

APPENDIX A

Details of hospitalization studies included in the review and key predictors reported (n=82)

<i>1st Author (year)</i>	<i>Country</i>	<i>n</i>	<i>Sample of interest</i>	<i>Study type</i>	<i>Study design</i>	<i>Predictors identified</i>	<i>Sig.</i>	<i>p-value reported</i>
Adams, 2000	USA	293	Asthma	3	Prospective cohort	Disease severity	S	p=.042
						Hospitalizations < 12 months	S	p<.0001
						Lack of care plan	S	p=.005
						Lower autonomy	S	p=.01
						Coping style	S	p=.0001
						Distance to health services	S	p<.0001
Ahern, 2007	USA	97256	Diabetes (type 2)	4	Retrospective database review	Age(uncontrolled diabetes)	S	p<.0001
						Female	S	p<.0001
						Uninsured	S	p<.0001
						Income	S	p<.0001
						Alcohol abuse	S	p<.0001
						Lung disease	S	p<.0001
						Coagulation deficiency	S	p<.0001
						Drug abuse	S	p<.0001
						Fluid disorders	S	p<.0001
						Metastatic cancer	S	p<.0001
						Hypertension	S	p<.0001
						Liver disease	S	p<.0001
						Ash, 2006	USA	10145
Backus, 2002	USA	394 areas	ACS	4	Retrospective file review	Managed care	S	p=.0051
						Median income	NS	p=.13
						Percent female	NS	p=.56

						Percent white race	S	p=.03
						Median age	NS	p=.99
Basu, 2002	USA	167622	ACS	4	Retrospective database review	Primary care physicians per 1000 pop.	S	p<.01
						Inpatient days	NS	NR
						Specialists per 1000 pop.	S	p<.01
						Patient insurance factors	S	p<.01
						Race	S	p<.01
						Gender	S	p<.01
						Age (35 – 64)	S	p<.01
						Severity score	S	p<.01
						Metropolitan area	S	p<.01
						New York city	S	p<.05
Bahadori, 2007	Canada	17 studies	COPD	1	Systematic review	Previous hospital admission	S	
						Dyspnea	S	
						Oral corticosteroids	S	
						Long term oxygen therapy	S	
						Low health status	S	
						Lack of routine physical activity	S	
Billings, 1996	USA	Per 1000	ACS	4	Retrospective database review	Low income areas (Toronto)	+	NR
Bo, 2004	Italy	3892	Diabetes	3	Prospective cohort	Age (older)	S	p<.001
						Glycated haemoglobin level	S	p=.044
						Gender	NS	p=.313
						Residence	NS	p=.226
						Duration of diabetes	NS	p=.097
						Body mass index>30kg	S	p=.008
						Hypertension	NS	p=.077

						Insulin treatment	S	p<.0001
						Comorbidity	S	p<.0001
Booth, 2003	Canada	605825	Diabetes	4	Population study	Income level	S	p<.001
						Income level*age (45 – 64 years)	S	p<.001
						Physician contact (<12 mths)	S	p<.001
						Rurality	S	p<.001
						Usual primary care provider	S	p<.001
						Provision of managed care	S	p<.001
Brameld, 2006	Australia	500000 +	Chronic disease	4	Retrospective dataset review	Gender (Asthma)	NS	NR
						Gender (IHD) (m)	S	NR
						Race (ATSI)	S	NR
						Disadvantaged areas	S	NR
						Co-morbidity	S	NR
						Private Health Insurance	S	NR
Braunstein (2003)	USA	122630	CHF	3	Prospective cohort	Co-morbidity	S	p=.0001
Casas, 2006	Spain	155	COPD	2	RCT	Integrated care versus usual care	S	p=.02
Chan, 2002	Australia	526	Chronic disease	3	Prospective cohort	Hypertension	+	NR
						Ischaemic heart disease	+	NR
						Age	+	NR
						Co-morbidities	S	p<.001
Chen, 2001	Canada	17601	Asthma	3	Prospective cohort	Education	S	NR
						Income status	S	NR
						Immigrant status	NS	NR
						Age	S	NR
						Smoking	S	NR

						Allergy history (f)	S	NR
Chen, 2003	Canada	4409	COPD	4	Retrospective database review	Particulate matter	+	NR
Chen, 2006	Taiwan	99591	Asthma	4	Population study	PM 10 (pollutant)	S	p=0.43
						Age (>65 years)	S	p<.05
						Seasonality (spring)	S	p<.001
						Sulfur dioxide	S	p<.001
						Carbon monoxide	S	p<.001
						Ozone	S	p<.001
						Nitrogen dioxide	S	p=.003
						Air temperature	S	p<.001
						Sunshine hours	S	p<.001
						Atmospheric pressure	S	p<.001
Chin, 1997	USA	435	CHF	3	Prospective cohort	Acute anginal chest pain	S	p<.05
						Respiratory infection	NS	NR
						Uncontrolled hypertension	S	NR
						Non-compliance with medications	S	NR
						Atrial tachyarrhythmias	S	NR
						Unidentified cause	S	p<.05
Claudio, 1999	USA	Per 10000	Asthma	4	Retrospective database review	Low median family income	S	NR
						% ethnic minorities in population	S	NR
Davis, 2003	USA	per 10000	Diabetes	4	Retrospective file review	Race*gender (m)	S	p<.0001
						Race*gender(f)	S	p<.0001
Dominici, 2006	USA	200000 +	Chronic disease	4	Population study	Air pollution (PM concentrations)	+	NR
Diette, 2002	USA	6590	Asthma	3	Prospective cohort	Age (>65 years)	NS	NR
						Gender (f)	S	NR

						Race (non-white)	S	NR
						Less educated	S	NR
						Less physically healthy	S	NR
						More frequent asthma symptoms	S	NR
Eisner, 2001	USA	242	Asthma	3	Prospective cohort	Non-white race	S	NR
						Lower income	S	NR
						Emergency unit reliance	S	NR
						Severity of asthma score	S	NR
Eisner, 2000	USA	39	Asthma	3	Prospective cohort	Non-white race	S	NR
						Lower income	S	NR
						Severity of condition	S	NR
						Education (years)	NS	NR
						Married or cohabiting	NS	NR
						Cigarette smoking	NS	NR
						General physical health	S	NR
						Mental health	S	NR
						Recent hospitalization	S	NR
						Reliance on emergency department	S	NR
Emtner, 2006	Sweden	21	COPD	3	Prospective cohort	Walking distance capacity	S	p<.001
						Activity related health status (SGRQ – activity)	S	p<.05
Fan, 2007	USA	610	COPD	3	Prospective cohort	Co-morbidity (Depression)	NS	p=.160
Fortney, 2007	USA	Per 10000	Depression	4	Population study	Unemployment	S	p<.05
						Poverty	S	p<.05
						Physician supply	S	p<.05
						Hospital bed supply	S	p<.05
Gadoury (2005)	Canada	191	COPD	2	RCT	Age	S	p<.05

						Gender (female)	S	p<.05
						Higher education	S	p<.05
						Health status	S	p<.05
						Exercise capacity	S	p<.05
						Self-management intervention	S	p<.05
Gill (1998)	USA	13495	ASC	4	Population study	Continuity of care score	S	p<.01
Godtfredsen, 2002	Denmark	19709	COPD	3	Prospective cohort	Quitting smoking	S	p=.05
						Smoking reduction	NS	NR
Gottlieb, 1995	USA	22	Chronic disease	4	Population study	Medication use	S	p=.008
						Socioeconomic status	S	
Gudmundsson, 2005	Iceland	406	COPD	3	Prospective cohort	Lower lung capacity	S	NR
						Lower health status	S	NR
						FEV	S	NR
						Anxiety	S	p=.002
						Activity scale (SGRA)	S	NR
Guo, 2001	USA	345040	ACS	4	Population study	Age	S	p=.03
						Medicare access	S	p=.00
						Medicaid access	S	p=.04
						Low income residential	S	p=.00
Hanania, 1997	Canada	120	Asthma	3	Prospective cohort	Availability of crisis care plan	S	p<.001
						Increase bronchodilator treatment preceding asthmatic attack	S	p<.05
						Initiate steroid therapy preceding asthmatic attack	S	p<.001
						Contact an office-based physician when attack is perceived	S	p<.001

						Initiate steroid therapy within present episode	S	p<.001
Kasper (2002)	USA	200	CHF	2	RCT	Multidisciplinary intervention and CHF hospitalization	S	p=0.03
Kessler, (1998)	France	64	COPD	3	Prospective cohort	Low body mass index	S	p=.015
						Limited walking distance	S	p=.045
						Pulmonary artery pressure	S	p=.005
						Pulmonary hemodynamic worsening‡	S	p=.005
						Pulmonary artery pressure (rest)	S	p=.0008
						Pulmonary artery pressure (exercise)	S	p=.0001
						Home oxygenotherapy	S	p=.01
						Dyspnea	NS	p =.14
						FEV	NS	p =.50
						Age	NS	p =.10
Comorbidities	NS	p =.25						
Smoking	NS	p =.99						
Komaromy, 1996	USA	1530	Chronic disease	3	Prospective cohort	Physician practice style	NS	NR
Kozak, 2001	USA	Per 10000	Avoidable admissions	4	Retrospective database review	Age (>65)	S	p<.05
						Gender	S	p<.05
						Race	S	p<.05
Krall, 2001	USA	29	Asthma	3	Prospective cohort	Higher self-efficacy	S	p=.001
Laditka, 2006	USA	1782240	ACS	4	Population study	Race (African-Americans; Hispanics)*Gender*ACS	S	P<.05 to <.0001
Li, 1995	USA	310	Asthma	3	Prospective cohort	Prior hospitalization (<12 months)	S	NR

						Severity of disease	S	NR
						Medication regime	S	NR
						Steroid use	S	NR
						PEF variability	S	NR
Lin, 2002	USA	250000 +	Chronic Disease	4	Population study	Age (grouped)	S	P<.01
						Gender (m)	S	p<.01
						Locality (grouped)	S	p<.01
						Income (grouped)	S	p<.01
						Lake/inlet crossing	S	p<.05
						Hill crossing	S	p<.01
Luttik, 2005	Netherlan ds	17 studies	CHF	1	Systematic review	Social support	+	NR
Magadle, 2000	USA	113	Asthma	3	Prospective cohort	Perception of dyspnea	+	NR
Miller, 1992	USA	26	Asthma	4	Retrospective file review	Medication use	S	p=.001
						Symptom duration	S	p=.001
Miravittles, 2000	Spain	713	COPD	3	Prospective cohort Cross-sectional	Gender (m)	NS	p=.566
						Age, years	NS	p=.097
						BMI	NS	p=.681
						Active smokers	NS	p=.328
						CMH	NS	p=.687
						Co-morbidity	S	p=.006
						Forced Expiratory Volume (FEV)	S	p=.001
Morris, 1994	USA	Per 100000	Respiratory disease (incl. COPD, Asthma)	4	Population study	Geographic variability	S	p<.0001
						Income per capita	S	p=.0001
						Median school years	S	p=.0001
						Household crowding	S	p=.0001
						Physicians per capita	S	p=.0001
						Hospital beds per capita	S	p=.0001

						Population density	NS	p=.5059
						Lung cancer incidence	S	p=.0001
						Occupational lung disease	S	p=.0001
						Average annual temperature	NS	p=.6815
Moss, 1999	USA	542	Diabetes (older onset)	3	Prospective cohort	Gender	NS	NR
						Glycosylated haemoglobin	S	p<.005
						Hypertension	S	p=.30
						Age	NS	p=.13
						Body mass	NS	p=.93
						Blood pressure (Systolic)	NS	p=.02
						Smoking	NS	p=.30
						Alcohol consumption	NS	p=.07
						Physical activity	NS	p>.99
						Insulin	S	.03
Niefeld, 2003	USA	193556	Diabetes	4	Retrospective database review	Co-morbidity*age	S	NR
Niewoehner, 2007	USA	1829	COPD	3	Retrospective cohort	Age>65yrs	S	p<.0001
						FEV (%)	S	p<.0001
						ED visits (prior year)	S	p<.002
						Co-morbidity	S	p<.001
						Hospitalizations (prior year)	S	p<.001
Ng, 2004	Singapore	20598	COPD	4	Retrospective database review	Gender (m)	S	NR
Olopode, 1997	USA	44	Asthma	4	Retrospective file review	Childhood asthma	S	NR
						Higher dose CTC	S	p<.05
OMalley, 2007	USA	91318	COPD	4	Population study	Physician gender	NS	NR
						Years in practice (>10years)	S	p<.01
						Place of medical education	S	p<.05

						Board certification	NS	NR
						Speciality of usual physician	S	p<.05
						Effect of formal guidelines on clinical practice	S	p<.05
						Uses IT to generate preventative reminders	NS	NR
						Percent revenue generated by managed care (>50%)	S	p<.01
						Percent revenue generated by Medicaid revenue >50%)	S	p<.01
						Physician can provide access to ancillary services	S	p<.05
						Age (>65 years)	S	p<.01
						Race (black/other)	S	p<.01
						Median income	S	p<.01
						Rural residence	S	p<.05
						Medicaid support	S	p<.01
						Severity of comorbidity (HCC)	S	p<.01
						Prior hospitalization for same condition	S	p<.01
Ong, 2005	Singapore	127	COPD	3	Prospective cohort	Body mass index	S	p<.001
						Airflow obstruction score	S	p<.001
						Dyspnea score	S	p<.001
						Exercise capacity score	S	p<.001
Oster, 2007	USA	53052	ASC	4	Retrospective database review	Race (Hispanic)	NS	p=.39
						Medicaid status (uninsured)	NS	p=.08
Pagano, 2007	Italy	3892	Diabetes	3	Prospective cohort	Age	S	p=.0008
						Diabetes duration (years)	S	p=.0127
						HbA1c	S	p=.00001

						HDL-C	S	p<.00001
						Insulin treatment	S	p=.0001
						Nephropathy	NS	p=.0619
						Peripheral artery disease	NS	p=.0598
						Coronary artery disease	S	p=.0036
						Co-morbidity	S	p=.0012
Parchman, 1994	USA	Per 10000	AHC	4	Population study	Number of GPs/FPs per adult population	S	p=.005
						Number of general internists per adult population	NS	NR
						Mean per capita income	S	p=.05
Parchman, 1999	USA	12677	ACS	4	Population study	Age>75 years	NS	
						Gender (male)	S	p=.03
						Race – non white	NS	NR
						Education>12 years	NS	NR
						Married	NS	NR
						Income<10 000/year	NS	NR
						Medicaid	NS	NR
						Primary care shortage area	S	p=.02
Pitta, 2006	USA	17	COPD	3	Prospective cohort	Lower activity level	S	p=.03
Prescott, 1999	Denmark	14223	COPD	4	Population study	Education	S	NR
						Household income	S	NR
						Socioeconomic index	S	NR
Ramos, 2006	USA	5650	Asthma	4	Population study	Urbanization	NS	p=.131
						Gender (f)	S	p=.0001
						Age (45-64 years)	S	p=.016
						Median income	+	NR
						Education	-	NR
Rea, 2004	NZ	135	COPD	2	RCT	Chronic disease	S	p=.03

						management intervention		
Riddell, 2005	NZ	Per 100000	CHF	4	Retrospective database review	Socioeconomic deprivation (Maori)	+	p<.0001
Ringbaek, 2005	Denmark	170	COPD	3	Prospective cohort	Home oxygen therapy	NS	p=.47
Rizza, 2007	USA	520	ACSC	3	Prospective cross- sectional study	Age(overall model)	S	p=.027
						Gender	S	p=.013
						Number of hospitalizations (<12 months)	S	p=.03
						Number of patients per primary care physician	S	p<.001
						Number of medical visits (<12 months)	S	p<.001
						Self-reported health status	S	p=.017
						Shorter length of hospital stay	S	p=.011
						Distance between home and hospital	NS	p=.399
						Type of admission	NS	p=.18
						Additional persons in the household	NS	p=.105
Rodriguez- Artelojo, 2005	Spain	394	CHF	3	Prospective cohort	<i>SF36 Tool</i>		
						Physical functioning	S	p<.001
						Role-physical	NS	NR
						Bodily pain	NS	NR
						General health	S	p<.001
						Vitality	S	p<.05
						Social functioning	S	p<.05
						Role – emotional	S	p<.05
						Mental health	S	p<.001

						Physical summary score	S	p<.01
						Emotional summary score	S	p<.05
						<i>Minnesota Living with Heart Failure Tool</i>		
						Total score	NS	NR
						Physical summary score	NS	NR
						Emotional summary score	NS	NR
Rodriguez-Artelojo, 2006	Spain	371	CHF	3	Prospective cohort	Moderate social network	S	p<.05
						Low social network	S	p<.05
						Serum creatinine at admission	S	p<.05
						Charlson Index	S	p<.05
						Katz's Index	S	p<.05
						Previous hospitalization	S	p<.05
Robbins, 2006	USA	18800	Diabetes	3	Retrospective cohort	Gender (f)*Age(<35 yrs)	S	NR
						Gender (m)*Age(>55 yrs)	S	NR
						Race	+	NR
Rost, 2007	USA	1455	Depression	4	Retrospective database review	Rurality *physical problems	S	p<.01
						Rurality*emotional problems	S	p<.05
Saha, 2007	USA	Per 10 000	ACSC	4	Population study	Medicaid*uninsured	S	p<.001
Savoie, 2004	Canada	110	Depression	1	Systematic review	Gender (f)	S	p<.05
						Education	-	NR
						Age	+	NR
Scherer, 2001	USA	29	Asthma	3	Prospective cohort	Higher self-efficacy	S	p=.001
						Attitudes	S	p=.001
Schwarz, 2003	USA	128 dyads	CHF	3	Prospective cohort	Severity of illness * functional status	S	NR
						Caregiver stress* depression	S	NR

Saxena, 2006	UK	Per 100000	Asthma	4	Population study	Deprivation score (asthma, COPD)	S	p<.05
			Diabetes			Condition-specific mortality rates (COPD)	S	p<.05
			Heart Failure COPD			% Ethnic minority residents	NS	NR
						% lone parents (diabetes)	S	p<.05
			% Elderly living alone (asthma, COPD)			S	p<.05	
			Average total patient list size			NS	NR	
			% GPs with <2500 patients			NS	NR	
			Total number of GPs			NS	NR	
			% GPs offering condition-specific services			NS	NR	
			Prescription rate			NS	NR	
Smith, 2000	USA	1378	Chronic Disease	2	RCT	Hospitalizations (<6m)	S	p=.0001
						ER visits (<6m)	S	p=.045
						High blood urea nitrogen	S	p=.004
						Lower mental health function	S	p=.005
						COPD	S	p=.0001
						Increased satisfaction with access to ED	S	p=.028
Sprenkle, 2004	USA	40605	COPD Asthma	3	Prospective cohort	SF36-physical component summary	S	p<.0001
						SF36- mental component summary	S	p=.047
Stewart, 1998	Australia	97	CHF	2	RCT	Home based intervention	S	p=.03
						Living alone	NS	p=.07
						Prolonged unplanned readmission (prior to study)	S	p=.002

						hypoalbuminemia	S	p=.01
						Previous admission for acute episode of same condition	S	p=.02
Tong, 1999	Australia	40 areas	Asthma	4	Retrospective file review	Seasonality	+	NR
						Rurality	+	NR
Trawick, 2001	USA	103	Asthma	4	Retrospective file review	Gender	S	NR
						Race	NS	NR
						Age *Gender	S	p<0.001
Tsuchihashi, 2001	Japan	230	CHF	3	Prospective cohort	Poor follow-up visits	S	NR
						Previous admission for CHF	S	NR
						No occupation	S	NR
						Longer hospital stay	S	NR
						Hypertension	S	NR
Williams, 2005	USA	176	Asthma	3	Prospective cohort	Human metapneumovirus	S	p=.03
Wolff, 2002	USA	1217103	Chronic disease	3	Randomized cross-sectional file review	Co-morbidity (chronic condition)	S	NR
Yohannes, 2001	UK	NR	COPD	1	Systematic review	Low FEV	+	NR
						Chronic mucus hypersecretion	+	NR
						Atmospheric air pollution	+	NR
						Flu outbreaks or epidemics	+	NR
						Clinical anxiety	+	NR
						Physical disability	+	NR
						Severity of respiratory impairment	+	NR
						Age	+	NR
						Co-morbid illness	+	NR
						Impaired quality of life	+	NR

NOTE: S=significant, NS=not significant, NR=not reported or unclear, *interaction effect

