APPENDIX 1. SEARCH STRATEGIES

OVID MEDLINE SEARCH FOR SYSTEMATIC REVIEWS

1	(meta-analy$ or metaanaly$ or meta analy$).tw. or exp Meta-Analysis/ or (systematic adj (review$ or overview$)).tw. or (systematic review or literature review or rapid review or umbrella review or meta synthesis or metasynthesis or meta-analysis or meta-synthesis or integrative review or data synthesis or comparative effectiveness review).mp.
2	(case report or case series).tw.
3	1 not 2
4	(((nursing home$ or care home$ or long-term care or institution$ or facility) adj5 (place$ or entry or admit$ or admission$)) or institutionalization).tw. or exp Homes for the Aged/ or Nursing Homes/ or Long-Term Care/
5	3 and 4
6	aged.mp. or exp AGED/ or (elder$ or old age or ag?ing or advanced age or aged-related or late$ life or senior$ or geriatr$ or retired or frail elder$).tw. or ((old or older) adj (adult$ or people or person$ or male$ or female$ or m?n or wom?n or population$ or citizen$)).tw. or exp dementia/ or (dementia or Alzheimer$ or lewy body or pick$ disease or (frontotemporal adj2 degeneration) or (vascular adj2 dementia)).tw. or ((memory adj2 (problem$ or disorder$)) or cognition or cognitive disorders).tw.
7	(TBI or mTBI or traumatic brain injur$).tw. or exp Brain Injuries, Traumatic/ or exp Stress Disorders, Traumatic/ or (((post-traumatic or posttraumatic or post traumatic) adj2 stress) or PTSD).tw.
8	(Disabled or disabilit$ or impair$ or function$).tw.
9	(6 or 7) and 8
10	exp Health Services for the Aged/ or exp Community Health Services/ or exp Community Health Workers/ or exp Home Care Services/ or Home Health Aides/
11	exp Geriatric Assessment/ or (geriatric$ adj5 assess$).tw.
12	exp House Calls/ or (house adj5 call$).tw. or (home adj5 (intervention$ or visit$ or assessment$ or service$ or therapy or healthcare or health care or primary care or aides or nurs$ or visit$)).tw. or home-based.tw. or health visitor$.tw.
13	exp Occupational Therapy/ or (occupation$ adj5 therap$).tw.
14	exp Physical Therapy Specialty/ or (phys$ adj5 therap$).tw.
15	exp Social Support/ or (social adj5 (support or intervention)).tw. or (psychosocial adj5 care).tw. or exp Social Isolation/ or exp Social Facilitation/
16	exp Social Work/ or (social adj5 (program$ or work$)).tw.
17	((physical$ adj5 (exercise or fitness or activit$)) or (exercise adj5 (program$ or behavi$))).tw. or exp Exercise Therapy/ or exp Physical Fitness/ or exp WALKING/ or exp exercise movement techniques/ or tai chi.tw.
18	exp Caregivers/ or exp FAMILY/ or exp FAMILY NURSING/ or (caregiver$ or carer$ or care giver$ or informal care$ or (family adj2 (care$ or therapy))).tw.
19	exp Home Nursing/ or exp Night Care/ or (night$ adj2 care).tw. or exp Respite Care/ or (respite or day care or day clinic$).tw. or exp Day Care, Medical/
20	exp Food Services/ or ((meals adj2 wheels) or congregant dining or grocery delivery).tw.
21	exp Foster Home Care/ or medical foster home$.tw.
22	exp Assisted Living Facilities/ or Group Homes/ or assisted living.tw.
23	((cash and counseling) or self-directed or consumer-directed).tw.
24	(transport$ or mobili$).tw.

25	or/10-24
26	3 and 9 and 25
25	5 or 26
26	Limit to English

OVID EMBASE SEARCH FOR SYSTEMATIC REVIEWS

1	(meta-analy$ or metaanaly$ or meta analy$).tw. or exp Meta-Analysis/ or (systematic adj (review$ or overview$)).tw. or (systematic review or literature review or rapid review or umbrella review or meta synthesis or metasynthesis or meta-analysis or meta-synthesis or integrative review or data synthesis or comparative effectiveness review).tw.
2	(case report or case series or case study).mp.
3	1 not 2
4	(((nursing home$ or care home$ or long-term care or institution$ or facility) adj5 (place$ or entry or admit$ or admission$)) or institutionalization).tw. or exp Home for the Aged/ or Nursing Home/
5	3 and 4
6	(elder$ or old age or ag?ing or advanced age or aged-related or late$ life or senior$ or geriatr$ or retired or frail elder$).tw. or ((old or older) adj (adult$ or people or person$ or male$ or female$ or m?n or wom?n or population$ or citizen$)).tw. or exp dementia/ or (dementia or Alzheimer$ or lewy body or pick$ disease or (frontotemporal adj2 degeneration) or (vascular adj2 dementia)).tw. or ((memory adj2 (problem$ or disorder$)) or cognition or cognitive disorders).tw.
7	(TBI or mTBI or traumatic brain injur$).tw. or exp Brain Injuries, Traumatic/ or exp Stress Disorders, Traumatic/ or (((post-traumatic or posttraumatic or post traumatic) adj2 stress) or PTSD).tw.
8	(Disabled or disabilit$ or impair$ or function$).tw.
9	(6 or 7) and 8
10	exp Geriatric Assessment/ or (geriatric$ adj5 assess$).tw. or exp Health Services for the Aged/ or exp Community Health Services/ or exp Community Health Workers/
11	exp home visit/ or exp home care/ or (house adj5 call$).tw. or (home adj5 (intervention$ or visit$ or assessment$ or service$ or therapy or healthcare or health care or primary care or aides or nurs$ or visit$)).tw. or home-based.tw. or health visitor$.tw.
12	exp Occupational Therapy/ or (occupation$ adj5 therap$).tw. or exp Physical Therapy/ or (phys$ adj5 therap$).tw.
13	exp Social Support/ or (social adj5 (support or intervention)).tw. or (psychosocial adj5 care).tw. or exp Social Isolation/ or exp Social Work/ or (social adj5 (program$ or work$)).tw.
14	((physical$ adj5 (exercise or fitness or activit$)) or (exercise adj5 (program$ or behavi$))).tw. or exp kinesiotherapy/ or exp Fitness/ or exp WALKING/ or tai chi.tw.
15	exp Caregiver/ or exp FAMILY NURSING/ or (caregiver$ or carer$ or care giver$ or informal care$ or (family adj2 (care$ or therapy))).tw. or (night$ adj2 care).tw.
16	exp Respite Care/ or exp Day Care/ or (respite or day care or day clinic$).tw.
17	exp catering service/ or ((meals adj2 wheels) or congregant dining or grocery delivery).tw.
18	medical foster home$.tw. or exp Assisted Living Facilities/ or assisted living.tw. or exp residential home/
19	((cash and counseling) or self-directed or consumer-directed).tw.
20	(transport$ or mobili$).tw.
21	or/10-20

22	3 and 9 and 21
23	5 or 22
24	Limit 23 to English language

PSYCINFO SEARCH FOR SYSTEMATIC REVIEWS

1	(meta-analy$ or metaanaly$ or meta analy$).tw. or exp Meta-Analysis/ or (systematic adj (review$ or overview$)).tw. or (literature review or rapid review or umbrella review or meta synthesis or metasynthesis or meta-synthesis or integrative review or data synthesis or comparative effectiveness review).mp.
2	(((nursing home$ or care home$ or long-term care or institution$ or facility) adj5 (institutionalization or place$ or entry or admit$ or admission$)) or institutionalization).tw. or Nursing Homes/ or Long-Term Care/
3	1 and 2
4	(TBI or mTBI or traumatic brain injur$).tw. or exp Traumatic Brain Injury/ or exp Posttraumatic Stress Disorder/ or (((post-traumatic or posttraumatic or post traumatic) adj2 stress) or PTSD).tw.
5	(Disabled or disabilit$ or impair$ or function$).tw.
6	1 and 4 and 5
7	2 and 6
8	exp Elder Care/ or exp Community Services/ or exp Home Care/ or exp Home Care Personnel/ or (community health service$ or community health worker$ or home care service$ or home health aide$).tw.
9	exp Home Visiting Programs/ or (house adj5 call$).tw. or (home adj5 (intervention$ or visit$ or assessment$ or service$ or therapy or healthcare or health care or primary care or aides or nurs$ or visit$)).tw. or home-based.tw. or health visitor$.tw.
10	exp Occupational Therapy/ or (occupation$ adj5 therap$).tw.
11	exp Social Support/ or (social adj5 (support or intervention)).tw. or (psychosocial adj5 care).tw. or exp Social Isolation/ or exp Social Facilitation/
12	exp Social Casework/ or (social adj5 (program$ or work$)).tw.
13	((physical$ adj5 (exercise or fitness or activit$)) or (exercise adj5 (therap$ or program$ or behavi$))).tw. or exp Physical Activity/ or exp Exercise/ or exp Physical Fitness/ or exp WALKING/ or tai chi.tw.
14	exp Caregivers/ or exp FAMILY/ or (caregiver$ or carer$ or care giver$ or informal care$ or (family adj2 (nurs$ or care$ or therapy))).tw.
15	((home adj2 nursing) or (night$ adj2 care)).tw. or exp Respite Care/ or (respite or day care or day clinic$).tw. or exp Adult Day Care/ or exp Day Care Centers/
16	(food service$ or (meals adj2 wheels) or congregant dining or grocery delivery).tw.
17	exp Assisted Living/ or exp Group Homes/ or exp Independent Living Programs/ or assisted living.tw.
18	((foster adj2 care) or medical foster home).tw.
19	((cash and counseling) or self-directed or consumer-directed).tw.
20	(transport$ or mobili$).tw.
21	exp Geriatric Assessment/ or (geriatric$ adj5 assess$).tw.
22	exp Physical Therapy/ or (phys$ adj5 therap$).tw.
23	or/8-22
24	aged.mp. or exp Aging/ or exp Geriatric Patients/ or (elder$ or old age or ag?ing or advanced age or aged-related or late$ life senior$ or geriatr$ or retired or frail elder$).tw. or ((old or

	older) adj (adult$ or people or person$ or male$ or female$ or m?n or wom?n or population$ or citizen$)).tw. or exp dementia/ or exp Alzheimer's Disease/ or (dementia or Alzheimer$ or lewy body or pick$ disease or (frontotemporal adj2 degeneration) or (vascular adj2 dementia)).tw. or exp Membory Disorders/ or exp Cognitive Impairment/ or ((memory adj2 (problem$ or disorder$)) or cognition or cognitive disorders).tw.
25	6 and 23
26	1 and 5 and 23 and 24
27	2 and 26
28	1 and (2 or ((4 or 24) and 5 and 23))
29	limit 28 to english language

SOCIOLOGICAL ABSTRACTS SEARCH FOR SYSTEMATIC REVIEWS

S2	noft(meta-analy* OR metaanaly* OR meta analy*) OR MAINSUBJECT.EXACT.EXPLODE("Literature Reviews") OR noft((systematic review* OR systematic overview* OR literature review OR rapid review OR umbrella review OR meta synthesis OR metasynthesis OR meta-synthesis OR integrative review OR data synthesis OR comparative effectiveness review))
S3	MAINSUBJECT.EXACT("Nursing Homes") OR MAINSUBJECT.EXACT("Long Term Care") OR noft(nursing home place* or nursing home entry or nursing home admit* or nursing home admission* or care home place* or care home entry or care home admit* or care home admission* or long?term care place* or long?term care entry or long?term care admit* or long?term care admission* or facility place* or facility entry or facility admit* or facility admission* or institutionalization)
S4	S2 AND S3
S5	noft(TBI or mTBI or traumatic brain injur* or post-traumatic stress or posttraumatic stress or post traumatic stress or PTSD)
S6	noft(disabled or disabilit$ or impair$ or function*)
S7	S2 and S5 and S6
S8	S3 and S7
S10	Exact("home health care" OR "health care services") OR noft(community health service* or community health worker* or home health aid*)
S11	noft(house call* or home intervention* or home visit* or home assessment* or home service* or home therapy or home healthcare or home health care or home primary care or home aid* or home nurse* or home visit* or home-based or health visitor*)
S12	noft(occupation* NEAR/5 therap*)
S13	noft(social support or social intervention* or psychosocial care or social isolation or social facilitation) OR Exact("social support" OR "social services" or "social welfare")
S14	Exact("social work") OR noft(social program* or social work*)
S16	Exact("physical fitness") OR noft(physical* exercise OR physical* fit* OR physical* activit* OR exercise program* OR exercise behavi* OR exercise therapy OR walking OR exercise movement OR tai chi)
S17	Exact("caregivers") OR (family or caregiver* or carer* or care giver* or informal care* or family care* or family therapy or family nursing)
S18	Exact("home care" OR "respite care" OR "adult care services") OR noft(home nursing or night* care or respite or day care or day clinic*)

S19	noft(food service* or meals NEAR/2 wheels or congregant dining or grocery delivery)
S20	Exact("foster home care") OR noft(medical foster home*)
S21	Exact("group homes" OR "assisted living" OR "assisted living facilities") OR noft(assisted living)
S22	Exact("group homes" OR "coresidence" OR "assisted living" OR "assisted living facilities") OR noft(assisted living)
S23	noft("cash and counseling" or self-directed or consumer-directed)
S24	noft(transport* or mobili*)
S25	Exact("geriatric assessment") OR noft(geriatric* NEAR/5 assess*)
S26	noft(phys* NEAR/5 therap*)
S28	S10 OR S11 OR S12 OR S13 OR S14 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22 OR S23 OR S24 OR S25 OR S26
S29	Exact("geriatric/geriatrics (see also aging, aged)" OR "alzheimer's disease" OR "dementia disorders" OR "aged (see also aging, geriatric)" OR "dementia, vascular" OR "alzheimers disease" OR "dementia" OR "aging (see also aged, geriatric)") OR noft(aged or elder* or old age* or ag?ing or advanced age or aged-related or late* life or senior* or geriatr* or retired or frail elder*) OR noft(old* NEAR/2 adult* or people or person* or male* or female* or m?n or wom?n or population* or citizen*) OR noft(dementia or Alzheimer* or lewy body or pick* disease or frontotemporal degeneration or vascular dementia or memory problem* or memory disorder* or cognition or cognitive disorder*)
S30	S7 AND S28
S31	S2 AND S6 AND S28 AND S29
S32	S31 AND S3
S33	S2 AND (S3 OR ((S5 OR S29) AND S6 and S28))

SEARCHES OF COCHRANE DATABASE OF SYSTEMATIC REVIEWS, JOANNA BRIGGS INSTITUTE (JBI) EVIDENCE-BASED PRACTICE DATABASE, VA EVIDENCE SYNTHESIS PROGRAM (ESP), AND AHRQ EVIDENCE-BASED PRACTICE CENTER (EPC)

Target Interventions	Search Terms (keywords in title/abstract)
Home-based primary care, outpatient geriatric assessment and case management	Home-based primary care Geriatric Assessment Home visits House calls Case management older adults Case management PTSD Case management TBI
Outpatient or home-based rehabilitation, nursing services, or other medical care	Home nursing Home physical therapy Home occupational therapy
Physical activity or exercise (not as part of rehabilitation program)	Physical activity program older adults Physical activity program PTSD Physical activity program TBI Exercise program older adults Exercise program PTSD

	Exercise program TBI
In-home assistance with non-healthcare activities (home aides, home repair, etc.)	Home health aide Home repair
Caregiver interventions	Caregiver (Edited to “caregiver adj3 intervention” in JBI)
Respite care	Respite care (Edited to “respite adj2 care” in JBI)
Community health workers, friendly visits	Friendly visit/visitor
Nutritional programs (Meals on Wheels, congregant dining, grocery delivery, etc.)	Meals on Wheels Congregant dining Grocery delivery
Transportation and mobility services	Transportation Mobility services
Assistive technologies	Assistive technology (“home” and “community” added to search in Cochrane)
Alternative housing with range of services (assisted living or group homes, medical foster homes, etc.)	Assisted living Group home Medical foster home
Financial support and benefits (caregiver stipends, Cash and Counseling, etc.)	Caregiver benefits Caregiver stipends Cash and Counseling

OVID MEDLINE FOR PRIMARY STUDIES ON TBI/PTSD POPULATION

1	(((nursing home$ or care home$ or long-term care or institution$ or facility) adj5 (place$ or entry or admit$ or admission$)) or institutionalization).tw. or exp Homes for the Aged/ or Nursing Homes/ or Long-Term Care/
2	(TBI or mTBI or traumatic brain injur$).tw. or exp Brain Injuries, Traumatic/ or exp Stress Disorders, Traumatic/ or (((post-traumatic or posttraumatic or post traumatic) adj2 stress) or PTSD).tw.
3	1 and 2
4	limit 3 to "all child (0 to 18 years)"
5	3 not 4
6	limit 5 to english language

APPENDIX 2. STUDY SELECTION CRITERIA

	Inclusion	Exclusion
Participants	Adults with physical or cognitive impairment (or at high risk for developing new impairments) due to: older age, frailty, dementia, other chronic conditions, PTSD, and/or TBI	Adults dependent on medical technology (*eg*, ventilator); adults with no impairments and having little or very remote risk for new impairments
Interventions	Home-based primary care, outpatient geriatric assessment and case management Outpatient or home-based rehabilitation, nursing services, or other medical care Physical activity or exercise (not as part of rehabilitation program) In-home assistance with non-healthcare activities (home aides, home repair, *etc*) Caregiver interventions Respite care Adult day clinics Community health workers, friendly visits Nutritional programs (Meals on Wheels, congregant dining, grocery delivery, *etc*) Transportation and mobility services Assistive technologies Alternative housing with range of services (assisted living or group homes, medical foster homes, *etc*) Financial support and benefits (*eg*, caregiver stipends, Cash and Counseling)	Hospice and end-of-life care Condition-specific medications (*eg*, donepezil for dementia)
Comparators	Any (active or inactive)	
Outcomes	Primary: Long-term nursing home placement, (must specify as long-term or otherwise use term that indicates long-term placement *eg*, institutionalization) Secondary: Function, quality of life Hospitalizations Resource use, costs, spend-down Mortality Harms (falls, medication errors)	Short-term admission to nursing homes for post-acute care Caregiver outcomes without patient outcomes
Timing	Any duration	
Setting	Community	Acute care settings (*ie*, emergency rooms and inpatient wards) Institutional settings (*eg*, skilled nursing facilities for rehabilitation)
Design	Systematic review: must have search strategy, eligibility criteria, and analysis/synthesis plan; may include randomized controlled trials, observational studies, and/or qualitative studies	
Other	English Language	

APPENDIX 3. QUALITY ASSESSMENT

3.1 QUALITY ASSESSMENT CRITERIA (MODIFIED AMSTAR 2[15])

1. **Total number of eligible articles included in review:** _____

2. **Types of studies included in review (check all that apply):**

☐ RCTs ☐ Cross-sectional ☐ Cohort ☐ Systematic Reviews

3. **Location (check all that apply):**

☐ United States ☐ Canada ☐ Eurpoe ☐ Asia ☐ Australia
☐ Other (please specify) _____ ☐ Not Reported

4. **Did the research questions and inclusion criteria for the review include the components of PICO?**
Must have **p**opulation, Intervention, **c**omparator group and **o**utcome.

Yes | No

5. **Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify and signification deviations from the protocol?**
Partial Yes=ALL of the following: review questions, search strategy, inclusion/exclusion criteria, risk of bias assessment

Yes=ALL of partial yes plus: protocol registered, a meta-analysis/synthesis plan (if appropriate) and a plan for investigating causes of heterogeneity, justification for any deviations from the protocol

Yes | Partial Yes | No

6. **Did the review authors explain their selection of the study designs for inclusion in the review?**
Example: explanation for including RCTs only

Yes | No

7. **Did the review authors use a comprehensive literature search strategy?**
Partial Yes: must have searched at least 2 databases (relevant to research question), provided key word and/or search strategy, justified publication restrictions (eg, dates)

Yes=ALL of the above plus searched reference lists/bibliographies, searched trial/study registries, included/consulted content experts i nthe field, searched for grey literature where relevant, conducted search within 24 months of completion of the reivew

Yes | Partial Yes | No

8. **Did the review authors perform study selection in duplicate?**
(at least two reviewers independently agreed on selection of eligible studies and achieved consensus on which studies to include)

Yes | No

9. **Did the review authors perform data extraction in duplicate?**
(at least two reviewers achieved consensus on which data to extract)

Yes | No

10. **Did the review authors use a satisfactory technique for assessing the quality of individual studies that were included in the review?**
Partial Yes: must have described element of quality
Yes: must have also used standard quality or risk of bias tools

Yes | Partial Yes | No

11. **If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results?**
(the authors justified combining the data in a mete-analysis and considered heterogeneity)

Yes | No | No meta-analysis conducted

12. **If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?**
(performed graphical or statistical tests for publication bias and discussed the likelihood and magnitude of impact of publication bias)

Yes | No | No meta-analysis conducted

13. **Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?**
(the authors reported no competing interests OR they described their funding sources and how they managed potential conflicts of interest)

Yes | No

Taking into account your previous answers, please rate quality as:

High | Medium | Low

3.2 QUALITY ASSESSMENT FOR ALL ELIGIBLE SYSTEMATIC REVIEWS

Author, Year	Research Questions include components of PICO?	Protocol established prior to conduct of review?	Explained selection of included study designs?	Comprehensive search strategy used?	Dual review for inclusion? Dual review for data extraction?	Assessed quality?	Meta analyses: Appropriate statistical methods and investigation of publication bias?	Reported any potential conflicts of interest?	Overall Quality
Apostolo, 2017[16]	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes	**High**
Beswick, 2010[36]	Yes	No	Yes	Yes	No Yes	Partial Yes	Yes	Yes	**Medium**
Black, 2004[20]	Yes	No	No	Yes	No	No	No	No	**Low**
Bottcher, 2015[37]	Yes	No	Yes	Yes	Yes No	Yes	NA	No	**Medium**
Brown, 2015[54]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**High**
Burridge, 2007[21]	No	No	No	Yes	No	Yes	NA	No	**Medium**
Cepoiu-Martin, 2016[22]	Yes	Partial Yes	Yes	Yes	Yes	Yes	Yes	Yes	**High**
Cochrane, 2016[38]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**High**
Dickinson, 2017[44]	Yes	No	No	Yes	Yes	Yes	NA	Yes	**Medium**
Du Preez, 2018[55]	No	No	No	No	No	Yes	NA	Yes	**Low**
Elkan, 2001[63]	Yes	No	Yes	Yes	No	Yes	Yes	Yes	**Medium**
Ellen, 2017[56]	Yes	No	No	Partial Yes	No	No	NA	No	**Medium**
Fields, 2014[57]	No	No	Yes	Yes	No	No	NA	Yes	**Low**
Flint, 1995[58]	Yes	No	No	Yes	No	Yes	NA	No	**Low**
Forbes, 2014[75]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**High**
Frazier, 2005[23]	No	No	No	Yes	No	No	NA	No	**Low**
Frost, 2017[71]	Yes	Yes	Yes	Yes	Yes No	Yes	Yes	Yes	**Medium**

Author, Year	Research Questions include components of PICO?	Protocol established prior to conduct of review?	Explained selection of included study designs?	Comprehensive search strategy used?	Dual review for inclusion? Dual review for data extraction?	Assessed quality?	Meta analyses: Appropriate statistical methods and investigation of publication bias?	Reported any potential conflicts of interest?	Overall Quality
Gawel, 2012[24]	Yes	No	Yes	Yes	Yes No	Yes	NA	No	**Medium**
Gilhooly, 2016[81]	Yes	No	Yes	Yes	Yes No	Yes	NA	Yes	**Medium**
Gine-Garriga, 2018[72]	Yes	No	Yes	Yes	Yes	Yes	Yes No	Yes	**Medium**
Goy, 2010[52]	Yes	Yes	Yes	Yes	No	Yes	NA	Yes	**Medium**
Griffin, 2015[45]	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes	**High**
Guirguis-Blake, 2018[73]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**High**
Hedrick, 1989[76]	Yes	No	No	Yes	No	No	No	No	**Low**
Hickam, 2013[83]	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes	**High**
Jensen, 2015[46]	Yes	No	No	Yes	Yes	Yes	Yes	Yes	**Medium**
Johri, 2003[82]	Yes	No	Yes	Yes	No	No	NA	No	**Low**
Kojima, 2018[17]	Yes	No	Yes	Partial Yes	No	Yes	No Yes	Yes	**Low**
Lee, 2014[59]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**High**
Lehmann, 2018[25]	Yes	No	No	Yes	Yes No	Yes	Yes No	Yes	**Medium**
Luppa, 2008[26]	Yes	No	Yes	Yes	No	No	NA	No	**Low**
Luppa, 2009[28]	Yes	No	Yes	Yes	No	No	NA	Yes	**Low**
Luppa, 2010[27]	Yes	No	Yes	Yes	No	Partial Yes	NA	Yes	**Medium**
Markle-Reid, 2006[64]	Yes	No	Yes	Yes	No	Yes	NA	Yes	**Low**
Mason, 2007[60]	Yes	Yes	Yes	Yes	Yes	Yes	Yes No	Yes	**High**

Author, Year	Research Questions include components of PICO?	Protocol established prior to conduct of review?	Explained selection of included study designs?	Comprehensive search strategy used?	Dual review for inclusion? Dual review for data extraction?	Assessed quality?	Meta analyses: Appropriate statistical methods and investigation of publication bias?	Reported any potential conflicts of interest?	Overall Quality
Mayo-Wilson, 2014[65]	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	**High**
Montgomery, 2008[77]	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes	**High**
O'Caoimh, 2015[29]	Yes	No	No	Yes	Yes	Yes	NA	Yes	**Medium**
Olazaran, 2010[78]	Yes	No	Yes	Yes	Yes No	Partial Yes	Yes No	Yes	**Medium**
Palmer, 2014[30]	Yes	No	Yes	Partial Yes	Yes	No	NA	No	**Low**
Pamoukdjian, 2015[31]	Yes	No	No	No	No	No	NA	Yes	**Low**
Parker, 2008[53]	Yes	No	Yes	Yes	Yes No	Yes	Yes No	No	**Low**
Pimouguet, 2010[39]	Yes	No	Yes	Yes	No	Partial Yes	NA	No	**Low**
Pinquart, 2006[47]	Yes	No	Yes	Partial Yes	Yes No	Yes	Yes No	Yes	**Medium**
Ploeg, 2005[66]	Yes	No	Yes	Yes	Yes	Yes	Yes No	Yes	**Medium**
Reilly, 2015[40]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**High**
Rydwik, 2012[32]	Yes	No	No	Partial Yes	No Yes	Partial Yes	NA	Yes	**Medium**
Shaw, 2009[61]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**High**
Smits, 2007[48]	No	No	No	Partial Yes	Yes No	Yes	NA	No	**Low**
Snowden, 2017[33]	Yes	No	No	Partial Yes	No	Partial Yes	NA	Yes	**Medium**
Spijker, 2008[79]	Yes	No	Yes	Yes	Yes No	Yes	Yes No	Yes	**Medium**

Author, Year	Research Questions include components of PICO?	Protocol established prior to conduct of review?	Explained selection of included study designs?	Comprehensive search strategy used?	Dual review for inclusion? Dual review for data extraction?	Assessed quality?	Meta analyses: Appropriate statistical methods and investigation of publication bias?	Reported any potential conflicts of interest?	Overall Quality
Stall, 2014[69]	Yes	No	No	Yes	Yes No	Yes	NA	Yes	**Medium**
Sternberg, 2011[18]	Yes	Partial Yes	No	Yes	Yes	Partial Yes	NA	Yes	**High**
Steultjens, 2004[74]	Yes	No	Yes	Partial Yes	Yes	Partial Yes	NA	No	**Medium**
Stuck, 2002[67]	Yes	No	Yes	Yes	Yes	Partial Yes	Yes	Yes	**Medium**
Suchowersky, 2007[34]	Yes	No	No	Yes	No	No	NA	Yes	**Low**
Tam-Tham, 2013[41]	Yes	Partial Yes	Yes	Yes	Yes	Yes	Yes	Yes	**High**
Torti, 2004[35]	No	No	No	No	No	No	NA	No	**Low**
Totten, 2016[70]	Yes	Yes	Yes	Yes	Yes	Partial Yes	NA	Yes	**High**
Van der Roest, 2017[80]	Yes	Yes	Yes	Yes	Yes No	No	NA	Yes	**High**
van Haastregt, 2000[68]	Yes	No	No	Yes	Yes	Yes	NA	Yes	**Medium**
Vandepitte, 2015[49]	Yes	No	Yes	Partial Yes	No	Yes	NA	Yes	**Low**
Vandepitte, 2016[62]	Yes	No	Yes	Yes	Yes No	Yes	NA	Yes	**Medium**
Van't Leven, 2013[50]	Yes	No	No	Yes	Yes No	Yes	NA	Yes	**Medium**
Vermeiren, 2016[19]	Yes	Yes	Yes	Partial Yes	Yes	Yes	Yes No	No	**Medium**
Vernooij-Dassen, 2011[51]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**High**
You, 2013[42]	Yes	No	Yes	Yes	No	Yes	NA	Yes	**Medium**

APPENDIX 4. PEER REVIEW COMMENTS/AUTHOR RESPONSES

Question Text	Reviewer Number	Comment	Author Response
Are the objectives, scope, and methods for this review clearly described?	1	Yes	Thank you.
	3	Yes	
	6	Yes	
	7	Yes	
	9	Yes	
	10	Yes	
Is there any indication of bias in our synthesis of the evidence?	1	No	Thank you. We agree with reviewer's concerns regarding challenges in evaluating and summarizing interventions that are applied to different populations and/or settings. This is particularly true for complex interventions, which often additionally vary in their components. However, we disagree that this necessarily lead to bias in findings of systematic reviews. We have focused on a set of prioritized, mostly high-quality eligible systematic reviews, in order to provide the findings from reviews which use more rigorous review methods (including careful consideration of bias and the impact of different synthesis approaches).
	3	Yes - Please see comment about heterogeneity of populations, interventions, and environments. Systematic reviews dilute this heterogenity	
	6	No	
	7	No	
	9	No	
	10	No	
Are there any published or unpublished studies that we may have overlooked?	1	No	Thank you.
	3	No	
	6	No	
	7	No	
	9	No	
	10	Yes - Recent studies on Social Determinants of Health	We focused our search and eligibility criteria on potentially modifiable risk factors and interventions to delay or prevent long-term nursing home placement. Social determinants would have been eligible as risk factors, although some social determinants (eg, educational status) may not be

			alterable at the time that adults develop impairments. Social determinants that were not potentially modifiable were considered as not addressing KQ 1 on modifiable risk factors. Social determinants could also have been included as participant (or caregiver) characteristics that impacted intervention effectiveness (KQ 3), but we did not identify findings about the impact of social determinants on intervention effects.
Additional suggestions or comments can be provided below. If applicable, please indicate the page and line numbers from the draft report.	1	Excellent recommendations. Minor edits: Pg 14. AMSTAR2 ratings in appendix 5 (not appendix 3) pg. 31 - 2nd policy recommendation has an extra word	Thank you. We have re-organized Appendices 3 and 5 and grouped together the AMSTAR 2 criteria and ratings for individual eligible reviews. We have also examined and revised the policy recommendations for clarity and wording.
	3	The ESP systematic review of systematic reviews of home and community based services has strong rigor including a comprehensive search, evaluation of the underlying systematic reviews, grading of the strength of evidence, and identifying the number of RCTss and studies within the systematic review. From this limited evidence base, there are strong conclusions drawn which could be misinterpreted. Major concerns: 1. The conclusions of the report are often broad and cutting. However, the evidence is under developed in most cases, making such broad statements as harmful as describing benefit. Examples include: Page 6 paragraph 2: “It is unclear that any existing intervention can change NHP for adults with impairments who have no informal care support” Page 7 Point 4: “As most interventions fail to prevent or delay NHP…” 2. These comments are particularly distressing in the context of the ESP reviews findings that the complexity of factors in both the environments, functional needs, and nuances of the interventions. As a result, the authors should tone down the definitiveness of the	Thank you. 1. We appreciate reviewer’s concerns about the conclusions, and have reworded these statements in the Discussion 2. We have removed the phrase “*As most interventions fail…*”

		statements 3. Page 15: Why was the focus on dementia, TBI and PTSD when other VA conditions that could be associated with NHP are not included (Stroke, SCI, or ALS)? 4. At times, the authors seem to appreciate the complexity of the risk factors, interventions, and social environment (Page 5 last line), but this appreciation seems reduced when this complexity is discounted in the analysis. If the reviews are comparing diverse populations, programs, and a environments, how effective are the reviews?	3. We undertook additional searches to identify evidence for adults with TBI and PTSD because of particular interest expressed by VA operations partners in risk factors and interventions for these groups. This is likely due to the higher prevalence of these conditions among Veterans (from more recent eras of service) who need substantial help from informal caregivers. We have further clarified the rationale for focusing on TBI and PTSD for additional searches, and our selection criteria, in Methods. While we did not undertake specific searches for the other conditions noted by the reviewer, eligible systematic reviews could have included or focused on these groups. Indeed, some of the eligible reviews included studies on interventions for adults who had suffered strokes, among other serious medical conditions. 4. We appreciate and agree with reviewer's comments about the challenges of conducting and evaluating complex interventions. Despite these challenges, synthesis of evidence for complex interventions is often high priority for healthcare systems, as such interventions may be the only plausible solution to enhance healthcare delivery and improve outcomes for populations with high needs. We note that the VA ESP, along with other evidence review groups such as the AHRQ Evidence-based Practice Centers, are frequently called upon to review and synthesize evidence for complex interventions. We hope that advances in evaluation of complex interventions will continue to enhance our ability to understand their value and applicability to different groups. 5. Symbols are defined in the footnotes of the tables. We have not found the "two plus signs" and have carefully reviewed the tables for

		5. For the tables of results, the choice of symbols for directionality is confusing and not well labeled. For example, two plus signs and a down arrow represent?.(i.e. interpretation could range from really significant - except when it wasn't – to strong numerator and low denominator). As these figures are critical to dissemination efforts, clarity is critical 6. Can the authors explain why the findings suggest that social and caregiver support is critical to delay of NHP, but there is no recommendation for standardized assessment? One could make the same argument for frailty status 7. A major limitation of a systematic review of systematic reviews is that the science of systematic reviews has increased substantially in the past couple years. The authors do note which systematic reviews are within 5 years. However, in complex population with complex interventions, there is significant variability. Some systematic reviews, particularly earlier ones, used 'evidence' which is more marketing of programs than science. Minor Page 16 Figure 3: What do the numbers in parentheses mean? Page 17 Table 1 – please center the columns consistently	formatting errors. Most reviewers have found these summary tables helpful. 6. In the Discussion, we have expanded upon the rationale for our recommendation to link assessment for needs and social resources, including caregiver support, with a longitudinal program of services and care coordination. Without a robust longitudinal program to address identified needs (and lack of social resources) we think it unlikely that improved assessment will be sufficient to impact Veteran outcomes. 7. We agree with reviewer's comments that there have been advances and improvements in systematic review methods, with have also included efforts to evaluate the quality of systematic reviews themselves. That is why we selected high quality and more recent eligible reviews, whenever possible, to focus on in describing results of specific risk factors and interventions. However, we have noted in the Limitations that we relied on systematic review authors to rate the quality of included studies, as well as the overall strength of evidence. We also agree that it is challenging to evaluate and synthesize evidence for complex interventions, which we have highlighted in the Discussion. These are the numbers of prioritized reviews for detailed data extraction (also noted in column heading). We have corrected the formatting.

	6	Pg. 11, Line 37: I find it interesting that only 2 reviews with HBPC met eligibility. Just today I listened to a research call with our GEC Data Analysis Center that showed evidence of HBPC delaying nursing home by 1 year (using 2016 data - although report is probably unpublished at this point). I realize much HBPC research is on hospitalization and cost vs nursing home, but find it interesting that only 2 met criteria.	Thank you for this update about emerging evidence on HBPC effects for nursing home placement. As you have noted, most studies of HBPC have focused on acute care use and costs, and not evaluated nursing home placement. Our findings regarding the risk factors for nursing home placement may be useful to researchers in future observational studies of the impact of HBPC vs usual care on this outcome.
	7	Are the objectives, scope, and methods for this review clearly described? • The report is highly responsive to its general objectives: (1) to examine evidence on modifiable risk factors for NHP and interventions that aimed to delay nursing home placement (NHP) for community-dwelling adults with physical and/or cognitive impairments. Community-dwelling adults included both older adults with existing disabilities (or at high risk for developing impairments) and individuals with posttraumatic stress disorder (PTSD) and/or traumatic brain injury (TBI); and (2) to address the broad scope of questions for these diverse populations and provide specific recommendations for VA policies. • A systematic review of systematic reviews is an efficient method for covering a wide range of individual studies. Employing a second level of review on top of the initial systematic review is an efficient check on the quality of the study findings. • The scope of the review was initially very broad and comprehensive, beginning initially with 10,671 citation meeting inclusion criteria. The inclusion criteria were designed to arrive at the very best systematic reviews. In the end, 20 risk factor reviews were considered and 6 were prioritized for specific results. A total of 47 intervention reviews were considered and 20 were prioritized for specific results (figure 3, page 16). • Unfortunately, none of the studies meeting inclusion criteria pertained to adults with PTSD or TBI. This gap appears to have been unavoidable because the research in these areas is not well developed. • The review was guided by a well-conceived, comprehensive conceptual model for risk of long-term NHP (Figure 1, page 11)	Thank you.

		including demographics, need for care, personal and social factors, and system and environmental factors. Special consideration was given to frailty status as a risk factor. In addition, the systematic review addressed the role of health services, community-based and other interventions in preventing NHP. The framework for the systematic review centered on: (1) direct contribution of modifiable and non-modifiable risk factors to NHP; (2) effect of interventions in preventing NHP; and (3) indirect effect of risk factors in modifying the effect of interventions (Figure 2, page 12). • The conclusions from the study, although disappointing, appeared to be well-founded. Three general risk factors were consistently related to NHP – frailty, functional impairments, and caregiver stress/burden. Frailty and functional impairments are difficult to modify, particularly among individuals of advanced age with multiple chronic conditions. Caregiver distress or burden should be modifiable. However, in reviewing evidence about the effectiveness of interventions to prevent NHP, the authors discovered that caregiver support, case management, and preventive home health visits demonstrated no overall benefit for delaying or avoiding NHP. There was insufficient evidence to draw conclusions about effects of other interventions such as physical activity, home-based primary care, and assistive technologies. One relevant finding, that carries over into the Implications for Policy, was the apparent benefit of some high-intensity interventions. 2. Is there any indication of bias in our synthesis of the evidence? None. 3. Are there any published or unpublished studies that we may have overlooked? None. 4. Additional suggestions or comments can be provided below. If applicable, please indicate the page and line numbers from the draft report. • The patient and caregiver's preferences for care setting are arguably the most important factor in NHP. Yet, there appears to have been no systematic reviews addressing preferences or the LTC	

		decision making process. This is not the fault of the review; it represents a substantial gap in LTC research. • The vast majority of reviewed studies took place outside the VA system. This limitation should be noted. It underscores the recommendation for more intervention development and program evaluation within the VA. • The first Implications for Policy regarding the organization and streamlining of VA programs and services was quite thoughtful. However, it does not seem to follow from the results of the systematic review. Only one systematic review dealt with the category of Systems and Environment as modifiable risk factors and it found questionable evidence. There were no interventions to modify Systems or Environment. • The report points to the difficulty of evaluating the effectiveness of complex, multi-component interventions that are aimed at influencing an outcome, NHP, that is itself highly complex. Thus, the absence of supporting evidence does not necessarily mean that these interventions are ineffective. • Building on this point, the conventional evidence review may be of questionable value for a problem such as NHP and the types of complex interventions reviewed in this report. Conventional summative evaluations run a high risk of a type-2 error because of the vulnerability of these interventions to implementation flaws that can undermine their ability to detect significant effects if they are present. Complex interventions tend to sensitive to local contexts, which few studies adequately take into account. In addition, fidelity can be problem because of formidable practical challenges in mounting these complex interventions. Finally, evaluation designs for these interventions tend to focus on effect size (summative evaluation) rather than "what worked or did not work, and for whom". Therefore, little learning takes place from a "failed" evaluation.	We appreciate reviewer's suggestion and have added this to Evidence Gaps and Future Research Needs. We have added this to the Limitations and also expanded on the applicability of non-VA studies, as well as those conducted outside of the US. We have expanded the Implications and clarified the connection between our results and the recommendation to streamline VA programs. We agree with reviewer's comments about the challenges of conducting and evaluating complex interventions. We have expanded our Discussion to better highlight issues surround the context for implementation. We have also expanded our recommendations for future research to reference an evaluation framework that combines standard efficacy or effectiveness (in terms of participant outcomes), with implementation outcomes, to better guide both interpretation of results and future implementation efforts. We address the question of fidelity through reference to concepts of core components and adaptable periphery, per implementation science frameworks. However, as noted above, VA ESP is frequently called upon to review and synthesize evidence for complex interventions. Therefore, advances in methodology (for both primary research studies and evidence synthesis) will be important for advancing this field and improving care. We agree with reviewer's suggestion that barriers and facilitators will be helpful for future

		• Would it be possible in the framework of ESP Reports to go one step further by reviewing selected individual studies covered by the systematic reviews? An examination of individual studies could shed light on factors contributing to effectiveness for interventions found to be effective, as well as implementation facilitators and challenges overcome. Would it be possible to find successful implementations that could be contrasted with those that were unsuccessful? • The recommendations for further research might give more consideration to evaluation designs. Pragmatic or realistic evaluation designs are often more appropriate for complex health services and HCBS interventions than are conventional RCTss. For larger scale evaluations, the stepped wedge design is a practical approach for achieving scientific rigor while dealing with differences in local context and addressing stakeholder concerns that everyone receive the intervention. Well-designed quasi-experiments, while not as strong in guarding against threats to internal validity, can be a good basis for inference, are less costly and more practical to implement, and can have better external validity.	implementation of interventions that have shown some benefit. Although VA ESP does review and synthesize evidence of barriers and facilitators for different programs and interventions, this was beyond the scope for the current report. This would be an important next step as VA seeks to improve care and outcomes for Veterans with impairments. We appreciate reviewer's suggestion and have expanded the Discussion to include additional study designs, including stepped-wedge designs, as well as implementation science frameworks.
	9	Overall I find this ESP to be clearly written and well organized and the team has done an excellent job of distilling all the research down into the report. I especially like the first 8 page summary, as you get everything you need in a condensed form. The inclusion of the conceptual model is a great strength. The tables are super clear. A few minor questions/comments for the team's consideration. p. 3 "System and Environmental Factors" – it would be helpful to define what system factors were examined as it is not clear – also not clear why marital status and stratification are included there. This does not seem like either but are you considering it an environmental factor? Page 22 also does not give sufficient detail to know what you mean. Could consider being very emphatic that these factors present true gaps in the literature.	Thank you. We appreciate reviewer's suggestions to clarify results from the study on system and environmental factors. We have elected to not provide detailed results from this study, as it may give undue weight to these findings, in the absence of other evidence on such factors. Therefore, we removed details of the analyses, leaving a brief summary of this study. We have followed reviewer's suggestion to emphasize the large gap in this area within Results.

		p. 4 and general comment. With this dyadic type of situation (e.g. there is a caregiver and a care recipient) sometimes it is tough to say who the "participant" is or "participant outcome (line 22 p. 4). So may be useful to give a once-over to see if it is clear throughout. P. 7 second bbullet "define success". Yes, they will have a low likelihood of success but most programs do not move NHP so emphasizing htat other important outcomes should be used to contextualize success. E.g. goal-concordant care, etc. General comment. I do think it is important for a recommendation for future research to consider that future RCTss need to be powered to detect a change in NHP. Most use NHP as a tertiary outcome and any analysis is exploratory or underpowered. So it will take a large trial to be able to test strategies in VA. This goes along with bullet 4 at bottom of page 7. Page 11. For the conceptual model, Bass and Noelker 1999 did a really cool adaptation of Andersen model and it could be useful as a reference if you need anything on informal v. formal care and outcomes. https://journals.sagepub.com/doi/abs/10.1177/073346489901800204 Table 2 and 3 and 4. I gave feedback on already, I think they are really helpful.	Thank you for this suggestion. We have reviewed the report revised usage of "participant," particularly for interventions that apply to both the care recipient and caregiver. We have clarified that this applies to long-term nursing home placement, and changed "success" to "change long-term NHP." We have added the need for larger sample size to our recommendations for Future Research. We appreciate reviewer's suggestion and have located an article by Bass and Noelker (published in 1987) describing an adaptation of Andersen's model that considered both formal and informal caregivers. We added this article to references cited in the Methods.
	10	It is good that you mention that you were unable to find eligible reviews for individuals and PTSD and/or TBI.	Thank you.
		When referencing NHP throughout the document sometimes the phrase "long-term" is placed before NHP and sometimes the phrase is not noted. Because the systematic review focused on delaying long term nursing home placements and excluded studies that examined nursing home admissions and explicitly counted short term stays for rehabilitation within its definition (page13 lines 46-49), we recommend always using the phrase "long-term" before NHP when describing the focus of the review, the findings, and the recommendations.	We appreciate reviewer suggestions to be consistent in terminology and have verified that "long-term NHP" is used throughout.

		The term “Long-Term NHP” is used throughout the document. Is there a definition of “Long-Term NHP”? Can it be included in the document?	Reviews were excluded if they evaluated “nursing home admission” and included short-term rehabilitation as part of this outcome. We have clarified the description of selection criteria for this outcome in Methods.
		Were studies that avoided nursing home admission excluded? The statement on page 13 lines 46-49 conveys that this is the case. Is this a correct understanding?	Reviews were excluded if they evaluated “nursing home admission” and included short-term rehabilitation as part of this outcome.
		Pg 3. Lines 39-41: The sentence that reads “The remaining 10 reviews….that an intervention (in this review, occupational therapy).” Appears to be missing information.	We have revised this sentence for clarity.
		Pg 4. What is the definition of “preventive home visits”?	We have clarified the description of preventive home visits in Results. In contrast to case management interventions, preventive home visits generally included older adults who did not have known impairments, recent adverse health events, or high-risk diagnoses at the outset.
		Pg 4. The sentence on lines 48 and 49: “Both reviews found no overall effect of preventive visits on NHP, but one review reported decreased NHP with interventions having more than 9 home visits.” The paragraph starts with two prioritized reviews. Are all these sentences accurate and/or worded correctly? Pg 5. Line 50-52 reads “Case management, caregiver support, and preventive home visit interventions demonstrated no overall benefit for delaying or reducing NHP across studies, but some high-intensity models in each category did show benefit.” How can the first part of this sentence and the last part of this sentence be true? If some high-intensity models in each category did show benefit, what benefit did they show? How is “no overall benefit” different from “benefit”? Page 29 lines 25-28 also have this statement.	We have revised these sentences to more clearly indicate that overall effects are summaries of the impact of interventions across all studies (included by reviews), while the evidence for benefit came from a very limited set of studies for each intervention.
		Pg 6. Line 29-30: What is the source that supports this statement? “It is unclear that any existing intervention can change NHP for adults with impairments who have no informal supports.” There is a body of evidence that is showing that by investing in social determinants of health that the risk of institutionalization can be reduced.	We have revised this sentence to more clearly state that our results suggest that many existing interventions would not sufficiently meet the needs of adults with impairments who have no informal caregiver support. This statement is supported by the large involvement of informal caregivers in many interventions that were evaluated.

			We undertook extensive searches for risk factors and interventions that may impact long-term nursing home placement, and as noted above, the involvement of social determinants would have been eligible for inclusion to address multiple KQ. However, we did not identify evidence that indicates social determinants are modifiable risk factors or characteristics that impact intervention effectiveness. This may reflect the lack of primary research studies and/or the selection criteria used by eligible systematic reviews (eg, requirement for longitudinal follow-up).
		Pg 7. Lines 19-23: The lead in on this bullet is inconsistent with other information in the report. The same bullet appears on page 31 line 14. The phrase “As most interventions fail to prevent or delay NHP” is not consistent with information on page 22 Lines 15-23 reads: “In general, no interventions clearly demonstrated benefit across studies for delaying or preventing NHP. Reviews reported some interventions had positive effects in a subset of included studies (ie, case management, caregiver support, and preventive home visits). Reviews on several other interventions, including home-based primary care and physical activity programs, were unable to identify studies that examined effects on NHP.” Are the interventions that are referenced in the phrase on page 7 and page 31 only noting the interventions that were part of this systematic review? Is it possible that some interventions did not have studies that examined the effects on NHP? See page 28 lines 42-44: “In summary, evidence on NHP was mostly not available for a wide range of interventions, and studies on interventions for falls prevention may have lacked sufficient follow-up and/or sample size to detect difference in NHP.”	We agree that this phrase did not capture the lack of evidence for certain interventions, and have removed it. As noted above, we have also clarified in multiple places that overall effects reflect summaries of intervention impact across included primary research studies (in eligible reviews), while a subset of studies for some interventions reported benefit.
		Pg 8. Line 8 through 23. Limitations. The statement on page 12 line 6-10 “Complex interventions involving several components addressing multiple factors may be needed to delay or avoid NHP; such interventions present substantial challenges in analysis and interpretation of effects, particularly regarding the importance of individual components.” appears to be a factor in the systematic review. Were the studies that were part of the systematic review	Yes, several complex interventions were examined by eligible systematic reviews, including case management, caregiver support, and home-based primary care. In the Discussion, we describe the challenges in evaluation and synthesis of complex interventions, as noted by authors of eligible reviews. We also provide some

		using complex interventions involving several components addressing multiple factors?	recommendations for design and evaluation of complex interventions in future studies.
		Pg 8. The Limitation paragraph fails to note the limited studies on the systems and environmental factors.	We note the lack of evidence on systems and environmental factors in the section on Evidence Gap and Future Research Needs. We focus on limitations of our review methodology in the Limitations section.
		Pg 8. Were studies that prevent long-term NH placement for people that have already been admitted to a nursing home included in this systematic review? Were programs and evaluations of the Medicaid funded Money Follows the Person program included in this review?	We have clarified in the text that eligible populations were community-dwelling adults, so adults already residing long-term in nursing homes would have been ineligible. More detailed information on eligibility criteria is also provided in Appendix 2. Reviews that included studies on Medicaid programs would have been eligible for our report, but we did not identify such studies included in eligible reviews.
		Is text missing from the bottom of page 16 to top of page 17?	The text on the top of this page is the footnote for Figure 3 (on preceding page). Formatting has been changed to make this clearer.
		Pg 26. Lines 21-24. The sentence that reads “In summary, evidence indicated that caregiver support interventions were generally not effective, although a few studies have reported benefits of a particular model of high-intensity caregiver counseling.” Is the evidence that is being referenced the research in the systematic review? What is it that the caregiver support interventions were not effective at? Can more be said about the benefits of the particular model of high-intensity caregiver counseling?	We have clarified this sentence to indicate effectiveness with regard to delaying or preventing long-term NHP. In the report text, we focus primarily on long-term NHP outcomes, but we also provide secondary outcomes (eg, mortality) in Appendix 5.
		Pg 27. Lines 39-40: the sentence reads: “In summary, most evidence indicated no decrease in NHP, but a few studies with greater intensity of home visits showed reduction in NHP. What was different with these studies? What were the differentiators? Is this an area for greater study?	We report the main findings from eligible reviews, including a subgroup analysis based on the number of visits provided by included interventions. We agree that there may have been other differences between interventions that were effective and those that were not. As noted above in our response to other reviewers, evaluation of numerous potential differences between interventions was not part of the scope of this report, but it may be helpful as a next step.

		Pg 28. Lines 31-40: The study referenced is under other interventions; however the description reads: "The review provided qualitative summaries of 7 demonstrations in US, Canada, UK, and Italy, and reported 2 of these projects evaluated rates of institutionalization. Both programs occurred in Europe and involved case managers who assessed participants, coordinated care, and promoted utilization of home and community-based services. Both studies reported decreased institutionalization." What was the reason to place this study in the "Other" category rather than the "Case Management" category or the "System and Environment" category?	We grouped eligible systematic reviews by main focus (per reviews' stated selection criteria). In this case, this review broadly included a number of demonstration projects (including some of adult day health clinics), but the 2 projects that examined long-term NHP both involved case managers. We have also added a clarification that one of these projects involved giving responsibility for budgets directly to case managers. As this review examined programs that intended to change services (and integration of care), we determined that these were active interventions, and not a synthesis of studies on risk factors. However, we agree that there is conceptual overlap between observational studies that examine Systems and Environmental risk factors and those that seek to evaluate changes to those factors (via non-experimental designs).
		Pg 30. Line 11-13 reads: "It is unclear that any existing intervention can change NHP for adults with impairments who have no informal care supports." What is the source for this statement? There are people with disabilities that do not have informal care supports that direct their care and services successfully in the community and have avoided long-term NHP. If the statement will remain in the document it may be good to tie the statement to published research.	As noted in our response above to the same concern (sentence in Executive Summary), we have revised this sentence to indicate that many interventions involve or rely on informal caregivers.
		Pg 30. Line 36-46 reads: "While there are a range….This underlying complexity likely explains why most interventions showed no effect on NHP, and only longer term evaluations of high-intensity multicomponent programs showed any promise of benefit. Moreover, interventions that seemed successful often required close involvement of family caregivers, such as spouses and adult children;" is an informative statement.	Thank you. These sentences have been revised, in connection with clarifying the evidence on the involvement of caregivers in many interventions.
		Pg 30. Line 46: Is there a research citation to tie to this statement: "there is little evidence to indicate that interventions can help those who lack strong social support networks to avoid long-term NHP?"?	We have removed this sentence.

APPENDIX 5. EVIDENCE TABLES

Appendix 5.1 Characteristics of All Eligible Systematic Reviews (SR)

	Total SR	High Quality	Recent[a]	SR included:				Prioritized SR[b]
				Reviews	RCTs	Cohort Studies	US Studies	
Risk Factors:								
Frailty Status	4	2	3	1	—	3	3	3
Other Risk Factors	16	1	8	1	4	16	12	3
Interventions:								
Case Management	8	4	3	—	8	3	6	4
Caregiver Support	10	2	4	3	8	4	4	2
Respite Care & Day Clinics	9	3	4	3	8	7	6	3
Preventive Home Visits	6	1	—	—	6	2	6	2
Home-Based Primary Care	2	1	2	—	2	2	2	1
Physical Activity	2	—	2	—	2	1	1	2
Others[c]	10	4	4	1	8	5	5	6
Totals	67	18	30	9	46	43	45	26

RCTs=randomized controlled trials; US=United States

[a] Search conducted 2013 or later

[b] Selected for highest quality, most recent searches, and broadest coverage of risk factors and interventions.

[c] 2 SR—any nonpharmacologic intervention for adults with dementia; 1 SR—any intervention for falls prevention; 1 SR—any intervention for patient or caregiver stress; 1 SR—different settings for personal assistance; 1 SR—in-home health care or personal assistance; 1 SR—assistive technologies; 1 SR— demonstration projects to integrate acute and long-term care in US and Europe; 1 SR—occupational therapy; and 1 SR—light therapy.

Appendix 5.2 Detailed Results from Prioritized Eligible Systematic Reviews on Potentially Modifiable Risk Factors for Long-term Nursing Home Placement in Older Adults

Author, Year (quality, last year of search)	Population Inclusion Criteria	Included Study Design(s)	# Included Studies on Long-term Nursing Home Placement (data sources)	Definition and Assessment of Long-term Nursing Home Placement Follow-up Period	Potentially Modifiable Risk Factors (# of studies and effect size, if available)	Quality of Included Studies (tool used) Review Authors' Concerns
Frailty Status						
Apostolo, 2017[16] (High, 2015)	Community-dwelling adults ≥60 years	Quantitative systematic reviews	1 (French cohort study)[235,236] 1 (regional Canadian administrative and interview data; Dutch administrative data)[85,86,88,237]	*"institutionalization"*[235] *"moving to long-term care"* or *"transition to long-term care"* [86] 1 year	*"Donini Index of Frailty, Winograd Index of Frailty and Schoevaerdts Index of Frailty were analyzed for institutionalization or mortality at 12 months after admission to emergency department and were revealed not to be sufficiently accurate to predict increased risk of any of these adverse outcomes."*[235] *"The Frailty Index was shown to be sufficiently accurate to predict increased risk of…hospitalization and institutionalization at 12 months after evaluation…"* [86]	1 review met 10 of 11 criteria[235]; 1 review met 6 of 11 criteria[86] (Joanna Briggs Institute Reviewer Manual)[238] *"…the reported data referred to different versions of* [Frailty Index]*, ranging from 13 to 92 items"* [86]
Sternberg, 2011[18] (High, 2009)	Community-dwelling adults ≥65 years	Cross-sectional & cohort studies	1 (PEP)[90] 2 (Canadian cohort)[84,89]	Participant (or family) reported nursing home stays ≥4 months[90], *"institutionalisation"*[84], or "*entry into institutional care*"[89] 5-7.5 years	"*The most common outcomes of frailty* [studies] *were death (13, 76%), disability (7, 41%), and institutionalization (6, 35%)."*	2 studies[89,90] rated highest quality (4 out of 4); 1 study[84] rated 3 out of 4 (CIFA quality assessment tool)[239] Authors reported no concerns
Vermeiren, 2016[19] (Medium, 2016)	Community-dwelling adults ≥65 years	Cohort studies	1 (PEP)[90] 1 (Canadian cohort)[89]	Participant (or family) reported nursing home stays ≥4 months[90],	Frailty pooled HR/RR (1.67 [95% CI 1.47, 1.89])	2 studies[89,90] met 5 out of 5 criteria; 2 studies[87,88] met 3 out of 5 (NICE methodology checklists)

Author, Year (quality, last year of search)	Population Inclusion Criteria	Included Study Design(s)	# Included Studies on Long-term Nursing Home Placement (data sources) Follow-up Period	Definition and Assessment of Long-term Nursing Home Placement	Potentially Modifiable Risk Factors (# of studies and effect size, if available)	Quality of Included Studies (tool used) Review Authors' Concerns
			1 (regional Canadian administrative and interview data)[88] 1 (Italian cohort)[87]	"*entry into institutional care*"[89], or "*nursing home placement*"[87] Regional healthcare administrative data showing "*admission to long-term care*"[88] 1-7.5 years		Authors reported no concerns
Other Risk Factors						
Cepoiu-Martin 2016[22] (High, 2015)	Adults with dementia residing in community or supportive living facilities	Cohort studies (follow-up ≥ 1 year)	5 (National US datasets—2 [CERAD][104,160]; 1 [NLCS, VA cohort][114]; 2 [MADDE][98,108]) 29 (Local or regional US cohorts)[97,102,103,106,108-110,112,116-120,123-126,139,140,158,171,176,240-246] 25 (Cohorts not in US)[96,100,101,105,107,111,113,115,121,122,127,128,138,141,144,247-256]	Participant or caregiver reported (45) Administrative data (1) Participant or caregiver report, verified with administrative data (1) Outcome definition not clear (12) 1-18 years	<u>Meta-analysis:</u> Caregiver depression (per 1 point increase on scale) HR 1.00 (95% CI 0.97-1.03) (9)[a] <u>Qualitative synthesis:</u> "*Greater impairment in basic ADL and/or* [instrumental] *ADL … was associated with an increased* [risk]…" (14)[96-109] "*self-rated health was not associated with an increased relative risk"*(2)[96,110] *"specific health issues such as … malnutrition, and incontinence was found to predict LTC placement.*" (2)[111,120]	Quality results NR (Newcastle-Ottawa) *"The most common issue with study quality was how the outcome of interest was determined …Most studies (n=38, 64.4%) relied on self-reported LTC placement, as opposed to independent assessment or record linkage… Other common quality issues identified included loss to follow-up (outcome data were missing) … and concerns about the representativeness of the cohort…"*

Author, Year (quality, last year of search)	Population Inclusion Criteria	Included Study Design(s)	# Included Studies on Long-term Nursing Home Placement (data sources)	Definition and Assessment of Long-term Nursing Home Placement Follow-up Period	Potentially Modifiable Risk Factors (# of studies and effect size, if available)	Quality of Included Studies (tool used) Review Authors' Concerns
					"*Behavioral and psychological symptoms of dementia significantly increased… risk…in most but not all studies…*" (22)[98,108,109,111-129] "*Increased caregiver burden and markers of worse caregiver health… were significant predictors… in most studies… Caregiver psychological factors such as increased role captivity, lower life satisfaction, and higher levels of distress (especially if due to behavioral challenges) were also predictive…*" (11)[97,98,100,108,112-114,116,139-141] "*Both family help and a longer duration of caregiving decreased the risk of LTC placement...*" (3)[98,112,116] "…[H]*igher number of nursing home beds…and occupancy rates increased the risk…for married but not unmarried persons…* [H]*igher percent of Medicaid LTC spending on homecare-based services decreased the risk…for unmarried but not for married individuals…*[H]*igher number of home health agencies…decreased the risk for married but not for unmarried individuals …The percentage of Medicare spending on LTC did not predict LTC placement*." (1)[104]	

Author, Year (quality, last year of search)	Population Inclusion Criteria	Included Study Design(s)	# Included Studies on Long-term Nursing Home Placement (data sources) Follow-up Period	Definition and Assessment of Long-term Nursing Home Placement	Potentially Modifiable Risk Factors (# of studies and effect size, if available)	Quality of Included Studies (tool used) Review Authors' Concerns
Luppa 2010[27] (Medium, 2008)	NR	Cohort studies	2 (NHANES)[257,258] 3 (AHEAD)[259-261] 5 (EPESE)[131,135,136,262,263] 5 (LSOA)[264-268] 1 (MADDE)[110] 3 (Medicare, national data)[137,269,270] 9 (local or regional US cohorts)[132,142,271-277] 8 Cohorts not in US[133,134,278 279 130,280,281 282]	Participant or caregiver reported (24) Administrative data (12) 1-20 years	Review authors rated overall strength of evidence and provided either range of minimum/maximum associations or single results from highest quality studies. <u>Strong evidence:</u> *"functional impairment (basic… ADL: HR 1.32/3.70, OR .30/1.78)"* [130-133] *"IADL: HR 1.05/2.50"*[110,260] *"cognitive impairment (HR 1.67, OR 1.44/1.50)"*[131,134,135] *"low self-rated health status (HR 3.40, OR 1.48/1.67)"*[130,134,136] *"a high number of prescriptions (HR 1.04/1.67, OR 1.15)"*[135-137] <u>Moderate evidence</u>: *"a poor social network (HR 1.18/1.27, OR 1.11/1.80)"*[131,133,135,142] *"low activity level (OR 1.97)"*[132]	High quality: 13 studies Moderate quality: 8 studies Low quality: 15 studies (modified tools from Gaugler 2009 and Mols 2005) *"Methodical shortcomings were frequently found due to information on non-respondents, lack of specifications of facility types in NHP definition and lack of data about demented persons included in samples."*
O'Caoimh 2015[29] (Medium, 2014)	Community-dwelling adults ≥50 years	Cohort studies	1 (VA cohort)[92] 2 (Canadian cohorts)[93,94] 1 (Irish cohort)[93]	Self-reported "admission to nursing home"[92] Regional healthcare administrative data showing "admission to nursing home"[94]	Risk assessment tools had AUC of 0.81 (95% CI 078, 0.84) and 0.70 (95 % CI 0.62, 0.76)[93] for predicting institutionalization	2 studies[93,95] with low risk of bias on 5 out of 6 criteria; 1 study[92] with low risk on 4 criteria; 1 study[94] with low risk on 3 criteria (QUIPS tool)[283] *"Baseline rates of institutionalisation are small …, so studies are often*

Author, Year (quality, last year of search)	Population Inclusion Criteria	Included Study Design(s)	# Included Studies on Long-term Nursing Home Placement (data sources)	Definition and Assessment of Long-term Nursing Home Placement Follow-up Period	Potentially Modifiable Risk Factors (# of studies and effect size, if available)	Quality of Included Studies (tool used) Review Authors' Concerns
				Proxy report or regional healthcare administrative data showing "nursing home placement"[95] Regional healthcare administrative data[93] 1-5 years		*underpowered to detect this outcome…"*

ADL=activities of daily living; AHEAD= Survey on Assets and Health Dynamics Among the Oldest Old; AUC=area under the curve; CERAD=Consortium to Establish Registry for Alzheimer's Disease; IADL=instrumental activities of daily living; LSOA=Longitudinal Study of Aging; MADDE=Medicare Alzheimer's Disease Demonstration Evaluation; NHANES=National Health and Nutrition Examination Survey; NLCS=National Longitudinal Caregiver Study; NR=not reported; PEP=Precipitating Events Project; QUIPS=Quality in Prognosis Studies; SR=Systematic Review

[a] Studies included in meta-analysis were not cited in review

Appendix 5.3 Detailed Results from Prioritized Eligible Systematic Reviews on Interventions to Prevent or Delay Long-term Nursing Home Placement

Author, Year (quality, last year of search	Population Inclusion Criteria	Included Study Design(s) Follow-up Period	Definition of Long-term Nursing Home Placement	Effect (95% CI) on Long-term Nursing Home Placement (# studies)	Quality of Included Studies* (tool used) Review Authors' Comments
Case Management (CM)					
Reilly, 2015[40] (High, 2013)	Adults with dementia, living in the community	RCTs 1-3 years	Self-reported data on: *"Institutionalization"*[148,149] *"Long-term institutionalization"*[150-152] *"placed in nursing home for long-term care"*[147] *"Admitted to nursing home"*[154] *"permanent nursing home placement"*[155]	By follow-up interval: 6 months (6)[147-150,152,155] OR 0.82 [0.69, 0.98] 10-12 months (9)[147-155] OR 0.95 [0.83, 1.08] 18 months (4)[147-150] OR 0.25 [0.10, 0.61] 24 months (2)[151,152] OR 1.03 [0.52, 2.03]	4 studies with low risk for ≥5 out of 9 criteria; 3 studies with low risk for 3-4 criteria; 1 study had high or unclear risk for all criteria (Cochrane Handbook)[284] *"…heterogeneity in the interventions, outcomes and participants may explain these largely equivocal findings… It is important that these interventions are targeted at the right populations… [A]t least two trials indicated that the intervention was not targeted appropriately..."*
Tam-Tham, 2013[41] (High, 2011)	Adults with dementia, living in the community	RCTs 10 months-16 years	Self-reported data on: "*nursing home admission*"[156,158,159] "*nursing home entry*"[160] "*nursing home placement*"[96,161] "*institutionalization*"[163,164,167] "*placed in nursing home for long-term care*"[147] "*long-term institutionalization*"[150-152,162] Administrative data on: "*institutionalization*"[157]	Overall pooled meta-analysis (16): "*no statistically significant effect of dementia CM compared to usual care*" RR 0.94 (0.85, 1.03) WMD 77.8 days (-70.5, 226.1), data from 5 studies[96,156,161,162,167] By follow-up interval: <18 months (5)[158,163,165-167] RR 0.61 (0.41, 0.91) 18 months (4)[147,150,157,162] RR 0.95 (0.62, 1.46) >18 months (7)[96,151,152,156,159,160,164] RR 1.01 (0.97, 1.06)	5 studies[147,152,158,164,165] met 3 out of 5 criteria; 8 studies[96,151,159,161-163,166,167] met 2; and 4[150,156,157,160] met only 1 (Jadad score)[285] "*we noted high variability in the CM interventions and the care available to the control group, which limits the ability to assess the effect of the intervention specifically… Finally, most trials were underpowered to detect statistically significant differences in effect size between the intervention and control groups.*"

Author, Year (quality, last year of search	Population Inclusion Criteria	Included Study Design(s) Follow-up Period	Definition of Long-term Nursing Home Placement	Effect (95% CI) on Long-term Nursing Home Placement (# studies)	Quality of Included Studies* (tool used) Review Authors' Comments
			"*nursing home admission, bed days, and costs*"[166]		
Hickam, 2013[83] (High, 2011)	Adults with medical illness and complex care needs, in outpatient settings	RCTs, observational studies 1-9.5 years	Self-report data on: *"avoidance of nursing home placement"*	Older adults with frailty or chronic health conditions (2)[172,173] "*CM does not decrease nursing home admissions in the frail elderly (strength of evidence: low)."* Dementia (10)[147,149-152,155,168-171] "*CM programs that serve patients with dementia and have a duration of no longer than 2 years do not confer clinically important delays in time to nursing home placement (strength of evidence: moderate)… CM programs that serve patients with dementia who have in-home spouse caregivers and continue services for longer than 2 years are more effective for delaying nursing home placement than programs providing services for 2 years or less (strength of evidence: low)."*	7 studies rated good, 2 fair, 3 poor (modified criteria from Downs and Black; USPSTF)[286,287] *"…few organizations have the potential scope (in terms of patient base and clinical resources) to conduct evaluations that directly compare different CM approaches… Synthesizing the evidence about CM requires indirect comparisons among different types of clinical programs. Because the published studies have not compared case managers with differing qualifications, there is no evidence about the efficacy of specialized training programs or case manager certification."*
Cochrane 2016[38] (High, 2015)	Adults ≥65 years, living at home and needing assistance to perform tasks of daily living and to participate in normal activities	RCTs, "*quasi-random studies*" 1 year	Administrative data on: "*transfer to a residential setting*"[174]	*"very low-quality evidence that reablement may make little or no difference to the rates of transfer to a residential setting"* (1)[174] 3 months—RR 0.76 (0.40, 1.44) 12 months—RR 0.92 (0.62, 1.34)	1 study with high risk of bias on all domains (Cochrane Handbook)[284] *"We are very uncertain of the effectiveness of reablement because the evidence was very low quality for all outcomes…"*

Author, Year (quality, last year of search	Population Inclusion Criteria	Included Study Design(s) Follow-up Period	Definition of Long-term Nursing Home Placement	Effect (95% CI) on Long-term Nursing Home Placement (# studies)	Quality of Included Studies* (tool used) Review Authors' Comments
Caregiver Support					
Griffin 2015[45,143] (High, 2014)	Adults with dementia and their family or caregivers	RCTs 6 months – 9.5 years	Self-reported data on: "*nursing home placement*"[96] "*residential care placement"*[176] *"institutionalization"*[164,167] *"permanent institutionalization"*[175] *"permanent nursing home placement"*[171] Administrative data on: "*nursing home admission, bed days, and costs*"[166]	Compared with usual care (5)[96,164,166,167,171] *"…[O]nly one…reported significant differences… [C]ompared with usual care, patients of caregivers who received counseling and support groups were able to avoid nursing home placement for longer periods of time…an equivalent to a delay of 557 days…"*[171] Compared with another active intervention (2)[175,176] *"Researchers [of 1 trial] found that the intervention was successful at keeping patients at home significantly longer. The time from baseline to residential placement for care recipients…in the control group was 228 days earlier…"*[176]	2 studies rated good; 3 fair; 2 poor (Cochrane Handbook)[284] *"For some interventions, it is likely that the intention was to reduce the burden of care for caregivers… Consequently, their limited impact on patient outcomes is not surprising…"*
Vernooij-Dassen, 2011[51] (High, 2009)	Family carers of community-dwelling adults with dementia	RCTs	NA	NA (0)	NA
Respite Care & Adult Day Clinics					
Brown 2015[54] (High, 2013)	Older adults (mean or median age >60 years), needing medical care	RCTs 2 months – 1 year	Self-reported data on: "*move to institutional care*"[177] "*admission to an institution"*[179] "*place of residence*"[178]	Overall pooled meta-analysis (13): Day clinic vs. all comparators OR 0.84 (0.58, 1.21) By type of comparator: Day clinic vs. comprehensive geriatric management (4)[179,181,184,185] OR 0.91 (0.70, 1.19)	2 studies[178,183] with low risk of bias in 5 or 6 criteria (out of 7), 4[177,180,181,189] with low risk in 4 criteria, and 7[179,182,184-188] with low risk in only 3 or fewer criteria (Cochrane Handbook) "*This review found little evidence that day [clinics] were better than alternative types of comprehensive service. However, the diversity in the content of*

Author, Year (quality, last year of search	Population Inclusion Criteria	Included Study Design(s) Follow-up Period	Definition of Long-term Nursing Home Placement	Effect (95% CI) on Long-term Nursing Home Placement (# studies)	Quality of Included Studies* (tool used) Review Authors' Comments
			"*move to long-term institutional care*"[180] <u>Administrative data on:</u> "*institutionalization*"[183,187] "*discharged to an institution*"[182]	vs. in-home care (5)[177,178,180,186,189] OR 1.49 (0.53, 4.25) vs. no comprehensive geriatric or in-home care (4)[182,183,187,188] OR 0.58 (0.28, 1.20)	*alternative services and the populations being served… means the external validity of this finding may be compromised. Furthermore, 10 of the studies were at least 20 years old and the types of health service and the populations being served may not reflect current practice or requirements.*"
Lee, 2014[59] (High, 2012)	Community-dwelling adults with full-time caregiver	RCTs 1 year	Family reported "*permanent institutionalization*"[190]	<u>Qualitative Synthesis (1):</u>[190] *"22-day increase of days spent in the community by the experimental group…"* (combined outcome of days until death or institutionalization)	Low risk of bias in 3 out of 7 criteria (Cochrane Handbook [cite])[284] *"…*[O]*nly one of the studies included any outcomes for the person with dementia[190]…* [T]*his publication was flawed due to the cluster randomisation process. This is one of the few studies to report a positive effect on rates of institutionalisation."*
Shaw, 2009[61] (High, 2008)	Adults ≥ 65 years, with informal carers	RCTs, observational studies 10 weeks – 8 years	<u>Self-reported data on:</u> *"institutional care"*[145,191] *"institutionalization"*[192] *"nursing home admission"*[156] *"still living at home"*[194] <u>Administrative data on:</u> "*institutionalization*"[146] *"move to residential, nursing or long-term hospital care with no planned or*	<u>Pooled meta- analysis (3):</u>[191-193] *"institutionalization…is more likely following a period of respite."* NHP OR 1.79 (95% CI 1.02, 3.13) Combined NHP or death OR 1.54 (95% CI 1.01, 2.33) <u>Qualitative Synthesis (6):</u> *"intervention group more likely to be institutionalized after a respite programme involving both home and day care."*[193] *"compared with a carer training programme, carers in receipt of*	3 studies high quality, 2 moderate, 2 low, 1 NR (modified criteria from Downs and Black[288], and Kmet et al.)[289] *"It is likely…that many samples recruited to studies of respite care are at a relatively late stage in the caregiving career and respite is unlikely to have a substantial impact on institutionalization rate. Many of the attitudes preventing early use of respite are not only a result of cultural values but also result from poor knowledge of the availability and content of respite programmes…"*

Author, Year (quality, last year of search	Population Inclusion Criteria	Included Study Design(s) Follow-up Period	Definition of Long-term Nursing Home Placement	Effect (95% CI) on Long-term Nursing Home Placement (# studies)	Quality of Included Studies* (tool used) Review Authors' Comments
			provisional date of discharge"[144]	*respite tended to institutionalise care recipients faster."*[156] *"respite users tended to keep the care recipient in the community for significantly longer than matched control subject."*[194] *"over a 3-year period, both low use of ADC (1-30 days in a 6-month period) and high use (78+ days) gave a 30% increased likelihood of institutionalization…"*[146] *"greater use of respite services (a variety of day and nursing home respite) was associated with institutionalization but…was non-significant when adjusted for dementia severity."*[145] "*those using day care or home care were less likely to be institutionalized at follow-up of around 1 year."*[144]	
Preventive Home Visits					
Stuck, 2002[290] (Medium 2001)	Community-dwelling adults (mean age >70 years)	RCTs 1-4 years	"*number of participants admitted to nursing homes (excluding short-term and residential or board are care-unit admissions)*"[290] Primary studies used self-reported and administrative data	Overall pooled meta- analysis (13):[100,195-199,201,203,211,291-294] "*reduction in the risk of* [nursing home] *admission was modest and nonsignificant*" RR 0.91 (0.76, 1.09) By number of visits: 0-4 visits (5)[100,211,291,293,294] RR 1.05 (0.85, 1.30)	All studies had clear randomization procedures, 8 studies reported masking of those assessing outcomes, all studies had >95% retention or used intention-to-treat analyses for nursing home outcome (3 criteria: method of randomization, blinding in outcomes assessment, and proportion of participants in analyses of final outcomes)

Author, Year (quality, last year of search	Population Inclusion Criteria	Included Study Design(s) Follow-up Period	Definition of Long-term Nursing Home Placement	Effect (95% CI) on Long-term Nursing Home Placement (# studies)	Quality of Included Studies* (tool used) Review Authors' Comments
				5-9 visits (4)[195,201,203,292] RR 0.90 [0.75, 1.07] >9 visits (4)[196-199] RR 0.66 [0.48, 0.92]	
Mayo-Wilson, 2014[65] (High, 2012)	Community-dwelling adults ≥ 65 years, without dementia (excluded if >50% of participants had dementia)	RCTs, "*quasi-random studies*" 6 weeks – 4 years	<u>Self-reported data on:</u> "*admission to nursing home*"[295,296] "*relocation to nursing home"*[201] "*admission to institution*"[209,211,297] "*moved to institutional care"*[206] "*institutionalization*"[204,298] "*facility placement*"[202] "*permanently admitted to nursing home"*[200,203] *"permanent institutionalization"*[299] "*admission to nursing home or long-term care hospital"*[100] "*placement in nursing homes or homes for disabled older persons"*[300] *"nursing home stays were deemed permanent if the*	<u>Overall pooled meta-analysis (26):</u>[100,172,197-204,206,209,211,291,295,297-307] "*moderate quality evidence of no clinically important difference*" RR 1.02 (0.88, 1.18) <u>By follow-up interval:</u> 0-11 months (2)[297,306] RR 1.00 (0.46, 2.18) 12-23 months (15)[100,172,201,202,206,209,211,295,298-302,304,305] RR 0.95 (0.78, 1.17) 24-35 months (6)[201,202,291,303,304,307] RR 1.02 (0.80, 1.30) 36+ months (8)[197-204] RR 0.96 (0.69, 1.33)	7 studies had low risk of bias for 4 out of 5 criteria[199,200,211,297,305-307], 5 studies had medium risk of bias for 3 out of 5 criteria[198,202-204,304] and 14 were rated high risk of bias[88,100,197,201,206,291,295,298-304] (Cochrane Handbook)[284] "*no specific components appeared to distinguish effective programs from ineffective programs for mortality and institutionalization …Limited reporting of intervention implementation prevented further investigation into potential mediators and moderators."*

Author, Year (quality, last year of search	Population Inclusion Criteria	Included Study Design(s) Follow-up Period	Definition of Long-term Nursing Home Placement	Effect (95% CI) on Long-term Nursing Home Placement (# studies)	Quality of Included Studies* (tool used) Review Authors' Comments
			participants remained for 100 days or more or if they were admitted for terminal care"[198] *"institutionalized or deceased"*[301] Pooled nursing home and hospital admissions[172,302] <u>Administrative data on:</u> "*nursing home admission"*[303] *"nursing home placement"*[304] *"moved to nursing home"*[305] *"care home admissions"*[306] *"admission to permanent residential care"*[197] *"institutionalization*"[291] "*institutional care*"[199]		
Home-based Primary Care (HBPC)					
Totten, 2016[70] (High, 2015)	Adults with chronic illnesses or disabilities	RCTs, observational studies, program evaluations	NA	*"There was insufficient evidence on which to base a conclusion about the impact of HBPC on nursing home admissions and nursing home days"* (0)	NA
Physical Activity					
Frost, 2017[71] (Medium, 2016)	Community-dwelling adults	RCTs	NA	NA (0 studies)	NA

Author, Year (quality, last year of search	Population Inclusion Criteria	Included Study Design(s) Follow-up Period	Definition of Long-term Nursing Home Placement	Effect (95% CI) on Long-term Nursing Home Placement (# studies)	Quality of Included Studies* (tool used) Review Authors' Comments
	≥ 65 with mild or pre-frailty				
Gine-Garriga, 2014[72] (Medium, 2013)	Community-dwelling adults ≥ 65 with frailty	RCTs	NA	NA (0 studies)	NA
Falls Prevention					
Guirguis-Blake, 2018[73] (High, 2018)	Community dwelling adults ≥65 years	RCTs 25 weeks – 1 year	Self-reported data on: "*move to institutional care*"[206,212] "*Admitted to nursing home*"[208,214] "*admission to institution*"[211] "*admission to long-term care*"[210] "*move to long-term care*"[213] Administrative data on: "*institutionalization*"[207]	Multifactorial intervention (7)[206-212] "*mixed results on institutionalization…RR from individual trials ranged from 0.43 to 3.07 with wide confidence intervals*…" Exercise intervention (2)[213,214] "*no statistically significant difference in the number of people transitioning to institutional care between the exercise and control groups at longest followup (6–12 months)*"	2 studies good quality; 7 studies fair (USPSTF criteria)[308] Multifactorial Intervention *"prevalence of institutionalization in the control groups varied substantially, from 0.6 to 20.1 percent…"* Exercise intervention *"wide confidence intervals reflect the rare event rate; the prevalence of institutionalization in the control groups varied from 2.8 percent over 6 months to 1.5 percent over 12 months…"*
Occupational Therapy					
Steultjens 2004[74] (Medium 2002)	Community-dwelling adults ≥60 years	RCTs, observational studies	Self-reported "*institutionalization*"[215] 1 yr	NR in review Original study (1)[215]--"*During the follow up period, 19 patients were institutionalized. Twelve were from the control group, and seven were from the intervention group. This difference was not significant.*"	1 low quality RCTs (modified from Jadad[285] and Verhagen[309]) NR
Different Residential Setting for Providing Personal Assistance					
Montgomery, 2008[77]	Community-dwelling adults	RCTs,	NA	NA (0 studies)	NA

Author, Year (quality, last year of search	Population Inclusion Criteria	Included Study Design(s) Follow-up Period	Definition of Long-term Nursing Home Placement	Effect (95% CI) on Long-term Nursing Home Placement (# studies)	Quality of Included Studies* (tool used) Review Authors' Comments
(High, 2005)	≥ 65 who need assistance with ADLs due to permanent impairments (excluded if >50% have dementia)	observational studies			
Light Therapy					
Forbes, 2014[75] (High, 2014)	Adults with dementia	RCTs	NA	NA (0 studies)	NA
Assistive Technology					
Van der Roest, 2017[80] (High, 2016)	Adults with dementia	RCTs	NA	NA (0 studies)	NA
Demonstration Projects for Integrating Acute & Long-term Care Services					
Johri, 2003[82] (Low, 2000)	Elderly	Observational studies	Unclear, may be self-reported "*still at home*" (1)[217] or admission to nursing home (1)[172]	"*After 6 months, two thirds of the experimental group were still living at home, and after 12 months, over 50% were still at home…*" (1)[217] "…*non-significant trend towards higher rates of admission to nursing home…"* (1)[172]	NR

Appendix 5.4 Detailed Results on Secondary Outcomes from Prioritized Eligible Systematic Reviews on Interventions

Intervention	Author, Year (quality, last year of search)	Mortality (# studies), Effect Size (95% CI)	Hospitalization (# studies), Effect Size (95% CI)	Other Secondary Outcomes (# studies), Effect Size (95% CI)
Case Management	Reilly, 2015 (High, 2013)	Mortality (9) and HQoL (3) "*For mortality at 4-6, 12, 18-24 and 36 months, or participants' or carers' quality of life at 4, 6, 12 and 18 months, there were no significant effects.*"	(5) "*There was no difference in the number of people admitted to hospital* at *six (4 RCTss, 439 participants), 12 (5 RCTss, 585 participants) and 18 months (5 RCTss, 613 participants).*"	NR
	Tam-Tham, 2013 (High, 2011)	NR	(3) "*no difference in the risk of hospitalization for the dementia CM group compared with usual care…"* RR 1.00 (0.76, 1.33)	NR
	Hickam, 2013 (High, 2011)	(35) *"Patients who were provided CM did not experience lower mortality in general populations of patients with chronic illness, in the frail elderly, those with AIDS, or in patients with congestive heart failure."*	(30) *"Although hospitalization rates were often included as an outcome, trials of CM generally did not demonstrate reductions in these rates. "*	NR
	Cochrane 2016 (High, 2015)	(2) "*very low quality evidence… that reablement may lead to little or no difference in mortality at nine to 12 months*" RR 0.97 (0.74, 1.29)	NR	<u>HQoL (2)</u> "very low quality findings indicated that reablement may make little or no difference to QoL" 3 months—SMD -0.18 (-0.43, 0.07) 12 months—SMD -0.23 (-0.48, 0.02)
Caregiver Support	Griffin 2015 (High, 2014)	NR	NR	<u>Function (23), HQoL (7)</u> "*The strength of evidence is low regarding the effectiveness of caregiver-involved interventions in improving patient outcomes in adults with dementia compared with usual care…We also did not find that caregiver-involved interventions were superior to ones that are patient focused or provide only health education, support, or psychoeducation.*"

Intervention	Author, Year (quality, last year of search)	Mortality (# studies), Effect Size (95% CI)	Hospitalization (# studies), Effect Size (95% CI)	Other Secondary Outcomes (# studies), Effect Size (95% CI)
Respite Care	Brown 2015 (High, 2013)	(16) Day clinic vs. all comparators OR 1.05 (0.85, 1.28)	NR	NR
	Lee, 2014 (High, 2012)	NR	NR	Depression & Anxiety (1) MD -0.18 (-3.82, 3.46)
	Shaw, 2009 (High, 2008)	NR	NR	Healthcare Costs (5): *"All of the included economic evaluations investigated the provision of day care interventions compared with customary care... Overall, few discernible benefits were found to be associated with the day care interventions…"*
Preventive Home Visits	Stuck, 2002 (Medium 2001)	(18) "*Preventive home visits appeared to reduce mortality, but results were again heterogeneous…there was strong evidence that the mean age of study participants was negatively associated with effects*…" Overall RR 0.91 (0.81, 1.01) Lowest tertile of age (mean 72.7-77.5) RR 0.76 (0.65, 0.88) NS for higher tertiles	NR	Function (16) "*…home visits appeared to have little effect on functional status, but results were heterogeneous… In multivariable analysis, the type of intervention … explained about half of intertrial heterogeneity…*" Overall RR 0.94 (0.83, 1.06) Studies with multi-dimensional geriatric assessment (6) RR 0.76 (0.64, 0.91)
	Mayo-Wilson, 2014 (High, 2012)	(53) "*high quality evidence of a small relative effect … but the absolute difference in mortality was close to zero and unlikely to be clinically important*" RR 0.93 (0.87, 0.99), RD 0.00 (-0.01, 0.00)	(15) "*moderate quality evidence of a small relative effect…that may not be clinically important*" RR 0.96 (0.91, 1.01), RD -0.01 (-0.03, 0.00)	HQoL (29) "*low quality evidence of no clinically important difference*" SMD -0.06 (-0.11, -0.01) Falls rate (23) "*moderate quality evidence of small effect…but it was not statistically significant*" OR 0.86 (0.73, 1.01)
Home-based Primary Care	Totten, 2016 (High, 2015)	(2) "*Both studies that included mortality reported no significant*	(11) "*Four* [high-quality] *studies reported that hospitalization decreased with HBPC, while one*	Healthcare Costs (6) "*Two high-quality*

Intervention	Author, Year (quality, last year of search)	Mortality (# studies), Effect Size (95% CI)	Hospitalization (# studies), Effect Size (95% CI)	Other Secondary Outcomes (# studies), Effect Size (95% CI)
		difference between the HBPC group and a comparison group…"	[high-quality] *study reported an increase…"*	*studies examined costs, and both calculated that HBPC lowered costs significantly…*[One study of] *all VA HBPC patients nationwide compared projected costs without HBPC to actual costs and reported an average reduction of 28.1 percent in costs for 6 months of HBPC enrollment*…" HQoL (2) *"…most caregiver outcomes were better for the HBPC group, and the patients experienced a statistically significant improvement in health-related quality of life"* Function (1) *"…multi-site RCTs of HBPC in several VA medical centers found no significant difference in function between HBPC patients and usual care patients*"
Physical Activity	Frost, 2017 (Medium, 2016)	NR	NR	Performance-based Physical Function (3) "…group exercise interventions had a significant and beneficial effect on physical functioning…" SMD 0.37 (0.07, 0.68)
	Gine-Garriga, 2014 (Medium, 2013)	NR	NR	Performance-based Physical Function (4) *"Exercise significantly increased the performance measure SPPB by 1.87 units (95% CI, 1.17-2.57)…"*
Falls Prevention	Guirguis-Blake, 2018 (High, 2018)	Multifactorial Intervention (23) *"no difference in all-cause mortality at 6 to 36 months in the*	Multifactorial Intervention (4) *"no difference in the prevalence of hospitalization in the multifactorial*	Multifactorial Intervention Falls (17) *"lower rate of falls at the longest followup (6–12 months) in the*

Intervention	Author, Year (quality, last year of search)	Mortality (# studies), Effect Size (95% CI)	Hospitalization (# studies), Effect Size (95% CI)	Other Secondary Outcomes (# studies), Effect Size (95% CI)
		multifactorial group compared to the control group…" RR 0.96 (0.79, 1.17) Exercise Intervention (11) *"no significant association with all-cause mortality at longest followup (12–60 months) in the exercise group compared to the control group…"* RR 0.93 (0.71, 1.22)	*versus control group…RR and OR point estimates ranged from 0.57 to 0.98."*	*multifactorial group than in the control group with substantial heterogeneity…"* IRR 0.79 (0.68, 0.91) Exercise Intervention Falls (14)—*"significant reduction in the rate of incident falls at the longest followup (6–24 months) in the exercise group compared to the control group, with substantial heterogeneity…"* IRR, 0.87 (0.75, 1.00)
Occupational Therapy	Steultjens 2004 (Medium 2002)	NR	NR	Falls (4) *"One high quality RCTs reported a statistically significant decrease in falls in elderly people who are at high risk of falling…"* OR 0.39 (0.22, 0.68)
Different Settings for Personal Assistance	Montgomery, 2008 (High, 2005)	(4) *"…most studies reported some data about mortality, which suggest that personal assistance had no comparative impact…"*	NR	NR
Light Therapy	Forbes, 2014 (High, 2014)	NR	NR	Sleep Duration (6) *"…no effect of morning, evening, and all day bright light on total night sleep duration…"* MD -1.07 minutes (-35.47, 33.33) Cognitive Function (3) *"pooled data revealed no significant effect…treatment…"* MD 1.24 (-0.81, 3.28) *95% CI -0.81 to 3.28, P = 0.24, n = 156)*
Demonstration Projects	Johri, 2003 (Low, 2000)	NR	(6) Mixed results	NR