EVIDENCE BASED PROTOCOLS FOR PHYSIOTHERAPY MANAGEMENT

Developed by:

College of Physiotherapy
Sumandeep Vidyapeeth Deemed to be University
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PREFACE

The commitment to evidence based practice (EBP) emerges as the need of the hour. Use of EBP is believed to be an important means by which physiotherapists can deliver safe and effective interventions, avoid use of ineffective and potentially detrimental methods, and thus avoid wasting precious resources which are allocated to healthcare. Early education on the foundations of EBP is advocated as a potent intervention toward enhancing EBP uptake among physiotherapists. This Evidence Based Protocol Book is an attempt to provide an evidence-based practice Guidelines for the Management of common Problems encountered in physiotherapy. These guidelines have been developed keeping the UG students clinical teaching in mind. These have been developed by the team of subject experts, who have based these, keeping in mind the conditions commonly referred to Physiotherapy department.

CONTENTS

EVIDENCE BASED PROTOCOL

PHYSIOTHERAPY MANAGEMENT OF TRAUMATIC BRAIN INJURY

Developed by:

College of Physiotherapy
Sumandeep Vidyapeeth Deemed to be University
Piparia, Vadodara

PREFACE

As Dean of the College of Physiotherapy, it gives me pleasure to update the Protocol (version 02) of **PT in Traumatic Brain Injury.** These guidelines have been developed keeping the UG students clinical teaching in mind. These have been developed by the team of subject experts, who have based these keeping in mind the conditions commonly referred to Physiotherapy department.

Description of PT in Traumatic Brain Injury:

Traumatic brain injuries (TBIs) are a leading cause of morbidity, mortality, disability and socioeconomic losses in India and other developing countries. It is estimated that nearly 1.5 to 2 million persons are injured and 1 million succumb to death every year in India. Road traffic injuries are the leading cause (60%) of TBIs followed by falls (20%-25%) and violence (10%). Alcohol involvement is known to be present among 15%-20% of TBIs at the time of injury.

Physiotherapy management for head injury patients aims at improving cognitive, motor, sensory and thereby improving the functional status of patients. Considering such an increase in prevalence among Traumatic Brain Injury individuals, there is a need to formulate a protocol, to maintain equal consensus among staff and students and thereby gives a proper guidance and direction to physiotherapists.

STATEMENT OF INTENT

These guidelines are not intended to serve as a standard of Physiotherapy care. Standards of care are subject to change as scientific knowledge and technology advance and new patterns of care evolve. The ultimate judgment regarding a particular clinical procedure or treatment plan must be made in light of the clinical presentation. However, any deviation from these should be recorded and appropriate evaluation carried out.

As a Dean of the College, I understand that in changing paradigm of evidence-based medicine, an algorithmic approach, if developed properly, may assist in the clinical practice of Physiotherapy. I acknowledge the whole team for their contributions in critically reviewing the available literature with level of evidences and updated the protocol.

We are grateful and acknowledge the immense help received from the authors / editors / publishers of all those articles, journals and books from where the literature for this protocol has been reviewed, used and updated. We are grateful to the support provided by the University EBES team and also very much grateful to the support patients.

TITLE OF THE PROTOCOL: PHYSIOTHERAPY MANAGEMENT OF TRAUMATIC BRAIN INJURY

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VERSION AND PREPARED/ UPDATED ON:

Version 2.0

12/10/21

Introduction:

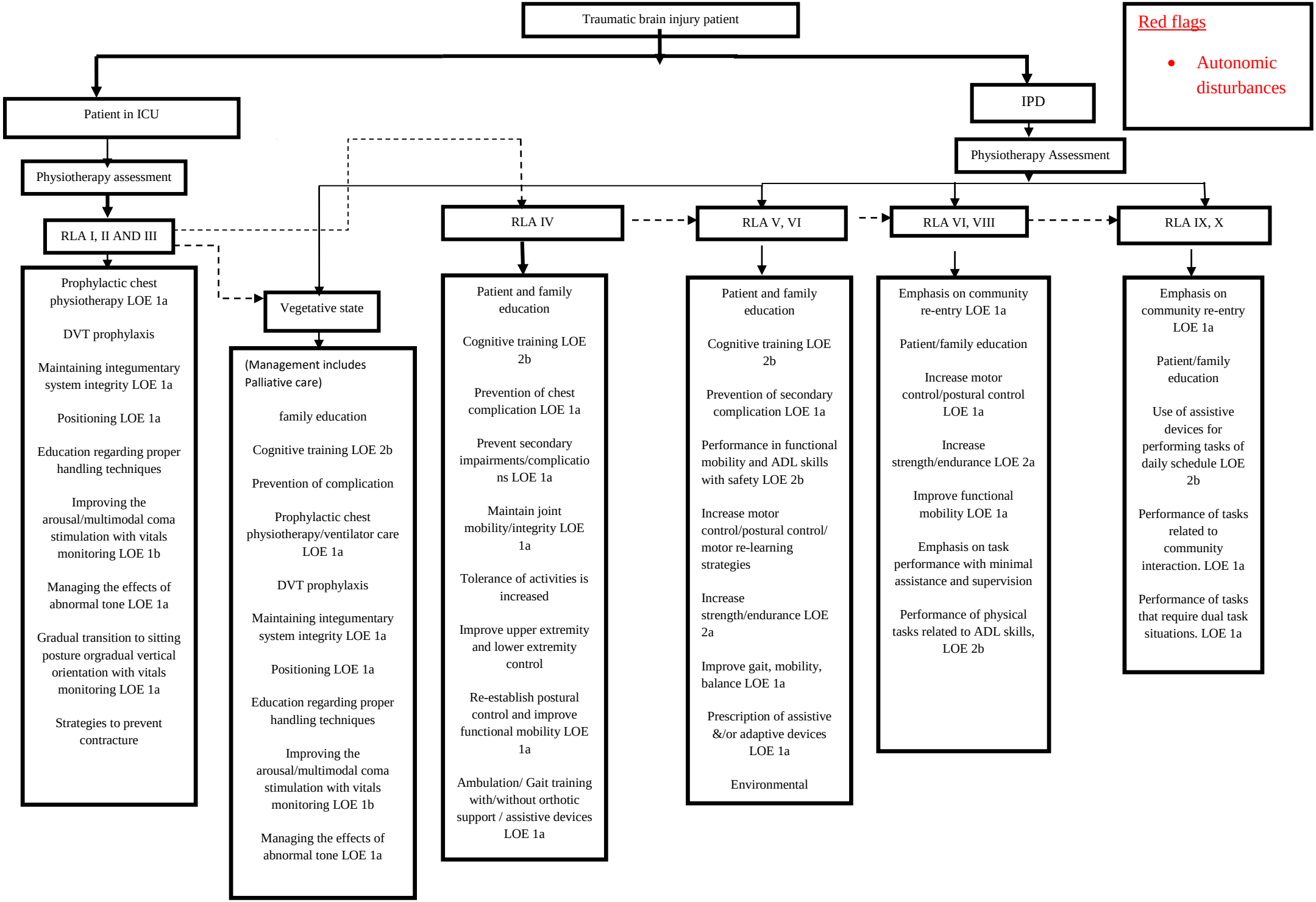
Traumatic brain injury (TBI), by definition, is any damage to the brain occurring after birth and unrelated to congenital disorders, developmental disabilities, or progressive processes. TBI has become an important public health concern because it is one of the leading causes of death and long-term disability. The devastating personal consequences of TBI often include long-term disability in the areas of physical, cognitive, behavioural, or emotional functioning[7]. Traumatic Brain Injury is the insult caused to the brain not by degenerative process or by congenital defect but by external physical agent which causes diminished or altered state of consciousness causing cognitive impairments thereby leading to physical functional disabilities[1]along with disturbance in behavioural or emotional functioning. These impairments can be either permanent or temporary causing functional disability. Due to wide range of impairments, a strong team is employed in the treatment of head injury and Physical therapist is the crucial member of this team[1,2]. Rehabilitation is occurs across a continuum of care in a variety of clinical settings.[2] Physical therapy Assessment includes examination of level of consciousness using GlassGow Coma Scale, RLA to assess the level of cognitive functioning, assessment of sensory system, motor system, cranial nerves, reflexes, Functional independence using FIM[2]. Physical therapy interventions are based on Rancho Los Amigos level of cognitive functioning according to which patients are categorized as No response, Generalized response, Localized response, Confused agitated, Confused in-appropriate non-agitated, Confused appropriate, Automatic appropriate, Purposeful appropriate stand-by Assistance, purposeful appropriate assistance stand-by on request, Purposeful appropriate modified independent.[2] While impairments from TBI are broad, nearly 30% of patients report impaired balance , as well as limitations in motor function including gait problems. Addressing gait and balance problems presents a significant challenge to the rehabilitation and recovery of patients with TBI[7]. Physical therapy interventions have been used to prevent chest complications, secondary impairments, improve the arousal, reduce, improve motor function, and the overall functional status of the as well to improve the quality of life of the patient.[6,7]

Need For the Protocol:

Since the no. of TBI patients forming the majority, there was a need to formulate the protocol so that there are equal consensus among all the staff and PG students regarding the management guidelines for that commonly seen condition and the management also goes in line with the current or recent evidences for the management of that condition.

REVIEW OF LITERATURE:

1. There has been level of 1a evidence- systematic review on the effectiveness of Physical therapy interventions for traumatic brain injury evidence.
2. There is a level of 1a evidence suggesting the effectiveness of chest physiotherapy in reducing the increased intracranial cerebral perfusion pressure after traumatic brain injury.
3. There is also a level of 1a evidence suggesting the effectiveness of multimodal coma stimulation to improve the arousal level of patients post traumatic brain injury.
4. There is a level of evidence suggesting the effectiveness of physical therapy to improve gait, balance following traumatic brain injury.
5. There is a 1a Level of evidence suggesting the effectiveness of passive-assistive movement for contracture prophylaxis, stimulation therapy, low-dose strength, and endurance training and stretching inpatients with TBI.
6. There is level 1a evidence suggesting the effectiveness of physical therapy in improving motor performance- gait, balance in patients with TBI.
7. There is level 2b evidence suggesting the Efficacy of a functionally-based neurorehabilitation program: a retrospective case-matched study of rehabilitation outcomes following traumatic brain injury.
8. There is level 4 evidence suggesting the effectiveness of in-patient rehabilitation in improving functional outcome in patients with TBI during the first year of moderate and severe brain injury.
9. There is level 1b evidence suggesting the effectiveness of splinting for contracture management after acquired brain injury.


Traumatic brain injury patient
Red flags
Autonomic disturbances
Patient in ICU
IPD
Physiotherapy assessment
Physiotherapy Assessment
RLA I, II AND III
RLA IV
RLA V, VI
RLA VI, VIII
RLA IX, X
Prophylactic chest physiotherapy LOE 1a
DVT prophylaxis
Maintaining integumentary system integrity LOE 1a
Positioning LOE 1a
Education regarding proper handling techniques
Improving the arousal/multimodal coma stimulation with vitals monitoring LOE 1b
Managing the effects of abnormal tone LOE 1a
Gradual transition to sitting posture orgradual vertical orientation with vitals monitoring LOE 1a
Strategies to prevent contracture
Vegetative state
(Management includes Palliative care)
family education
Cognitive training LOE 2b
Prevention of complication
Prophylactic chest physiotherapy/ventilator care LOE 1a
DVT prophylaxis
Maintaining integumentary system integrity LOE 1a
Positioning LOE 1a
Education regarding proper handling techniques
Improving the arousal/multimodal coma stimulation with vitals monitoring LOE 1b
Managing the effects of abnormal tone LOE 1a
Patient and family education
Cognitive training LOE 2b
Prevention of chest complication LOE 1a
Prevent secondary impairments/complications LOE 1a
Maintain joint mobility/integrity LOE 1a
Tolerance of activities is increased
Improve upper extremity and lower extremity control
Re-establish postural control and improve functional mobility LOE 1a
Ambulation/ Gait training with/without orthotic support / assistive devices LOE 1a
Patient and family education
Cognitive training LOE 2b
Prevention of secondary complication LOE 1a
Performance in functional mobility and ADL skills with safety LOE 2b
Increase motor control/postural control/ motor re-learning strategies
Increase strength/endurance LOE 2a
Improve gait, mobility, balance LOE 1a
Prescription of assistive &/or adaptive devices LOE 1a
Environmental
Emphasis on community re-entry LOE 1a
Patient/family education
Increase motor control/postural control LOE 1a
Increase strength/endurance LOE 2a
Improve functional mobility LOE 1a
Emphasis on task performance with minimal assistance and supervision
Performance of physical tasks related to ADL skills, LOE 2b
Emphasis on community re-entry LOE 1a
Patient/family education
Use of assistive devices for performing tasks of daily schedule LOE 2b
Performance of tasks related to community interaction. LOE 1a
Performance of tasks that require dual task situations. LOE 1a

SUMMARY:

Thus, physiotherapy helps in improving cognitive and motor domains and thereby improving the overall performance in ADL skills in patients with TBI.

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EVIDENCE BASED PROTOCOL

PHYSIOTHERAPY MANAGEMENT OF PARAPLEGIA

Developed by:

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PREFACE

As Dean of the College of Physiotherapy, it gives me pleasure to update the Protocol (version 02) of **PT in Paraplegia.** These guidelines have been developed keeping the UG students clinical teaching in mind. These have been developed by the team of subject experts, who have based these keeping in mind the conditions commonly referred to Physiotherapy department.

Description of PT in Paraplegia:

Paraplegia describes complete or incomplete paralysis affecting the legs and possibly also the trunk, but not the arms. The extent to which the trunk is affected depends on the level of spinal cord injury. Paraplegia is the result of damage to the cord at T1 and below. T-1 injuries are the first level with normal hand function. They can perform all motor functions of a non-injured person, with the exception of standing and walking. As thoracic levels proceed caudally, intercostal and abdominal musculature recovery is present, and there is improved respiratory function and trunk balance as a result. Some complete lower injuries have partial trunk movement and may be able to stand, with long leg braces and a walker, and may be able to walk short distances using this equipment, with assistance. T6-12 patients also have partial abdominal muscle strength, and may be able to walk independently for short distances with long leg braces and a walker or crutches.
A physiotherapy (PT) program can facilitate the restoration of muscle strength, flexibility, improve mobility, coordination, and maintain body functions through various exercises including gait training where patient is taught how to use orthosis and assistive devices (e.g., walker, crutches or a cane) to achieve independence. Also, physiotherapy benefits the patient by preventing complications from surgery or illness.

STATEMENT OF INTENT

These guidelines are not intended to serve as a standard of Physiotherapy care. Standards of care are subject to change as scientific knowledge and technology advance and new patterns of care evolve. The ultimate judgment regarding a particular clinical procedure or treatment plan must be made in light of the clinical presentation. However, any deviation from these should be recorded and appropriate evaluation carried out.

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We are grateful and acknowledge the immense help received from the authors / editors / publishers of all those articles, journals and books from where the literature for this protocol has been reviewed, used and updated. We are grateful to the support provided by the University EBES team and also very much grateful to the support patients.

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Version 2.0

12/10/21

Introduction:

Paraplegia due to spinal cord injuries (SCI) cause previously normal people to become handicapped. Furthermore, most common affected age group being 20-29 signifying higher incidence in young, active and productive population of the society.[1]

In India, fall from height is the leading cause for spinal cord insult. Road traffic accident is the commonest cause in the younger age group i.e. 18-<25 years. Traumatic lesions are common in men and non-traumatic lesions are common in women. Majority of the cases are illiterate, poor villagers who are involved in high risk jobs. Lumbar level (T_{10} and below) is the commonest level of lesion in individuals with paraplegia.[2]

Damage to the cord will result in loss of motor power, deep and superficial sensation, vasomotor control, bladder and bowel control & sexual function.

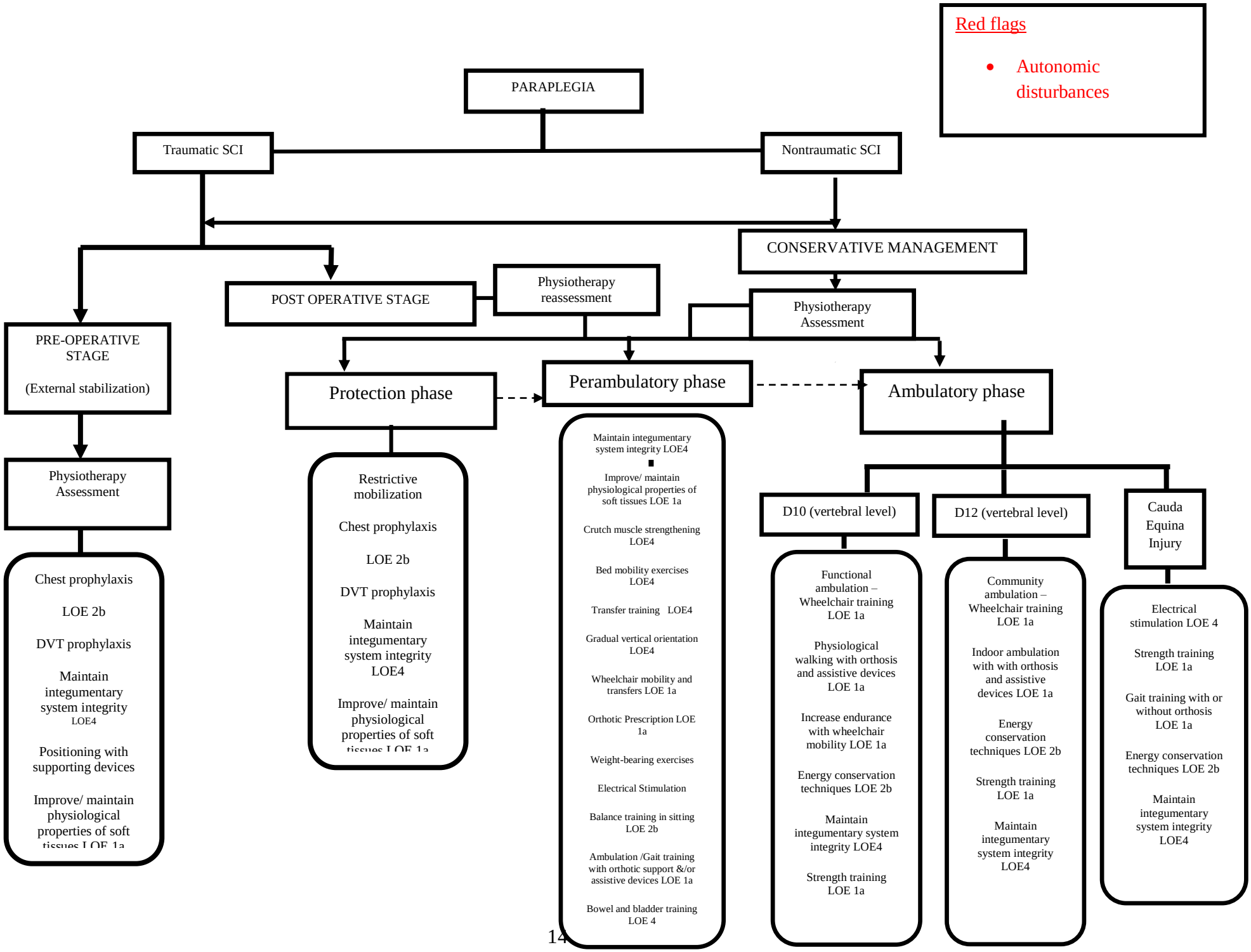
The ultimate goat of physiotherapy rehabilitation after spinal cord injury is to minimize disability. This involves enabling the person with a spinal cord injury to return to as healthy, fulfilling and independent lifestyle as possible.[1,3]

Need For the protocol:

Paraplegia resulting from SCI lead to impairment or loss of function below the level of injury. Each of these impairments impose activity limitations that directly or indirectly prevent patients from performing physical activities such as walking, mobilizing in a wheelchair and attending to self-care. Physical interventions that address impairments invariably also address activity limitations.

REVIEW OF LITERATURE:

1. There is a level 1a evidence for effectiveness of physical therapy interventions in SCI. Out of the 31 RCTs, clinically significance was found in gait training with RGOs, gait training with medially linked bilateral KAFOs, General strength and fitness training and arm and leg crank exercises.
2. There is a level 2c evidence for individuals with motor incomplete SCI Level C and Level D using walking as the active ingredient on the treadmill or over ground, for improvement in walking over ground. The study includes articles that addressed the retraining of walking in adults with SCI and reported outcome measures of over ground walking ability were identified through a non-systematic search of the PubMed, Scopus, and CINAHL databases.
3. There is a level 2a evidence for upper limb strengthening in individuals with spinal cord injury.
4. There is a level 2b evidence for balance training in sitting in individuals with spinal cord injury.
5. There is a level 2b evidence for respiratory muscle training and respiratory pacing in individuals with spinal cord injury.
6. There is level 4 evidence for physiotherapy management of acute spinal cord injury patients.
7. There is level 4 evidence for physiotherapy management of spinal cord injury patient.


Red flags
Autonomic disturbances
PARAPLEGIA
Traumatic SCI
Nontraumatic SCI
CONSERVATIVE MANAGEMENT
PRE-OPERATIVE STAGE
(External stabilization)
POST OPERATIVE STAGE
Physiotherapy reassessment
Physiotherapy Assessment
Protection phase
Perambulatory phase
Ambulatory phase
Physiotherapy Assessment
Chest prophylaxis
LOE 2b
DVT prophylaxis
Maintain integumentary system integrity LOE4
Positioning with supporting devices
Improve/ maintain physiological properties of soft tissues LOE 1a
Restrictive mobilization
Chest prophylaxis
LOE 2b
DVT prophylaxis
Maintain integumentary system integrity LOE4
Improve/ maintain physiological properties of soft
Maintain integumentary system integrity LOE4
Improve/ maintain physiological properties of soft tissues LOE 1a
Crutch muscle strengthening LOE4
Bed mobility exercises LOE4
Transfer training LOE4
Gradual vertical orientation LOE4
Wheelchair mobility and transfers LOE 1a
Orthotic Prescription LOE 1a
Weight-bearing exercises
Electrical Stimulation
Balance training in sitting LOE 2b
Ambulation /Gait training with orthotic support &/or assistive devices LOE 1a
Bowel and bladder training LOE 4
D10 (vertebral level)
D12 (vertebral level)
Cauda Equina Injury
Functional ambulation – Wheelchair training LOE 1a
Physiological walking with orthosis and assistive devices LOE 1a
Increase endurance with wheelchair mobility LOE 1a
Energy conservation techniques LOE 2b
Maintain integumentary system integrity LOE4
Strength training LOE 1a
Community ambulation – Wheelchair training LOE 1a
Indoor ambulation with with orthosis and assistive devices LOE 1a
Energy conservation techniques LOE 2b
Strength training LOE 1a
Maintain integumentary system integrity LOE4
Electrical stimulation LOE 4
Strength training LOE 1a
Gait training with or without orthosis LOE 1a
Energy conservation techniques LOE 2b
Maintain integumentary system integrity LOE4

SUMMARY:

By reducing activity limitations, physical interventions address the ultimate aim of rehabilitation, namely to increase participation and thereby improve overall quality of life. Therefore, physical therapy for individuals with paraplegia is advocated.

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EVIDENCE BASED PROTOCOL

PHYSIOTHERAPY MANAGEMENT IN STROKE

Developed by:

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PREFACE:

As Dean of the College of Physiotherapy, it gives me pleasure to update the Protocol(version2) of **PT in Stroke.** These guidelines have been developed keeping the UG students clinical teaching in mind. These have been developed by the team of subject experts, who have based these keeping in mind the conditions commonly referred to Physiotherapy department.

Description of PT in Stroke:

The goals of rehabilitation are to help survivors become as independent as possible and to attain the best possible quality of life. Even though Physiotherapy does not "cure" the effects of stroke in that it does not reverse brain damage, rehabilitation can substantially help people achieve the best possible long-term outcome.

Physiotherapy begins in the acute-care hospital after the person's overall condition has been stabilized, often within 24 to 48 hours after the stroke. The first steps involve promoting independent movement because many individuals are paralyzed or seriously weakened. Patients are prompted to change positions frequently while lying in bed and to engage in passive or active range of motion exercises to strengthen their stroke-impaired limbs. Depending on many factors—including the extent of the initial injury—patients may progress from sitting up and being moved between the bed and a chair to standing, bearing their own weight, and walking, with or without assistance. It is necessary that continuous active home program continues.

STATEMENT OF INTENT

These guidelines are not intended to serve as a standard of Physiotherapy care. Standards of care are subject to change as scientific knowledge and technology advance and new patterns of care evolve. The ultimate judgment regarding a particular clinical procedure or treatment plan must be made in light of the clinical presentation. However, any deviation from these should be recorded and appropriate evaluation carried out.

As a Dean of the College, I understand that in changing paradigm of evidence-based medicine, an algorithmic approach, if developed properly, may assist in the clinical practice of Physiotherapy. I acknowledge the whole team for their contributions in critically reviewing the available literature with level of evidences and updated the protocol.

We are grateful and acknowledge the immense help received from the authors / editors / publishers of all those articles, journals and books from where the literature for this protocol has been reviewed, used and updated. We are grateful to the support provided by the University EBES team and also very much grateful to the support patients.

TITLE OF THE PROTOCOL: PHYSIOTHERAPY MANAGEMENT OF STROKE

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VERSION AND PREPARED/ UPDATED ON:
Version 2.0

12/10/2021

Introduction:

Stroke is one of the major causes of disability and mortality. In addition, while severe stroke incidence has decreased, milder stroke incidence with minimal and moderate deficits has increased. Stroke survivors present sensorimotor, musculoskeletal, perceptual, and cognitive system deficits. The individuals surviving a stroke require multidisciplinary care that includes varying degrees of medical care, physical therapy, nursing, and other health professional care. Post-stroke physical therapy interventions have been used to reduce pain and spasticity, as well as to increase range of motion (ROM), muscle force, mobility, walking ability, functional status, physical fitness, and quality of life. Post-stroke physical therapy interventions are mostly noninvasive interventions that present very few adverse side effects and contraindications as compared with a large number of pharmacologic interventions.

Need For the Protocol:

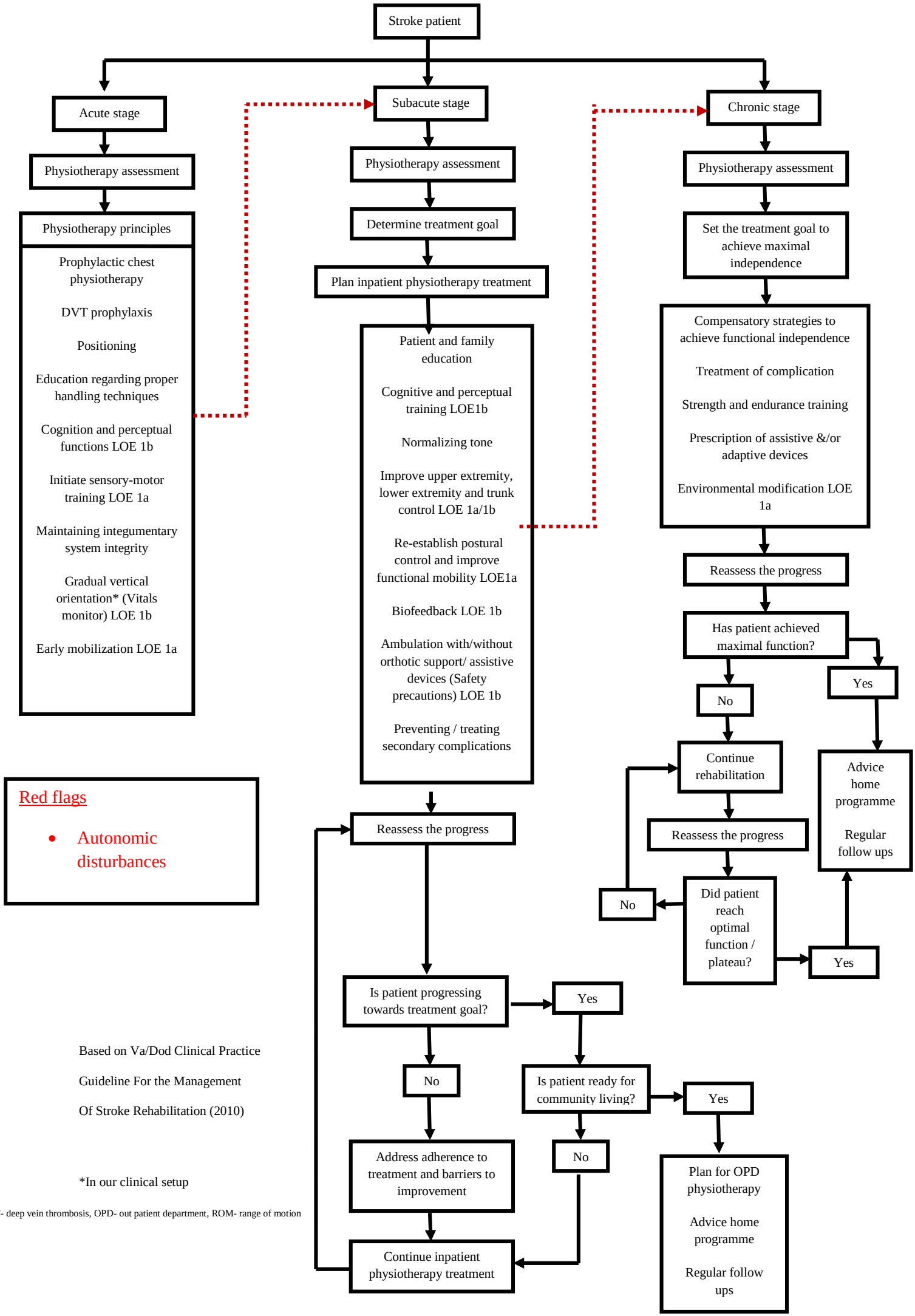
Since there are number of stroke patients forming the majority, there was a need to formulate the protocol so that there is equal consensus among all the staff and PG students regarding the management guidelines for that commonly seen condition and the management also goes in line with the current or recent evidences for the management of that condition.

Review of literature:

1. There is level 1b evidence exists to recommend that chronic stroke patients should participate in regular strengthening and aerobic exercise programs, and poor evidence exists to support strengthening in the rehabilitation of acute and subacute stroke patients.
2. There is level 1a evidence to recommend considering task-oriented training as an approach to stroke rehabilitation.
3. There is level 2b evidence to support the use of rhythmic auditory stimulation as an intervention following stroke to improve gait speed and stride length.
4. There is level 1a evidence to recommend balance training as a rehabilitation intervention for subacute and post-acute stroke patients.
5. There is level 2b evidence to recommend some types of sensory-based interventions for stroke rehabilitation, including sensory function training of the hand, rocking chair stimulation, visual attention retraining, passive vestibular training (functional ambulation) and perceptual learning exercises.
6. The Ottawa Panel found level 1a evidence to recommend the consideration of the inclusion of CIMT in the treatment of subacute and chronic stroke patients with some active finger and wrist extension prior to CIMT.***Ottawa Panel Evidence-Based Clinical Practice Guidelines for Post-Stroke***

   Rehabilitation (2006)

7. There is level 1b evidence to support use of mirror therapy for subacute and chronic stroke patients.
8. There is level 1b evidence that recommends core stability exercise for improving trunk control for subacute and chronic stroke patients.
9. There is level 1a evidence that supports early mobilization in acute stroke patients.



Based on Va/Dod Clinical Practice Guideline For the Management Of Stroke Rehabilitation (2010)

*In our clinical setup

*DVT- deep vein thrombosis, OPD- out patient department, ROM- range of motion

Summary:

Physiotherapy helps in improving the sensory-motor performance and thereby functional status of stroke patient post treatment.

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2. Va/Dod Clinical Practice Guideline For The Management Of Stroke Rehabilitation (2010)
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EVIDENCE BASED PROTOCOL

PHYSIOTHERAPY MANAGEMENT OF GUILLAIN-BARRÉ SYNDROME

Developed by:

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PREFACE

As Dean of the College of Physiotherapy, it gives me pleasure to update the Protocol (version 02) of **PT in Guillain-Barré syndrome.** These guidelines have been developed keeping the UG students clinical teaching in mind. These have been developed by the team of subject experts, who have based these keeping in mind the conditions commonly referred to Physiotherapy department.

Description of PT in Guillain-Barré syndrome:

Guillain-Barré syndrome is a disease which comes under the term acute flaccid paralysis. Patients can experience variety of impairments from weakness of all four limbs to life threatening respiratory muscle paralysis, which can ultimately lead to difficulty or loss in functioning of activities of daily living, that leads to reduced participation and quality of life. Prognosis is good if the treatment is started at the right time. Physiotherapy plays an important role in management of GBS from the initial chest care to making the patient independent in his daily life.

STATEMENT OF INTENT

These guidelines are not intended to serve as a standard of Physiotherapy care. Standards of care are subject to change as scientific knowledge and technology advance and new patterns of care evolve. The ultimate judgment regarding a particular clinical procedure or treatment plan must be made in light of the clinical presentation. However, any deviation from these should be recorded and appropriate evaluation carried out.

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TITLE OF THE PROTOCOL: PHYSIOTHERAPY MANAGEMENT OF GUILLAIN-BARRÉ SYNDROME

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VERSION AND PREPARED/ UPDATED ON:

Version 2.0

12/10/21

Introduction:

Guillain-Barré syndrome (GBS), also called acute inflammatory demyelinating polyneuropathy (AIDP), affects one to two new persons per 100,000 populations each year.[1] It can strike anyone without warning regardless of gender, age or ethnic background. Disability caused by GBS generally progresses over the course of a few days to four weeks, with weakness starting distally and ascending in a matter of hours to days. Fortunately, GBS is self-limiting with improvement usually beginning spontaneously after weakness maximizes. Most patients eventually reach a full or nearly full recovery. Many patients will walk without aid after three months and experience only minor residual symptoms by the end of the first year following onset. In some patients, recovery can be extremely slow (6 months-2 years) and five to twenty percent of patients are left with significant residual symptoms that lead to long-term disability and prevent a successful return to their prior lifestyle or occupation.

Rehabilitation is started as soon as patient is medically stable. Commonly, a patient with severe GBS would require inpatient rehabilitation for 3–6 weeks followed by outpatient and home-based rehabilitation program for 3–4 months.[2]

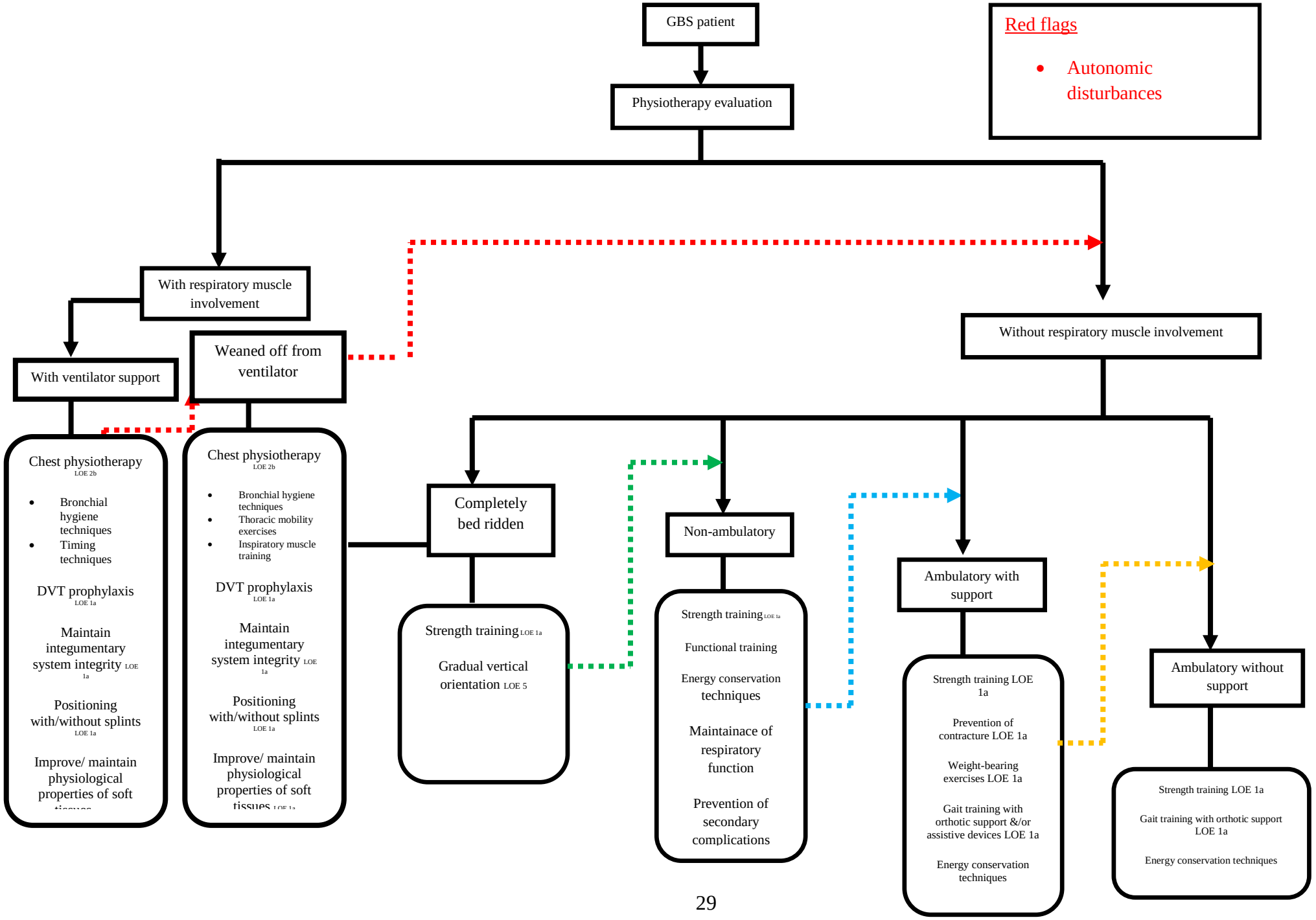
Need For The Protocol:

The prognosis and complications of GBS are well known, there is a need to form a protocol which provides guidance for early management and rehabilitation as per the recent advances and evidences.

Protocol formation enhances equal consensus among the physiotherapists (staff and students) and thereby aid in recovery and follow up. It also augments research and evidence-based practice.

REVIEW OF LITERATURE:

1. According to Guidelines for Physical and Occupational Therapy provided by GBS/CIDP FOUNDATION INTERNATIONAL, the principle goals of physiotherapy are 1) To help the patient to achieve optimal muscle use at a tolerable pain level as nerve supply returns; and 2) To use supportive equipment and other functional adaptations to help patients with residual impairments to resume an activity level that is as close to their previous lifestyle as possible. LOE 1a
2. El Mhandi et al did a prospective cohort study and showed significant muscle strength improvement using dynamometer at 18 months following an individualized physical therapy programme based on muscular reinforcement and active mobilization (average 2-3 weekly sessions). They found that at six months, manual muscle testing and functional independence motor scores were close to normal, and at 18 months, all patients satisfied the criteria for a full recovery. LOE 2b
3. A systematic review done in 2012, found good evidence to support outpatient multidisplinary high intensity rehabilitation in producing long-term gains up to 12 months at the level of activity (disability) and participation in the later stage of recovery.[1] LOE 1a.


GBS patient
Physiotherapy evaluation
Red flags
Autonomic disturbances
With respiratory muscle involvement
With ventilator support
Weaned off from ventilator
Without respiratory muscle involvement
Chest physiotherapy LOE 2b
Bronchial hygiene techniques
Timing techniques
DVT prophylaxis LOE 1a
Maintain integumentary system integrity LOE 1a
Positioning with/without splints LOE 1a
Improve/ maintain physiological properties of soft tissues
Chest physiotherapy LOE 2b
Bronchial hygiene techniques
Thoracic mobility exercises
Inspiratory muscle training
DVT prophylaxis LOE 1a
Maintain integumentary system integrity LOE 1a
Positioning with/without splints LOE 1a
Improve/ maintain physiological properties of soft tissues LOE 1a
Completely bed ridden
Strength training LOE 1a
Gradual vertical orientation LOE 5
Non-ambulatory
Strength training LOE 1a
Functional training
Energy conservation techniques
Maintainace of respiratory function
Prevention of secondary complications
Ambulatory with support
Strength training LOE 1a
Prevention of contracture LOE 1a
Weight-bearing exercises LOE 1a
Gait training with orthotic support &/or assistive devices LOE 1a
Energy conservation techniques
Ambulatory without support
Strength training LOE 1a
Gait training with orthotic support LOE 1a
Energy conservation techniques

SUMMARY:

Physiotherapy exercises help the patient to optimally use muscle and thereby gain functional independence post GBS.

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EVIDENCE BASED PROTOCOL

PHYSIOTHERAPY MANAGEMENT OF POST OPERATED LUMBAR LAMINECTOMY

Developed by:

College of Physiotherapy
Sumandeep Vidyapeeth Deemed to be University
Piparia, Vadodara

PREFACE

As Dean of the College of Physiotherapy, it gives me pleasure to introduce the Protocol of **PT in Post operated lumbar laminectomy.** These guidelines have been developed keeping the UG students clinical teaching in mind. These have been developed by the team of subject experts, who have based these keeping in mind the conditions commonly referred to Physiotherapy department.

Description of PT in Post Operated Lumbar Laminectomy:

Disc prolapse is more frequently seen in the lumbar region as compared to any other region and most common at L4-L5 and L5-S1 level. Lumbar prolapsed intervertebral disc (PIVD) or herniation among LBP patients is one of the most prevalent musculoskeletal disorders, affecting approximately 10% of the population. Radicular pain is one of the most common and disabling symptoms. It may lead to sensory and motor deficits and leaves the person incapacitated. Surgical intervention is required, when the patient does not respond to conservative treatment.

Lumbar laminectomy is the most commonly used surgical procedure to decompress spinal canal. Laminectomy, a standard surgical procedure for lumbar PIVD, can have complications such as pain, dural tear, post-operative paralysis, and superficial wound infection, recurrent or persistent herniation and reoperation at the same level.

STATEMENT OF INTENT

These guidelines are not intended to serve as a standard of Physiotherapy care. Standards of care are subject to change as scientific knowledge and technology advance and new patterns of care evolve. The ultimate judgment regarding a particular clinical procedure or treatment plan must be made in light of the clinical presentation. However, any deviation from these should be recorded and appropriate evaluation carried out.

As a Dean of the College, I understand that in changing paradigm of evidence-based medicine, an algorithmic approach, if developed properly, may assist in the clinical practice of Physiotherapy. I acknowledge the whole team for their contributions in critically reviewing the available literature with the level of evidences and finalized the protocol.

We are grateful and acknowledge the immense help received from the authors / editors / publishers of all those articles, journals and books from where the literature for this protocol has been reviewed and used. We are grateful to the support provided by the University EBES team and also very much grateful to the support patients.

EVIDENCE BASED PROTOCOL OF PHYSIOTHERAPY MANAGEMENT OF POST OPERATED LUMBAR LAMINECTOMY

PREPARED BY:

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VERSION AND PREPARED/ UPDATED ON:
Version 2.0

12/10/21

Introduction:

Disc prolapse is more frequently seen in the lumbar region as compared to any other region and most common at L4-L5 and L5-S1 level. Lumbar prolapsed intervertebral disc (PIVD) or herniation among LBP patients is one of the most prevalent musculoskeletal disorders, affecting approximately 10% of the population. Prevalence is higher in men as compared to women and most of the individuals are between 30 and 50 years of age. Obesity, smoking, sedentary lifestyle, and socioeconomic conditions are associated risk factors.[1]

The number of surgical procedures performed for the management of lumbar spinal conditions has increased considerably over the previous two decades. It may be possible to improve the success of surgical intervention through rehabilitation programs specifically designed to optimise post-operative recovery.[2]

Damage to the intervertebral disc will lead to impaired joint mobility, motor function, muscle performance, ROM, and reflex integrity associated with spinal disorders.[3]

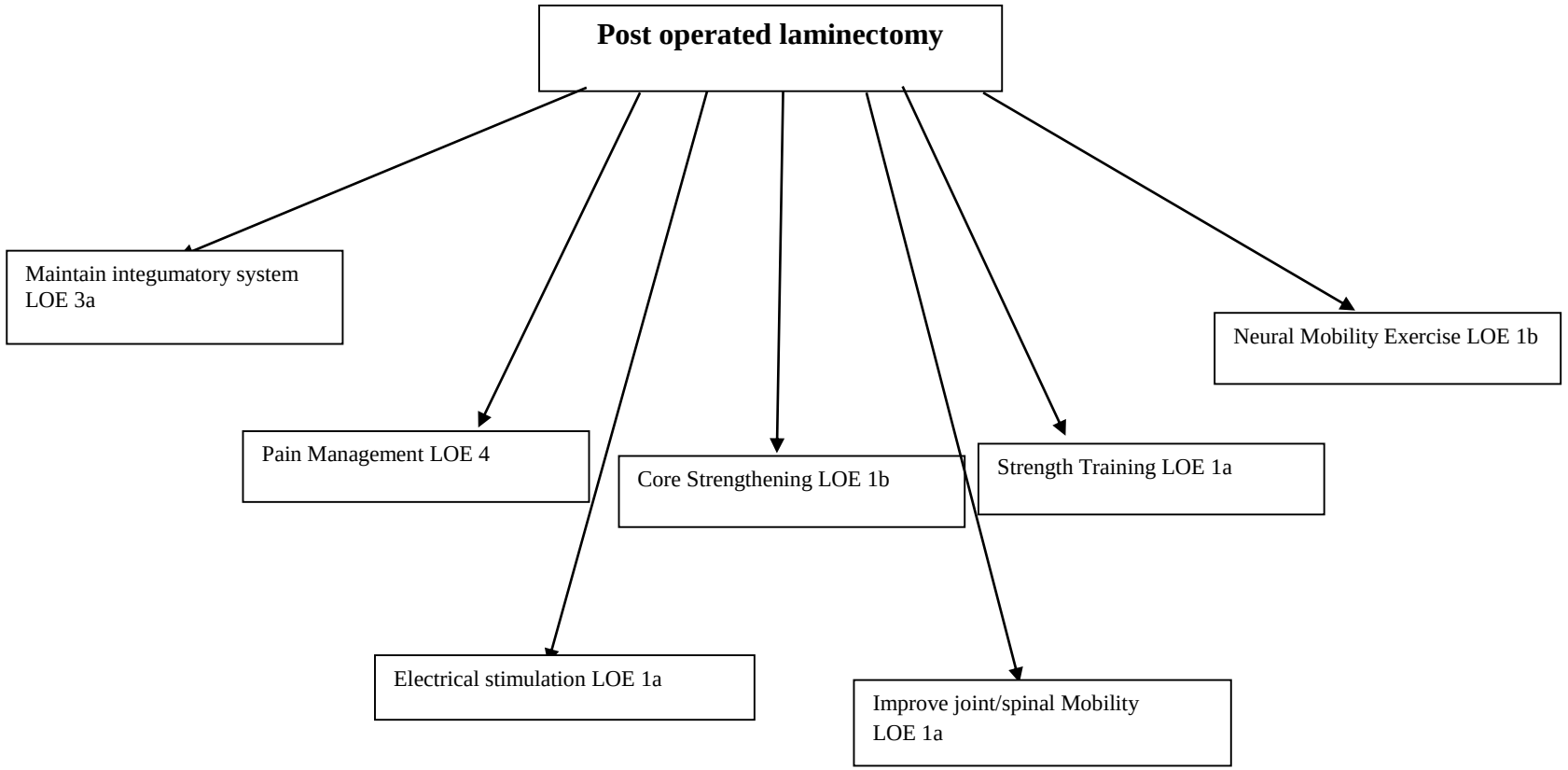
The ultimate goal of physiotherapy rehabilitation after lumbar spinal surgery is to minimize pain, disability and loss of productivity. This enables the person with lumbar spinal surgery to return to work as a healthy individual.

Need For the protocol:

Lumbar spinal surgery due to cause of PIVD leads to impaired joint mobility, motor function, muscle performance and functional activities. Each of these impairments prevents the patient from performing bed transfers and physical activities such as walking, running, stair climbing, etc. Physical interventions that address these impairments invariably also address activity limitation.

Review of literature:

1. There is a level of 1a evidence in strength training, neuromuscular control, neural mobilization, joint mobility and electrical stimulation after lumbar spinal surgery.
2. There is a level of 1b evidence of effectiveness of core stabilization exercise in reducing pain and disability in patients with lumbar spinal surgery. Clinical significant difference was found in the experimental group in which isolated activation of transverse abdominis, multifidus and pelvic floor was performed.
3. There is a level of 1b evidence in neural mobilization along with traditional physical therapy post-operatively which shows better improvement in pain and functional disability.
4. There is a level of 2b evidence of early ambulation after lumbar surgery which results in improved long-term recovery of function.


Post operated laminectomy
Maintain integumatory system LOE 3a
Pain Management LOE 4
Core Strengthening LOE 1b
Strength Training LOE 1a
Neural Mobility Exercise LOE 1b
Electrical stimulation LOE 1a
Improve joint/spinal Mobility LOE 1a

Summary:

By reducing activity limitations, physical interventions address the ultimate aim of rehabilitation, namely to increase participation and thereby improve overall quality of life. Therefore, physical therapy for individuals with post operated lumbar laminectomy is advocated.

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EVIDENCE BASED PROTOCOL

PHYSIOTHERAPY MANAGEMENT OF LOW BACK PAIN

Developed by:
College of Physiotherapy
Sumandeep Vidyapeeth Deemed to be University
Piparia, Vadodara

PREFACE BY HEAD OF DEPARTMENT:

As Dean of College of Physiotherapy, it gives me pleasure to introduce the Protocol of **Physiotherapy management in low back pain**. These guidelines have been developed keeping the UG students' clinical teaching in mind. These have been developed by the team of subject experts, who have based these keeping in mind the conditions commonly referred to Physiotherapy department.

Description of low back pain; It is estimated that only 15% of all low back pain has an identifiable anatomic explanation. The other 85% is identified as non-specific low back pain. It is clear that there is no consensus in the area of the cause.
The early acute phase is defined as less than two weeks and the late acute phase is defined as two to six weeks, **Subacute Low Back Pain** –with duration of greater than six weeks after injury but no longer than 12 weeks after onset of symptoms, low back pain more than 12 weeks in duration is chronic.

- ✓ Clinicians should educate patients as an adjunct to other treatment. Heat should be used for pain relief (Strong Recommendation, Moderate Quality Evidence) (French, 2006). Cold therapy is not recommended for low back pain (Weak Recommendation, Low Quality Evidence) (French, 2006).
- ✓ Clinicians should advise patients with acute and subacute low back pain to stay active and continue activities of daily living within the limits permitted by their symptoms (Strong Recommendation, Moderate Quality Evidence) (Dahm, 2010).
- ✓ Exercise should be recommended to reduce the recurrence of low back pain. However, no specific exercise is preferred (Strong Recommendation, Moderate Quality Evidence) (Choi, 2010).
- ✓ Clinicians should not recommend bed rest for patients with low back pain (Strong Recommendation, Moderate Quality Evidence) (Dahm, 2010).

STATEMENT OF INTENT

These guidelines are not intended to serve as a standard of Physiotherapy care.
Standards of care are subject to change as scientific knowledge and technology advance and new patterns of care evolve. The ultimate judgment regarding a particular clinical procedure or treatment plan must be made in light of the clinical presentation. However, any deviation from these should be recorded and appropriate evaluation carried out.
I understand that in changing paradigm of evidence based medicine, an algorithmic approach, if developed properly, may assist in the clinical practice of Physiotherapy. I acknowledge Prof. Palani Kumar, Dean College of Physiotherapy, for his contributions in critical review of this and finalizing the protocol. The whole team with each member of the said subject team sat late in the evening and within their capacity contributed in reviewing literature with level of evidences and the finalized protocol.
We are grateful and acknowledge the immense help received from the authors / editors / publishers of all those articles, journals and books from where the literature for this protocol has been reviewed and used. We are grateful to the support provided by the University EBES team and also very much grateful to the support of patients.

EVIDENCE BASED PROTOCOL OF PHYSIOTHERAPY MANAGEMENT IN

LOW BACK PAIN

PREPARED BY

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COP, SV

UNDER GUIDANCE OF
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Version and prepared/ updated on
Version 2.0
12-10-21

INTRODUCTION

Low back pain (LBP), is a common musculoskeletal problem, affecting 75–85% of adults in their lifetime. Patients with low-back pain (LBP) are one of the most common group of patients that visit in physiotherapy clinics. Patients of low back pain are heterogeneous in terms of their clinical Presentation (pain sometimes radiating to the buttock and/or legs with variation in symptoms, signs, duration, severity and disability). All physiotherapists are interested in the outcome of treatment and how the patients are best helped and appropriate management has the potential to reduce the number of people with disabling long-term back pain, and so reduce the personal, social and economic impact of low back pain.

NEED FOR THE PROTOCOL

• To give the best revised evidence based treatment to the patient.
• To make uniform decision across the concerned specialty.
• Protocol based care can help to reduce unnecessary variations in treatment and outcomes.

REVIEW OF LITERATURE

• A systematic review was done by Middelkoop et al, In 2011 to see the effectiveness of physical and rehabilitation interventions for chronic non-specific low back pain. The objective of the study was to determine the effectiveness of physical and rehabilitation interventions(i.e. exercise therapy, transcutaneous electrical nerve stimulation (TENS), low level laser therapy, education, massage behavioral treatment, traction multidisciplinary treatment, lumbar supports, and heat/cold therapy) for chronic LBP and the study concluded that Multidisciplinary treatment was found to reduce pain intensity and disability in chronic non-specific low back pain.

• B Ahmed et al, in 2011 did a study to see the effects Of Transcutaneous Electrical Nerve Stimulation (Tens) On Patients with Acute Low Back Pain. 58 patients were divided into two groups (A and B). Patients of Group A (30 patients) were treated with TENS, Nonsteroidal anti-inflammatory drugs (NSAIDs) and activities of daily living (ADLs) instruction. Patients of group B (28 patients) were treated with NSAIDs and ADLs instructions and the study concluded that TENS in patients with acute low back pain is beneficial.

• Study 'Spine stabilisation exercises in the treatment of chronic low back pain: a good clinical outcome is not associated with improved abdominal muscle function' done by Mannion FA in 2012 showed that Spine stabilisation exercises are useful in case of chronic low back pain. 32 patients with chronic low back pain were taken and the voluntary activation of transversus abdominis , obliquus internus and obliquus externus during "abdominal-hollowing" and activation of these muscles during movement were measured using M-mode ultrasound with tissue Doppler imaging and author found Spine stabilisation exercises are effective in chronic LBP.

• A Systematic Review done by Haladay ED et al, in 2013 to see effect of Specific Spinal Stabilization Exercise for chronic low back pain, contained randomized controlled trials examining a specific stabilization exercise program for the treatment of chronic LBP. The study indicated benefit of specific stabilization exercise programs for patients with nonspecific chronic LBP.

• Study was done by Moon JH in 2013 to see the effect of Lumbar Stabilization and Dynamic Lumbar Strengthening Exercises in Patients With Chronic Low Back Pain, on the maximal isometric strength of the lumbar extensors, pain severity and functional disability. Patients having low back pain since 3 months were taken Exercises were performed for 1 hour, twice weekly, for 8 weeks and the study concluded that lumbar stabilization exercises are useful to reduce low back pain.

- Ebadi S et al., (2014) in the Cochrane review determined the effectiveness of therapeutic ultrasound in the management of chronic non-specific LBP. Evidence from comparisons between other treatments and therapeutic ultrasound for chronic LBP were indeterminate and generally of low quality. Since there are few high quality randomised trials and the available trials are very small, future large trials with valid methodology are likely to have an important impact on our confidence in the estimate of effect and may change the estimate.

- Olawale et al., (2014) determine the efficacy of interferential therapy and exercise therapy in the treatment of LBP. Sixty-five subjects diagnosed with low back pain participated in the study.

The results of this study showed that interferential therapy combined with exercise therapy could help to reduce pain intensity and increase spinal range of motion in patients with low back pain.

- Kim D et al., (2015) investigated the effect of an exercise program for posture correction on musculoskeletal pain. [Subjects] Between September 2, 2013 and November 3, 2013, an exercise program was performed in 88 students from S University in K city. The exercise program for posture correction was performed for 20 minutes per session, 3 times a week for 8 weeks. Pain levels were measured using a pain scale, and pain levels before and after the exercise program were compared. The author concluded that shoulder pain, mid back pain, and low back pain were relieved with the exercise program for posture correction. Therefore, the findings of this study can be used to improve the work efficiency of students as well as people engaged in sedentary work.

- Slater J (2016) in their systematic review evaluated the published literature that has investigated exercise as a primary intervention for Lumbar Spinal Stenosis. The author concluded that Exercise appeared to be an efficacious intervention for pain, disability, analgesic intake, depression, anger, and mood disturbance among patients with LSS. Further research is needed to determine which type of exercise is the most effective in managing symptoms associated with lumbar spinal stenosis.

- According to Sharma J et al., (2018) there are many researches being done on the effects of core strengthening exercises and McKenzie extension exercise on low back pain separately. The author wanted to compare both of them to derive a better and effective exercise plan for low back pain of lumbar prolapsed intervertebral disc condition. The study concluded that McKenzie extension exercise protocol was more effective in comparison to core strengthening in low back pain with PIVD condition.

- Schneider MJ et. al., (2019) explored the comparative clinical effectiveness of 3 nonsurgical interventions for patients with LSS. Three-arm randomized clinical trial of 3 years' duration (November 2013 to June 2016). Patients older than 60 years with LSS were recruited from the general public. The results of this study provided new evidence about the comparative effectiveness of tailored medical care, group exercise, and a combination of chiropractic/physical therapy as viable nonsurgical and nonopioid treatment options for patients with LSS. Patients, health care professionals, and other stakeholders would benefit from the dissemination of these new research findings.

- Elbayomy, Mahmoud. (2019). In their systematic review and meta-analysis aimed to determine the efficacy, effectiveness of various core strengthening programs for adult patients with chronic nonspecific low back pain. In patients with chronic low back pain there was no clinically important difference between core strengthening and manual therapy but core strengthening exercises seem to be slightly superior to several other treatments.

- Aoyagi K et al., (2019) in their systematic review is to explore current knowledge of the effects of spinal mobilization, without any other combined manual therapy treatment technique on LBP and provide scope for the future research implications to enhance clinical management of LBP. Spinal mobilization is effective for patients with LBP, primarily improving pain, function and ROM. Future studies should fill in these gaps by comparing the effects of spinal mobilization by itself to placebo and other types of intervention as well as test its long-term effects in patients with LBP for a better understanding of one of the most common manual therapy techniques in clinical practice.

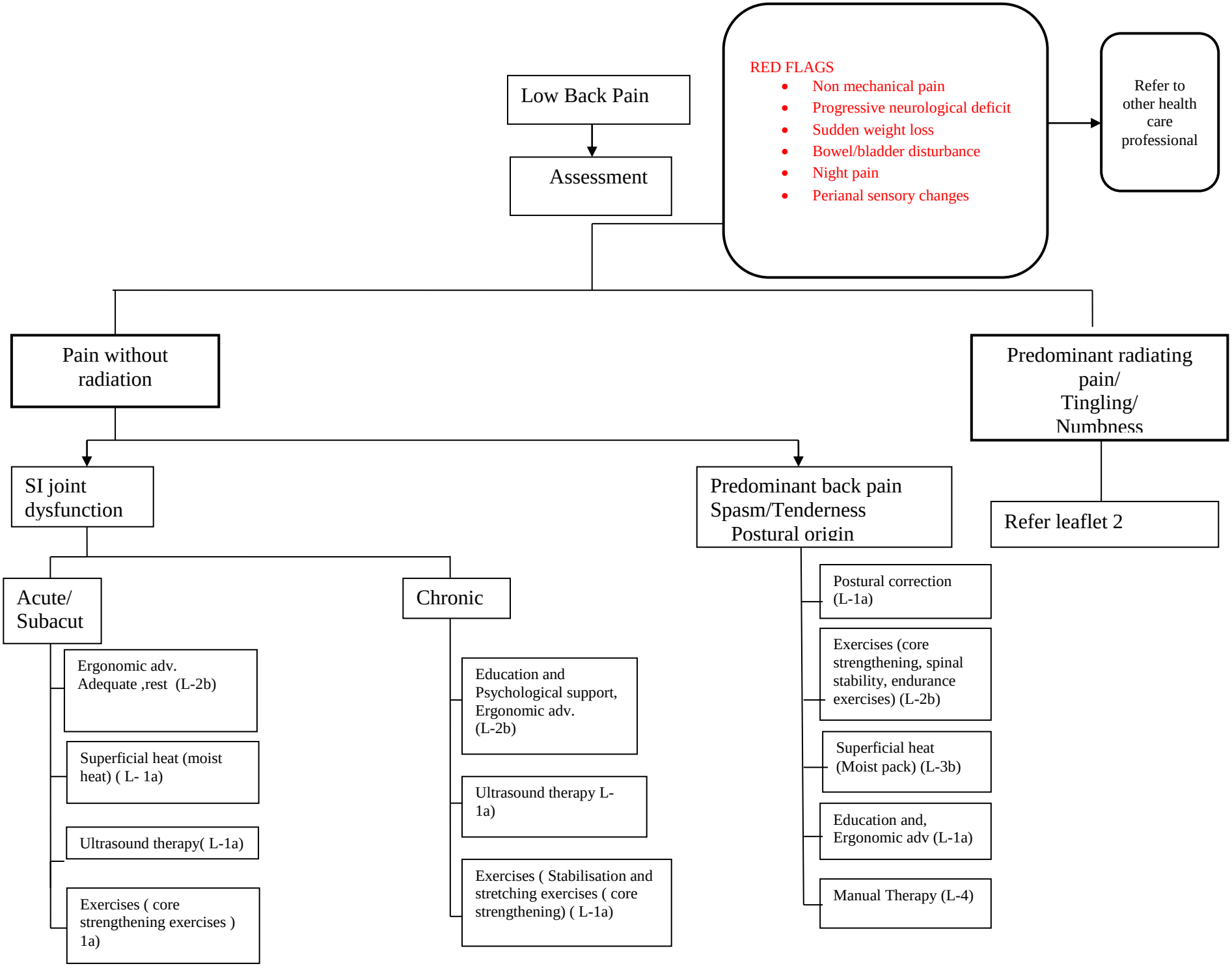
- Karlsson et al. (2020) in their systematic review of systematic reviews aimed to assess the overall certainty of evidence for the effects of exercise therapy, compared with other interventions, on pain, disability, recurrence, and adverse effects in adult patients with acute low back pain. The findings suggest very low to moderate certainty of evidence that exercise therapy may result in little or no important difference in pain or disability, compared with other interventions, in adult patients with acute low back pain.

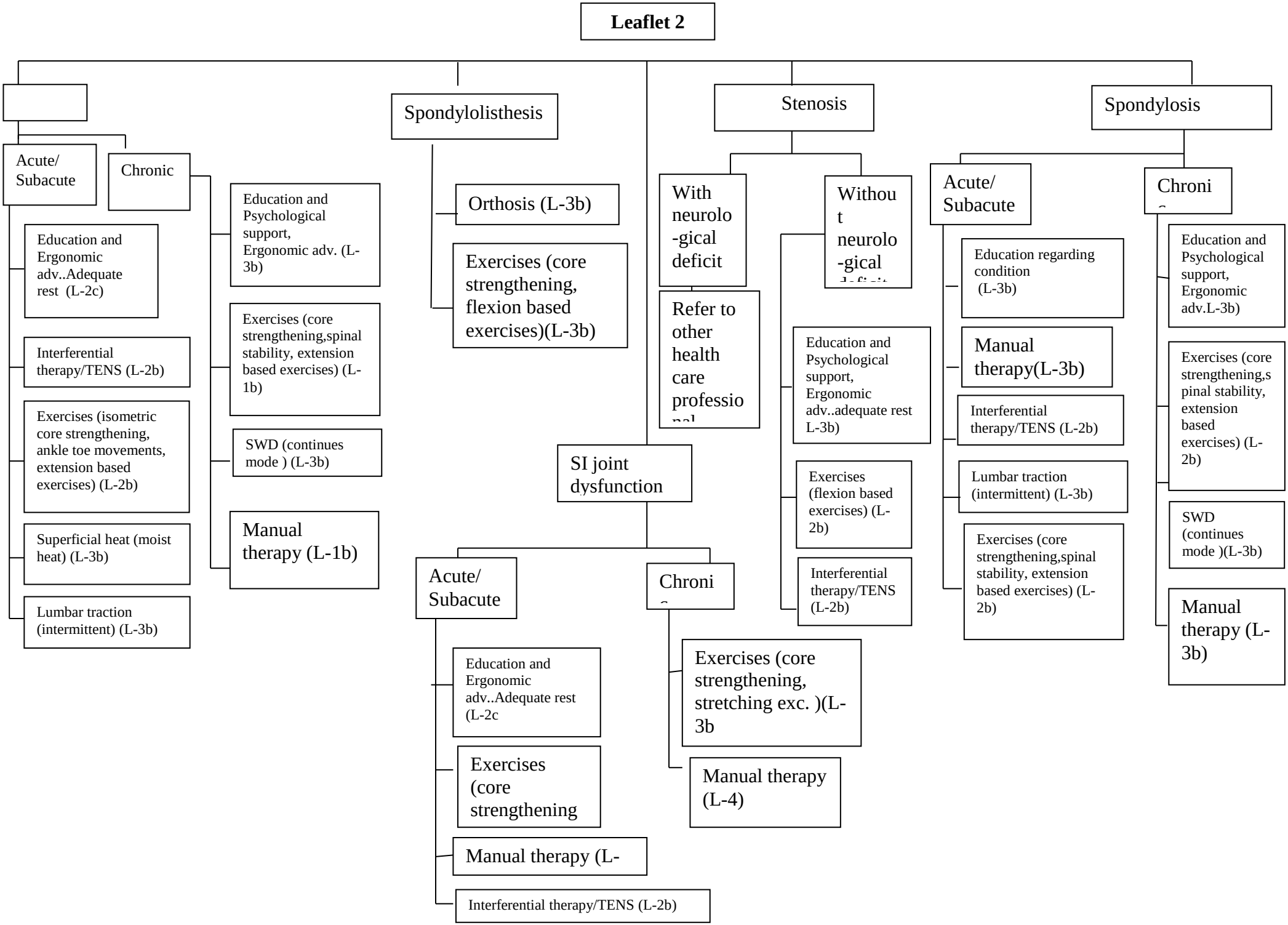
- Haile et al (2021) in their review evaluated the up-to-date confirmation in the efficacy of ultrasound therapy on the treatment of non-specific chronic low back pain. A comprehensive search of four computerized electronic databases was performed to identify the effectiveness of ultrasound therapy on the management of chronic non-specific low back pain. In this review, the effect of UST in five articles was statically significant in reducing the visual analog scale ($p<0.05$) score. So this systematic review found ultrasound therapy could be an alternative treatment to reduce the intensity of pain in subjects with non-specific chronic LBP.

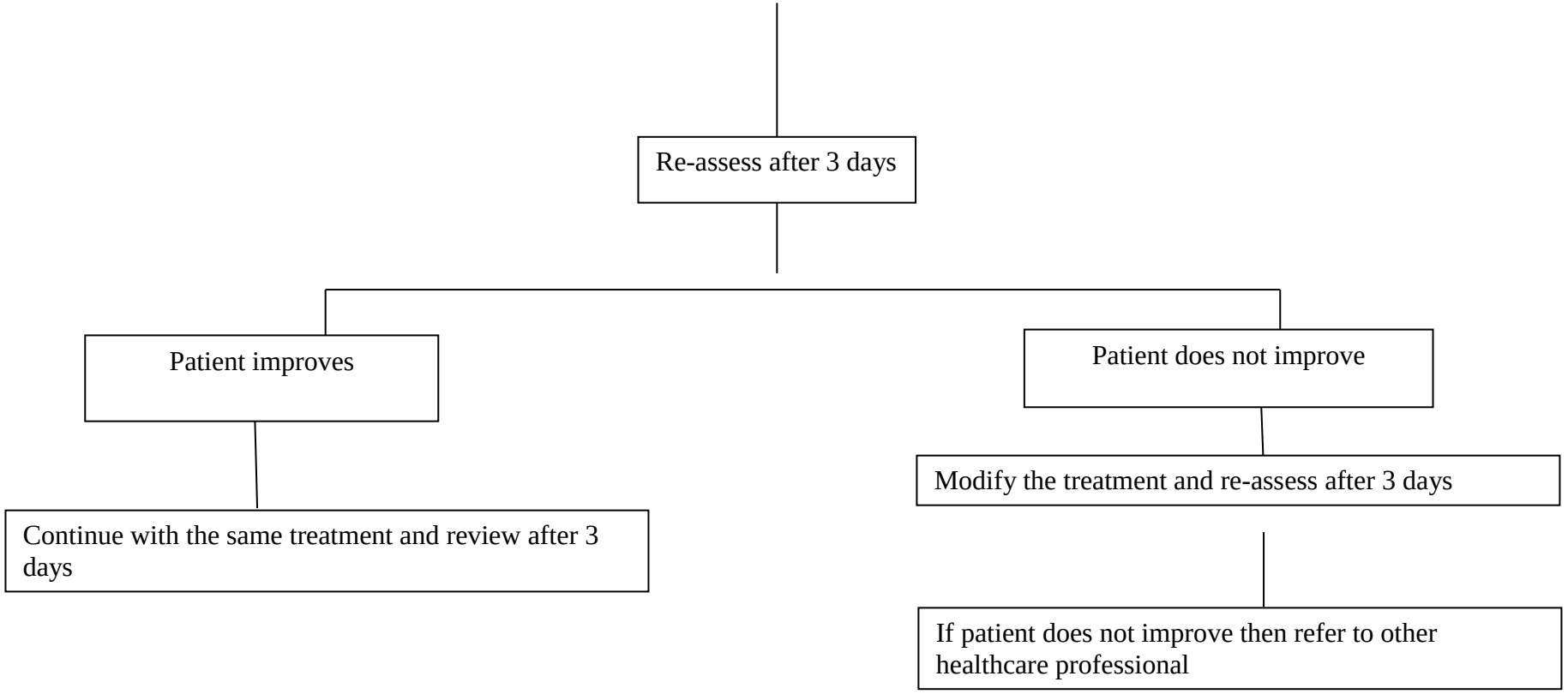
- Javadov A et al., (2021) in a comparative, prospective, single-blind, randomized, controlled trial assessed the effects of manual therapy for sacroiliac joints, sacroiliac joints home-based exercises, and home-based lumbar exercises. 69 women diagnosed with sacroiliac joint dysfunction syndrome through specific sacroiliac joints clinical diagnostic tests were randomized into 3 groups. Manual therapy is effective in the long term in sacroiliac joint dysfunction syndrome. Adding specific exercises for sacroiliac joints to the sacroiliac joints manipulation treatment further increases this effectiveness.

- Singh et al., (2021) in their meta-analysis and systematic review analyzed the efficacy of physiotherapy interventions in management of lumbar prolapsed intervertebral disc (PIVD). Randomized controlled trials (RCTs) were searched in PubMed and Cochrane Library using related keywords and advanced option, from commencement to January 2019. Quality of researches was assessed by PEDro scoring. The author concluded that Physiotherapy interventions are effective in management of lumbar PIVD. Physiological and biomechanical factors such as correction of the displaced disc, opening of the foramina, increase in intervertebral space, and reduction in herniation size with negative intradiscal pressure may be possible mechanisms.

- de Zoete A et al., (2021) assessed the effect of Spinal Manipulative Therapy on pain and function for chronic LBP in a IPD meta-analysis. Randomized controlled trials (RCT) examining the effect of SMT in adults with chronic LBP compared to any comparator. Sufficient evidence suggest that SMT provides similar outcomes to recommended interventions, for pain relief and improvement of functional status. SMT would appear to be a good option for the treatment of chronic LBP.


Low Back Pain
Assessment
RED FLAGS
Non mechanical pain
Progressive neurological deficit
Sudden weight loss
Bowel/bladder disturbance
Night pain
Perianal sensory changes
Refer to other health care professional
Pain without radiation
Predominant radiating pain/ Tingling/ Numbness
SI joint dysfunction
Predominant back pain Spasm/Tenderness Postural origin
Refer leaflet 2
Acute/ Subacut
Chronic
Ergonomic adv. Adequate ,rest (L-2b)
Superficial heat (moist heat) (L- 1a)
Ultrasound therapy(L-1a)
Exercises (core strengthening exercises) 1a)
Education and Psychological support, Ergonomic adv. (L-2b)
Ultrasound therapy L-1a)
Exercises (Stabilisation and stretching exercises (core strengthening) (L-1a)
Postural correction (L-1a)
Exercises (core strengthening, spinal stability, endurance exercises) (L-2b)
Superficial heat (Moist pack) (L-3b)
Education and, Ergonomic adv (L-1a)
Manual Therapy (L-4)


Leaflet 2
Acute/ Subacute
Chronic
Education and Ergonomic adv..Adequate rest (L-2c)
Interferential therapy/TENS (L-2b)
Exercises (isometric core strengthening, ankle toe movements, extension based exercises) (L-2b)
Superficial heat (moist heat) (L-3b)
Lumbar traction (intermittent) (L-3b)
Education and Psychological support, Ergonomic adv. (L-3b)
Exercises (core strengthening,spinal stability, extension based exercises) (L-1b)
SWD (continues mode) (L-3b)
Manual therapy (L-1b)
Spondylolisthesis
Orthosis (L-3b)
Exercises (core strengthening, flexion based exercises)(L-3b)
SI joint dysfunction
Acute/ Subacute
Education and Ergonomic adv..Adequate rest (L-2c
Exercises (core strengthening
Manual therapy (L-
Interferential therapy/TENS (L-2b)
Chroni
Exercises (core strengthening, stretching exc.)(L-3b
Manual therapy (L-4)
Stenosis
With neurolo-gical deficit
Refer to other health care professio
Withou t neurolo-gical
Education and Psychological support, Ergonomic adv..adequate rest L-3b)
Exercises (flexion based exercises) (L-2b)
Interferential therapy/TENS (L-2b)
Spondylosis
Acute/ Subacute
Education regarding condition (L-3b)
Manual therapy(L-3b)
Interferential therapy/TENS (L-2b)
Lumbar traction (intermittent) (L-3b)
Exercises (core strengthening,spinal stability, extension based exercises) (L-2b)
Chroni
Education and Psychological support, Ergonomic adv.L-3b)
Exercises (core strengthening,spinal stability, extension based exercises) (L-2b)
SWD (continues mode)(L-3b)
Manual therapy (L-3b)


Re-assess after 3 days
Patient improves
Patient does not improve
Continue with the same treatment and review after 3 days
Modify the treatment and re-assess after 3 days
If patient does not improve then refer to other healthcare professional

Summary:

Treatment for Low Back Pain includes patient's education regarding the self-limiting nature of the condition, short wave diathermy, moist pack, ultrasound, mobilization and exercises. Home program also forms an essential component of the rehabilitation.

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EVIDENCE BASED PROTOCOL

PHYSIOTHERAPY MANAGEMENT OF ADHESIVE CAPSULITIS

Developed by:

College of Physiotherapy
Sumandeep Vidyapeeth Deemed to be University
Piparia, Vadodara

Preface by Head of Department

As Dean of College of Physiotherapy, it gives me pleasure to introduce the Protocol of **Physiotherapy management of Adhesive Capsulitis.** These guidelines have been developed keeping the UG students clinical teaching in mind. These have been developed by the team of subject experts, who have based these keeping in mind the conditions commonly referred to Physiotherapy department.

Description of condition Adhesive Capsulitis; Clinicians (Physiotherapists) should assess for impairments in the structures surrounding the shoulder complex when a patient presents with shoulder pain and mobility deficits (adhesive capsulitis). The loss of passive motion in multiple planes, particularly external rotation with the arm at the side and in varying degrees of shoulder abduction, is a significant finding that can be used to guide treatment planning. (Recommendation based on theoretical/foundational evidence.)

Clinicians should utilize patient education that (1) describes the natural course of the disease, (2) promotes activity modification to encourage functional, pain-free ROM, and (3) match the intensity of stretching to the patient's current level of irritability. (Recommendation based on moderate evidence.)

Clinicians may utilize short-wave diathermy, ultrasound, or electrical currents combined with joint mobilization procedures, mobility and stretching exercises to reduce pain and improve shoulder ROM in patients with adhesive capsulitis. (Recommendation based on weak evidence.)

As a Dean of the College, I acknowledge the Prof. G Palani Kumar for his contributions in critical review of this and finalizing the protocol. The whole team with each member of the said subject team sat late in the evening and within their capacity contributed in reviewing literature with level of evidences and the finalized protocol.

STATEMENT OF INTENT

These guidelines are not intended to serve as a standard of Physiotherapy care. Standards of care are subject to change as scientific knowledge and technology advance and new patterns of care evolve. The ultimate judgment regarding a particular clinical procedure or treatment plan must be made in light of the clinical presentation. However, any deviation from these should be recorded and appropriate evaluation carried out.

I acknowledge Prof. G Palani Kumar, Dean of the College, for his contributions in critical review of this and finalizing the protocol. The whole team with each member of the said subject team sat late in the evening and within their capacity contributed in reviewing literature with level of evidences and the finalized protocol.

We are also grateful and acknowledge the immense help received from the authors / editors / publishers of all those articles, journals and books from where the literature for this protocol has been reviewed and used. We are grateful to the support provided by the University EBES team and also very much grateful to the patients.

EVIDENCE BASED PROTOCOL OF PHYSIOTHERAPY MANAGEMENT OF ADHESIVE CAPSULITIS

PREPARED BY

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12-10-21

INTRODUCTION

Adhesive capsulitis (frozen shoulder) is an insidious painful condition with gradual restriction of all planes of movement in the shoulder. It is the main cause of shoulder pain and dysfunction in middle aged and elderly populations. The three stages of the disease as described by Reeves are: Stage I is mainly characterised by pain usually lasting 2–9 months, Stage II (frozen stage); pain gradually subsides but stiffness is marked lasting 4–12 months, Stage III (thawing phase); pain resolves and improvement in range of motion (ROM) appears.[1]Although adhesive capsulitis is often considered to be self- limiting, full resolution of symptoms does not always occur.

NEED FOR PROTOCOL:

1. To give the best evidence based treatment to the patient.
2. To make uniform decision across the concerned specialty.
3. Protocol based care can help to reduce unnecessary variations in treatment and outcomes.

REVIEW OF LITERATURE

- **Effectiveness of manual therapy in adhesive capsulitis**

  In this Cochrane review, interventions included mobilisation, manipulation and supervised or home exercise and were compared to glucocorticoid injections. The authors concluded that a combination of manual therapy and exercise may not be as effective as glucocorticoid injection in the short-term. There was no clarity on whether a combination of manual therapy, exercise and electrotherapy is an effective adjunct to glucocorticoid injection or oral NSAID.

- **Effectiveness of electro modalities in adhesive capsulitis**

  The Cochrane review focused on whether electrotherapy modalities are effective compared to placebo or no treatment, or if they are an effective adjunct to manual therapy or exercise (or both). LLLT for a short duration may be more effective than placebo in terms of global treatment success at six days. Based upon moderate quality evidence from one trial, LLLT plus exercise for eight weeks may be more effective than exercise alone in terms of pain up to four weeks, and function up to four months. It is unclear whether PEMF is more or less effective than placebo, or whether other electrotherapy modalities are an effective adjunct to exercise.

- **Effectiveness of Physical therapy treatment in adhesive capsulitis:**

  A Salam et al,[11] studied 'Physical therapy treatment for adhesive capsulitis: clinical evidence and clinical reasoning to optimally guide clinical practice'. A systematic literature search was conducted for reviews and trials describing physical therapy treatment for adhesive capsulitis. Strong evidence exists to support the use of education, steroid injection, mobilisations, stretching, supervised exercise, home exercise, acupuncture, heat therapy, transcutaneous electrical nerve stimulation, non-steroidal anti-inflammatory drugs and interferential electrotherapy.

PHYSIOTHERAPY MANAGEMENT OF ADHESIVE CAPSULITIS

[ASSESSMENT AND EDUCATION]

Appropriate for physical therapy evaluation and intervention

Versus

Not appropriate for physical therapy evaluation and intervention

Consultation with appropriate healthcare provider

RED FLAGS:
FEVER
SEVERE NIGHT PAIN
SEVERE UNREMITTING PAIN
REFERRED PAIN(CARDIAC)

High Irritability
Characterized by:
- Reports high levels of pain (≥7/10)
- Consistent night or resting pain
- High levels of reported disability on standardized self-report outcome tools
- Pain occurs before end ranges of active or passive movements
- Active ROM is significantly less than passive ROM due to pain

Moderate Irritability
Characterized by:
- Reports moderate levels of pain (4-6/10)
- Intermittent night or resting pain
- Moderate levels of reported disability on standardized self-report outcome tools
- Pain occurs at end ranges of active or passive movements
- Active ROM similar to passive ROM

Low Irritability
Characterized by:
- Reports minimal levels of pain (≤3/10)
- No night or resting pain
- Minimal levels of reported disability on standardized self-report outcome tools
- Pain occurs with overpressures into end ranges of passive movements
- Active ROM same as passive ROM

Intervention strategies for shoulder pain and mobility deficits

High Irritability

Modalities:
- Heat [SWD/Moist pack] (Level 2b)
- TENS (Level 2b)
  - US (Level 2b)
  - LLLT (level 2b)
  - ECSWT (level 2a)
  - CPM (level 1b)

Self-care/home management training:
- Patient education on positions of comfort and activity modifications to limit tissue inflammation and pain (Level 1a)

Manual therapy:
- Low-intensity joint mobilization [Grade I, II](Level 1b)

Mobility exercises:
- Pain-free passive ROM exercises
- Pain-free active assisted ROM exercises

Moderate Irritability

Modalities:
- Heat [SWD/Moist pack] (Level 2b)
- TENS (Level 2b)
  - US (Level 2b)
  - LLLT (level 2b)
  - ECSWT (level 2a)

Self-care/home management training:
- Patient education on progressing activities to gain motion and function without producing tissue inflammation and pain. (Level 1a)

Manual therapy:
- Moderate-intensity joint mobilization [GradeII, III](Level 1b)

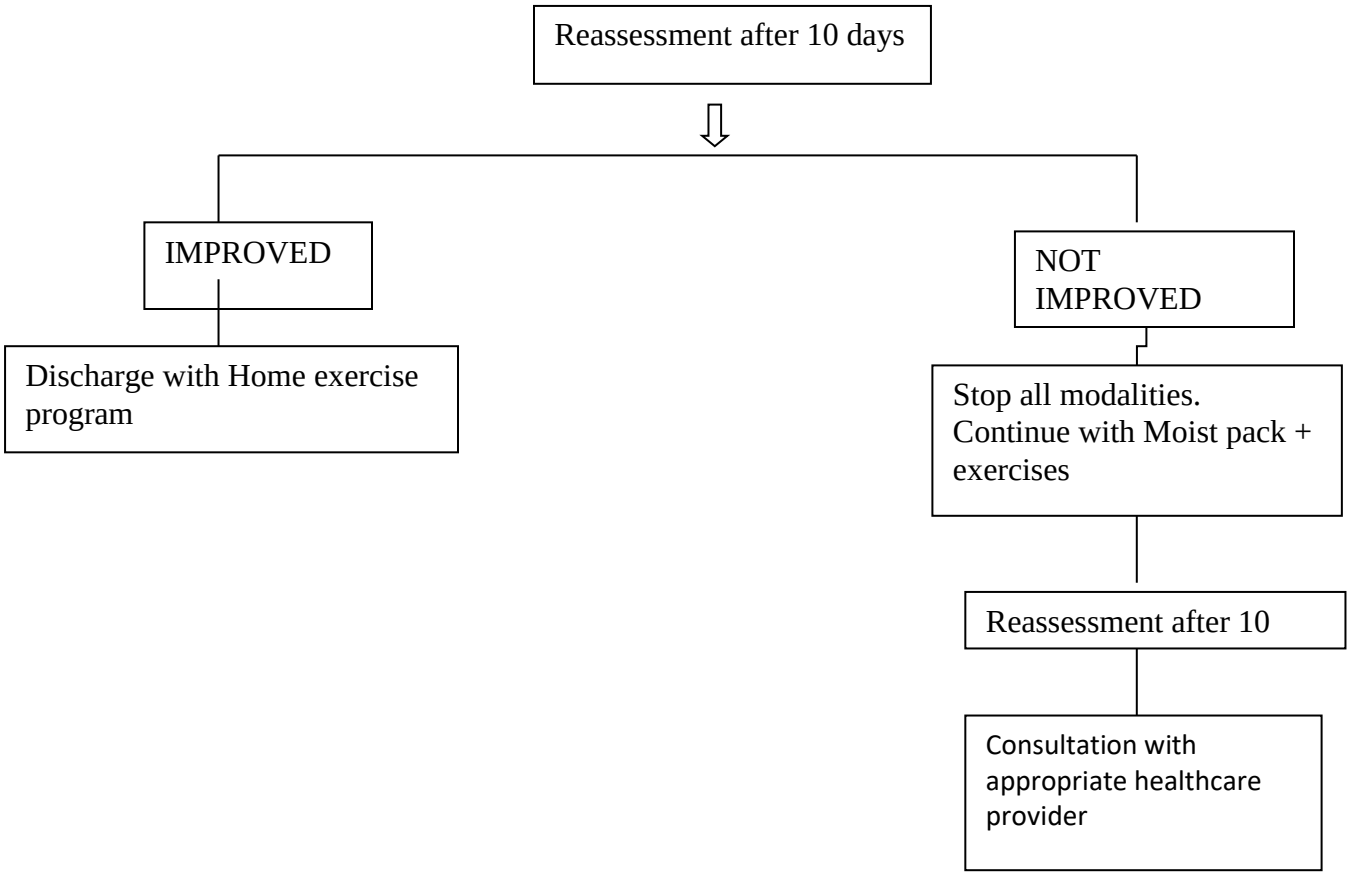
Stretching exercises: (Level 1a)
- Gentle to moderate stretching exercises, progressing the intensity and duration of the stretches into tissue resistance without producing posttreatment tissue inflammation and associated pain

Low Irritability

Self-care/home management training:
- Patient education on progression to performing high-demand functional and/or recreational activities. (Level 1a)

Manual therapy:
- End-range joint mobilization procedures, high amplitude and long duration of procedures into tissue resistance [GradeIII, IV] (Level 1b)

Capsular Stretching exercises: (Level 1a)
- Stretching exercises, progressing the duration of the stretches into tissue resistance without producing posttreatment tissue inflammation and associated pain


Reassessment after 10 days
IMPROVED
NOT IMPROVED
Discharge with Home exercise program
Stop all modalities.
Continue with Moist pack + exercises
Reassessment after 10
Consultation with appropriate healthcare provider

Protocol based on:

Shoulder Pain and Mobility Deficits: Adhesive Capsulitis. Clinical Practice Guidelines Linked to the International Classification of Functioning, Disability, and Health From the Orthopaedic Section of the American Physical Therapy Association. J Orthop Sports Phys Ther 2013;43(5):A1-A31. doi:10.2519/jospt.2013.0302

SUMMARY

Treatment for frozen shoulder mainly includes patient's education regarding the self-limiting nature of the condition, short wave diathermy, moist pack, ultrasound, mobilization, exercises and capsular stretching. A home program also forms an essential component of the rehabilitation.

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EVIDENCE BASED PROTOCOL

PHYSIOTHERAPY MANAGEMENT OF LATERAL EPICONDYLITIS

Developed by:

College of Physiotherapy
Sumandeep Vidyapeeth Deemed to be University
Piparia, Vadodara

PREFACE BY HEAD OF DEPARTMENT:

As a Dean of College of Physiotherapy, it gives me pleasure to introduce the Protocol of **Physiotherapy Management in Lateral Epicondylitis.** These guidelines have been developed keeping the UG students clinical teaching in mind. These have been developed by the team of subject experts, who have based these, keeping in mind the conditions commonly referred to Physiotherapy department.

DESCRIPTION OF CONDITION:

Lateral epicondylitis also commonly referred to as tennis elbow. Affecting the extensor tendons on the lateral aspect of the forearm, this condition is most commonly seen in middle-aged patients with a peak incidence between 40 and 50 years. The most commonly implicated of the extensor tendons is the extensor carpi radialis brevis (ECRB). Mechanism of injury includes overload with increased tension on soft tissue around radial head, inadequate forearm endurance, extreme torque or repetition, sudden increased activity of wrist extensors on an unconditioned forearm, improper equipment and surface, lack of flexibility, excessive forearm pronation e.g. back hand stroke in Tennis. On clinical examination there is tenderness on palpation of the tendinous insertion at the lateral epicondyle. The main complaints of patients with lateral epicondylitis are pain and decreased function both of which may affect daily activities.

Current treatment option in treating lateral epicondylitis consist of physiotherapy. Physiotherapy and rehabilitation are core features of recovery in chronic lateral epicondylitis. A wide array of physiotherapy techniques, electrotherapeutic and non- electrotherapeutic modalities have been recommended for the management of lateral epicondylitis.

STATEMENT OF INTENT

These guidelines are not intended to serve as a standard of Physiotherapy care. Standards of care are subject to change as scientific knowledge and technology advance and new patterns of care evolve. The ultimate judgment regarding a particular clinical procedure or treatment plan must be made in light of the clinical presentation. However, any deviation from these should be recorded and appropriate evaluation carried out.

I acknowledge Prof. G Palani Kumar, Dean of the College, for his contributions in critical review of this and finalizing the protocol. The whole team with each member of the said subject team sat late in the evening and within their capacity contributed in reviewing literature with level of evidences and the finalized protocol.

We are also grateful and acknowledge the immense help received from the authors / editors / publishers of all those articles, journals and books from where the literature for this protocol has been reviewed and used. We are grateful to the support provided by the University EBES team and also very much grateful to the support patients.

EVIDENCE BASED PROTOCOL OF PHYSIOTHERAPY MANAGEMENT IN LATERAL EPICONDYLITIS

PREPARED BY

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Version and prepared/ updated on
Version 2.0
12-10-2021

INTRODUCTION:

Lateral epicondylitis is a condition where the outer part of elbow becomes painful and tender, usually as a result of specific strain or overuse.[1] It affects tendons at the wrist extensor muscle origin, which leads to functional loss of the affected limb.[2]

This injury is a major challenge, as it is difficult to treat, prone to reoccurrence and may last for several weeks or months, with an average duration of a typical episode which has been reported to be between 6 months to 2 years. [3]

Physiotherapy is usually recommended for the management of lateral epicondylitis. A plethora of physiotherapy techniques, electrotherapeutic and non-electrotherapeutic modalities has been recommended for the management of lateral epicondylitis. [4]

NEED FOR PROTOCOL:

1. To give the best evidence based treatment to the patient.
2. To make uniform decision across the concerned specialty.
3. Protocol based care can help to reduce unnecessary variations in treatment and outcomes.

Review of literature

In a comparative study by Parmar et al (2020), they aimed to compare effect of eccentric exercise versus concentric exercise on pain, grip strength and function in the patients with lateral epicondylitis. With multiple comparison between the groups, they concluded that eccentric exercise and concentric exercise both are effective in lateral epicondylitis but eccentric exercise were more effective in reducing pain, improving grip strength and function. (level of evidence IIb)

A study by Shaheen et al (2019) aimed to investigate the effect of kinesio tape and therapeutic ultrasound on pain and handgrip associated with tennis elbow. Their result showed improvement in both the groups however, the kinesio tape patients were better than therapeutic ultrasound. (level of evidence IIb)

A prospective randomized control trial conducted by Nowotny et al (2018) aimed to evaluate a new dynamic wrist orthosis in the treatment of lateral epicondylitis compared to physiotherapy alone. They observed that the elbow orthosis appears to accelerate the healing process with respect to the PRTEE and Pain on the VAS at 12 weeks follow up. Although a significant improvement of symptoms was achieved after 12 months in both groups. (level of evidence Ia)

A systematic review by Dingemanse at el (2014) presented an evidence based overview of the effectiveness of electrophysical modality treatment for both medial and lateral epicondylitis. They concluded that Ultrasound plus friction massage showed moderate evidence of effectiveness versus LASER Therapy on short term follow up. (level of evidence IIa)

The algorithm is based upon guidelines and clinical statement as provided by:

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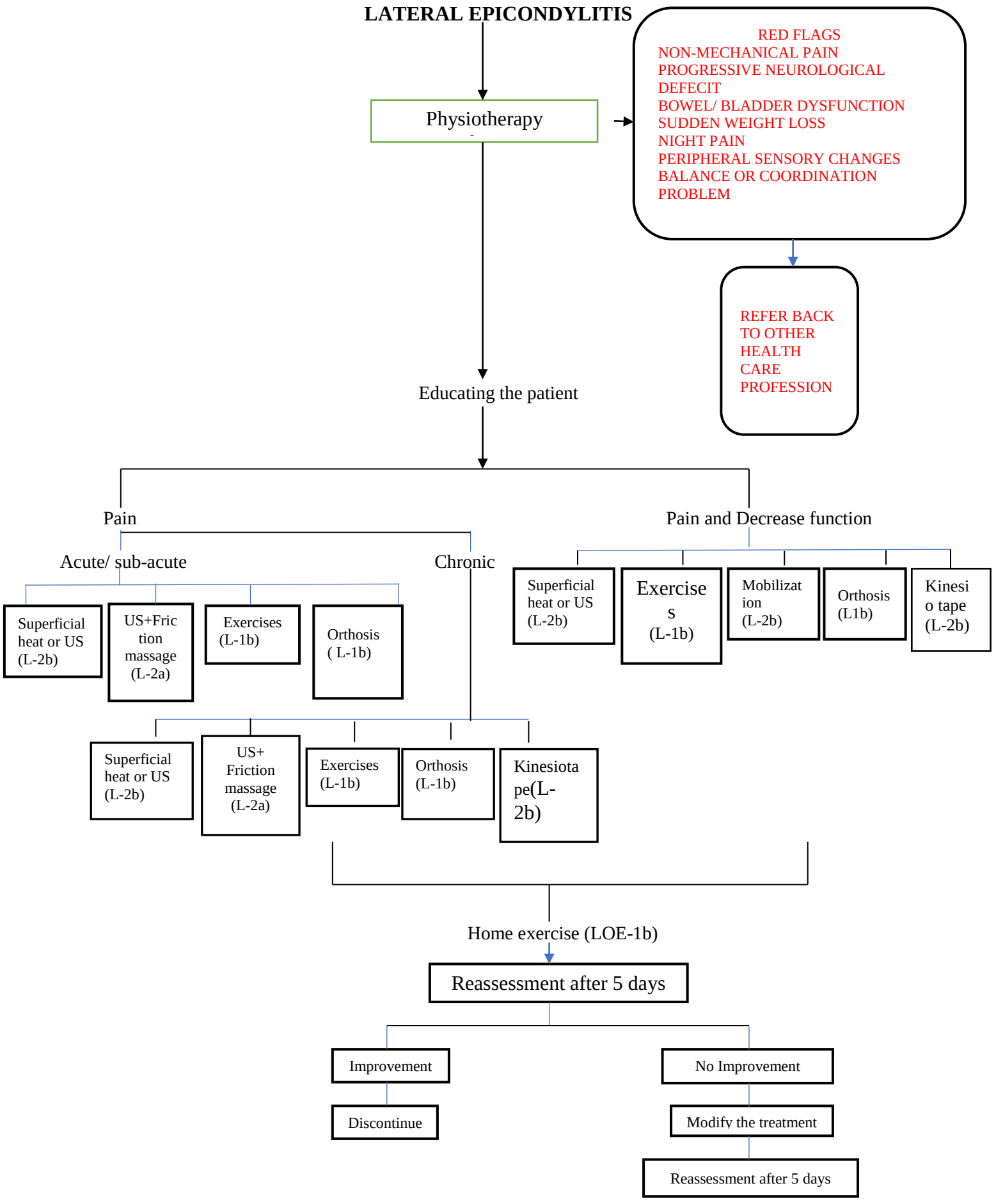
LATERAL EPICONDYLITIS
Physiotherapy
RED FLAGS
NON-MECHANICAL PAIN
PROGRESSIVE NEUROLOGICAL DEFECIT
BOWEL/ BLADDER DYSFUNCTION
SUDDEN WEIGHT LOSS
NIGHT PAIN
PERIPHERAL SENSORY CHANGES
BALANCE OR COORDINATION PROBLEM
REFER BACK TO OTHER HEALTH CARE PROFESSION
Educating the patient
Pain
Pain and Decrease function
Acute/ sub-acute
Chronic
Superficial heat or US (L-2b)
US+Friction massage (L-2a)
Exercises (L-1b)
Orthosis (L-1b)
Superficial heat or US (L-2b)
Exercises (L-1b)
Mobilization (L-2b)
Orthosis (L1b)
Kinesio tape (L-2b)
Superficial heat or US (L-2b)
US+ Friction massage (L-2a)
Exercises (L-1b)
Orthosis (L-1b)
Kinesiotape(L-2b)
Home exercise (LOE-1b)
Reassessment after 5 days
Improvement
Discontinue
No Improvement
Modify the treatment
Reassessment after 5 days

Summary:

Physiotherapy plays an important role in treating Lateral epicondylitis. Treatment for the lateral epicondylitis is multimodal and includes patient's education about the condition, massage, Moist heat, Therapeutic ultrasound, Orthosis, Kinesio tape and exercises.

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EVIDENCE BASED PROTOCOL

PHYSIOTHERAPY MANAGEMENT OF OSTEOARTHRITIS OF KNEE

Developed by:

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Piparia, Vadodara

PREFACE BY HEAD OF DEPARTMENT:

As a Dean of College of Physiotherapy, it gives me pleasure to introduce the Protocol of **Physiotherapy Management in Osteoarthritis of Knee.** These guidelines have been developed keeping the UG students clinical teaching in mind. These have been developed by the team of subject experts, who have based these, keeping in mind the conditions commonly referred to Physiotherapy department.

DESCRIPTION OF CONDITION:

Osteoarthritis is the most common type of arthritis and is a major cause of disability. Knee is among the most frequently affected joints. Knee pain in osteoarthritis is associated with a poorer functional prognosis, fear of movement and decreased mobility. It predisposes to higher levels of disability, with a significant negative impact on various physical and psychological components encountered in daily life. Osteoarthritis causes pain, stiffness, swelling, joint instability and muscle weakness, all of which can lead to impaired physical function and reduced quality of life. Non-pharmacological interventions to improve symptoms are advocated and there is growing recognition that physiotherapy treatments can play an important role in the multidisciplinary management of patients with knee osteoarthritis.

STATEMENT OF INTENT

These guidelines are not intended to serve as a standard of Physiotherapy care. Standards of care are subject to change as scientific knowledge and technology advance and new patterns of care evolve. The ultimate judgment regarding a particular clinical procedure or treatment plan must be made in light of the clinical presentation. However, any deviation from these should be recorded and appropriate evaluation carried out.

I acknowledge Prof. G Palani Kumar, Dean of the College, for his contributions in critical review of this and finalizing the protocol. The whole team with each member of the said subject team sat late in the evening and within their capacity contributed in reviewing literature with level of evidences and the finalized protocol.

We are also grateful and acknowledge the immense help received from the authors / editors / publishers of all those articles, journals and books from where the literature for this protocol has been reviewed and used. We are grateful to the support provided by the University EBES team and also very much grateful to the support patients.

EVIDENCE BASED PROTOCOL OF PHYSIOTHERAPY MANAGEMENT IN OSTEOARTHRITIS OF KNEE

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12-10-21

INTRODUCTION

Knee osteoarthritis is one of the most debilitating conditions associated with pain and functional impairment which negatively affects quality of life. It is characterized by deterioration of the articular cartilage and subchondral bone sclerosis. [(1),(2)]

Clinical observations have revealed that patients suffering from osteoarthritis undergo other complications, including occasional effusion in the joints, tenderness and ache with local inflammation, crepitus, stiffness, and movement limitation.

Due to the rising life expectancy and number of people with obesity, the prevalence of OA is expected to further increase during the next decades, which will in turn lead to an extra demand for OA-related healthcare services. [(3)]

Variety of factors, including demographic, clinical, and biomechanical aspects, have been studied and associated with functional and pain status. In addition, growing evidence suggests that psychological factors such as anxiety, fear, and depression may also relate to physical function in patients with knee osteoarthritis. [(4)]

Exercise therapy alone or with other modalities play an important role in improving symptoms and physical function in Knee. There are several pieces of evidence showing the positive effect of regular exercise therapy on increasing muscle strength and endurance, reducing joint stiffness, enhancing proprioceptive efficiency, improving balance, and the quality of life of the patients. Also, available evidence has shown that physical modalities plus exercise can improve clinical outcomes in Knee osteoarthritis patients. [(5),(6)]

NEED FOR THE PROTOCOL

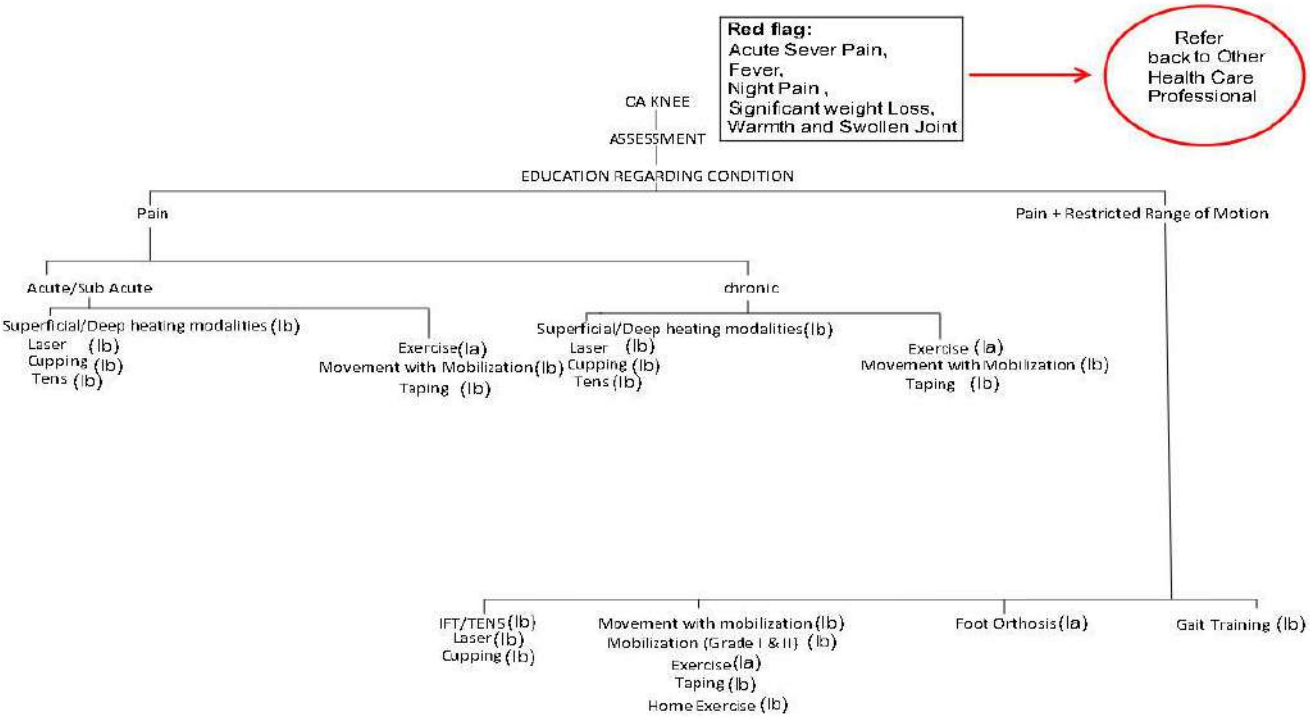
1. To give the best treatment which is evidence based to the patient.
2. To make uniform decision across the concerned specialty.
3. Protocol based care can help to reduce unnecessary variations in treatment and outcomes.

REVIEW OF LITERATURE

- **Effectiveness of Exercise, Manual therapy in Osteoarthritis of Knee Joint:**
  In this study to compare the cost-effectiveness of 4 different combinations of exercise, manual therapy, and booster sessions for individuals with knee OA.Participants were randomized into 4 treatment groups: exercise only (EX), exercise plus booster sessions (EX+B), exercise plus manual therapy (EX+MT), and exercise plus manual therapy and booster sessions (EX+MT+B).All groups received similar exercise interventions focusing on strength and flexibility of hip and knee musculature. The manual therapy groups additionally received stretching and non-thrust knee joint mobilizations. Hip and ankle treatments were used if clinical examination indicated the presence of impairment in these joints.At each booster session, the physical therapist reviewed the home exercise program with the participant, discussed problems, and made recommendations for progression or modification of the program. Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), were measured at baseline,9 weeks, 1 year, and 2 years. Health care utilization and quality-of-life data were measured at baseline, 1 year, and 2 years. He concluded that spacing exercise-based physical therapy sessions over 12 months using periodic booster sessions was less costly and more effective over 2 years than strategies not containing booster sessions for individuals with knee Osteoarthritis. [(7)]

- **Effectiveness of Mobilization**
  In this study, long-term results between three treatment groups (mobilization with movements [MWMs], passive joint mobilization [PJM], and electrotherapy) to determine which treatment is most effective in patients with knee OA.Seventy-two consecutive patients with bilateral knee OA were randomly assigned to one of three treatment groups: MWMs, PJM, and electrotherapy. All groups performed an exercise program and received 12 sessions. The primary outcome measures of the functional assessment were the Western Ontario and McMaster Universities Osteoarthritis index (WOMAC) and Aggregated Locomotor Function (ALF) test scores. The secondary outcome measures were pain level, measured using a pressure algometer and a visual analogue scale (VAS), range of motion (ROM), measured using a digital goniometer, and muscle strength, evaluated with a handheld dynamometer. Patients were assessed before treatment, after treatment and after 1 year of follow-up. He concluded that Patients receiving the manual physical therapy interventions consisting of either MWM or PJM demonstrated a greater decrease in VAS scores at rest, during functional activities, and during the night compared to those in the electrotherapy group from baseline to after the treatment. This improvement continued at the 1-year follow-up. The MWMs and PJM groups also showed significantly improved WOMAC and ALF scores, knee ROM and quadriceps muscle strength compared to those in the electrotherapy group from baseline to 1-year follow-up. He thus emphasized that in the treatment of patients with knee OA, manual physical therapy consisting of either MWM or PJM provided superior benefit over electrotherapy in terms of pain level, knee ROM, quadriceps muscle strength, and functional level. [(8)]

Algorithm of Physiotherapy Management in Osteoarthritis of Knee



SUMMARY

Treatment for OA knee is multimodal, encompassing patient education, electrotherapy modalities, exercises and orthotic management.

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EVIDENCE BASED PROTOCOL

PHYSIOTHERAPY MANAGEMENT OF NECK PAIN

Developed by:

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Piparia, Vadodara

PREFACE BY HEAD OF DEPARTMENT:

As a Dean of College of Physiotherapy, it gives me pleasure to introduce the Protocol of **Physiotherapy Management in Neck Pain.** These guidelines have been developed keeping the UG students clinical teaching in mind. These have been developed by the team of subject experts, who have based these, keeping in mind the conditions commonly referred to Physiotherapy department.

DESCRIPTION OF CONDITION:

Neck pain is a leading cause of disability worldwide and its burden continues to grow due to its high frequency among working population. Neck pain can be classified as simple "non-specific" neck pain (i.e. sprain/strain) described as pain without specific identifiable etiology and "specific" neck pain with identifiable etiology. Non-specific neck pain has a postural or mechanical basis and affects about two thirds of people at some stage, especially in middle age. Acute neck pain resolves within days or weeks, but may become chronic in about 10% of people. Whiplash injuries follow sudden acceleration-deceleration of the neck, such as in road traffic or sporting accidents. Often neck pain is associated with a radiating pain. The location and pattern of symptoms and pain vary depending on the nerve root level affected. Patient with Cervical Radiculopathy may have complains of neck pain, the most frequent reason for seeking medical assistance is arm pain. Patient usually complains of pain, tingling, numbness & weakness in upper extremity.

Physiotherapy has an important role in the rehabilitation of neck pain by means of stretching and strengthening exercises and by the use of electro therapeutic modalities.

STATEMENT OF INTENT

These guidelines are not intended to serve as a standard of Physiotherapy care. Standards of care are subject to change as scientific knowledge and technology advance and new patterns of care evolve. The ultimate judgment regarding a particular clinical procedure or treatment plan must be made in light of the clinical presentation. However, any deviation from these should be recorded and appropriate evaluation carried out.

I acknowledge Prof. G Palani Kumar, Dean of the College, for his contributions in critical review of this and finalizing the protocol. The whole team with each member of the said subject team sat late in the evening and within their capacity contributed in reviewing literature with level of evidences and the finalized protocol.

We are also grateful and acknowledge the immense help received from the authors / editors / publishers of all those articles, journals and books from where the literature for this protocol has been reviewed and used. We are grateful to the support provided by the University EBES team and also very much grateful to the support patients.

EVIDENCE BASED PROTOCOL OF PHYSIOTHERAPY MANAGEMENT IN NECK PAIN

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Version and prepared/ updated on
Version 2.0
12-10-21

INTRODUCTION

Neck disorders are common, painful and limit function in the general population.[1]

Neck pain is the second largest cause of time off work, after low back pain (LBP). It is one of the most common conditions for referral to a physical therapist. Neck pain may arise due to prolonged neck flexion, weak musculature, trapezitis, cervical spondylosis and trauma etc.

Mechanical neck pain commonly arises insidiously[2]andis common in middle-aged and elderly patients. It causes stiffness with radiation into the shoulders. Neck pain usually accompanies upper extremity radicular symptoms. Abnormal findings of an examination consist of decreased mobility, muscle spasms, and tenderness.[3]

Physical Therapists approach the management of this pathology with a plethora of interventions such as manual therapy (MT), therapeutic exercises, manual/mechanical traction, modalities, massage, and functional training[4]

NEED FOR PROTOCOL:

1. To give the best evidence based treatment to the patient.
2. To make uniform decision across the concerned specialty.
3. Protocol based care can help to reduce unnecessary variations in treatment and outcomes.

Review of literature

In a meta-analysis done by John Albright et al, they studied interventions like massage, thermal therapy (hot or cold packs), electrical stimulation, electromyographic (EMG) biofeedback, transcutaneous electrical nerve stimulation (TENS), therapeutic ultrasound, therapeutic exercises, and combinations of these. Control groups that received active treatments were included. For neck pain, therapeutic exercises were the only intervention with clinically important benefit relative to a control. There was good agreement with this recommendation from practitioners (93%).(level of evidence 1a)

The Philadelphia Panel found good scientific evidence (level I), which showed clinically important benefit on pain and function with supervised, isometric or slow neck movement exercises. It also showed showed no benefit of therapeutic ultrasound on pain relief for chronic neck pain.

A study done by Ahlgren C et al on the effects on physical performance and pain from three dynamic training programs for women with work-related trapezius myalgia, showed that strengthening exercises are most beneficial for reducing neck pain. [L-1b][4]

In a systematic review done by Selaiman A. Noori et.al, they studied ultrasound was effective than placebo ultrasound, and it demonstrated significant pain relief in combination with other treatment modalities in the treatment of low back as well as neck pain. However monotherapeutic ultrasound was not recommended in use for the treatment of chronic neck pain. It is potentially helpful for short term relief only.[5]

A randomized controlled trial was done by Ahmes S.A. Youssef et.al, to find the effectiveness of cervical thoracic orthosis in the treatment of chronic neck pain. 24 patients were randomly assigned into 2 groups, control and the study group. Both groups received conventional treatment consisting of moist pack, soft tissue mobilization, manual therapy and therapeutic exercise. The study group also received ambulatory mirror image functional re-training wearing a 3D adjustable cervico thoracic posture corrective orthosis. It was found to be effective in relieving pain. [6]

A randomized controlled trial was done by Castello et.al,to study the Effectiveness of kinesio taping in addition to conventional rehabilitation treatment on pain, cervical range of motion and quality of life in patients with neck pain. 45 subjects with neck pain were included in this controlled trial and were assigned to Kinesio Taping and Conventional rehabilitation control group. A protocol of manual therapy and physical exercises, significantly improved pain and mobility in patients with neck pain. [7]

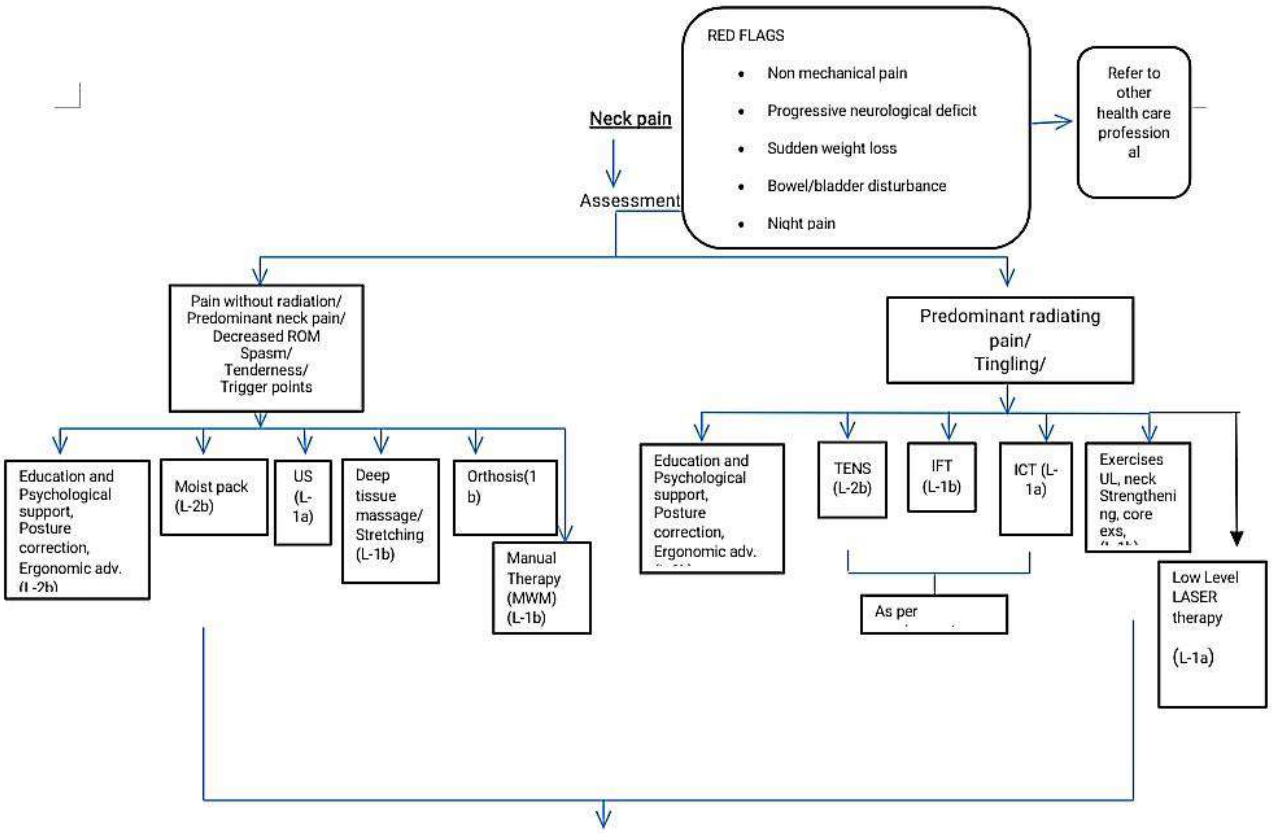
A systematic review and meta analysis of randomized controlled trial on Cervical Radiculopathy to see the effectiveness of adding traction to physical therapy. The literature concluded that the use of mechanical and manual traction for Cervical radiculopathy in addition to other physical therapy procedures were effective in pain reduction. [8,9]

In a systematic review and meta analysis done to evaluate the effects of Low Level Laser therapy for neck pain, it was found that out of the trials conducted Low level Laser therapy over placebo was effective in improving pain/disability. [10]

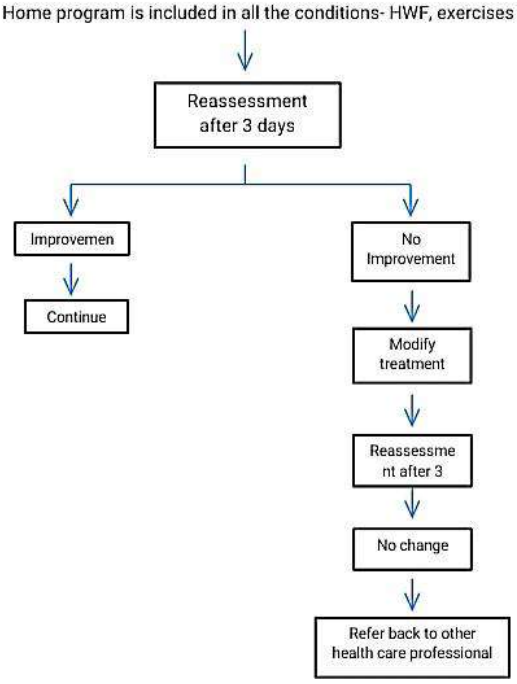
A randomized controlled trial was done by Manuel Cabello et.al to find theEffect of adding interferential current stimulation to exercise on outcomes in primary care patients with chronic neck pain. Eight four patients were divided into control and experimental group. The experimental group received exercises including stretching, strengthening, ocular cervical kinetic re-education program. The control group along with the exercises received Interferential current also. They concluded that Adding IFT stimulation along with exercises received better outcomes. [11]

The Stockholm Neck (STONE) randomized controlled trial was done by Eva Stillgate et.al, to evaluate the effectiveness of deep tissue massage therapy, and supervised strengthening and stretching exercises for subacute or persistent disabling neck pain.619 adults with subacute or persistent neck pain allocated to massage (n = 145), exerciseincluding deep tissue massage, strengthening and stretching exercises or, combined therapy (n = 160), combined therapy (n = 169) or advice (n = 147) group. They found improvement in pain intensity favouring massage and combined therapy compared to advice.[12]

A Systematic Review was done by Ana Luiza et.al, to evaluate the effectiveness of Transcutaneous electrical nerve stimulation (TENS) for chronic neck pain. Seven RCTs with a total of 651 participants were included. Most RCTs used continuous TENS, with a frequency of 60 Hz to 100 Hz, pulse width of 40 μs to 250 μs and tolerable intensity. They found out that there was very low-certainty evidence from two trials about the effects of conventional TENS.[13]



Home program is included in all the conditions- HWF, exercises



SUMMARY

Treatment for neck pain is multimodal and includes patient's education about the condition and Physiotherapy has an important role in the rehabilitation of neck pain by means of stretching and strengthening exercises and by the use of electro therapeutic modalities like TENS, moist heat, traction, low level laser therapy and interferential current.

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EVIDENCE BASED PROTOCOL

PHYSIOTHERAPY MANAGEMENT IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE

Developed by:

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Sumandeep Vidyapeeth Deemed to be University
Piparia, Vadodara

PREFACE BY HEAD OF DEPARTMENT

As a Dean of the College of Physiotherapy, it gives me pleasure to introduce the Protocol of **Physiotherapy in COPD.** These guidelines have been developed keeping the UG students clinical teaching in mind. These have been developed by the team of subject experts, who have based these, keeping in mind the conditions commonly referred to Physiotherapy department.

DESCRIPTION OF CONDITION:

Chronic Obstructive Pulmonary Disease (COPD) is the third leading cause of death worldwide; With a worldwide prevalence of 10.1%. COPD afflicts many people in low-income, middle-income, and wealthy countries. The two main types of COPD are chronic bronchitis and emphysema. The main cause of COPD is long-term exposure to substances that irritate and damage the lungs. This is usually cigarette smoke, Air pollution, chemical fumes, or dust can also cause it. Most common features of the COPD are increased work of breathing, cough with expectoration and functional limitation.

Physiotherapy plays an important role in the management of these patients. Role of physiotherapy as team member of pulmonary rehabilitation is very important. Physiotherapy helps to improve quality of life of the COPD patients by means of patient education, decreasing their perception of dyspnea, increased functional independence and clearing airways.

STATEMENT OF INTENT

These guidelines are not intended to serve as a standard of Physiotherapy care. Standards of care are subject to change as scientific knowledge and technology advance and new patterns of care evolve. The ultimate judgment regarding a particular clinical procedure or treatment plan must be made in light of the clinical presentation. However, any deviation from these should be recorded and appropriate evaluation carried out.

As a Dean of the College, I acknowledge the Prof. G Palani Kumar for his contributions in critical review of this and finalizing the protocol. The whole team with each member of the said subject team sat late in the evening and within their capacity contributed in reviewing literature with level of evidences and the finalized protocol.

We are also grateful and acknowledge the immense help received from the authors / editors / publishers of all those articles, journals and books from where the literature for this protocol has been reviewed and used. We are grateful to the support provided by the University EBES team and also very much grateful to the support patients.

EVIDENCE BASED PROTOCOL OF PHYSIOTHERAPY MANAGEMENT IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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12-10-21

INTRODUCTION:

Chronic obstructive pulmonary disease (COPD) is a multi-factorial progressive chronic lung disease that causes obstruction in airflow. This obstruction results in persistent and progressive breathlessness, productive coughing, fatigue and recurrent chest infection. COPD is also associated with extra pulmonary effects such as muscle wasting, osteopenia (reduction in protein and mineral content of bone tissue), cardiovascular disease and depression and therefore is now best understood as a systemic disease.

Airway clearance techniques (ACTs) or Bronchial hygiene techniques are helpful in managing mucopurulent secretions. There are many types of ACTs used in clinical practice, including 'conventional' therapy (e.g. Postural Drainage, Percussion, Vibration), Breathing Exercises (e.g. Active Cycle of Breathing Technique, Autogenic Drainage), hand-held Positive Expiratory Pressure (PEP) devices (e.g. mask, mouthpiece or oscillatory PEP) and mechanical devices that are applied externally to the chest wall (e.g. high-frequency chest wall oscillation). Most ACTs involve a degree of active respiratory effort; however, some can be applied passively (e.g. Postural Drainage).[2,3,4]

Exercise capacity in patients with COPD is impaired, and is often limited by dyspnea. Considered to be the cornerstone of pulmonary rehabilitation.[1] exercise training is the best available means of improving muscle function in COPD. Even those patients with severe chronic respiratory disease can often sustain the necessary training intensity and duration for skeletal muscle adaptation to occur.[5]

Pulmonary Rehabilitation has been clearly demonstrated to reduce dyspnea, work of breathing, increase exercise capacity, and improve quality of life in individuals with COPD and highly effective and safe intervention to reduce hospital admissions and mortality and to improve health related quality of life.[5]

NEED FOR PROTOCOL:

COPD is a third leading cause of death worldwide. Globally, the COPD burden is projected to increase in coming decades because of continuous exposure to COPD risk factors. Physiotherapy management has an important role in COPD patients, to improve dyspnea, clear airways and improve or maintain exercise capacity. But there is a no standardize evidence based protocol for same. So there is a need to make evidence based protocol for physiotherapy management in COPD patients.

REVIEW OF LITERATURE

- A systematic review was done to assess the effects of pulmonary rehabilitation after COPD exacerbations on future hospital admissions (primary outcome) and other patient important outcomes (mortality, health related quality of life and exercise capacity). Author concluded that pulmonary rehabilitation is a highly effective and safe intervention to reduce hospital admissions and mortality and to improve health related quality of life in COPD patients who have recently suffered an exacerbation of COPD. [Level of Evidence 1a].

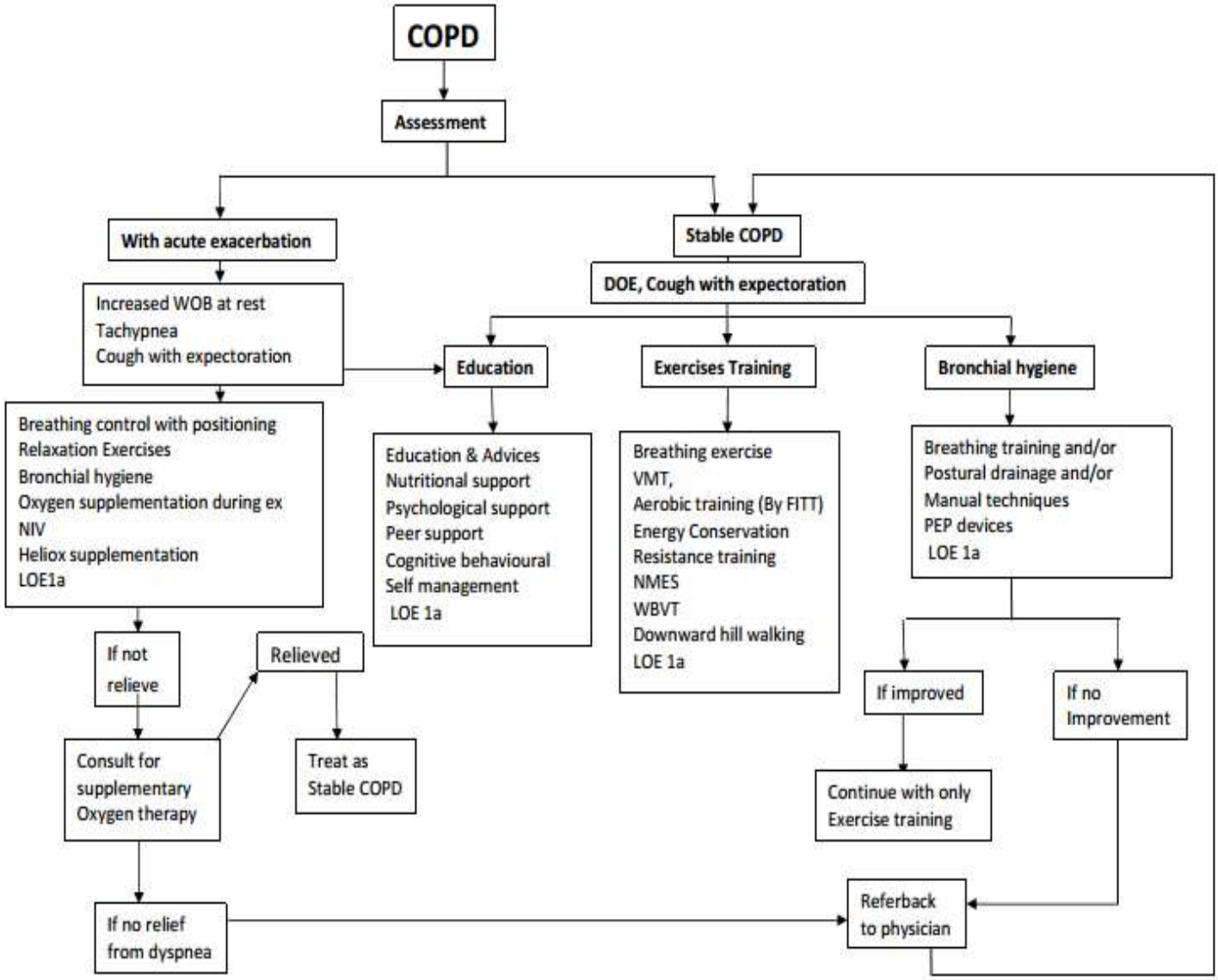
- A systematic review was done to assess the safety and efficacy of ACTs for individuals with AECOPD and stable COPD. Twenty-eight studies on 907 participants were included in the review. Author concluded that airway clearance techniques are safe for individuals with COPD and confer small beneficial effects on some clinical outcomes. Consideration may be given to the use of airway clearance techniques for patients with COPD in both acute and stable disease. [Level of Evidence 1a].

- A meta-analysis was done to assess the efficacy of pulmonary rehabilitation for COPD. The study included a total of 65 studies (represented by 130 citations) contributed to this meta-analysis, including 34 new studies. These studies involved 3822 participants, 2090 of whom were randomly allocated to some form of exercise rehabilitation for a minimum duration of four weeks, and 1732 individuals who were randomly assigned to usual care. Results of this meta-analysis strongly support pulmonary rehabilitation, including at least four weeks of exercise training, as part of the spectrum of treatment for patients with COPD. [Level of Evidence-1]

- A systematic review was aimed to systematize the different designs used to deliver pulmonary rehabilitation during acute exacerbations of COPD (AECOPD) and explore which ones are the most effective. Randomized controlled trials comparing pulmonary rehabilitation or at least one of its components with usual care or comparing different components of pulmonary rehabilitation were included.42 studies were included. Most studies were conducted in an inpatient setting (57%) and started the intervention 24–48 hours after hospital admission (24%). Exercise training (71%), education and psychosocial support (57%) and breathing techniques (55%) were the most used components. Studies combining exercise with breathing techniques presented the larger effects on exercise capacity and health-related quality of life, and breathing techniques presented the larger effects on dyspnea and length of hospitalization. Author concluded that Pulmonary rehabilitation is a safe intervention during AECOPD. Exercise, breathing techniques, and education and psychosocial support seem to be the core components for implementing pulmonary rehabilitation during AECOPD. [Level of Evidence -1]

- A systematic review was done to compare the impact of pulmonary rehabilitation after an exacerbation of chronic obstructive pulmonary disease (COPD) on hospital readmissions and other patient-important outcomes such as quality of life versus usual post-exacerbation care. Study included 20 studies involving 1477 participants with COPD. Rehabilitation programmes started in hospital in some trials and after discharge in others. The author concluded that Quality of life and exercise capacity were improved by rehabilitation, and the effect was substantially larger than the minimal important difference. Results for hospital readmissions and mortality were diverse, with some studies showing that pulmonary rehabilitation reduced hospital admissions and mortality compared with usual community care (no rehabilitation), and other studies not showing such effects. [Level of Evidence -1]

- A systematic review was done to assess the effectiveness of any single intervention for COPD adapted or tailored to their co morbidity(s) compared to any other intervention for people with COPD and one or more common co - morbidities (quantitative data, RCTs) in terms of the following outcomes: Quality of life, exacerbations, functional status, all-cause and respiratory-related hospital admissions, mortality, pain, and depression and anxiety. The study included seven studies (1197 participants) in the quantitative analyses, with interventions including tele monitoring, pulmonary rehabilitation, treatment optimization, water-based exercise training and case management. [Level of Evidence -1]


COPD
Assessment
With acute exacerbation
Increased WOB at rest
Tachypnea
Cough with expectoration
Breathing control with positioning
Relaxation Exercises
Bronchial hygiene
Oxygen supplementation during ex
NIV
Heliox supplementation
LOE1a
If not relieve
Consult for supplementary Oxygen therapy
If no relief from dyspnea
Relieved
Treat as Stable COPD
Stable COPD
DOE, Cough with expectoration
Education
Education & Advices
Nutritional support
Psychological support
Peer support
Cognitive behavioural
Self management
LOE 1a
Exercises Training
Breathing exercise
VMT,
Aerobic training (By FITT)
Energy Conservation
Resistance training
NMES
WBVT
Downward hill walking
LOE 1a
Bronchial hygiene
Breathing training and/or
Postural drainage and/or
Manual techniques
PEP devices
LOE 1a
If improved
Continue with only Exercise training
If no Improvement
Referback to physician

Summary

Physiotherapy is an integral part of the clinical management and health maintenance. Patients with COPD who remain symptomatic or continue to have decreased lung function despite standard medical treatment to reduce symptoms, optimize functional status, increase participation, reduce health care costs by stabilizing or reversing systemic manifestations of the disease and improve quality of life.

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EVIDENCE BASED PROTOCOL

PHYSIOTHERAPY MANAGEMENT IN PATIENTS WITH CORONARY ARTERY BYPASS GRAFT

Developed by:
College of Physiotherapy
Sumandeep Vidyapeeth Deemed to be University
Piparia, Vadodara

Preface by head of the department:

As a Dean of the College of Physiotherapy, it gives me pleasure to introduce the Protocol of **Physiotherapy in CABG.** These guidelines have been developed keeping the UG students clinical teaching in mind. These have been developed by the team of subject experts, who have based these, keeping in mind the conditions commonly referred to Physiotherapy department.

Description of condition:

Ischemic heart disease is emerging as a major condition of the modern world. In this era change in life style, eating habits, work atmosphere and stress leads to cardiac problems. Clinical features of the ischemic heart disease are chest pain, breathlessness, and limitations in ADLs. CABG is preferred [a treatment] of choice for ischemic heart disease or coronary heart disease.

Physiotherapy plays very important role in patient with CABG as member of cardiac rehabilitation. It improves patient condition by preventing post-operative pulmonary complications and improving functional status of the patients. Common therapies given post CABG are patient education, lung expansion therapy, bronchial hygiene and early mobilization.

STATEMENT OF INTENT

These guidelines are not intended to serve as a standard of Physiotherapy care. Standards of care are subject to change as scientific knowledge and technology advance and new patterns of care evolve. The ultimate judgment regarding a particular clinical procedure or treatment plan must be made in light of the clinical presentation. However, any deviation from these should be recorded and appropriate evaluation carried out.

As a Dean of the College, i acknowledge the Prof. G Palani Kumar for his contributions in critical review of this and finalizing the protocol. The whole team with each member of the said subject team sat late in the evening and within their capacity contributed in reviewing literature with level of evidences and the finalized protocol.

We are also grateful and acknowledge the immense help received from the authors / editors / publishers of all those articles, journals and books from where the literature for this protocol has been reviewed and used. We are grateful to the support provided by the University EBES team and also very much grateful to the support patients.

EVIDENCE BASED PROTOCOL OF PHASE I CARDIAC REHABILITATION IN PATIENTS WITH CORONARY ARTERY BYPASS GRAFT

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Version and prepared/ updated on
Version 2.0
12-10-21

INTRODUCTION:

CABG is a surgical procedure developed during 1960s for the treatment of coronary artery disease. It is the most commonly performed open heart surgery for coronary revascularization for patients who have severe coronary artery disease (CAD)[1]. However, the risk of developing pulmonary complication is very high in patients undergoing coronary artery bypass graft surgery[2]. This is because of the effect of general anaesthesia used for surgery, larger median sternotomy incision, hypothermia for myocardial protection and longer duration of surgery.[3] These factors alter the pulmonary function parameters which results into reduction in lung volume and oxygenation which leads to increased risk of getting post-operative pulmonary complications such as pneumonia (2.4-20%), atelectasis (30-72%), respiratory failure, pneumothorax[4,5]. Also, there is difficulty in taking deep breath due to pain of median sternotomy, poor post-operative coughing along with tachypnea, shallow breathing, resulting into reduced aeration of basal lungs, impaired mucociliary clearance further increasing the risk of getting post-operative pulmonary complications and ultimately these complications after CABG are a major source of morbidity & mortality and increased length of hospital stay & resource utilization.

Therefore, the initiation of a rehabilitation program post-operatively for CABG patients is suggested as an essential part of the management plan, Cardiac Rehabilitation Programs (CRP) is a professionally supervised program in heart attacks, heart surgery and percutaneous coronary intervention (PCI) procedures such as stenting and angioplasty to help improving recovery. CRP constitutes several exercises such as graded exercises, respiratory exercises, bed mobilization and gradual ambulation. These programs play an important role in the restoration of cardiopulmonary function, reduction of symptoms, increase in exercise tolerance and physical work capacity, normalization of blood lipid levels, alleviation of psychological stress and reduced hospitalization period.[6] Phase I cardiac rehabilitation involves immediate inpatients exercise rehabilitation to prevent post-operative pulmonary complications and prophylaxis of complications of prolonged bed rest.

Exercise training has been shown to have direct benefits on the heart and coronary vasculature, including myocardial oxygen demand, endothelial function, autonomic tone, coagulation and clotting factors, inflammatory markers, and the development of coronary collateral vessels.[7,8,9]

So that physiotherapy management has an important role in CABG patients as mentioned.

NEED FOR THE PROTOCOL:

In CABG patients, physiotherapy management has an important role to prevent post-operative pulmonary complications and most of the cases referred for the physiotherapy management. But there is a no standardize evidence based physiotherapy protocol for this category of patients, so there is a need to make a protocol.

REVIEW OF LITERATURE:

A systematic review (2021) was carried out to evaluate the evidence for the effects of early mobilisation in patients after cardiac surgery on length of hospital stay, functional capacity and postoperative complications. Randomised controlled trials of early mobilisation after cardiac surgery were taken. Nine trials were selected. The trials revealed diversity in techniques used for mobilisation, as well as periods considered early for the start of the intervention. The author concluded that early mobilisation seems to be important to prevent postoperative complications, improve functional capacity and reduce length of hospital stay in patients after cardiac surgery. (Level of evidence -1a)

Elisabeth W, Birgitta L et al) (Chest 2005) studied to investigate the effects of deep-breathing exercises on pulmonary function, atelectasis and arterial blood gas levels after coronary artery bypass graft surgery. Study was prospective randomised controlled trial with 92 patients. The patients in the deep-breathing group were instructed to perform breathing exercise shortly during daytime for the first 4 postoperative days. They concluded patient performing deep-breathing exercises after CABG surgery had significantly smaller atelectatic areas and better pulmonary function. (Level of Evidence - 1b)

Andrew D. Hirschhorn, (Heart, Lung and Circulation 2008) did a study aimed to determine whether a structured, inpatient (or Phase 1 cardiac rehabilitation), physiotherapy-supervised walking program, with or without musculoskeletal and respiratory exercises, might improve walking capacity and other parameters for patients undergoing coronary artery bypass graft surgery (CABG), study was prospective randomised controlled trial with 93 patients. They concluded that a physiotherapy-supervised, moderate intensity walking program in the inpatient phase following CABG improves walking capacity at discharge from hospital. (Level of evidence - 1b)

One systematic review is done by Rod S Taylor et al (2004 - American Journal of Medicine) of Exercise-based rehabilitation for patients with coronary heart disease. They included 48 trials with a total of 8940 patients. Confirms the benefits of exercise-based cardiac rehabilitation within the context of today's cardiovascular service provision. (Level of evidence - 1a)

POD	Physiotherapy management	Phase 1 POD 1 – POD 7
1st POD Long sitting Intensity: 1-1.5METs	**A. Pain** TENS (30 min) (LOE- 2) **B. Chest prophylaxis** Lung expansion therapy (LOE 1b) Airway clearance techniques ➢ **Breathing Techniques**: a. Thoracic Expansion Exercise b. Breathing Exercise with flow based IS c. Pursed Lip Breathing d. Diaphragmatic Breathing Exercise f. Breathing Exercise with Acapella and/or Incentive Spirometer (LOE-2) ➢ **Thoracic Mobility Exercises: (**LOE-2) 5 repetitions, 3 sets, 4 times/ day ➢ **Non-Invasive Ventilation:** BiPAP (LOE-2) **C. Bed mobility exercises** (LOE-2) **Cycle ergometer:** (3×1min) (LOE-2) **D**. **Splinted/Supported huffing** (3-4 huffs, 3 times/ day) **E. DVT prophylaxis** (5 repetitions, 3 sets, Minimum 4 times/ day)	Prescription: - LOE 1a Frequency: 2-3times/days Intensity: METs - 1- 3 METs (gradually increase from 1 POD to 7th POD) HR - Resting HR + 10-20 beats/min RPE - Can be used (below 13 on a 6-20 grade Borg scale) Duration: 5- 20 min (intermittent session) **Red flags -** ST-segment depression ≥2 mm from baseline. Presence of angina or other significant symptoms (e.g., unusual shortness of breath, light-headedness, or dizziness at low levels of exertion [<5 METs] or during recovery) Presence of complex ventricular dysrhythmias during exercise Presence of abnormal hemodynamics with exercise (i.e., chronotropic incompetence or flat or decreasing systolic BP with increasing workloads) or recovery (i.e., severe post exercise hypotension). Increased cardiac bio-markers
2nd POD High sitting (sitting out of bed) 1-1.5 MET	**A to D - Same as above** **F. Continue with cycle ergometer:** (3×2min) (LOE-2)	
3rd POD -Sitting with supported feet 1.5 -2 METs	**A to F - Same as above** **G - Supported room ambulation** 1 round (50 meters), 2 times /day + - (Begin sitting on chair several times in a day (10 to 30 minute) - Standing - Bedside walking (Approx.50-100 ft.)	

4th POD Sitting with supported feet 1.5 -2.5 METs	**B to G - Same as above** **(D- Splinted/Supported Coughing, G- Unsupported Ambulation)** + Trunk Mobility Exercises Walking Progression (Approx.100 - 200 ft.)	
5th POD 6th POD Sitting with supported feet 2- 3 METs	**B to G - Same as above** + Trunk mobility exercise Downstairs 1 flight (2 times/day) on 5th POD Step training- 3 times continuously, 20 cm standardized step) (LOE-2) on 6th POD Downstairs 2 flight (2 times/day) on 6th POD Upstairs 1 flight (2 times/day) on 6th POD Stair climbing (Start with 5- 6 flight of stairs down) Walking around the ward - Gradually increase the distance)	
7th POD 3METs	**B to G - Same as above** **Step training** (6 times continuously, 20 cm standardized step) (LOE-2) **Up and down stairs -** 1flight (2 times /day) (LOE-2) - Mobilization (Gradually progression) + - Walking in the corridor (Gradually increase walk distance)	
Before discharge	**Continue all exercises same as above** Stair climbing - (Gradually increase 10-12 flight) Perform 6MWT or Symptoms limited test before discharge[1].	

Summary

Cardiac rehabilitation assists individuals with CABG in achieving optimal physical, psychological and functional status within limits of their disease.

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EVIDENCE BASED PROTOCOL

PHYSIOTHERAPY MANAGEMENT IN INTENSIVE CARE UNIT

Developed by:

College of Physiotherapy
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Piparia, Vadodara

PREFACE BY HEAD OF DEPARTMENT

As a Dean of the College of Physiotherapy, it gives me pleasure to introduce the Protocol of **Physiotherapy in ICU.** These guidelines have been developed keeping the UG students clinical teaching in mind. These have been developed by the team of subject experts, who have based these, keeping in mind the conditions commonly referred to Physiotherapy department.

DESCRIPTION OF PHYSIOTHERAPY IN ICU

While in the ICU, inactivity and immobility by themselves have significant and deleterious physiologic effects, including atelectasis, pressure ulcers, and an increased susceptibility to aspiration and pneumonia. The effect of immobility is even more profound in the elderly and in patients with chronic illnesses, including congestive heart failure and chronic obstructive pulmonary disease. The development of neuromuscular weakness in patients recovering from critical illness has dramatic effects on their physical functioning and health related quality of life after ICU discharge. The greatest impairments are especially related to daily physical functioning including an inability to lift and carry groceries, climb stairs, bend, kneel, or walk moderate distances.

Physical therapy is one potential intervention that has been studied in patients recovering from critical illness. PT can be safely performed on many such patients. However, activities such as chest care, positioning, and passive range of motion exercises, ambulation, are reported to be among the most commonly used inpatient PT interventions.

STATEMENT OF INTENT

These guidelines are not intended to serve as a standard of Physiotherapy care. Standards of care are subject to change as scientific knowledge and technology advance and new patterns of care evolve. The ultimate judgment regarding a particular clinical procedure or treatment plan must be made in light of the clinical presentation. However, any deviation from these should be recorded and appropriate evaluation carried out.

As a Dean of the College, I understand that in changing paradigm of evidence based medicine, an algorithmic approach, if developed properly, may assist in the clinical practice of Physiotherapy. I acknowledge Prof. G Palani Kumar for his contributions in critical review of this and finalizing the protocol. The whole team with each member of the said subject team sat late in the evening and within their capacity contributed in reviewing literature with level of evidences and the finalized protocol.

We are grateful and acknowledge the immense help received from the authors / editors / publishers of all those articles, journals and books from where the literature for this protocol has been reviewed and used. We are grateful to the support provided by the University EBES team and also very much grateful to the support patients.

EVIDENCE BASED PROTOCOL OF PHYSIOTHERAPY MANAGEMENT IN INTENSIVE CARE UNIT

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12-10-21

INTRODUCTION:

Intensive care unit (ICU) is a specially staffed and equipped hospital ward dedicated to the management of patient with life threatening illness, injuries or complications.[1] Physiotherapists in the ICU are part of multidisciplinary team involved in the treatment of critically ill patients. The specific conditions or diseases in ICUs may be acute respiratory failure requiring mechanical ventilator support, acute exacerbation of COPD, Acute stroke with altered mental status, Coma (metabolic, toxic, or anoxic), Drug ingestion with significantly altered mental status with inadequate airway protection, Acute myocardial infarction with complications, Acute congestive heart failure with respiratory failure and/or requiring hemodynamic support etc. The physiotherapeutic care begins with a detailed assessment and scheduling goals of treatment. The most common techniques used by physiotherapists in the ICU are Positioning, Early Mobilization, Bronchial Hygiene Techniques such as Percussion, Vibrations, Manual Hyperinflation, Suction, Cough, and various Breathing Exercises.[2,3,4,6,7] PNF is a facilitator technique that can also be used to improve chest wall mobility and thus improving chest expansion. The physiotherapy treatment in ICUs is mainly addressed to prevent and reduce potential pulmonary complications such as hypoventilation, hypoxemia and infection in order to restore pulmonary function as fast as possible and also in preventing function impairment in the patients on mechanical ventilator support and thus enhancing quality of life.

NEED FOR PROTOCOL:

In intensive care unit most of the cases are on mechanical ventilator support, either by invasive or non-invasive mode due to respiratory failure by various causes. The chest physiotherapy plays important role to maintain airway patency or to prevent and reduce potential pulmonary complications[1, 2, 5, 6]. Chest physiotherapy is commonly referred in ICUs but there is no standardize Evidence Based Protocol made for such management. So there is a need to formulate EBP for chest physiotherapy in ICUs patients.

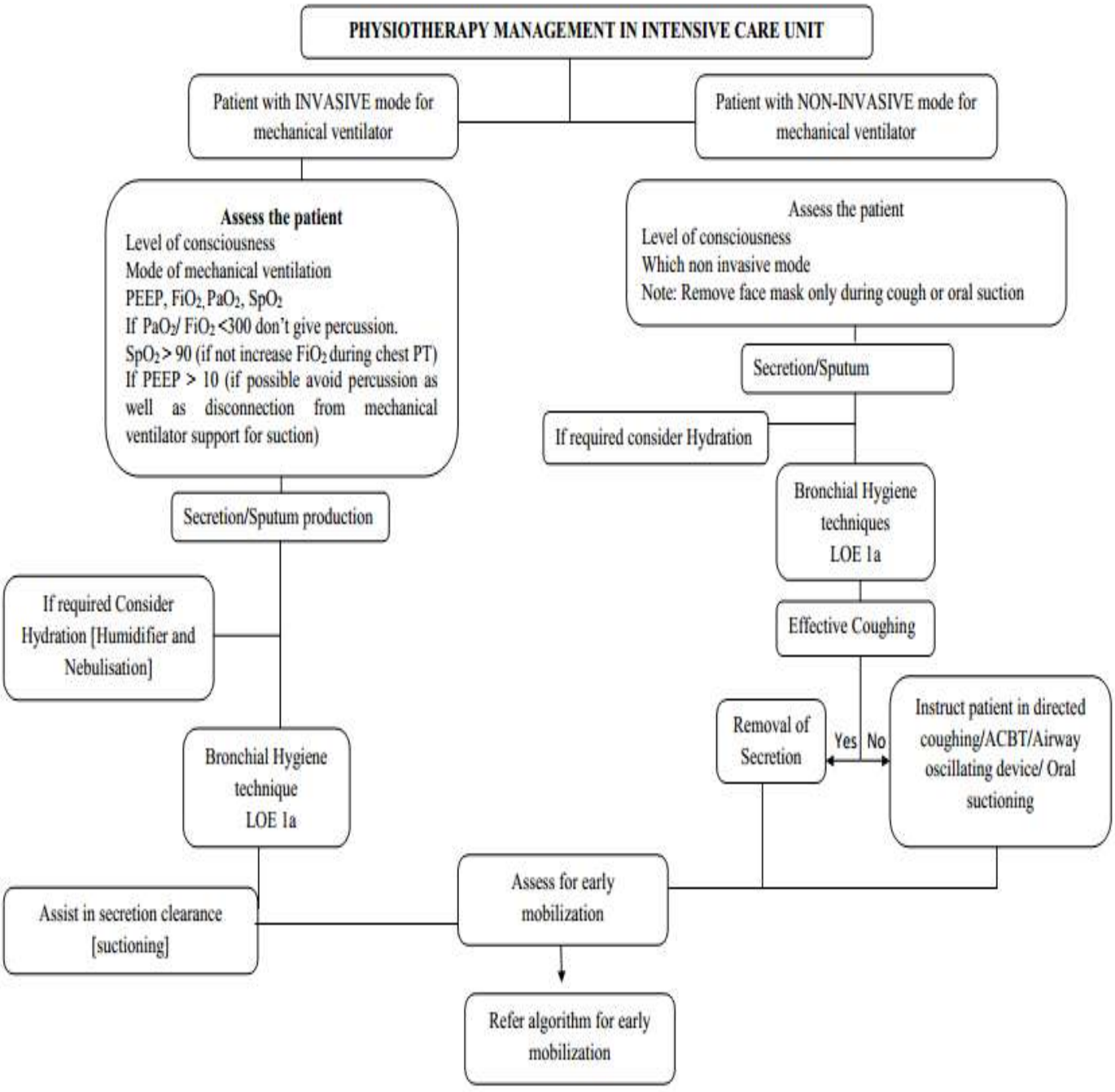
REVIEW OF LITERATURE

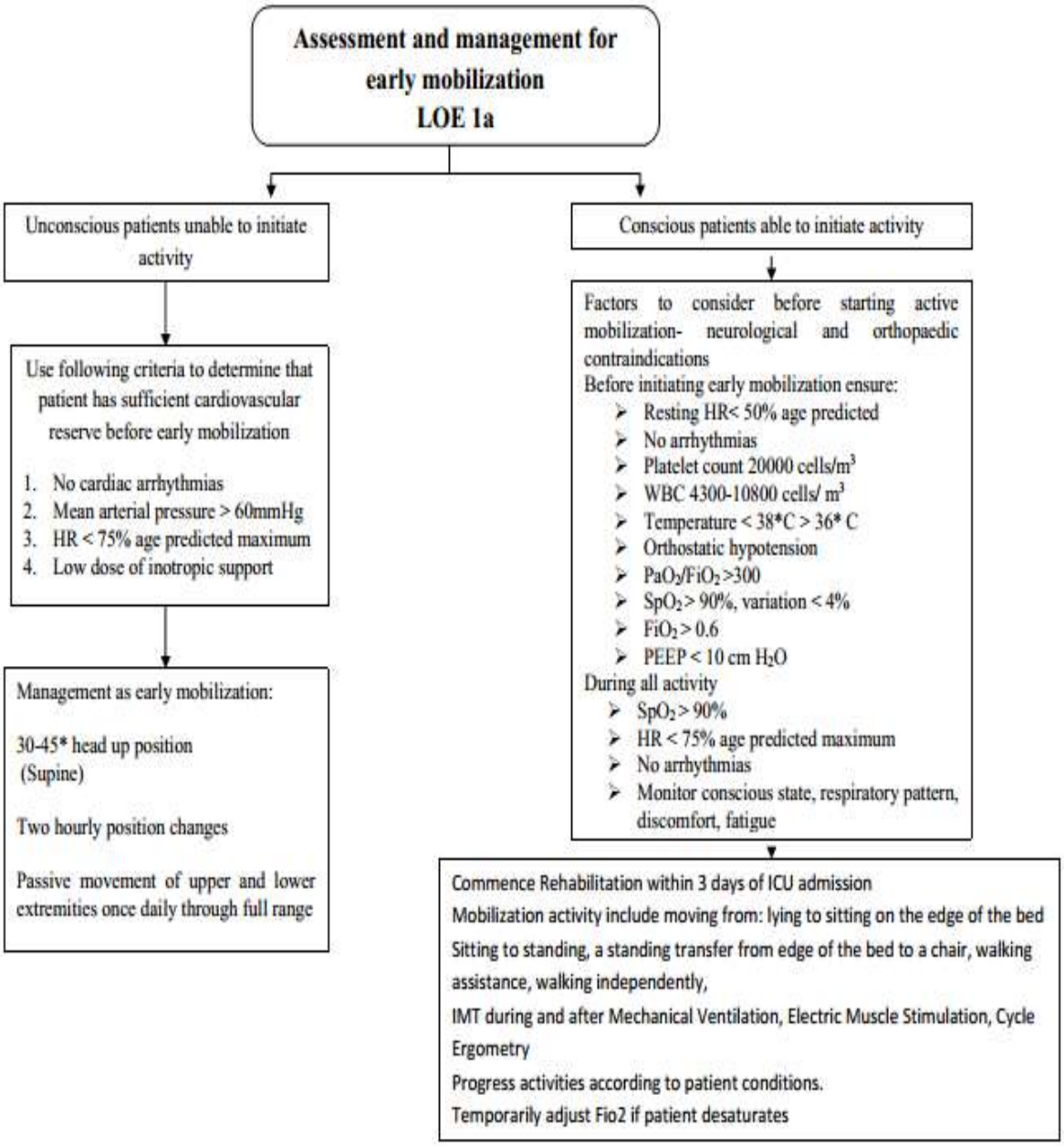
- Effectiveness of chest physiotherapy in intensive care unit patients:

  - Ntoumenopoulos G. *et al*, done randomized controlled trial to investigate the effect of chest physiotherapy (aimed at enhancing airway secretion clearance) in intubated and mechanically ventilated patients. Sixty adult patients included in the study. They randomized in intervention and control group. Intervention group received chest physiotherapy and control group received sham physiotherapy. They found that twice daily chest physiotherapy comprising postural drainage, patient positioning in side lying or head down, chest wall vibrations, and airway suctioning via the endotracheal tube was independently associated with a reduction in the occurrence of ventilated associated pneumonia[5]. [Level of evidence 1a]
  - Dr. Ankita ashtankar *et al* done an experimental comparative study on Comparative effect of PNF and chest physiotherapy with chest physiotherapy alone on SPO2, heart rate, respiratory rate and lung compliance in mechanically ventilated patient in which pts were divided into 2 groups: Group A received PNF and chest PT and group B received chest PT alone. They found that PNF alone with chest PT are better in improving oxygen saturation, pulmonary compliance and reduction of heart rate, respiratory rate and leads to early extubation of patients.

- Effectiveness of early mobilization in intensive care unit:

  - A review was done by Adler J *et al* who identified the literature and characterized the clinical benefits of mobilizing critically ill patients found predominantly in the ICU, specifically related to safety and functional outcomes. Fifteen studies were included in the review. They concluded early mobilization and physical therapy as a safe and effective intervention that can have a significant impact on functional outcomes.[6] [Level of evidence 1a].
  - Hodgson CL *et al* done a systematic review on physiotherapy management of intensive care unit-acquired weakness on ICU patients and found that it is possible that early interventions, early mobilisation and cycle ergometry reduce ICU acquired weakness and improve independence at hospital discharge


PHYSIOTHERAPY MANAGEMENT IN INTENSIVE CARE UNIT
Patient with INVASIVE mode for mechanical ventilator
Patient with NON-INVASIVE mode for mechanical ventilator
Assess the patient
Level of consciousness
Mode of mechanical ventilation
PEEP, FiO2, PaO2, SpO2
If PaO2/ FiO2 <300 don't give percussion.
SpO2 > 90 (if not increase FiO2 during chest PT)
If PEEP > 10 (if possible avoid percussion as well as disconnection from mechanical ventilator support for suction)
Assess the patient
Level of consciousness
Which non invasive mode
Note: Remove face mask only during cough or oral suction
Secretion/Sputum
If required consider Hydration
Bronchial Hygiene techniques LOE 1a
Effective Coughing
Removal of Secretion
Yes
No
Instruct patient in directed coughing/ACBT/Airway oscillating device/ Oral suctioning
Secretion/Sputum production
If required Consider Hydration [Humidifier and Nebulisation]
Bronchial Hygiene technique LOE 1a
Assess for early mobilization
Assist in secretion clearance [suctioning]
Refer algorithm for early mobilization


Assessment and management for early mobilization LOE 1a
Unconscious patients unable to initiate activity
Use following criteria to determine that patient has sufficient cardiovascular reserve before early mobilization
1. No cardiac arrhythmias
2. Mean arterial pressure > 60mmHg
3. HR < 75% age predicted maximum
4. Low dose of inotropic support
Management as early mobilization:
30-45* head up position (Supine)
Two hourly position changes
Passive movement of upper and lower extremities once daily through full range
Conscious patients able to initiate activity
Factors to consider before starting active mobilization- neurological and orthopaedic contraindications
Before initiating early mobilization ensure:
Resting HR< 50% age predicted
No arrhythmias
Platelet count 20000 cells/m3
WBC 4300-10800 cells/ m3
Temperature < 38*C > 36* C
Orthostatic hypotension
PaO2/FiO2 >300
SpO2 > 90%, variation < 4%
FiO2 > 0.6
PEEP < 10 cm H2O
During all activity
SpO2 > 90%
HR < 75% age predicted maximum
No arrhythmias
Monitor conscious state, respiratory pattern, discomfort, fatigue
Commence Rehabilitation within 3 days of ICU admission
Mobilization activity include moving from: lying to sitting on the edge of the bed Sitting to standing, a standing transfer from edge of the bed to a chair, walking assistance, walking independently,
IMT during and after Mechanical Ventilation, Electric Muscle Stimulation, Cycle Ergometry
Progress activities according to patient conditions.
Temporarily adjust Fio2 if patient desaturates

Summary:

In chest physiotherapy most commonly used techniques for ICUs patients are bronchial hygiene techniques, lung expansion therapy and or early mobilization to improve and/or maintain pulmonary functions.

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EVIDENCE BASED PROTOCOL

PHYSIOTHERAPY MANAGEMENT IN POSTOPERATIVE ABDOMINAL SURGERY

Developed by:

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PREFACE BY HEAD OF DEPARTMENT:

As a Dean of the College of Physiotherapy, it gives me pleasure to introduce the Protocol of **Physiotherapy in Post Abdominal Surgery.** These guidelines have been developed keeping the UG students clinical teaching in mind. These have been developed by the team of subject experts, who have based these, keeping in mind the conditions commonly referred to Physiotherapy department.

DESCRIPTION OF CONDITION:

Abdominal surgeries are performed for the diagnosis and treatment of many diseases besides that could be removal of cancerous tissue, to resolve visceral tissue perforations or to remove inflammatory bowel segments, benign growths, or vascular aneurysms and many other conditions. Abdominal surgical procedures are associated with a high risk of postoperative pulmonary complications (PPCs). These complications following abdominal surgery are very common and are responsible for increased morbidity and mortality as well as the length of hospital stay and health-related cost of care. PPCs are defined as pulmonary abnormalities occurring in the postoperative period producing clinically significant, identifiable disease. Common PPCs include atelectasis, hypoxemia, pneumonia, respiratory dysfunction, and pleural effusion. PPCs can be non-infectious for example atelectasis and respiratory failure; or can be infectious like pneumonia.

Physiotherapy has an important role in prevention of post-operative pulmonary complications by means of Lung Expansion Therapy, Bronchial Hygiene and Early Mobilization.

STATEMENT OF INTENT

These guidelines are not intended to serve as a standard of Physiotherapy care. Standards of care are subject to change as scientific knowledge and technology advance and new patterns of care evolve. The ultimate judgment regarding a particular clinical procedure or treatment plan must be made in light of the clinical presentation. However, any deviation from these should be recorded and appropriate evaluation carried out.

As a Dean of the College, I acknowledge the Prof. G Palani Kumar for his contributions in critical review of this and finalizing the protocol. The whole team with each member of the said subject team sat late in the evening and within their capacity contributed in reviewing literature with level of evidences and the finalized protocol.

We are also grateful and acknowledge the immense help received from the authors / editors / publishers of all those articles, journals and books from where the literature for this protocol has been reviewed and used. We are grateful to the support provided by the University EBES team and also very much grateful to the support patients.

EVIDENCE BASED PROTOCOL OF PHYSIOTHERAPY MANAGEMENT IN POSTOPERATIVE ABDOMINAL SURGERY

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Version and prepared/ updated on
Version 2.0
12-10-21

INTRODUCTION:

Abdominal surgical procedures are associated with a high risk of postoperative pulmonary complications (PPCs). Pulmonary complications include atelectasis, pneumonia, respiratory failure, and tracheobronchial infection. The commonest of these complications is pulmonary atelectasis.[1,2]

The basic mechanism of PPCs is a lack of lung inflation that occurs because of a change in breathing to a shallow, monotonous breathing pattern without periodic sighs. Physiotherapy is designed to enhance inspiration and is aimed at increasing the abnormally low postoperative functional residual capacity.[1,2]

Incentive spirometry also offers these components and the additional benefit of visual feedback; giving the patient a measurable goal however has yet no evidence.[1] Bronchial hygiene has an important role in these patients due to inhibition of cough post operatively.[2]

Pain is an important negative influence in the postoperative evolution of abdominal surgeries, especially those in the upper abdomen, even using analgesic drugs. Transcutaneous electrical nerve stimulation is a physical therapy tool widely used to relieve pain.[3]

NEED FOR PROTOCOL:

Patients with Abdominal surgeries are commonly referred for physiotherapy management but there is a no specific evidence based protocol available.

Review of literature

Systemic review and meta-analysis was done by Dunja kokotovic et al, to assess the effect of post-operative respiratory and mobilization intervention on post-operative complications following abdominal surgery. Pulmonary complications were addressed in 25 studies containing 2068 patients. 23 studies were included in meta-analysis. Conclusion of review is the use of post-operative expiratory modalities (CPAP, BiPAP, EPAP, NIV) after abdominal surgery might prevent pulmonary complications and it seems the preventive abilities were largely drive on by post-operative treatment with CPAP.

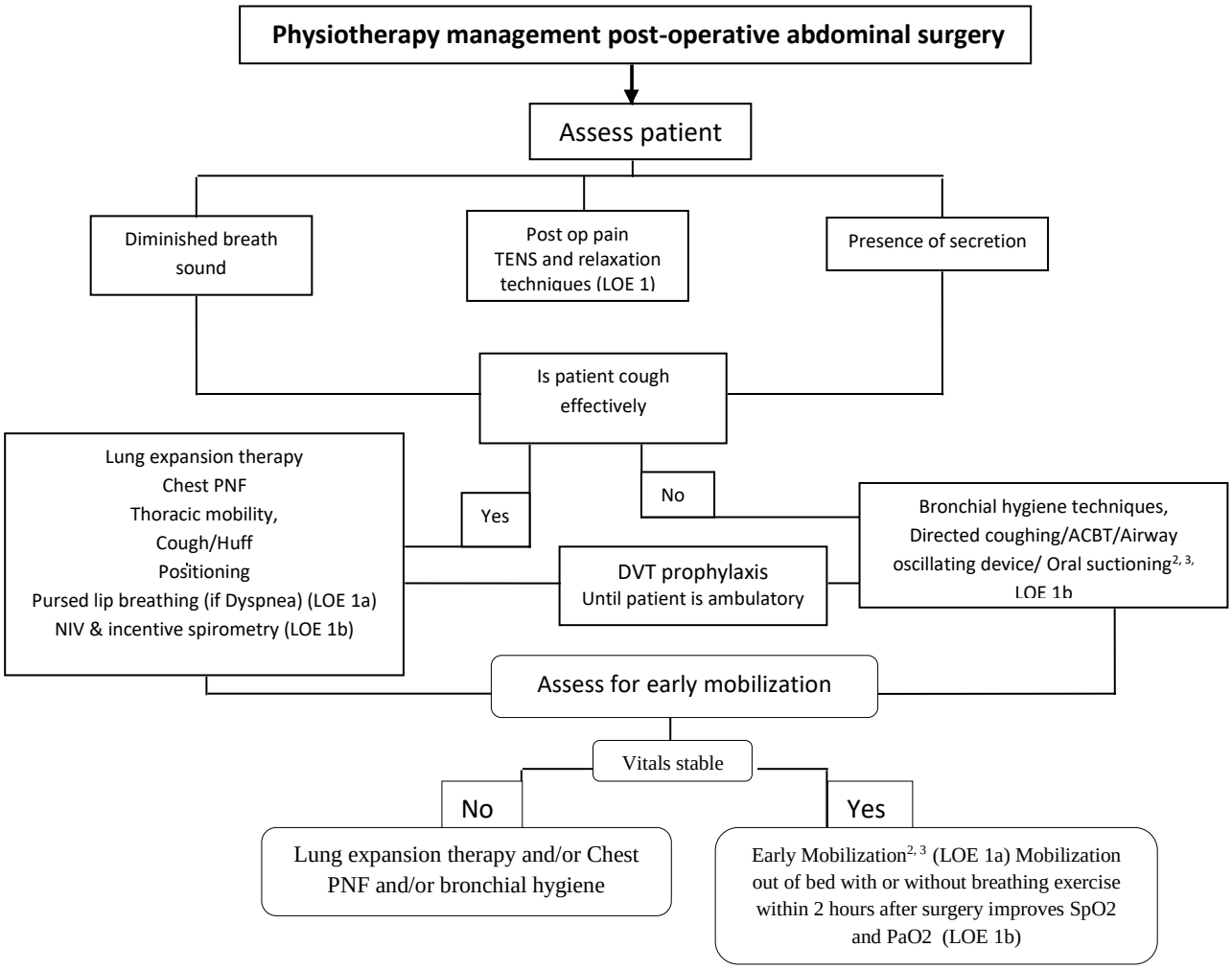
RCT was done to evaluate the effectiveness of transcutaneous electrical stimulation for treatment of post-operative pain and pulmonary functions in patients to underwent abdominal surgery. Conclusion suggests that TENS is valuable treatment to alleviate post-operative pain and improve pulmonary function (i.e. VC, CPF) in patients following abdominal surgery.

Systemic review was done with the aim of assessing the efficacy of relaxation techniques for pain relief in patients undergoing abdominal surgery. A total of 12 studies were included in the review and 7 in the meta-analysis. In total, 4 relaxation techniques were utilized in the included studies: Jaw relaxation, Benson's relaxation, progressive muscle relaxation (PMR) and systematic relaxation. Of the 12 included, 10 studies demonstrated statistically significant pain relief in the relaxation group as compared to the controls. The data of 422 patients in the relaxation group and 424 patients in the control group were pooled for a meta-analysis, which indicated that patients undergoing abdominal surgery had significantly greater pain relief following relaxation therapy as compared to the controls.

RCT was done to evaluate the effects of flow and volume incentive spirometry on pulmonary function and exercise tolerance in patients undergoing open abdominal surgery. Thirty-seven males and thirteen females who were undergoing abdominal surgeries were included and allocated into flow and volume incentive spirometry groups by block randomization. The author concluded that Flow and volume incentive spirometry can be safely recommended to patients undergoing open abdominal surgery as there have been no adverse events recorded. Also, these led to a demonstrable improvement in pulmonary function and exercise tolerance.

Single center RCT was done to investigate if mobilization out of bed within 2 hours after abdominal surgery improves respiratory function or whether breathing exercise has an additional positive effect. Participants were 214 consecutively recruited patients who underwent abdominal surgery. Conclusion was mobilization out of bed with or without breathing exercise within 2 hours after abdominal surgery improve spo2 and Pao2.

A narrative review was done to identify to review the evidence for incentive spirometry, and examining the physiological basis, equipment and its use following thoracic surgery. Five studies included in review and they concluded that physiological evidence suggests that incentive spirometry may be appropriate for lung re-expansion following major thoracic surgery.


Physiotherapy management post-operative abdominal surgery
Assess patient
Diminished breath sound
Post op pain TENS and relaxation techniques (LOE 1)
Presence of secretion
Is patient cough effectively
Yes
No
Lung expansion therapy
Chest PNF
Thoracic mobility,
Cough/Huff
Positioning
Pursed lip breathing (if Dyspnea) (LOE 1a)
NIV & incentive spirometry (LOE 1b)
DVT prophylaxis
Until patient is ambulatory
Bronchial hygiene techniques, Directed coughing/ACBT/Airway oscillating device/ Oral suctioning[2, 3,
LOE 1b
Assess for early mobilization
Vitals stable
No
Yes
Lung expansion therapy and/or Chest PNF and/or bronchial hygiene
Early Mobilization[2, 3] (LOE 1a) Mobilization out of bed with or without breathing exercise within 2 hours after surgery improves SpO2 and PaO2 (LOE 1b)

Summary:

Physiotherapy plays an important role to prevent post-operative pulmonary complications by means of Breathing Exercise, Incentive Spirometry, Bronchial Hygiene, Early Mobilization, pain relieving techniques and Positioning. (LOE 1a). Mobilization out of bed with or without breathing exercise within 2 hours after surgery improves SpO2 and PaO2 (LOE 1b)

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EVIDENCE BASED PROTOCOL

PHYSIOTHERAPY MANAGEMENT IN POST COVID REHABILITATION

Developed by:

College of Physiotherapy
Sumandeep Vidyapeeth Deemed to be University
Piparia, Vadodara

PREFACE BY HEAD OF DEPARTMENT

As a Dean of the College of Physiotherapy, it gives me pleasure to introduce the Protocol of **COVID REHABILITATION.** These guidelines have been developed keeping the UG students clinical teaching in mind. These have been developed by the team of subject experts, who have based these, keeping in mind the conditions commonly referred to Physiotherapy department.

DESCRIPTION OF CONDITION:

The corona virus disease of 2019 (COVID-19) caused by the severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) first appeared in Wuhan, China. Owing to lung fibrosis as a pneumonia, some patients experience severe respiratory failure requiring respiratory rehabilitation. Post-COVID syndrome is also known as long-COVID. The incidence of post-COVID sequela is estimated between 10 and 35%. It causes breathlessness, fatigue, muscle weakness, delirium, post-traumatic stress disorder and other mental health conditions. Physiotherapy management has an important role in COVID patients, to improve Quality of life after COVID. But there is no standardize evidence based protocol for same. So there is a need to make evidence based protocol for Physiotherapy management in Post COVID patients.

STATEMENT OF INTENT

These guidelines are not intended to serve as a standard of Physiotherapy care. Standards of care are subject to change as scientific knowledge and technology advance and new patterns of care evolve. The ultimate judgment regarding a particular clinical procedure or treatment plan must be made in light of the clinical presentation. However, any deviation from these should be recorded and appropriate evaluation carried out.

As a Dean of the College, I acknowledge the Prof. Palani Kumar for his contributions in critical review of this and finalizing the protocol. The whole team with each member of the said subject team sat late in the evening and within their capacity contributed in reviewing literature with level of evidences and the finalized protocol.

We are also grateful and acknowledge the immense help received from the authors / editors / publishers of all those articles, journals and books from where the literature for this protocol has been reviewed and used. We are grateful to the support provided by the University EBES team and also very much grateful to the support patients.

EVIDENCE BASED PROTOCOL OF POST COVID REHABILITATION

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Version and prepared/ updated on
Version 1.0
12-10-21

INTRODUCTION:

The corona virus disease of 2019 (COVID-19) caused by the severe acute respiratory syndrome, corona virus 2 (SARS-CoV-2) first appeared in Wuhan, China. It was officially declared a pandemic by the World Health Organization in March 2020.[1] In many cases, patients remain bedridden in the intensive care unit (ICU) for extended periods. Patients often remain in a prone position for many hours, which can cause post-ICU dysphagia, muscle weakness, myopathy, and neuropathy owing to critical illness, as well as reduced joint mobility, pain in the neck and shoulders, difficulty in standing, and impaired balance and gait, with consequent limitations in activities of daily living.[2]

Early problems after COVID are owing to lung fibrosis as a sequela of pneumonia, some patients experience severe respiratory failure requiring respiratory rehabilitation.[3] SARS-CoV-2 infections not only causes respiratory manifestations, but also commonly affects the cardiovascular system. Patients with cardiovascular risk factors, such as male sex, advanced age, hypertension, diabetes, obesity, and those with pre-existing cardiovascular or cerebrovascular disease are prone to developing COVID-19-associated complications, and these factors have been shown to be associated with an increased morbidity and mortality.[4]

Post-COVID syndrome, also known as long-COVID, incidence of which is estimated between 10 and 35%. Fatigue, shortness of breath, chest pain, mental disorders and olfactory and gustatory dysfunction are amongst the most common symptoms. Current evidence indicates that approximately 10% of patients with COVID-19 may have persisting symptoms beyond three weeks, which is rather underestimated given that half of COVID-19 cases are not formally diagnosed.[5] Between 10 and 20% of COVID-19 patients with symptomatic acute COVID-19 will evolve to a persistence phase of clinical manifestations lasting more than one month, with chronic ailments such as fatigue, post exertional malaise, dyspnea, headache, inability to perform daily physical tasks and increased likelihood of developing stress, depression, irritability, insomnia, confusion or frustration.[6]

NEED FOR PROTOCOL

COVID causes several deaths worldwide. It became pandemic and affects Quality of life of the patients after infection. Post COVID fatigue syndrome is most common. It causes breathlessness, fatigue, muscle weakness, delirium, post-traumatic stress disorder and other mental health conditions. Physiotherapy management has an important role in COVID patients, to improve Quality of life after COVID. But there is no standardize evidence based protocol for same. So there is a need to make evidence based protocol for physiotherapy management in COVID patients.

REVIEW OF LITERATURE

- Effects of home-based exercise programmes on measures of physical-fitness in healthy older adults

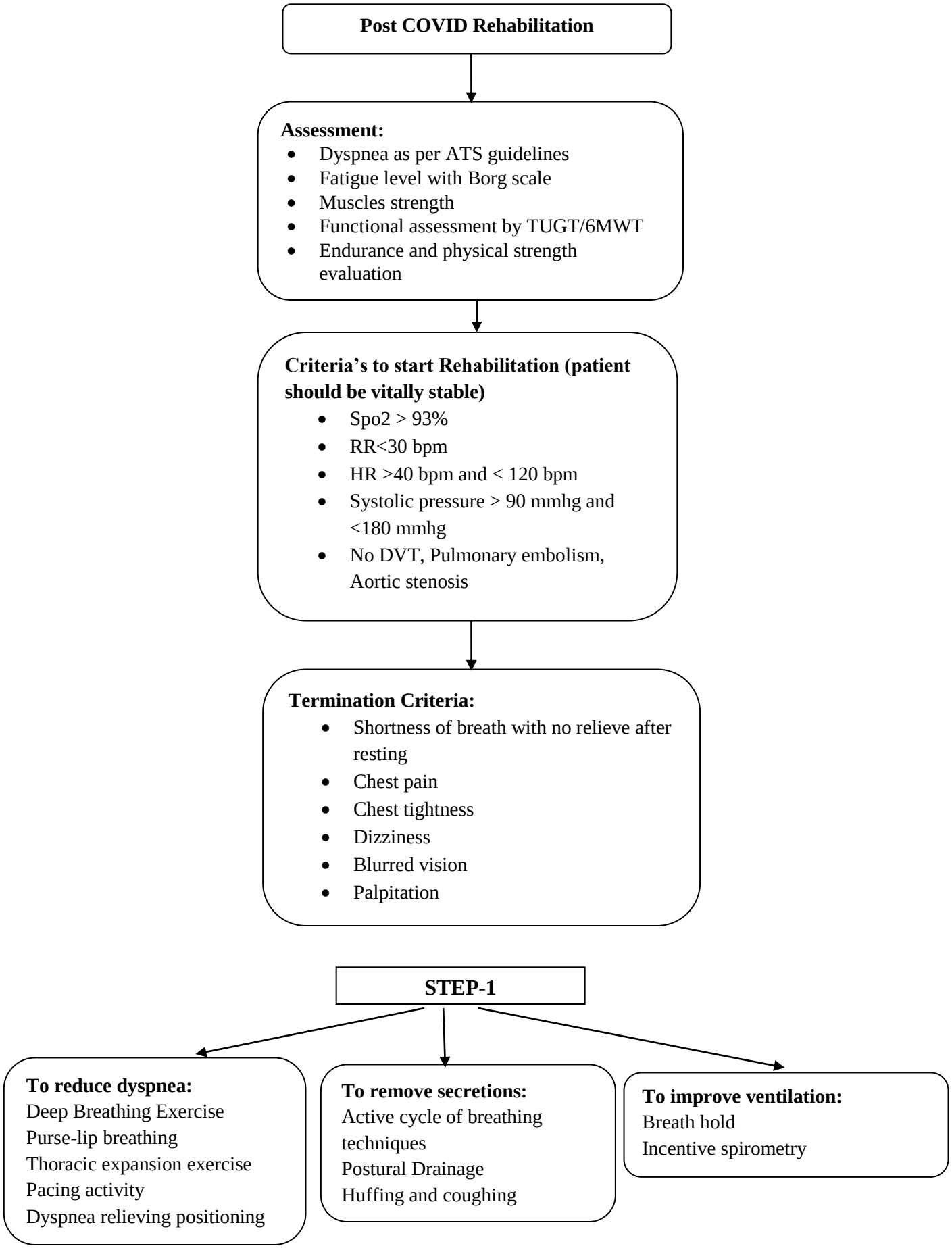
  A systematic review and meta-analysis was done by Chaabene H et al to examine the effects of home-based exercise programmes on measures of physical-fitness in healthy older adults where Seventeen randomized-controlled trials were included with a total of 1,477 participants. Training >3 weekly sessions produced larger effects on muscle strength and balance compared with ≤3 weekly sessions. For session-duration, only ≤30 min per-session produced small effects on muscle strength and balance. Home-based exercise appears effective to improve components of health-(i.e., muscle strength and muscular endurance) and skill-related (i.e., muscle power, balance) physical-fitness.[7] [Level of Evidence 1]

- Respiratory rehabilitation in elderly patients with COVID 19

  A Randomized Control trial was done by Liu K on Respiratory rehabilitation in elderly patients with COVID 19, where 6 weeks' respiratory rehabilitation training on respiratory function, QOL, mobility and psychological function in elderly patients with COVID 19 given. Total 72 participants were recruited, of which 36 patients underwent respiratory rehabilitation. After 6 week of rehabilitation they concluded that improvement was seen in respiratory function, QOL and anxiety of elderly patients with COVID 19.[8] [Level of Evidence 2]

- COVID 19: the importance of physical therapy in the recovery of worker's health

  A literature review was done by Liu K on COVID 19: the importance of physical therapy in the recovery of worker's health. They analyzed effects of COVID 19 on occupational health, with a focus on the importance of physical therapy in rehabilitation from PubMed, SciELO and LILACS database. The finding showed that COVID-19 can affect several physiological systems and have both short term effects on patients, including physical and psychological impairments. Physical therapists must be involved in the battle against this illness to help patients recover their physical function and return to work as quickly, safely and effectively as possible.[09] [Level of Evidence 5].


Post COVID Rehabilitation
Assessment:
Dyspnea as per ATS guidelines
Fatigue level with Borg scale
Muscles strength
Functional assessment by TUGT/6MWT
Endurance and physical strength evaluation
Criteria's to start Rehabilitation (patient should be vitally stable)
Spo2 > 93%
RR<30 bpm
HR >40 bpm and < 120 bpm
Systolic pressure > 90 mmhg and <180 mmhg
No DVT, Pulmonary embolism, Aortic stenosis
Termination Criteria:
Shortness of breath with no relieve after resting
Chest pain
Chest tightness
Dizziness
Blurred vision
Palpitation
STEP-1
To reduce dyspnea:
Deep Breathing Exercise
Purse-lip breathing
Thoracic expansion exercise
Pacing activity
Dyspnea relieving positioning
To remove secretions:
Active cycle of breathing techniques
Postural Drainage
Huffing and coughing
To improve ventilation:
Breath hold
Incentive spirometry

STEP-2

If able to control dyspnea and remove secretions

If not able to control dyspnea

Continue Step 1

Maintain muscle strength

Bed exercise:

- Neck and head movement,
- Neck circumduction, shoulder rotations,
- Flexion and extension of fingers,
- Quadriceps contraction
- Ankle and foot circumduction

Exercise in sitting:

• Shoulder exercises
• Shoulder abductions
• Forearm flexion on the arm with low weight
• Contractions of the quadriceps
• Plantar flexion and dorsiflexion
• Foot circumduction

Exercises in standing:

• Abduction and adduction of the hip (with the leg on side)
• Hip extension (with the leg back)
Quadriceps contractions and squats
• Standing on the tips of the toes

STEP- 3 (IF ABLE TO COMPLETE STEP 2)

To reduce Fatigue:

Aerobic exercise: Walking at home,
Walking up and down
Stair climbing

- 120 to 150 minutes per week
- Week 1: 5 minutes, 5 times per day
- Week 2: 10 minutes, 3 times per day
- Week 3: 15 minutes, 2 times per day

- Start with low intensity exercise like walking and then start moderate intensity exercise like brisk walking.
- Gradually start high intensity activity like running and jogging.
- Increase intensity by 10% every week
- Limit of 70% of HR max

Restricted exercise: With Theratube,
Thera band,
Dumbbell

- Squats
- Wall push-up
- Progressive resisted training

- Progress resistance training
- 8-12 repetition of each major group of muscle like biceps, quadriceps
- 2-3 time per week, continue for 6 week

Summary

Post COVID syndrome is having many complains that mainly includes dyspnea, easy fatigability, generalized weakness, reduced endurance. This complains affects ADL's of individuals. Post COVID rehabilitation helps to make the patient independent in ADL's.

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EVIDENCE BASED PROTOCOL

PHYSIOTHERAPY MANAGEMENT OF CEREBRAL PALSY

Developed by:

College of Physiotherapy
Sumandeep Vidyapeeth Deemed to be University
Piparia, Vadodara

PREFACE BY HEAD OF DEPARTMENT:

As a Dean of the College of Physiotherapy, it gives me pleasure to introduce the Protocol of **Physiotherapy in Cerebral Palsy.** These guidelines have been developed keeping the UG students clinical teaching in mind. These have been developed by the team of subject experts, who have based these, keeping in mind the conditions commonly referred to Physiotherapy department.

DESCRIPTION OF CONDITION:

Cerebral palsy also called static encephalopathy, in which the brain damage is static and non-progressive, which occurs in the developing brain. Children experience a wide variety of sensory-motor, cognitive, perceptual, language deficits. These impairments can make the child disabled with reduced participation in activity, community and quality of life. The role of physiotherapy in the form of early intervention and neurodevelopmental therapy has been effective in treating cerebral palsy. The child has to be managed in a holistic manner where physiotherapist has to work in collaboration with other expertise which ultimately can maximize the child's independence.

STATEMENT OF INTENT

These guidelines are not intended to serve as a standard of Physiotherapy care. Standards of care are subject to change as scientific knowledge and technology advance and new patterns of care evolve. The ultimate judgment regarding a particular clinical procedure or treatment plan must be made in light of the clinical presentation. However, any deviation from these should be recorded and appropriate evaluation carried out.

We are also grateful and acknowledge the immense help received from the authors / editors / publishers of all those articles, journals and books from where the literature for this protocol has been reviewed and used. We are grateful to the support provided by the University EBES team and also very much grateful to the support patients.

EVIDENCE BASED PROTOCOL OF PHYSIOTHERAPY MANAGEMENT IN CEREBRAL PALSY

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Version and prepared/ updated on
Version 2.0
12-10-21

INTRODUCTION:

Cerebral palsy describes a group of permanent disorders of the development of movement and posture, causing activity limitation, that are attributed to non-progressive disturbances that occurred in the developing fetal or infant brain. The motor disorders of cerebral palsy are often accompanied by disturbances of sensation, perception, cognition, communication and behaviour; by epilepsy and by secondary musculoskeletal problems.[1]

The global incidence of cerebral palsy (CP) is 2 to 2.5 per 1000 live births[2] and in India it is estimated to be 2 to 2.7 per 1000 live births.[3] Topographically spastic CP is classified as hemiplegia, diplegia and quadriplegia.[4] Spastic CP accounts for nearly 70 to 80 % of all CP cases. It is characterized by spasticity, impaired selective voluntary motor control, pathological reflexes, postural deformities of trunk, abnormal pelvic tilts leading to truncal instability.[5]

NEED FOR THE PROTOCOL:

1. To give the treatment based on recent literatures.
2. To make uniform decision for patients with cerebral palsy.
3. Protocol based care can help to reduce unnecessary variations in treatment and outcomes.

REVIEW OF LITERATURE:

1. Children with normal motor development, as well as spastic diplegic children increase their capacity to generate strength when submitted to a resistance training, not only on lower limbs, but also on upper limbs. Several studies have shown that diplegic CP children improve their motor ability due to strength training, though it still remains to be proved that strength training leads to a substantial change in functional capacity

LEVEL OF EVIDENCE: 1b

2. 6 children aged between 4 and 10 years with CP participated in a 6-week strengthening program. Subjects were evaluated before and after intervention in terms of ankle PF strength, muscle activity, gait velocity, cadence, step length, and D (standing) and E (walking, running, and jumping) dimensions of GMFM. Strength increased in majority of subjects. Significant and clinically meaningful post-intervention improvements in subject's gait velocity, cadence, and step length were found. They concluded that Controlled ankle PF strengthening program may lead to improvements in strength and spatiotemporal gait parameters of children with CP

LEVEL OF EVIDENCE: 1b

3. Study has done to assess the effectiveness of a hinged ankle-foot orthoses on gait impairments and energy expenditure in children with hemiplegic cerebral palsy. They concluded that the hinged AFO is useful in controlling dynamic equinus deformity and reducing the energy expenditure of gait in children with hemiplegic spastic cerebral palsy.

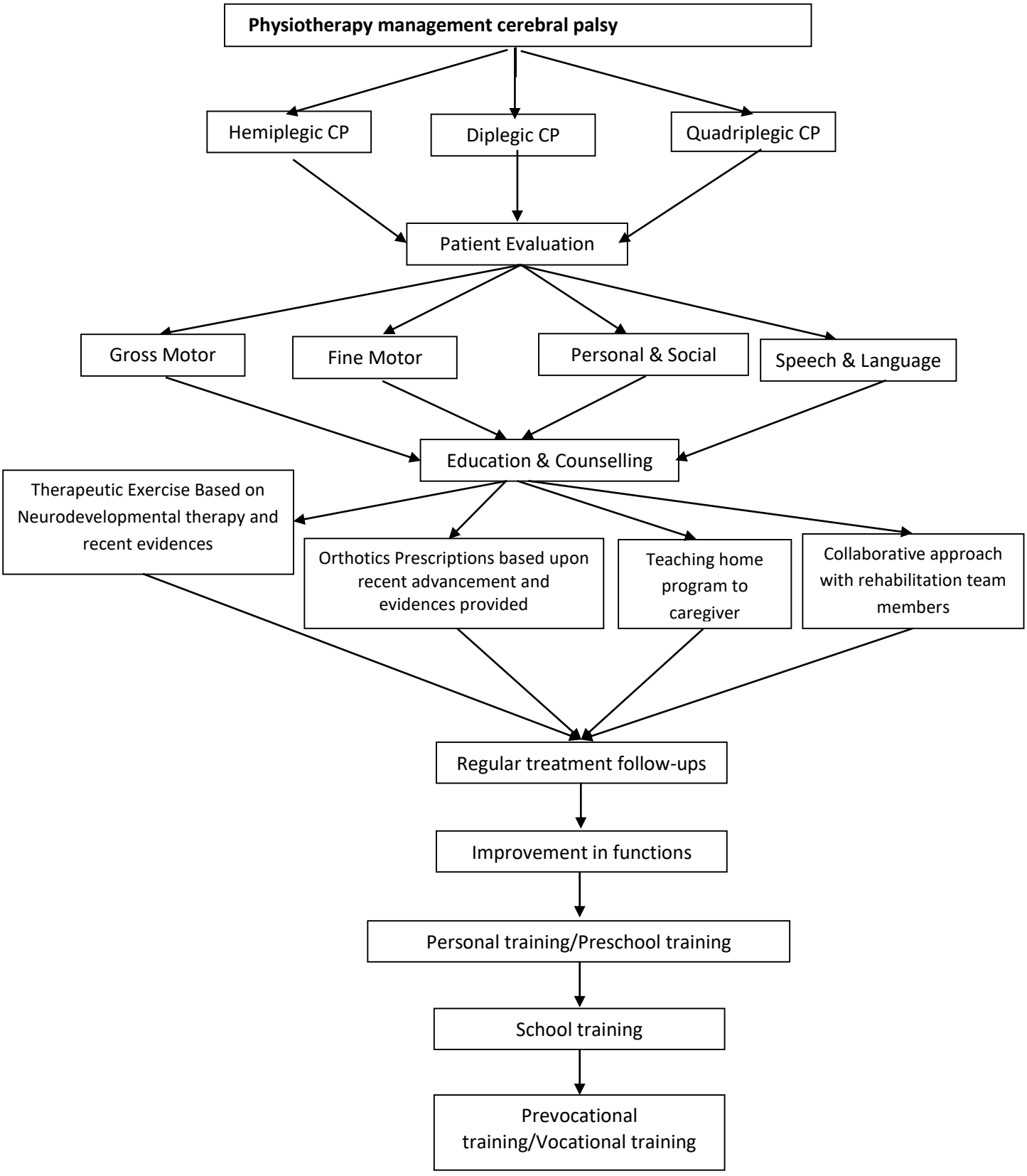
LEVEL OF EVIDENCE: 4

4. Review has done to look for recent evidence for managing patients with cerebral palsy. Based on the results, it may be concluded that CIMT, task-oriented functional training, and gait training to be effective in this population. Other interventions such as hippotherapy, suit therapy etc. have very low-quality evidence. Thus, techniques which are significant in improving functions will be preferred in regular OPD setup.

LEVEL OF EVIDENCE: 1A

5. Review has done on the efficacy of the ankle foot orthosis in gait parameters in children with cerebral palsy. The review showed that there are significant researches supporting that application of orthosis improves gait parameters such as ankle range of motion, stride length, gait speed etc and tend to improve the normal physiological gait pattern.

LEVEL OF EVIDENCE: 1B


Physiotherapy management cerebral palsy
Hemiplegic CP
Diplegic CP
Quadriplegic CP
Patient Evaluation
Gross Motor
Fine Motor
Personal & Social
Speech & Language
Education & Counselling
Therapeutic Exercise Based on Neurodevelopmental therapy and recent evidences
Orthotics Prescriptions based upon recent advancement and evidences provided
Teaching home program to caregiver
Collaborative approach with rehabilitation team members
Regular treatment follow-ups
Improvement in functions
Personal training/Preschool training
School training
Prevocational training/Vocational training

SUMMARY:

Cerebral palsy is long-life, but improves with adequate intervention. NDT is in practice a successful approach. Along with-it other approaches such as CIMT, Task oriented approach etc. should be included and holistic management in collaboration with other expertise like orthotists, speech therapist etc. If the treatment is started before abnormal patterns of movement have become established, we can help the child to organize his potential abilities in what for him is the most normal way.

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EVIDENCE BASED PROTOCOL

PHYSIOTHERAPY MANAGEMENT OF GUILLAIN-BARRÉ SYNDROME IN PAEDIATRICS

Developed by:

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PREFACE BY HEAD OF DEPARTMENT:

As a Dean of the College of Physiotherapy, it gives me pleasure to introduce the Protocol of **Physiotherapy Management of Guillain-Barré syndrome In Paediatrics.** These guidelines have been developed keeping the UG students clinical teaching in mind. These have been developed by the team of subject experts, who have based these, keeping in mind the conditions commonly referred to Physiotherapy department.

DESCRIPTION OF CONDITION:

Guillain-Barre syndrome (GBS) is a rare neurological condition in which nerve myelin is destroyed, which is similar to a crippling disease with unknown cause. Lendi first reported GBS in 1895. Lack of reflexes, pain in the organs, weakness of the organs and anesthetizing are considered as clinical signs of the disease. Cerebrospinal fluid (CSF) analysis and electro diagnostic studies are among the most important GBS diagnostic tests. Both intravenous immunoglobulin and plasma replacement therapies reduce the time spent for recovery. The muscle strength is the ability or capacity of a muscle or muscle group to exert the maximum force against a resistance. Muscle weakness or imbalance in muscle groups can cause abnormal movement or displacement in various parts of the body and disrupt normal functioning of the muscle; it can also cause abnormalities to occur in organs. Patients with GBS have difficulty with doing activities such as walking and running independently, and their participation in physical activity decreases due to problems such as weakness and lack of muscular strength. So, the physiotherapy treatment is atmost important for the management of the reduced muscle strength and it increases the physical activity.

STATEMENT OF INTENT

These guidelines are not intended to serve as a standard of Physiotherapy care. Standards of care are subject to change as scientific knowledge and technology advance and new patterns of care evolve. The ultimate judgment regarding a particular clinical procedure or treatment plan must be made in light of the clinical presentation. However, any deviation from these should be recorded and appropriate evaluation carried out.

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We are also grateful and acknowledge the immense help received from the authors / editors / publishers of all those articles, journals and books from where the literature for this protocol has been reviewed and used. We are grateful to the support provided by the University EBES team and also very much grateful to the support patients.

EVIDENCE BASED PROTOCOL OF PHYSIOTHERAPY MANAGEMENT OF GUILLAIN-BARRÉ SYNDROME IN PAEDIATRICS

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Version and prepared/ updated on
Version 2.0
12-10-21

INTRODUCTION:

Guillain-Barré syndrome, also called acute inflammatory demyelinating polyneuropathy (AIDP), affects one to two new persons per 100,000 populations each year in both genders and all ages.[1] The male to female ratio of GBS was higher, and in some cases it was 1.5 times higher [2]. Disability caused by GBS generally progresses over the course of a few days to four weeks, with weakness starting distally and ascending in a matter of hours to days. Fortunately, GBS is self-limiting with improvement usually beginning spontaneously after weakness maximizes. Most patients eventually reach a full or nearly full recovery. Many patients will walk without aid after three months and experience only minor residual symptoms by the end of the first year following onset. In some patients, recovery can be extremely slow (6 months-2 years) and five to twenty percent of patients are left with significant residual symptoms that lead to long-term disability and prevent a successful return to their prior lifestyle or occupation.

Rehabilitation is started as soon as patient is medically stable. Commonly, a patient with severe GBS would require inpatient rehabilitation for 3–6 weeks followed by outpatient and home-based rehabilitation program for 3–4 months.[3]

NEED FOR PROTOCOL:

The prognosis and complications of GBS are well known, there is a need to form a protocol which provides guidance for early management and rehabilitation as per the recent advances and evidences. Protocol formation enhances equal consensus among the physiotherapists (staff and students) and thereby aid in recovery and follow up. It also augments research and evidence based practice.

Review of literature

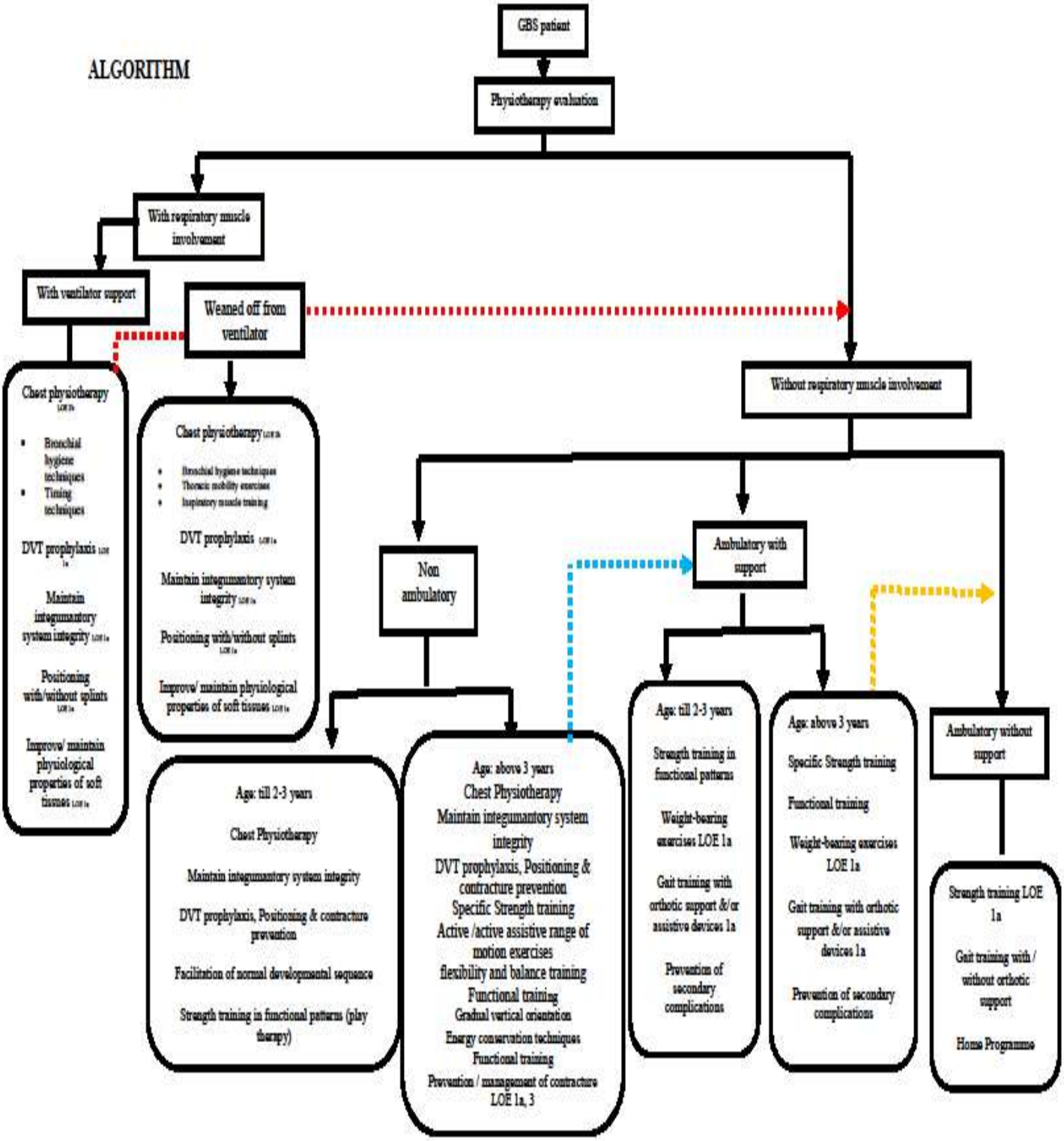
According to Guidelines for Physical and Occupational Therapy provided by GBS/CIDP FOUNDATION INTERNATIONAL, the principle goals of physiotherapy are 1) To help the patient to achieve optimal muscle use at a tolerable pain level as nerve supply returns; and 2) To use supportive equipment and other functional adaptations to help patients with residual impairments to resume an activity level that is as close to their previous lifestyle as possible. LOE 1a

El Mhandi et al did a prospective cohort study and showed significant muscle strength improvement using dynamometer at 18 months following an individualized physical therapy programme based on muscular reinforcement and active mobilization (average 2-3 weekly sessions). They found that at six months, manual muscle testing and functional independence motor scores were close to normal, and at 18 months, all patients satisfied the criteria for a full recovery. LOE 2b

A systematic review done in 2012, found good evidence to support outpatient multidisplinary high intensity rehabilitation in producing long-term gains up to 12 months at the level of activity (disability) and participation in the later stage of recovery. [3] LOE 1a

Khatereh Dayyer et al did a quasi-experimental study and showed that selected exercises (exercises with theraband and physioball) for continuous eight week can improve the strength of the ankle and knee muscles as well as quality of life, and can increases the Range of Motion in knee and hip.LOE 3

ALGORITHM


GBS patient
Physiotherapy evaluation
With respiratory muscle involvement
With ventilator support
Weaned off from ventilator
Without respiratory muscle involvement
Chest physiotherapy
Bronchial hygiene techniques
Timing techniques
DVT prophylaxis
Maintain integumantory system integrity
Positioning with/without splints
Improve/ maintain physiological properties of soft tissues
Chest physiotherapy
Bronchial hygiene techniques
Thoracic mobility exercises
Inspiratory muscle training
DVT prophylaxis
Maintain integumantory system integrity
Positioning with/without splints
Improve/ maintain physiological properties of soft tissues
Non ambulatory
Ambulatory with support
Ambulatory without support
Age: till 2-3 years
Chest Physiotherapy
Maintain integumantory system integrity
DVT prophylaxis, Positioning & contracture prevention
Facilitation of normal developmental sequence
Strength training in functional patterns (play therapy)
Age: above 3 years
Chest Physiotherapy
Maintain integumantory system integrity
DVT prophylaxis, Positioning & contracture prevention
Specific Strength training
Active /active assistive range of motion exercises
flexibility and balance training
Functional training
Gradual vertical orientation
Energy conservation techniques
Functional training
Prevention / management of contracture
LOE 1a, 3
Age: till 2-3 years
Strength training in functional patterns
Weight-bearing exercises LOE 1a
Gait training with orthotic support &/or assistive devices 1a
Prevention of secondary complications
Age: above 3 years
Specific Strength training
Functional training
Weight-bearing exercises LOE 1a
Gait training with orthotic support &/or assistive devices 1a
Prevention of secondary complications
Strength training LOE 1a
Gait training with / without orthotic support
Home Programme

SUMMARY

Physiotherapy exercises help the patient to optimally use muscle and thereby gain functional independence post GBS.

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EVIDENCE BASED PROTOCOL

PHYSIOTHERAPY MANAGEMENT IN DUCHENNE MUSCULAR DYSTROPHY

Developed by:

College of Physiotherapy

Sumandeep Vidyapeeth Deemed to be University

Piparia, Vadodara

PREFACE BY HEAD OF DEPARTMENT:

As a Dean of the College of Physiotherapy, it gives me pleasure to introduce the Protocol of **Physiotherapy Management of Duchenne muscular dystrophy (DMD).** These guidelines have been developed keeping the UG students clinical teaching in mind. These have been developed by the team of subject experts, who have based these, keeping in mind the conditions commonly referred to Physiotherapy department.

DESCRIPTION OF CONDITION:

Duchenne muscular dystrophy (DMD) is a genetic condition which affects the muscles, causing muscle weakness. It is a serious condition which starts in early childhood. The muscle weakness is not noticeable at birth, even though the child is born with the gene which causes it. The weakness develops gradually, usually noticeable by the age of three. Symptoms are mild at first but become more severe as the child gets older. Sadly, there is no cure for Duchenne's, but there are ways to help improve the individual's quality of life and provide help for the stage they are in. Physiotherapy is essential to the management of Duchenne's. It is important to monitor the physical symptoms of the condition and physiotherapy can help keep the child active for as long as possible. Physiotherapists will work with the parents and carers and provide them with information and manual skills that will be helpful for the child.The proactive symptom-based multidisciplinary team (MDT) management and access to non-invasive ventilation have enabled improved survival into adulthood. Males with DMD, with intervention, can now be expected to live until their 30's and 40's.

STATEMENT OF INTENT

These guidelines are not intended to serve as a standard of Physiotherapy care. Standards of care are subject to change as scientific knowledge and technology advance and new patterns of care evolve. The ultimate judgment regarding a particular clinical procedure or treatment plan must be made in light of the clinical presentation. However, any deviation from these should be recorded and appropriate evaluation carried out.

As a Dean of the College, I acknowledge the Prof. G Palani Kumar for his contributions in critical review of this and finalizing the protocol. The whole team with each member of the said subject team sat late in the evening and within their capacity contributed in reviewing literature with level of evidences and the finalized protocol.

We are also grateful and acknowledge the immense help received from the authors / editors / publishers of all those articles, journals and books from where the literature for this protocol has been reviewed and used. We are grateful to the support provided by the University EBES team and also very much grateful to the support patients.

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INTRODUCTION:

Duchenne Muscular Dystrophy (DMD) is an inherited X chromosome-linked recessive myopathy which affects [(1)] 15.9 to 19.5 per 100,000 live births. The disease is caused by a mutation of the dystrophin gene and induces a progressive loss of muscular strength and endurance (9,5). Over time subjects with DMD develop axial skeletal muscle weakness and loss of ambulation between 7 and 13 years of life (average of 12 years). They also develop respiratory muscle weakness, mostly of diaphragmatic fibers that may lead to recurrent pulmonary infections and progressive respiratory failure. Respiratory complications represent the major cause of morbidity and mortality. [(2)]

Although ongoing studies show promising therapies that target disease cause, there is still no curative (pharmaco) therapy available and, thus, treatment remains symptomatic. An important aim in the management of DMD is to preserve functional abilities for as long as possible. Delaying the loss of functional abilities is relevant for all activities in daily life and may optimize independence in DMD [(1).]

NEED FOR PROTOCOL:

The prognosis and complications of DMD are well known, there is a need to form a protocol which provides guidance for early management and rehabilitation as per the recent advances and evidences. Protocol formation enhances equal consensus among the physiotherapists (staff and students) and thereby aid in recovery and follow up. It also augments research and evidence based practice.

Review of literature

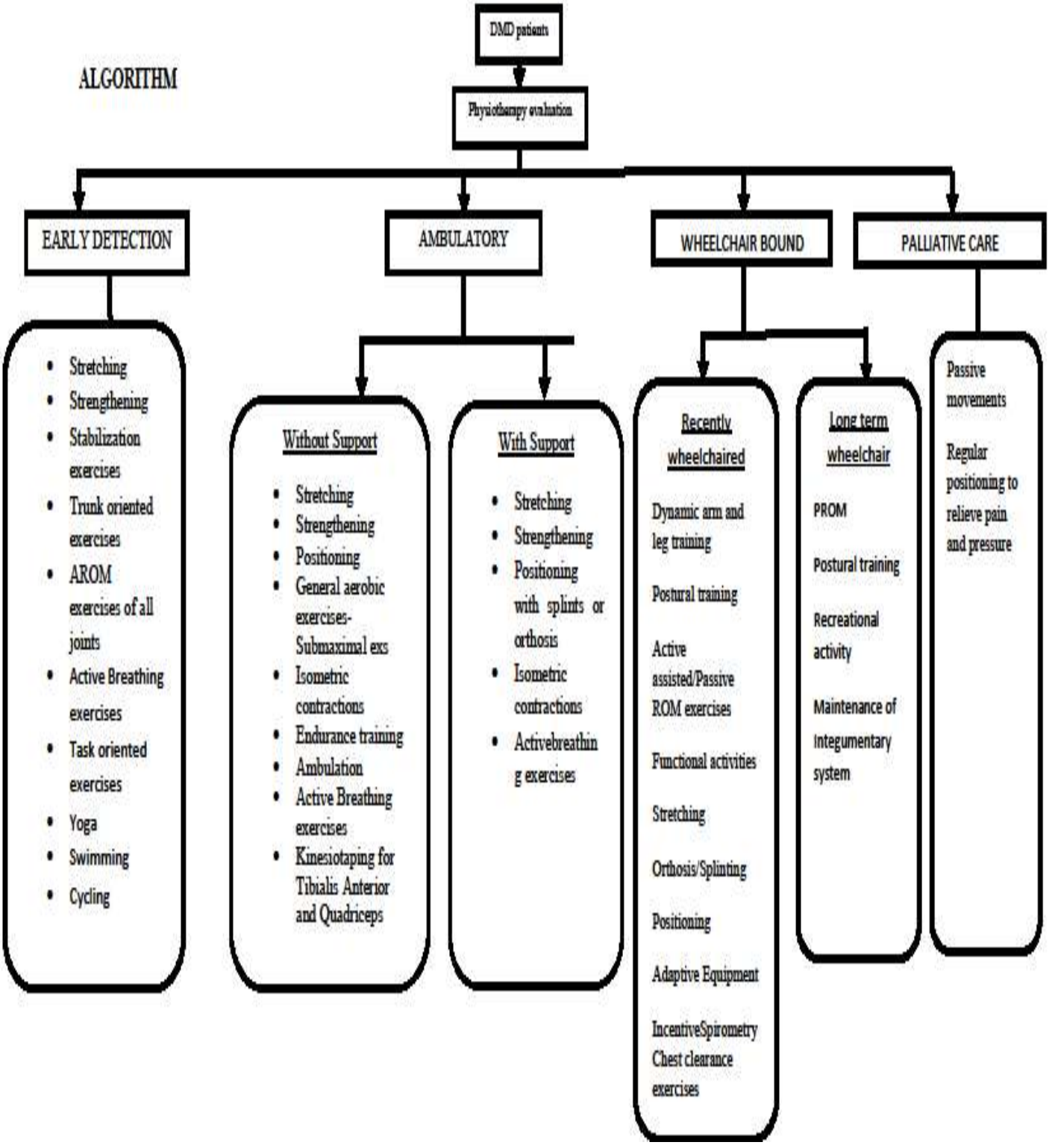
A randomized control trial was done by Merel Jansen et al, to examine whether assisted bicycle training is feasible, safe and beneficial in boys with DMD aged 8-12 years. The study concluded that assisted bicycle training of the arms and legs is feasible and safe for both ambulatory and wheelchair dependent children and may decline the deterioration due to disuse.

A randomized control trial was done by Ðpek Alemdaroglu et al, in which the effect of 2 different types of upper extremity exercise training on upper extremity function, strength, endurance and ambulation in 28 patients with early stage DMD were investigated and compared. The study concluded thatupper extremity training with an arm ergometer is more effective in preserving and improving the functional level of early stage DMD patients compared to ROM exercises alone.

A randomized control trial was done by Gokce Yagmur et al, to investigate the effect of trunk training on trunk control, arm, and pulmonary function in 26 children with DMD aged 5-16 years. The study showed thattrunk-oriented exercise program in Duchenne muscular dystrophy might be effective for trunk control, arm, and respiratory function.

A randomized control trial was done by Pradnya Dhargave et al to study the added effect of Yoga over Physiotherapy on pulmonary functions in 124 children with DMD. The findings suggested that introduction of yoga with physiotherapy intervention at an early age can be considered as one of the therapeutic strategies in improving pulmonary functions in patients with DMD.

ALGORITHM


DMD patients
Physiotherapy evaluation
EARLY DETECTION
AMBULATORY
WHEELCHAIR BOUND
PALLIATIVE CARE
Stretching
Strengthening
Stabilization exercises
Trunk oriented exercises
AROM exercises of all joints
Active Breathing exercises
Task oriented exercises
Yoga
Swimming
Cycling
Without Support
Stretching
Strengthening
Positioning
General aerobic exercises- Submaximal exs
Isometric contractions
Endurance training
Ambulation
Active Breathing exercises
Kinesiotaping for Tibialis Anterior and Quadriceps
With Support
Stretching
Strengthening
Positioning with splints or orthosis
Isometric contractions
Activebreathing exercises
Recently wheelchaired
Dynamic arm and leg training
Postural training
Active assisted/Passive ROM exercises
Functional activities
Stretching
Orthosis/Splinting
Positioning
Adaptive Equipment
IncentiveSpirometry
Chest clearance exercises
Long term wheelchair
PROM
Postural training
Recreational activity
Maintenance of Integumentary system
Passive movements
Regular positioning to relieve pain and pressure

SUMMARY

Physiotherapy exercises help the patient to optimally use muscle and thereby gain functional independence post DMD.

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