

AECOPD-Mob

Clinical Decision-Making Tool for Safe and Effective Mobilization of Hospitalized Patients with AECOPD

Purpose, Scope & Disclaimer. The purpose of this document is to provide recently graduated or returning clinicians working in acute care settings with guidance on safe and effective mobilization of the hospitalized patient with an acute exacerbation of COPD. This decision-making tool is evidence- and expert-informed. It is not intended to replace the clinician's clinical reasoning skills and interprofessional collaboration.

Prior to any patient mobilization, ensure there is enough qualified staff available, the patient has consented to the treatment plan, and the patient's goals have been identified and effectively communicated between patient, staff and family.

WHAT TO ASSESS PRIOR TO MOBILIZATION

<p>Equipment</p> <ul style="list-style-type: none"> Mechanical lifts, poles, transfer belts etc. available Portable oximeter; portable oxygen tank and tubing, blood pressure unit Lines organized (i.e. cap feeding tubes, lines secure or capped as appropriate) Mobility aids in reach, used appropriately and maintained Glasses, footwear or hearing aids available <p>Review the chart:</p> <ul style="list-style-type: none"> Comorbidities, medications, medical status, etc. 	<p>Review the patient:</p> <ul style="list-style-type: none"> Not: combative, severely confused or agitated, or heavily sedated Medically stable and without significant pain, fatigue, or diaphoresis Cardiovascular signs and symptoms assessed – no angina at rest, untreated arrhythmia, decompensated left or right heart failure, severe postural hypotension Mobility assessment <ul style="list-style-type: none"> Standing/balance assessed to determine fall risk (eyes open, eyes closed, tandem, reaching / Berg) Adequate body strength and energy required to perform specific exercise, transfer, or ambulation Medications accessible and appropriate staff available to administer them if needed during activity Note: SpO₂ < 88% at rest or during exercise requires supplemental oxygen
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WHEN TO CONSIDER NOT MOBILIZING OR TO DISCONTINUE MOBILIZATION

(For patients in critical care settings, see SAFEMOB*)

<p>Cardiovascular status</p> <ul style="list-style-type: none"> BP - A drop in systolic pressure (>20 mm Hg) or below pre-exercise level OR a disproportionate rise i.e. >200 mm Hg for systolic or >110 mm Hg for diastolic.¹ HR - < 40² or > 130^{2,3}; requiring temporary pacer Pulmonary embolus – discussion with physician required to determine suitability. Deep venous thrombosis – May mobilize as tolerated immediately after low molecular weight heparin is given. If patient is on any other form of anticoagulation, check mobility orders with the physician. Monitor patient for changes in pain, swelling, colour and sudden shortness of breath.⁴ Angina before, during or after activity Untreated arrhythmia or decompensated left or right heart failure 	<p>Respiratory status</p> <ul style="list-style-type: none"> SpO₂ <88%^{2,5} at rest or during exercise RR - <5 or >40² F_IO₂ - >60%³ or high flow oxygen > 6 lpm Uncontrolled asthma <p>Other</p> <ul style="list-style-type: none"> Intermittent hemodialysis² Unstable fracture Excessive muscle soreness or fatigue that is residual from last exercise or activity session Other contraindications specific to a given setting/unit
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WHAT TO MONITOR DURING MOBILIZATION FOR PATIENT SAFETY

Staff should be available to monitor patient signs and symptoms, and the need for O₂
Ensure supplemental oxygen and tubing are nearby to administer if SpO₂ drops below 88%

<p>Patient -- Subjective:</p> <ul style="list-style-type: none"> Dizziness, vertigo, Dyspnea, fatigue Nausea, pain Consider use of scales e.g., Borg Dyspnea Scale or Rating of Perceived Exertion 	<p>Patient -- Objective</p> <ul style="list-style-type: none"> Cognition, balance Perspiration, cyanosis, heart rate, oxygen saturation, respiratory rate and blood pressure Other factors relevant to patient and mobility task, for example, cardiac rhythm in those patients when ECG is essential during mobilization or blood pressure monitoring in patient that is prone to postural hypotension.
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WHAT TO MONITOR AND HOW TO PROGRESS MOBILIZATION TO ENHANCE EFFECTIVENESS

Written communication regarding daily targets for exercise activities and a record of exercise activities accomplished should be posted at bedside and documented

- Type of **exercise activities match patient's functional needs** upon discharge i.e. walk distance, stairs, balance, strength sufficient to carry and unpack groceries.
- Targets for progression are determined daily** i.e. increase walk distance and/or increase number of walks, stair climbing, standing balance, U/E exercises.
- Pertinent **exercise parameters** i.e. heart rate and breathlessness, **increase proportionately with incremental activity and recover** to baseline within 5 minutes post activity

***SAFEMOB** available at <http://physicaltherapy.med.ubc.ca/physical-therapy-knowledge-broker/safemob-project/>

HOW TO PROGRESS				
For mobilization prior to Level V see SAFEMOB*				
	LEVEL V →	LEVEL VI →	LEVEL VII →	LEVEL VIII
Mobility Criteria for Entering this Level ^{6,7}	Patient is unable to transfer out of bed without moderate to maximum assistance and unable to sit independently.	Patient can transfer out of bed with minimal assistance, has independent sitting balance but unable to stand independently or walk without assistance.	Patient has independent standing balance. Patient can transfer/walk independently or with supervision, but has poor endurance. Unable to ascend/descend flight of stairs	Patient is independent with transfers and gait and has high level balance skills. Patient can do stairs with minimal assistance/supervision
TURNING AND BED MOBILITY	Q2H: Encourage patient to reposition self.	Q2H; Same as level V, plus encourage patient to sit up in bed for meals.	Q2H: Same as level VI, plus encourage patient to sit up in chair for meals.	Q2H: Same as level VII, plus encourage patient mobilize as tolerated.
EXERCISE PROGRAM ^{6,7}	Bed exercise program should include targeted lower limb, upper limb and abdominal strengthening exercises in supine as well as sitting balance exercises. (See Appendix I&II)	Sitting exercise program should include targeted lower limb, upper limb and abdominal strengthening exercises in sitting position, sit to stand exercises, marching on the spot and standing balance exercises. (See Appendix I&II)	Standing exercise program should include targeted lower limb, upper limb exercises as per level VI and ambulation. (See Appendix I&II)	Stairs exercise program should include targeted lower limb and upper limb exercises as per level VII (See Appendix I&II)
	Consider inclusion of: - Airway clearance techniques. Additional exercise / mobilization as indicated by PT assessment.	Consider inclusion of: - Cycle ergometry - Wheelchair mobility for wheelchair user.	Consider inclusion of: - Closed kinetic chain or functional strengthening exercises	Consider inclusion of: - Treadmill training
	Progress exercise duration/rep or train at a target rate e.g. percentage of the maximum load.	As per level V	As per level V	As per level V
MOBILIZATION	Sitting balance exercises with physio as appropriate, 5 to 10 minutes initially OD, then progress to BID and increased duration as tolerated.	Physio assesses ability to weight shift, and walk. Initial duration in chair 30 minutes, progress as indicated by OT/PT assessment.	Physio assesses walking and outlines walking program with appropriate aids. Patient able to manage O2 tanks, tubes, flow	Progress walking program with incline or stairs.
	Increasing time and/or frequency as patient tolerates. Ensure safe use of oxygen tank and tubing.	Same as level V. Patients with neuro/ortho status precluding WB require individualized mobilization prescription.	Progress walking time/distance or training at a target rate e.g. Borg scale,	As per level VII

WHAT TO CONFIRM PRIOR TO DISCHARGE

<p>Patient status, Home Services</p> <ul style="list-style-type: none"> • D/C planning involves the patient/ friends/family/other caregivers where appropriate • General health status, nutrition, mental health, sleep hygiene, bodyweight, and need for smoking cessation counselling has been assessed and deemed appropriate for D/C • Able to feed independently while sitting without undue fatigue • SpO2 > 88% during ambulation, with or without supplemental O2 • Assessed for home oxygen, under different conditions, and/or night-time mechanical ventilation completed • Assessed for and set up with home health (PT, OT, SW, RN) and community supports if indicated, and/or has been provided with info on this • Referred to pulmonary rehabilitation and physician follow-up appointment 	<p>Mobility</p> <ul style="list-style-type: none"> • Update mobility/balance assessment to determine if patient is safe for D/C. • Prescribe mobility aids and/or hip protector if there is a fall risk. • Patient should be able to ambulate a distance in accordance with home and community needs <p>Education -- consistent information, in understandable terms, to patient and family</p> <ul style="list-style-type: none"> • Written home activity/exercise plan provided • Inhaler technique, use of oral medications, use of supplemental O2 (including connections, flow rates, use with gait aids, potential side effects • Action plan for management of future AECOPD • Patient has received education on self monitoring and self management of COPD (i.e. pacing, airway clearance, breathing techniques, smoking cessation etc.
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Appendix I. Exercise frequency, duration and intensity

Type of Exercise	Frequency	Duration	Intensity	Overriding Principles for Intensity Consider interval training if dyspnea or exertion is severe	Implications of co-existing chronic conditions
Bed exercise	2x-3x/day 5 days/wk 5-10 reps/exercise 2 to 3 sets	20-30 min/session; exercise till D/C	Ex with resistance: 70% of 1RM; up to 80% of the sustainable load at baseline	<ul style="list-style-type: none"> • 10RM– fatigue @ 8th rep • No pain • Overall feeling of exertion 	<p>Diabetes (⁸):</p> <ul style="list-style-type: none"> • Ensure blood glucose is assessed and within safe range prior to exercise. • Consider the impact of peripheral neuropathy or vision impairment on the safety of the exercise prescription. <p>Osteoarthritis and musculoskeletal pain:</p> <ul style="list-style-type: none"> • Adapt resistance exercises to minimize load on affected joints or muscles. No sharp pain or increased pain lasting more than 2 hours <p>Stable Heart Failure (⁹):</p> <ul style="list-style-type: none"> • moderate exercise intensity with a BORG Dyspnea Scale between 3-5
Sitting exercise	2x-3x/day 5 days/wk 5-10 reps/exercise 2 to 3 sets	20-30 min/session; exercise till D/C	Fatigue should occur but not lasting for >2 hours		
Standing exercise	2x-3x/day 5 days/wk 5-10 reps/exercise 2 to 3 sets	20-30 min/session; exercise till D/C	No sharp pain should be induced		
Walking/Stair exercise	2x-3x/day 5 days/wk 5-10 reps/exercise 2 to 3 sets	20-30 min/session; exercise till D/C	BORG Dyspnea scale between 3-5.	<ul style="list-style-type: none"> • Dyspnea may occur but should not be > 7 on Borg Dyspnea Scale • Heart rate is not a good measure of intensity in these patients as the HR is typically elevated, especially in patients with AECOPD 	

Appendix II. List of Suggested Exercises ^{6,9-11} * = exercises where a weight could be used

Bed Based Strengthening (Level IV)		Bed Based Flexibility (Level V)		Seated Strengthening (Level VI)		Seated Flexibility (Level VI)	
Bench Press	Hip ab / adduction	Scapular retraction	Reaching*	Shoulder abduction*	Chest pull with resistive band	Shoulder circle	Side bend (hands behind head)
Inner range quads*	Bridging	Ankle Pump	Ankle inversion / eversion	Arm chair push	Knee extension	Side stretch (arm up)	Trunk rotation, arms crossed
Side lying to sitting	Heel drag	Knee to Chest (flexion)		Sit to stand		Forward bend to floor	
Seated Balance (Level VI)		Standing strengthening (Level VII)		Standing Flexibility (Level VII)		Standing Balance (Level VII)	
Forward lean for sit to stand	Trunk rotation, hands clasped	Diagonal arm pull down with resistive band	Diagonal arm pull up with resistive band	Scapular retraction	Lumbar extension in standing	Supported stepping on the spot	Supported calf raise
						Single step fwd/back	Single step side
						Turning on the spot	
Reaching / placing objects in horizontal, vertical, and diagonal pattern	Throwing / catching balloon	Alternating heel raise and toe raise	Partial knee bend	Trunk twist	Supported soleus stretch	Walking / Stair Program (Level VIII)	
						Walking	Picking up/carrying object
						Backward walking	Obstacle course
		Hip abduction	Hip extension*	Supported gastroc stretch	Reaching exercise	Step up	Flight of stairs

AECOPD-Mob developed by Dr. P. Camp, Dr. D. Reid, F. Chung, Dr. D. Brooks, Dr. D. Goodridge, Dr. D. Marciniuk, and A. Hoens. The project was supported by the Canadian Institutes of Health Research, the UBC Faculty of Medicine Department of Physical Therapy, the Physiotherapy Association of British Columbia, Vancouver Coastal Health Research Institute, Providence Health Research Institute and the COPD Canada Patient Network.
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