REHABILITATION IN CANCER CARE

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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
- 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 person’s 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
Dietz has classified cancer rehabilitation into 4 categories:
- Preventive
- Restorative
- Supportive
- 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 make 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
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 stenuous 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

![Graph showing pain percentages by stage of cancer](image-url)
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
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