

The impact of patient support programs among patients with severe asthma treated with biologic therapies: A systematic literature review and indirect treatment comparison

Authors: Adrian P.J. Rabe, Wei J. Loke, Danuta Kielar, Tamsin Morris, Vivian H. Shih, Lynda Olinger, Mihaela G. Musat, Zhiyi Lan, Sharada Harricharan, Olivia Fulton, Azeem Majeed, Liam G. Heaney

Supplementary Table 1. Systematic literature review search strategy

Topic		#	Term	Results
Disease: Asthma	Medline	1	exp Asthma/ or exp Asthma-Chronic Obstructive Pulmonary Disease Overlap Syndrome/	445516
	Embase	2	exp asthma/ or exp asthma-chronic obstructive pulmonary disease overlap syndrome/	445516
	All	3	Asthma\$.ti,ab.	441149
Patients with Asthma		4	or/1-3	540012
Disease severity terms	All	5	(severe or steroid\$-dependent or steroid\$ dependent or glucocorticosteroid\$-dependent or glucocorticosteroid\$ dependent or corticosteroid\$-dependent or corticosteroid\$ dependent or corticoid\$-dependent or corticoid\$ dependent or inadequat\$ controlled or persistent or therapy-resistant or therapy resistant or brittle or refractory or resistant or difficult or "not manage\$").mp,af,tw.	6407061
Patients with Severe Asthma		6	4 and 5	103592
Intervention: Biologics	Medline	7	Omalizumab/	13809
	Embase	8	benralizumab/ or omalizumab/ or mepolizumab/ or dupilumab/ or reslizumab/	21829
	All	9	(benralizumab or omalizumab or mepolizumab or dupilumab or reslizumab or Fasentra\$ or Xolair\$ or Nucala\$ or Bosatria\$ or Dupixent\$ or Cinqair\$ or Cinqaero\$).ti,ab.	19216
		10	or/7-9	26465
Treated patients with Severe Asthma		11	6 and 10	9313
Patient support program	Medline	12	Telemedicine/ or Remote Consultation/ or Patient Care/ or Self Care/ or Self-Management/ or Patient Education as Topic/ or internet/ or "internet of things"/ or internet-based intervention/ or Mobile Applications/ or Telephone/ or Cell Phone/ or Electronic Mail/ or Online Systems/ or Online Social Networking/ or Pharmaceutical Services, Online/ or Social Networking/ or Decision Support Systems, Clinical/ or social support/	1269764

Topic		#	Term	Results
	Embase	13	telemedicine/ or telecommunication/ or self care/ or patient care/ or patient education/ or internet/ or "internet of things"/ or web-based intervention/ or mobile application/ or mobile phone/ or telephone/ or mobile phone/ or e-mail/ or online support group/ or online monitoring/ or social network/ or decision support system/ or social support/	1284444
	All	14	((patient\$ or asthma or individual) adj2 (support\$ or car\$ or assist\$ or help\$) adj2 (program\$ or system\$ or tool\$ or etool\$ or plan\$)).ti,ab.	19383
		15	(nurs\$ or education\$ or resource\$ or train\$ or communicat\$ or remind\$ or consult\$ or alert\$ or counsel\$ or pharmacist\$ or pharmacy or pharmacies or e-pharmacy or e-pharmacies or (virtual adj1 counsel\$)).ti,ab.	6313323
		16	(short messaging service\$ or portal\$ or message\$ or email\$ or mail\$ or internet-base\$ or web-base\$ or internet\$ or website\$ or webpage\$ or mobil\$ or phone\$ or telephone\$ or social network\$ or IT-enabled\$ or telemedicine or telemonitor\$ or tele-medicine or tele-monitor\$ or teleconsult\$ or tele-consult\$ or telehealth or tele-health or multimedia or online or on-line or remote\$ or virtual or distance or 'e-support\$' or in-home or home\$ or multidisciplinary team\$ or \$care team\$ or interdisciplinary team\$ or multidisciplinary health or interdisciplinary health or public-private partnership\$ or public private partnership\$ or private-public partnership\$ or private public partnership\$ or public agreement\$ or private agreement\$).ti,ab.	4947517
		17	('self car\$' or 'self manag\$' or self-manag\$ or self-car\$ or selfcare\$ or selfmanag\$ or social support\$ or decision support\$).ti,ab.	281777
		18	or/12-17	10712058
Treated patients with Severe Asthma under PSP		19	11 and 18	1136
QOL Outcomes	QOL	20	exp "Quality of Life"/ or exp "Surveys and Questionnaires"/ or exp questionnaire/ or exp "quality of life assessment"/	2869834
		21	(QOL\$ or HQL\$ or HQOL\$ or H QOL\$ or HRQL\$ or HRQOL\$ or HR QOL\$).ti,ab.	216617
		22	(quality adj4 life).ti,ab.	995789
	General QoL scales	23	(sf-36\$ or sf36\$ or sf 36\$ or sf thirtysix or sfthirtysix or sf-thirtysix or sf thirty six or sf-20\$ or sf20\$ or sf 20\$ or sf twenty or sftwenty or sf-twenty or sf-12\$ or sf12\$ or sf 12\$ or sf twelve or sftwelve or sf-twelve or sf-6\$ or sf6\$ or sf 6\$ or sf six\$ or sfsix\$ or sf-six\$ or short form\$ or shortform\$ or RAND\$ or sf-5\$ or sf5\$ or sf 5\$ or sf five or sf-five or sffive).tw.	3589736

Topic	#	Term	Results	
	Utility	24	exp Health Status/ or exp Health Surveys/ or exp health survey/	1563242
		25	(euroqol\$ or euro qol\$ or euro-qol\$ or euroqual\$ or euro qual\$ or euro-qual\$ or eq5d\$ or eq 5d\$ or eq-5d\$ or eqoL-5d\$ or eqoL5D\$ or eqoL 5d\$).tw.	47582
		26	(utilit\$ or disutilit\$).tw.	679583
		27	(standard gamble\$ or time-trade-off or time trade-off or time trade off or time tradeoff or discrete choice experiment\$ or rosser).tw.	13025
		28	(SG or TTO or WTP or DCE).tw.	66082
		29	((valu\$ or measur\$ or preference\$) adj4 (health or outcome\$ or effect\$ or change\$ or state\$)).tw.	1598711
		30	(VAS or visual analog\$ scale\$ or visual-analog\$ scale\$).tw.	247193
	PRO	31	Patient Reported Outcome Measures/ or patient-reported outcome/	67413
		32	(patient adj2 reported adj2 outcome\$).ti,ab.	91703
		33	PRO.ti,ab.	636846
	Satisfaction	34	(satisf\$ or Treatment Satisfaction Questionnaire or TSQM\$ or SATMED-Q\$ or SATMEDQ\$ or SATMED Q\$ or 'Treatment Satisfaction with Medicines Questionnaire').tw.	1000904
Disease specific Questionnaires	35	Asthma Control Questionnaire/ or ('Asthma Control Questionnaire' or ACQ\$ or 'Asthma Control Test' or ACT\$ or 'Asthma Quality of Life Questionnaire' or AQLQ or 'St\$ George\$ Respiratory Questionnaire' or SGRQ or 'International Physical Activity Questionnaire' or IPAQ or 'Asthma Self-Management Knowledge Questionnaire' or AKQ or 'Beck Depression Inventory' or BDI or 'Beck Anxiety Inventory' or BAI or 'Living with Asthma Questionnaire' or LWAQ or LVAQ or 'Quality of Life for Respiratory Illness Questionnaire' or QOL-RIQ or QOLRIQ or fatigue or 'Patient-Reported Outcomes Measurement Information System' or PROMIS\$ or HADS or 'Hospital Anxiety and Depression Scale').tw.	48630	
Econ outcomes	Cost/HCRU	36	cost\$.ti,ab.	1998038
		37	Health Resources/ or health care utilization/	260632
		38	((resource\$ or health care or healthcare or health service\$ or drug\$ or medication\$) adj4 (use\$ or usage\$ or utilit\$ or utili#ation\$)).ti,ab	1078984
	BOI	39	burden\$.ti,ab.	825617
	Productivity	40	(Productivit* or work limitation*).ti,ab.	231005
		41	(work\$ or school\$ or employ\$).tw.	6802397

Topic		#	Term	Results
		42	((work or working) adj1 (absen\$ or loss\$ or disabilit\$ or abilit\$ or impairment\$ or limitation\$ or incapacit\$ or capacit\$)).tw.	36989
Adherence/Persistence/Discontinuation	Adherence	43	patient compliance/ or medication adherence/	261430
		44	(adherence\$ or compliance\$ or persistence\$ or discontinu\$ or 'Proportion of days covered' or PDC or 'medication possession ratio' or MPR).tw.	1409215
Exacerbation	Worsening	45	(exacerbat\$ or deteriorat\$ or worsen\$ or attack\$ or lung function\$ or pulmonary function\$ or respiratory function\$ or symptom\$).tw.	4827730
	Hospitalization	46	(hospitali\$ or length of stay\$ or length of hospital stay\$ or length of hospitali#ation\$ or ICU or inpatient or admission or emergen\$ or intensive care or intensive-care or (duration adj2 treatment) or (time adj2 treatment)).tw.	3370661
	OCS dose	47	((oral adj1 (corticosteroid\$ or corticoids\$ or glucocorticoid\$ or steroid\$)) and (dose or dosage or dosing)).tw.	9745
		48	or/20-47	22989313
Outcomes in Treated patients with Severe Asthma		49	11 and 48	7668
Treated Patients with Severe Asthma under PSP or with outcomes reported		50	19 or 48	7782
Irrelevant Study Design		51	(addresses or bibliography or biography or case report or comment or congresses or consensus development conference or duplicate publication or editorial or guideline or in vitro or interview or lectures or letter or monograph or news or "newspaper article" or practice guideline or "review literature" or review or "review of reported cases" or review, academic or review, multicase or review, tutorial or twin study).pt.	10977632
		52	(animals/ not (humans/ and animals/)) or (animal/ not (human/ and animal/))	6320201
		53	case report/ or case reports/	5257412
		54	or/51-53	21460095
		55	50 not 54	5157
Limits		56	limit 55 to English language	4959
		57	limit 56 to human	4551
		58	limit 57 to yr="2003 -Current"	4534
Final: Treated Patients with Severe Asthma under PSP or with outcomes reported		59	Deduplicate	3717