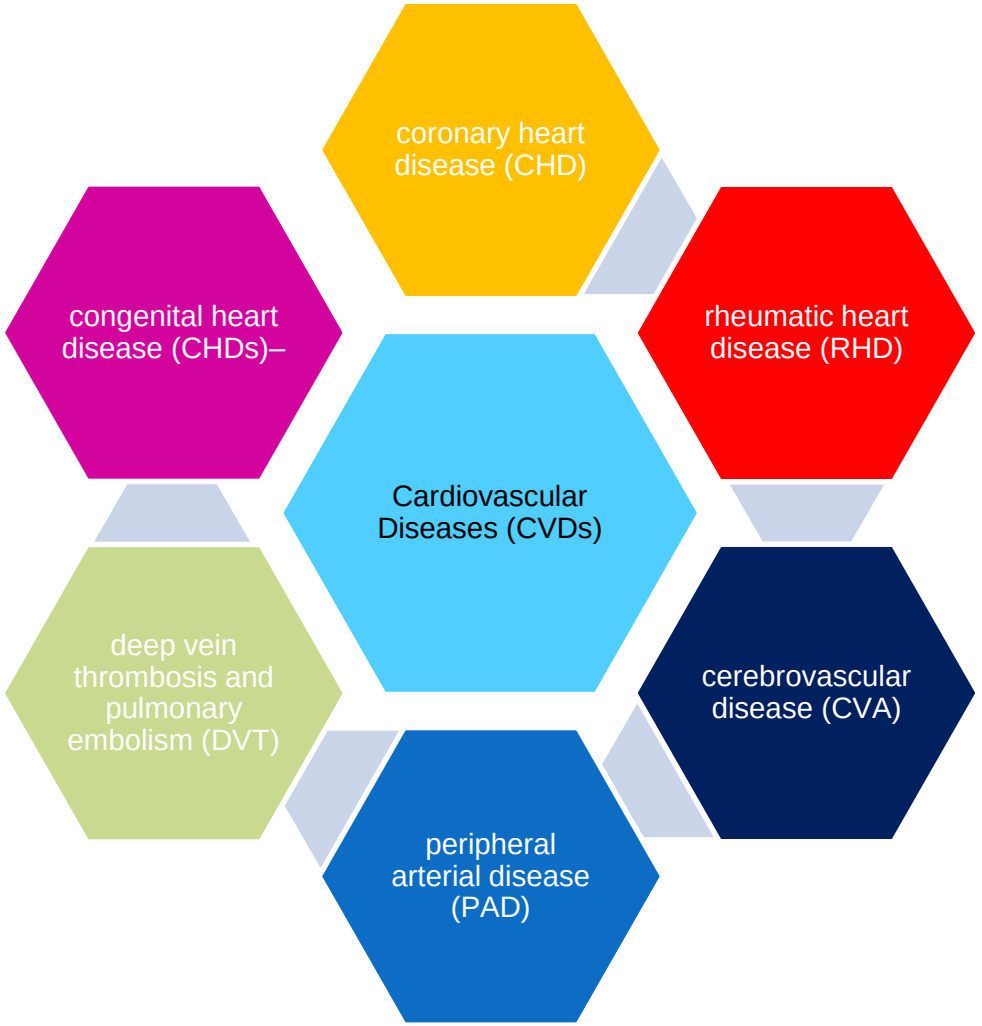
Who is Defined as Elderly?

- Defined as the chronological age of 65 or older.
- People from 65 to 74 years old early elderly
- 75 years old late elderly

What are the most common with Elderly?

- Urinary incontinence
- Sleep Problems.
- Delirium
- Dementia
- Falls
- Osteoporosis
- Weight Loss
- Cardiovascular Diseases (CVD)

What are cardiovascular diseases (CVD)?



Evidences this population need Cardiac Rehabilitation (CR)

- CR can offer substantial benefits for older patients with HF, after CABG surgery and/or HVR, and after an acute cardiac event (unstable angina pectoris, AMI) *(Austin et al., 2015, González et al., 2016, Voller et al., 2016, Baldasseroni et al., 2016)*
- older patients with CVD most likely to benefit from the multidisciplinary approach that characterizes CR *(Austin et al., 2015)*

European Journal of
Heart Failure

Articles | Free Access

Randomised controlled trial of cardiac rehabilitation in elderly patients with heart failure

Jacky Austin, Robert Williams, Linda Ross, Laurie Moseley, Stephen Hutchison

First published: 17 February 2005 | https://doi.org/10.1016/j.ejheart.2004.10.004 | Citations: 146

Volume 7, Issue 3
March 2005
Pages 411-417

Figures References Related Information

European Geriatric Medicine (2018) 9:853–861
https://doi.org/10.1007/s41999-018-0119-2

RESEARCH PAPER

CrossMark

Geriatric rehabilitation in older patients with cardiovascular disease: a feasibility study

Eléonore F. van Dam van Isselt[1,2] · Jan van Wijngaarden[3] · Dirk J. A. Lok[3] · Wilco P. Achterberg[1]

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JOURNAL OF THE AMERICAN GERIATRICS SOCIETY

AGS Geriatrics Healthcare Professionals
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Brief Reports

Cardiac Rehabilitation in Very Old Adults: Effect of Baseline Functional Capacity on Treatment Effectiveness

Samuele Baldasseroni MD, PhD, Alessandra Pratesi MD, Sara Francini MD, Rachele Pallante MD, Riccardo Barucci MD, Francesco Orso MD, Costanza Burgisser MD ... See all authors

First published: 17 August 2016 | https://doi.org/10.1111/jgs.14239 | Citations: 37

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Research Letter

FREE

October 2015

Participation in Cardiac Rehabilitation Programs Among Older Patients After Acute Myocardial Infarction

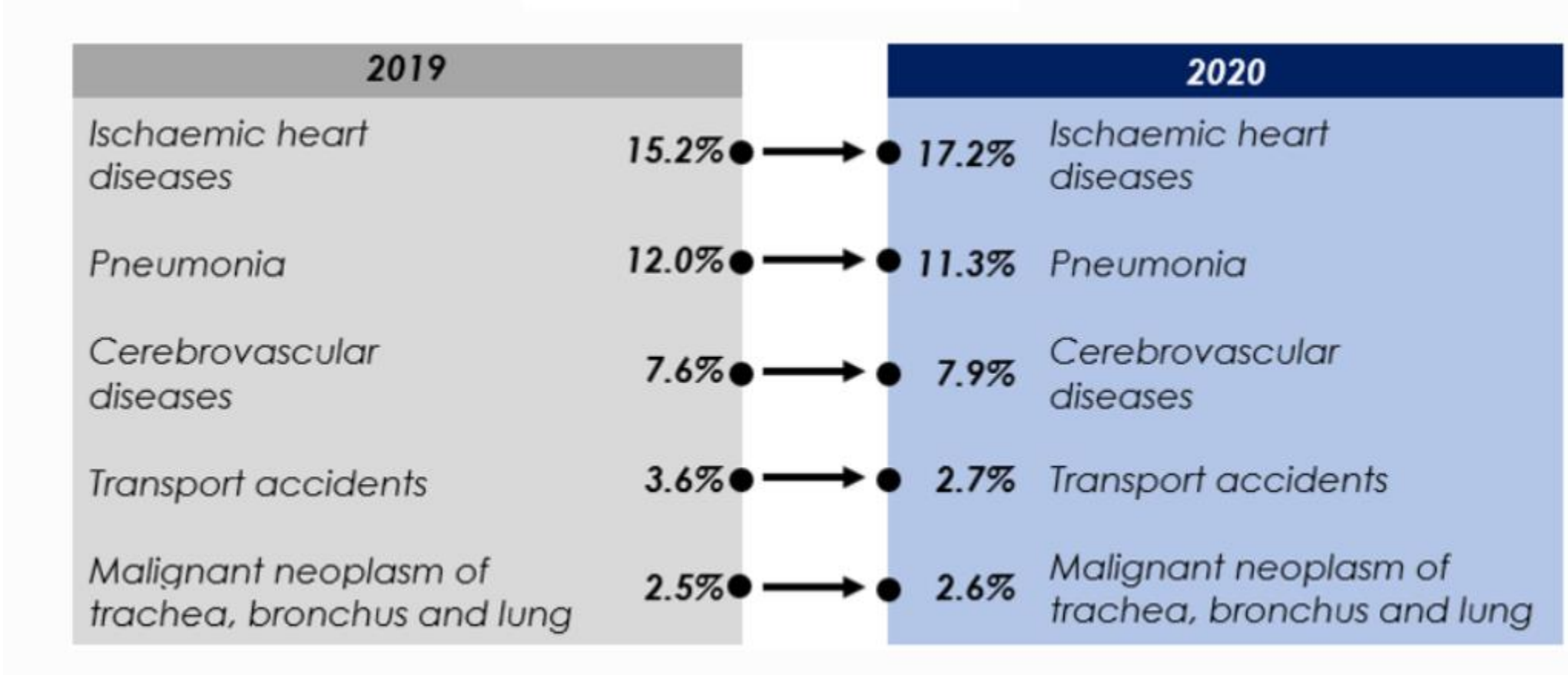
Jacob A. Doll, MD[1,2]; Anne Hellkamp, MS[1,2]; P. Michael Ho, MD, PhD[3,4]; et al

» Author Affiliations | Article Information

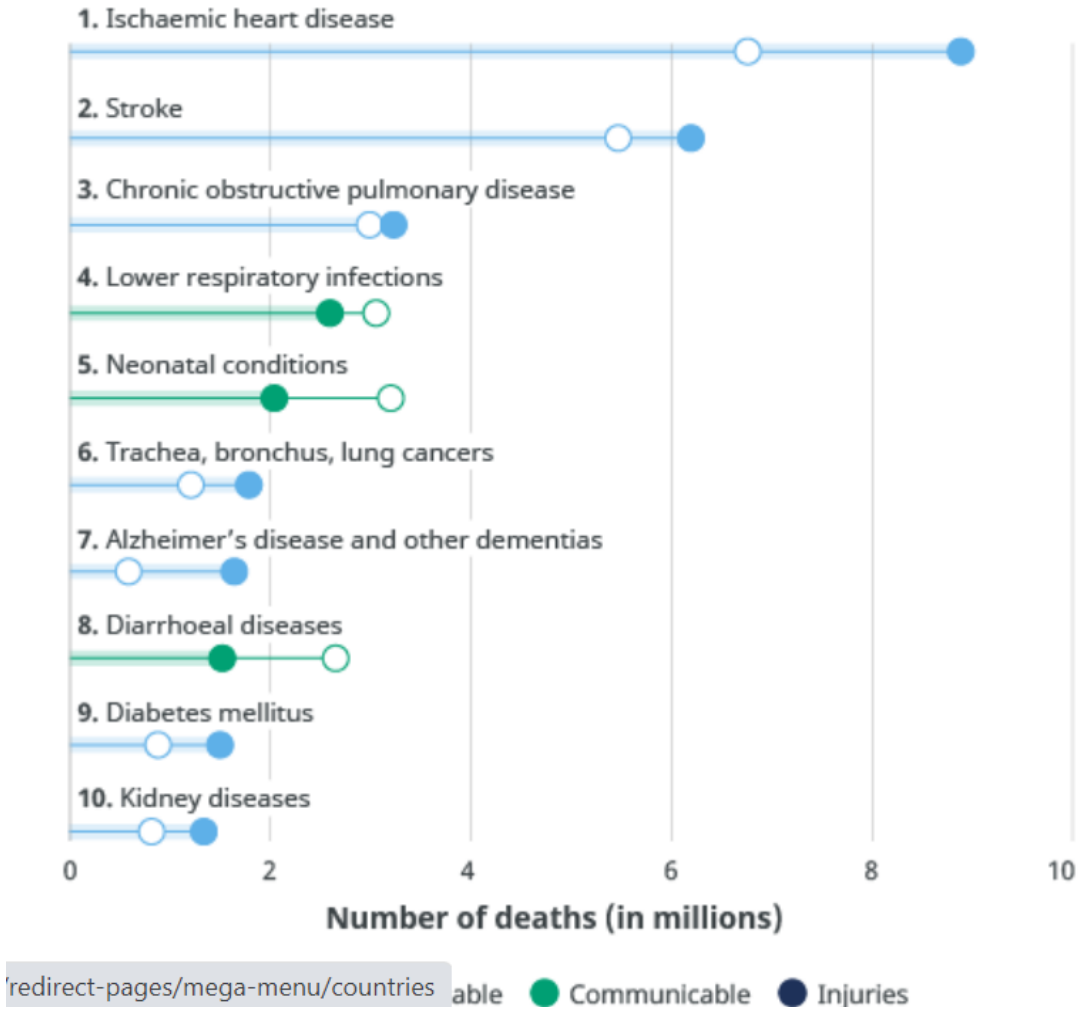
JAMA Intern Med. 2015;175(10):1700-1702. doi:10.1001/jamainternmed.2015.3819

Prevalence of CVD

5 principle of death in Malaysia



WHO top-10 causes of death



- 16% of the world's total deaths.
- rising by more than 2 million to 8.9 million deaths in 2019.

Physiotherapy Mx - CR Guidelines

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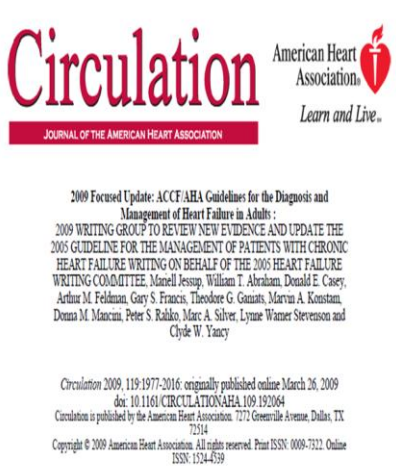
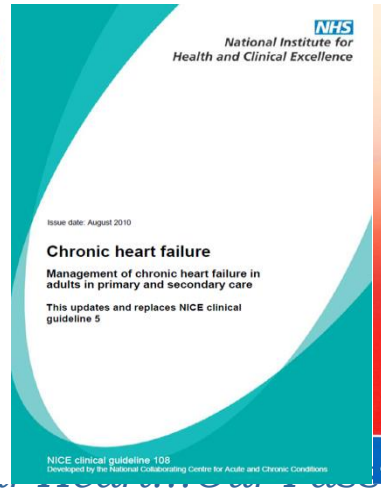
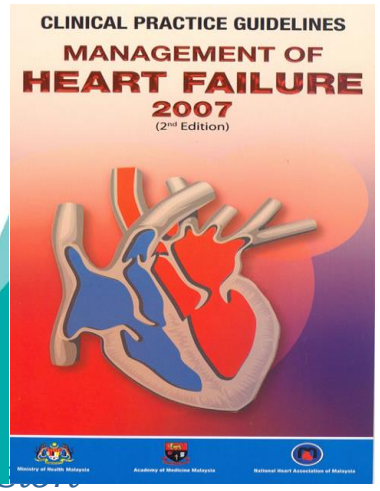
- actively performed in many Western countries
- effectiveness and safety - established
- CPG in Physio Mx of CR have been developed - consideration circumstances
    - medical and scientific evidence
    - documenting systematically organized
    - reff for medical professionals







Class of recommendation & level of evidence

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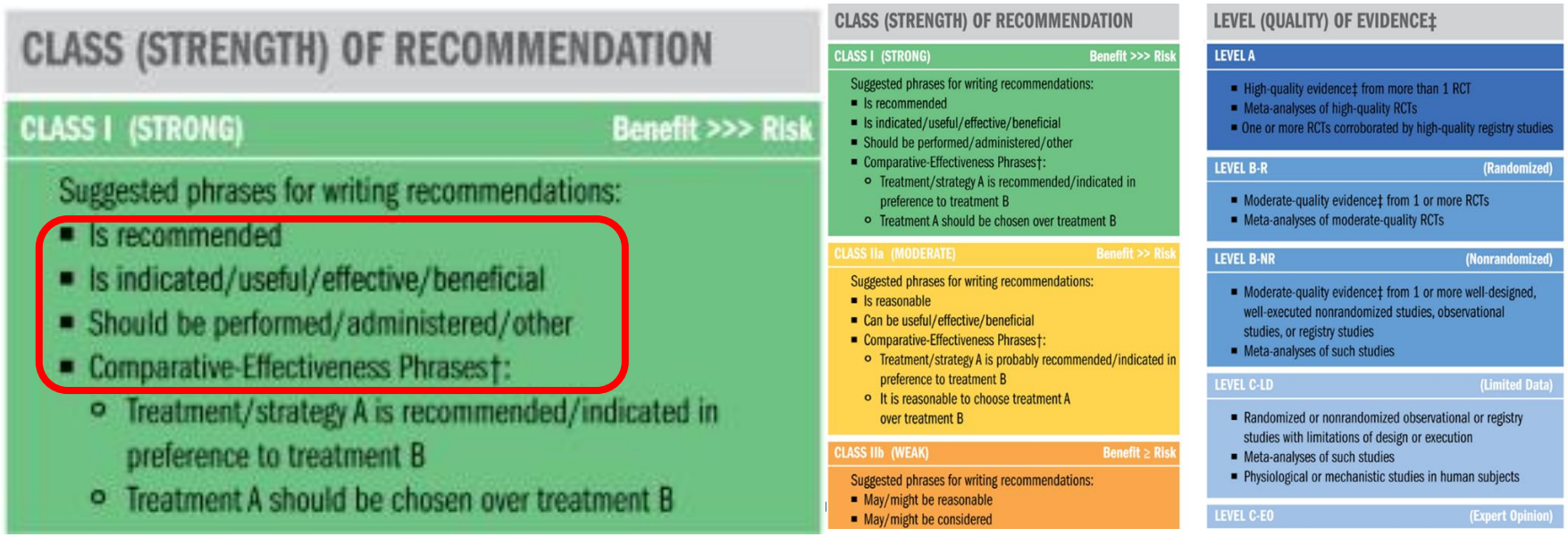
- Class 1 indication (i.e., strong recommendation)

  AHA/ACC - Class 1 Guideline recommendations for referral to CR include the following conditions:

- MI, PCI, CABG, Chronic stable angina, HF, PAD,



Halperin et al,. 2016

Cardiac Rehabilitation

THEN to NOW…

6 weeks bed rest(1930s)

Multidisciplinary & lifestyle modification

Early Concepts Of Cardiac Rehabilitation

Historical Perspective

1960's In USA, Kellerman showed that exercise was safe for post heart attack patients

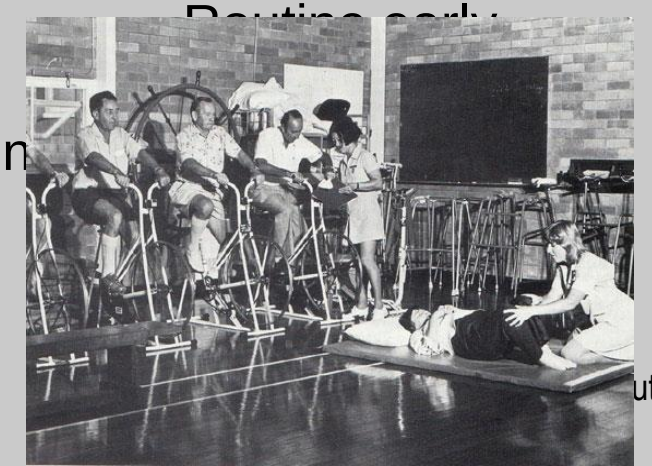
↓

Development of Inpatient Rehab Programs
Introduction of CCU

1967 Introduction of CABG and heart transplantation

↓

1970's Several RCT provided evidence that post heart attack patients did better if there were mobilized early after the event. Routine early ambulation.



Beginnings of Comprehen & Outpatient Rehab Programs

Factor Modification.

The Initial Years…. Physio involvement

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- Done in the Ward post-surgery
- Breathing exercises
- Active exercises
- Ambulation
- Home Exercise Program

Cardiac Rehabilitation Program Phase 1

Phase 1

Hospitalization

Activities

- Early mobilization
- Personalized Individual program
- Pt & family education :
  1. *to increase the patient's awareness*
  2. *reassure the patient about future progress and follow-up*

Benefits

- shorter hospital stay
- Improves ADL/ functional

Phase 1

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- Inpatient rehabilitation program (CRP 1) :admission to discharge
- Mostly post-surgical cases (auto referral)- services provide equitable access to all patient groups (different socioeconomic status)
- Cardiology cases (auto referral)- clinical pathways

INPATIENT Phase 1

- As soon as possible after admission(for surgery)
- Pre-op physiotherapy education(patient & family member)

➢ Basic information and reassurance

➢ Expectations after surgery:

1. Mobilisation
2. Family involvement
3. Outpatient Cardiac Rehabilitation

Basic Information & Reassurance

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- Reassurance and brief explanation of cardiac condition, treatment and procedure
  - ❖ Surgical incision
  - ❖ Pain-Support (drugs/ non-drug)
  - ❖ Effects of anesthesia on the respiratory system
  - ❖ Sleeping positions
  - ❖ Getting in and out of bed

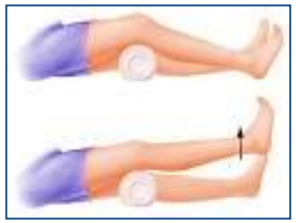
Inpatient Phase 1

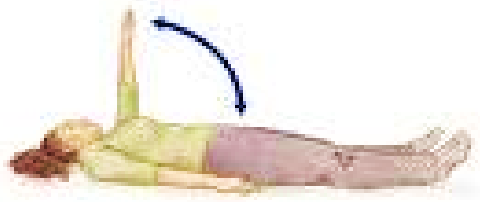
- Mobilisation program:

➢ Active exs in bed(ICU & Wards): prevent

Deep vein thrombosis &

Pulmonary embolus





Early Mobilization

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- initiation of the rehabilitation activities immediately upon respiratory and hemodynamic stabilization *(Bailey et al., 2007; Needham & Korupolu)* ,

- “the physical activity that, performed with the appropriate intensity , produces physiological benefits for the organism”, acting on the circulation, central and peripheral perfusion,ventilation, or state of consciousness *(Castro Avila et al, 2015).*

Q22

Benefits of EM

- Minimizing complications of bed rest.
- Promoting improved function for patients.
- Shortening the duration of mechanical ventilation.
- Reducing length of hospital stay.
- Reducing overall hospital cost.
- Improving patient's quality of life.

Indications

- Post Myocardial infarction.
- Chronic stable angina.
- Heart failure.
- After coronary artery bypass surgery.
- After a percutaneous coronary angioplasty or intervention.
- Heart valve repair or replacement.
- Heart or heart and lung tx.
- Correction of congenital abnormalities
- Peripheral artery disease
- Mechanical Circulatory support
- Etc.

Physiotherapy Referral System

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Auto Referral

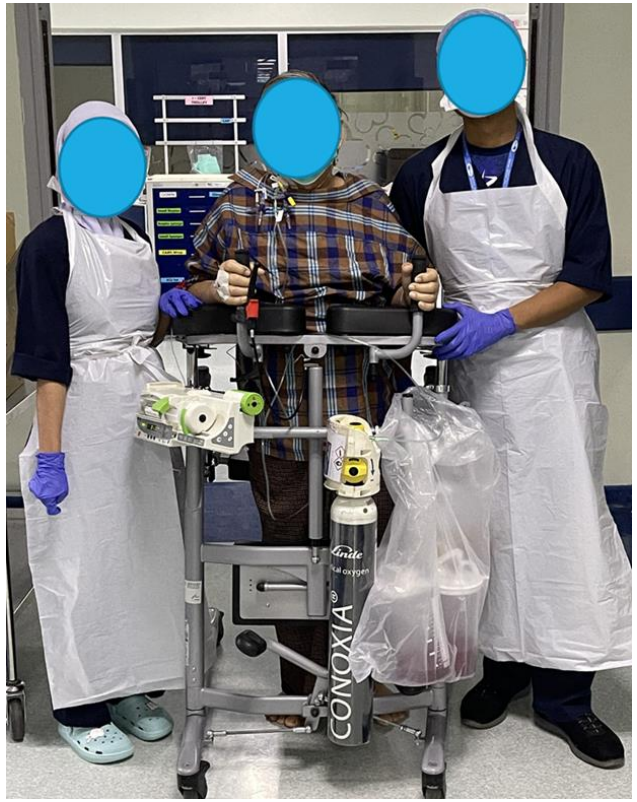
- All elderly patients in Critical Care Area (ICU, HDUCT, PICU, PCICU)
- All ventilated cases in Coronary Care Unit

All other cases

Individual Referral.

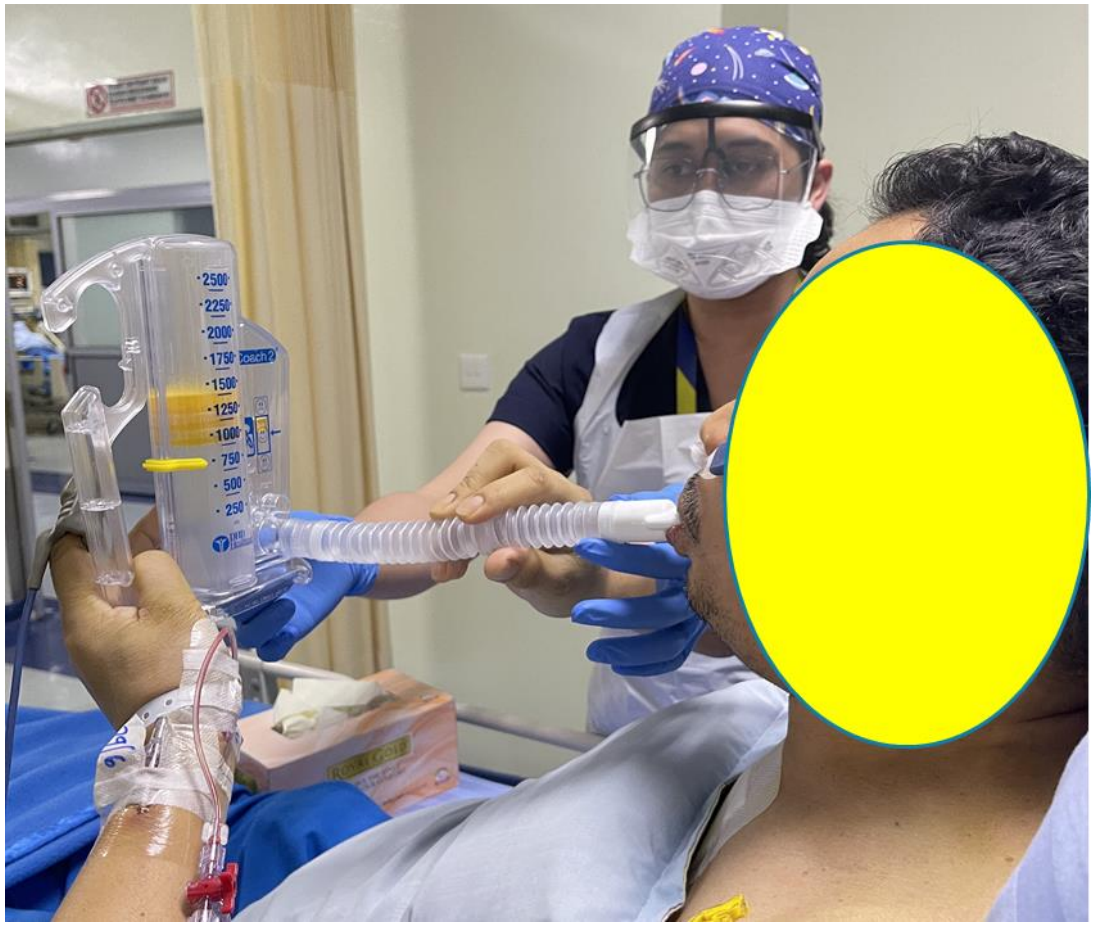
Initiation

- Immediately upon respiratory and hemodynamic stabilization, generally within 24-48 hours after admission.
- Screen for contraindications



Contraindications

- Hemodynamically unstable
- Medical or surgical status necessitating immobility
- Active Myocardial Infarction
- Unsecure Airway
- Chest not closed or chest re open
- Active gastrointestinal tuberculosis (GITB)
- Intracranial Pressure > 20



Safety Measures

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- **HEART RATE**
- 60 100 bpm
- HR Trend, HR 50- 130
- Example: if a pt HR always maintain at around 90 bpm and on the day of your assessment it was at 50.

BLOOD PRESSURE

- MAP 60 100, SBP 90 180
- Trend of BP need to be review. What is acceptable for the patient

SpO2

- 90% and above.

pO2

- pO2 > 80 mmHg
- Baseline pO2, post surgery. pO2 trend, acceptable range

Safety Measures

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RR

- 12 20
- < 30, in selective cases

Pain Score:

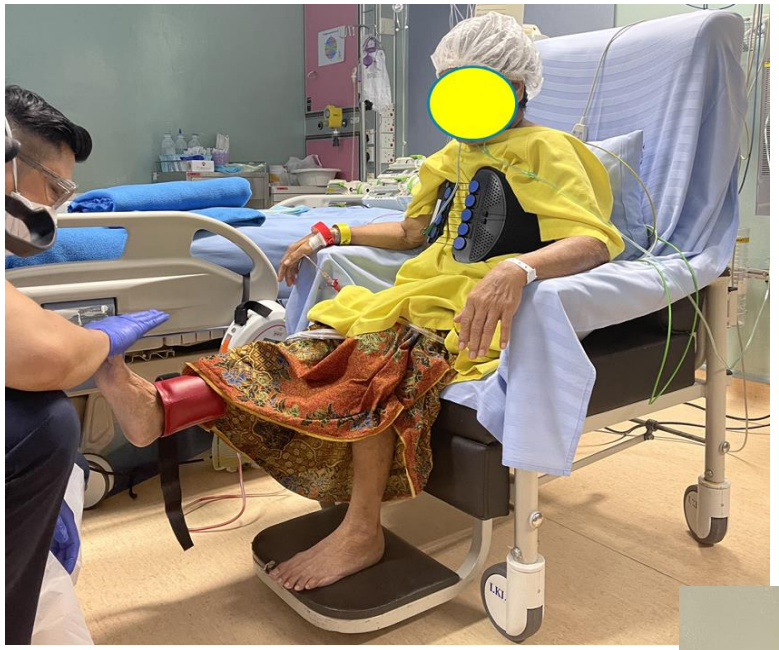
- 3/10 and below

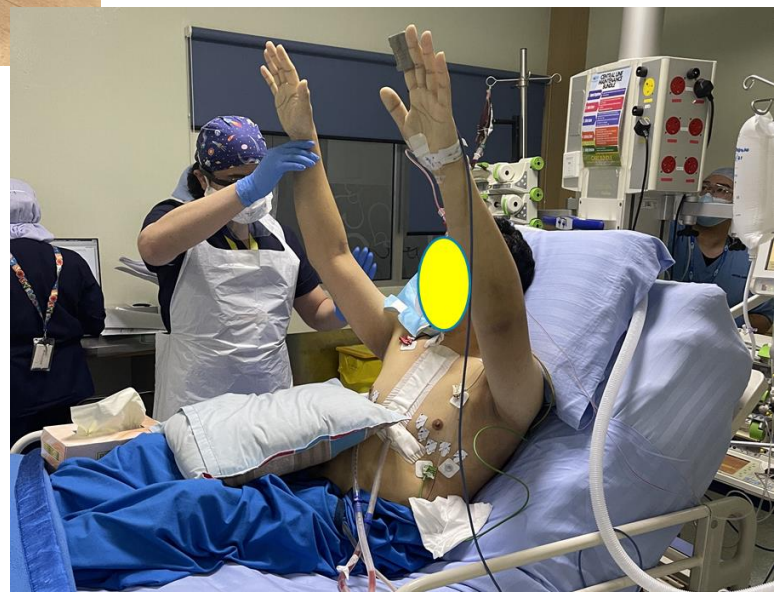
Blood Investigation

- Hb: >7
- Platelet: > 20k
- INR: 1 3
- Potassium: 3.5 5.2 mmol/L

Frequency

- 2 to 4 times /day is recommended.
- Depend on the physiotherapy assessment & pts need.





Intensity

Graded Exercises Test (GXT)

NO Graded Exercises Test (GXT)

Graded Exercises Test (GXT)/ Exercises Stress Test

- Percentages of heart rate reserve (%HRR),
- VO2 reserve (%VO2R)
- peak aerobic power (%VO2max)

} To achieve 40–80%

Borg's rating of perceived exertion (RPE) 6–20 scale, target of 12–16 (moderate to hard).

Intensity: NO GXT

RPE scale must be accurately explain

First session:

- Target 20 bpm above resting heart rate (RHR +20–30)
- RPE to a range of 11–14 (somewhat hard to hard)

Monitor Symptoms:

- Symptoms free, report low RPE (<11) at RHR +20–30
- Increase exercises intensity to reach RPE goal of 11–14

Patients on beta-blocker tend to report a higher RPE

RPE ↑ as work rates ↑, consistent in exercises prescription

Recognize that hemodynamic responses associated RPE values

Special Consideration

- Hypertension
  - Monitor hypertensive or hypotensive exercise responses (Measure BP during exercise)
- Diabetic
  - Monitor blood glucose level
- Heart Failure patients
  - Slightly lower performance
- Lifestyle habit (Physical activity behaviour)
  - Begin at higher exercise workloads if patient is active.

Exercises

- Passive/ Active assisted/ Active and Resistance Exercises.

Bed Mobility Training

- Turning side to side
- Bridging
- Supine to sitting/ bedside sitting

- Balance Training.

- Sitting (Static/ Dynamic)
- Standing (Static/ Dynamic)

- Gait Retraining
- Endurance Training

Common Goals

- Assist in bronchial hygiene/ To achieve highest IS value
- To achieve full FSS: ICU Score
  1. Rolling
  2. Supine to Sit Transfer
  3. Sit to Stand Transfer
  4. Sitting Edge of Bed
  5. Walking (45 meter)

  } Score range 0 (unable to attempt, weakness) – 7 (Independence)
- 30 second sit to stand, minimum of 14 times
- 6MWT, to achieve the highest distance possible

Termination Criteria

Heart Rate

- >70% APMHR (age predicted max heart rate)
- >20% decrease in resting HR
- <50 bpm; >130 bpm

Blood Pressure

- SBP >180mmHg
- >20% decrease in SBP/DBP; orthostatic hypotension (associated with dizziness, fainting, and/or diaphoresis)
- MAP < 60 mmHg; >110 mmHg

Respiratory Rate

- < 5 breath/minute; >40 breath/minute
- Change in breathing pattern with an increase in accessory muscle use, paradoxical pattern, or appearance of facial distress.

SpO2

- > 4% decrease
- < 88%- 90%

Patient sign and symptoms

Exercise Progression

Progression of exercise should be **individualize** and based on:

- Patient's risk stratification
- Underlying disease state
- Exercise tolerance
- Goals

Duration

- Initially to achieve 10 continuous minutes of exercise
- Increase1–5 minutes per session
- Goal of 40–60 minutes.
- Duration should be achieved before intensity is progressed

Intensity

- Systematically increased RPE, from 11- 14 (somewhat hard to hard) to consistently exercising at 12-16 (moderate to hard)

Outcome Measures

1. Incentive Spirometer
2. FSS:ICU
3. 30 second sit to stand
4. 6MWT

There are multiple outcome measures to be use in clinical practice.
These are what adopted by IJN

Cardiac Rehabilitation Phase 2

Activities:

- Begins soon after discharge
- Circuits training
- Individualized prog
- Low to moderate intensity
- group education for Elderly pts and family members

Benefits:

- Supervised/ monitored prog
- Pts return to work safely & sooner
- Reduces stress

Phase 2

Ambulatory Elderly Out Patient

Exercise training program

CR PHASE 2 EXERCISE PRESCRIPTION

Intensity AT: 50% to 95% HRR, RPE 11 to 14

Intensity RT: 30% to 60% 1RM, 8-12 reps, 2-4 set

Modality: cycle ergometer, treadmill walking, circuit training

Duration : 20–80 minutes/session, including warm-up and cool-down exercises

Group based & individual supervised

CR Phase 2 Aerobic Training Intensity

With Graded Exercises Test (GXT)

Graded Exercises Test (GXT)/ Exercises Stress Test

- Percentages of heart rate reserve (%HRR),
- VO2 reserve (%VO2R)
- peak aerobic power (%VO2max)

] To achieve 40–70%

Borg's rating of perceived exertion (RPE) 6–20 scale, target of 12–16 (moderate to hard).

Intensity: IF NO GXT

First session:

- Target 20 bpm above resting heart rate (RHR +20–30)
- RPE to a range of 11–14 (somewhat hard to hard)

Monitor Symptoms:

- Symptoms free, report low RPE (<11) at RHR +20–30
- Increase exercises intensity to reach RPE goal of 11–14

Duration of Exercise & RPE is an Objective goal, then progression will be based on last / recent exercise achieved

Exercise Progression

Progression of exercise should be **individualized** and based on:

- Patient's risk stratification
- Previous/ recent exercise record that pts reported
- Exercise tolerance
- Goals

Duration

- Initially to achieve 10 continuous minutes of exercise
- Increase1–5 minutes/ session
- Goal of 40–60 minutes.
- Duration should be achieved before intensity is progressed

Intensity

- Systematically increased RPE, from 11- 14 (somewhat hard to hard) to consistently exercising at 12-16 (moderate to hard)

Special CR Considerations for Elderly with CVD

1. Hypertension
2. Hypotension
3. Diabetes Melittus (DM)
4. Peripheral Vascular Disease (PVD)
5. Respiratory Problems
6. Obesity
7. Skeletal Disorder
8. Musculoskeletal Problems

Special CR Considerations for Elderly with CVD- Hypertension (HPT)

- 90% of elderly identified as hypertensive.
- Secondary HPT - renal, endocrine or vascular abnormalities.
- BP over a period of years - damage to the arteries & puts strain on the heart & other organs.

<u>Exercise Considerations</u>

- Mode, frequency, duration & intensity = CVD
- Training at the lower end of the recommended range (40-70% VO2max, 60-80% HRM)- effective in lowering BP & is safer than high intensity exercise prescription.
- Effect of medication on BP become exaggerated during exercise,

Special CR Considerations for Elderly with CVD- Hypotension

- Erderly has low BP & this is normal for them.
- Symptoms- faintness/dizziness, cold hand & feet (reduced blood flow to brain, palpitations & sweating (body releasing adrenaline - restore BP to normal level)
- Rx- lie pt down, check BP, BP no improving (legs 2b raise)
- Loosen clothing
- recovery - 20-30mins

<u>Exercise Considerations</u>

- a thorough graduated w/up & equally c/down- lessen the incident of post exs.
- Immediate changes- lying / seated to standing positions avoided
- GTN - pt remains seated after administration medication.

Special CR Considerations for Elderly with CVD- Diabetes Melitus (DM)

- Hyperglycaemia

Most pt hv been taught how to manage & will know how to test for the presence of ketones.

- Hypoglycaemia

Give a sweetened drink/ glucose tablets immediately. Pt should not resume exs, for that session. If the pt become unconscious, call an ambulance.

Exercise Considerations

- pt to monitor their blood sugar levels b4 exercising. >10mmol/l- should be monitor 10 minutes after the start of exs.
- If the levels are falling, exs can continue. If they are rising, stop exs. (exs with spikes blood sugar level is dangerous)

- Monitor b4 & post-exs.
- insulin dose may need to be reduced on exs day.
- Avoid exs. - peak insulin effect & not injected into limb to be exercise within the next 12 hrs (increases rate insulin absorbed)

Special CR Considerations for Elderly with CVD- Neuropathy

- Damage to peripheral nerves - lead to loss of sensation & cause numbness feet.
- Autonomic neuropathy may present, - pts will exhibit abnormal HR & BP
- HR not be a reliable indicator of intensity. Immediate changes posture avoided.

<u>Exercise Considerations</u>

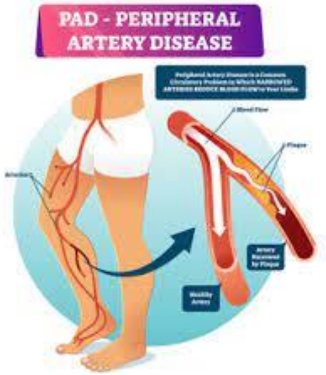
- advance retinopathy -avoid activities involves excessive pain/discomfort & spikes BP.
- Do not bend over, head remain above the heart, or not below it.

Special CR Considerations for Elderly with CVD- Peripheral Vascular Disease (PVD)

- Severe PVD causes cold, painful feet & lead to toes gangrene
- Pt suffering from severe PVD - exs carefully, skin of the feet easily damaged, heals slowly.

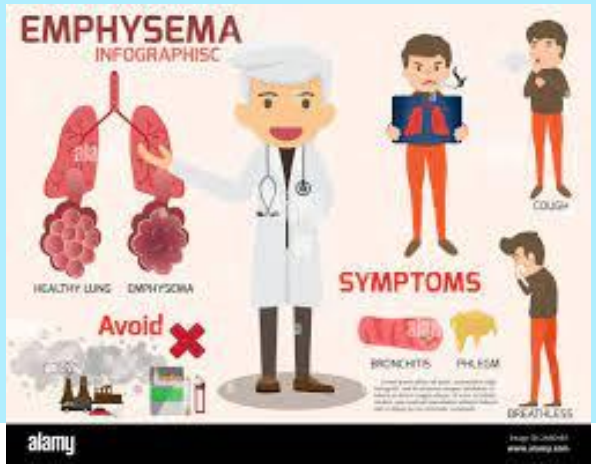
Exercise Considerations

- Daily exs. (prescribed walking intermittent)
- Encourages increased blood flow & greater oxidative capacity - muscles increase exs. tolerance & alleviate symptoms
- Progress duration & intensity exs, gradually



Special Physiotherapy Considerations for Elderly with CVD- Respiratory Problems

- Bronchitis
- Asthma
- Emphysema

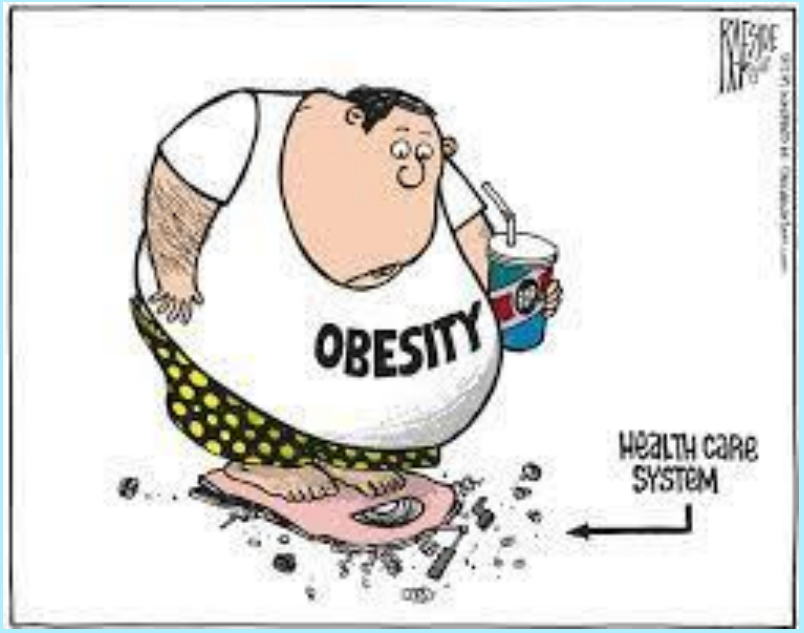


Exercise Considerations

- Exs. induce bronchoconstriction- in cold conditions & bronchospasm by exs uncommon.
- Bronchodilator - preventive measure to exs. - will increase the HR.
- w/up lessen chest thightness & wheezing.
- Elderly pt are unlikely to exhibit improvement in pulmonary function as a result of exs. But will increase their exs tolerance as a results of peripheral adaptation to increase level of activity.

Special CR Considerations for Elderly with CVD- Obesity

- Defined as BMI >30
- Habitually inactive

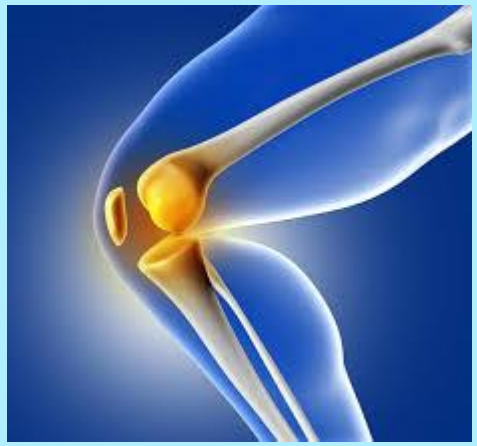


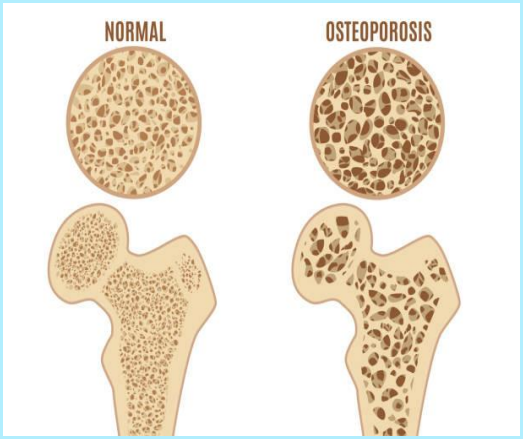
Exercise Considerations

- Intensity -lower end of the normally prescribed range 60-80% HRmax.
- 2-3x/week (300kcal/session)
- 20-30 mins remaining days of the week.
- Brisk walking
- No high impact
- good posture
- Supine position should be avoided, this bcoz they embarrassed by getting down onto & up from the floor. Lying flat - restrict breathing.
- RPE to monitor intensity
- fat around neck/wrist makes pulse palpation difficult.

Special CR Considerations for Elderly with CVD- Skeletal Disorders

- Arthritis
- Osteoarthritis (OA)
- Rheumatoid Arthritis (RA)
- Replacement Surgery
- Osteoporosis



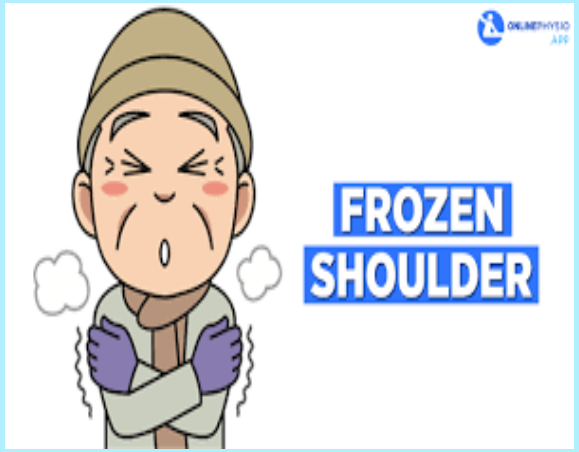


Exercise Considerations

- Maintaining good ROM
- Mobility & flexibility prescribe -daily basis
- Strengthening exs. -maintain joint stability & diminish pain, not be perform without load on the affected joints.
- Weight bearing activity need not be excluded
- Non weight bearing activity
- No high impact movements
- Emphasize good posture- elderly pt tend to adopt flexed positions.

Special CR Considerations for Elderly with CVD- Musculoskeletal Problems

- Frozen Shoulder
- Tennis Elbow
- Sciatica

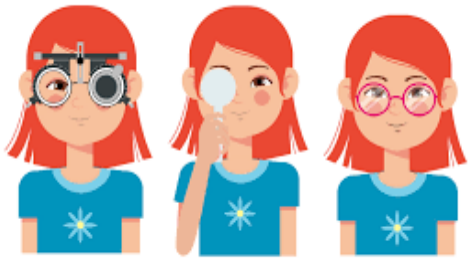


Exercise Considerations

- Action should be avoided
- Passive movt may performed within pain limits.
- Once pain subside -mobility exs which intensified until full recovery achieved
- Analgesic & gentle mobility exs recommended.
- For long term alleviation, strengthening exs recommended

Special CR Considerations for Elderly with CVD- Hearing & Eyesight

Both tend to deteriorate with age, although variation between individuals in sensory loss is considerable. For some, impaired hearing or vision may be a source of anxiety and lack of confidence.



<u>Exercise Considerations</u>

- Instructions must be clear, precise and unhurried.
- Visual demonstration + verbal explanation = most effective means of communicating with individuals & groups.
- If written handouts are supplied/ exs cards used, ensure easy to read & diagrams are clear.

In Conclusion

Not only are more elderly pts surviving from cardiac events, but because pts are less likely nowadays to be refer to CR on the basis. The number who benefit from CR is increasing. It is hoped that Physiotherapy & CR multidisciplinary team will make a significant contribution to helping older pts maintain favorable lifestyle change adopted during Cardiac Rehabilitation Program.

Thank You

Email: azran@ijn.com.my
Mobile: +601111929085
Instagram: im_capt_azran