Supplemental materials for:

Stokes J, Man M, Guthrie B, Mercer SW, Salisbury C, Bower P. The Foundations Framework for developing and reporting new models of care for multimorbidity. *Ann Fam Med.* 2017;15(6):570-577.

Contents

Search strategy methods

We searched a number of bibliographic databases (MEDLINE, EMBASE, Cochrane CENTRAL – up to 18th September 2015) for three blocks of terms (*multimorbidity/chronic conditions*; AND *primary care*; AND *models/frameworks/interventions* (see below for example search strategy). We supplemented our bibliographic search with our knowledge of any additional models that met the inclusion criteria.

One researcher combined the results of the search strategies in a single Endnote database, and scanned first titles, then abstracts, and finally full texts, excluding irrelevant articles at each stage according to our inclusion/exclusion criteria. All articles recommended for inclusion by the first reviewer were independently assessed for inclusion or exclusion by a second reviewer.

Inclusion criteria:

- *Practical* models of care aimed at informing the organisation and/or delivery of care
- Models intended to improve the care and outcomes of people with chronic conditions or multimorbidity (defined as the presence of two or more chronic conditions) (Boyd and Fortin, 2010)
    - Not focused on a single specific chronic condition/type of condition (e.g. mental health), but at adapting health services/systems for chronic conditions in general and/or multimorbidity in particular
- Models based in the primary care setting (defined as "first-contact, continuous, comprehensive, and coordinated care provided to populations undifferentiated by gender, disease, or organ system") (Starfield, 1994)

Exclusion criteria:

- Non-English language papers

We did not exclude any article based on study type. The data from each model were independently extracted by two researchers, with consensus reached by discussion.

Detailed search strategy (Ovid Medline as example)

Models/framework/intervention (adapted from (Moullin et al., 2015))

1. exp Models, Educational/ or exp Models, Psychological/ or exp Models, Economic/ or exp Models, Nursing/ or exp Models, Organizational/ or exp Models, Structural/

2. model$.ti,ab.

3. framework$.ti,ab.

4. theory.ti,ab.

5. theories.ti,ab.

6. intervention$.ti,ab.

7. exp Intervention Studies/

8. principle$.ti,ab.

9. re?design$.ti,ab.

10. re?config$.ti,ab.

11. re?form$.ti,ab.

12. (manag$ adj2 patient$).ti,ab.

13. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12

Primary care (expert search from OVID website)

14. Family Practice/

15. Primary Health Care/

16. Physicians, Family/

17. Community Health Services/

18. Community Dentistry/

19. Community Health Nursing/

20. Community Mental Health Services/

21. Community Pharmacy Services/

22. Home Care Services/

23. Community Mental Health Centers/

24. family pract$.tw.

25. general practice$.tw.

26. community based.tw.

27. community care.tw.

28. family medicine.tw.

29. family physician$.tw.

30. primary care.tw.

31. (primary health care or primary healthcare).tw.

32. family doctor$.tw.

33. primary medical care.tw.

34. general physician$.tw.

35. general practitioner$.tw.

36. primary care practitioner$.tw.

37. (community adj (health or healthcare or health care)).tw.

38. primary healthcare team$.tw.

39. primary health care team$.tw.

40. primary medical care team$.tw.

41. practice nurse$.tw.

42. practice manager$.tw.

43. (gpsi or gpwsi).tw.

44. (practitioner$ adj3 special interest$).tw.

45. (primary care or primary health care or general practice or family practice or family medicine).nw.

46. or/14-45

Multimorbidity/ long-term conditions (Smith et al., 2012)

47. Comorbidity/

48. (comorbid$ or co-morbid$).ti,ab.

49. (multimorbid$ or multi-morbid$).ti,ab.

50. (multidisease? or multi-disease? or (multiple adj (ill$ or disease? or condition? or syndrom$ or disorder?))).ti,ab.

51. or/47-50

52. Chronic disease/

53. (chronic$ adj3 (disease? or ill$ or care or condition? or disorder$ or health$ or medication$ or syndrom$ or symptom$)).ti,ab.

54. or/52-53

55. 51 or 54

56. exp diabetes mellitus/ or diabet$.ti,ab.

57. exp hypertension/ or (hypertens$ or high blood pressure).ti,ab.

58. exp heart diseases/ or (((heart or cardiac or cardiovascular or coronary) adj (disease? or disorder? or failure)) or arrythmia?).ti,ab.

59. exp cerebrovascular disorders/ or ((cerebrovascular or vascular or carotoid$ or arter$) adj (disorder? or disease?)).ti,ab.

60. exp asthma/ or asthma$.ti,ab.

61. exp pulmonary disease chronic obstructive/ or (copd or (pulmonary adj2 (disease? or disorder?))).ti,ab.

62. exp hyperlipidemia/ or (hyperlipidem$ or Hypercholesterolemia$ or hypertriglyceridemia$).ti,ab.

63. exp Thyroid diseases/ or ((thyroid adj (disease? or disorder)) or hyperthyroid$ or hypothyroid$).ti,ab.

64. exp arthritis rheumatoid/ or rheumatoid arthritis.ti,ab.

65. exp mental disorders/ or (((mental or anxiety or mood or psychological or sleep) adj (disease? or disorder?)) or ((substance or drug or marijuana or cocaine or Amphetamine) adj2 abuse) or depression or schizophren$ or psychos$ or substance abuse or addiction?).ti,ab.

66. exp epilepsy/ or (epileps$ or seizure?).ti,ab.

67. exp hiv infections/ or (HIV or acquired immune$ deficiency syndrome? or (aids adj (associated or related or arteritis))).ti,ab.

68. exp neoplasms/ or (neoplasm? or cancer?).ti,ab.

69. exp kidney diseases/ or (kidney adj (disease? or disorder?)).ti,ab.

70. exp liver diseases/ or (liver adj (disease? or disorder?)).ti,ab.

71. exp osteoporosis/ or osteoporosis.ti,ab.

72. or/56-71

73. ((coocur$ or co-ocur$ or coexist$ or co-exist$ or multipl$) adj3 (disease? or ill$ or care or condition? or disorder$ or health$ or medication$ or symptom$ or syndrom$)).ti,ab.

74. chronic$.ti,ab,hw.

75. 73 or 74

76. 72 and 75

77. 55 or 76

78. 13 and 46 and 77

79. limit 78 to english

Individual model descriptions (Table A1)

Model of care	Year	Health system context (country)	Underlying conceptual framework	Target population	Short description of Model	References
3D	2016	UK	Patient Centred Care Model	Patients with multimorbidity (3/more conditions)	3D is a complex intervention including components affecting practice organisation, the conduct of patient reviews, and integration with secondary care. Changes include improving continuity of care and replacing separate reviews of each disease with patient-centred reviews with a focus on patients' quality of life, mental health and polypharmacy.	(Man et al., 2016)
CARE Plus	2016	UK	not stated	Multimorbid patients living in high deprivation areas	Whole system primary care-based model to improve quality of life in multimorbid patients living in areas of very high deprivation. Consists of structured longer consultations, relationship continuity, practitioner peer-support, and self-management support.	(Mercer et al., 2016a) (Mercer et al., 2016b)
Denver Health Intensive Outpatient Clinic (IOC)	2015	USA	not stated	Very high-risk patients, 'super-utilizers'	Modeled as a primary care ICU for super-utilizers with no other primary care/beyond the reach of traditional primary care. Offers longer appointments, interdisciplinary team, easy access and integration with mental, hospital and primary care.	(Batal et al., 2015) (Denver Health, 2016)
ENHANCE	2015	UK	Chronic Care Model	Patients 45+ with chronic conditions	A nurse-led ENHANCE LTC review consultation for identifying, assessing, and managing joint pain, and anxiety and/or depression in patients attending LTC reviews.	(Healey et al., 2015)

TrueBlue	2015	Australia	Chronic Care Model	Patients with diabetes/heart disease and depression	Collaborative care intervention. A care plan was designed around diabetes, coronary heart disease, and depression management guidelines to prompt implementation of best practices and to provide a single document for information from multiple sources.	(Morgan et al., 2015)
Intensive Management Patient-Aligned Care Team (ImPACT)	2014	USA	not stated	High-need, high-cost Veterans	ImPACT is a multidisciplinary team that provides intensive case management for high-need, high-cost patients. Through a “high-touch” model—combining telephone, in-person, and community-based activities	(Zulman et al., 2014)
Shared Medical Appointments (SMAs)	2014	Australia	not stated	Management of chronic diseases	An SMA is a comprehensive medical visit, but in a group consultation with other patients. ‘A series of individual office visits sequentially attending to each patient’s unique medical needs individually, but in a supportive group setting where all can listen, interact and learn’.	(Egger et al., 2014)
Chronic disease prevention and management (CDPM)	2013	Canada	Chronic Care Model	Chronic disease patients after acute care episode	Integration of chronic disease prevention and management (CDPM) services into primary health care with a focus on self-management support, patient-centered care, motivational interviewing, interprofessional collaboration and integration of services.	(Fortin et al., 2013)
Internal Medicine Associates-Preventable Admissions Care Team (IMA/PACT)	2013	USA	not stated	Patients with multiple chronic conditions or hospital admissions	IMA PACT team serves patients for whom the current healthcare delivery system is insufficient. Team-delivered (same team over time) intensive primary care with increased visit time and intensity, holistic assessments, and an 'open access' policy - patients seen as walk-in/can phone in/home visits as needed.	(Lynch et al., 2014) (Lipani, 2013) (Mount Sinai Hospital, 2016)

Interprofessional Model of Practice for Aging and Complex Treatments (IMPACT)	2013	Canada	not stated	Community-dwelling seniors with complex health care needs	Model of interprofessional primary care for elderly patients with complex health care needs delivered by comprehensive multidisciplinary team. Patient appointments are 1.5 to 2 hours in length, during which time a diverse range of medical, functional, and psychosocial issues are investigated by the full interprofessional team.	(Tracy et al., 2013)
Prevention of Care (PoC)	2013	Netherlands	not stated	Community dwelling frail elderly	Nurse-led interdisciplinary primary care case management approach for community dwelling frail older people.	(Metzelthin et al., 2013)
The ChenMed Model	2013	USA	not stated	Low- and middle-income seniors	A primary care–led group practice. A number of innovations: a one-stop-shop approach for delivering multispecialty services in the community, smaller physician panel sizes of 350–450 patients that allow for intensive health coaching and preventive care, on-site physician pharmacy dispensing, a collaborative physician culture with peer review, and customized information technology.	(Tanio and Chen, 2013)
Care Guides	2012	USA	Chronic Care Model	Original study: Adults with hypertension, diabetes, or heart failure/ combinations of these (authors assert can be adapted to other populations)	Lay persons (“care guides”) without previous clinical experience were hired by a primary care clinic, trained for 2 weeks, and assigned to help patients and their providers manage their diabetes, hypertension, and congestive heart failure.	(Adair et al., 2012) (Adair et al., 2013) (Radel et al., 2014)

Choices for Healthy Aging (CHA)	2012	USA	Home-based palliative care programme model	Chronic ill, at high-risk of hospitalisation	Interdisciplinary team (separate from usual primary care practitioner) that provided care in the home for chronically ill patients at high risk for hospitalization.	(Levine et al., 2012)
Health Quality Partners (HQP)	2012	USA	not stated	Elderly with one or more eligible chronic conditions	A comprehensive, integrated, and tightly managed system of care coordination, disease management, and preventive services provided by community-based nurse care managers working collaboratively with primary care providers.	(Coburn et al., 2012)
Promoting effective advance care planning for elders (PEACE)	2012	USA	Chronic Care Model	Nursing home-eligible, chronically ill elderly	An in-home interdisciplinary care management intervention that combines palliative care approaches to symptom management, psychosocial and emotional support, and advance care planning with geriatric medicine approaches to optimizing function and addressing polypharmacy.	(Allen et al., 2012) (Radwany et al., 2014)
Transformacion Para Salud (TPS)	2012	USA	Chronic Care Model	Patients with selected chronic diseases and co-morbidities	A patient navigation model where certified community health workers (CHW) were trained to deliver health care, preventive services, and health education for underserved populations to promote chronic disease self-management.	(Esperat et al., 2012)
Healthcare Partners	2011	USA	not stated	High-need patients at risk of hospitalisation	Multidisciplinary teams care for patients who have just been discharged from a hospital or who have conditions such as chronic obstructive pulmonary disease or congestive heart failure. Homecare Teams visit homebound patients.	(Feder, 2011)

TEAMcare	2011	USA	Chronic Care Model	Patients with diabetes/heart disease and depression	Multidisciplinary team case management focused on mental and physical health multimorbidity, prevention, and self-management.	(McGregor et al., 2011)
Vermont Blueprint Model	2011	USA	Chronic Care Model	General population (evolved from targeted chronic care population)	Having community health teams work with primary care providers to assess patients' needs, coordinate community-based support services, and provide multidisciplinary care for a general population. Add-on to PCMH model.	(Bielaszka-DuVernay, 2011)
GP Super Clinics	2010	Australia	not stated	Patients with complex conditions	Formation of large 'Super' clinics for primary care co-locating multidisciplinary practice (including a number of GPs with specialised skills) for the management of complex chronic disease patients. Complex patients referred from usual GP	(Dart et al., 2010) (Considine et al., 2012)
APTCare	2009	Canada	not stated	Frail, at-risk of hospitalisation patients	Home-based anticipatory and prevention-oriented case management from a collaborative team composed of the patient's physicians, 1 of 3 nurse practitioners, and a pharmacist.	(Gray et al., 2010) (Hogg et al., 2009) (Dahrouge et al., 2010)
Guided Care	2008	USA	Chronic Care Model	High-risk patients with multimorbidity and complex care needs	A registered nurse who has completed a supplemental educational curriculum works in a practice with several primary care physicians, conducting case management for 50-60 multimorbid patients.	(Boult et al., 2008) (Boult and Wieland, 2010)
After Discharge Management of Low Income Frail Elderly (AD-LIFE)	2007	USA	Chronic Care Model	Functionally impaired, low income, frail elderly with chronic conditions	Intensive case management followed by case manager stepping back to allow more self-management	(Allen et al., 2011) (Wright et al., 2007)

Care Advocate Program (CA)	2007	USA	Chronic Care Model	Older adults with high care utilisation	Social worker acts as 'Care Advocate' to better co-ordinate care and provide health coaching through case management.	(Alkema et al., 2007)
Nurse-Physician Collaborative Partnership rural (Nurse-Physician Collab)	2007	Canada	Chronic Care Model	Rural high-needs patients who are elderly and have complex chronic problems	Collaborative partnership between homecare nurses and family physicians in a rural area. Shared care plan, which included comprehensive biopsychosocial assessment, early intervention, health education and self-management.	(Mitton et al., 2007)
Geriatric Resources for Assessment and Care of Elders (GRACE)	2006	USA	not stated	Low income elderly patients	Initial home assessment by a nurse and social worker, followed by interdisciplinary case management including protocols for evaluating and manageing common geriatric conditions. Work clselyto lign managegment with paient imary care physican.	(Counsell et al., 2006) (Counsell et al., 2007) (Counsell et al., 2009) (Boult and Wieland, 2010)
Integrated Services for Frail Elders (SIPA)	2006	Canada	not stated	Elderly persons with functional disabilities	The integratedmodel encompassed a group of coordinated services offered to persons admitted to the SIPA program under the responsibility of a case manager and a multidisciplinary team providing home health and social care, 24/7 on-call service, the application of care protocols, etc.	(Beland et al., 2006)
Patient-Centered Medical Home (PCMH)	2005	USA	Chronic Care Model	Whole primary care system, including chronic care	Practical implementation of the Chronic Care Model. PCMH core features include the following: Enhanced access; Payment reform; Personal physicians; Physician-directed medical practice (leading a team of multidisciplinary members); Quality and safety; Whole-person orientation.	(PCPCC, 2007) (Nutting et al., 2009) (Kamajian, 2010) (Epperly, 2011) (Jackson et al., 2013) (Wagner et al., 2012)

VNS Choice Model	2005	USA	not stated	Medically complex and frail nursing home-eligible elderly	Collaboration between interdisciplinary care team clinicians, members, caregivers, physicians, providers and facility staff; and continuous coordination of care, which addresses the multiple health and community services needs of the program's population through case management approach.	(Fisher and McCabe, 2005)
Community Matrons	2004	UK	Chronic Care Model	Patients with multimorbidity at risk of hospitalisation	Nurse-led case management model for patients with complex healthcare needs aiming to improve care and reduce hospitalisations through personalised care plans and teaching self-management skills	(Drennan et al., 2011) (Randall et al., 2014) (Murphy, 2004)
Evercare	2004	UK	not stated	Elderly at high-risk of emergency admission	Nurse-led, co-located case management model for elderly patients with history of emergency admissions	(Winstanley, 2004) (Gravelle et al., 2007) (Boaden et al., 2006)
PeaceHealth Senior Health and Wellness Center (SHWC)	2004	USA	Chronic Care Model	Frail elderly with multimorbidity, and management of chronic conditions in the healthier elderly population	The model emphasizes team development, integration of evidence-based geriatric care, site-based care coordination, longer appointment times, ''high touch'' service qualities, utilization of an electronic medical record across care settings, and a prevention/wellness orientation.	(Stock et al., 2004)
Virtual Integrated Practice (VIP)	2003	USA	not stated	Chronically ill patients (diabetes/COPD/urinary incontinence)	Relies on communications technology to link clinicians from different disciplines at different locations. VIP teams work together to develop explicit patient care goals in a specific clinical problem area. Four strategies are used: planned communications, process standardization, group activities and patient self-management.	(Rothschild et al., 2004) (Rothschild and Lapidos, 2003)

Home Based Primary Care (HBPC)/ Independence at home (IAH)	2000	USA	not stated	Older Adults with Severe Chronic Illness	Comprehensive longitudinal primary care (case management) delivered in home by an interdisciplinary team	(Edes et al., 2014) (Hughes et al., 2000) (DeJonge et al., 2009)
Senior Care Connections (SCC)	2000	USA	not stated	Community-dwelling seniors with chronic illnesses	Multidisciplinary team case management approach combining office-based, home-visits and telephone management.	(Sommers et al., 2000)
Geriatrics Evaluation and Management (GEM)	1998	USA	not stated	High-risk community dwelling older adults	Multidisciplinary team case management approach after initial hoistic assessment	(Boult et al., 1998)
Cooperaptive Health Care Clinic (CHCC)	1997	USA	not stated	Patients with high health service utilisation and one or more chronic conditions	Group visits with the patient's primary care physician and nurse, including health education, prevention measures, opportunities for socialisation, mutual support, and one-to-one consultation with physician where necessary	(Beck et al., 1997)
Program of All-Inclusive Care for the Elderly (PACE)	1992	USA	not stated	Frail elderly individuals with severe chronic diseases eligible for a nursing home	A capitated health care program that allows individuals who qualify for the level of care provided by a nursing home to remain in their communities instead. Includes comprehensive care provided by an interdisciplinary team, a medical day program, patient care coordination, intensive work with families, and provision of transportation and home care as needed.	(Shaw, 2014) (Boult and Wieland, 2010) (Kane et al., 1992) (Lynch et al., 2008) (Casiano, 2015)

Individual model elements (Table A2)

Model of care	Year	Elements																												
		Clinical Focus							Organisation of care delivery														Support for model delivery							
		Self-management support	Biopsychosocial (holistic) approach	Prevention focus	Polypharmacy attention	Shared decision-making	Mental health care focus	Application of guidelines/protocols	Case management	Integration with social/ community care	Integration with secondary care	Multi-disciplinary teams/ Collaborative care	Home-care	Co-location of services	Scheduled chronic disease appointments	Extended appointment time	Nurse-led	Group visits	Single healthcare professional responsible for patient	24/7 support available	Trained lay navigator/health coach	Up-skilling primary care workforce (new roles)	Education of healthcare professional for chronic care	Telephone management	Funding/payment changes	Clinical IT linkage with other services/providers	Electronic population stratification risk tool	Tele-health	Primary care providers network
3D	2016	■	■	■	■	■	■	■	■		■				■	■			■			■	■		■	■	■		
CARE Plus	2016	■	■			■	■	■	■	■						■			■										■
IOC	2015				■		■		■	■	■	■				■					■	■					■			
ENHANCE	2015	■				■	■		■	■	■				■	■	■						■		■				
TrueBlue	2015	■	■	■	■	■	■	■	■	■	■				■	■	■					■	■		■				
ImPACT	2014	■	■	■	■		■	■	■	■	■	■		■								■	■	■		■			
SMAs	2014	■	■	■	■							■			■	■		■					■						
CDPM	2013	■	■	■	■						■	■			■							■	■						
IMA/PACT	2013	■	■	■			■		■	■	■	■	■	■		■						■		■					
IMPACT	2013	■	■	■	■	■			■	■		■		■		■						■	■						
PoC	2013	■	■	■	■	■	■	■	■	■	■	■	■		■		■					■	■						
ChenMed	2013	■		■							■	■		■		■			■						■	■			
Care Guides	2012	■		■		■				■				■							■	■								
CHA	2012	■	■	■	■	■	■		■	■	■	■	■	■							■	■		■			■			
HQP	2012	■	■	■	■		■	■	■	■	■		■				■	■	■			■	■	■	■					
PEACE	2012	■	■	■	■	■	■	■	■	■	■	■	■		■					■		■	■	■	■	■				
TPS	2012	■	■	■		■			■	■		■						■			■	■								
Healthcare Partners	2011	■			■				■	■	■	■	■	■		■						■		■	■		■			
TEAMcare	2011	■	■	■	■	■	■	■	■		■	■			■		■					■	■	■		■		■		
Vermont Blueprint	2011	■	■	■		■	■		■	■	■	■		■			■					■	■		■	■			■	
GP Super Clinics	2010	■		■	■				■		■	■		■								■	■		■			■		
APTCare	2009	■	■		■	■	■		■	■		■	■									■		■				■		
Guided Care	2008	■	■		■	■	■	■	■	■	■		■				■	■	■			■	■	■		■	■			
AD-LIFE	2007	■	■	■	■			■	■	■	■	■	■				■						■		■	■				
CA	2007	■	■			■			■	■	■											■		■						
Nurse-Physician Collab	2007	■	■		■			■	■	■		■	■										■			■				
GRACE	2006	■	■	■	■	■	■	■	■	■	■	■	■									■	■	■		■				
SIPA	2006		■		■			■	■	■	■	■	■							■		■	■		■	■				
PCMH	2005	■	■	■		■	■	■	■	■	■	■						■	■	■		■	■	■	■	■	■			
VNS Choice	2005		■	■	■	■	■	■	■	■	■	■	■				■		■			■	■	■	■					
Community Matrons	2004	■	■	■	■	■	■		■	■	■						■		■			■	■							
Evercare	2004	■	■	■	■	■			■	■	■		■	■			■					■	■				■			
SHWC	2004	■	■	■	■		■	■	■	■	■	■	■	■		■						■	■	■	■	■	■			
VIP	2003	■		■	■			■	■	■		■	■					■					■	■		■	■	■		
HBPC/ IAH	2000		■		■				■	■	■	■	■							■		■			■	■	■			
SCC	2000	■		■		■			■	■		■	■	■	■			■				■	■	■						
GEM	1998	■	■	■	■		■	■	■	■	■	■	■	■	■	■				■		■	■	■						
CHCC	1997	■	■	■					■			■			■			■												
PACE	1992		■	■	■	■			■	■	■	■	■	■	■							■			■					

Prevalence of the elements used by framework categories (Table A3)

The prevalence of elements shown in **bold** have increased or decreased significantly (tested with chi-squared statistic, $p<0.05$) since 2010.

Category (average number of category elements used per model)	Element	All models % (n=39)	Models before 2010 % (n=18)	Models post 2010 % (n=21)	Difference*
Clinical focus (4.7)	Self-management support	87	78	95	17%
	Biopsychosocial approach	79	89	71	-18%
	Prevention focus	74	67	81	14%
	Polypharmacy attention	72	78	67	-11%
	Shared decision making	56	56	57	1%
	Mental health focus	54	44	62	18%
	Guidelines/protocols focus	46	56	38	-18%
Organisation of care delivery (5.6)	Case/care management	90	100	81	-19%
	Integration social/community care	82	94	71	-23%
	Integration secondary care	74	72	76	4%
	MDT/collaborative care	72	78	67	-11%
	Home care	54	78	**33**	**-45%**
	Co-location of services	33	28	38	10%
	Scheduled chronic appointments	31	17	43	26%
	Extended appointments	31	11	**48**	**37%**
	Nurse led service	28	28	29	1%
	Group visits	21	28	14	-14%
	Single professional responsible	21	22	19	-3%
	24/7 support available	15	22	10	-12%
	Trained lay navigator/coach	8	0	14	14%

Support for model delivery (3.2)	Upskilling of primary care workforce	79	78	81	3%
	Education of professionals	69	72	67	-5%
	Telephone management	49	61	38	-23%
	Funding/payment change	41	39	43	4%
	Clinical IT linkage	38	50	29	-21%
	Risk stratification tool	26	33	19	-14%
	Tele-health	10	11	10	-1%
	Primary care provider network	5	0	10	10%

*Difference = % of models implementing post-2010 - % of models implementing before-2010

Glossary of component terms

Clinical focus

Self-management support: Extra support offered with emphasis on enabling patients to manage their own chronic conditions.

Biopsychosocial (holistic) approach: When a social worker is involved or attention to social circumstances (as well as health) are explicitly mentioned.

Prevention focus: Focus on addressing disease risk-factors (e.g. diet, smoking etc.) through inclusion of specific practitioner (e.g. dietician) or interventions.

Polypharmacy attention: When a pharmacist is involved in the model or medication reviews are explicitly mentioned.

Shared decision-making: Patient is actively involved in treatment decision-making (e.g. setting prioritised goals).

Mental health care focus: When a mental health practitioner is involved or focus on mental health is explicitly mentioned.

Application of guidelines/protocols: Emphasis on use of clinical guidelines for the professionals to work from (either for specific diseases, or attempts to make multimorbidity guidelines for commonly co-occuring conditions, for instance).

Organisation of care delivery

Case management: Consists of identification of an individual patient to case manage, written individualised care planning, with regular review and adaptation of the care plan.

Integration with social/community care: Primary care working more closely with social/community-based care.

Integration with secondary care: Primary care working more closely with secondary care.

Multi-disciplinary team/Collaborative care: Two (collaborative) or more (multi-disciplinary) healthcare professionals regularly working together to deliver care.

Home-care: Aspects of care/assessment occurring directly in the patients' home.

Co-location of services: Multiple disciplines working co-located in the same facility.

Scheduled chronic disease appointments: Specific appointments scheduled to monitor/treat chronic disease(s).

Extended appointment time: Longer appointment times offered to deal with chronic disease(s).

Nurse-led: A nurse primarily leads patient contacts/care.

Group visits: A group of patients visiting physician(s) at the same time to receive education/consultation.

Single healthcare professional responsible for patient: A single healthcare professional is explicitly responsible for care of the patient.

24/7 support available: Patients are able to access advice/support 24 hours a day, 7 days a week.

Trained lay navigator/health coach: Inclusion of a less-professionalised role helping the patient through peer-support/self-management techniques/co-ordination of care.

Support for model delivery

Up-skilling primary care workforce (new roles): New roles (e.g. addition of a social worker/psychologist/specialist) added to 'usual' primary care.

Education of healthcare professional for chronic care: Additional training in chronic disease management received by the professional(s) involved in the model.

Telephone management: Aspects of care/assessment occurring remotely by telephone.

Funding/payment changes: Model involves any changes in payment, including physician reimbursement/remuneration, or practice-level incentive changes.

Clinical IT linkage with other services/providers: Integrating shared clinical records between providers/ service levels (e.g. primary/secondary, primary/social care).

Electronic population stratification risk tool: Electronic tool used to convert details from patient health records into a risk score (risk of an adverse event, usually a hospital admission) for the population (frequently used to target specific groups with further interventions, e.g. case management).

Tele-health: Remote care utilising technology support.

Primary care providers network: Support for sharing learning/peer support etc. across primary care providers.

References

Adair, R., Christianson, J., Wholey, D. R., White, K., Town, R., Lee, S., Britt, H., Lund, P., Lukasewycz, A. & Elumba, D. (2012). *Care guides: Employing nonclinical laypersons to help primary care teams manage chronic disease* [Online]. United States: Lippincott Williams and Wilkins (530 Walnut Street,P O Box 327, Philadelphia PA 19106-3621, United States). Available: http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed11&NEWS=N&AN=22156953 [Accessed (Adair, Britt, Lund, Lukasewycz, Elumba) Allina Hospitals and Clinics, Abbott Northwestern Hospital, Mail Route 44250, 800 E 28th St, Minneapolis, MN 55407, United States 35].

Adair, R., Wholey, D. R., Christianson, J., White, K. M., Britt, H. & Lee, S. (2013). Improving chronic disease care by adding laypersons to the primary care team: a parallel randomized trial.[Summary for patients in Ann Intern Med. 2013 Aug 6;159(3):I-28; PMID: 23922079]. *Annals of Internal Medicine,* 159(3)**,** 176-84.

Alkema, G. E., Wilber, K. H., Shannon, G. R. & Allen, D. (2007). Reduced Mortality: The Unexpected Impact of a Telephone-Based Care Management Intervention for Older Adults in Managed Care. *Health Services Research,* 42(4)**,** 1632-1650.

Allen, K. R., Hazelett, S. E., Jarjoura, D., Wright, K., Fosnight, S. M., Kropp, D. J., Hua, K. & Pfister, E. W. (2011). The after discharge care management of low income frail elderly (AD-LIFE) randomized trial: theoretical framework and study design. *Popul Health Manag,* 14(3)**,** 137-42.

Allen, K. R., Hazelett, S. E., Radwany, S., Ertle, D., Fosnight, S. M. & Moore, P. S. (2012). *The promoting effective advance care for elders (PEACE) randomized pilot study: Theoretical framework and study design* [Online]. United States: Mary Ann Liebert Inc. (140 Huguenot Street, New Rochelle NY 10801-5215, United States). Available: http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed10&NEWS=N&AN=22012228384 [Accessed (Allen, Hazelett, Radwany, Fosnight, Moore) Summa Health System, 75 Arch St., Akron, OH 44304, United States 15].

Batal, H. A., Kulasekaran, V., Long, J., Durfee, M. J., Everhart, R., Brewer, D., Vander Heijde, M., Rinehart, D., Oronce, C. I., Thompson, K., Botton, D. & Johnson, T. L. (2015). *The intensive outpatient clinic: Targeting super-utilizers at denver health* [Online]. Springer New York LLC. Available: http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed13&NEWS=N&AN=71878632 [Accessed (Batal, Kulasekaran, Long, Durfee, Everhart, Brewer, Vander Heijde, Rinehart, Oronce, Thompson, Botton, Johnson) Denver Health, Denver, CO, United States 30].

Beck, A., Scott, J., Williams, P., Robertson, B., Jackson, D., Gade, G. & Cowan, P. (1997). *A randomized trial of group outpatient visits for chronically ill older HMO members: The Cooperative Health Care Clinic* [Online]. United States. Available: http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed4&NEWS=N&AN=1997151363 [Accessed (Beck, Cowan) Dept. of Research and Development, Colorado Permanente Med. Care Prog., Denver, CO, United States 45].

Beland, F., Bergman, H., Lebel, P., Dallaire, L., Fletcher, J., Contandriopoulos, A. P. & Tousignant, P. (2006). Integrated services for frail elders (SIPA): a trial of a model for Canada. *Can J Aging,* 25(1)**,** 5-42.

Bielaszka-DuVernay, C. (2011). *Innovation profile: Vermont's Blueprint for medical homes, community health teams, and better health at lower cost* [Online]. United States: Project HOPE (7500 Old Georgetown Rd, Suite 600, Bethesda MD 20814, United States). Available: http://content.healthaffairs.org/content/30/3/383.full.pdf

http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed10&NEWS=N&AN=2011239635 [Accessed 30].

Boaden, R., Dusheiko, M., Gravelle, H., Parker, S., Pickard, S., Roland, M., Sargent, P. & Sheaff, R. (2006). Evercare evaluation: Final report. Available: http://www.population-health.manchester.ac.uk/primarycare/npcrdc-archive/Publications/NOV06%20EVERCARE%20FINAL%20REPORT.pdf [Accessed 20/03/2016].

Boult, C., Boult, L., Morishita, L., Smith, S. L. & Kane, R. L. (1998). Outpatient geriatric evaluation and management. *Journal of the American Geriatrics Society,* 46(3)**,** 296-302.

Boult, C., Karm, L. & Groves, C. (2008). Improving Chronic Care: The "Guided Care" Model. *The Permanente Journal,* 12(1)**,** 50-54.

Boult, C. & Wieland, G. D. (2010). *Comprehensive primary care for older patients with multiple chronic conditions: "Nobody rushes you through"* [Online]. United States: American Medical Association (515 North State Street, Chicago IL 60654, United States). Available: http://jama.ama-assn.org/cgi/reprint/304/17/1936

http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed9&NEWS=N&AN=2010602763 [Accessed (Boult) Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States 304].

Boyd, C. M. & Fortin, M. (2010). Future of multimorbidity research: How should understanding of multimorbidity inform health system design. *Public Health Rev,* 32(2)**,** 451-474.

Casiano, A. (2015). PACE: A Model of Care for Individuals with Multiple Chronic Conditions. *Annals of Long Term Care* [Online]. Available: http://www.managedhealthcareconnect.com/ad-block/welcome?destination=/article/pace-model-care-individuals-multiple-chronic-conditions [Accessed 30/03/2016].

Coburn, K. D., Marcantonio, S., Lazansky, R., Keller, M. & Davis, N. (2012). Effect of a community-based nursing intervention on mortality in chronically ill older adults: a randomized controlled trial. *PLoS medicine,* 9(7)**,** e1001265.

Considine, R., Tozer, J., Milne, H. & Chappe, M. (2012). Evaluation of the GP Super Clinics Program 2007-2008. Available: https://www.health.gov.au/internet/main/publishing.nsf/Content/8D7BFF0FAF894E86CA257D550002EA1B/$File/eval.pdf [Accessed 20/03/2016].

Counsell, S. R., Callahan, C. M., Buttar, A. B., Clark, D. O. & Frank, K. I. (2006). *Geriatric Resources for Assessment and Care of Elders (GRACE): A new model of primary care for low-income seniors* [Online]. United States: Blackwell Publishing Inc. Available: http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed7&NEWS=N&AN=2006316882 [Accessed (Counsell, Callahan, Clark) Indiana University Center for Aging Research, School of Medicine, Indiana University, Indianapolis, IN, United States 54].

Counsell, S. R., Callahan, C. M., Clark, D. O., Tu, W., Buttar, A. B., Stump, T. E. & Ricketts, G. D. (2007). Geriatric care management for low-income seniors: a randomized controlled trial. *Jama,* 298(22)**,** 2623-33.

Counsell, S. R., Callahan, C. M., Tu, W., Stump, T. E. & Arling, G. W. (2009). Cost analysis of the Geriatric Resources for Assessment and Care of Elders care management intervention. *J Am Geriatr Soc,* 57(8)**,** 1420-6.

Dahrouge, S., Hogg, W., Lemelin, J., Liddy, C. & Legault, F. (2010). *Methods for a study of anticipatory and preventive multidisciplinary team care in a family practice* [Online]. Canada: College of Family Physicians of Canada (2630 Skymark Avenue, Mississauga Ont. ONT L4W 5A4, Canada). Available: http://www.cfp.ca/cgi/reprint/56/2/e73

http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed9&NEWS=N&AN=2010152774 [Accessed (Dahrouge) C.T. Lamont Primary Health Care Research Centre, Elisabeth Bruyere Research Institute, Ottawa, ON, Canada 56].

Dart, J. M., Jackson, C. L., Chenery, H. J., Shaw, P. N. & Wilkinson, D. (2010). Meeting local complex health needs by building the capacity of general practice: the University of Queensland GP super clinic model. *Medical Journal of Australia,* 193(2)**,** 86-9.

DeJonge, K. E., Taler, G. & Boling, P. A. (2009). *Independence at Home: Community-Based Care for Older Adults with Severe Chronic Illness* [Online]. United States: W.B. Saunders (Independence Square West, Philadelphia PA 19106-3399, United States). Available: http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed9&NEWS=N&AN=2009067217 [Accessed (DeJonge, Taler) Section of Geriatrics and Long-Term Care, Washington Hospital Center, 110 Irving Street NW, Washington, DC 20010, United States 25].

Denver Health. (2016). Denver Health - Intensive Outpatient Clinic. Available: http://www.denverhealth.org/for-patients-and-visitors/our-locations/main-denver-campus/intensive-outpatient-clinic [Accessed 14/03/2016].

Drennan, V., Goodman, C., Manthorpe, J., Davies, S., Scott, C., Gage, H. & Iliffe, S. (2011). Establishing new nursing roles: a case study of the English community matron initiative. *J Clin Nurs,* 20(19-20)**,** 2948-2957.

Edes, T., Kinosian, B., Vuckovic, N. H., Olivia Nichols, L., Mary Becker, M. & Hossain, M. (2014). *Better access, quality, and cost for clinically complex veterans with home-based primary care* [Online]. United States: Blackwell Publishing Inc. Available: http://www.blackwellpublishing.com/journal.asp?ref=0002-8614&site=1

http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed12&NEWS=N&AN=2014929514 [Accessed (Edes) Geriatrics and Extended Care, Office of Clinical Operations and Management, U.S. Department of Veterans Affairs, Washington, DC, United States 62].

Egger, G., Binns, A., Cole, M. A., Ewald, D., Davies, L., Meldrum, H., Stevens, J. & Noffsinger, E. (2014). *Shared medical appointments - an adjunct for chronic disease management in Australia?* [Online]. Available: http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed12&NEWS=N&AN=24600680 [Accessed (Egger) AM, MPH, PhD, Adjunct Professor of Health and Applied Sciences, Southern Cross University, and Centre for Health Promotion and Research, New South Wales. 43].

Epperly, T. (2011). *The patient-centred medical home in the USA* [Online]. United Kingdom: Blackwell Publishing Ltd (9600 Garsington Road, Oxford OX4 2XG, United Kingdom). Available: http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed10&NEWS=N&AN=2011148699 [Accessed (Epperly) Family Medicine Residency of Idaho, 777 N. Raymond, Boise, ID 83704, United States 17].

Esperat, M. C., Flores, D., McMurry, L., Feng, D., Song, H., Billings, L. & Masten, Y. (2012). *Transformacion Para Salud: a patient navigation model for chronic disease self-management* [Online]. United States. Available: http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed11&NEWS=N&AN=22686110 [Accessed (Esperat) Texas Tech University Health Sciences Center School of Nursing, USA. 17].

Feder, J. L. (2011). *Innovation profile: Predictive modeling and team care for high-need patients at HealthCare partners* [Online]. United States: Project HOPE (7500 Old Georgetown Rd, Suite 600, Bethesda MD 20814, United States). Available: http://content.healthaffairs.org/content/30/3/416.full.pdf

http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed10&NEWS=N&AN=2011239644 [Accessed (Feder) Politico Pro, United States 30].

Fisher, H. M. & McCabe, S. (2005). *Managing chronic conditions for elderly adults: The VNS CHOICE model* [Online]. United States: Health Care Financing Administration. Available: http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed7&NEWS=N&AN=2005536156 [Accessed (Fisher) WellCare Health Plans, Inc. 27].

Fortin, M., Chouinard, M. C., Bouhali, T., Dubois, M. F., Gagnon, C. & Belanger, M. (2013). *Evaluating the integration of chronic disease prevention and management services into primary health care* [Online]. United Kingdom. Available: http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed11&NEWS=N&AN=23565674 [Accessed (Fortin) Departement de medecine de famille, Universite de Sherbrooke, Quebec, Canada. 13].

Gravelle, H., Dusheiko, M., Sheaff, R., Sargent, P., Boaden, R., Pickard, S., Parker, S. & Roland, M. (2007). Impact of case management (Evercare) on frail elderly patients: controlled before and after analysis of quantitative outcome data. *BMJ,* 334(7583)**,** 31.

Gray, D., Armstrong, C. D., Dahrouge, S., Hogg, W. & Zhang, W. (2010). Cost-effectiveness of Anticipatory and Preventive multidisciplinary Team Care for complex patients: evidence from a randomized controlled trial. *Can Fam Physician,* 56(1)**,** e20-9.

Healey, E. L., Jinks, C., Tan, V. A., Chew-Graham, C. A., Lawton, S. A., Nicholls, E., Finney, A. G., Porcheret, M., Cooper, V., Lewis, M., Dziedzic, K. S., Wathall, S. & Mallen, C. D. (2015). Improving the care of people with long-term conditions in primary care: protocol for the ENHANCE pilot trial. *2015,* 5(1)**,** 15.

Hogg, W., Lemelin, J., Dahrouge, S., Liddy, C., Armstrong, C. D., Legault, F., Dalziel, B. & Zhang, W. (2009). Randomized controlled trial of anticipatory and preventive multidisciplinary team care: for complex patients in a community-based primary care setting. *Can Fam Physician,* 55(12)**,** e76-85.

Hughes, S. L., Weaver, F. M., Giobbie-Hurder, A., Manheim, L., Henderson, W., Kubal, J. D., Ulasevich, A. & Cummings, J. (2000). *Effectiveness of team-managed home-based primary care: A randomized multicenter trial* [Online]. United States: American Medical Association (515 North State Street, Chicago IL 60654, United States). Available: http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed5&NEWS=N&AN=2000439520 [Accessed (Hughes, Giobbie-Hurder, Henderson, Ulasevich) Cooperative Studies Program Coordinating Center, Edward A. Hines Jr Veterans Affairs Hospital, Hines, IL, United States 284].

Jackson, G. L., Powers, B. J., Chatterjee, R., Bettger, J. P., Kemper, A. R., Hasselblad, V., Dolor, R. J., Irvine, R. J., Heidenfelder, B. L., Kendrick, A. S., Gray, R. & Williams, J. W. (2013). *Improving patient care. The patient centered medical home. A Systematic Review* [Online]. Available: http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed12&NEWS=N&AN=24779044 [Accessed 158].

Kamajian, S. (2010). *Utilizing medical homes to manage chronic conditions* [Online]. United States: Elsevier Inc. (360 Park Avenue South, New York NY 10010, United States). Available: http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed9&NEWS=N&AN=2010338643 [Accessed (Kamajian) Westminster Free Clinic, Montrose, CA, United States 2].

Kane, R. L., Illston, L. H. & Miller, N. A. (1992). Qualitative analysis of the Program of All-inclusive Care for the Elderly (PACE). *Gerontologist,* 32(6)**,** 771-80.

Levine, S., Steinman, B. A., Attaway, K., Jung, T. & Enguidanos, S. (2012). Home care program for patients at high risk of hospitalization. *American Journal of Managed Care,* 18(8)**,** e269-76.

Lipani, M. B. (2013). Transitional Care at Mount Sinai – The PACT Program. Available: http://assets.healthfirst.org/api/pdf?id=pdf_5280e7ca84&key=78a537abd425eaf1f85d7a21aad5acacb3184e53 [Accessed 20/03/2016].

Lynch, C., Wajnberg, A., Jacob, M., Basso Lipani, M., Bernstein, S., Colgan, C., Kalman, J. & Federman, A. (2014). *Intensive primary care for high readmission risk adults* [Online]. Springer New York. Available: http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed12&NEWS=N&AN=71495913 [Accessed (Lynch, Wajnberg, Jacob, Basso Lipani, Bernstein, Colgan, Kalman, Federman) Mount Sinai School of Medicine, New York, NY, United States 29].

Lynch, M., Hernandez, M. & Estes, C. (2008). PACE: has it changed the chronic care paradigm? *Social Work in Public Health,* 23(4)**,** 3-24.

Man, M.-S., Chaplin, K., Mann, C., Bower, P., Brookes, S., Fitzpatrick, B., Guthrie, B., Shaw, A., Hollinghurst, S., Mercer, S., Rafi, I., Thorn, J. & Salisbury, C. (2016). Improving the management of multimorbidity in general practice: protocol of a cluster randomised controlled trial (The 3D Study). *BMJ Open,* 6(4)**,** e011261.

McGregor, M., Lin, E. H. B. & Katon, W. J. (2011). *TEAMcare: An integrated multicondition collaborative care program for chronic illnesses and depression* [Online]. United States: Lippincott Williams and Wilkins. Available: http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed10&NEWS=N&AN=21415613 [Accessed (McGregor, Katon) Department of Psychiatry and Behavioral Sciences, University of Washington School of Medicine, Seattle, WA, United States 34].

Mercer, S. W., Fitzpatrick, B., Guthrie, B., Fenwick, E., Grieve, E., Lawson, K., Boyer, N., McConnachie, A., Lloyd, S. M., O'Brien, R., Watt, G. C. M. & Wyke, S. (2016a). The CARE Plus study – a whole-system intervention to improve quality of life of primary care patients with multimorbidity in areas of high socioeconomic deprivation: exploratory cluster randomised controlled trial and cost-utility analysis. *BMC Medicine,* 14(1)**,** 88.

Mercer, S. W., O'Brien, R., Fitzpatrick, B., Higgins, M., Guthrie, B., Watt, G. & Wyke, S. (2016b). The development and optimisation of a primary care-based whole system complex intervention (CARE Plus) for patients with multimorbidity living in areas of high socioeconomic deprivation. *Chronic Illn,* 12(3)**,** 165-81.

Metzelthin, S. F., van Rossum, E., de Witte, L. P., Ambergen, A. W., Hobma, S. O., Sipers, W. & Kempen, G. I. J. M. (2013). *Effectiveness of interdisciplinary primary care approach to reduce disability in community dwelling frail older people: cluster randomised controlled trial* (Vol. 347).

Mitton, C., O'Neil, D., Simpson, L., Hoppins, Y. & Harcus, S. (2007). *Nurse-Physician Collaborative Partnership: a rural model for the chronically ill* [Online]. Canada. Available: http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed8&NEWS=N&AN=18076814 [Accessed (Mitton, O'Neil, Simpson, Hoppins, Harcus) University of British Columbia Okanagan, Kelowna, BC, Canada. 12].

Morgan, M. A., Coates, M. J. & Dunbar, J. A. (2015). *Using care plans to better manage multimorbidity* [Online]. Australia: Australasian Medical Journal Pty Ltd (12 Lancett Crt, Sorrento, WA 6020 WA, Australia. E-mail: editor@amj.net.au). Available: http://www.amj.net.au/index.php?journal=AMJ&page=article&op=viewFile&path%5B%5D=2377&path%5B%5D=1327

http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed13&NEWS=N&AN=2015174639 [Accessed (Morgan, Coates) Greater Green Triangle University, Department of Rural Health, Flinders and Deakin Universities, Warrnambool, VIC, Australia 8].

Moullin, J., Sabater-Hernandez, D., Fernandez-Llimos, F. & Benrimoj, S. (2015). A systematic review of implementation frameworks of innovations in healthcare and resulting generic implementation framework. *Health Research Policy and Systems,* 13(1)**,** 16.

Mount Sinai Hospital. (2016). Mount Sinai Internal Medicine Associates. Available: http://www.mountsinai.org/patient-care/service-areas/ambulatory-care/ambulatory-care-practices/internal-medicine-associates [Accessed 18/03/2016].

Murphy, E. (2004). Case management and community matrons for long term conditions. *BMJ,* 329(7477)**,** 1251.

Nutting, P. A., Miller, W. L., Crabtree, B. F., Jaen, C. R., Stewart, E. E. & Stange, K. C. (2009). Initial Lessons From the First National Demonstration Project on Practice Transformation to a Patient-Centered Medical Home. *Annals of Family Medicine,* 7(3)**,** 254-260.

PCPCC. (2007). Joint Principles of the Patient-Centred Medical Home. Available: http://www.pcpcc.net/joint-principles [Accessed 20/03/2016].

Radel, K., Te Nelson, S., Hutchison, M., Christianson, J. & Britt, H. (2014). *Integrating lay health care workers into the primary care team* [Online]. United States: Turner White Communications Inc. Available: http://www.turner-white.com/pdf/jcom_dec14_primary.pdf

http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed12&NEWS=N&AN=2014624385 [Accessed (Radel, Te Nelson, Hutchison, Christianson, Britt) Allina Health, Minneapolis, MN, United States 21].

Radwany, S. M., Hazelett, S. E., Allen, K. R., Kropp, D. J., Ertle, D., Albanese, T. H., Fosnight, S. M. & Moore, P. S. (2014). *Results of the promoting effective advance care planning for elders (PEACE) randomized pilot study* [Online]. United States: Mary Ann Liebert Inc. Available: http://www.liebertonline.com/loi/pop

http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed12&NEWS=N&AN=2014252021 [Accessed (Radwany, Hazelett) Summa Health System, Northeast Ohio Medical University (NEOMED), 75 Arch St., Akron, OH 44304, United States 17].

Randall, S., Daly, G., Thunhurst, C., Mills, N., Guest, D. A. & Barker, A. (2014). *Case management of individuals with long-term conditions by community matrons: report of qualitative findings of a mixed method evaluation* [Online]. Available: http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed12&NEWS=N&AN=23374197 [Accessed (Randall) 1 Senior Lecturer and Pathway Lead for Long-term Conditions, Department of Nursing and Health Studies, Faculty of Health and Life Sciences, Coventry University, Coventry, UK. 15].

Rothschild, S. K. & Lapidos, S. (2003). Virtual integrated practice: integrating teams and technology to manage chronic disease in primary care. *J Med Syst,* 27(1)**,** 85-93.

Rothschild, S. K., Lapidos, S., Minnick, A., Fogg, L. & Catrambone, C. (2004). *Using virtual teams to improve the care of chronically ill patients* [Online]. United States: Turner White Communications Inc. Available: http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed6&NEWS=N&AN=2004409259 [Accessed (Rothschild, Lapidos, Minnick, Fogg, Catrambone) Rush University Medical Center, 163 W. Congress Pkwy., Chicago, IL 60612, United States 11].

Shaw, L. (2014). Program of All-Inclusive Care for the Elderly: a comprehensive, cost-effective alternative for frail elderly individuals. *N C Med J,* 75(5)**,** 344-5.

Smith, S. M., Soubhi, H., Fortin, M., Hudon, C. & O'Dowd, T. (2012). Managing patients with multimorbidity: systematic review of interventions in primary care and community settings. *BMJ,* 345.

Sommers, L. S., Marton, K. I., Barbaccia, J. C. & Randolph, J. (2000). *Physician, nurse, and social worker collaboration in primary care for chronically ill seniors* [Online]. United States: American Medical Association. Available: http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed5&NEWS=N&AN=2000227721 [Accessed (Sommers) Internal Medicine Residency Program, St. Mary's Medical Center, San Francisco, CA, United States 160].

Starfield, B. (1994). Is primary care essential? *The Lancet,* 344(8930)**,** 1129-1133.

Stock, R. D., Reece, D. & Cesario, L. (2004). *Developing a comprehensive interdisciplinary senior healthcare practice* [Online]. United States: Blackwell Publishing Inc. Available: http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed6&NEWS=N&AN=2005548712

http://onlinelibrary.wiley.com/store/10.1111/j.1532-5415.2004.52576.x/asset/j.1532-5415.2004.52576.x.pdf?v=1&t=ihopid1p&s=22377d8eb1fcad7c42a2dfafcdd6d54054777321 [Accessed (Stock, Reece, Cesario) PeaceHealth Oregon Region Center for Senior Health, Eugene, OR, United States 52].

Tanio, C. & Chen, C. (2013). *Innovations at miami practice show promise for treating high-risk medicare patients* [Online]. United States: Project HOPE (7500 Old Georgetown Rd, Suite 600, Bethesda MD 20814, United States). Available: http://content.healthaffairs.org/content/32/6/1078.full.pdf

http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed11&NEWS=N&AN=2013392563 [Accessed (Tanio, Chen) ChenMed, Miami, FL, United States 32].

Tracy, C. S., Bell, S. H., Nickell, L. A., Charles, J. & Upshur, R. E. G. (2013). *The IMPACT clinic: Innovative model of interprofessional primary care for elderly patients with complex health care needs* [Online]. Canada: College of Family Physicians of Canada (2630 Skymark Avenue, Mississauga Ont. ONT L4W 5A4, Canada). Available: http://www.cfp.ca/content/59/3/e148.full.pdf+html

http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed11&NEWS=N&AN=2013177425 [Accessed (Tracy) Primary Care Research Unit, Department of Family and Community Medicine (DFCM), Sunnybrook Health Sciences Centre, 2075 Bayview Ave., Toronto, ON M4N 3M5, Canada 59].

Wagner, E. H., Coleman, K., Reid, R. J., Phillips, K., Abrams, M. K. & Sugarman, J. R. (2012). *The Changes Involved in Patient-Centered Medical Home Transformation* [Online]. United States: W.B. Saunders (Independence Square West, Philadelphia PA 19106-3399, United States). Available: http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed10&NEWS=N&AN=22287261 [Accessed (Wagner, Coleman) MacColl Center for Health Care Innovation, Group Health Research Institute, 1730 Minor Avenue, Suite 1600, Seattle, WA 98101, United States 39].

Winstanley, I. (2004). *Care model could change approach to chronic disease management in NHS* [Online]. United Kingdom: Pharmaceutical Press. Available: http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed6&NEWS=N&AN=2004249458 [Accessed (Winstanley) Luton Primary Care Trust, Luton, United Kingdom 272].

Wright, K., Hazelett, S., Jarjoura, D. & Allen, K. (2007). The AD-LIFE trial: working to integrate medical and psychosocial care management models. *Home Healthcare Nurse,* 25(5)**,** 308-14.

Zulman, D. M., Ezeji-Okoye, S. C., Shaw, J. G., Hummel, D. L., Holloway, K. S., Smither, S. F., Breland, J. Y., Chardos, J. F., Kirsh, S., Kahn, J. S. & Asch, S. M. (2014). *Partnered research in healthcare delivery redesign for high-need, high-cost patients: development and feasibility of an Intensive Management Patient-Aligned Care Team (ImPACT)* [Online]. United States. Available: http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed13&NEWS=N&AN=25355084 [Accessed (Zulman, Ezeji-Okoye, Shaw, Hummel, Holloway, Smither, Breland, Chardos, Kirsh, Kahn, Asch) Center for Innovation to Implementation, VA Palo Alto Health Care System, 795 Willow Road, MPD-152, Menlo Park, CA, 94025, USA, dzulman@stanford.edu 29].