

Primary care models for community-dwelling adults with long-term conditions: a scoping review protocol

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1 Introduction

2 Worldwide, health has been shaped by both the environment in which people live and the resources
3 available¹. For most, this has increased life expectancy over the last ten years with little fluctuation.
4 Adults in the United Kingdom (UK) who are currently 60 years of age are predicted to live for a further
5 20 years². In addition to these people living longer, a significant percentage are also living with one or
6 more long term conditions³. Long term conditions are defined as conditions that require ongoing
7 management over a period of years or decades⁴, also known as noncommunicable diseases, which
8 comprise conditions such as heart disease, stroke, cancer, chronic respiratory diseases and diabetes,
9 are the primary cause of mortality globally⁵. These conditions can fracture the economic development
10 of many countries and the number of individuals, groups and communities affected by the impact of
11 long term illness is increasing⁶. Advances in healthcare have seen conditions that were once thought
12 to be life limiting, becoming those that people live with for many years⁷. Although appearing to be an
13 achievement for humanity, this also presents a global challenge to health care systems due to the
14 increased prevalence of those living with complex and enduring conditions. People who live with
15 these conditions often require high levels of health and social care due to the complexity that living
16 with a long term condition entails⁸.

17 It is well established that living with a long term condition impacts on the quality of life, health
18 outcomes and the ability to carry out daily activities⁹. For example, research has highlighted
19 experiencing fear, blame, struggling, fatalism, and hidden disability as key themes for those affected
20 by chronic obstructive pulmonary disease¹⁰. The possibility of developing a mental health condition
21 also increases with the number of physical illnesses a person experiences¹¹. This demonstrates the
22 need for services to be equipped to support those with both physical and mental health conditions
23 effectively. Generally, services are specialist to one pathological condition and therefore the care and
24 support provided to those with multi factorial illnesses can be fragmented and disjointed, leading to
25 errors and omissions¹². Clinical evidence and guidelines are largely created for individual diseases
26 and specialized to a single illness, demonstrating the lack of guidance for those supporting people
27 with multiple long term conditions. Likewise, most randomized trials exclude multimorbidity and older
28 people within their sampling strategies, thus not generating the evidence that could support the
29 development of understanding within this areas of practice for many health professionals¹³.

30 Global impact of Long Term Conditions

31 In Australia, 35% of the population have a long term condition, and an increasing number have
32 multiple conditions, making care increasingly complex with input required from a range of health
33 professionals¹⁴. Similarly, the health and social care systems within the UK are facing unprecedented
34 pressures due to the high volumes of people who require support compounded by the effects of long
35 term governmental austerity policies¹⁵. Many people with long term conditions, are frequent users of
36 acute hospitals, primary care and social care services, thus increasing pressures on services that are
37 already overwhelmed⁸. Within the United States of America, long term conditions represent the

38 leading cause of morbidity and mortality with over 70% of all deaths being attributable to heart
 39 disease, cancer, stroke, chronic obstructive pulmonary disease, and diabetes¹⁶. In New Zealand,
 40 long term conditions account for 88% of healthy life lost due to factors including premature death,
 41 illness or impairment¹⁷. Health systems globally are in need of strategic refocus due to the challenges
 42 being brought about by how our societies have developed. However, it is imperative not to ignore
 43 those societies where the impact of long term conditions is significant, despite some differences in
 44 their aetiology, compared with the challenges posed by long term conditions to westernized society.
 45 An example might be Sub-Saharan Africa, stereotypically recognized as a region with high levels of
 46 malnutrition, yet, identified more recently, due to growth in urbanization and westernization, with a rise
 47 in obesity¹⁸. Universally, the physical impact on the earth of global warming has had and will continue
 48 to have a significant impact on human health, especially for those with long term conditions perhaps
 49 through injury during natural disasters, malnutrition during famine or inability to cope physiologically
 50 with the effects of prolonged heat waves. The impact is amplified for those living in low-income
 51 countries¹⁹. Furthermore, direct exposure to natural disasters has an impact on mental health and
 52 conflict has been reported as a major threat to public health however, the lasting effects of conflict on
 53 health have yet to be studied in the context of developing countries²⁰. In spite of developing countries
 54 representing the majority of the world's population and 90% of the worldwide burden of disease²¹
 55 research and development is substantially inadequate^{22,23}. Under-representation caused by lack of
 56 capacity and commercial viability hinders health improvement in regions where research led
 57 resolutions could have the greatest impact to life^{24,25}. The health and social care systems within
 58 developing countries require evidence to guide resolutions regarding the most efficient and cost-
 59 effective interventions for those with long term conditions.

60 Primary Care

61 The World Health Organization's analysis of health systems⁵ demonstrates gaps within health care,
 62 most noticeably within primary care, presenting barriers to the provision of equitable health care for
 63 people living with long term conditions. Primary care is the first point of contact with health systems
 64 and is also the point of access for people to receive care for most of their everyday health and well-
 65 being needs²⁶. Primary care services include health promotion, disease prevention, health
 66 maintenance, counselling, patient education, diagnosis and treatment of acute and chronic illnesses²⁷.
 67 Over the past two decades, several countries worldwide have initiated reforms to improve their
 68 delivery of primary health care with the intention of supporting those with long term conditions to
 69 manage their condition better and reduce the risk of unplanned hospital admissions^{7,17,28,29}.

70 Long-term solutions to support those with long term conditions need to be created in order to increase
 71 health service capacity, provide cost-effective solutions whilst, most importantly, ensuring people
 72 receive the best services, in order to live meaningful and productive lives. UK Policy is focusing
 73 heavily on delivering care nearer to the patient with the aim of increasing self-care and improve
 74 management of those with more complex long-term conditions, prevent hospital admissions and
 75 improve quality of life for individuals⁷. However, it is imperative that new models of care consider that

76 people with a long-term condition should be supported to live and not just exist¹⁵. Long-term
 77 conditions have a wide-reaching social impact, affecting every part of an individual's daily life,
 78 including family relationships, employment and everyday socialization. Models of healthcare often
 79 focus on symptom reduction, disease management, and basic prevention, and not on the pursuit of
 80 long-term health. Recent research has highlighted a rise in emergency readmissions for conditions
 81 that are classified as “potentially preventable” between 2010 and 2017 by 41.3%. Such admissions
 82 are also contrary to the preferred wishes of most patients who wish to be cared for at home²⁹.

83 Essentially, people with complex health needs are not properly supported³⁰. More than a quarter of
 84 people who have long-term conditions say that they are not well cared for by their healthcare provider,
 85 and 40% expect their care to get worse in the future²⁸. People report frustration by using different
 86 services that do not communicate and share information, therefore people are left feeling that their
 87 conditions are treated in isolation²⁸. Well-designed primary care has the potential to improve health
 88 and cost effectiveness however, large gaps exist in the evidence base concerning care for patients
 89 with multimorbidity³¹. A recent Cochrane review³² found only 18 trials that evaluated models of care
 90 with two main strategies: the reorganization of care delivery through enhanced multidisciplinary
 91 working, and patient-oriented education or self-management. The review found limited evidence for
 92 the effectiveness of the models with a lack of agreement regarding the description of models of care
 93 for multi morbidity. However, the process of evidence building is hindered by incomplete descriptors
 94 of models within publications³³. Without accurate descriptions of these developing models,
 95 researchers cannot replicate studies or identify components for success.

96 Producing a scoping review of the literature surrounding models of primary care for long term
 97 conditions would allow researchers and health care professionals to further understand current and
 98 emerging models of practice in order to more effectively recognize what models of practice work for
 99 different individuals, communities and populations³³. This information is likely to be critical, given the
 100 broad range of approaches and patient populations included under the umbrella of long term
 101 conditions. Due to the heterogeneity of the research base and differing approaches to implementing
 102 primary care models to support those with long term and complex conditions, a scoping review will
 103 provide a rigorous and transparent method of mapping this concept as a preliminary step to further
 104 research and evaluation. The objective of this review is to map the available evidence to provide an
 105 overview of the existing primary care models of practice that aim to improve clinical and mental health
 106 outcomes and patient-reported outcomes for people with long term conditions that are community
 107 dwelling.

108 A preliminary search of PROSPERO, MEDLINE (Ovid), the Cochrane Database of Systematic
 109 Reviews and the Joanna Briggs Institute Database of Systematic Reviews and Implementation
 110 Reports was conducted and no current, or proposed, systematic reviews on the exact topic of this
 111 planned review were identified. However, a rapid review by Singh and Ham³⁴, conducted in 2005 was
 112 identified and, although the rapid review provides insight into frameworks for people with long term
 113 conditions internationally, it was only able to capture readily available literature over a period of three

114 weeks, thus not permitting systematic mapping of all of the evidence within this field. Due to the
 115 significant demographic and social changes and development of healthcare designed for those with
 116 long term conditions over the intervening 15 years, it is essential that this topic is explored
 117 comprehensively, examining the effectiveness of contemporary primary care models focussed on
 118 those living with long term conditions, which this scoping review aims to achieve.

119 Review Questions

120 What primary care models exist globally for adults with long term conditions?

121 What are the characteristics, outcome measures used to evaluate, the impact reported, and the
 122 implications for practice of the models of primary care identified?

123 Keywords

124 Chronic Disease; Community Health Services; Long term conditions; Primary Health Care

125 Inclusion Criteria

126 Participants

127 The review will consider studies that include adults that live with long term conditions. This will
 128 exclude evidence of those who have long term conditions but are under the age of 18. For the
 129 uniformity of this review, the term used throughout will be long term conditions although it has been
 130 noted that a multitude of definitions exist in the literature that encompass 'long term conditions'.
 131 Interchangeable terms for long term conditions include; chronic conditions, chronic illness and chronic
 132 disease, as well as a term identified by the World Health Organization³⁵, noncommunicable disease.
 133 The Department of Health in England⁴ defined a long term condition as: 'One that cannot currently be
 134 cured, but can be controlled with the use of medication and/or other therapies' (p.3). Long term
 135 conditions are also defined as conditions that require ongoing management over a period of years or
 136 decades and cover a range of health conditions that go beyond the conventional definition of chronic
 137 illness, such as heart disease, diabetes and asthma³⁶. Multimorbidity is also a prevalent term within
 138 relevant literature, referring to the presence of two or more chronic medical conditions in an
 139 individual³⁷. Long term conditions also comprise some communicable diseases, such as the human
 140 immunodeficiency virus and the acquired immunodeficiency syndrome (HIV/AIDS) that, due to
 141 advances in medicine, have become controllable health problems although they are communicable.
 142 The term, long term condition also extends to mental health conditions such as depression and
 143 schizophrenia and disabilities and impairment including blindness and musculoskeletal disorders³⁶.
 144 Whilst there remains some ambiguity regarding a sole definition, the common denominator is that
 145 they all require a complex approach to their care that is often over the course of the lifespan from the
 146 onset of the condition.

147

148 Concept

149 The concept being mapped within this scoping review will be primary care models used to manage
 150 individuals with long term conditions. The concepts of interest are the characteristics (values,
 151 principles, components and suggested practical applications), outcome measures, impact and
 152 implications for practice of the models of primary care identified. Within the literature, a number of
 153 different terms such as service delivery models of care and service frameworks have been used
 154 interchangeably to articulate the way in which services are or should be conducted. For the purpose
 155 of this review, all characteristics of a model of service delivery, either in part or as a whole, will be
 156 considered; this may include services, models, interventions, frameworks that involve primary care of
 157 patients. This may also encompass services not solely designed for long term conditions however,
 158 they will be services that may be the first port of call for those with long term conditions. Therefore,
 159 the focus of the search will include literature that involves specifically primary care models,
 160 interventions and similar concepts that are defined by similar boundaries of service design and
 161 implementation but lack use of the term, 'primary care intervention'. It is recognized that many service
 162 developments are not subjected to rigorous evaluation, but still may provide useful examples of the
 163 way in which primary care services have been developed. Therefore, the review will also encompass
 164 current developments in clinical practice in relation to long term primary and community care.

165 An operational a priori criteria has been developed in order to distinguish primary care models from
 166 similar community models:

167 1) The care provided is within a primary care setting e.g. General Practice (GP) surgery, community
 168 center or through adult social care

169 2) Care is longitudinally coordinated by health and social care professionals

170 3) Care may be delivered in the patient's home, through information technology or within a voluntary
 171 third sector settings

172 4) Care can include telecare and case managers; however, there must be clear and evident oversight
 173 and integration of patient care by the primary care physician or team

174 All four criteria need to be met for a paper to be included. Models that do not utilize the term "primary
 175 care", but met the four operational criteria, will be included in the review.

176 Context

177 This review will focus on the context of primary care. Therefore, this review will consider studies that
 178 examine primary care models within a global context, due to the scope of the literature available. **The**
 179 **scoping review will therefore take into consideration any evidence internationally that investigates**
 180 **primary care models for adults with long term conditions. This is to capture all the evidence available**

181 to create a scoping review that has the potential to have international value for primary care. A
 182 preliminary review of the literature demonstrates that the development of primary care models will be
 183 of worldwide interest. Searching will be restricted to English language because due translation
 184 resources are not available.

185 Types of Sources

186 This scoping review will consider both experimental and quasi-experimental study designs including
 187 randomized controlled trials, non-randomized controlled trials, before and after studies and interrupted
 188 time-series studies. In addition, analytical observational studies including prospective and
 189 retrospective cohort studies, case-control studies and analytical cross-sectional studies will be
 190 considered for inclusion. This review will also consider descriptive observational study designs
 191 including case series, individual case reports and descriptive cross-sectional studies for inclusion.
 192 Qualitative studies will also be considered that adopt methodologies including, but not limited to
 193 phenomenology, grounded theory, ethnography, qualitative description, action research and feminist
 194 research. In addition, systematic reviews that meet the inclusion criteria will also be considered.
 195 Additionally, text and opinion papers, as well as other published material such as case studies,
 196 relevant academic presentations, such as theses and dissertations, will also be included. Official
 197 websites of organizations will be used (see Appendix III) together with international strategies on
 198 primary health and social care, including, but not limited to white papers, reports, position papers,
 199 policy papers, governmental guidance that are available in print or online from relevant websites listed
 200 in Appendix III.

201 Literature published from 1995 onward will be considered for the review. 1995 is the date that Wagner
 202 published The Chronic Care Model³⁸, a framework for describing the essential elements needed to
 203 provide the best quality care for those with long term conditions. This model is frequently drawn upon
 204 in more contemporary evidence so this date becomes a clear starting timeline for the development of
 205 the search for models for long term health conditions.

206 Methods

207 Search strategy

208 The search strategy will aim to locate both published and unpublished studies. The proposed
 209 systematic review will be conducted in accordance with the Joanna Briggs Institute methodology for
 210 scoping reviews³⁹. A three-step approach to searching is proposed in line with Joanna Briggs
 211 Institute recommended methodology³⁹. An initial limited search of MEDLINE was undertaken to
 212 identify articles on the topic. An example search strategy has been appended (see Appendix I). The
 213 text words contained in the titles and abstracts of relevant articles, and the index terms used to
 214 describe the articles were used to develop a full search strategy. The search strategy, including all
 215 identified keywords and index terms will be adapted for each included information source. It is

216 acknowledged that an iterative approach will be used and further search terms may be revealed and
 217 utilized within the search strategy.

218 The reference list of the identified articles will be reviewed to include other relevant studies and
 219 additional items. Duplicate sources and publications that do not directly relate to the research
 220 question will be eliminated. The title and abstract of each article will be reviewed thoroughly to select
 221 the most relevant sources

222 Information sources

223 Searches will be undertaken using the following electronic databases: MEDLINE, Embase,
 224 PsycINFO, HMIC, CINAHL, Cochrane library and Web of Science.

225 Other searches will be undertaken through ProQuest Dissertations and Theses Global and Google
 226 Scholar. A pragmatic decision to review only the Google Scholar articles from the first fifty pages was
 227 taken following consultation with an information specialist. EthOS (British Library Theses online
 228 service) is accessible via ProQuest Dissertations and Theses Global. The appended search strategy
 229 will be employed to capture any grey literature using Open Grey.

230 Supplementary searching will include hand searching of the data yielded and hand searching within
 231 relevant journals including but not limited to; Quality in primary care, Journal of primary care and
 232 community health, Journal of family medicine and primary care, Journal of Integrated care,
 233 International journal of integrated care, Journal of primary health care, British journal of general
 234 practice and Canadian family physician. It is envisaged that these journals will form part of this search
 235 and others will be searched according to their value to the research questions. Hand searching within
 236 relevant conference abstracts such as the primary care and public health conferences, white papers,
 237 reports, professional bodies, charities and news articles will also be utilized. Lexis library will be
 238 searched to capture any new articles of relevance. Further to this, the reviewers intend to contact
 239 authors of primary studies or reviews for further information if necessary.

240 Study selection

241 Following the search, all identified citations will be collated and uploaded into the bibliographic citation
 242 management system, Endnote X8.2 (Clarivate Analytics, PA, USA) reference manager. Titles and
 243 abstracts will then be screened by two independent reviewers for assessment against the inclusion
 244 criteria for the review. Potentially relevant studies will be retrieved in full and their citation details
 245 imported into the Joanna Briggs Institute's System for the Unified Management, Assessment and
 246 Review of Information (JBIR SUMARI). The full text of the selected citations will be assessed in detail
 247 against the inclusion criteria by two independent reviewers. Reasons for exclusion of full text studies
 248 that do not meet the inclusion criteria will be recorded and reported in the systematic review. Any
 249 disagreements that arise between the reviewers at each stage of the study selection process will be
 250 resolved through discussion, or with a third reviewer. The results of the search will be reported in full

251 in the final systematic review report and presented in a Preferred Reporting Items for Systematic
 252 Reviews and Meta-analyses (PRISMA) flow diagram⁴⁰.

253 Data Extraction

254 Data will be extracted from papers included in the scoping review by two independent reviewers using
 255 a data extraction tool developed by the reviewers. The data extraction process may also be referred
 256 to as charting the results when utilised within a scoping review. Charting of the data will include
 257 specific details about the population, concept, context, study methods and key findings relevant to the
 258 review objective. A data extraction instrument has been created explicitly for this scoping review (see
 259 Appendix II). The data extraction instrument will be modified and revised as necessary during the
 260 process of extracting data from each included study. Modifications will be detailed in the full scoping
 261 review report. Any disagreements that arise between the reviewers will be resolved through
 262 discussion, or with a third reviewer. Authors of papers will be contacted to request missing or
 263 additional data, where required.

264 Data Presentation

265 The extracted data will be presented in tabular form in a manner that aligns with the objective of this
 266 scoping review. A narrative summary will accompany the tabulated and/or charted results and will
 267 describe how the results relate to the reviews objective and questions.

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 276 interest.

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282 References

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- 284 1. The Academy of Medical Sciences. Improving the health of the public by 2040 Optimising the
285 research environment for a healthier, fairer future. London: The Academy of Medical Sciences; 2016:
286 1-122.
- 287 2. United Nations. World Population Ageing 2015 Report. New York: United Nations; 2015: 1-162.
- 288 3. Oliver D, Foot C. Humphries R. Making our health and care systems fit for an ageing population
289 [Internet]. London: The King's Fund; 2014 [cited 2018 Jun 4]. Available from:
290 [https://www.kingsfund.org.uk/sites/default/files/field/field_publication_file/making-health-care-systems-](https://www.kingsfund.org.uk/sites/default/files/field/field_publication_file/making-health-care-systems-fit-ageing-population-oliver-foot-humphries-mar14.pdf)
291 [fit-ageing-population-oliver-foot-humphries-mar14.pdf](https://www.kingsfund.org.uk/sites/default/files/field/field_publication_file/making-health-care-systems-fit-ageing-population-oliver-foot-humphries-mar14.pdf)
- 292 4. Department of Health. Long Term Conditions Compendium of Information. 3rd edition. London:
293 Department of Health; 2012:3.
- 294 5. World Health Organisation. Global status report on noncommunicable diseases. Switzerland: World
295 Health Organisation; 2014:1-298.
- 296 6. Lunenfeld B, Stratton P. The clinical consequences of an ageing world and preventive strategies.
297 *Best Pract Res Clin Obstet Gynaecol.* 2013; 27(5):643–659.
- 298 7. Ham C, Dixon A, Brooke, B. Transforming the delivery of health and social care. The case for
299 fundamental change. London: The King's Fund; 2012:1-61.
- 300 8. Goodwin N, Sonolo L, Thiel V, Kodner DL. Co-ordinated care for people with complex chronic
301 conditions: Key lessons and markers for success. London: King's Fund; 2013:1-44.
- 302 9. Roddis JK, Holloway I, Bond C, Galvin KT. Living with a long-term condition: Understanding well-
303 being for individuals with thrombophilia or asthma. *Int J Qual Stud Health Well-being.*
304 2016;11(10):31530.
- 305 10. Clancy K, Hallett C, Caress A. The meaning of living with chronic obstructive pulmonary disease.
306 *J Nurs Healthc Chronic Illn;*2009;1(1):78–86.
- 307 11. Naylor C, Das P, Ross S, Honeyman M, Thompson J, Gilbert H. Bringing together physical and
308 mental health: A new frontier for integrated care. London: The King's Fund; 2016:1-122.
- 309 12. Barnett K, Mercer SW, Norbury M, Watt G, Wyke S, Guthrie B. Epidemiology of multimorbidity and
310 implications for health care, research, and medical education: a cross-sectional study. *Lancet.*
311 2012;380:37–43.
- 312 13. Fabbri E, Zoli M, Gonzalez-Freire M, Salive ME, Studenski SA, Ferrucci L. Aging and
313 Multimorbidity: New Tasks, Priorities, and Frontiers for Integrated Gerontological and Clinical
314 Research. *J Am Med Dir Assoc;*2015;16(8):640–647.
- 315 14. Primary Health Care Advisory Group. Better Outcomes for people with Chronic and Complex
316 Health Conditions. Canberra, Australia: Commonwealth of Australia as represented by the
317 Department of Health; 2016:1-80.
- 318 15. Royal College of Occupational Therapists. Living, not Existing: Putting prevention at the heart of
319 care for older people in England. London: Royal College of Occupational Therapists; 2017.

- 320 16. Raghupathi W, Raghupathis V. An Empirical Study of Chronic Diseases in the United States: A
321 Visual Analytics Approach to Public Health. *Int J Environ Res Public Health*. 2018;15(3):431.
- 322 17. Ministry of Health Manatu Hauora. National Expectations for the Prevention and Management of
323 Long Term Conditions. New Zealand: Ministry of Health Manatu Hauora; 2017:1-16.
- 324 18. Kandala N, Stranges S. Geographic Variation of Overweight and Obesity among Women in
325 Nigeria: A Case for Nutritional Transition in Sub-Saharan Africa. *PLoS one*. 2014;9(6):101-103.
- 326 19. Rossati A. Global warming and its health impact. *Int J Occup Environ Med*;2017(8):7–20.
- 327 20. Teerawichitchainan B, Korinek K. The long term impact of war on health and wellbeing in Northern
328 Vietnam: Some glimpses from a recent survey. *Soc Sci Med*. 2012;74(12):1995–2004.
- 329 21. United Nations. *The World Population Prospects: 2015*. United Nations: New York; 2015:1-66.
- 330 22. Murray CJL, Lopez AD. *Global comparative assessments in the health sector: disease burden,*
331 *expenditures and intervention packages*. Geneva: World Health Organization; 1994:1-106.
- 332 23. Alemayehu C, Mitchell G, Nikles J. Barriers for conducting clinical trials in developing countries- a
333 systematic review. *Int J Equity Health*. 2018;17(1):37.
- 334 24. Røttingen JA, Chamas C, Goyal LC, Harb H, Lagrada L, Mayosi BM. Securing the public good of
335 health research and development for developing countries. *Bulletin World Health Organization*.
336 2012;90:398–400.
- 337 25. Mbuagbaw L, Thabane L, Ongolo-Zogo P, Lang T. The challenges and opportunities of
338 conducting a clinical trial in a low resource setting: the case of the Cameroon mobile phone SMS
339 (CAMPS) trial, an investigator initiated trial. *Trials*. 2011;12(1):145.
- 340 26. American Academy of Family Physicians. Primary Care [Internet]. Kansas, USA: American
341 Academy of Family Physicians; 2018 [cited 2018 Aug 14]. Available from:
342 <https://www.aafp.org/about/policies/all/primary-care.html#Parsys0001>
- 343 27. National Health Service (NHS). Primary care services [Internet]. London: National Health Service;
344 2018 [cited 2018 Aug 14]. Available from: [https://www.england.nhs.uk/participation/get-](https://www.england.nhs.uk/participation/get-involved/how/primarycare/)
345 [involved/how/primarycare/](https://www.england.nhs.uk/participation/get-involved/how/primarycare/)
- 346 28. Department of Health, NHS England. *Transforming Primary Care Safe, proactive, personalised*
347 *care for those who need it most*. London: The Department of Health; 2014:1-48.
- 348 29. Quality Watch, The Health Foundation, Nuffield Trust. *Emergency readmissions: Trends in*
349 *emergency readmissions to hospital in England* [Internet]. London: Quality Watch, The Health
350 Foundation, Nuffield Trust; 2018 [cited 2018 Jun 5]. Available from:
351 [http://www.qualitywatch.org.uk/blog/emergency-readmissions-trends-emergency-readmissions-](http://www.qualitywatch.org.uk/blog/emergency-readmissions-trends-emergency-readmissions-hospital-england)
352 [hospital-england](http://www.qualitywatch.org.uk/blog/emergency-readmissions-trends-emergency-readmissions-hospital-england)
- 353 30. Wessex Local Medical Communities. *Transforming Primary Care* [Internet]. UK: Wessex Local
354 Medical Communities; [cited 2018 Aug 30]. Available from:
355 <https://www.wessexlmcs.com/transformingprimarycare>
- 356 31. McPhail SM. Multimorbidity in chronic disease: impact on health care resources and costs. *Risk*
357 *Manag Healthc Policy*. 2016;9:143–56.
- 358 32. Smith SM, Wallace E, O'Dowd T, Fortin M. Interventions for improving outcomes in patients with
359 multimorbidity in primary care and community settings. *Cochrane Database Syst Rev*. 2016;14 (3):1-

360 115.

361 33. Stokes J, Man MS, Guthrie B, Mercer SW, Salisbury C, Bower P. The Foundations Framework for
 362 Developing and Reporting New Models of Care for Multimorbidity. *Ann Fam Med*. 2017;15 (6):570–7.

363 34. Singh D. Ham C. Improving Care for People with Long-Term Conditions: A Review of UK and
 364 International Frameworks. Birmingham: Health Services Management Centre, University of
 365 Birmingham, and NHS Institute for Innovation and Improvement;2006:1-40.

366 35. World Health Organization. Noncommunicable diseases and their risk factors [Internet]. World
 367 Health Organization; 2018 [cited 2018 Aug 1]. Available from: www.who.int

368 36. Nolte E. & McKee M. Caring for people with chronic conditions: A health system perspective.
 369 Berkshire, England: Open University Press McGraw-Hill Education; 2008:1-290.

370 37. Wallace E. Salisbury C. Guthrie B. Lewis C. Fahey T. Smith SM. Managing patients with
 371 multimorbidity in primary care. *BMJ*. 2015;(20):350.

372 38. Wagner E.H. Effective Clinical Practice. Chronic disease management: What will it take to
 373 improve care for chronic illness? 1998;1(1):2–4.

374 39. Peters MDJ. Godfrey C. McInerney P. Baldini Soares C. Khalil H.Parker D. Chapter 11: Scoping
 375 Reviews. In: Aromataris E. Munn Z., editor. Joanna Briggs Institute Reviewer’s Manual. Joanna
 376 Briggs Institute; 2017.

377 40. Moher D. Shamseer L. Clarke M. Ghersi D. Liberati A. Petticrew M. Shekelle P. Stewart LA.
 378 Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) 2015
 379 statement. *Systematic Reviews*. 2015;4(1):1.

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 401 Appendix I: Search strategy from MEDLINE (via Ovid)
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CONTEXT	
	Primary Health Care/
OR	(Primary adj2 care).tw.
OR	Family Practice/
OR	(general adj2 practi\$).tw.
OR	family medicine.tw.
OR	(general adj1 practi\$).tw.
AND	
CONCEPT	
	(care adj1 model*).tw.
OR	(model* adj1 service delivery).tw.
OR	(model* adj1 (healthcare or health care)).tw.
AND	
PARTICIPANTS	
	Comorbidity/
OR	Chronic Disease/
OR	Multimorbid*.tw.
OR	Multi-morbidity.tw.
OR	(Chronic* adj2 Disease*).tw.
OR	(Chronic* adj1 Ill*).tw.
OR	((persistent or long* term or ongoing or degenerative) adj3 (disease* or ill* or condition* or insufficienc* or disorder*)).tw.
OR	Diabetes Mellitus/
OR	(diabetes or diabetic).tw.
OR	(heart disease* or heart failure or myocardial ischemia or coronary disease* or coronary artery disease* or myocardial infarction or hypertension or high blood pressure).tw.
OR	Sickle cell.tw.
OR	Lung Diseases, Obstructive/
OR	(obstructive lung disease* or obstructive pulmonary disease* or copd or asthma or bronchitis).tw.
OR	emphysema.tw.
OR	emphysema/
OR	pulmonary emphysema/
OR	(cystic fibrosis or respiratory distress).tw.
OR	nervous system diseases/
OR	((brain adj disease*) or damage* or injur*).tw.
OR	(cerebrovascular or brain ischemia or cerebral infarction or carotid artery disease* or stroke or epilep* or seizure*).tw.
OR	(neurodegenerative or Huntingdon* or Parkinson* or amyotrophic lateral sclerosis or multiple sclerosis or motor neuron disease).tw.
OR	(paralys* or quadriplegi* or tetraplegi* or paraplegi* or locked-in syndrome).tw.
OR	((communication or learning or consciousness or perpetual or speech or voice or vision or hearing or psychomotor) adj disorder*).tw.
OR	(hearing loss or hearing aid* or deaf* or blind* or stutter*).tw.
OR	down* syndrome.tw.
OR	Cerebral Palsy/

OR	cerebral palsy.tw.
OR	gastrointestinal diseases/
OR	(gastroenter* or intestinal or bowel or colonic).tw.
OR	((renal or kidney) adj1 (failure* or insufficienc*)).tw.
OR	nutrition disorders/
OR	(underweight or malnutrition or malnourished or overweight or obes*).tw.
OR	arthritis/
OR	rheumatic diseases/
OR	(arthritis or osteoarthritis or rheumati* or fibromyalgia).tw.
OR	((back or neck) adj pain).tw.
OR	(chronic adj pain).tw.
OR	(musculoskeletal or MSK).tw.
OR	Osteoporosis/
OR	osteoporosis.tw.
OR	thyroid diseases/
OR	Thyroid Gland/
OR	thyroid.tw.
OR	hypersensitivity/
OR	(hypersensitivit* or allerg* or intolerance or anaphyla*).tw.
OR	neoplasms/
OR	(cancer* or oncolog* or neoplasm* or carcinom* or tumo?r* or malignan* or leuk?emia).tw.
OR	hiv infections/
OR	(hiv infect* or hiv disease*).tw.
OR	exp *mental disorders/
OR	behavioral symptoms/
OR	((mental* or psychiatr* or psychological*) adj1 (ill* or disorder* or disease* or distress* or disab* or problem* or health* or patient* or treatment)).tw.
OR	((personality or mood or dysthymic or cognit* or anxiety or stress or eating or adjustment or reactive or somatoform or conversion or behavior or perception or psycho* or impulse control or development* or attention deficit or hyperactivity or conduct or motor skills or movement or tic or substance related) adj disorder*).tw.
OR	(psychos#s or psychotic* or paranoi* or schizo* or neuros#s or neurotic* or delusion* or depression or depressive or bipolar or mania or manic or obsessi* or compulsi* or panic or phobic or phobia or anorexia or bulimia or neurastheni* or dissociative or autis* or Asperger* or Tourette or dyslex* or affective or borderline or narcissis* or suicid* or self injur* or self harm or adhd).tw.
OR	((substance or drug or alcohol) adj abuse).tw.
OR	((addict* or alcoholism or problem*) adj1 drinking).tw.
OR	Dementia/
OR	(Alzheimer adj Disease).tw.
OR	((sleep adj disease?) or disorder?).tw.
OR	hyperlipidem*.tw.
OR	Hypercholesterolemia*.tw.
OR	hypertriglyceridemia*.tw.
OR	((liver adj disease?) or disorder?).tw.
OR	Muscular Dystrophies/
AND	limit 77 to yr="1995 -Current"

404 Appendix II: Data extraction instrument

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Author						
Year of publication						
Country of origin						
Model/ Intervention						
Aim						
Study design						
Study population, sample size						
Characteristics of Model/ Intervention						
Outcomes assessed						
Results/ Findings/ Recommendati ons						
Implication for practice, further study						

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410 Appendix III- List of websites to be included in search.

411 **Australia**

412 www.health.gov.au

413 www.aihw.gov.au

414

415 **New Zealand**

416 www.health.govt.nz

417

418 **South Africa**

419 www.health.gov.za

420

421 **India**

422 www.mohfw.gov.in

423 www.dhr.gov.in

424

425 **Canada**

426 www.canada.ca/en/health-canada

427 www.cihi.ca

428 www.cfpc.ca

429 www.cfhi-fcass.ca

430

431 **United Kingdom**

432 www.gov.uk/government/organisations/department-of-health-and-social-care

433 www.england.nhs.uk

434 www.scot.nhs.uk

435 <https://health.gov.ie/>

436 www.wales.nhs.uk

437 www.kingsfund.org.uk

438 www.nice.org.uk

439 www.napc.co.uk

440 www.hsj.co.uk

441 www.nhsconfed.org

442 <https://digital.nhs.uk/>

443 www.ageuk.org.uk

444 www.phc.ox.ac.uk

445 www.nuffieldtrust.org.uk

446

447 **International**

448 www.who.int/primary-health

449 www.improvingchroniccare.org

450 <http://maccollcenter.org>

451 www.ihl.org

452 www.rand.org

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