

# REHABILITATION IN CANCER CARE

**A/PROF ARUN AGGARWAL**

**Department of Rehabilitation**

**ROYAL PRINCE ALFRED HOSPITAL  
SYDNEY, AUSTRALIA**



# What is Rehabilitation?

- Development of a person to their fullest potential consistent with their physiological or anatomical impairment and environmental limitations

- Physical
- Psychological
- Social
- Vocational
- Avocational and
- Educational



# WHO Definitions - 1980



## □ **IMPAIRMENT**

- ▣ Loss or abnormality of physiological, psychological or anatomical structure or function

## □ **DISABILITY**

- ▣ Restriction resulting from an impairment of the ability to perform an activity in a manner considered normal

## □ **HANDICAP**

- ▣ Disadvantage resulting from an impairment or disability that prevents the fulfilment of a role that is normal for an individual.

# WHO Definitions - 1997

## □ **IMPAIRMENT**

- ▣ Loss or abnormality of physiological, psychological or anatomical structure or function

## □ **ACTIVITY (rather than disability)**

- ▣ The nature and extent of functioning at the level of the person

## □ **PARTICIPATION (rather than handicap)**

- ▣ The nature and extent of a persons involvement in situations in relation to impairments, activities, health conditions and environmental factors

# Organisation of Rehabilitation

## ❑ **Multi-disciplinary**

- ❑ Parallel and discipline oriented
- ❑ Team members only address skills related to their discipline
- ❑ Treatment is the sum of each disciplines activities

## ❑ **Inter-disciplinary**

- ❑ Different disciplines work together towards a common goal
- ❑ Contribute to a group effort
- ❑ Treatment program is synergistic

# Realistic Goals

- Determined by team and in consultation with patient
- Working to optimise level of function
  - ▣ Despite residual disability
  - ▣ Even if the impairment is caused by a irreversible pathological process
- Increased independence
- Improved quality of life
- Reduced carer burden

# Case Conference

- Communicate
- Collaborate - interactive
- Consolidate knowledge
- Goal setting and actions determined and evaluated
- Problem solving
- Decision making
- Co-ordinated, non-fragmented and cost effective treatment program established

# Functional Independence Measure

- Scale that describes the functional activity and the specific assistance levels required for each activity
- **13 Motor**
  - Self care
    - Eating, grooming, bathing, dressing upper body, lower, toileting
  - Sphincter control
    - Bladder and bowel
  - Mobility
    - Bed, toilet, shower, walk, stairs
- **5 Cognitive tasks**
  - Communication and Cognition
    - Comprehension, expression, interaction, problem solving, memory



# Functional Independence Measure

- Score out of 7 (total score 126)
- Assess disability and burden of care
  - ▣ 7 – Complete Independence – no help required
  - ▣ 6 – Modified Independence – assistive device
  - ▣ 5 – Supervision or setup required
  - ▣ 4 – Minimal assistance – <75% effort
  - ▣ 3 – Moderate assistance – 50-75% effort
  - ▣ 2 – Maximal assistance – 25-50% effort
  - ▣ 1 – Total assistance - <25% effort

# Cancer Rehabilitation

- Traditional cancer rehabilitation has focused on:
  - ▣ Restoring function after cancer therapy to premorbid level of function
  - ▣ Maintaining patients' function during cancer therapy
  - ▣ Improving quality of life if cured or in remission
- Rehabilitation involves a balance between optimising function and comfort
- Important to preserve patient's independence to reduce the burden of care for the caregivers
- Rehabilitation goals must be realistic and take into account:
  - ▣ Stage of the disease
  - ▣ Patient's medical status
  - ▣ Cognition
  - ▣ Prognosis and
  - ▣ Site of planned discharge

# Cancer Rehabilitation

- Dietz has classified cancer rehabilitation into 4 categories:
  - ▣ Preventive
  - ▣ Restorative
  - ▣ Supportive and
  - ▣ Palliative
- The effectiveness of rehabilitation has been reported for each stage of cancer treatment
  - ▣ Physical rehabilitation during the acute stage of treatment
  - ▣ Physical and psychological rehabilitation during the terminal stage
- DeLisa stated ***“now that cancer patients survival rate has increased, attention should be turned to maintaining cancer patients’ QOL and prolonging it, not just improving their function and prognosis”***

# Cancer Rehabilitation

## **PREVENTIVE REHABILITATION**

- Starts soon after cancer has been diagnosed
- Performed before or immediately after surgery, radiotherapy or chemotherapy
- No impairments of function and preventing impairment is the key

## **RESTORATIVE REHABILITATION**

- Aims for maximal functional recovery of function in patients who have impairment of function and decreased ability

## **SUPPORTIVE REHABILITATION**

- Increases self-care ability and mobility using aids for patients whose cancer has been growing and whose impairments of function and declining abilities have been progressing
- Prevent disuse, such as contractures, muscle atrophy, loss of muscle strength

## **PALLIATIVE REHABILITATION**

- Enables patients in the terminal stage to lead a high QOL physically, psychologically and socially, while respecting their wishes.
- Designed to relieve symptoms, such as pain, dyspnoea and oedema and to prevent contractures and decubitus using heat, low-frequency therapy, positioning, breathing assistance, relaxation

# Rehabilitation Before and After Surgical Treatment

- Promote early post-operative ambulation and improve physical function so that patients can return as closely as possible to their pre-morbid function
- Patients just started treatment
  - Consider that many patients have a tendency to become psychologically depressed as a result of their 'cancer' diagnosis or changes in their body image as a result of surgery
  - Important to first determine how a patient's disease has been explained to them and how the patient perceives their disease
  - Determining what issues patients and their families are concerned about with regard to their future makes it possible to provide them with information to allay their concerns
- Another role to provide patients with a place to go for consultation when they have concerns after being discharged
  - Patients often spend the next several years being concerned about recurrence

# Rehabilitation During Chemotherapy

- Physical strength reduces during chemotherapy as a result of:
  - ▣ Nausea & vomiting
  - ▣ Myelosuppression
  - ▣ Peripheral neuropathies
- Rehabilitation aims to:
  - ▣ Encourage ambulation even during chemotherapy
  - ▣ Prevent disuse syndrome and
  - ▣ Maintain physical and muscle strength by performing exercise and sedentary occupational therapy
- Continuing to work and maintaining a house, while experiencing adverse effects of treatment often imposes a major burden on patients
  - ▣ Determine which activities are important, so that the patient can recognize their own symptoms and acquire his or her desired ADL
  - ▣ Giving patients a sense of control is an important link to preserving their self-confidence

# Rehabilitation During Advanced Stages

- Patients develop disuse syndrome and their general condition rapidly deteriorates
- Desirable to maintain a minimum of self-care in their everyday lives
  - ▣ Feeding, elimination and bathing
- As the disease progresses, patients need to cope with physical symptoms
- They are confronted with situations that makes cure of their disease difficult
- Many patients are concentrating on treatment with the aim of a cure
- The improvement of physical functions is often ranked first among patient's hopes with regard to rehabilitation
- The rehabilitation approach should also take into consideration:
  - ▣ Environment surrounding the patient
  - ▣ Support available
  - ▣ Utilization of healthcare devices
  - ▣ Utilization of social resources

# Rehabilitation During Terminal Stage

- Patient and their families needs are most important during this stage
- When patients express strong wishes, such as 'I want to go to the bathroom' and 'I want to walk':
  - ▣ Teaching family members how to assist them
  - ▣ Making adjustments to the environment around the bed and bathroom
  - ▣ Using walking aids
- Communication with patients and their families is important providing support and introducing communication aids, if needed
- When a patient's general condition deteriorates, palliative interventions:
  - ▣ Range of motion (ROM) exercises for the patients' limbs,
  - ▣ Massage for swollen lower limbs or
  - ▣ Breathing assistance
- Rehabilitation can be applied throughout the entire phase of disease from the time of diagnosis until the terminal stage, and involvement with psychosocial aspects not just physical aspects are important



# REHABILITATION IN CANCER CARE

**SPECIFIC REHABILITATION TREATMENT  
STRATEGIES**



# **SPECIFIC REHABILITATION TREATMENT STRATEGIES**

- 1. PREVENT OR CORRECT DISABILITY**
- 2. ENHANCE SYSTEMS UNAFFECTED BY PATHOLOGY**
- 3. ENHANCE FUNCTIONAL CAPACITY OF AFFECTED SYSTEM**
- 4. USE ADAPTIVE EQUIPMENT TO PROMOTE FUNCTION**
- 5. MODIFY SOCIAL AND VOCATIONAL ENVIRONMENT**
- 6. PSYCHOLOGICAL TECHNIQUES and PATIENT EDUCATION**

# 1. Prevent Additional Disability

## □ Passive joint ROM

- Avoid contractures in weak limb
- Stretching and splinting program
- Avoid DVT

## □ Medications

- Anti-Spasticity
  - Baclofen and Botulinum Toxin
- Analgesics
  - Narcotics, anti-neuropathics, anti-inflammatories
  - Intra-articular joint injections

## □ Shoulder sling

- Prevent subluxation

## □ Nutritional supplementation

- Prevent malnutrition
  - Protein Supplementation



# Dynamic Modified Orthosis

- Lycra splints
  - ▣ Individually designed according to postural and tone
  - ▣ Appropriate for all aspects of muscle tone
    - Spasticity, dystonia, ataxic or involuntary movement
- Improved posture and sensory awareness
- Improved patterns of movement
- Improved grasp/sustained hold and active release skills
- Supports their posture and reduces the impact of altered muscle tone
- ✦ Frequently a long-term approach to develop functional skills and prevent deformity

# DMO Glove



# Lower limb Spasticity

- Localised spasticity of
  - ▣ Interfering with walking
  - ▣ Tripping over toes when walking
- Muscle over-activity is one of the cardinal features of spasticity and common problem post-stroke
- Responsible for several limitations that interfere in activities of daily living and quality of life

# Botulinum Toxin



- Action at CNS level mediated through afferent pathways originating at muscle spindles
- Open-label, prospective study to assess effectiveness of BTX-A in improving functional mobility in early post-stroke population
  - ▣ Individualised, flexible dosage and targeted muscle groups
- 21 stroke patients (13 male, 8 female)
  - ▣ Mean dose: 255 U; range: 185-300
- Effective, reversible and safe treatment for spasticity

# Botulinum Toxin



- 35 % of patients receiving oral therapy showed an improvement in pre-treatment functional targets
- 73% and 68% of patients treated with BTX-A first- and second-line therapy
- BTX-A treatment
  - ▣ More cost-effective than oral therapy in post-stroke upper limb spasticity (flexed wrist/clenched fist spasticity)
  - ▣ J Rehabil Med. Jul 2005



## 2. Enhance Unaffected Systems

- Progressive resistive exercise to the non-paralysed side of a stroke patient to aid in transfers
  - ▣ Constraint therapy
- Visual feedback for hand function in patients with a sensory deficit
- Functional Electrical Stimulation
  - ▣ Uses transcutaneous electrical current to initiate contractions in paralyzed extremities

# Functional Electrical Stimulation

- 46 subjects, 70.9+/-8.0 yo and 9.2+/-4.1 days after stroke, randomly assigned to 1 of 3 groups receiving standard rehabilitation with FES, placebo stimulation or no stimulation (control)
  - FES applied 30 minutes and placebo stimulation
  - 5 days per week for 3 weeks
  
- After 3 weeks reduction in spasticity score and improvement in the ankle dorsiflexion in the FES group compared with the other 2 groups ( $p < 0.05$ )
  - All subjects in the FES group were able to walk after treatment and 84.6% returned home c.f. 53.3% in placebo and 46.2% of controls

# 3. Enhance Functional Capacity

- ❑ **Graded exercise programs**
  - ❑ Reconditioning program
  - ❑ Improve endurance and fitness
- ❑ **Progressive resistive exercises**
  - ❑ Weakened muscles to enhance strength
- ❑ **Improve dysarthric speech**
  - ❑ Reduce speaking rates for improved intelligibility
  - ❑ Improve voice projection
- ❑ **Visual written cues**
  - ❑ Assist memory function



# 4. Use Adaptive Equipment



- Sticks, crutches and frames as mobility aids
- Augmentative communication devices for patients with unintelligible speech
- Wheelchair training if unable to walk
- Equipment to extend hand function in dressing
  - ▣ Long shoehorns, stocking pullers, button-hookers
  - ▣ Adaptive cutlery

# Use Adaptive Equipment

- ✦ Environmental modification and simple equipment improve patients' overall function and preserving independence in activities of daily living
  - ▣ Bath boards,
  - ▣ Raised toilets, and
  - ▣ Grab rails
  
- ▣ Foot drop
  - ▣ Thermo-plastic AFO
  - ▣ DICTUS Band



# Fatigue

- Fatigue and dyspnoea are common in patients with advanced cancer
  - ▣ Approximately 70% of patients report fatigue
- Specific aetiologies include
  - ▣ Cachexia
  - ▣ Infection
  - ▣ Anaemia
  - ▣ Metabolic and Endocrine disorders
- Energy conservation work simplification techniques include
  - ▣ Pacing activities,
  - ▣ Taking frequent rests, sitting during activities of daily living,
  - ▣ Storing items where they can be easily accessed, and
  - ▣ Avoiding strenuous arm motions and physical stresses
- Balance between rest to alleviate fatigue and promoting deconditioning

# 5. Modify Social Environment



- Rails on stairs to promote stair climbing
- Assistance in the home for physically dependent
- Widen bathroom doorways to allow a wheelchair
  - ▣ Redesign work areas for wheelchair users
- Modified diet for certain swallowing problems
- Train family members not to reinforce sick role

# 6. Psychological and Education

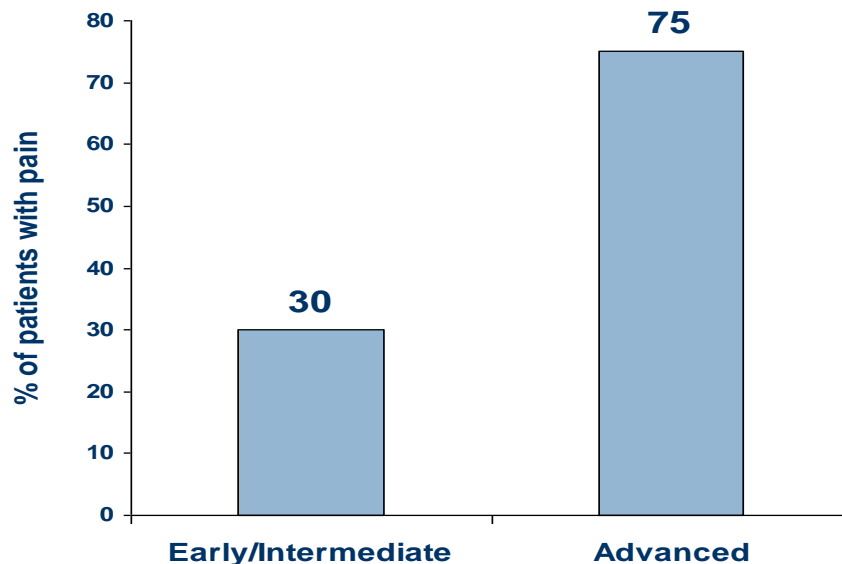


- Repetition in training patients with memory problems
- Teach new skills by verbal instruction for patients problems
- Teach new skills by demonstration for patients with language deficits
- Group therapy for patients with similar disabilities
- Community service to assist at home



# Pain is the Most Common Symptom of Cancer

- Pain is a highly prevalent symptom that can interfere with rehabilitation
  - 70–90% of patients with advanced cancer suffer from significant pain
- Recent study from the Eastern Cooperative Oncology Group reported:
  - 55% of 1308 ambulatory cancer patients experienced pain
    - 19% of those patients reporting severe pain and
    - 36% reporting pain significant enough to impair function



Stage of cancer

# Mr RW

- 80 years old
- Diagnosed with **prostate cancer** 6 years ago
  - ▣ Treated with radical radiotherapy with satisfactory results
  - ▣ 2 years ago, increased prostate specific antigen
    - Hormone treatment
- History of **renal impairment** and **cardiac failure**
- Developed bone pain in several different sites
  - ▣ Pain levels generally **8-9/10**
- Bone scan shows **multiple bony metastases**

# ANALGESIA for BONE PAIN

## □ NSAID

- ▣ Good for bone pain, but this patient's age and cardiac failure may preclude use

## □ Paracetamol

- ▣ Probable central action, good for superficial pain but may not provide sufficient relief

## □ Opioids

- ▣ Effective, manageable risks and easily titrated
- ▣ Morphine has traditionally been the preferred agent for cancer pain
- ▣ But morphine is far from ideal:
  - Oral bioavailability is highly variable
  - Pharmacologically active metabolites (morphine-6-glucuronide)

# Alternatives to MORPHINE

## ❑ Oxycodone

- ❑ Available in short and long-acting formulations
- ❑ Quick onset of action
- ❑ No significant active metabolites

## ❑ Fentanyl

- ❑ Transdermal fentanyl is a good analgesic choice for patients with stable and infrequent episodes of breakthrough pain

## ❑ Methadone

- ❑ Useful if pain is poorly controlled with standard opioids, but is difficult to titrate

# Progress

- Commenced **Targin 5/2.5mg twice a day**
  - ▣ Regular Paracetamol 1000mg qid
  - ▣ No improvement in pain, but well tolerated
  
- **Targin increased to 10/5mg twice a day**
  - ▣ Pain improved from 8-9/10 to 6/10
  
- **Targin increased to 20/10mg twice a day**
  - ▣ Pain improved further to 3/10
  - ▣ Sleeping better
  - ▣ Walking longer distances
  
- **Targin increased to 40/20mg twice a day**
  - ▣ Virtually pain free 0-1/10
  - ▣ **No problems with constipation**

# CONCLUSION

- Rehabilitation has a multidisciplinary model of care, which aims to improve patients' levels of function and comfort
  - ▣ Physical function and independence needs be maintained as long as possible to improve patients' quality of life and reduce the burden of care for the caregivers
  
- Cancer patients have a high prevalence of:
  - ▣ Weakness
  - ▣ Pain
  - ▣ Fatigue
  - ▣ Dyspnoea in addition to other symptoms
  
- Disability in patients with advanced cancer often results from:
  - ▣ Bed rest
  - ▣ Deconditioning
  - ▣ Neurologic and musculoskeletal complications of cancer or cancer treatment

# CONCLUSION

- Rehabilitation is an important part of cancer care as it sustains the hopes of patients and their families, as it is said that

***‘Being able to maintain and improve ADL’s as much as possible, while skilfully using remaining physical strength is a great joy and is linked to the desire to live’***

- Cancer patients should have access to rehabilitation services and be encouraged to remain functional and independent
- Application of the fundamental principles of Rehabilitation Medicine will improve the care of patients with Cancer



