

Box 11: Reducing hospital utilisation: current level I and II evidence from COPD-X

Intervention	Demonstrated impact	Effect estimate	Where to find it
Level I			
LAMAs	"...LAMAs had reduced exacerbation rates ...and exacerbation-related hospitalisations ... compared to LABAs" NB: most participants in this analysis had <i>Tiotropium</i> as their LAMA	22% improvement (RR 0.78, 95% CI 0.69 to 0.87)	O1.2.1 <i>Maia</i> 2017
Tiotropium	"... tiotropium reduced the odds of a COPD exacerbation ... and related hospitalisations compared to placebo or ipratropium." "... tiotropium was more effective in preventing COPD exacerbations leading to hospitalisation [compared to a range of other LABAs]"	36% improvement (OR 0.64, 95% CI 0.51 to 0.82 NNT 30, 95% CI 22 to 61) 14% improvement (OR 0.86, 95% CI 0.79 to 0.93)	P5.1 <i>Barr</i> 2005 P5.2 <i>Chong</i> 2012
Acclidinium	"...Acclidinium resulted in marginal improvements in quality of life and FEV1, and reduced the number of patients with exacerbations requiring hospitalisation "	NNT 77 , 95% CI 51 to 233	O1.2.1 <i>Ni</i> 2014
Systemic corticosteroids	"... systemic corticosteroids reduce treatment failure (defined as additional treatment, hospital admission/re-admission for index episode, return to emergency department, unscheduled physician visit for the index episode) , improve lung function, shorten recovery and reduce the severity of exacerbations of COPD ... reduced the risk of treatment failure by over half compared with placebo in ... median treatment duration 14 days"	52% improvement (OR 0.48, 95% CI 0.35 to 0.67 NNT 9)	X2.2.2 <i>Walters</i> 2014
Non-invasive ventilation	"The use of NIV reduces hospital length of stay. "	MD -3.39 days , 95% CI -5.93 to -0.85	X3.2 <i>Osadnik</i> 2017

Intervention	Demonstrated impact	Effect estimate	Where to find it
Level I			
Hospital at home	"... compared to standard care, participants allocated to hospital in the home were significantly less likely to be readmitted to hospital within the next 1 to 6 months."	24% improvement (RR 0.76, 95% CI 0.59 to 0.99)	X1 <i>Jeppesen 2012</i>
Multi-faceted care plans	"... integrated disease management programs defined as 'a group of coherent interventions designed to prevent or manage one or more chronic conditions using a systematic, multidisciplinary approach and potentially employing multiple treatment modalities.' ... found positive effects on disease-specific QoL ... exercise tolerance, hospital admissions and hospital days per person... "	Admissions: 32% improvement (OR 0.68, 95% CI 0.47 to 0.99 NNT 15) Length of stay: MD -3.78 days , 95% CI -5.90 to -1.67	D <i>Kruis 2013</i>
Pulmonary rehabilitation	"Pulmonary rehabilitation also reduced hospital readmissions. "	56% improvement OR 0.44, 95% CI 0.21 to 0.91	X3.6 <i>Puhan 2016</i>
Intervention	Demonstrated impact	Effect estimate	Where to find it
Level II			
LAMA/LABA/ICS (umeclidinium/ vilanterol/ fluticasone furoate)	"In selected COPD patients with a history of exacerbations there was a 34% reduction in admissions with triple therapy using a single inhaler (fluticasone [ICS], vilanterol, umeclidinium – IMPACT study), as well as other benefits, regardless of baseline bronchodilator responsiveness, compared to dual therapy (no ICS), and with even greater benefits in some outcomes demonstrated in those with high eosinophil counts (>150 cells/ microlitre)."	34% improvement (RR 0.66, 95% CI 0.56 to 0.78)	O4.2 <i>Lipson 2018</i>
Airway clearance techniques	"The use of ACTs was associated with a significant short-term reduction in the need for increased ventilatory assistance ... duration of ventilatory assistance ...and hospital length of stay. "	MD - 0.75 days , 95% CI -1.38 to -0.11	X3.4

Intervention	Demonstrated impact	Effect estimate	Where to find it
Level II			
Discharge bundles	"... the use of COPD discharge bundles reduced hospital readmissions ..."	20% improvement (RR 0.80, 95% CI 0.65 to 0.99)	X3.7 <i>Ospina 2017</i>
Supported discharge programs & medication adherence	"...has been shown to reduce re-admissions for COPD exacerbations compared to usual care ..."	45% improvement (HR 0.55, 95% CI 0.35 to 0.88)	X3.8 <i>Casas 2006</i>
	"Adherence to inhaled medications regimes is associated with reduced risk of death and admissions to hospital due to exacerbations in COPD..."	44% improvement (RR 0.56, 95% CI 0.48 to 0.65)	O <i>Vestbo 2009</i>