National Institute for Health and Care Excellence

Final

End of life care for adults: service delivery

[K] Evidence review: Out of hours services

NICE guideline NG142

Evidence review

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Final

Developed by the National Guideline Centre, hosted by the Royal College of Physicians

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1.1 Review question: What are the best out of hours services, models and policies to support people in their last year of life to stay in their preferred place of care?

It is important that adults who are likely to be in the last year of life, and those important to them, should have access to professional care and to necessary medications at all times of day and night, and throughout the week. Many services operating outside acute settings, such as primary care and community palliative care teams, work 'office hours', that is, between 8am and 5pm; and with limited or no availability on weekends. Even in hospitals and other in-patient settings such as care homes and hospices, levels of specialist staff are commonly limited out of hours.[140] The committee regarded these gaps in service as important because lack of access to trained staff' or to special medicines' out of hours may mean that people have to be transferred – often against their prior wishes - to a different setting such as hospital emergency departments. For this reason, different types of services aimed at people likely to be in the last year of life have been developed, including outreach from hospices, community-based teams, and telephone advice services. The committee was aware that there is marked variation across the country in the implementation of these solutions, and their costs vary significantly depending on the staffing levels and extended hours of work.

The committee wanted to review the evidence for different models of out of hours services and policies, which would enable more people to remain in the care setting of their choice and avoid unnecessary transfers.

1.2 PICO table

For full details see the review protocol in Appendix A.

Table 1: PICO characteristics of review question

Population	Adults (aged 18 years or over) with progressive life-limiting conditions thought to be entering their last year of life
Intervention	Out of hours service
Comparisons	Out of hours service Other service (not out of hours) Usual care
Outcomes	CRITICAL - Quality of life (Continuous) - Preferred and actual place of death (Dichotomous) - Preferred and actual place of care (Dichotomous) IMPORTANT - Length of survival (Continuous) - Length of stay (Continuous) - Hospitalisation (Dichotomous) - Number of hospital visits (Dichotomous) - Number of visits to accident and emergency (Dichotomous) - Number of unscheduled admissions (Dichotomous) - Use of community services (Dichotomous) - Staff satisfaction (Continuous)

	- Avoidable/inappropriate admissions to ICU (Dichotomous) - Inappropriate attempts at cardiopulmonary resuscitation (Dichotomous)
Study design	Systematic Review RCT Non-randomised comparative study, including before and after studies and interrupted-time-series.

1.3 Clinical evidence

A search was conducted for studies comparing out of hours services, models and policies to support people with progressive life-limiting conditions thought to be entering their last year of life to stay in their preferred place of care.

Four studies (reported in 5 papers) were included in the review[57, 77, 133, 137, 146]; these are summarised in Table 2 below. Services delivered out of hours which were a component of a more complex intervention have been included; all interventions details are reported below and in Appendix E. Some studies evaluated the availability of a service rather than the access to a service; where relevant, this has been reported in Table 3.

Evidence from these studies is summarised in the clinical evidence summary below (Table 4). See also the study selection flow chart in Appendix C, forest plots in Appendix E, study evidence tables in Appendix D and GRADE tables in Appendix F.

1.3.1 Excluded studies

See the excluded studies list in Appendix I.

1.3.2 Table 2: Summary of clinical studies included in the evidence review

Study	Intervention and comparison	Population	Outcomes	Comments
Gage 2015[57] (Holdsworth 2015[77])	Rapid response service users. Rapid response service non-users. Rapid response service available. Rapid response service not available . The rapid response service was delivered by health care assistants and supported by a multiprofessional team. The team had access to a service coordinator	Patients newly referred to the hospice services N=164 UK	Preferred and actual place of death; Use of community services; GP contacts; All community contacts; All Marie Curie visits; All out of hours contacts: Hospice contacts; Social services; Number of visits to accident and emergency; Carers' quality of life (SF-12, EQ5D)	No description of usual care. Only 36% of people in the 'RRS available' group actually accessed the service
Purdy 2015[133]	Marie Curie Cancer Care Delivering Choice Programme (with out of hours service) users. Marie Curie Cancer Care Delivering Choice Programme (without out of hours service). Marie Curie Cancer Care Delivering Choice Programme (with out of hours service) non-users Intervention consisted of: Out of hours advice and response lines manned by specialist nurses from 5pm to 1pm weekends and bank holidays.	Patients who died between Sep 2011-Feb 2012, who were expected to die and potentially eligible for end-of-life care N=2785 UK	Place of death: Acute hospital; Home; Care home (not usual place of residence); Hospice; Community hospital; Elsewhere; Number of hospital visits; Patients with one or more emergency admissions (< 30 days, < 7 days); Mean emergency admissions per patient (< 30 days, < 7 days); Number of visits to accident and emergency;	23% used the Delivery Choice intervention Out of hours advice line 9%. Preferred place of death not reported

Study	Intervention and comparison	Population	Outcomes	Comments
	Two front of house hospital-based discharge nurses. Two end of life care coordinators. These services were supported by an electronic end of life care register to record advance care wishes		Patients with one or more ED attendance (< 30 days, < 7 days); Mean ED attendance per patient (< 30 days, < 7 days)	
Riolfi 2014[137]	Palliative home care service. Usual care (palliative home care service not available). The service consisted of two palliative care physicians and 30 specialist nurses who cooperate with GPs. The services of a palliative care physician or nurse are assured from Monday to Friday (8am to 8pm). On Saturdays and Sundays there is a nurse on call 8am to 8pm. During the night and weekends patients and caregivers and colleagues can always contact a palliative care physician by phone	People with predicted life expectancy of three months N=402 Italy	Place of death: Home; Hospital; Nursing home; Country hospital; Length of stay (time spent in hospital in the last 2 months of life); Hospitalisation (number of hospitalisations in the last 2 months of life)	
Seow 2014[146]	Specialist palliative care team N=3109. Usual care. Core members: nurses, palliative care physicians, and family physicians. The team provided interdisciplinary, home-based palliative care to people with	Patients receiving care from specialist care teams who: a) provide interdisciplinary, home based palliative care; b) were the only team in their respective region; c) had little or no change in staffing between 2009 until 2012; d) had broad admission criteria that is, not limited to one disease; e) admitted more than	Hospitalisation (number of people in hospital in last 2 weeks of life); Number of visits to accident and emergency (ED visits in the last 2 weeks of life); Place of death (hospital)	All people in the intervention group received care from specialist palliative care team

Study	Intervention and comparison	Population	Outcomes	Comments
	palliative care needs. Core features of services were 24/7 care and collaboration between health professionals	50 patients; f) were available to patients 24/7 N=9327 Canada		

Table 3: Proportion of participants using out of hours services

Study	Number for each intervention	Proportion using out of hours service
Purdy 2015[133]	All users were offered the intervention Users of intervention N=819 (N=616 with out of hours; N=213 without out of hours) Nonusers N=2765 (N=1956 with out of hours, N=809 without out of hours)	23% used the Delivery Choice intervention Out of hours advice line 9%
Riolfi 2014[137]	Not all patients offered the intervention Offered palliative care N=160 Not given palliative care N=242	Study states that all of the patients were eligible for palliative care (they all died of cancer within two months) – our analysis compared patients who did or did not join the palliative care program
Gage 2015[57] (Holdsworth 2015[77])	Comparison 1: Service was available to all patients Rapid response service (RRS) users N= 247 RRS non-users N=441	Service was available to all people accessing hospice services in the area
	Comparison 2: Service was available only to intervention group RRS available N=688 (and carers, N=48) RRS not available N=265 (and carers, N=16)	Only 36% of people in the 'RRS available' group actually accessed the service
Seow 2014[146]	People who received care from specialist palliative care team ('exposed') N=3109 People who received usual care ('unexposed') N=3109	All people in the intervention group received care from specialist palliative care team

See Appendix D for full evidence tables.

1.3.3 Quality assessment of clinical studies included in the evidence review

Table 4: Clinical evidence summary: out of hours service (Rapid response service available) versus usual care (Rapid response service not available) in adults with progressive life-limiting conditions thought to be entering their last year of life

Outcomes	No of Participants (studies) Follow up	Quality of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects	
				Risk with Usual care (RRS not available)	Risk difference with Rapid Response Service available (95% CI)
Carers quality of life (EQ5D, 0-1) 8 months	64 (1 study)	⊕⊖⊖⊖ VERY LOW[a,b] due to risk of bias, imprecision	-	The mean carers quality of life (EQ5D) 8 months - rapid response service available versus rapid response service not available in the control groups was 0.77	The mean carers quality of life (EQ5D) 8 months - rapid response service available versus rapid response service not availablein the intervention groups was 0.05 lower (0.12 lower to 0.02 higher)
Carers quality of life (SF12 Physical Component Summary Score, 0-100) 8 months	64 (1 study)	⊕⊖⊖⊖ VERY LOW[a,b] due to risk of bias, imprecision	-	The mean carers quality of life (SF12 physical) 8 months - rapid response service available versus rapid response service not available in the control groups was 44.27	The mean carers quality of life (SF12 physical) 8 months - rapid response service available versus rapid response service not available in the intervention groups was 1.86 higher (0.99 lower to 4.71 higher)
Carers quality of life (SF12 Mental Component Summary Score, 0-100) 8 months	64 (1 study)	⊕⊖⊖⊖ VERY LOW[a,b] due to risk of bias, imprecision	-	The mean carers quality of life (SF12 mental) 8 months - rapid response service available versus rapid response service not available in the control groups was 46.47	The mean carers quality of life (SF12 mental) 8 months - rapid response service available versus rapid response service not available in the intervention groups was 4.93 lower (8 to 1.86 lower)
Preferred and actual place of death (Achieved (initial) place of death)	953 (1 study)	⊕⊖⊖⊖ VERY LOW[a] due to risk of bias	RR 1.01 (0.9 to 1.13)	619 per 1000	6 more per 1000 (from 62 fewer to 80 more)
Preferred and actual place of death (Achieved (final) place of death)	953 (1 study)	⊕⊖⊖⊖ VERY LOW[a]	RR 0.95 (0.86	698 per 1000	35 fewer per 1000 (from 98 fewer to 28 more)

Outcomes	No of Participants (studies) Follow up	Quality of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects	
				Risk with Usual care (RRS not available)	Risk difference with Rapid Response Service available (95% CI)
		due to risk of bias	to 1.04)		

[a] Downgraded by 1 increment if the majority of the evidence was at high risk of bias, and downgraded by 2 increments if the majority of the evidence was at very high risk of bias
[b] Downgraded by 1 increment if the confidence interval crossed 1 MID or downgraded by 2 increments if the confidence interval crossed both MIDs

Table 5: Clinical evidence summary: out of hours service (Rapid response service users) versus usual care (Rapid response service non-users) in adults with progressive life-limiting conditions thought to be entering their last year of life

Outcomes	No of Participants (studies) Follow up	Quality of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects	
				Risk with Usual care (RRS non-users)	Risk difference with Rapid Response Service users (95% CI)
Preferred and actual place of death (Achieved (initial) place of death)	681 (1 study)	⨁⊖⊖⊖ VERY LOW[a,b] due to risk of bias, imprecision	RR 1.17 (1.04 to 1.31)	592 per 1000	101 more per 1000 (from 24 more to 184 more)
Number of visits to A&E (Number with >1 contact with acute care)	688 (1 study)	⨁⊖⊖⊖ VERY LOW[a] due to risk of bias	RR 0.92 (0.8 to 1.07)	565 per 1000	45 fewer per 1000 (from 113 fewer to 40 more)
Use of community services (Number with >1 contact with GP/primary care)	426 (1 study)	⨁⊖⊖⊖ VERY LOW[a,b] due to risk of bias, imprecision	RR 1.22 (1.11 to 1.34)	719 per 1000	158 more per 1000 (from 79 more to 244 more)

Outcomes	No of Participants (studies) Follow up	Quality of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects	
				Risk with Usual care (RRS non-users)	Risk difference with Rapid Response Service users (95% CI)
Use of community services (Number with>1 contact with community care)	688 (1 study)	⨁⊖⊖⊖ VERY LOW[a,b] due to risk of bias, imprecision	RR 1.3 (1.21 to 1.4)	694 per 1000	208 more per 1000 (from 146 more to 278 more)
Use of community services (Number with >1 contact with Marie Curie visits	688 (1 study)	⨁⊖⊖⊖ VERY LOW[a] due to risk of bias	RR 9.82 (4.17 to 23.11)	14 per 1000	123 more per 1000 (from 44 more to 310 more)
Use of community services (Number with >1 contact with out of hours services)	688 (1 study)	⨁⊖⊖⊖ VERY LOW[a] due to risk of bias	RR 2.1 (1.65 to 2.69)	191 per 1000	210 more per 1000 (from 124 more to 323 more)
Use of community services (Number with >1 contact with hospice)	688 (1 study)	⨁⊖⊖⊖ VERY LOW[a] due to risk of bias	RR 1 (0.99 to 1.01)	1000 per 1000	0 fewer per 1000 (from 10 fewer to 10 more)
Use of community services (Number receiving >1 social service)	688 (1 study)	⨁⊖⊖⊖ VERY LOW[a,b] due to risk of bias, imprecision	RR 1.19 (0.82 to 1.72)	136 per 1000	26 more per 1000 (from 24 fewer to 98 more)

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[b] Downgraded by 1 increment if the confidence interval crossed 1 MID or downgraded by 2 increments if the confidence interval crossed both MIDs

Table 6: Clinical evidence summary: out of hours service (Delivering Choice Programme with out of hours users) versus usual care (Delivering Choice Programme with out of hours non-users) in adults with progressive life-limiting conditions thought to be entering their last year of life

Outcomes	No of Participants (studies) Follow up	Quality of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects	
				Risk with Usual care	Risk difference with Delivering Choice Programme with OOH (95% CI)
Preferred and actual place of death (Place of death - acute hospital)	2572 (1 study)	⨁⊖⊖⊖ VERY LOW[a,b] due to risk of bias, indirectness	RR 0.32 (0.26 to 0.39)	427 per 1000	290 fewer per 1000 (from 260 fewer to 316 fewer)
Preferred and actual place of death (Place of death - community hospital)	2572 (1 study)	⨁⊖⊖⊖ VERY LOW[a,b] due to risk of bias, indirectness	RR 3.18 (1.95 to 5.18)	16 per 1000	35 more per 1000 (from 15 more to 67 more)
Preferred and actual place of death (Place of death - home)	2572 (1 study)	⨁⊖⊖⊖ VERY LOW[a,b] due to risk of bias, indirectness	RR 1.37 (1.26 to 1.5)	398 per 1000	147 more per 1000 (from 103 more to 199 more)
Preferred and actual place of death (Place of death - care home)	2572 (1 study)	⨁⊖⊖⊖ VERY LOW[a,b,c] due to risk of bias,	RR 1.06 (0.8 to 1.41)	88 per 1000	5 more per 1000 (from 18 fewer to 36 more)

Outcomes	No of Participants (studies) Follow up	Quality of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects	
				Risk with Usual care	Risk difference with Delivering Choice Programme with OOH (95% CI)
		indirectness, imprecision			
Preferred and actual place of death (Place of death - hospice)	2572 (1 study)	⨁⊖⊖⊖ VERY LOW[a,b] due to risk of bias, indirectness	RR 5.66 (4.12 to 7.77)	28 per 1000	130 more per 1000 (from 87 more to 190 more)
Preferred and actual place of death (Place of death - elsewhere)	2572 (1 study)	⨁⊖⊖⊖ VERY LOW[a,b,c] due to risk of bias, indirectness, imprecision	RR 2.12 (0.87 to 5.15)	6 per 1000	7 more per 1000 (from 1 fewer to 25 more)
Number of hospital visits (patients with one or more emergency admissions <30 days)	2572 (1 study)	⨁⊖⊖⊖ VERY LOW[a] due to risk of bias	RR 0.85 (0.76 to 0.95)	447 per 1000	67 fewer per 1000 (from 22 fewer to 107 fewer)
Number of hospital visits (patients with one or more emergency admissions <7 days)	2572 (1 study)	⨁⊖⊖⊖ VERY LOW[a] due to risk of bias	RR 0.41 (0.32 to 0.53)	239 per 1000	141 fewer per 1000 (from 112 fewer to 163 fewer)

Outcomes	No of Participants (studies) Follow up	Quality of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects	
				Risk with Usual care	Risk difference with Delivering Choice Programme with OOH (95% CI)
Number of hospital visits (mean emergency admissions per patient <30 days)	2572 (1 study)	⊕⊖⊖⊖ VERY LOW[a] due to risk of bias		The mean number of hospital visits (mean emergency admissions per patient <30 days) in the control groups was 0.45	The mean number of hospital visits (mean emergency admissions per patient <30 days) in the intervention groups was 0.08 higher (0.02 to 0.14 higher)
Number of hospital visits (mean emergency admissions per patient <7 days)	2572 (1 study)	⊕⊖⊖⊖ VERY LOW[a] due to risk of bias		The mean number of hospital visits (mean emergency admissions per patient <7 days) in the control groups was 0.25	The mean number of hospital visits (mean emergency admissions per patient <7 days) in the intervention groups was 0.14 lower (0.17 to 0.11 lower)
Number of visits to A&E (patients with one or more ED attendance <30 days)	2572 (1 study)	⊕⊖⊖⊖ VERY LOW[a,c] due to risk of bias, imprecision	RR 0.71 (0.61 to 0.82)	364 per 1000	106 fewer per 1000 (from 66 fewer to 142 fewer)
Number of visits to A&E (patients with one or more ED attendance <7 days)	2572 (1 study)	⊕⊖⊖⊖ VERY LOW[a] due to risk of bias	RR 0.32 (0.23 to 0.43)	221 per 1000	150 fewer per 1000 (from 126 fewer to 170 fewer)
Number of visits to A&E (mean ED attendance per patient <30 days)	2572 (1 study)	⊕⊖⊖⊖ VERY LOW[a] due to risk of bias		The mean number of visits to A&E (mean ED attendance per patient <30 days) in the control groups was 0.41	The mean number of visits to A&E (mean ED attendance per patient <30 days) in the intervention groups was 0.02 lower (0.07 lower to 0.03 higher)
Number of visits to A&E (mean ED attendance per patient <7 days)	2572 (1 study)	⊕⊖⊖⊖ VERY		The mean number of visits to A&E (mean ED attendance per patient	The mean number of visits to A&E (mean ED attendance per patient

Outcomes	No of Participants (studies) Follow up	Quality of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects	
				Risk with Usual care	Risk difference with Delivering Choice Programme with OOH (95% CI)
		LOW[a,c] due to risk of bias, imprecision		<7 days) in the control groups was 0.26	<7 days) in the intervention groups was 0.19 lower (0.22 to 0.16 lower)

[a] Downgraded by 1 increment if the majority of the evidence was at high risk of bias, and downgraded by 2 increments if the majority of the evidence was at very high risk of bias
[b] The majority of the evidence had indirect outcomes (preferred place of death not reported)
[c] Downgraded by 1 increment if the confidence interval crossed 1 MID or downgraded by 2 increments if the confidence interval crossed both MIDs

Table 7: Clinical evidence summary: out of hours service (Delivering Choice Programme with out of hours users) versus other service (Delivering Choice Programme without out of hours users) in adults with progressive life-limiting conditions thought to be entering their last year of life

Outcomes	No of Participants (studies) Follow up	Quality of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects	
				Risk with Delivering Choice Programme without OOH	Risk difference with Delivering Choice Programme with OOH (95% CI)
Preferred and actual place of death (Place of death - acute hospital)	829 (1 study)	⨁⊖⊖⊖ VERY LOW[a,b,c] due to risk of bias, indirectness, imprecision	RR 0.73 (0.52 to 1.02)	188 per 1000	51 fewer per 1000 (from 90 fewer to 4 more)
Preferred and actual place of death (Place of death - home)	829 (1 study)	⨁⊖⊖⊖ VERY	RR 1.32	413 per 1000	132 more per 1000 (from 45 more to 240 more)

Outcomes	No of Participants (studies) Follow up	Quality of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects	
				Risk with Delivering Choice Programme without OOH	Risk difference with Delivering Choice Programme with OOH (95% CI)
		LOW[a,b,c] due to risk of bias, indirectness, imprecision	(1.11 to 1.58)		
Preferred and actual place of death (Place of death - care home)	829 (1 study)	⨁⊖⊖⊖ VERY LOW[a,b,c] due to risk of bias, indirectness, imprecision	RR 0.59 (0.4 to 0.87)	160 per 1000	66 fewer per 1000 (from 21 fewer to 96 fewer)
Preferred and actual place of death (Place of death - hospice)	829 (1 study)	⨁⊖⊖⊖ VERY LOW[a,b,c] due to risk of bias, indirectness, imprecision	RR 1 (0.7 to 1.43)	160 per 1000	0 fewer per 1000 (from 48 fewer to 69 more)
Preferred and actual place of death (Place of death - elsewhere)	829 (1 study)	⨁⊖⊖⊖ VERY LOW[a,b] due to risk of bias, indirectness	RR 0.16 (0.07 to 0.37)	80 per 1000	67 fewer per 1000 (from 50 fewer to 74 fewer)

Outcomes	No of Participants (studies) Follow up	Quality of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects	
				Risk with Delivering Choice Programme without OOH	Risk difference with Delivering Choice Programme with OOH (95% CI)
Number of hospital visits (patients with one or more emergency admissions <30 days)	829 (1 study)	⨁⊖⊖⊖ VERY LOW[a,c] due to risk of bias, imprecision	RR 1.32 (1.04 to 1.67)	286 per 1000	92 more per 1000 (from 11 more to 192 more)
Number of hospital visits (patients with one or more emergency admissions <7 days)	829 (1 study)	⨁⊖⊖⊖ VERY LOW[a,c] due to risk of bias, imprecision	RR 1.6 (0.89 to 2.85)	61 per 1000	37 more per 1000 (from 7 fewer to 113 more)
Number of hospital visits (mean emergency admissions per patient <30 days)	829 (1 study)	⨁⊖⊖⊖ VERY LOW[a] due to risk of bias		The mean number of hospital visits (mean emergency admissions per patient <30 days) in the control groups was 0.31	The mean number of hospital visits (mean emergency admissions per patient <30 days) in the intervention groups was 0.22 higher (0.13 to 0.31 higher)
Number of hospital visits (mean emergency admissions per patient <7 days)	829 (1 study)	⨁⊖⊖⊖ VERY LOW[a] due to risk of bias		The mean number of hospital visits (mean emergency admissions per patient <7 days) in the control groups was 0.07	The mean number of hospital visits (mean emergency admissions per patient <7 days) in the intervention groups was 0.04 higher (0 to 0.08 higher)
Number of visits to A&E (patients with one or more ED attendance <30 days)	829 (1 study)	⨁⊖⊖⊖ VERY LOW[a,c] due to risk of bias, imprecision	RR 1.02 (0.78 to 1.33)	254 per 1000	5 more per 1000 (from 56 fewer to 84 more)

Outcomes	No of Participants (studies) Follow up	Quality of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects	
				Risk with Delivering Choice Programme without OOH	Risk difference with Delivering Choice Programme with OOH (95% CI)
Number of visits to A&E (patients with one or more ED attendance <7 days)	829 (1 study)	⊕⊖⊖⊖ VERY LOW[a,c] due to risk of bias, imprecision	RR 1.14 (0.63 to 2.08)	61 per 1000	9 more per 1000 (from 23 fewer to 66 more)
Number of visits to A&E (mean ED attendance per patient <30 days)	829 (1 study)	⊕⊖⊖⊖ VERY LOW[a] due to risk of bias		The mean number of visits to A&E (mean ED attendance per patient <30 days) in the control groups was 0.27	The mean number of visits to A&E (mean ED attendance per patient <30 days) in the intervention groups was 0.12 higher (0.04 to 0.2 higher)
Number of visits to A&E (mean ED attendance per patient <7 days)	829 (1 study)	⊕⊖⊖⊖ VERY LOW[a] due to risk of bias		The mean number of visits to A&E (mean ED attendance per patient <7 days) in the control groups was 0.07	The mean number of visits to A&E (mean ED attendance per patient <7 days) in the intervention groups was 0 higher (0.04 lower to 0.04 higher)

[a] Downgraded by 1 increment if the majority of the evidence was at high risk of bias, and downgraded by 2 increments if the majority of the evidence was at very high risk of bias
[b] The majority of the evidence had indirect outcomes (preferred place of death not reported)
[c] Downgraded by 1 increment if the confidence interval crossed one MID or downgraded by 2 increments if the confidence interval crossed both MIDs

Table 8: Clinical evidence summary: out of hours service (Palliative home care service) versus usual care in adults with progressive life-limiting conditions thought to be entering their last year of life

Outcomes	No of Participants (studies) Follow up	Quality of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects	
				Risk with Usual care	Risk difference with Palliative home care service (95% CI)

Outcomes	No of Participants (studies) Follow up	Quality of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects	
				Risk with Usual care	Risk difference with Palliative home care service (95% CI)
Preferred and actual place of death (Place of death - hospital)	402 (1 study)	⨁⊖⊖⊖ VERY LOW[a,b,c] due to risk of bias, indirectness	RR 0.31 (0.23 to 0.42)	736 per 1000	508 fewer per 1000 (from 427 fewer to 567 fewer)
Preferred and actual place of death (Place of death - country hospital)	402 (1 study)	⨁⊖⊖⊖ VERY LOW[a,b,c] due to risk of bias, indirectness	RR 2.42 (1.31 to 4.47)	62 per 1000	88 more per 1000 (from 19 more to 215 more)
Preferred and actual place of death (Place of death - home)	402 (1 study)	⨁⊖⊖⊖ VERY LOW[a,b,c] due to risk of bias, indirectness	RR 6.85 (4.34 to 10.79)	79 per 1000	462 more per 1000 (from 264 more to 773 more)
Preferred and actual place of death (Place of death - nursing home)	402 (1 study)	⨁⊖⊖⊖ VERY LOW[a,b,c,d] due to risk of bias, indirectness, imprecision	RR 0.66 (0.35 to 1.22)	124 per 1000	42 fewer per 1000 (from 81 fewer to 27 more)
Hospitalisation (number of hospitalisations in last 2 months of life)	402 (1 study)	⨁⊖⊖⊖ VERY LOW[a,c] due to risk of bias, indirectness		The mean hospitalisation (number of hospitalisations in last 2 months of life) in the control groups was 1.3	The mean hospitalisation (number of hospitalisations in last 2 months of life) in the intervention groups was 0.9 lower (1.07 to 0.73 lower)

Outcomes	No of Participants (studies) Follow up	Quality of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects	
				Risk with Usual care	Risk difference with Palliative home care service (95% CI)
Length of stay (time spent in hospital in the last 2 months of life)	402 (1 study)	⨁⊖⊖⊖ VERY LOW[a,c] due to risk of bias, indirectness		The mean length of stay (time spent in hospital in the last 2 months of life) in the control groups was 19.6	The mean length of stay (time spent in hospital in the last 2 months of life) in the intervention groups was 15.2 lower (18.08 to 12.32 lower)

[a] Downgraded by 1 increment if the majority of the evidence was at high risk of bias, and downgraded by 2 increments if the majority of the evidence was at very high risk of bias
[b] The majority of the evidence had indirect outcomes (preferred place of death not reported)
[c] The majority of the evidence was based on indirect intervention.
[d] Downgraded by 1 increment if the confidence interval crossed 1 MID or downgraded by 2 increments if the confidence interval crossed both MIDs

Table 9: Clinical evidence summary: out of hours service (Specialist palliative care team) versus usual care in adults with progressive life-limiting conditions thought to be entering their last year of life

Outcomes	No of Participants (studies) Follow up	Quality of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects	
				Risk with Usual care	Risk difference with Specialist Palliative Care team (95% CI)
Preferred and actual place of death (Place of death - hospital)	6218 (1 study)	⨁⊖⊖⊖ VERY LOW[a,b] due to risk of bias, indirectness	RR 0.57 (0.51 to 0.63)	285 per 1000	123 fewer per 1000 (from 105 fewer to 140 fewer)
Hospitalisation (last 2 weeks of life)	6218 (1 study)	⨁⊖⊖⊖ VERY LOW[a,c] due to risk of bias, imprecision	RR 0.80 (0.74 to 0.85)	392 per 1000	78 fewer per 1000 (from 59 fewer to 102 fewer)

Outcomes	No of Participants (studies) Follow up	Quality of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects	
				Risk with Usual care	Risk difference with Specialist Palliative Care team (95% CI)
Number of visits to A&E (last two weeks of life)	6218 (1 study)	⨁⊖⊖⊖ VERY LOW[a] due to risk of bias	RR 0.84 (0.78 to 0.9)	344 per 1000	55 fewer per 1000 (from 34 fewer to 76 fewer)

[a] Downgraded by 1 increment if the majority of the evidence was at high risk of bias, and downgraded by 2 increments if the majority of the evidence was at very high risk of bias
[b] The majority of the evidence had indirect outcomes (preferred place of death not reported)
[c] Downgraded by 1 increment if the confidence interval crossed 1 MID or downgraded by 2 increments if the confidence interval crossed both MIDs

See Appendix F for full GRADE tables.

1.4 Economic evidence

1.4.1 Included studies

No relevant health economic studies were included.

1.4.2 Excluded studies

One economic study relating to this review question was identified but was excluded due to a combination of limited applicability and methodological limitations.[57] This is listed in Appendix I, with reasons for exclusion given.

See also the health economic study selection flow chart in Appendix G.

1.4.3 Health economic costing analysis

End-of-life community services and out-of-hours end-of-life services were the areas of the guideline that were prioritised by the guideline committee for original economic analysis. A costing analysis, with a threshold analysis, was conducted to estimate imprecisely the cost of a number of community services, available out-of-hours and investigate how plausible it is that they could break even. These should not be taken to be a prescription for such services which will vary considerably in order to meet local needs.

The services were assumed to serve 0.8% of a population of approximately 265,000, the average size of a CCG. The figure of 0.8% was used as an estimate for the number of people that should receive some level of end of life care services. Table 10, provides estimates of the total costs of the services included in the costing analysis. For full details please see the End of Life Care costing analysis report, saved separately on the NICE website.

Table 10: Total costs of the out-of-hours community services included in the costing analysis

Out-of-hours community services	Total cost[(a)]	Source
End of life care coordination service	£642,335	Original costing analysis *
Out of hours, end of life advice line	£138,424	Original costing analysis *
Out of hours, end of life, medication provision service	£7,464	Original costing analysis *
End of Life ambulance	£100,000	Original costing analysis *
Hospice at home service	£873,023	Original costing analysis *

*(a) these costs were estimated assuming that 0.8% of a population of approximately 265,000 people would have access to the services (*please see the End of Life Care costing analysis report, saved separately on the NICE website for details on why the figure of 0.8% was used)*

Table 11 provides estimates of the potential cost savings, per unit reduction in outcome achieved, that might arise from implementing the additional out-of-hours, end-of-life services in the community.

Table 11: Potential cost savings resulting from implementing the additional end-of-life out-of-hours community services

Outcome	Estimated cost saved	Source
Death occurring outside hospital instead of in hospital	£958	[120]
Inpatient day reduced in an end of life emergency admission	£254	[132]
End of life emergency admission avoided	£2,919	[132]

Table 12 reports the results of the threshold analysis. These results provide estimates of the outcomes the service components would need to achieve to make them cost neutral; assuming they were implemented to serve 0.8% of a population of approximately 265,000.

Table 12: Threshold Analysis Results

Service	Percentage reduction in outcomes required to make the service cost neutral		
	Deaths in Hospital	Inpatient Days in Emergency Admissions	Emergency Admissions
End of life care coordination service	63%	6%	6%
Out of hours, end of life advice line	13%	1%	1%
Out of hours, end of life, medication provision service	0.3%	0.07%	0.07%
End of Life ambulance	10%	1%	1%
Hospice at home service	85%	8%	8%

Interpreting the results: The above table shows that for the care coordination service to be cost neutral, it would need to achieve a 63% reduction in deaths occurring in hospital, or a 6% reduction in inpatient days spent in emergency admissions for people in the last year of life, or a 6% reduction in emergency admissions of people in the last year of life. However, if reductions in the outcomes were to occur simultaneously, as would be likely to happen in reality, then the reduction required for each individual outcome would be lower.

1.5 Resource costs

The recommendations made based on this review (see section **Error! Reference source n ot found.**) may have a substantial impact on resources.

Additional costs could be incurred for the following reasons: the implementation of giving people (thought to be in the last year of life) access to a healthcare practitioner available 24 hours a day, 7 days-a-week, who can access the person's records and advance care plan, and can make informed decisions about changes to care; a dedicated out-of-hours end of life care advice line; an out-of-hours pharmacy service that has access to medicines for symptom relief in adults in the last year of life. The magnitude of the resource impact depends on the scale to which the above is already current practice for end of life care. This will depend on local circumstances. Savings could be made through hospital admissions and hospital deaths avoided due to improvements in the out-of-hours services available for people in the last year of life. Further detail can be found in the resource impact tools that support the guideline which will be available after final publication.

1.6 Evidence statements

1.6.1 Clinical evidence statements

People who were offered the service (service available) compared with people who were not offered the service (service not available)

Rapid response service

In carers there was a clinically important difference in favour of people who were not offered the service for carers' quality of life (EQ-5D) and quality life (SF-36 mental). There was no clinically important difference for carers' quality of life (SF-36 physical) or for the proportion of people achieving their preferred initial or final actual place of death.

Specialist palliative care

A clinically important lower proportion of people who were offered the specialist palliative care team died in hospital. The difference between the two groups was not clinically important for the proportion of people who were hospitalised or attended accident and emergency both in the last two weeks of life.

Palliative care team

For the outcome of preferred place of death in hospital there was a clinically important lower proportion of people who were offered the service compared to people who were not offered the service. There was a clinically importance difference between people who were and people were not offered the service with the former having a greater proportion of people dying in a country hospital and at home. There was no clinically important difference between the groups for the proportion of people dying in a nursing home

The mean time spent in hospital in the last two months of life was shorter for the people who were offered the service compared to those who were not.

There was no clinical difference between the groups for the mean number of hospitalisations in the last two months of life.

People who were offered the service and used it (users) compared with those that were offered the service but did not use it (non-users)

Rapid response service

There was a clinically important difference in favour of people who used the service for preferred (initial) and actual place of death. A clinically important higher proportion of users had more than one contacts with community services (GP/primary care or community care), one or more visits from a Marie Curie professional or one or more contacts with an out of hours service. There was no clinically important difference between the groups with respect to the proportion of people with one or more visits to accident and emergency, acute care, a hospice or with social services.

Delivering Choice Programme

For the outcome of actual place of death there was a clinically important difference between users compared to non-users with the former having a lower proportion of people dying in an acute hospital and elsewhere. There was a clinically importance difference between users compared to non-users with the former having a greater proportion of people dying in a community hospital, at home and in hospice. There was no clinically important difference

between users compared to non-users for the proportion of people dying in a care home and 'elsewhere'.

There was a clinically important difference between users compared to non-users with the former having a lower proportion of people with one or more emergency admissions and visits to the accident and emergency department within the last 30 and 7days.

There was no clinically important difference between users compared to non-users for the proportion of people for the mean number of patients with one more emergency admissions, visits to the accident and emergency department per patient at 30 and 7 days.

People who were offered the service and used it with those who were offered the same service without 'out of hours' element

Delivering Choice Programme

There was a clinically important difference between people who used the service compared to users of a non-'out of hours' service for actual place of death with lower proportion of people dying in an acute hospital, a care home and 'elsewhere' and a greater proportion of people dying at home. The difference between the users of both services for the proportion of people dying in a hospice was not clinically important.

A clinically important lower proportion of users of the 'out of hours' service compared to an emergency hospital admissions within 30 days and 7 days of death.

There was no clinically important difference between the groups for the proportion of people with visiting the accident and emergency department within 30 days and 7 days of death, the mean number of visits to the accident and emergency department or mean number of hospital visits per patient within 30 days and 7 days of death

1.6.2 Health economic evidence statements

No relevant economic evaluations were identified.

The threshold analysis conducted on different 'out of hours' community end of life services found that the services would be considered good value of money for the average CCG if they achieved:

- Care coordination service:
  - 61% reduction in number of hospital deaths, or
  - 6% reduction in emergency inpatient days of people in the last year of life, or
  - 6% reduction in emergency admissions of people in the last year of life
- Out-of-hours end-of-life advice line:
  - 13% reduction in number of hospital deaths, or
  - 1% reduction in emergency inpatient days of people in the last year of life, or
  - 1% reduction in emergency admissions of people in the last year of life
- Out-of-hours end-of-life Pharmacy service:
  - 1% reduction in number of hospital deaths, or
  - 0.06% reduction in emergency inpatient days of people in the last year of life, or
  - 0.06% reduction in emergency admissions of people in the last year of life
- End-of-life ambulance service
  - 10% reduction in number of hospital deaths, or
  - 1% reduction in emergency inpatient days of people in the last year of life, or
  - 1% reduction in emergency admissions of people in the last year of life
- Hospice at home
  - 83% reduction in number of hospital deaths, or
  - 8% reduction in emergency inpatient days of people in the last year of life, or

- 8% reduction in emergency admissions of people in the last year of life

1.7 The committee's discussion of the evidence

1.7.1 Interpreting the evidence

1.7.1.1 The outcomes that matter most

The committee identified quality of life, and preferred place of care and death as the critical outcomes for measuring the impact of an 'out of hours' service. The following outcomes were identified as important: length of stay, length of survival, hospitalisation, number of hospital visits, number of visits to accident and emergency, number of unscheduled admissions, use of community services, avoidable or inappropriate admissions to ICU, inappropriate attempts at cardiopulmonary resuscitation, staff satisfaction, patient or carer reported outcomes and carer health.

See tables 7 and 8 in the Methods chapter for a detailed explanation of why the committee selected these outcomes.

For the critical outcomes only one study reported the quality of life of carers. Only one study reported actual and preferred place of death with the remainder reporting actual place of death.

For the important outcomes one study reported length of hospital stay. All five studies (two studies on the same data set) reported one or more outcomes related to accident and emergency visits or hospitalisation. None of the studies reported whether these were unscheduled or avoidable. One study reported use of community services. None of the studies reported length of survival. No studies reported inappropriate or avoidable admissions to ICU, inappropriate attempts at cardiopulmonary resuscitation or staff satisfaction.

Place of death was a surrogate outcome for actual place of death compared to preferred place of death.

1.7.1.2 The quality of the evidence

All of the studies had an observational design and the quality of the evidence ranged from very low to low. The Committee was unable to pre-specify confounders that may affect the results of the studies. Some of the studies performed multivariate analysis but only included a limited number of potential confounders.

One study was considered to have an indirect population and the evidence downgraded because the population was restricted to people with cancer. A number of the studies did not describe the comparator i.e., standard care and more specifically they did not describe whether an 'out of hours' service was available or not. This meant that it was impossible to understand what was making a difference in the interventions.

1.7.1.3 Benefits and harms

One study evaluated an 'out of hours' service only (rapid response service). The results are in favour of the intervention for a limited number of outcomes for preferred (initial) and actual place of death, more than one contact with community services (GP/primary care or community care), one or more visits from a Marie Curie professional or one or more contacts with an out of hours service.

The remaining studies implemented a number of services changes in addition to an out of hours service. The Committee was not confident that an 'out of hours' service implemented in isolation would lead to clinically important benefits. The Committee noted that an 'out of hours' service was unlikely to be implemented in isolation and that the evidence reflected the type of services that currently exist in the UK. The Committee acknowledged the variation in these different 'out of hours' services across the UK.

The Committee noted that it was difficult to interpret the evidence where there were few people using the out of hours service compared to the people who had access to it.

There may be differences between the groups for a number of reasons, for example the severity of illness and symptoms and the availability of support from people important to the person who is in their last year of life. These variables were either not reported at baseline or the analysis was restricted to a small number of confounders. The studies comparing those who were and who were not offered the service were difficult to interpret as the comparator or standard care was poorly described especially with respect to whether any 'out of hours' service was available.

The Committee noted that the majority of people included in the studies had cancer and this is not representative of the people who actually use the service for example older adults with deteriorating health or people with chronic conditions with deteriorating health.

The Committee agreed that the evidence from the study comparing people who were offered the service and used it with people who were offered the service without the 'out of hours' element and used it was the most relevant. Whilst this study only adjusted for a limited number of potential confounders the characteristics of the people in each group were likely to be comparable.

There was one study comparing people who were and were not offered the service that reported whether people died in their initial preferred place of death and the final preferred place of death. The results were in favour of the intervention. Both the initial and final preferred place of death was at home.

The lower proportion of people accessing hospital services in the study comparing people who were offered the service and used it with those who were offered the service without out of hours and used it was thought to be due to the ability of the service to manage symptoms at home.

The evidence reporting use of acute and community services for people who were offered the service and used it with those who were offered the service and did not use it showed an increase in service use. The Committee commented that people who use a service have a greater need for example a more symptomatic and may therefore require more support from services. Alternatively, the out of hours service may identify symptom needs to be managed in hospital or that additional community services may be required.

1.7.2 Cost effectiveness and resource use

Having services available to access out-of-hours (for example extended hours, available at weekends or 24/7) increases the amount of resources required (for example staff time or overhead costs) to provide the services compared to if they were only available Monday to Friday, 9am to 5pm. The committee discussed the possibility that some out-of-hours services do however have the potential to save NHS resources. This might be through helping to prevent costly emergency hospital admissions, or increasing the feasibility that people can be cared for in their preferred place of care or the likelihood that people will be able to die outside hospital. The committee noted that in order to ensure 24/7 care is clinically and cost effective in addressing patients' needs, practitioners need access to the person's records and advance care plan, preferably through a shared electronic information system, to enable them to make informed decisions about care.

The committee discussed the example of having equipment provision services available out-of-hours, for example at weekends, would reduce a number of unnecessary hospital admissions where people are admitted to hospital because they cannot get access to certain equipment which had they had access, would have prevented the admission. Another example the committee discussed was people having access to end-of-life medications out-of-hours. Currently, if people cannot be issued with end-of-life medications out of hours, they will be admitted to hospital in an emergency, where they are then potentially at a greater risk of developing complications such as a hospital infection. Avoidable admissions are considered an inefficient use of resources as well as inducing unnecessary stress and discomfort for the patients and those close to them. With the end-of-life population there is also the potential risk that people admitted to hospital may never be discharged.

The committee highlighted that currently there is huge national variation in what end of life services are available out-of-hours. They all agreed that reducing this variation by increasing the level of out-of-hours services available in areas where there is currently very few services available would be likely to be of great benefit as the services would help to support a service model that enables and empowers people to choose to be cared for outside of a hospital setting; however the committee also acknowledged the significant resource impact of recommending out-of-hours services due to the increased level of resources required to provide the services compared to current practice.

The committee felt that community services and out-of-hours services were extremely important areas of the guideline where any potential recommendations would be likely to lead to a significant resource impact; therefore they were prioritised as areas for original economic analysis. Due to the low quality of the clinical evidence it was not possible to conduct an evidence based cost-effectiveness analysis. A cost analysis was conducted for different out-of-hours community interventions that had been identified by the committee, from the literature or from the call for evidence (please see the details of the analysis in the Appendix 1 on the NICE website). The committee identified deaths occurring outside hospital, length of stay in end of life emergency admissions and emergency admissions as the outcomes for the analysis. The cost analysis also included a threshold analysis which determined the reductions required in outcomes listed above, for a hypothetical region representing an average size CCG, to make the services cost neutral.

The committee used the results of the threshold analysis to inform their recommendations regarding having an out-of-hours advice line dedicated to end of life, a dedicated ambulance services for end of life patients, and an out-of-hours end-of-life pharmacy service as the committee felt confident that the outcomes needed to recover the costs of these interventions could be achieved, and therefore felt the interventions were likely to be a good use of NHS resources. The committee felt more uncertain about whether the care coordination service and hospice at home components would be able to achieve the required outcomes needed to make them cost neutral.

It is important to note that the illustrative costs provided in the cost analysis that were presented to the committee to aid the decisions were highly subjective and do not reflect the estimated actual cost of implementing the services. In reality the costs will vary significantly according to the specific region and are therefore extremely difficult to estimate.

The committee noted that geographical, societal, economic and epidemiological differences between regions mean that the optimal end-of-life service model will differ by locality and will be determined by a number of varying factors. The committee also noted that due to wide scale variation in the level of services currently available, the level of reorganisation required would need to be tailored to compliment what is currently already provided, and the resource impact of any recommendations will depend on this as well.

1.7.3 Other factors the committee took into account

Although the committee recommended access to out of hours pharmacy they were aware that some services have arrangements for the anticipatory prescribing of end of life medication and this been described as having a positive impact on reducing the need for people needing emergency pharmacy services.

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Appendices

Appendix A: Review protocols

Table 13: Review protocol for what are the best out of hours services, models and policies to support people in their last year of life to stay in their usual place of residence?

Question number: 13

Relevant section of Scope: Service delivery models for end of life care, including both acute, community and third sector settings covering:

- types of services (supportive and palliative care) provided by generalists and specialists during the course of the last year of life,
- who delivers the services and how, multidisciplinary team composition,
- timing and review of service provision,
- location of services, for example, place of care,
- out of hours, weekend and 24/7 availability of services.

Field names are based on PRISMA-P.]

ID	Field	Content
I	Review question	What are the best out of hours services, models and policies to support people in their last year of life to stay in their usual place of residence
II	Type of review question	Intervention review. A review of health economic evidence related to the same review question was conducted in parallel with this review. For details see the health economic review protocol for this NICE guideline.
III	Objective of the review	To identify what are the best out of hours services, models and policies to support people in their last year of life to stay in their usual place of residence
IV	Eligibility criteria – population / disease / condition / issue / domain	Adults (aged 18 or over) with progressive life-limiting conditions thought to be entering the last year of life.
V	Eligibility criteria – intervention(s) / exposure(s) / prognostic factor(s)	Out of hours service, such as for example • Helplines • Paramedics • District nurses • Rapid visiting system (GPs) • Out of hours GP • Social workers • Allied health professionals • Equipment store • Dedicated ambulances • 24/7 palliative care services

		• Emergency care and treatment plans/crisis management • Telehealth • Any combination of the above
VI	Eligibility criteria – comparator(s) / control or reference (gold) standard	• Other service (not OOH) • Usual care
VII	Outcomes and prioritisation	CRITICAL • Quality of life (Continuous) • Preferred and actual place of death (Dichotomous) • Preferred and actual place of care (Dichotomous) IMPORTANT • Length of survival (Continuous) • Length of stay (Continuous) • Hospitalisation (Dichotomous) • Number of hospital visits (Dichotomous) • Number of visits to accident and emergency (Dichotomous) • Number of unscheduled admissions (Dichotomous) • Use of community services (Dichotomous) • Avoidable/inappropriate admissions to ICU (Dichotomous) • Avoidable/inappropriate admissions to ICU (Dichotomous) • Inappropriate attempts at cardiopulmonary resuscitation (Dichotomous) • Staff satisfaction (continuous) • Patient/carer reported outcomes (satisfaction) (continuous)
VIII	Eligibility criteria – study design	• Systematic reviews • RCTs • Non-randomised comparative studies, including before and after studies and interrupted-time-series
IX	Other inclusion exclusion criteria	• Children (17 years or younger) • Studies will only be included if they reported one or more of the outcomes listed above • Descriptive (non-comparative) studies will be excluded
X	Proposed sensitivity / subgroup analysis, or meta-regression	Subgroup analyses if there is heterogeneity: • Younger adults (aged 18-25) • Frail elderly • People with dementia • People with hearing loss • People in prisons • Socioeconomic inequalities (people from lower income brackets) • Homeless people/vulnerably housed • Travellers • People with learning difficulties • People with disabilities • People with mental health problems • Migrant workers • LGBT

		• People in whom life-prolonging therapies are still an active option • People from ethnic minorities (BAME)
XI	Selection process – duplicate screening / selection / analysis	This question will be double reviewed in full including double sift and quality assessment. Quality assurance will be undertaken by a senior research fellow prior to completion. Review strategy/other analysis: • Information on identification tools used as part of a service will be extracted. • Due to the expected complexity of the service models implemented in the studies, studies will be reported separately if necessary. In such case, studies on the populations included in the subgroup list will be highlighted to the Committee and will be considered when making the recommendations
XII	Data management (software)	• Pairwise meta-analyses were performed using Cochrane Review Manager (RevMan5). • GRADEpro was used to assess the quality of evidence for each outcome. • Endnote was used for: ○ Bibliography, citations, sifting and reference management • Evibase was used for ○ Data extraction and quality assessment / critical appraisal
XIII	Information sources – databases and dates	Clinical search databases to be used: Medline, Embase, Cochrane Library, Current Nursing and Allied Health Literature (CINAHL), PsycINFO, Healthcare Management Information Consortium (HMIC), Social Policy and Practice (SSP), Applied Social Sciences Index and Abstracts (ASSIA) Date: All years Health economics search databases to be used: Medline, Embase, NHSEED, HTA Date: Medline, Embase from 2014 NHSEED, HTA – All years Language: Restrict to English only
XIV	Identify if an update	Not applicable.
XV	Author contacts	https://www.nice.org.uk/guidance/indevelopment/gid-cgwave0799
XVI	Highlight if amendment to previous protocol	For details please see section 4.5 of Developing NICE guidelines: the manual.
XVII	Search strategy – for one database	For details please see Appendix B
XVIII	Data collection process – forms / duplicate	A standardised evidence table format can be found in Appendix D.
XIX	Data items – define all variables to be collected	For details please see evidence tables in Appendix D (clinical evidence tables) or G (health economic evidence tables).

XX	Methods for assessing bias at outcome / study level	Standard study checklists were used to critically appraise individual studies. For details please see section 6.2 of Developing NICE guidelines: the manual The risk of bias across all available evidence was evaluated for each outcome using an adaptation of the 'Grading of Recommendations Assessment, Development and Evaluation (GRADE) toolbox' developed by the international GRADE working group http://www.gradeworkinggroup.org/ [Please document any deviations/alternative approach when GRADE isn't used or if a modified GRADE approach has been used for non-intervention or non-comparative studies.]
XXI	Criteria for quantitative synthesis	For details please see section 6.4 of Developing NICE guidelines: the manual.
XXII	Methods for quantitative analysis – combining studies and exploring (in)consistency	For details please see the separate Methods report for this guideline.
XXIII	Meta-bias assessment – publication bias, selective reporting bias	For details please see section 6.2 of Developing NICE guidelines: the manual.
XXIV	Confidence in cumulative evidence	For details please see sections 6.4 and 9.1 of Developing NICE guidelines: the manual.
XXV	Rationale / context – what is known	For details please see the introduction to the evidence review.
XXVI	Describe contributions of authors and guarantor	A multidisciplinary committee [https://www.nice.org.uk/guidance/indevelopment/gid-cgwave0799] developed the evidence review. The committee was convened by the National Guideline Centre (NGC) and chaired by Mark Thomas in line with section 3 of Developing NICE guidelines: the manual. Staff from NGC undertook systematic literature searches, appraised the evidence, conducted meta-analysis and cost-effectiveness analysis where appropriate, and drafted the evidence review in collaboration with the committee. For details please see Developing NICE guidelines: the manual.
XXVII	Sources of funding / support	NGC is funded by NICE and hosted by the Royal College of Physicians.
XXVIII	Name of sponsor	NGC is funded by NICE and hosted by the Royal College of Physicians.
XXIX	Roles of sponsor	NICE funds NGC to develop guidelines for those working in the NHS, public health and social care in England.
XXX	PROSPERO registration number	Not registered

Table 14: Health economic review protocol

Review question	All questions – health economic evidence
Objectives	To identify health economic studies relevant to any of the review questions.
Search criteria	Populations, interventions and comparators must be as specified in the clinical review protocol above. Studies must be of a relevant health economic study design (cost–utility analysis, cost-effectiveness analysis, cost–benefit analysis, cost–consequences analysis, comparative cost analysis). Studies must not be a letter, editorial or commentary, or a review of health economic evaluations. (Recent reviews will be ordered although not reviewed. The bibliographies will be checked for relevant studies, which will then be ordered.) Unpublished reports will not be considered unless submitted as part of a call for evidence. Studies must be in English.
Search strategy	A health economic study search will be undertaken using population-specific terms and a health economic study filter – see Appendix G [in the Full guideline]
Review strategy	Studies not meeting any of the search criteria above will be excluded. Studies published before 2007, abstract-only studies and studies from non-OECD countries or the USA will also be excluded. Each remaining study will be assessed for applicability and methodological limitations using the NICE economic evaluation checklist which can be found in Appendix H of Developing NICE guidelines: the manual (2014).[121] Inclusion and exclusion criteria If a study is rated as both 'Directly applicable' and with 'Minor limitations' then it will be included in the guideline. A health economic evidence table will be completed and it will be included in the health economic evidence profile. If a study is rated as either 'Not applicable' or with 'Very serious limitations' then it will usually be excluded from the guideline. If it is excluded then a health economic evidence table will not be completed and it will not be included in the health economic evidence profile. If a study is rated as 'Partially applicable', with 'Potentially serious limitations' or both then there is discretion over whether it should be included. Where there is discretion The health economist will make a decision based on the relative applicability and quality of the available evidence for that question, in discussion with the guideline committee if required. The ultimate aim is to include health economic studies that are helpful for decision-making in the context of the guideline and the current NHS setting. If several studies are considered of sufficiently high applicability and methodological quality that they could all be included, then the health economist, in discussion with the committee if required, may decide to include only the most applicable studies and to selectively exclude the remaining studies. All studies excluded on the basis of applicability or methodological limitations will be listed with explanation as excluded health economic studies in Appendix M. The health economist will be guided by the following hierarchies.

Review question	All questions – health economic evidence
	Setting: UK NHS (most applicable). OECD countries with predominantly public health insurance systems (for example, France, Germany, Sweden). OECD countries with predominantly private health insurance systems (for example, Switzerland). Studies set in non-OECD countries or in the USA will be excluded before being assessed for applicability and methodological limitations. Health economic study type: Cost–utility analysis (most applicable). Other type of full economic evaluation (cost–benefit analysis, cost-effectiveness analysis, cost–consequences analysis). Comparative cost analysis. Non-comparative cost analyses including cost-of-illness studies will be excluded before being assessed for applicability and methodological limitations. Year of analysis: The more recent the study, the more applicable it will be. Studies published in 2007 or later but that depend on unit costs and resource data entirely or predominantly from before 2007 will be rated as 'Not applicable'. Studies published before 2007 will be excluded before being assessed for applicability and methodological limitations. Quality and relevance of effectiveness data used in the health economic analysis: The more closely the clinical effectiveness data used in the health economic analysis match with the outcomes of the studies included in the clinical review the more useful the analysis will be for decision-making in the guideline.

Appendix B: Literature search strategies

The literature searches for this review are detailed below and complied with the methodology outlined in Developing NICE guidelines: the manual 2014, updated 2017 https://www.nice.org.uk/guidance/pmg20/resources/developing-nice-guidelines-the-manual-pdf-72286708700869

For more detailed information, please see the Methodology Review.

B.1 Clinical search literature search strategy

Searches for were constructed using a PICO framework where population (P) terms were combined with Intervention (I) and in some cases Comparison (C) terms. Outcomes (O) are rarely used in search strategies for interventions as these concepts may not be well described in title, abstract or indexes and therefore difficult to retrieve. Search filters were applied to the search where appropriate.

Table 15: Database date parameters and filters used

Database	Dates searched	Search filter used
Medline (Ovid)	1946 – 04 January 2019	Exclusions
Embase (Ovid)	1974 – 04 January 2019	Exclusions
The Cochrane Library (Wiley)	Cochrane Reviews to Issue 1 of 12, January 2019	None

Database	Dates searched	Search filter used
	CENTRAL to Issue 1 of 12, January 2019 DARE, and NHSEED to Issue 2 of 4 2015 HTA to Issue 4 of 4 2016	
CINAHL, Current Nursing and Allied Health Literature (EBSCO)	Inception – 04 January 2019	Limiters - English Language; Exclude MEDLINE records; Publication Type: Clinical Trial, Journal Article, Meta Analysis, Randomized Controlled Trial, Systematic Review: Age Groups: All Adult; Language: English
PsycINFO (ProQuest)	Inception – 04 January 2019	Study type
HMIC. Healthcare Management Information Consortium (Ovid)	1979 – 04 January 2019	Exclusions
SPP, Social Policy and Practice	1981 – 04 January 2019	Study types
ASSIA, Applied Social Sciences Index and Abstracts (ProQuest)	1987 – 04 January 2019	None

Medline (Ovid) search terms

1.	Palliative care/
2.	Terminal care/
3.	Hospice care/
4.	palliat*.ti,ab.
5.	Terminally Ill/
6.	((terminal* or long term or longterm) adj2 (care* or caring or ill*)).ti,ab.
7.	((dying or terminal) adj (phase* or stage*)).ti,ab.
8.	life limit*.ti,ab.
9.	Nursing Homes/
10.	((care or nursing) adj2 (home or homes)).ti,ab.
11.	Respite Care/
12.	((respite or day) adj2 (care or caring)).ti,ab.
13.	Hospices/
14.	hospice*.ti,ab.
15.	*Patient care planning/
16.	*"Continuity of Patient Care"/
17.	((advance* or patient*) adj3 (care or caring) adj3 (continu* or plan*)).ti,ab.
18.	*Attitude to Death/
19.	(attitude* adj3 (death* or dying*)).ti,ab.
20.	*Physician-Patient Relations/
21.	*Long-Term Care/
22.	*"Delivery of Health Care"/
23.	(end adj2 life).ti,ab.

24.	EOLC.ti,ab.
25.	((last or final) adj2 (year or month*) adj2 life).ti,ab.
26.	((dying or death) adj2 (patient* or person* or people or care or caring)).ti,ab.
27.	or/1-26
28.	letter/
29.	editorial/
30.	news/
31.	exp historical article/
32.	Anecdotes as Topic/
33.	comment/
34.	case report/
35.	(letter or comment*).ti.
36.	or/28-35
37.	randomized controlled trial/ or random*.ti,ab.
38.	36 not 37
39.	animals/ not humans/
40.	exp Animals, Laboratory/
41.	exp Animal Experimentation/
42.	exp Models, Animal/
43.	exp Rodentia/
44.	(rat or rats or mouse or mice).ti.
45.	or/38-44
46.	27 not 45
47.	limit 46 to English language
48.	(exp child/ or exp pediatrics/ or exp infant/) not (exp adolescent/ or exp adult/ or exp middle age/ or exp aged/)
49.	47 not 48
50.	After-Hours Care/
51.	((morning* or evening* or weekday or weekend* or 7 day or seven day or seven-day or after-hour* or 24 hour* or 24hour* or twenty-four-hour* or out-of-hour* or 9-5 or Monday-Friday or Saturday or Sunday) adj3 (service* or access* or availab* or hour* or appointment* or care or caring or palliativ* or pharmacy* or telephone* or advic* or advis* or consult* or support* or nurs* or speciali* or physician* or doctor* or expert* or professional* or paramedic* or general practioner* or GP* or social worker* or case worker* or ambulance* or health worker* or physiotherapist* or therapist*)).ti,ab.
52.	rapid response.ti,ab.
53.	Hospital Rapid Response Team/
54.	(critical care adj2 outreach).ti,ab.
55.	medical emergency team*.ti,ab.
56.	(hospital* adj2 home*).ti,ab.
57.	hospital at night.ti,ab.
58.	("NHS 111" or "NHS 24" or "NHS Direct").ti,ab.
59.	exp telemedicine/
60.	(telehealth* or tele-health* or telemedicine* or tele-medicine* or teleconsult* or tele-consult* or tele-monitor* or telemonitor* or telemanag* or tele-manag* or telepharm* or tele-pharm* or telenurs* or tele-nurs* or tele-homecare or telehomecare or tele-support or telesupport or mobile health or ehealth or e-health or mhealth or m-health).ti,ab.
61.	hotlines/

62.	(hotline* or helpline* or help-line* or call cent* or call service*).ti,ab.
63.	((email* or e-mail* or telephone* or phone* or video*) adj3 (servic* or advic* or advis* or consult* or support* or care* or caring* or appoint*)).ti,ab.
64.	or/50-63
65.	49 and 64
66.	(commission* adj2 (support* or service* or model*)).ti,ab.
67.	((service* or program* or co-ordinat* or co ordinat* or coordinat*) adj2 (model* or deliver* or strateg* or support* or access* or method* or system* or policies or policy or availab*)).ti,ab.
68.	Critical Pathways/
69.	((critical or clinic* or service* or care) adj2 path*).ti,ab.
70.	Patient Care Bundles/
71.	(care adj2 (bundle* or service* or package* or standard*)).ti,ab.
72.	or/66-71
73.	(assess* or criteria* or predict* or recogni* or identif* or refer*).ti,ab.
74.	49 and 72 and 73
75.	gold standard*.ti,ab.
76.	49 and 75
77.	(amber adj2 bundle).ti,ab.
78.	74 or 76 or 77
79.	patient care team/
80.	interdisciplinary communication/
81.	(((interdisciplin* or inter-disciplin* or interprofession* or inter-profession* or multidisciplin* or multi-disciplin* or multi-profession* or multiprofession* or transprofession* or trans-profession*) adj2 (team* or staff* or meeting* or manag* or appointment* or system* or program* or practic* or advic* or advis* or caring or intervention* or ward* or round* or panel* or forum* or fora or communicat* or collaborat* or relat*)) or MDT or IDT).ti,ab.
82.	(((integrat* or network*) adj2 (team* or staff* or meeting* or manag* or appointment* or system* or program* or practic* or advic* or advis* or caring or intervention* or ward* or round* or panel* or forum* or fora or communicat* or collaborat* or relat*)) or MDT or IDT).ti,ab.
83.	(key adj2 work*).ti,ab.
84.	((healthcare or care) adj2 (lead or leader or leads or facilitat*)).ti,ab.
85.	((healthcare or care) adj1 profession*).ti,ab.
86.	*Case Management/
87.	(case adj2 manage*).ti,ab.
88.	(co-ordinator* or coordinator* or coordinate* or co-ordinate*).ti,ab.
89.	Or/79-88
90.	interdisciplinary communication/
91.	exp Communication Barriers/
92.	(communicat* or discuss* or speak* or talk* or convers* or contact).ti,ab.
93.	((handover or hand over or share or shared or sharing or transfer*) adj3 information*).ti,ab.
94.	(followup or follow up).ti,ab.
95.	(palliativ* adj2 (care or caring)).ti,ab.
96.	Or/90-95
97.	49 and 89 and 96

98.	Social Welfare/ec, ed, es, eh, ma, st, sn, td [Economics, Education, Ethics, Ethnology, Manpower, Standards, Statistics & Numerical Data, Trends]
99.	Charities/ec, ed, es, ma, mt, og, st, sn, sd, td, ut [Economics, Education, Ethics, Manpower, Methods, Organization & Administration, Standards, Statistics & Numerical Data, Supply & Distribution, Trends, Utilization]
100.	Home Care Services/ec, ed, es, ma, mt, og, st, sn, sd, td, ut [Economics, Education, Ethics, Manpower, Methods, Organization & Administration, Standards, Statistics & Numerical Data, Supply & Distribution, Trends, Utilization]
101.	Community Health Nursing/ec, ed, es, ma, mt, og, st, sn, sd, td, ut [Economics, Education, Ethics, Manpower, Methods, Organization & Administration, Standards, Statistics & Numerical Data, Supply & Distribution, Trends, Utilization]
102.	Telemedicine/ec, es, ma, mt, og, st, sn, td, ut [Economics, Ethics, Manpower, Methods, Organization & Administration, Standards, Statistics & Numerical Data, Trends, Utilization]
103.	exp remote consultation/
104.	*telemedicine/ or *telepathology/ or *teleradiology/ or *telerehabilitation/
105.	(telemedicine or tele medicine or telehealth or tele health or virtual hospital* or helpline* or help line* or rapid response team* or telepathology or teleradiology or telerehabilitatio).ti,ab.
106.	((tele* or remote) adj2 consult*).ti,ab.
107.	Mobile Health Units/ec, es, ma, og, st, sn, sd, td, ut [Economics, Ethics, Manpower, Organization & Administration, Standards, Statistics & Numerical Data, Supply & Distribution, Trends, Utilization]
108.	(mobile adj2 (health or care) adj2 unit*).ti,ab.
109.	(hospital-based home care or HBHC or hospital-based hospice care or acute hospital care).ti,ab.
110.	(hospital adj3 (domicil* or home)).ti,ab.
111.	home hospitali*ation.ti,ab.
112.	exp Home Care Agencies/
113.	(social adj (welfare or care)).ti,ab.
114.	(nurs* adj4 (home-visit* or home visit* or home-based or home based)).ti,ab.
115.	((district* or communit* or home or visit*) adj nurs*).ti,ab.
116.	(community adj2 (health care or healthcare or nursing or nurse*)).ti,ab.
117.	((hospitali*ation* or admission* or readmission* or admit*) adj3 (reduc* or avoid* or prevent* or inappropiate or increase* or risk*)).ti,ab.
118.	Or/98-117
119.	*"Continuity of Patient Care"/
120.	*Aftercare/ or *Patient discharge/ or *Patient handoff/ or *Patient transfer/ or *Transitional care/
121.	Patient Discharge Summaries/
122.	((patient* or person* or people or nursing* or clinic*) adj (discharg* or handover* or hand* over* or handoff* or hand off* or signout* or sign* out* or signover* or sign* over*)).ti,ab.
123.	((care or caring or serv*) adj2 (continu* or change* or transition* or transfer*)).ti,ab.
124.	(discharg* adj2 (facilitat* or rapid* or pathway* or path way* or plan* or program*)).ti,ab.
125.	Or/119-124
126.	exp Advance Care Planning/
127.	(advance* adj2 (plan* or decision* or directive*)).ti,ab.
128.	living will*.ti,ab.
129.	or/126-128

130.	Caregivers/
131.	Spouses/
132.	Family/
133.	(spouse* or wife or wives or husband* or carer* or caregiver* or care giver* or significant other* or friend* or partner* or family or families or individual* or sibling* or brother* or sister* or relative or relatives or mothers* or daughters* or father* or son or sons or uncle* or aunt* or grand mother* or grandmother* or grandfather* or grand father* or aunt* or uncle* or cousin* or niece* or nephew*).ti,ab.
134.	Or/130-133
135.	((replacement or break* or holiday* or respite) adj3 (care* or service*)).ti,ab.
136.	((communit* or support* or psychosocial* or psycholog*) adj3 (service* or group* or system*)).ti,ab.
137.	((group* or support* or psychosocial* or psycholog*) adj3 (selfhelp or self help or therap*)).ti,ab.
138.	((psychosocial* or psycholog*) adj2 support*).ti,ab.
139.	Self-Help Groups/
140.	exp social support/
141.	Counseling/
142.	(counseling or counselling*).ti,ab.
143.	(buddy* or buddies).ti,ab.
144.	((health* or medical*) adj2 check*).ti,ab.
145.	((spouse* or wife or wives or husband* or carer* or caregiver* or care giver* or significant other* or friend* or partner* or family or families or individual* or sibling* or brother* or sister* or relative or relatives or mothers* or daughters* or father* or son or sons or uncle* or aunt* or grand mother* or grandmother* or grandfather* or grand father* or aunt* or uncle* or cousin* or niece* or nephew*) adj3 (education or educate or educating or information or literature or leaflet* or booklet* or pamphlet* or website* or knowledge)).ti,ab.
146.	or/135-145
147.	49 and 134 and 146
148.	"referral and consultation"/
149.	(referral* or referred or referring or refer or refers or consult*).ti,ab.
150.	(recommend* or direct*).ti,ab.
151.	or/148-150
152.	(service* adj3 (provision* or deliver* or addition* or method* or time* or timing or frequent* or frequenc* or review* or ident* or assess*)).ti,ab.
153.	49 and (89 or 125 or 129 or 151 or 152)
154.	65 or 78 or 97 or 147 or 153

Embase (Ovid) search terms

1.	*Palliative therapy/
2.	*Terminal care/
3.	*Hospice care/
4.	palliat*.ti,ab.
5.	*Terminally ill patient/
6.	((terminal* or long term or longterm) adj2 (care* or caring or ill*)).ti,ab.
7.	((dying or terminal) adj (phase* or stage*)).ti,ab.
8.	life limit*.ti,ab.
9.	*Nursing home/

10.	((care or nursing) adj2 (home or homes)).ti,ab.
11.	*Respite Care/
12.	((respite or day) adj2 (care or caring)).ti,ab.
13.	*Hospice/
14.	hospice*.ti,ab.
15.	*Patient care planning/
16.	((advance* or patient*) adj3 (care or caring) adj3 (continu* or plan*)).ti,ab.
17.	*Patient care/
18.	*Attitude to Death/
19.	(attitude* adj3 (death* or dying*)).ti,ab.
20.	*Doctor patient relation/
21.	*Long term care/
22.	*Health care delivery/
23.	(end adj2 life).ti,ab.
24.	EOLC.ti,ab.
25.	((last or final) adj2 (year or month*) adj2 life).ti,ab.
26.	((dying or death) adj2 (patient* or person* or people or care or caring)).ti,ab.
27.	or/1-26
28.	letter.pt. or letter/
29.	note.pt.
30.	editorial.pt.
31.	case report/ or case study/
32.	(letter or comment*).ti.
33.	or/28-32
34.	randomized controlled trial/ or random*.ti,ab.
35.	33 not 34
36.	animal/ not human/
37.	nonhuman/
38.	exp Animal Experiment/
39.	exp Experimental Animal/
40.	animal model/
41.	exp Rodent/
42.	(rat or rats or mouse or mice).ti.
43.	or/35-42
44.	27 not 43
45.	(exp child/ or exp pediatrics/ or exp infant/) not (exp adolescent/ or exp adult/ or exp middle age/ or exp aged/)
46.	44 not 45
47.	limit 46 to English language
48.	(after hours care or after-hours care).ti,ab.
49.	((morning* or evening* or weekday or weekend* or 7 day or seven day or seven-day or after-hour* or 24 hour* or 24hour* or twenty-four-hour* or out-of-hour* or 9-5 or Monday-Friday or Saturday or Sunday) adj3 (service* or access* or availab* or hour* or appointment* or care or caring or palliativ* or pharmacy* or telephone* or advic* or advis* or consult* or support* or nurs* or speciali* or physician* or doctor* or expert* or professional* or paramedic* or general practioner* or GP* or social worker* or case worker* or ambulance* or health worker* or physiotherapist* or therapist*)).ti,ab.

50.	rapid response.ti,ab.
51.	rapid response team/
52.	(critical care adj2 outreach).ti,ab.
53.	medical emergency team*.ti,ab.
54.	(hospital* adj2 home*).ti,ab.
55.	hospital at night.ti,ab.
56.	("NHS 111" or "NHS 24" or "NHS Direct").ti,ab.
57.	exp telehealth/
58.	(telehealth* or tele-health* or telemedicine* or tele-medicine* or teleconsult* or tele-consult* or tele-monitor* or telemonitor* or telemanag* or tele-manag* or telepharm* or tele-pharm* or telenurs* or tele-nurs* or tele-homecare or telehomecare or tele-support or telesupport or mobile health or ehealth or e-health or mhealth or m-health).ti,ab.
59.	telephone/
60.	(hotline* or helpline* or help-line* or call cent* or call service*).ti,ab.
61.	((email* or e-mail* or telephone* or phone* or video*) adj3 (servic* or advic* or advis* or consult* or support* or care* or caring* or appoint*)).ti,ab.
62.	or/48-61
63.	47 and 62
64.	(commission* adj2 (support* or service* or model*)).ti,ab.
65.	((service* or program* or co-ordinat* or co ordinat* or coordinat*) adj2 (model* or deliver* or strateg* or support* or access* or method* or system* or policies or policy or availab*)).ti,ab.
66.	*Clinical Pathway/
67.	((critical or clinic* or service* or care) adj2 path*).ti,ab.
68.	*Care Bundle/
69.	(care adj2 (bundle* or service* or package* or standard*)).ti,ab.
70.	or/64-70
71.	(assess* or criteria* or predict* or recogni* or identif* or refer*).ti,ab.
72.	47 and 70 and 71
73.	gold standard*.ti,ab.
74.	47 and 73
75.	(amber adj2 bundle).ti,ab.
76.	72 or 74 or 75
77.	interdisciplinary communication/
78.	patient care team*.ti,ab.
79.	(((interdisciplin* or inter-disciplin* or interprofession* or inter-profession* or multidisciplin* or multi-disciplin* or multi-profession* or multiprofession* or transprofession* or trans-profession*) adj2 (team* or staff* or meeting* or manag* or appointment* or system* or program* or practic* or advic* or advis* or caring or intervention* or ward* or round* or panel* or forum* or fora or communicat* or collaborat* or relat*)) or MDT or IDT).ti,ab.
80.	(((integrat* or network*) adj2 (team* or staff* or meeting* or manag* or appointment* or system* or program* or practic* or advic* or advis* or caring or intervention* or ward* or round* or panel* or forum* or fora or communicat* or collaborat* or relat*)) or MDT or IDT).ti,ab.
81.	(key adj2 work*).ti,ab.
82.	((healthcare or care) adj2 (lead or leader or leads or facilitat*)).ti,ab.
83.	((healthcare or care) adj1 profession*).ti,ab.
84.	*Case Management/

85.	(case adj2 manage*).ti,ab.
86.	(co-ordinator* or coordinator* or coordinate* or co-ordinate*).ti,ab.
87.	Or/77-86
88.	(advance* adj2 (plan* or decision* or directive*)).ti,ab.
89.	living will*.ti,ab.
90.	88 or 89
91.	*Caregiver/
92.	*Spouse/
93.	*Family/
94.	(spouse* or wife or wives or husband* or carer* or caregiver* or care giver* or significant other* or friend* or partner* or family or families or individual* or sibling* or brother* or sister* or relative or relatives or mothers* or daughters* or father* or son or sons or uncle* or aunt* or grand mother* or grandmother* or grandfather* or grand father* or aunt* or uncle* or cousin* or niece* or nephew*).ti,ab.
95.	Or/91-94
96.	((replacement or break* or holiday* or respite) adj3 (care* or service*)).ti,ab.
97.	((communit* or support* or psychosocial* or psycholog*) adj3 (service* or group* or system*)).ti,ab.
98.	((group* or support* or psychosocial* or psycholog*) adj3 (selfhelp or self help or therap*)).ti,ab.
99.	((psychosocial* or psycholog*) adj2 support*).ti,ab.
100.	*Self-Help/
101.	*Social support/
102.	*Counseling/
103.	(counseling or counselling*).ti,ab.
104.	(buddy* or buddies).ti,ab.
105.	((health* or medical*) adj2 check*).ti,ab.
106.	((spouse* or wife or wives or husband* or carer* or caregiver* or care giver* or significant other* or friend* or partner* or family or families or individual* or sibling* or brother* or sister* or relative or relatives or mothers* or daughters* or father* or son or sons or uncle* or aunt* or grand mother* or grandmother* or grandfather* or grand father* or aunt* or uncle* or cousin* or niece* or nephew*) adj3 (education or educate or educating or information or literature or leaflet* or booklet* or pamphlet* or website* or knowledge)).ti,ab.
107.	or/96-106
108.	47 and 95 and 107
109.	interdisciplinary communication/
110.	(communicat* or discuss* or speak* or talk* or convers* or contact).ti,ab.
111.	((handover or hand over or share or shared or sharing or transfer*) adj3 information*).ti,ab.
112.	(followup or follow up).ti,ab.
113.	(palliativ* adj2 (care or caring)).ti,ab.
114.	Or/109-113
115.	47 and 87 and 114
116.	*social welfare/
117.	*community health nursing/ or *community care/
118.	*senior center/
119.	*telemedicine/ or *telehealth/
120.	*teleconsultation/

121.	(telehealth or tele health or virtual hospital* or helpline* or help line* or rapid response team* or mobile health unit*).ti,ab.
122.	*home care/ or *home health agency/ or *home monitoring/ or *home oxygen therapy/ or *home physiotherapy/ or *home rehabilitation/ or *home respiratory care/ or *respite care/ or *visiting nursing service/
123.	*health care personnel/ or *health auxiliary/ or *nursing home personnel/
124.	(telemedicine or tele medicine or telehealth or tele health or virtual hospital* or helpline* or help line* or rapid response team* or telepathology or teleradiology or telerehabilitatio).ti,ab.
125.	((tele* or remote) adj2 consult*).ti,ab.
126.	(mobile adj2 (health or care) adj2 unit*).ti,ab.
127.	(hospital-based home care or HBHC or hospital-based hospice care or acute hospital care).ti,ab.
128.	(hospital adj3 (domicil* or home)).ti,ab.
129.	home hospitali*ation.ti,ab.
130.	(social adj (welfare or care)).ti,ab.
131.	(nurs* adj4 (home-visit* or home visit* or home-based or home based)).ti,ab.
132.	((district* or communit* or home or visit*) adj nurs*).ti,ab.
133.	(community adj2 (health care or healthcare or nursing or nurse*)).ti,ab.
134.	((hospitali*ation* or admission* or readmission* or admit*) adj3 (reduc* or avoid* or prevent* or inappropiate or increase* or risk*)).ti,ab.
135.	Or/116-134
136.	*patient care/ or *case management/ or *patient care planning/ or *rapid response team/
137.	*aftercare/
138.	*hospital discharge/
139.	*clinical handover/
140.	*transitional care/
141.	*patient care planning/
142.	*medical record/
143.	((patient* or person* or people or nursing* or clinic*) adj (discharg* or handover* or hand* over* or handoff* or hand off* or signout* or sign* out* or signover* or sign* over*)).ti,ab.
144.	((care or caring or serv*) adj2 (continu* or change* or transition* or transfer*)).ti,ab.
145.	(discharg* adj2 (facilitat* or rapid* or pathway* or path way* or plan* or program*)).ti,ab.
146.	Or/136-145
147.	exp patient referral/
148.	(referral* or referred or referring or refer or refers or consult*).ti,ab.
149.	(recommend* or direct*).ti,ab.
150.	or/147-149
151.	(service* adj3 (provision* or deliver* or addition* or method* or time* or timing or frequent* or frequenc* or review* or ident* or assess*)).ti,ab.
152.	47 and (87 or 90 or 135 or 146 or 150 or 151)
153.	63 or 76 or 108 or 115 or 152

Cochrane Library (Wiley) search terms

#1.	MeSH descriptor: [Palliative Care] this term only
#2.	MeSH descriptor: [Terminal Care] this term only

#3.	MeSH descriptor: [Hospice Care] this term only
#4.	palliat*:ti,ab
#5.	MeSH descriptor: [Terminally Ill] this term only
#6.	((terminal* or long term or longterm) near/2 (care* or caring or ill*)):ti,ab
#7.	((dying or terminal) near (phase* or stage*)):ti,ab
#8.	life limit*:ti,ab
#9.	MeSH descriptor: [Nursing Homes] explode all trees
#10.	((care or nursing) near/2 (home or homes)):ti,ab
#11.	MeSH descriptor: [Respite Care] this term only
#12.	((respite or day) near/2 (care or caring)):ti,ab
#13.	MeSH descriptor: [Hospices] this term only
#14.	hospice*:ti,ab
#15.	MeSH descriptor: [Patient Care Planning] this term only
#16.	MeSH descriptor: [Continuity of Patient Care] this term only
#17.	((advance* or patient*) near/3 (care or caring) near/3 (continu* or plan*)):ti,ab
#18.	MeSH descriptor: [Attitude to Death] explode all trees
#19.	(attitude* near/3 (death* or dying*)):ti,ab
#20.	MeSH descriptor: [Physician-Patient Relations] this term only
#21.	MeSH descriptor: [Long-Term Care] this term only
#22.	MeSH descriptor: [Delivery of Health Care] this term only
#23.	(end near/2 life):ti,ab
#24.	EOLC:ti,ab
#25.	((last or final) near/2 (year or month*) near/2 life):ti,ab
#26.	((dying or death) near/2 (patient* or person* or people or care or caring)):ti,ab
#27.	(or #1-#26)
#28.	MeSH descriptor: [After-Hours Care] explode all trees
#29.	((morning* or evening* or weekday or weekend* or 7 day or seven day or seven-day or after-hour* or 24 hour* or 24hour* or twenty-four-hour* or out-of-hour* or 9-5 or Monday-Friday or Saturday or Sunday) near/3 (service* or access* or availab* or hour* or appointment* or care or caring or palliativ* or pharmacy* or telephone* or advic* or advis* or consult* or support* or nurs* or speciali* or physician* or doctor* or expert* or professional* or paramedic* or general practioner* or GP* or social worker* or case worker* or ambulance* or health worker* or physiotherapist* or therapist*)):ti,ab
#30.	rapid next response:ti,ab
#31.	MeSH descriptor: [Hospital Rapid Response Team] explode all trees
#32.	medical next emergency next team*:ti,ab
#33.	(hospital* near/2 home*):ti,ab
#34.	hospital next at next night:ti,ab
#35.	(NHS next (111 or 24 or direct)):ti,ab
#36.	MeSH descriptor: [Telemedicine] this term only
#37.	(telehealth* or tele-health* or telemedicine* or tele-medicine* or teleconsult* or tele-consult* or tele-monitor* or telemonitor* or telemanag* or tele-manag* or telepharm* or tele-pharm* or telenurs* or tele-nurs* or tele-homecare or telehomecare or tele-support or telesupport or mobile health or ehealth or e-health or mhealth or m-health):ti,ab
#38.	MeSH descriptor: [Hotlines] explode all trees
#39.	(hotline* or helpline* or help-line* or call cent* or call service*):ti,ab
#40.	((email* or e-mail* or telephone* or phone* or video*) near/3 (servic* or advic* or advis* or consult* or support* or care* or caring* or appoint*)):ti,ab

#41.	(or #28-#40)
#42.	#27 and #41
#43.	(commission* near/2 (support* or service* or model*)):ti,ab
#44.	((service* or program* or co-ordinat* or co ordinat* or coordinat*) near/2 (model* or deliver* or strateg* or support* or access* or method* or system* or policies or policy or availab*)):ti,ab
#45.	MeSH descriptor: [Critical Pathways] explode all trees
#46.	((critical or clinic* or service* or care) near/2 path*):ti,ab
#47.	MeSH descriptor: [Patient Care Bundles] explode all trees
#48.	(care near/2 (bundle* or service* or package* or standard*)):ti,ab
#49.	(or #43-#38)
#50.	(assess* or criteria* or predict* or recogni* or identif* or refer*):ti,ab
#51.	#27 and #49 and #50
#52.	gold standard*:ti,ab
#53.	#27 and #52
#54.	(amber near/2 bundle):ti,ab
#55.	#51 or #53 or #54
#56.	MeSH descriptor: [Patient Care Team] explode all trees
#57.	MeSH descriptor: [Interdisciplinary Communication] explode all trees
#58.	(((interdisciplin* or inter-disciplin* or interprofession* or inter-profession* or multidisciplin* or multi-disciplin* or multi-profession* or multiprofession* or transprofession* or trans-profession*) near/2 (team* or staff* or meeting* or manag* or appointment* or system* or program* or practic* or advic* or advis* or caring or intervention* or ward* or round* or panel* or forum* or fora or communicat* or collaborat* or relat*)) or MDT or IDT):ti,ab
#59.	((integrat* or network*) near/2 (team* or staff* or meeting* or manag* or appointment* or system* or program* or practic* or advic* or advis* or caring or intervention* or ward* or round* or panel* or forum* or fora or communicat* or collaborat* or relat*)):ti,ab
#60.	(key near/2 work*):ti,ab
#61.	((healthcare or care) near/2 (lead or leader or leads or facilitat*)):ti,ab
#62.	((healthcare or care) near/1 profession*):ti,ab
#63.	MeSH descriptor: [Case Management] this term only
#64.	(case near/2 manage*):ti,ab
#65.	(co-ordinator* or coordinator* or coordinate* or co-ordinate*):ti,ab
#66.	(or #56-#65)
#67.	MeSH descriptor: [Advance Care Planning] explode all trees
#68.	(advance* near/2 (plan* or decision* or directive*)):ti,ab
#69.	living will*:ti,ab
#70.	(or #67-#69)
#71.	MeSH descriptor: [Caregivers] this term only
#72.	MeSH descriptor: [Spouses] this term only
#73.	MeSH descriptor: [Family] this term only
#74.	(spouse* or wife or wives or husband* or carer* or caregiver* or care giver* or significant other* or friend* or partner* or family or families or individual* or sibling* or brother* or sister* or relative or relatives or mothers* or daughters* or father* or son or sons or uncle* or aunt* or grand mother* or grandmother* or grandfather* or grand father* or aunt* or uncle* or cousin* or niece* or nephew*):ti,ab
#75.	(or #71-#74)
#76.	((replacement or break* or holiday* or respite) near/3 (care* or service*)):ti,ab

#77.	((communit* or support* or psychosocial* or psycholog*) near/3 (service* or group* or system*)):ti,ab
#78.	((group* or support* or psychosocial* or psycholog*) near/3 (selfhelp or self help or therap*)):ti,ab
#79.	((psychosocial* or psycholog*) near/2 support*):ti,ab
#80.	MeSH descriptor: [Self-Help Groups] this term only
#81.	MeSH descriptor: [Social Support] explode all trees
#82.	MeSH descriptor: [Counseling] this term only
#83.	(counseling or counselling*):ti,ab
#84.	(buddy* or buddies):ti,ab
#85.	(health or medical*) near/3 check*:ti,ab
#86.	(spouse* or wife or wives or husband* or carer* or caregiver* or care giver* or significant other* or friend* or partner* or family or families or individual* or sibling* or brother* or sister* or relative or relatives or mothers* or daughters* or father* or son or sons or uncle* or aunt* or grand mother* or grandmother* or grandfather* or grand father* or aunt* or uncle* or cousin* or niece* or nephew*) near/3 (education or educate or educating or information or literature or leaflet* or booklet* or pamphlet* or website* or knowledge):ti,ab
#87.	(or #76-#86)
#88.	#27 and #75 and #87
#89.	MeSH descriptor: [Interdisciplinary Communication] explode all trees
#90.	MeSH descriptor: [Communication Barriers] explode all trees
#91.	(communicat* or discuss* or speak* or talk* or convers* or contact):ti,ab
#92.	((handover or hand over or share or shared or sharing or transfer*) near/3 information*):ti,ab
#93.	(followup or follow up):ti,ab
#94.	(palliativ* near/2 (care or caring)):ti,ab
#95.	(or #80-#94)
#96.	#27 and #66 and #95
#97.	MeSH descriptor: [Social Welfare] explode all trees
#98.	MeSH descriptor: [Charities] explode all trees
#99.	MeSH descriptor: [Adult Day Care Centers] explode all trees
#100.	MeSH descriptor: [Community Health Nursing] explode all trees
#101.	MeSH descriptor: [Home Care Services] explode all trees
#102.	MeSH descriptor: [Senior Centers] explode all trees
#103.	MeSH descriptor: [Telemedicine] this term only
#104.	MeSH descriptor: [Remote Consultation] explode all trees
#105.	(telehealth or tele health or virtual hospital* or helpline* or help line* or rapid response team*):ti,ab
#106.	MeSH descriptor: [Mobile Health Units] explode all trees
#107.	((community based or community dwelling home or rural) near/3 (care or health care or healthcare)):ti,ab
#108.	(hospital-based home care or HBHC or hospital-based hospice care or acute hospital care):ti,ab
#109.	((hospitali*ation* or admission* or readmission* or admit*) near/3 (reduc* or avoid* or prevent* or inappropiate or increase* or risk*)):ti,ab
#110.	(home based versus hospital based):ti,ab
#111.	(hospital near/3 (domicil* or home)):ti,ab
#112.	(home hospitali*ation):ti,ab

#113.	MeSH descriptor: [Home Care Services, Hospital-Based] explode all trees
#114.	MeSH descriptor: [Home Health Nursing] explode all trees
#115.	MeSH descriptor: [Homemaker Services] explode all trees
#116.	MeSH descriptor: [Home Care Agencies] explode all trees
#117.	MeSH descriptor: [Home Health Aides] explode all trees
#118.	(social care):ti,ab
#119.	MeSH descriptor: [Nurses, Community Health] explode all trees
#120.	(nurs* near/4 (home-visit* or home visit* or home-based or home based)):ti,ab
#121.	((district* or communit* or home or visit*) near nurs*):ti,ab
#122.	(Or #97-#121)
#123.	MeSH descriptor: [Continuity of Patient Care] this term only
#124.	MeSH descriptor: [Aftercare] this term only
#125.	MeSH descriptor: [Patient Discharge] this term only
#126.	MeSH descriptor: [Patient Handoff] this term only
#127.	MeSH descriptor: [Patient Transfer] this term only
#128.	MeSH descriptor: [Transitional Care] this term only
#129.	MeSH descriptor: [Patient Discharge Summaries] this term only
#130.	((patient* or person* or people or nursing* or clinic*) near (discharg* or handover* or hand* over* or handoff* or hand off* or signout* or sign* out* or signover* or sign* over*)):ti,ab
#131.	((care or caring or serv*) near/2 (continu* or change* or transition* or transfer*)):ti,ab
#132.	(discharg* near/2 (facilitat* or rapid* or pathway* or path way* or plan* or program*)):ti,ab
#133.	(or #123-#132)
#134.	MeSH descriptor: [Referral and Consultation] explode all trees
#135.	(referral* or referred or referring or refer or refers or consult*):ti,ab
#136.	(recommend* or direct*):ti,ab
#137.	(or #134-#136)
#138.	service* near/3 (provision* or deliver* or addition* or method* or time* or timing or frequent* or frequenc* or review* or ident* or assess*):ti,ab
#139.	#27 and(#66 or #70 or #122 or #133 or #137 or #138)
#140.	#42 or #55 or #88 or #96 or #139

CINAHL (EBSCO) search terms

S1.	MH Palliative care
S2.	MH Terminal care
S3.	MH Hospice care
S4.	TI palliat* OR AB palliat*
S5.	MW Terminally ill
S6.	TI (terminal* or long term or longterm) AND TI (care* or caring or ill*)
S7.	AB (terminal* or long term or longterm) AND AB (care* or caring or ill*)
S8.	TI (dying or terminal) AND TI (phase* or stage*)
S9.	AB (dying or terminal) AND AB (phase* or stage*)
S10.	TI life limit* OR AB life limit*
S11.	MH Nursing homes
S12.	TI (care or nursing) AND TI (home or homes)
S13.	AB (care or nursing) AND AB (home or homes)

S14.	MH Respite care
S15.	TI (respite or day) AND TI (care or caring)
S16.	AB (respite or day) AND AB (care or caring)
S17.	MH Hospices
S18.	TI Hospice* OR AB Hospice*
S19.	(MH "Patient Care Plans")
S20.	(MH "Continuity of Patient Care")
S21.	TI (advance* or patient*) AND TI (care or caring) AND TI (continu* or plan*)
S22.	AB (advance* or patient*) AND AB (care or caring) AND AB (continu* or plan*)
S23.	MH Attitude to Death
S24.	TI attitude* AND TI (death* or dying)
S25.	AB attitude* AND AB (death* or dying)
S26.	MH Physician-Patient Relations
S27.	(MH "Long Term Care")
S28.	(MH "Health Care Delivery")
S29.	TI end AND TI life OR AB end AND AB life
S30.	TI EOLC OR AB EOLC
S31.	TI (last or final) AND TI (year or month) AND TI life
S32.	AB (last or final) AND AB (year or month) AND AB life
S33.	TI (dying or death) AND TI (patient* or person* or people or care or caring)
S34.	AB (dying or death) AND AB (patient* or person* or people or care or caring)
S35.	S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22 OR S23 OR S24 OR S25 OR S26 OR S27 OR S28 OR S29 OR S30 OR S31 OR S32 OR S33 OR S34
S36.	out of hours care
S37.	((morning* or evening* or weekday or weekend* or 7 day or seven day or seven-day or after-hour* or 24 hour* or 24hour* or twenty-four-hour* or out-of-hour* or 9-5 or Monday-Friday or Saturday or Sunday) n3 (service* or access* or availab* or hour* or appointment* or care or caring or palliativ* or pharmacy* or telephone* or advic* or advis* or consult* or support* or nurs* or speciali* or physician* or doctor* or expert* or professional* or paramedic* or general practioner* or GP* or social worker* or case worker* or ambulance* or health worker* or physiotherapist* or therapist*))
S38.	rapid response
S39.	(critical care n2 outreach) OR medical emergency team* OR (hospital* n2 home*) OR hospital at night
S40.	NHS 111 OR NHS 24 OR NHS Direct
S41.	(MH "Telemedicine") OR (MH "Telehealth")
S42.	(telehealth* or tele-health* or telemedicine* or tele-medicine* or teleconsult* or tele-consult* or tele-monitor* or telemonitor* or telemanag* or tele-manag* or telepharm* or tele-pharm* or telenurs* or tele-nurs* or tele-homecare or telehomecare or tele-support or telesupport or mobile health or ehealth or e-health or mhealth or m-health)
S43.	(MH "Telephone Information Services")
S44.	(hotline* or helpline* or help-line* or call cent* or call service*)
S45.	((email* or e-mail* or telephone* or phone* or video*) n3 (servic* or advic* or advis* or consult* or support* or care* or caring* or appoint*))
S46.	S36 OR S37 OR S38 OR S39 OR S40 OR S41 OR S42 OR S43 OR S44 OR S45
S47.	S35 AND S46
S48.	TI commission* AND TI ((support* or service* or model*))

S49.	AB commission* AND AB ((support* or service* or model*))
S50.	TI (service* or program* or co-ordinat* or co ordinat* or coordinat*) AND TI (model* or deliver* or strateg* or support* or access* or method* or system* or policies or policy or availab*)
S51.	AB (service* or program* or co-ordinat* or co ordinat* or coordinat*) AND AB (model* or deliver* or strateg* or support* or access* or method* or system* or policies or policy or availab*)
S52.	TI (critical or clinic* or service* or care) AND TI path*
S53.	AB (critical or clinic* or service* or care) AND AB path*
S54.	TI care AND TI (bundle* or service* or package* or standard*)
S55.	AB care AND AB (bundle* or service* or package* or standard*)
S56.	S48 OR S49 OR S50 OR S51 OR S52 OR S53 OR S54 OR S55
S57.	TI (assess* or criteria* or predict* or recogni* or identif* or refer*) OR AB (assess* or criteria* or predict* or recogni* or identif* or refer*)
S58.	S35 AND S56 AND S57
S59.	TI gold standard* OR AB gold standard*
S60.	S35 AND S59
S61.	TI amber AND TI bundle
S62.	AB amber AND AB bundle
S63.	S61 OR S62
S64.	S58 OR S60 OR S63
S65.	(MH "Multidisciplinary Care Team+")
S66.	MDT OR IDT
S67.	((interdisciplin* or inter-disciplin* or interprofession* or inter-profession* or multidisciplin* or multi-disciplin* or multi-profession* or multiprofession* or transprofession* or trans-profession*) n2 (team* or staff* or meeting* or manag* or appointment* or system* or program* or practic* or advic* or advis* or caring or intervention* or ward* or round* or panel* or forum* or fora or communicat* or collaborat* or relat*))
S68.	((integrat* or network*) n2 (team* or staff* or meeting* or manag* or appointment* or system* or program* or practic* or advic* or advis* or caring or intervention* or ward* or round* or panel* or forum* or fora or communicat* or collaborat* or relat*))
S69.	TI (key n2 work*) OR AB (key n2 work*)
S70.	TI (((healthcare or care) n2 (lead or leader or leads or facilitat*))) OR AB (((healthcare or care) n2 (lead or leader or leads or facilitat*)))
S71.	TI (((healthcare or care) n1 profession*)) OR AB (((healthcare or care) n1 profession*))
S72.	MH Case Management
S73.	TI (case n2 manage*) OR AB (case n2 manage*)
S74.	TI ((co-ordinator* or coordinator* or coordinate* or co-ordinate*)*)) OR AB ((co-ordinator* or coordinator* or coordinate* or co-ordinate*))
S75.	S65 OR S66 OR S67 OR S68 OR S69 OR S70 OR S71 OR S72 OR S73 OR S74
S76.	TI advance* AND TI (plan* or decision* or directive*)
S77.	AB advance* AND AB (plan* or decision* or directive*)
S78.	S76 OR S77
S79.	MeSH descriptor: [Interdisciplinary Communication] explode all trees
S80.	MeSH descriptor: [Communication Barriers] explode all trees
S81.	(communicat* or discuss* or speak* or talk* or convers* or contact):ti,ab
S82.	((handover or hand over or share or shared or sharing or transfer*) near/3 information*):ti,ab

S83.	(followup or follow up):ti,ab
S84.	(palliativ* near/2 (care or caring)):ti,ab
S85.	S79 OR S80 OR S81 OR S82 OR S83 OR S84
S86.	S35 AND S75 AND S85
S87.	(MM "Social Welfare")
S88.	(MH "Charities")
S89.	(MM "Adult Day Center (Saba CCC)") OR (MM "Housing for the Elderly") OR (MM "Older Adult Care (Saba CCC)")
S90.	(MH "Community Health Nursing+") OR (MM "Community Health Centers")
S91.	(MH "Home Health Care+") OR (MM "Home Health Aides") OR (MM "Home Health Care Information Systems") OR (MM "Home Health Aide Service (Saba CCC)")
S92.	(MM "Housing for the Elderly") OR (MM "Rural Health Centers") OR (MM "Community Health Centers")
S93.	(MH "Telemedicine+") OR (MH "Telehealth+")
S94.	(MM "Remote Consultation") OR (MM "Telephone Consultation (Iowa NIC)") OR (MM "Services for Australian Rural and Remote Allied Health")
S95.	telehealth or tele health or virtual hospital* or helpline* or help line* or rapid response team* or senior center*
S96.	(MM "Rural Health Personnel") OR (MM "Mobile Health Units")
S97.	remote consultation
S98.	((community based or community dwelling home or rural) n3 (care or health care or healthcare))
S99.	hospital-based home care or HBHC or hospital-based hospice care or acute hospital care
S100.	((hospitali?ation* or admission* or readmission* or admit*) n3 (reduc* or avoid* or prevent* or inappropiate or increase* or risk*))
S101.	home based versus hospital based
S102.	(hospital n3 (domicil* or home))
S103.	home hospitali?ation
S104.	home care service*
S105.	(MM "Home Health Agencies") OR (MM "Nursing Home Personnel")
S106.	(MM "Homemaker Services") OR (MM "Health Services for the Aged")
S107.	(MH "Home Health Care+") OR (MM "Home Care Equipment and Supplies") OR (MH "Nursing Homes") OR (MM "National Association for Home Care & Hospice") OR (MM "Nursing Home Patients")
S108.	social care
S109.	(MM "Hospitals, Community")
S110.	(MM "Home Nursing") OR (MM "Home Nursing, Professional")
S111.	(nurs* n4 (home-visit* or home visit* or home-based or home based))
S112.	((district* or communit* or home or visit*) n nurs*)
S113.	S87 OR S88 OR S89 OR S90 OR S91 OR S92 OR S93 OR S94 OR S95 OR S96 OR S97 OR S98 OR S99 OR S100 OR S101 OR S102 OR S103 OR S104 OR S105 OR S106 OR S107 OR S108 OR S109 OR S110 OR S111 OR S112
S114.	MH Continuity of Patient Care OR MH Aftercare OR MH Patient discharge OR MH Patient handoff OR MH Patient transfer OR MH Transitional care
S115.	(MM "Discharge Planning") OR (MM "Patient Discharge Summaries")
S116.	TI (((patient* or person* or people or nursing* or clinic*)) AND TX ((discharg* or handover* or hand* over* or handoff* or hand off* or signout* or sign* out* or signover* or sign* over*))

S117.	AB (((patient* or person* or people or nursing* or clinic*)) AND AB ((discharg* or handover* or hand* over* or handoff* or hand off* or signout* or sign* out* or signover* or sign* over*))
S118.	AB ((care or caring or serv*)) AND AB ((continu* or change* or transition* or transfer*))
S119.	TI ((care or caring or serv*)) AND TI ((continu* or change* or transition* or transfer*))
S120.	TI discharg* AND TI (facilitat* or rapid* or pathway* or path way* or plan* or program*))
S121.	AB discharg* AND AB (facilitat* or rapid* or pathway* or path way* or plan* or program*))
S122.	S1114 OR S115 OR S116 OR S117 OR S118 OR S119 OR S120 OR S121
S123.	(MH "Referral and Consultation+")
S124.	TI (referral* or referred or referring or refer or refers or consult*) OR AB (referral* or referred or referring or refer or refers or consult*)
S125.	TI (recommend* or direct*) OR AB (recommend* or direct*)
S126.	S123 OR S124 OR S125
S127.	TX service* AND TX (provision* or deliver* or addition* or method* or time* or timing or frequent* or frequenc* or review* or ident* or assess*)
S128.	AB service* AND AB (provision* or deliver* or addition* or method* or time* or timing or frequent* or frequenc* or review* or ident* or assess*)
S129.	S127 OR S128
S130.	S35 AND (S75 OR S78 OR S113 OR S122 OR S126 OR S129)
S131.	S47 OR S64 OR S86 OR S130

PsycINFO (ProQuest) search terms

1.	(ti,ab(commission* NEAR/2 (support* OR service* OR model*)) OR ((service* OR program* OR co-ordinat* OR coordinat*) NEAR/2 (model* OR deliver* OR strateg* OR support* OR access* OR method* OR system* OR policies OR policy OR availab*))) AND (SU.EXACT("Palliative Care") OR SU.EXACT("Terminally Ill Patients") OR SU.EXACT("Hospice") OR ti,ab(palliat*) OR ti,ab((terminal* OR long-term OR longterm) NEAR/2 (care* OR caring OR ill*)) OR ti,ab((dying OR terminal) NEAR/1 (phase* OR stage*)) OR ti,ab(life-limit*) OR SU.EXACT("Nursing Homes") OR ti,ab((care OR nursing) NEAR/2 (home OR homes)) OR SU.EXACT("Respite Care") OR ti,ab((respite OR day) NEAR/2 (care OR caring)) OR ti,ab(hospice*) OR MJSUB.EXACT("Treatment Planning") OR MJSUB.EXACT("Continuum of Care") OR ti,ab((advance* OR patient*) NEAR/3 (care OR caring) NEAR/3 (continu* OR plan*)) OR MJSUB.EXACT("Long Term Care") OR ti,ab(attitude* NEAR/3 (death* OR dying*)) OR ti,ab(end NEAR/2 life) OR ti,ab(EOLC) OR ti,ab((last OR final) NEAR/2 (year OR month*) NEAR/2 life) OR ti,ab((dying OR death) NEAR/2 (patient* OR person* OR people OR care OR caring)))
2.	Adolescence (13-17 Yrs), Adulthood (18 Yrs & Older), Aged (65 Yrs & Older), Middle Age (40-64 Yrs), Thirties (30-39 Yrs), Very Old (85 Yrs & Older), Young Adulthood (18-29 Yrs)
3.	1 and 2
4.	Conference Proceedings, Journal Article, Peer Reviewed Journal
5.	3 and 4

HMIC (Ovid) search terms

1.	exp End of life care/
2.	(terminal* adj ill*).ti,ab.
3.	((dying or terminal) adj (phase* or stage*)).ti,ab.
4.	life limit*.ti,ab.
5.	(end adj2 life).ti,ab.

6.	EOLC.ti,ab.
7.	((last or final) adj2 (year or month*) adj2 life).ti,ab.
8.	((dying or death) adj2 (patient* or person* or people or care or caring)).ti,ab.
9.	or/2-8
10.	(exp child/ or exp Paediatrics/ or exp infant/) not (exp adolescent/ or exp adult/ or exp middle age/ or exp older people/)
11.	9 not 10
12.	limit 11 to English
13.	limit 12 to (audiovis or book or chapter dh helmis or circular or microfiche dh helmis or multimedias or website)
14.	limit 12 to (audiocass or books or cdrom or chapter or dept pubs or diskettes or folio pamp or "map" or marc or microfiche or multimedia or pamphlet or parly or press or press rel or thesis or trustdoc or video or videos or website)
15.	13 or 14
16.	12 not 15
17.	euthanasia/
18.	euthanasia.ti,ab.
19.	17 or 18
20.	16 not 19

SPP (Ovid) search terms

1.	palliat*.ti,ab.
2.	((dying or terminal) adj (phase* or stage*)).ti,ab.
3.	life limit*.ti,ab.
4.	hospice*.ti,ab.
5.	(advance* adj2 (plan* or decision* or directive*)).ti,ab.
6.	living will*.ti,ab.
7.	((advance* or patient*) adj3 (care or caring) adj3 (continu* or plan*)).ti,ab.
8.	(attitude* adj3 (death* or dying*)).ti,ab.
9.	(end adj2 life).ti,ab.
10.	EOLC.ti,ab.
11.	((last or final) adj2 (year or month*) adj2 life).ti,ab.
12.	((dying or death) adj2 (patient* or person* or people or care or caring)).ti,ab.
13.	(nursing adj2 (home or homes)).ti,ab.
14.	(terminal* adj2 ill*).ti,ab.
15.	(respite adj2 (care or caring)).ti,ab.
16.	or/1-15
17.	(child* or infant*).ti,ab.
18.	(adult* or adolescent*).ti,ab.
19.	17 not 18
20.	16 not 19
21.	limit 20 to (journal or journal article or online resource or online report or report)

ASSIA (ProQuest) search terms

1.	palliat*.ti,ab. ((ti,ab(commission* N/2 (support* or service* or model*)) OR ti,ab((service* or program* or co-ordinat* or coordinat*) N/2 (model* or deliver* or strateg* or support* or access* or method* or system* or policies or policy or availab*))) AND ((SU.EXACT("Care" OR "Clinical nursing" OR "Community homes" OR "Community nursery nursing" OR "Community nursing" OR "Compassionate care" OR

	"Continuing care" OR "District nursing" OR "Family centred care" OR "Geriatric wards" OR "Group care" OR "Health visiting" OR "Home care" OR "Home from home care" OR "Home health aides" OR "Home helps" OR "Hospices" OR "Hostel wards" OR "Informal care" OR "Integrated care pathways" OR "Intentional care" OR "Intermediate care" OR "Intermediate care centres" OR "Lack of care" OR "Learning disability nursing" OR "Length of stay" OR "Liaison nursing" OR "Long stay wards" OR "Long term care" OR "Long term home care" OR "Long term residential care" OR "Nurse led care" OR "Nursing" OR "Occupational health nursing" OR "Ontological care" OR "Out of home care" OR "Outreach nursing" OR "Palliative care" OR "Paranursing" OR "Pastoral care" OR "Patient care" OR "Primary nursing" OR "Private residential care" OR "Process centred care" OR "Quality of care" OR "Radical health visiting" OR "Residential care" OR "Residential group care" OR "Respite care" OR "Shared care" OR "Social care" "Temporary care" OR "Terminal care" OR "Wards") OR (SU.EXACT("Terminally ill elderly people") OR SU.EXACT("Terminally ill fathers") OR SU.EXACT("Terminally ill elderly men") OR SU.EXACT("Terminally ill elderly women") OR SU.EXACT("Terminally ill young adults") OR SU.EXACT("Terminally ill parents") OR SU.EXACT("Terminally ill women") OR SU.EXACT("Terminally ill widowed sisters") OR SU.EXACT("Terminally ill colleagues") OR SU.EXACT("Terminally ill young girls") OR SU.EXACT("Terminally ill people") OR SU.EXACT("Terminally ill men")) OR SU.EXACT("Advance directives" OR "Do not resuscitate orders" OR "Durable power of attorney for health care" OR "Living wills" OR "Treatment preferences" OR "Treatment needs")) OR (ti,ab((advance* or patient*) N/3 (care or caring) N/3 (continu* or plan*)) or ti,ab(attitude* N/3 (death* or dying*)) or ti,ab(end N/2 life) or ti,ab(EOLC) or ti,ab((last or final) N/2 (year or month*) N/2 life) or ti,ab((dying or death) N/2 (patient* or person* or people or care or caring))))) OR SU.EXACT("End of life decisions")

B.2 Health Economics literature search strategy

Health economic evidence was identified by conducting a broad search relating to end of life care in NHS Economic Evaluation Database (NHS EED – this ceased to be updated after March 2015) and the Health Technology Assessment database (HTA) with no date restrictions. NHS EED and HTA databases are hosted by the Centre for Research and Dissemination (CRD). Additional searches were run on Medline and Embase for health economics, economic modelling and quality of life studies.

Table 16: Database date parameters and filters used

Database	Dates searched	Search filter used
Medline	2014 – 04 January 2019	Exclusions Health economics studies Health economics modelling studies Quality of life studies
Embase	2014 – 04 January 2019	Exclusions Health economics studies Health economics modelling studies Quality of life studies
Centre for Research and Dissemination (CRD)	HTA - Inception – 04 January 2019 NHSEED - Inception to March 2015	None

Medline (Ovid) search terms

1.	Palliative care/

2.	Terminal care/
3.	Hospice care/
4.	palliat*.ti,ab.
5.	Terminally Ill/
6.	((terminal* or long term or longterm) adj2 (care* or caring or ill*)).ti,ab.
7.	((dying or terminal) adj (phase* or stage*)).ti,ab.
8.	life limit*.ti,ab.
9.	Nursing Homes/
10.	((care or nursing) adj2 (home or homes)).ti,ab.
11.	Respite Care/
12.	((respite or day) adj2 (care or caring)).ti,ab.
13.	Hospices/
14.	hospice*.ti,ab.
15.	exp Advance Care Planning/
16.	(advance* adj2 (plan* or decision* or directive*)).ti,ab.
17.	living will*.ti,ab.
18.	*Patient care planning/
19.	*"Continuity of Patient Care"/
20.	((advance* or patient*) adj3 (care or caring) adj3 (continu* or plan*)).ti,ab.
21.	*Attitude to Death/
22.	(attitude* adj3 (death* or dying*)).ti,ab.
23.	*Physician-Patient Relations/
24.	*Long-Term Care/
25.	*"Delivery of Health Care"/
26.	(end adj2 life).ti,ab.
27.	EOLC.ti,ab.
28.	((last or final) adj2 (year or month*) adj2 life).ti,ab.
29.	((dying or death) adj2 (patient* or person* or people or care or caring)).ti,ab.
30.	or/1-29
31.	letter/
32.	editorial/
33.	news/
34.	exp historical article/
35.	Anecdotes as Topic/
36.	comment/
37.	case report/
38.	(letter or comment*).ti.
39.	or/31-38
40.	randomized controlled trial/ or random*.ti,ab.
41.	39 not 40
42.	animals/ not humans/
43.	exp Animals, Laboratory/
44.	exp Animal Experimentation/
45.	exp Models, Animal/

46.	exp Rodentia/
47.	(rat or rats or mouse or mice).ti.
48.	or/41-47
49.	30 not 48
50.	limit 49 to English language
51.	(exp child/ or exp pediatrics/ or exp infant/) not (exp adolescent/ or exp adult/ or exp middle age/ or exp aged/)
52.	50 not 51
53.	economics/
54.	value of life/
55.	exp "costs and cost analysis"/
56.	exp Economics, Hospital/
57.	exp Economics, medical/
58.	Economics, nursing/
59.	economics, pharmaceutical/
60.	exp "Fees and Charges"/
61.	exp budgets/
62.	budget*.ti,ab.
63.	cost*.ti.
64.	(economic* or pharmaco?economic*).ti.
65.	(price* or pricing*).ti,ab.
66.	(cost* adj2 (effectiv* or utilit* or benefit* or minimi* or unit* or estimat* or variable*)).ab.
67.	(financ* or fee or fees).ti,ab.
68.	(value adj2 (money or monetary)).ti,ab.
69.	or/53-68
70.	exp models, economic/
71.	*Models, Theoretical/
72.	*Models, Organizational/
73.	markov chains/
74.	monte carlo method/
75.	exp Decision Theory/
76.	(markov* or monte carlo).ti,ab.
77.	econom* model*.ti,ab.
78.	(decision* adj2 (tree* or analy* or model*)).ti,ab.
79.	or/70-78
80.	quality-adjusted life years/
81.	sickness impact profile/
82.	(quality adj2 (wellbeing or well being)).ti,ab.
83.	sickness impact profile.ti,ab.
84.	disability adjusted life.ti,ab.
85.	(qal* or qtime* or qwb* or daly*).ti,ab.
86.	(euroqol* or eq5d* or eq 5*).ti,ab.
87.	(qol* or hql* or hqol* or h qol* or hrqol* or hr qol*).ti,ab.
88.	(health utility* or utility score* or disutilit* or utility value*).ti,ab.
89.	(hui or hui1 or hui2 or hui3).ti,ab.

90.	(health* year* equivalent* or hye or hyes).ti,ab.
91.	discrete choice*.ti,ab.
92.	rosser.ti,ab.
93.	(willingness to pay or time tradeoff or time trade off or tto or standard gamble*).ti,ab.
94.	(sf36* or sf 36* or short form 36* or shortform 36* or shortform36*).ti,ab.
95.	(sf20 or sf 20 or short form 20 or shortform 20 or shortform20).ti,ab.
96.	(sf12* or sf 12* or short form 12* or shortform 12* or shortform12*).ti,ab.
97.	(sf8* or sf 8* or short form 8* or shortform 8* or shortform8*).ti,ab.
98.	(sf6* or sf 6* or short form 6* or shortform 6* or shortform6*).ti,ab.
99.	or/80-98
100.	52 and (69 or 79 or 99)

Embase (Ovid) search terms

1.	*Palliative therapy/
2.	*Terminal care/
3.	*Hospice care/
4.	palliat*.ti,ab.
5.	*Terminally ill patient/
6.	((terminal* or long term or longterm) adj2 (care* or caring or ill*)).ti,ab.
7.	((dying or terminal) adj (phase* or stage*)).ti,ab.
8.	life limit*.ti,ab.
9.	*Nursing home/
10.	((care or nursing) adj2 (home or homes)).ti,ab.
11.	*Respite Care/
12.	((respite or day) adj2 (care or caring)).ti,ab.
13.	*Hospice/
14.	hospice*.ti,ab.
15.	*Patient care planning/
16.	(advance* adj2 (plan* or decision* or directive*)).ti,ab.
17.	living will*.ti,ab.
18.	*Patient care/
19.	((advance* or patient*) adj3 (care or caring) adj3 (continu* or plan*)).ti,ab.
20.	*Attitude to Death/
21.	(attitude* adj3 (death* or dying*)).ti,ab.
22.	*Doctor patient relation/
23.	*Long term care/
24.	*Health care delivery/
25.	(end adj2 life).ti,ab.
26.	EOLC.ti,ab.
27.	((last or final) adj2 (year or month*) adj2 life).ti,ab.

28.	((dying or death) adj2 (patient* or person* or people or care or caring)).ti,ab.
29.	or/1-28
30.	letter.pt. or letter/
31.	note.pt.
32.	editorial.pt.
33.	case report/ or case study/
34.	(letter or comment*).ti.
35.	or/30-34
36.	randomized controlled trial/ or random*.ti,ab.
37.	35 not 36
38.	animal/ not human/
39.	nonhuman/
40.	exp Animal Experiment/
41.	exp Experimental Animal/
42.	animal model/
43.	exp Rodent/
44.	(rat or rats or mouse or mice).ti.
45.	or/37-44
46.	29 not 45
47.	limit 46 to English language
48.	(exp child/ or exp pediatrics/ or exp infant/) not (exp adolescent/ or exp adult/ or exp middle age/ or exp aged/)
49.	47 not 48
50.	health economics/
51.	exp economic evaluation/
52.	exp health care cost/
53.	exp fee/
54.	budget/
55.	funding/
56.	budget*.ti,ab.
57.	cost*.ti.
58.	(economic* or pharmaco?economic*).ti.
59.	(price* or pricing*).ti,ab.
60.	(cost* adj2 (effectiv* or utilit* or benefit* or minimi* or unit* or estimat* or variable*)).ab.
61.	(financ* or fee or fees).ti,ab.
62.	(value adj2 (money or monetary)).ti,ab.
63.	or/50-62
64.	statistical model/

65.	exp economic aspect/
66.	64 and 65
67.	*theoretical model/
68.	*nonbiological model/
69.	stochastic model/
70.	decision theory/
71.	decision tree/
72.	monte carlo method/
73.	(markov* or monte carlo).ti,ab.
74.	econom* model*.ti,ab.
75.	(decision* adj2 (tree* or analy* or model*)).ti,ab.
76.	or/66-75
77.	quality-adjusted life years/
78.	"quality of life index"/
79.	short form 12/ or short form 20/ or short form 36/ or short form 8/
80.	sickness impact profile/
81.	(quality adj2 (wellbeing or well being)).ti,ab.
82.	sickness impact profile.ti,ab.
83.	disability adjusted life.ti,ab.
84.	(qal* or qtime* or qwb* or daly*).ti,ab.
85.	(euroqol* or eq5d* or eq 5*).ti,ab.
86.	(qol* or hql* or hqol* or h qol* or hrqol* or hr qol*).ti,ab.
87.	(health utility* or utility score* or disutilit* or utility value*).ti,ab.
88.	(hui or hui1 or hui2 or hui3).ti,ab.
89.	(health* year* equivalent* or hye or hyes).ti,ab.
90.	discrete choice*.ti,ab.
91.	rosser.ti,ab.
92.	(willingness to pay or time tradeoff or time trade off or tto or standard gamble*).ti,ab.
93.	(sf36* or sf 36* or short form 36* or shortform 36* or shortform36*).ti,ab.
94.	(sf20 or sf 20 or short form 20 or shortform 20 or shortform20).ti,ab.
95.	(sf12* or sf 12* or short form 12* or shortform 12* or shortform12*).ti,ab.
96.	(sf8* or sf 8* or short form 8* or shortform 8* or shortform8*).ti,ab.
97.	(sf6* or sf 6* or short form 6* or shortform 6* or shortform6*).ti,ab.
98.	or/77-97
99.	49 and (63 or 76 or 98)

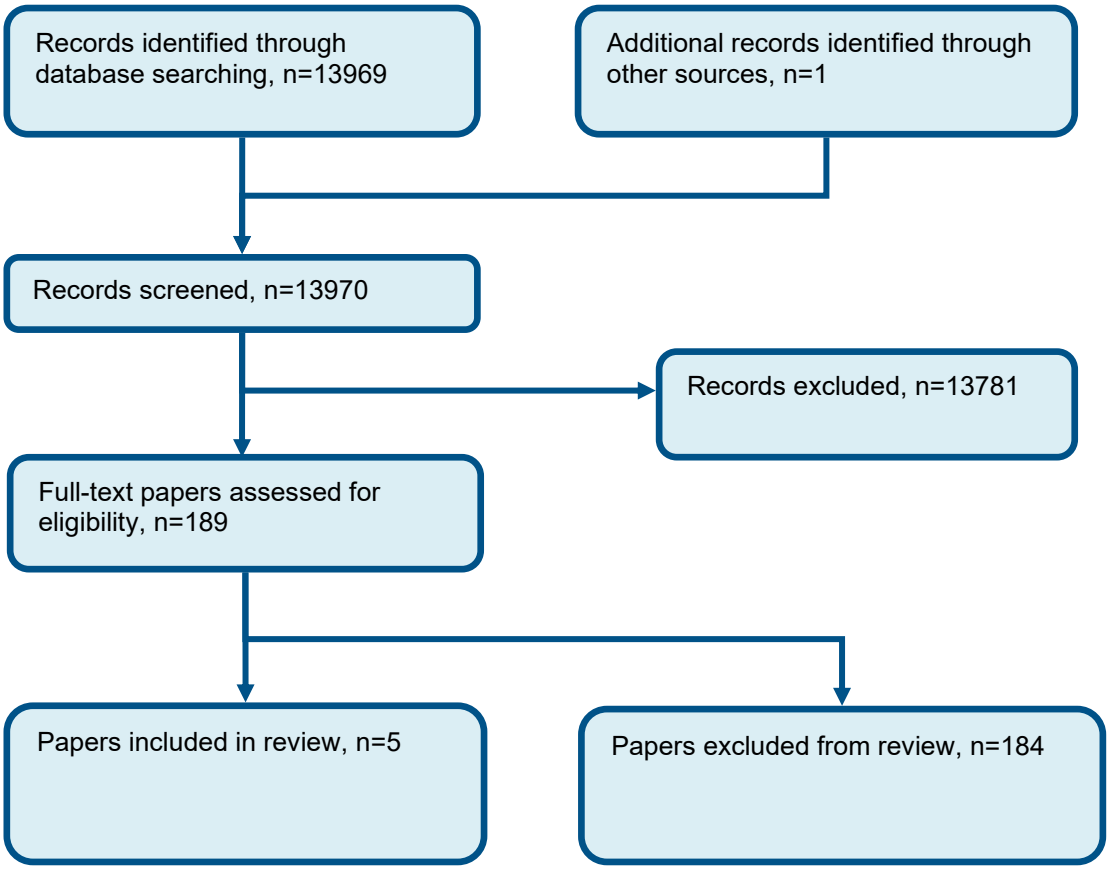
NHS EED and HTA (CRD) search terms

#1.	MeSH DESCRIPTOR Palliative Care IN NHSEED,HTA

#2.	MeSH DESCRIPTOR Terminal Care IN NHSEED,HTA
#3.	MeSH DESCRIPTOR Hospice Care IN NHSEED,HTA
#4.	(palliat*) IN NHSEED, HTA
#5.	MeSH DESCRIPTOR Terminally Ill IN NHSEED,HTA
#6.	(((terminal* or long term or longterm) adj2 (care* or caring or ill*))) IN NHSEED, HTA
#7.	(((dying or terminal) adj (phase* or stage*))) IN NHSEED, HTA
#8.	(life limit*) IN NHSEED, HTA
#9.	MeSH DESCRIPTOR Nursing Homes IN NHSEED,HTA
#10.	(((care or nursing) adj2 (home or homes))) IN NHSEED, HTA
#11.	MeSH DESCRIPTOR Respite Care IN NHSEED,HTA
#12.	(((respite or day) adj2 (care or caring))) IN NHSEED, HTA
#13.	MeSH DESCRIPTOR Hospices IN NHSEED,HTA
#14.	(hospice*) IN NHSEED, HTA
#15.	MeSH DESCRIPTOR Advance Care Planning EXPLODE ALL TREES IN NHSEED,HTA
#16.	((advance* adj2 (plan* or decision* or directive*))) IN NHSEED, HTA
#17.	(living will*) IN NHSEED, HTA
#18.	MeSH DESCRIPTOR Patient Care Planning IN NHSEED,HTA
#19.	MeSH DESCRIPTOR Continuity of Patient Care IN NHSEED,HTA
#20.	(((advance* or patient*) adj3 (care or caring) adj3 (continu* or plan*))) IN NHSEED, HTA
#21.	MeSH DESCRIPTOR Attitude to Death IN NHSEED,HTA
#22.	((attitude* adj3 (death* or dying*))) IN NHSEED, HTA
#23.	MeSH DESCRIPTOR Physician-Patient Relations IN NHSEED,HTA
#24.	MeSH DESCRIPTOR Long-Term Care IN NHSEED,HTA
#25.	MeSH DESCRIPTOR Delivery of Health Care IN NHSEED,HTA
#26.	((end adj2 life)) IN NHSEED, HTA
#27.	(EOLC) IN NHSEED, HTA
#28.	(((last or final) adj2 (year or month*) adj2 life)) IN NHSEED, HTA
#29.	(((dying or death) adj2 (patient* or person* or people or care or caring))) IN NHSEED, HTA
#30.	#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29
#31.	(#30) IN NHSEED
#32.	(#30) IN HTA

Appendix C: Clinical evidence selection

Figure 1: Flow chart of clinical study selection for the review of out of hours services



Appendix D: Clinical evidence tables

Study (subsidiary papers)	Gage 2015[57] (Holdsworth 2015[77])
Study type	Non-randomised comparative study
Number of studies (number of participants)	1 (n=688)
Countries and setting	Conducted in United Kingdom; Setting: Pilgrims Hospice services, delivered by 3 centres serving contiguous communities (total population of 600 000) in the county of Kent, UK.
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 18 months (2010-11)
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Adults (aged 18 years or over)
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients newly referred to the hospice services (provided by three centres). Family carers were included if they were the primary carer for a patient included in the analysis. Only one carer was selected for each patient.
Exclusion criteria	Patients still alive at the end of the 18 month collection period (as outcomes unknown). Patients already registered with the hospice when the RSS was introduced (because they crossed between control and intervention conditions). Amongst eligible patients, those without a recorded preferred place of death (PPD) in the hospice notes were excluded from the analysis.
Recruitment/selection of patients	Hospice database accessed retrospectively.
Age, gender and ethnicity	Age - Mean (SD): RRS users and RRS non-users, respectively: 73.1 (81.23), 69.1 (76.50); RRS available and not available, respectively: 75.09 (11.52), 74.06 (11.96). Gender (M:F): RRS users and non-users: 388/300; RRS available and RRS not available: 548. Ethnicity: Not stated
Further population details	1. Any specific population: Not applicable
Extra comments	Baseline characteristics (n) for RRS users and RRS non-users, respectively: initial preferred place of death home 190, 227; care home 2, 47; hospice 52, 158; hospital 0, 4; other 3, 5; final preferred place of death home 184, 221; care home 4, 47; hospice 58, 164; hospital 0, 4; other 2, 5. Baseline characteristics (n) for RRS available and RRS not available groups, respectively: diagnosis cancer 617, 239; non-cancer 70, 26;

Study (subsidiary papers)	Gage 2015[57] (Holdsworth 2015[77])
	unknown 1, 0; initial preferred place of death home 426, 126; care home 40, 14; hospice 210, 121; hospital 4, 0; other 8, 4; Baseline characteristics (mean (CI)) for carers of RRS available group (n=48)and carers of RRS not available group (n=16), respectively:SF-12 Physical 47.77(44.27-58.54), 46.41(44.27-48.54); SF-12 Mental 39.91(38.24-41.60), 35.27(33.46-37.07); EQ-5D 0.75(0.71-0.78), 0.63(0.58-0.69). The study followed a randomised stepped wedge design. The new rapid response service was rolled out sequentially to three areas (order determined randomly using a simple probabilistic model), starting January 2010, with 6 months between the start of provision in each area. Once available in any area, any patient referred to the hospice in that area could access the RRS, although not all patients did. A comparison of the intervention (when RRS was provided) and control (no RRS available) is reported in the Holdsworth 2015 paper. Gage 2015 focusses on the time when the RRS was available in each area, and a comparison of the people using it (RRS users) versus those who did not (RRS non-users).
Indirectness of population	No indirectness
Interventions	(n=247) Intervention 1: Out of hours service. Type: Rapid response service. Team: team of experienced healthcare assistants who were trained by the hospice and supported by the full hospice interdisciplinary team. The service has access to a service coordinator, medical advice and equipment. Description: to provide intense care over relatively short periods when crises arise, and work alongside regular domiciliary services that offer long term support, to help avoid admission to hospice or hospital. The team responds rapidly 24/7 to crisis in patient's homes (including care homes). Hand-on-care is provided in coordination with other community services.. Duration 18 months. Concurrent medication/care: Regular domiciliary services that offer long term support. (n=441) Intervention 2: Out of hours service. Usual care. Duration 18 months. Concurrent medication/care: Usual care. (n=688) Intervention 3: Out of hours service. Type: Rapid response service. Team: team of experienced healthcare assistants who were trained by the hospice and supported by the full hospice interdisciplinary team. The service has access to a service coordinator, medical advice and equipment. Description: to provide intense care over relatively short periods when crises arise, and work alongside regular domiciliary services that offer long term support, to help avoid admission to hospice or hospital. The team responds rapidly 24/7 to crisis in patient's homes (including care homes). Hand-on-care is provided in coordination with other community services.. Duration 18 months. Concurrent medication/care: Usual care Comments: Only 36% (247) of patients in the intervention group accessed the rapid response service. (n=265) Intervention 4: Out of hours service. Usual care. Duration 18 months. Concurrent medication/care: Usual care.

Study (subsidiary papers)	Gage 2015[57] (Holdsworth 2015[77])
	(n=48) Intervention 5: Out of hours service. Type: Rapid response service. Team: team of experienced healthcare assistants who were trained by the hospice and supported by the full hospice interdisciplinary team. The service has access to a service coordinator, medical advice and equipment. Description: to provide intense care over relatively short periods when crises arise, and work alongside regular domiciliary services that offer long term support, to help avoid admission to hospice or hospital. The team responds rapidly 24/7 to crisis in patient's homes (including care homes). Hand-on-care is provided in coordination with other community services.. Duration 18 months. Concurrent medication/care: Usual care (n=16) Intervention 6: Out of hours service. Usual care. Duration 18 months. Concurrent medication/care: Usual care
Funding	Academic or government funding (Independent research funded by the National Institute for Health Research (NIHR) under its Research for Patient Benefit programme. The study was sponsored by East Kent hospitals University NHS Foundation Trust and supported by the Kent and Medway Comprehensive Local Research Network. The service was funded by NHS Kent and Medway.

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: RAPID RESPONSE TEAM (RRS USERS) versus USUAL CARE (RRS NON-USERS)

Protocol outcome 1: Number of visits to accident and emergency
- Actual outcome for Adults (aged 18 years or over): N with ≥ 1 contact with acute care (visits to hospital A&E, inpatients nights, outpatient appointments, day hospital visits) at time between referral to hospice and death; Group 1: 129/247, Group 2: 249/441; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: No significant differences with respect to mean age, days in study and sex; however, users were significantly more likely than non-users to want to die at home and actually die at home; Key confounders: sex, age, live at home alone or with carer (vs live in care home), Area 2 or 3 (vs Area 1), number of days in study; Group 1 Number missing: 0; Group 2 Number missing: 7, Reason: actual place of death not known

Protocol outcome 2: Use of community services
- Actual outcome for Adults (aged 18 years or over): N with ≥ 1 contact with GP/all primary care (visits to surgery to see GP or practice nurse, and home visits by GP) at time between referral to hospice and death; Group 1: 139/159, Group 2: 192/267; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: No significant differences with respect to mean age, days in study and sex; however, users were significantly more likely than non-users to want to die at home and actually die at home; Key confounders: sex, age, live at home alone or with carer (vs live in care home), Area 2 or 3 (vs Area 1), number of days in study; Group 1 Number missing: 0; Group 2 Number missing: 7, Reason: actual place of death not known- Actual outcome for Adults (aged 18 years or over): N with ≥ 1 contact with community care (visits and telephone calls to patients by community nurse, long term condition team, intermediate care teams, community matrons) at time between referral to hospice and death; Group 1: 223/247, Group 2: 306/441; Risk of bias: All

Study (subsidiary papers)	Gage 2015[57] (Holdsworth 2015[77])
domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: No significant differences with respect to mean age, days in study and sex; however, users were significantly more likely than non-users to want to die at home and actually die at home; Key confounders: sex, age, live at home alone or with carer (vs live in care home), Area 2 or 3 (vs Area 1), number of days in study; Group 1 Number missing: 0; Group 2 Number missing: 7, Reason: actual place of death not known - Actual outcome for Adults (aged 18 years or over): N with ≥ 1 contact with Marie Curie visits (Marie Curie health care assistants or registered nurse visits - each lasted 8 hours (overnight sitting)) at time between referral to hospice and death; Group 1: 33/247, Group 2: 6/441; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: No significant differences with respect to mean age, days in study and sex; however, users were significantly more likely than non-users to want to die at home and actually die at home; Key confounders: sex, age, live at home alone or with carer (vs live in care home), Area 2 or 3 (vs Area 1), number of days in study; Group 1 Number missing: 0; Group 2 Number missing: 7, Reason: actual place of death not known - Actual outcome for Adults (aged 18 years or over): N with ≥ 1 contact with out of hours services (out of hours home visits by GP or nurse, telephone advice by GP, 'walk-in' attendances and ambulance responses) at time between referral to hospice and death; Group 1: 99/247, Group 2: 84/441; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: No significant differences with respect to mean age, days in study and sex; however, users were significantly more likely than non-users to want to die at home and actually die at home; Key confounders: sex, age, live at home alone or with carer (vs live in care home), Area 2 or 3 (vs Area 1), number of days in study; Group 1 Number missing: 0; Group 2 Number missing: 7, Reason: actual place of death not known - Actual outcome for Adults (aged 18 years or over): N with ≥ 1 contact with hospice (not RRS: home or outpatient contacts with hospice nurses, doctors, allied health professionals, social workers, chaplain, inpatient stays, day hospice attendances for complementary therapies) at time between referral to hospice and death; Group 1: 247/247, Group 2: 441/441; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: No significant differences with respect to mean age, days in study and sex; however, users were significantly more likely than non-users to want to die at home and actually die at home; Key confounders: sex, age, live at home alone or with carer (vs live in care home), Area 2 or 3 (vs Area 1), number of days in study; Group 1 Number missing: 0; Group 2 Number missing: 7, Reason: actual place of death not known - Actual outcome for Adults (aged 18 years or over): N with ≥ 1 social service received (for example, domiciliary help, meals) at time between referral to hospice and death; Group 1: 40/247, Group 2: 60/441; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: No significant differences with respect to mean age, days in study and sex; however, users were significantly more likely than non-users to want to die at home and actually die at home; Key confounders: sex, age, live at home alone or with carer (vs live in care home), Area 2 or 3 (vs Area 1), number of days in study; Group 1 Number missing: 0; Group 2 Number missing: 7, Reason: actual place of death not known

Study (subsidiary papers)	Gage 2015[57] (Holdsworth 2015[77])

Protocol outcome 3: Preferred and actual place of death
- Actual outcome for Adults (aged 18 years or over): Achieved preferred place of death (using initial place of death) at end of follow-up; Group 1: 171/247, Group 2: 257/434; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: No significant differences with respect to mean age, days in study and sex; however, users were significantly more likely than non-users to want to die at home and actually die at home; Key confounders: sex, age, live at home alone or with carer (vs live in care home), Area 2 or 3 (vs Area 1), number of days in study; Group 1 Number missing: 0; Group 2 Number missing: 7, Reason: actual place of death not known

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: AVAILABILITY OF RAPID RESPONSE TEAM (RRS AVAILABLE) versus USUAL CARE (RRS NOT AVAILABLE)

Protocol outcome 1: Preferred and actual place of death
- Actual outcome for Adults (aged 18 years or over): Achieved preferred place of death (using initial place of death) at end of follow-up; Group 1: 429/688, Group 2: 164/265; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: Significant differences were observed between the intervention and control groups in terms of preferred place of death; Key confounders: weighted logistic regression adjusting for PPD, occupancy status and time in the study, weighted by sampling proportions in each centre at each time point in order to adjust for both potential cluster effects and differences in allocated group sizes.; Group 1 Number missing: 0; Group 2 Number missing: 0

- Actual outcome for Adults (aged 18 years or over): Achieved preferred place of death (using final place of death) at end of follow-up; Group 1: 454/688, Group 2: 185/265; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: Significant differences were observed between the intervention and control groups in terms of preferred place of death; Key confounders: weighted logistic regression adjusting for PPD, occupancy status and time in the study, weighted by sampling proportions in each centre at each time point in order to adjust for both potential cluster effects and differences in allocated group sizes.; Group 1 Number missing: 0; Group 2 Number missing: 0

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: AVAILABILITY OF RAPID RESPONSE TEAM (RRS AVAILABLE - CARERS) versus USUAL CARE (RRS NOT AVAILABLE - CARERS)

Protocol outcome 1: Quality of life
- Actual outcome for Adults (aged 18 years or over): Carers SF-12 Mental at 8 months; Group 1: mean 41.54 (SD 7.82); n=48, Group 2: mean 46.47 (SD 4.35); n=16; SF12 0-100 Top=High is good outcome; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low,

Study (subsidiary papers)	Gage 2015[57] (Holdsworth 2015[77])
Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: Significant differences were observed between the intervention and control groups in terms of preferred place of death; Key confounders: Carers outcomes were analysed using a weighted linear regression model adjusting for baseline covariates and caregiver demand.; Group 1 Number missing: 0; Group 2 Number missing: 0 - Actual outcome for Adults (aged 18 years or over): Carers SF-12 Physical at 8 months; Group 1: mean 46.13 (SD 7.27); n=48, Group 2: mean 44.27 (SD 4.03); n=16; SF12 0-100 Top=High is good outcome; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: Significant differences were observed between the intervention and control groups in terms of preferred place of death; Key confounders: Carers outcomes were analysed using a weighted linear regression model adjusting for baseline covariates and caregiver demand.; Group 1 Number missing: 0; Group 2 Number missing: 0 - Actual outcome for Adults (aged 18 years or over): Carers EQ5D at 8 months; Group 1: mean 0.72 (SD 0.17); n=48, Group 2: mean 0.77 (SD 0.09); n=16; EQ5D 0-1 Top=High is good outcome; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: Significant differences were observed between the intervention and control groups in terms of preferred place of death; Key confounders: Carers outcomes were analysed using a weighted linear regression model adjusting for baseline covariates and caregiver demand.; Group 1 Number missing: 0; Group 2 Number missing: 0	
Protocol outcomes not reported by the study	Hospitalisation; Number of hospital visits; Number of unscheduled admissions; Length of survival; Staff satisfaction; Avoidable/inappropriate admissions to ICU; Inappropriate resuscitation; Length of stay

Study	Purdy 2015[133]
Study type	Non-randomised comparative study
Number of studies (number of participants)	1 (n=2785)
Countries and setting	Conducted in United Kingdom; Setting: Somerset (Out of hours) and North Somerset
Line of therapy	Adjunctive to current care
Duration of study	Intervention time: Six months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Adults (aged 18 years or over)
Subgroup analysis within study	Not applicable
Inclusion criteria	See population
Exclusion criteria	None reported
Age, gender and ethnicity	Age - Mean (SD): Somerset (out of hours) 77.3 (12.5) years. North Somerset 79.4 (10.7). Gender (M:F): Somerset (out of hours) 49% North Somerset 51%. Ethnicity: Not reported
Further population details	1. Any specific population: Not applicable
Extra comments	People who died between Sep 2011 and Feb 2012 in North Somerset and Somerset whose death were expected and potentially eligible for end of life care according to the criteria derived by the UK National End of Life Care Intelligence Network. The commonest causes of death were cancer, heart disease, respiratory disease and dementia
Indirectness of population	No indirectness
Interventions	(n=616) Intervention 1: Out of hours service. Users of a Delivering Choice Programme (DCP) in Somerset that included: Out of hours advice and response lines manned by specialist nurses from 5pm to 1am weekends and bank holidays who responded to calls from professionals, family carers and patients Two front of house hospital-based discharge nurses who identified patients who wanted a non-hospital death and facilitated fast discharges accordingly Two end of life care coordinators that took referrals from community, hospital and hospice staff to organise packages of care including equipment, night nurses and personal carers. These services were supported by an electronic end of life care register to record advance care wishes. Duration Six months. Concurrent medication/care: Not stated.

Study	Purdy 2015[133]
	(n=213) Intervention 2: Out of hours service. Users of the Delivering Care Program in North Somerset which did not include the out of hours service or the discharge nurses. Duration Six months. Concurrent medication/care: None stated. (n=1956) Intervention 3: Out of hours service. Usual care (not described). Duration Six months. Concurrent medication/care: None stated
Funding	Other (Marie Curie Cancer and the MRC)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: DELIVERING CHOICE PROGRAMME (WITH OUT OF HOURS) USERS versus DELIVERING CHOICE PROGRAMME (WITHOUT OUT OF HOURS) USERS

Protocol outcome 1: Number of hospital visits
- Actual outcome for Adults (aged 18 years or over): Patients with one or more emergency admissions < 30 days at Admissions in last 30 days of life; Group 1: 233/616, Group 2: 61/213; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness

- Actual outcome for Adults (aged 18 years or over): Mean emergency admissions per patients < 30 days at Admissions in last 30 days of life; Group 1: mean 0.53 (SD 0.69); n=616, Group 2: mean 0.31 (SD 0.52); n=213; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness

- Actual outcome for Adults (aged 18 years or over): Mean number of emergency admissions per patient < 7 days at Admissions in last seven days of life; Group 1: mean 0.11 days (SD 0.33); n=616, Group 2: mean 0.07 days (SD 0.27); n=213; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness

- Actual outcome for Adults (aged 18 years or over): Patients with one or more emergency admissions < 7 days at Admissions in last seven days of life; Group 1: 60/616, Group 2: 13/213; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness

Protocol outcome 2: Number of visits to accident and emergency
- Actual outcome for Adults (aged 18 years or over): Patients with one or more ED attendance < 30 days at Admissions in the last 30 days of life; Group 1: 159/616, Group 2: 54/213; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness

Study	Purdy 2015[133]
	- Actual outcome for Adults (aged 18 years or over): Mean ED attendance per patient < 30 days at Admissions in last 30 days of life; Group 1: mean 0.39 (SD 0.51); n=616, Group 2: mean 0.27 (SD 0.5); n=213; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness - Actual outcome for Adults (aged 18 years or over): Patients with one or more ED attendance < 7 days at Admissions in last 7 days of life; Group 1: 43/616, Group 2: 13/213; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness - Actual outcome for Adults (aged 18 years or over): Mean ED attendance per patients< 7 days at Admissions in last 7 days of life; Group 1: mean 0.07 days (SD 0.27); n=616, Group 2: mean 0.07 days (SD 0.29); n=213; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness Protocol outcome 3: Preferred and actual place of death - Actual outcome for Adults (aged 18 years or over): Place of death - acute hospital at Not applicable; Group 1: 84/616, Group 2: 40/213; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: Serious indirectness, Comments: Preferred place of death not reported - Actual outcome for Adults (aged 18 years or over): Place of death - home; Group 1: 337/616, Group 2: 88/213; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: Serious indirectness, Comments: Preferred place of death not reported - Actual outcome for Adults (aged 18 years or over): Place of death - care home (not usual place of residence) at Not applicable; Group 1: 58/616, Group 2: 34/213; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: Serious indirectness, Comments: Preferred place of death not reported - Actual outcome for Adults (aged 18 years or over): Place of death - hospice at Not applicable; Group 1: 98/616, Group 2: 34/213; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: Serious indirectness, Comments: Preferred place of death not reported - Actual outcome for Adults (aged 18 years or over): Place of death - elsewhere; Group 1: 8/616, Group 2: 17/213; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: Serious indirectness, Comments: Preferred place of death not reported RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: DELIVERING CHOICE PROGRAMME (WITH OUT OF HOURS) USERS

Study	Purdy 2015[133]
versus DELIVERY CHOICE PROGRAMME (WITH OUT OF HOURS) NON-USERS Protocol outcome 1: Number of hospital visits - Actual outcome for Adults (aged 18 years or over): Patients with one or more emergency admissions < 30 days at Admissions in last 30 days of life; Group 1: 233/616, Group 2: 875/1956; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness - Actual outcome for Adults (aged 18 years or over): Mean emergency admissions per patients < 30 days at Admissions in last 30 days of life; Group 1: mean 0.53 (SD 0.69); n=616, Group 2: mean 0.54 (SD 0.64); n=1956; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness - Actual outcome for Adults (aged 18 years or over): Patients with one or more emergency admissions < 7 days at Admissions in last seven days of life; Group 1: 60/616, Group 2: 467/1956; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness - Actual outcome for Adults (aged 18 years or over): Mean number of emergency admissions per patient < 7 days at Admissions in last seven days of life; Group 1: mean 0.11 (SD 0.33); n=616, Group 2: mean 0.25 (SD 0.46); n=1956; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness Protocol outcome 2: Number of visits to accident and emergency - Actual outcome for Adults (aged 18 years or over): Patients with one or more ED attendance < 30 days at Admissions in the last 30 days of life; Group 1: 159/616, Group 2: 712/1956; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness - Actual outcome for Adults (aged 18 years or over): Mean ED attendance per patient < 30 days at Admissions in last 30 days of life; Group 1: mean 0.39 (SD 0.51); n=616, Group 2: mean 0.41 (SD 0.6); n=1956; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness - Actual outcome for Adults (aged 18 years or over): Patients with one or more ED attendance < 7 days at Admissions in last 7 days of life; Group 1: 43/616, Group 2: 432/1956; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness - Actual outcome for Adults (aged 18 years or over): Mean ED attendance per patients< 7 days at Admissions in last 7 days of life; Group 1: mean 0.07 (SD 0.27); n=616, Group 2: mean 0.26 (SD 0.43); n=1956; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness	

Study	Purdy 2015[133]
	Protocol outcome 3: Preferred and actual place of death - Actual outcome for Adults (aged 18 years or over): Place of death - acute hospital; Group 1: 84/616, Group 2: 836/1956; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: Serious indirectness, Comments: Preferred place of death not reported - Actual outcome for Adults (aged 18 years or over): Place of death - home; Group 1: 337/616, Group 2: 779/1956; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: Serious indirectness, Comments: Preferred place of death not reported - Actual outcome for Adults (aged 18 years or over): Place of death - care home (not usual place of residence) at Not applicable; Group 1: 58/616, Group 2: 173/1956; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: Serious indirectness, Comments: Preferred place of death not reported - Actual outcome for Adults (aged 18 years or over): Place of death - hospice; Group 1: 98/616, Group 2: 55/1956; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: Serious indirectness, Comments: Preferred place of death not reported - Actual outcome for Adults (aged 18 years or over): Place of death - community hospital; Group 1: 31/616, Group 2: 31/1956; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: Serious indirectness, Comments: Preferred place of death not reported - Actual outcome for Adults (aged 18 years or over): Place of death - elsewhere; Group 1: 8/616, Group 2: 12/1956; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: Serious indirectness, Comments: Preferred place of death not reported
Protocol outcomes not reported by the study	Quality of life; Hospitalisation; Number of unscheduled admissions; Use of community services; Length of survival; Staff satisfaction; Avoidable/inappropriate admissions to ICU; Inappropriate resuscitation; Length of stay

Study	Riolfi 2014[137]
Study type	Non-randomised comparative study
Number of studies (number of participants)	1 (n=402)
Countries and setting	Conducted in Italy; Setting: Italy, community intervention

Study	Riolfi 2014[137]
Line of therapy	Adjunctive to current care
Duration of study	2 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Adults (aged 18 years or over)
Subgroup analysis within study	Not applicable
Inclusion criteria	Predicted life expectancy three months
Exclusion criteria	People on life prolonging cancer therapy
Recruitment/selection of patients	People who were offered the intervention. These were people who lived in a specific region of Italy. The outcomes of this group were compared with people living in a different region where the service was not implemented
Age, gender and ethnicity	Age - Mean (SD): No palliative care 75.1 (11.9) Palliative care 72.1 (11.9). Gender (M:F): Does not report this. Ethnicity: Does not report this
Further population details	1. Any specific population: Not applicable
Extra comments	People who died of cancer in 2011.
Indirectness of population	Serious indirectness: Implemented a service of which one component was out of hours
Interventions	(n=160) Intervention 1: Out of hours service. The service consisted of two palliative care physicians and 30 specialist nurses who cooperate with GPs. GPs have to guarantee their on-call availability and they do not always recommend activating home care for their patients either because of the burden of this kind of care or because they do not recognise the terminal phase of illness. The intensity of care depends on the patient's condition: at least one specialist medical examination a week is guaranteed for all terminally ill patients being cared for at home and this specialist medical exam is conducted daily in the last days of life. Nurses are called into deal with medication and infusion therapies. The services of a palliative care physician or nurse are assured from Monday to Friday (8am to 8pm). On Saturdays and Sundays there is a nurse on call 8am to 8pm. During the night and weekends patients and caregivers and colleagues can always contact a palliative care physician by phone . Duration Predicted life expectancy of three months. Concurrent medication/care: None. (n=242) Intervention 2: Out of hours service. GPs acted as gatekeepers to the health system. Traditionally GPs have worked in solo practices. The outcomes of the comparison group were for people treated before the palliative home care team was implemented. Duration People with a life expectancy of three months. Concurrent medication/care: None reported

Study	Riolfi 2014[137]
Funding	No funding
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: PALLIATIVE HOME CARE SERVICE versus USUAL CARE Protocol outcome 1: Length of stay - Actual outcome for Adults (aged 18 years or over): Time spent in hospital in last two months of life at two months; Group 1: mean 4.4 days (SD 10.4); n=160, Group 2: mean 19.6 days (SD 18.9); n=242; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness Protocol outcome 2: Hospitalisation - Actual outcome for Adults (aged 18 years or over): Number of hospitalisations in the last two months of life at Two months; Group 1: mean 0.4 (SD 0.7); n=160, Group 2: mean 1.3 (SD 1); n=242; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness Protocol outcome 3: Preferred and actual place of death - Actual outcome for Adults (aged 18 years or over): Place of death - hospital at Not applicable; Group 1: 37/160, Group 2: 178/242; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: Serious indirectness, Comments: Place of death is reported but not whether this was the preferred place of death - Actual outcome for Adults (aged 18 years or over): Place of death - home at Not applicable; Group 1: 86/160, Group 2: 19/242; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: Serious indirectness, Comments: Place of death is reported but not whether this was the preferred place of death - Actual outcome for Adults (aged 18 years or over): Place of death - nursing home at Not applicable; Group 1: 13/160, Group 2: 30/242; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: Serious indirectness, Comments: Place of death is reported but not whether this was the preferred place of death - Actual outcome for Adults (aged 18 years or over): Place of death - country hospital at Not applicable; Group 1: 24/160, Group 2: 15/242; Risk of bias: All domain - High, Selection - High, Blinding - Low, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: Serious indirectness, Comments: Place of death is reported but not whether this was the preferred place of death	
Protocol outcomes not reported by the study	Quality of life; Number of visits to accident and emergency; Number of unscheduled admissions; Use of community services; Length of survival; Staff satisfaction; Avoidable/inappropriate admissions to ICU; Inappropriate resuscitation; Number of hospital visits

Study	Seow 2014[146]
Study type	Non-randomised comparative study
Number of studies (number of participants)	1 (n=6218)

Study	Seow 2014[146]
Countries and setting	Conducted in Canada; Setting: Community-based services in Ontario, Canada. 11 specialist palliative care teams providing services in patients' homes. Administrative databases (Vital Statistics, Discharge Abstract Database, National Ambulatory Care Reporting System, Home Care Database, Statistics Canada)
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 2 years (2009-2011)
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Adults (aged 18 years or over)
Subgroup analysis within study	Not applicable:
Inclusion criteria	Intervention group: Patients of palliative care specialist teams that a) provide interdisciplinary, home based palliative care, b) were the only such team in their respective region, c) had little or no change in staffing between 2009 until 2012, d) had broad admission criteria, that is, not limited to one disease such as cancer, e) admitted more than 50 patients/year, f) were available to patients 24/7, g) had the same core members of their team as the past randomised trials. Control group: a) for teams beginning after 2009, patients in the intervention group were assigned a match from the pool of decedents within the same health region in an earlier period, fiscal years 2007-2009, so factors related to health system delivery were the same; b) for teams starting before 2009, decedents in the intervention group were assigned a match from the pool of decedents from a neighbouring region that was similar in size, geography, and access to services during the same study period (2009-2011) but did not have a palliative care team available.
Exclusion criteria	Patients were excluded if they were alive after fiscal year 2011, were < 18 years old, or had an invalid or missing provincial health insurance number.
Recruitment/selection of patients	Propensity score matching was used: the propensity score is each individual's probability of using a specialist team given the values of his pre-intervention, baseline covariates. Matching on propensity scores can estimate the effect of the intervention, which is unbiased by differences in measured pre-intervention covariates, thus aiming to simulate a randomised trial using observational data.
Age, gender and ethnicity	Age - Median (IQR): Intervention group: 75 (64-84) years; control group: 74 (63-83) years. Gender (M:F): 3009/3209. Ethnicity: not stated
Further population details	1. Any specific population: not applicable.
Extra comments	.
Indirectness of population	No indirectness
Interventions	(n=3109) Intervention 1: Out of hours service. Type: specialist palliative care team. Team: despite variations in team composition, all 11 teams had the same team core members: nurses, palliative care physicians, and family physicians. Description: the team provided interdisciplinary, home-based palliative care to people with

Study	Seow 2014[146]
	palliative care needs not limited to a single disease for example cancer. There was variation in care provided, but core features of services in the intervention group were 24/7 care and collaboration between health professionals.. Duration 2 years. Concurrent medication/care: Usual care. (n=3109) Intervention 2: Out of hours service. Usual care: home based palliative care delivered by the public homecare system, without involvement from palliative care teams. Usual care can be fragment and inconsistent in quality. The homecare agency coordinates care and contracts the delivery of services, mainly nursing and personal support at end of life. Little coordination between service providers. Contacting providers and receiving care after office hours or weekend is difficult. Duration 2 years. Concurrent medication/care: Usual care
Funding	Academic or government funding (This study was funded by a grant from the Canadian Institutes of Health Research and used databases maintained by the Institute for Clinical Evaluative Sciences, which receives funding by the Ontario Ministry of Health and Long term Care)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SPECIALIST PALLIATIVE CARE TEAM (24/7) versus USUAL CARE

Protocol outcome 1: Hospitalisation
- Actual outcome for Adults (aged 18 years or over): People in hospital in the last 2 weeks of life; Group 1: 970/3109, Group 2: 1219/3109; Risk of bias: All domain - High, Selection - Low, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: After propensity score matching, the only observed systematic difference between the two groups was their exposure to a specialist team; Key confounders: Age at death, sex, comorbidity weighting, cancer diagnosis, hospital and emergency department use before intervention, region and time, homecare service type and time in homecare

Protocol outcome 2: Number of visits to accident and emergency
- Actual outcome for Adults (aged 18 years or over): Emergency department visits in the last 2 weeks of life; Group 1: 896/3109, Group 2: 1070/3109; Risk of bias: All domain - High, Selection - Low, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: After propensity score matching, the only observed systematic difference between the two groups was their exposure to a specialist team; Key confounders: Age at death, sex, comorbidity weighting, cancer diagnosis, hospital and emergency department use before intervention, region and time, homecare service type and time in homecare

Protocol outcome 3: Preferred and actual place of death
- Actual outcome for Adults (aged 18 years or over): People dying in hospital at end of follow up; Group 1:503/3109, Group 2: 887/3109; Risk of bias: All domain - High, Selection - Low, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: Serious indirectness, Comments: Preferred place of death not reported; Baseline details: After propensity score matching, the only observed systematic difference between the two groups was their exposure to a specialist team; Key confounders: Age at death, sex, comorbidity

Study	Seow 2014[146]
weighting, cancer diagnosis, hospital and emergency department use before intervention, region and time, homecare service type and time in homecare	
Protocol outcomes not reported by the study	Quality of life; Number of hospital visits; Number of unscheduled admissions; Use of community services; Length of survival; Staff satisfaction; Avoidable/inappropriate admissions to ICU; Inappropriate resuscitation; Length of stay

Appendix E: Forest plots

E.1 Out of hours service (Rapid response service available) versus usual care (Rapid response service not available) in adults with progressive life-limiting conditions thought to be entering their last year of life (Gage 2015 – Holdsworth 2015)

Figure 2: Carers quality of life (EQ5D, 0-1) (8 months)

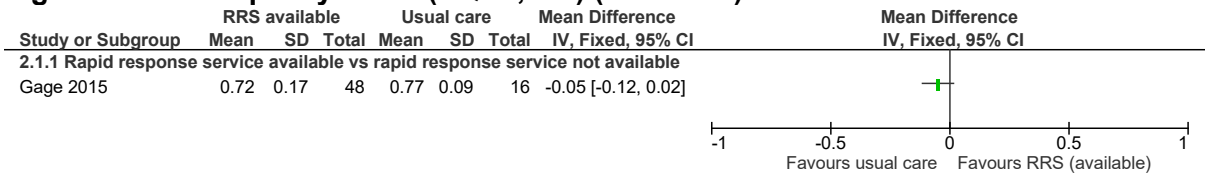


Figure 3: Carers quality of life (SF12 Physical Component Summary Score, 0-100) (8 months)

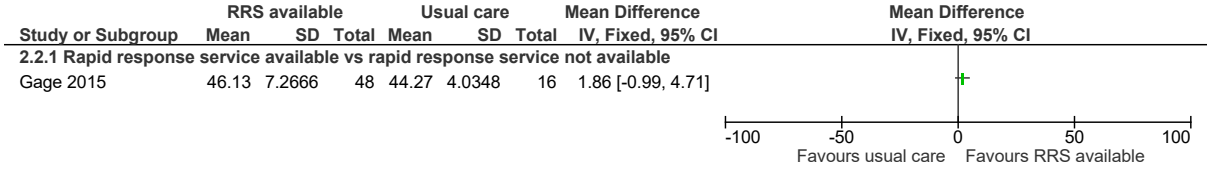


Figure 4: Carers quality of life (SF12 Mental Component Summary Score, 0-100) (8 months)

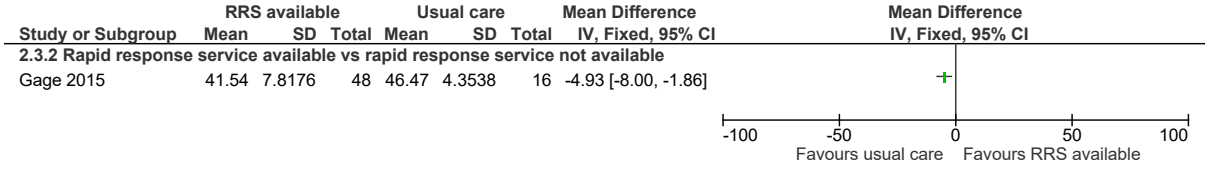


Figure 5: Preferred and actual place of death (N achieving (initial) place of death)

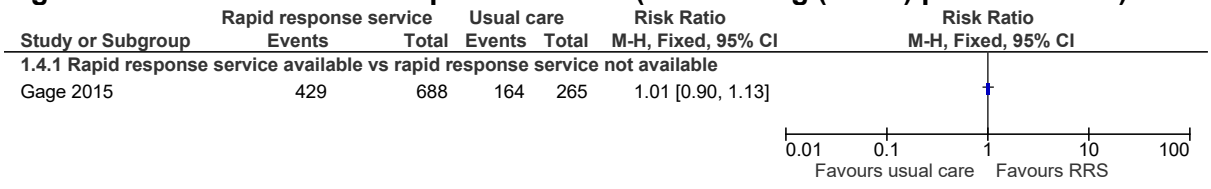
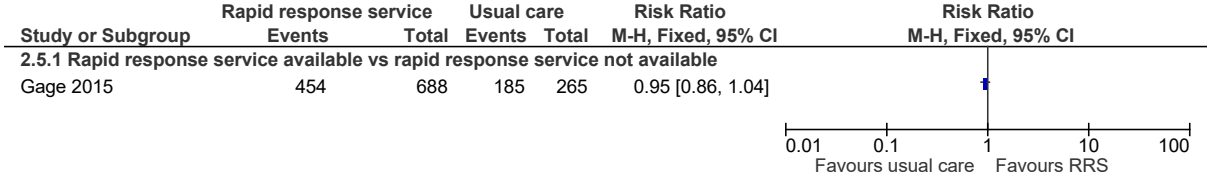


Figure 6: Preferred and actual place of death (N achieving (final) place of death)



E.2 Out of hours service (Rapid response service users) versus usual care (Rapid response service non-users) in adults with progressive life-limiting conditions thought to be entering their last year of life (Gage 2015 – Holdsworth 2015)

Figure 7: Preferred and actual place of death (N achieving (initial) place of death)

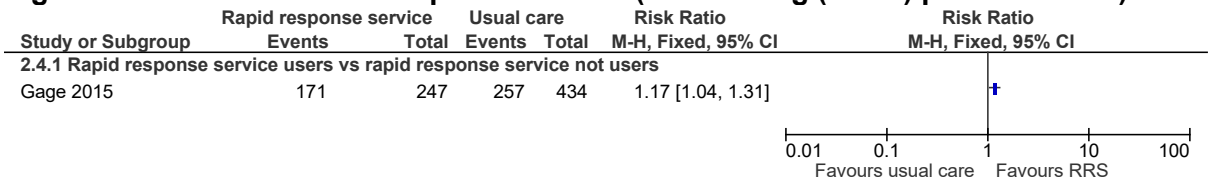
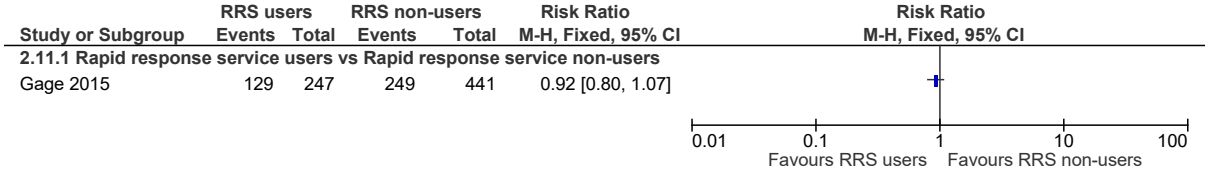
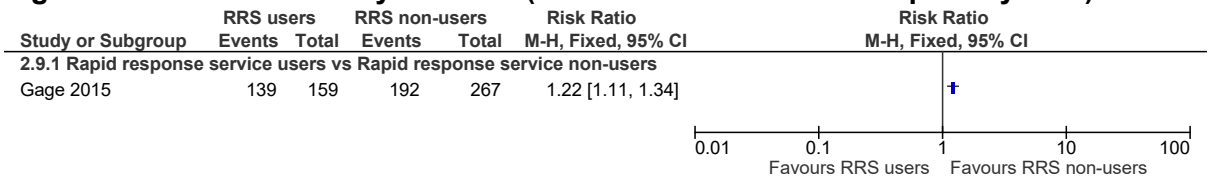


Figure 8: Number of visits to accident and emergency (N with ≥ 1 contact with acute care)



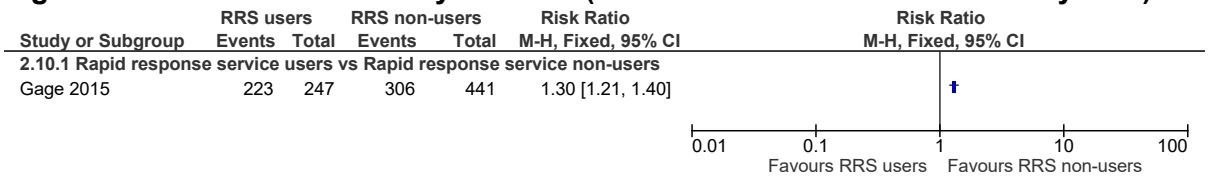
This outcome included visits to hospital A&E, inpatients nights, outpatients appointments, day hospital visits

Figure 9: Use of community services (N with ≥ 1 contact with GP/primary care)



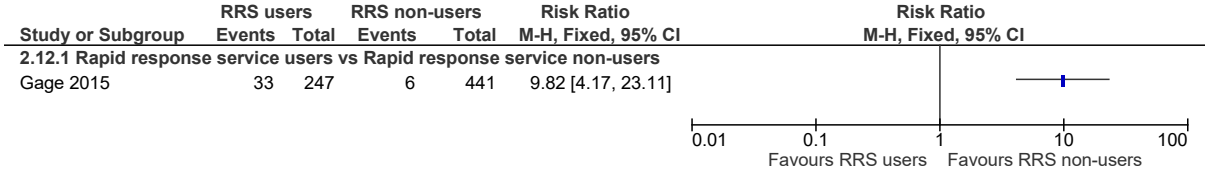
This outcome included all visits to surgery to see GP or practice nurse, and home visits by GP

Figure 10: Use of community services (N with ≥ 1 contact with community care)



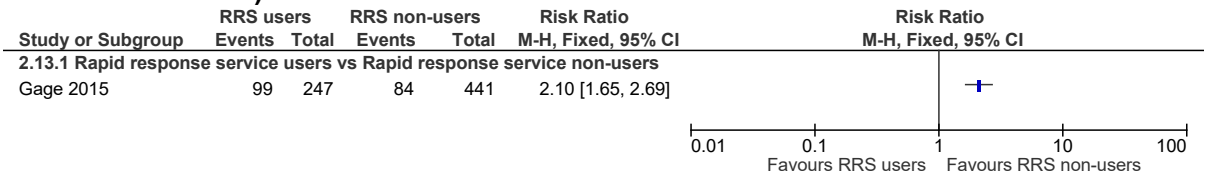
This outcome included all visits and telephone calls to patients by community nurse, long-term condition team, intermediate care teams, community matrons

Figure 11: Use of community services (N with ≥ 1 contact with Marie Curie visits)



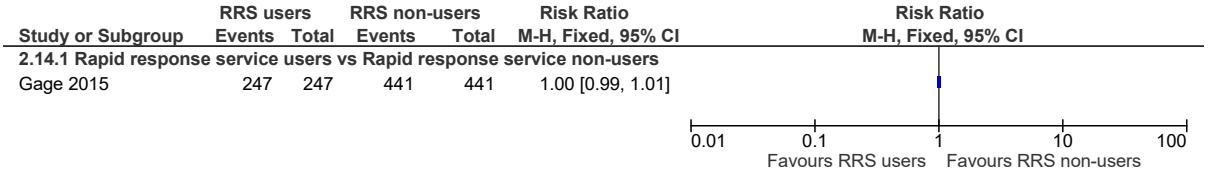
This outcome included Marie Curie health care assistants or registered nurse visits – each lasted 8 hours (overnight sitting)

Figure 12: Use of community services (N with ≥ 1 contact with out of hours services)



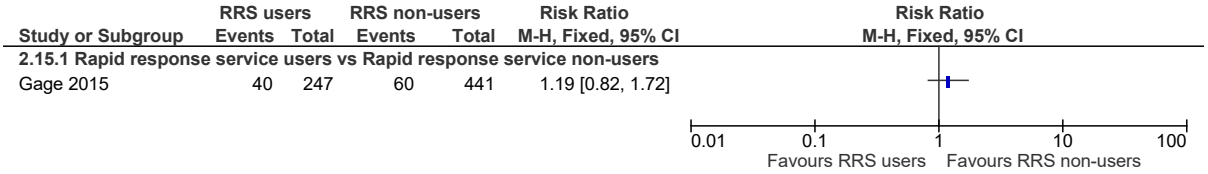
This outcome included out of hours home visits by GP or nurse, telephone advice by GP, 'walk-in' attendances and ambulance responses

Figure 13: Use of community services (N with ≥ 1 contact with hospice, excluding rapid response service)



This outcome included home or outpatients contacts with hospice nurses, doctors, allied health professionals, social workers, chaplain, inpatient stays, day hospice attendances for complementary therapies

Figure 14: Use of community services (N receiving ≥ 1 social service)



This outcome included social services such as for example domiciliary help, meals

E.3 Out of hours services (Delivering Choice Programme with out of hours users) versus usual care (Delivering Choice Programme with out of hours non-users) in adults with progressive life-limiting conditions thought to be entering their last year of life (Purdy 2015)

Figure 15: Preferred and actual place of death (Place of death – acute hospital)

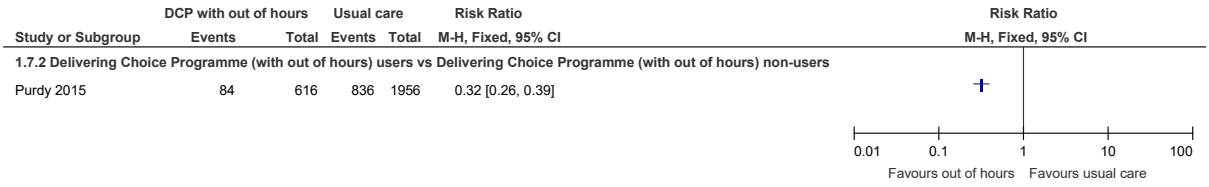


Figure 16: Preferred and actual place of death (Place of death – community hospital)

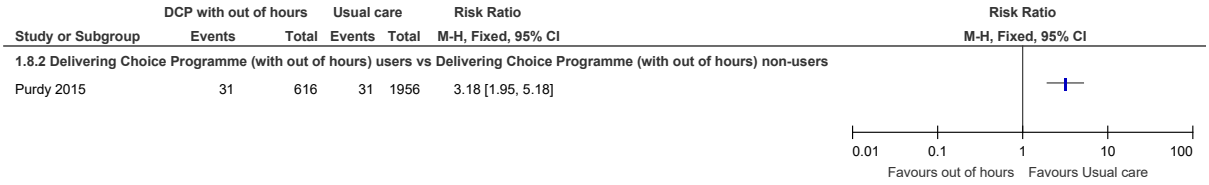


Figure 17: Preferred and actual place of death (Place of death – home)

Figure 18: Preferred and actual place of death (Place of death – care home)

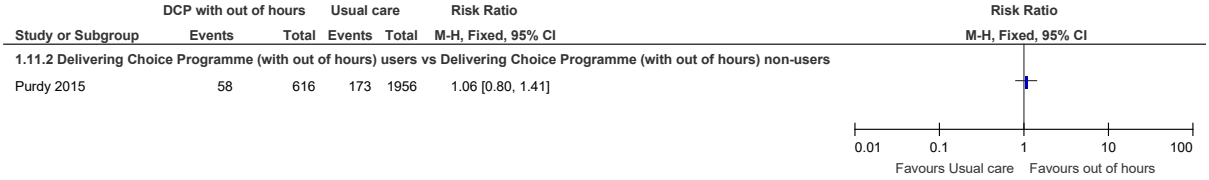


Figure 19: Preferred and actual place of death (Place of death – hospice)

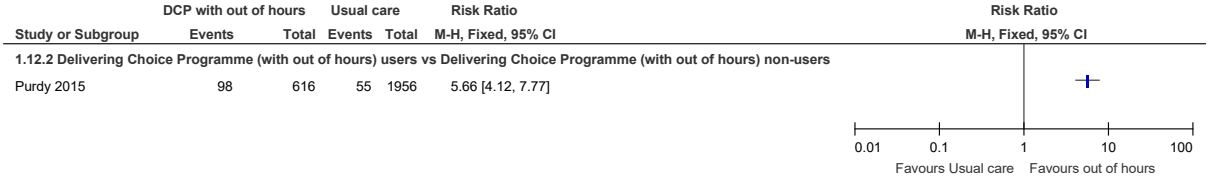


Figure 20: Preferred and actual place of death (Place of death – elsewhere)

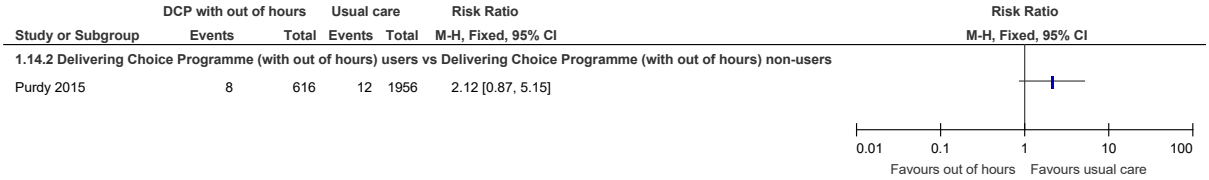


Figure 21: Number of hospital visits (patients with one or more emergency admissions < 30 days)

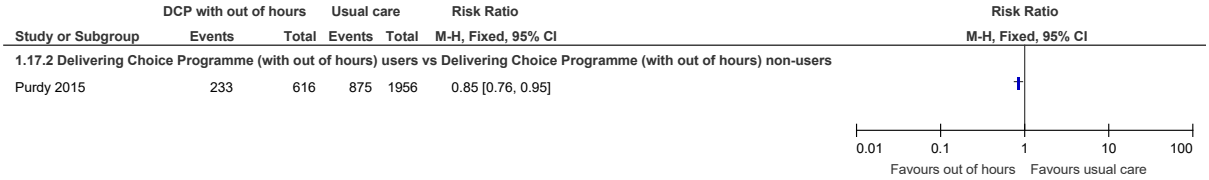


Figure 22: Number of hospital visits (patients with one or more emergency admissions < 7 days)

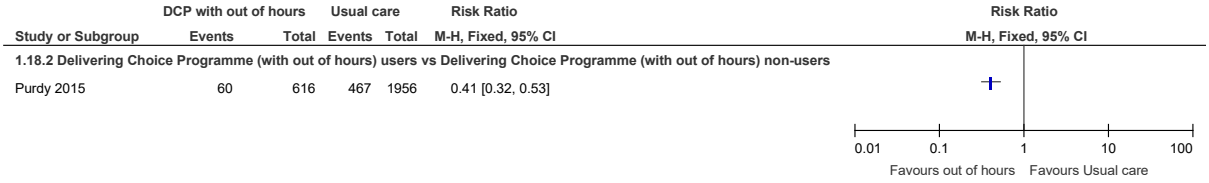


Figure 23: Number of hospital visits (mean emergency admission per patient < 30 days)

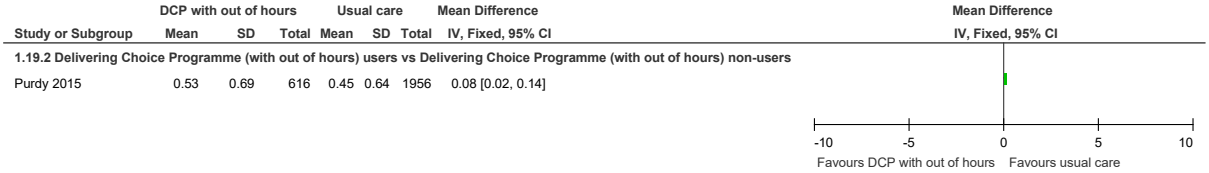


Figure 24: Number of hospital visits (mean emergency admission per patient < 7 days)

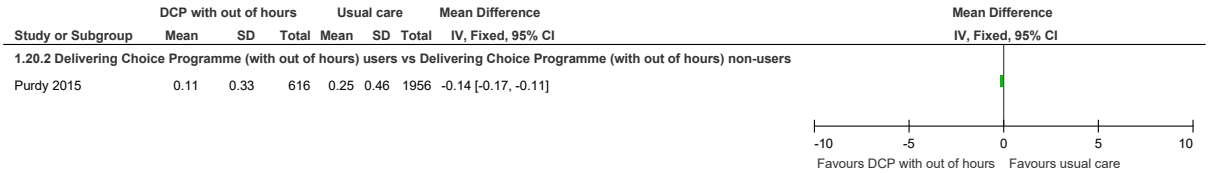


Figure 25: Number of visits to accident and emergency (patients with one or more ED attendance < 30 days)

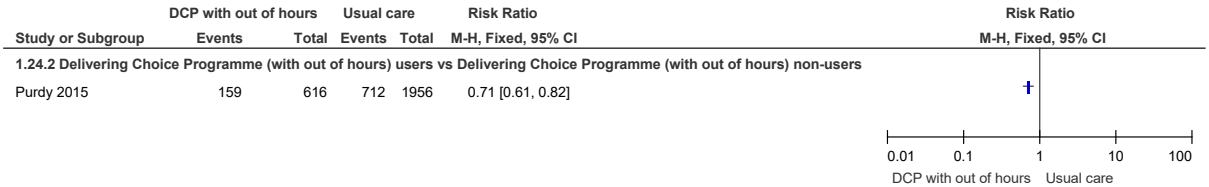


Figure 26: Number of visits to accident and emergency (patients with one or more ED attendance < 7 days)

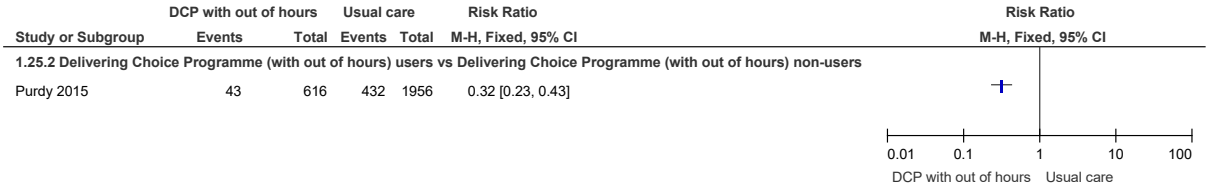


Figure 27: Number of visits to accident and emergency (mean ED attendance per patient < 30 days)

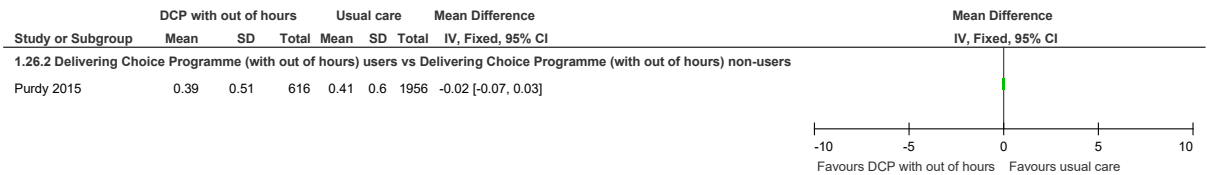
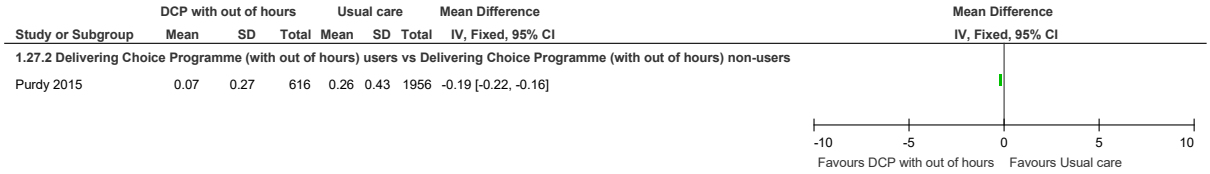


Figure 28: Number of visits to accident and emergency (mean ED attendance per patient < 7 days)



E.4 Out of hours services (Delivering Choice Programme with out of hours users) versus other services (Delivering Choice Programme without out of hours users) in adults with progressive life-limiting conditions thought to be entering their last year of life (Purdy 2015)

Figure 29: Preferred and actual place of death (Place of death – acute hospital)

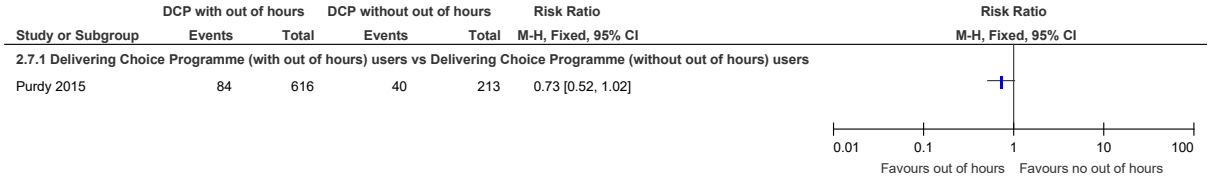


Figure 30: Preferred and actual place of death (Place of death – home)

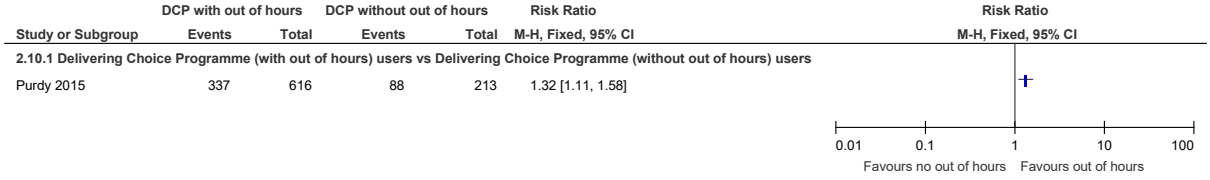


Figure 31: Preferred and actual place of death (Place of death – care home)

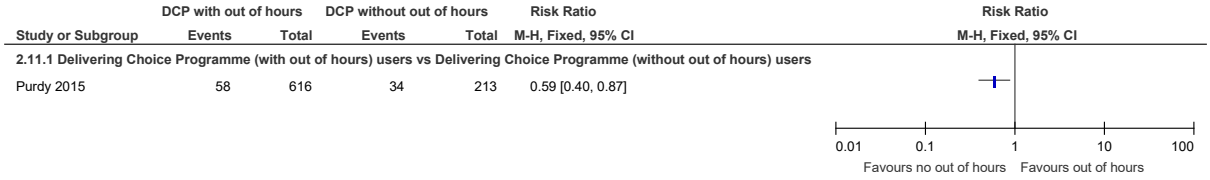


Figure 32: Preferred and actual place of death (Place of death – hospice)

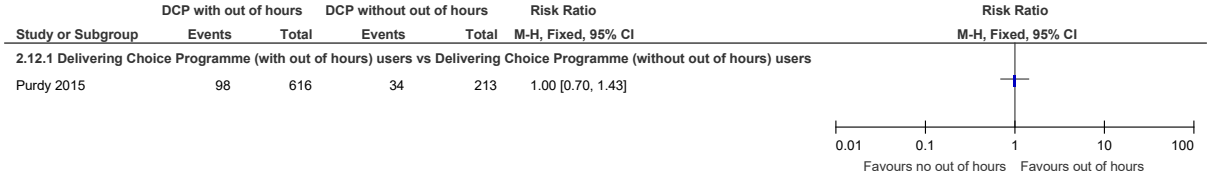


Figure 33: Preferred and actual place of death (Place of death – elsewhere)

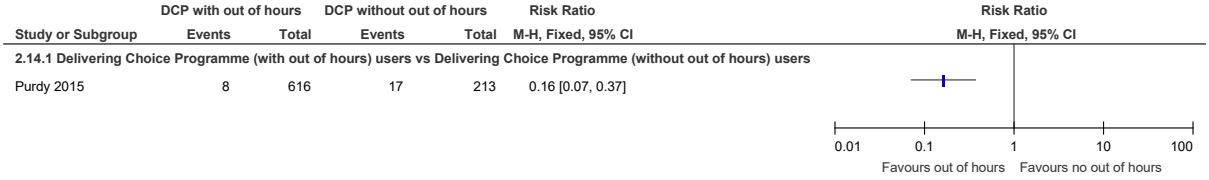


Figure 34: Number of hospital visits (patients with one or more emergency admissions <30 days)

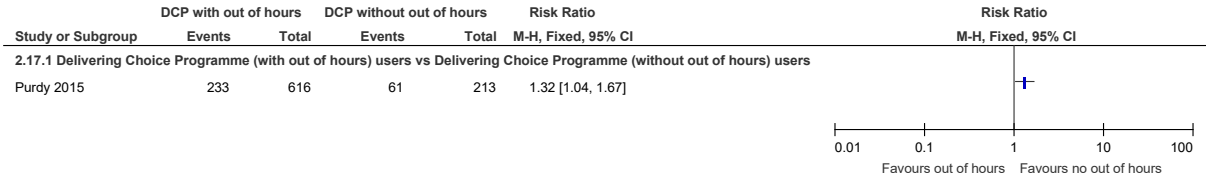


Figure 35: Number of hospital visits (patients with one or more emergency admissions <7 days)

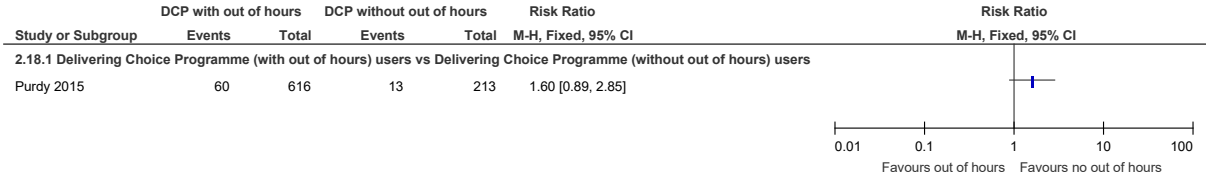


Figure 36: Number of hospital visits (mean emergency admissions per patient <30 days)

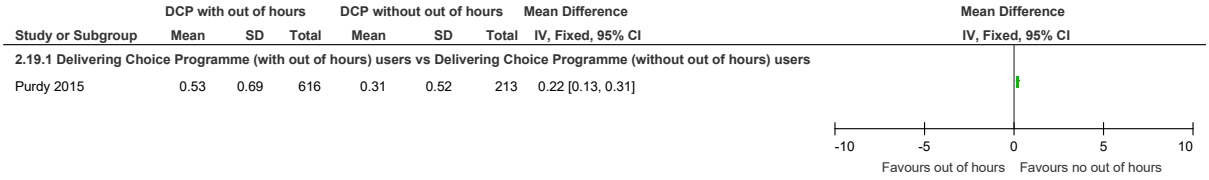


Figure 37: Number of hospital visits (mean emergency admissions per patient <7 days)

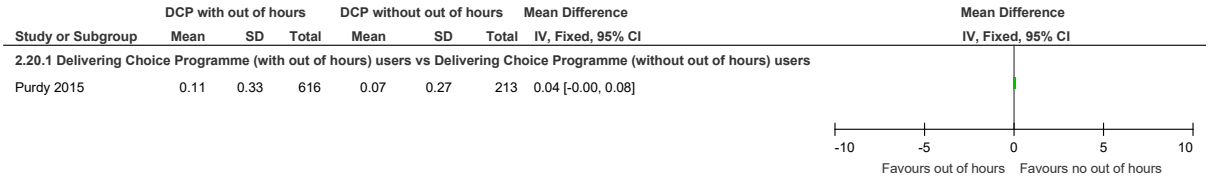


Figure 38: Number of visits to accident and emergency (patients with one or more ED attendance <30days)

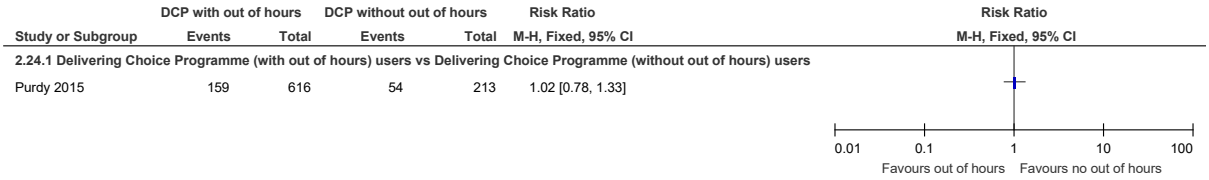


Figure 39: Number of visits to accident and emergency (patients with one or more ED attendance <7days)

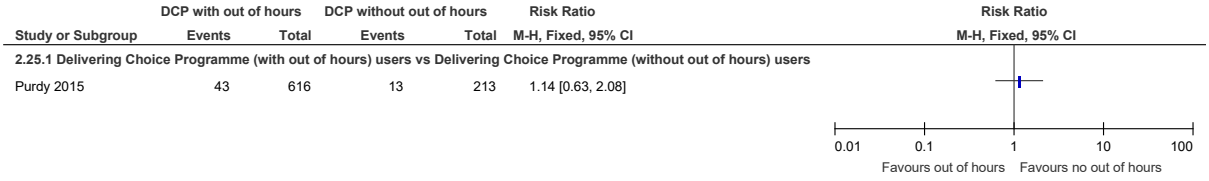


Figure 40: Number of visits to accident and emergency (mean ED attendance per patient <30 days)

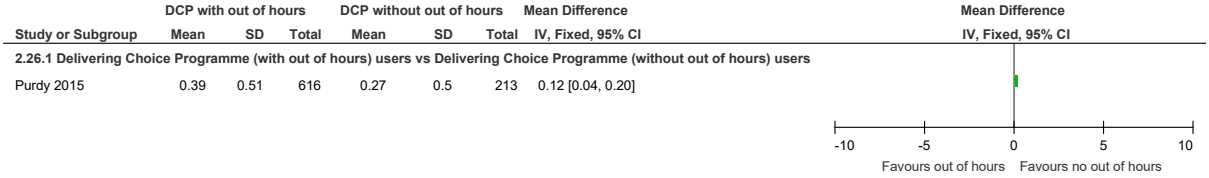
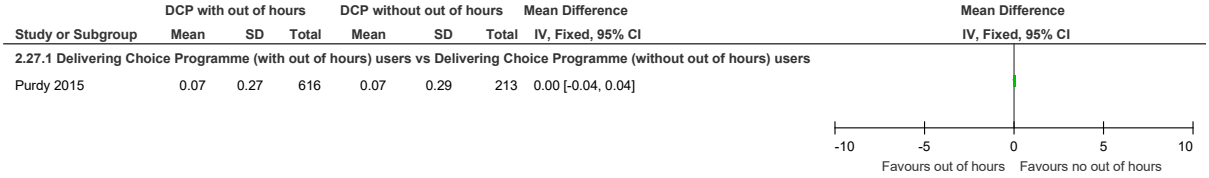


Figure 41: Number of visits to accident and emergency (mean ED attendance per patient <7 days)



E.5 Out of hours service (Palliative home care) versus usual care in adults with progressive life-limiting conditions thought to be entering their last year of life (Riolfi 2014)

Figure 42: Preferred and actual place of death (Place of death - hospital)

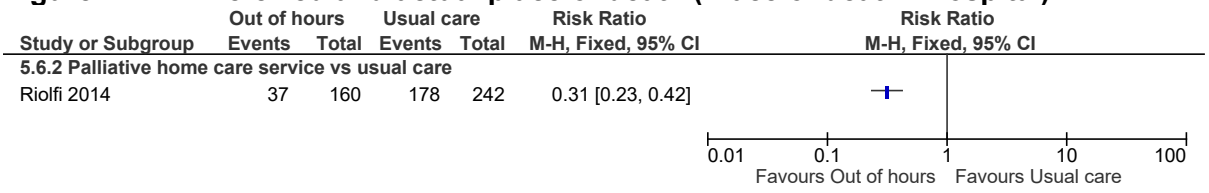


Figure 43: Preferred and actual place of death (Place of death – country hospital)

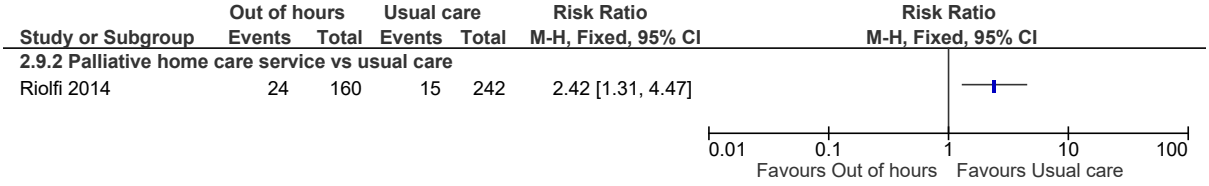


Figure 44: Preferred and actual place of death (Place of death – home)

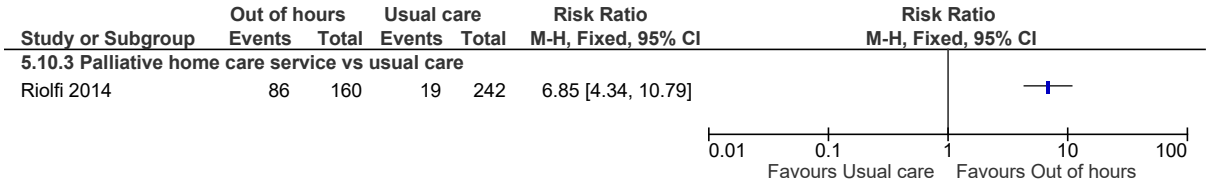


Figure 45: Preferred and actual place of death (Place of death – nursing home)

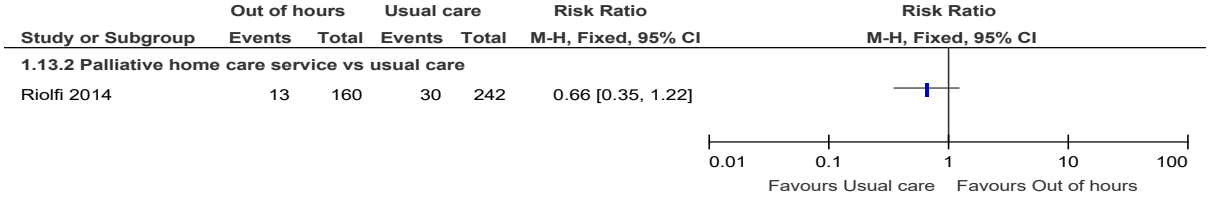


Figure 46: Hospitalisation (number of hospitalisations in the last 2 months of life)

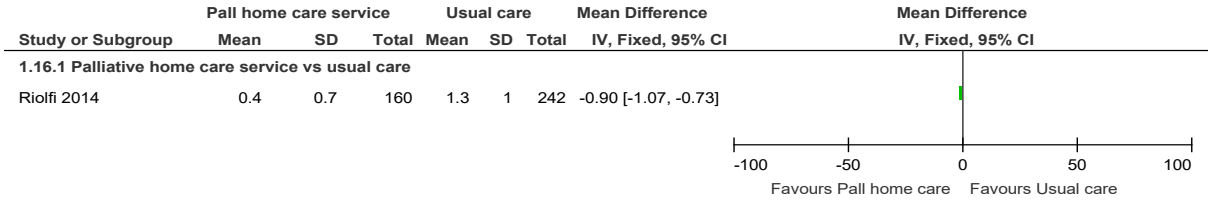
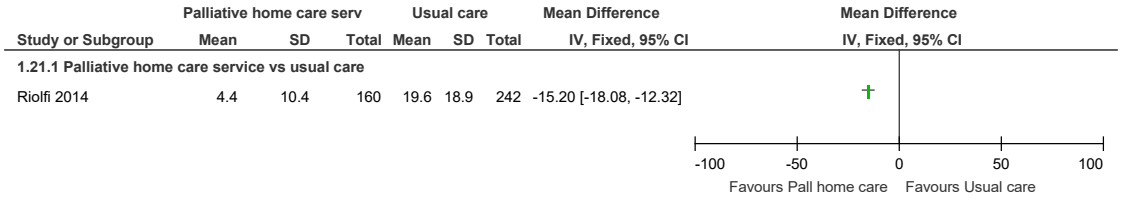


Figure 47: Length of stay (time spent in hospital in the last 2 months of life)



E.6 Out of hours services (Specialist palliative care team) versus usual care in adults with progressive life-limiting conditions thought to be entering their last year of life (Seow 2014)

Figure 48: Preferred and actual place of death (Place of death - hospital)

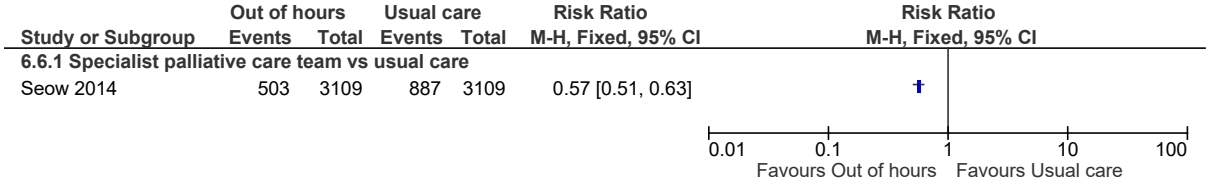


Figure 49: Hospitalisation (last 2 weeks of life)

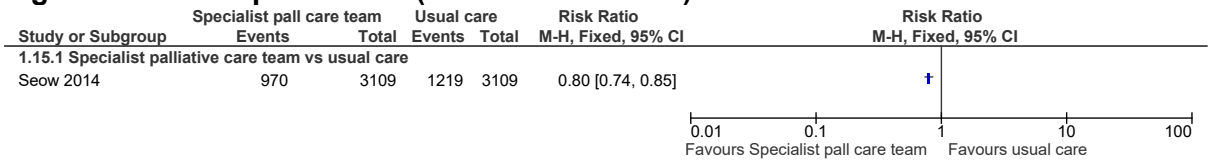
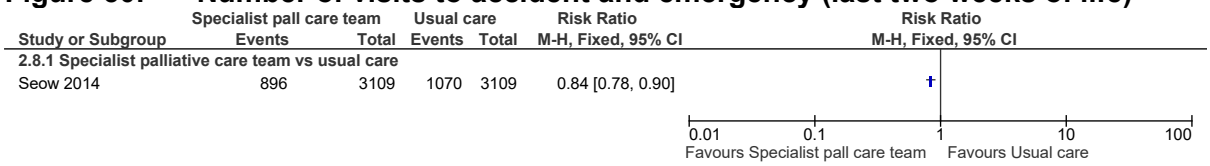


Figure 50: Number of visits to accident and emergency (last two weeks of life)



Appendix F: GRADE tables

Table 17: Clinical evidence profile: out of hours service (Rapid response service available) versus usual care (Rapid response service not available, Rapid response service not available) in adults with progressive life-limiting conditions thought to be entering their last year of life

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Rapid Response Service available	Usual care (RRS not available)	Relative (95% CI)	Absolute		
Carers quality of life (EQ5D) 8 months - Rapid response service available versus rapid response service not available (Better indicated by lower values)												
1	observational studies	serious[a]	no serious inconsistency	no serious indirectness	Serious[b]	none	48	16	-	MD 0.05 lower (0.12 lower to 0.02 higher)	⊕OOO VERY LOW	CRITICAL
Carers quality of life (SF12 Physical) 8 months - Rapid response service available versus rapid response service not available (range of scores: 0-100; Better indicated by higher values)												
1	observational studies	Serious[a]	no serious inconsistency	no serious indirectness	Serious[b]	none	48	16	-	MD 1.86 higher (0.99 lower to 4.71 higher)	⊕OOO VERY LOW	CRITICAL
Carers quality of life (SF12 Mental) 8 months - Rapid response service available versus rapid response service not available (range of scores: 0-100; Better indicated by higher values)												
1	observational studies	Serious[a]	no serious inconsistency	no serious indirectness	Serious[b]	none	48	16	-	MD 4.93 lower (8 to 1.86 lower)	⊕OOO VERY LOW	CRITICAL
Preferred and actual place of death (Achieved (initial) place of death) - Rapid response service available versus rapid response service not available												
1	observational studies	Serious[a]	no serious inconsistency	no serious indirectness	no serious imprecision	none	429/688 (62.4%)	61.9%	RR 1.01 (0.9 to 1.13)	6 more per 1000 (from 62 fewer to 80 more)	⊕OOO VERY LOW	CRITICAL

Preferred and actual place of death (Achieved (final) place of death) - Rapid response service available versus rapid response service not available												
1	observational studies	Serious[a]	no serious inconsistency	no serious indirectness	no serious imprecision	none	454/688 (66%)	69.8%	RR 0.95 (0.86 to 1.04)	35 fewer per 1000 (from 98 fewer to 28 more)	⊕OOO VERY LOW	CRITICAL

[a] Downgraded by 1 increment if the majority of the evidence was at high risk of bias, and downgraded by 2 increments if the majority of the evidence was at very high risk of bias
[b] Downgraded by 1 increment if the confidence interval crossed 1 MID or downgraded by 2 increments if the confidence interval crossed both MIDs

Table 18: Clinical evidence profile: out of hours service (Rapid response service users) versus usual care (Rapid response service not available, Rapid response service non-users) in adults with progressive life-limiting conditions thought to be entering their last year of life

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Rapid Response Service users	Usual care (RRS non-users)	Relative (95% CI)	Absolute		
Preferred and actual place of death (Achieved (initial) place of death) - Rapid response service users versus rapid response service non-users)												
1	observational studies	serious[a]	no serious inconsistency	no serious indirectness	Serious[b]	none	171/247 (69.2%)	59.2%	RR 1.17 (1.04 to 1.31)	101 more per 1000 (from 24 more to 184 more)	⊕OOO VERY LOW	CRITICAL
Number of visits to A&E (Number with >1 contact with acute care) - Rapid response service users versus Rapid response service non-users												
1	observational studies	serious[a]	no serious inconsistency	no serious indirectness	no serious imprecision	none	129/247 (52.2%)	56.5%	RR 0.92 (0.8 to 1.07)	45 fewer per 1000 (from 113 fewer to 40 more)	⊕OOO VERY LOW	IMPORTANT
Use of community services (Number with >1 contact with GP/primary care) - Rapid response service users versus Rapid response service non-users												
1	observational studies	Serious[a]	no serious inconsistency	no serious indirectness	Serious[b]	none	139/159 (87.4%)	71.9%	RR 1.22 (1.11 to 1.34)	158 more per 1000 (from 79 more to 244 more)	⊕OOO VERY LOW	IMPORTANT
Use of community services (Number with >1 contact with community care) - Rapid response service users versus Rapid response service non-users												

1	observational studies	Serious[a]	no serious inconsistency	no serious indirectness	Serious[b]	none	223/247 (90.3%)	69.4%	RR 1.3 (1.21 to 1.4)	208 more per 1000 (from 146 more to 278 more)	⊕OOO VERY LOW	IMPORTANT
Use of community services (Number with >1 contact with Marie Curie visits) - Rapid response service users versus Rapid response service non-users												
1	observational studies	Serious[a]	no serious inconsistency	no serious indirectness	no serious imprecision	none	33/247 (13.4%)	1.4%	RR 9.82 (4.17 to 23.11)	123 more per 1000 (from 44 more to 310 more)	⊕OOO VERY LOW	IMPORTANT
Use of community services (Number with >1 contact with out of hours services) - Rapid response service users versus Rapid response service non-users												
1	observational studies	Serious[a]	no serious inconsistency	no serious indirectness	no serious imprecision	none	99/247 (40.1%)	19.1%	RR 2.1 (1.65 to 2.69)	210 more per 1000 (from 124 more to 323 more)	⊕OOO VERY LOW	IMPORTANT
Use of community services (Number with >1 contact with hospice) - Rapid response service users versus Rapid response service non-users												
1	observational studies	Serious[a]	no serious inconsistency	no serious indirectness	no serious imprecision	none	247/247 (100%)	100%	RR 1 (0.99 to 1.01)	0 fewer per 1000 (from 10 fewer to 10 more)	⊕OOO VERY LOW	IMPORTANT
Use of community services (N receiving >1 social service) - Rapid response service users versus Rapid response service non-users												
1	observational studies	Serious[a]	no serious inconsistency	no serious indirectness	Serious[b]	none	40/247 (16.2%)	13.6%	RR 1.19 (0.82 to 1.72)	26 more per 1000 (from 24 fewer to 98 more)	⊕OOO VERY LOW	IMPORTANT

[a] Downgraded by 1 increment if the majority of the evidence was at high risk of bias, and downgraded by 2 increments if the majority of the evidence was at very high risk of bias
[b] Downgraded by 1 increment if the confidence interval crossed 1 MID or downgraded by 2 increments if the confidence interval crossed both MIDs

Table 19: Clinical evidence profile: out of hours service (Delivering Choice Programme with out of hours users) versus usual care (Delivering Choice Programme with out of hours non-users) in adults with progressive life-limiting conditions thought to be entering their last year of life

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Delivering Choice Programme with OOH	Usual care	Relative (95% CI)	Absolute		

Preferred and actual place of death (Place of death - acute hospital) - Delivering Choice Programme (with out of hours) users versus Delivering Choice Programme (with out of hours) non-users												
1	observational studies	serious[a]	no serious inconsistency	serious[b]	no serious imprecision	none	84/616 (13.6%)	42.7%	RR 0.32 (0.26 to 0.39)	290 fewer per 1000 (from 260 fewer to 316 fewer)	⊕OOO VERY LOW	CRITICAL
Preferred and actual place of death (Place of death - community hospital) - Delivering Choice Programme (with out of hours) users versus Delivering Choice Programme (with out of hours) non-users												
1	observational studies	serious[a]	no serious inconsistency	serious[b]	no serious imprecision	none	31/616 (5%)	1.6%	RR 3.18 (1.95 to 5.18)	35 more per 1000 (from 15 more to 67 more)	⊕OOO VERY LOW	CRITICAL
Preferred and actual place of death (Place of death - home) - Delivering Choice Programme (with out of hours) users versus Delivering Choice Programme (with out of hours) non-users												
1	observational studies	serious[a]	no serious inconsistency	serious[b]	no serious imprecision	none	337/616 (54.7%)	39.8%	RR 1.37 (1.26 to 1.5)	147 more per 1000 (from 103 more to 199 more)	⊕OOO VERY LOW	CRITICAL
Preferred and actual place of death (Place of death - care home) - Delivering Choice Programme (with out of hours) users versus Delivering Choice Programme (with out of hours) non-users												
1	observational studies	serious[a]	no serious inconsistency	serious[b]	serious[c]	none	58/616 (9.4%)	8.8%	RR 1.06 (0.8 to 1.41)	5 more per 1000 (from 18 fewer to 36 more)	⊕OOO VERY LOW	CRITICAL
Preferred and actual place of death (place of death - hospice) - Delivering Choice Programme (with out of hours) users versus Delivering Choice Programme (with out of hours) non-users												
1	observational studies	serious[a]	no serious inconsistency	serious[b]	no serious imprecision	none	98/616 (15.9%)	2.8%	RR 5.66 (4.12 to 7.77)	130 more per 1000 (from 87 more to 190 more)	⊕OOO VERY LOW	CRITICAL
Preferred and actual place of death (place of death - elsewhere) - Delivering Choice Programme (with out of hours) users versus Delivering Choice Programme (with out of hours) non-users												
1	observational studies	serious[a]	no serious inconsistency	serious[b]	serious[c]	none	8/616 (1.3%)	0.6%	RR 2.12 (0.87 to 5.15)	7 more per 1000 (from 1 fewer to 25 more)	⊕OOO VERY LOW	CRITICAL
Number of hospital visits (patients with one or more emergency admissions <30 days) - Delivering Choice Programme (with out of hours) users versus Delivering Choice Programme (with out of hours) non-users												

1	observational studies	serious[a]	no serious inconsistency	no serious indirectness	no serious imprecision	none	233/616 (37.8%)	44.7%	RR 0.85 (0.76 to 0.95)	67 fewer per 1000 (from 22 fewer to 107 fewer)	⊕OOO VERY LOW	IMPORTANT
Number of hospital visits (patients with one or more emergency admissions <7 days) - Delivering Choice Programme (with out of hours) users versus Delivering Choice Programme (with out of hours) non-users												
1	observational studies	serious[a]	no serious inconsistency	no serious indirectness	no serious imprecision	none	60/616 (9.7%)	23.9%	RR 0.41 (0.32 to 0.53)	141 fewer per 1000 (from 112 fewer to 163 fewer)	⊕OOO VERY LOW	IMPORTANT
Number of hospital visits (mean emergency admissions per patient <30 days) - Delivering Choice Programme (with out of hours) users versus Delivering Choice Programme (with out of hours) non-users (Better indicated by lower values)												
1	observational studies	serious[a]	no serious inconsistency	no serious indirectness	no serious imprecision	none	616	1956	-	MD 0.08 higher (0.02 to 0.14 higher)	⊕OOO VERY LOW	IMPORTANT
Number of hospital visits (mean emergency admissions per patient <7 days) - Delivering Choice Programme (with out of hours) users versus Delivering Choice Programme (with out of hours) non-users (Better indicated by lower values)												
1	observational studies	serious[a]	no serious inconsistency	no serious indirectness	no serious imprecision	none	616	1956	-	MD 0.14 lower (0.17 to 0.11 lower)	⊕OOO VERY LOW	IMPORTANT
Number of visits to A&E (patients with one or more ED attendance <30 days) - Delivering Choice Programme (with out of hours) users versus Delivering Choice Programme (with out of hours) non-users												
1	observational studies	serious[a]	no serious inconsistency	no serious indirectness	serious[c]	none	159/616 (25.8%)	36.4%	RR 0.71 (0.61 to 0.82)	106 fewer per 1000 (from 66 fewer to 142 fewer)	⊕OOO VERY LOW	IMPORTANT
Number of visits to A&E (patients with one or more ED attendance <7 days) - Delivering Choice Programme (with out of hours) users versus Delivering Choice Programme (with out of hours) non-users												
1	observational studies	serious[a]	no serious inconsistency	no serious indirectness	no serious imprecision	none	43/616 (7%)	22.1%	RR 0.32 (0.23 to 0.43)	150 fewer per 1000 (from 126 fewer to 170 fewer)	⊕OOO VERY LOW	IMPORTANT
Number of visits to A&E (mean ED attendance per patient <30 days) - Delivering Choice Programme (with out of hours) users versus Delivering Choice Programme (with out of hours) non-users (Better indicated by lower values)												

1	observational studies	serious[a]	no serious inconsistency	no serious indirectness	no serious imprecision	none	616	1956	-	MD 0.02 lower (0.07 lower to 0.03 higher)	⊕OOO VERY LOW	IMPORTANT
Number of visits to A&E (mean ED attendance per patient <7 days) - Delivering Choice Programme (with out of hours) users versus Delivering Choice Programme (with out of hours) non-users (Better indicated by lower values)												
1	observational studies	serious[a]	no serious inconsistency	no serious indirectness	serious[c]	none	616	1956	-	MD 0.19 lower (0.22 to 0.16 lower)	⊕OOO VERY LOW	IMPORTANT

[1] Downgraded by 1 increment if the majority of the evidence was at high risk of bias, and downgraded by 2 increments if the majority of the evidence was at very high risk of bias
[2] The majority of the evidence had indirect outcomes (preferred place of death not reported)
[3] Downgraded by 1 increment if the confidence interval crossed 1 MID or downgraded by 2 increments if the confidence interval crossed both MIDs

Table 20: Clinical evidence profile: out of hours service (Delivering Choice Programme with out of hours users) versus usual care (Delivering Choice Programme without out of hours non-users) in adults with progressive life-limiting conditions thought to be entering their last year of life

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Delivering Choice Programme with OOH**	**Delivering Choice Programme without OOH (Purdy 2015)**	**Relative (95% CI)**	**Absolute**		
Preferred and actual place of death (Place of death - acute hospital) - Delivering Choice Programme (with out of hours) users versus Delivering Choice Programme (without out of hours) users												
1	observational studies	serious[a]	no serious inconsistency	serious[b]	serious[c]	none	84/616 (13.6%)	18.8%	RR 0.73 (0.52 to 1.02)	51 fewer per 1000 (from 90 fewer to 4 more)	⊕OOO VERY LOW	CRITICAL
Preferred and actual place of death (Place of death - home) - Delivering Choice Programme (with out of hours) users versus Delivering Choice Programme (without out of hours) users												

1	observational studies	serious[1a]	no serious inconsistency	serious[b]	serious[3c]	none	337/616 (54.7%)	41.3%	RR 1.32 (1.11 to 1.58)	132 more per 1000 (from 45 more to 240 more)	⊕OOO VERY LOW	IMPORTANT
Preferred and actual place of death (Place of death - care home) - Delivering Choice Programme (with out of hours) users versus Delivering Choice Programme (without out of hours) users												
1	observational studies	serious[a]	no serious inconsistency	serious[b]	serious[c]	none	58/616 (9.4%)	16%	RR 0.59 (0.4 to 0.87)	66 fewer per 1000 (from 21 fewer to 96 fewer)	⊕OOO VERY LOW	CRITICAL
Preferred and actual place of death (Place of death - hospice) - Delivering Choice Programme (with out of hours) users versus Delivering Choice Programme (without out of hours) users												
1	observational studies	serious[1a]	no serious inconsistency	serious[b]	very serious[c]	none	98/616 (15.9%)	16%	RR 1 (0.7 to 1.43)	0 fewer per 1000 (from 48 fewer to 69 more)	⊕OOO VERY LOW	CRITICAL
Preferred and actual place of death (Place of death - elsewhere) - Delivering Choice Programme (with out of hours) users versus Delivering Choice Programme (without out of hours) users												
1	observational studies	serious[a]	no serious inconsistency	serious[b]	no serious imprecision	none	8/616 (1.3%)	8%	RR 0.16 (0.07 to 0.37)	67 fewer per 1000 (from 50 fewer to 74 fewer)	⊕OOO VERY LOW	CRITICAL
Number of hospital visits (patients with one or more emergency admissions <30 days) - Delivering Choice Programme (with out of hours) users versus Delivering Choice Programme (without out of hours) users												
1	observational studies	serious[a]	no serious inconsistency	no serious indirectness	serious[c]	none	233/616 (37.8%)	28.6%	RR 1.32 (1.04 to 1.67)	92 more per 1000 (from 11 more to 192 more)	⊕OOO VERY LOW	IMPORTANT
Number of hospital visits (patients with one or more emergency admissions <7 days) - Delivering Choice Programme (with out of hours) users versus Delivering Choice Programme (without out of hours) users												
1	observational studies	serious[a]	no serious inconsistency	no serious indirectness	serious[c]	none	60/616 (9.7%)	6.1%	RR 1.6 (0.89 to 2.85)	37 more per 1000 (from 7 fewer to 113 more)	⊕OOO VERY LOW	IMPORTANT

Number of hospital visits (mean emergency admissions per patient <30 days) - Delivering Choice Programme (with out of hours) users versus Delivering Choice Programme (without out of hours) users (Better indicated by lower values)												
1	observational studies	serious[a]	no serious inconsistency	no serious indirectness	no serious imprecision	none	616	213	-	MD 0.22 higher (0.13 to 0.31 higher)	⊕OOO VERY LOW	IMPORTANT
Number of hospital visits (mean emergency admissions per patient <7 days) - Delivering Choice Programme (with out of hours) users versus Delivering Choice Programme (without out of hours) users (Better indicated by lower values)												
1	observational studies	serious[a]	no serious inconsistency	no serious indirectness	no serious imprecision	none	616	213	-	MD 0.04 higher (0 to 0.08 higher)	⊕OOO VERY LOW	IMPORTANT
Number of visits to A&E (patients with one or more ED attendance <30 days) - Delivering Choice Programme (with out of hours) users versus Delivering Choice Programme (without out of hours) users												
1	observational studies	serious[a]	no serious inconsistency	no serious indirectness	serious[c]	none	159/616 (25.8%)	25.4%	RR 1.02 (0.78 to 1.33)	5 more per 1000 (from 56 fewer to 84 more)	⊕OOO VERY LOW	IMPORTANT
Number of visits to A&E (patients with one or more ED attendance <7 days) - Delivering Choice Programme (with out of hours) users versus Delivering Choice Programme (without out of hours) users												
1	observational studies	serious[a]	no serious inconsistency	no serious indirectness	very serious[c]	none	43/616 (7%)	6.1%	RR 1.14 (0.63 to 2.08)	9 more per 1000 (from 23 fewer to 66 more)	⊕OOO VERY LOW	IMPORTANT
Number of visits to A&E (mean ED attendance per patient <30 days) - Delivering Choice Programme (with out of hours) users versus Delivering Choice Programme (without out of hours) users (Better indicated by lower values)												
1	observational studies	serious[a]	no serious inconsistency	no serious indirectness	no serious imprecision	none	616	213	-	MD 0.12 higher (0.04 to 0.2 higher)	⊕OOO VERY LOW	IMPORTANT
Number of visits to A&E (mean ED attendance per patient <7 days) - Delivering Choice Programme (with out of hours) users versus Delivering Choice Programme (without out of hours) users (Better indicated by lower values)												
1	observational studies	serious[a]	no serious inconsistency	no serious indirectness	no serious imprecision	none	616	213	-	MD 0 higher (0.04 lower to 0.04 higher)	⊕OOO VERY LOW	IMPORTANT

[a] Downgraded by 1 increment if the majority of the evidence was at high risk of bias, and downgraded by 2 increments if the majority of the evidence was at very high risk of bias
[b] The majority of the evidence had indirect outcomes (preferred place of death not reported)
[c] Downgraded by 1 increment if the confidence interval crossed one MID or downgraded by 2 increments if the confidence interval crossed both MIDs

Table 21: Clinical evidence profile: out of hours service (Palliative home care service) versus usual care in adults with progressive life-limiting conditions thought to be entering their last year of life

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Palliative home care service	Usual care (Riolfi 2014)	Relative (95% CI)	Absolute		
Preferred and actual place of death (place of death - hospital) - Palliative home care service versus usual care												
1	observational studies	serious[a]	no serious inconsistency	very serious[b,c]	no serious imprecision	none	37/160 (23.1%)	73.6%	RR 0.31 (0.23 to 0.42)	508 fewer per 1000 (from 427 fewer to 567 fewer)	⊕OOO VERY LOW	CRITICAL
Preferred and actual place of death (place of death - country hospital) - Palliative home care service versus usual care												
1	observational studies	serious[a]	no serious inconsistency	very serious[b,c]	no serious imprecision	none	24/160 (15%)	6.2%	RR 2.42 (1.31 to 4.47)	88 more per 1000 (from 19 more to 215 more)	⊕OOO VERY LOW	CRITICAL
Preferred and actual place of death (place of death - home) - Palliative home care service versus usual care												
1	observational studies	serious[a]	no serious inconsistency	very serious[2b,c]	no serious imprecision	none	86/160 (53.8%)	7.9%	RR 6.85 (4.34 to 10.79)	462 more per 1000 (from 264 more to 773 more)	⊕OOO VERY LOW	CRITICAL
Preferred and actual place of death (Place of death - nursing home) - Palliative home care service versus usual care												
1	observational studies	serious[a]	no serious inconsistency	very serious[b,c]	serious[d]	none	13/160 (8.1%)	12.4%	RR 0.66 (0.35 to 1.22)	42 fewer per 1000 (from 81 fewer to 27 more)	⊕OOO VERY LOW	CRITICAL
Hospitalisation (number of hospitalisations in last 2 months of life) - Palliative home care service versus usual care (Better indicated by lower values)												

1	observational studies	serious[a]	no serious inconsistency	serious[c]	no serious imprecision	none	160	242	-	MD 0.9 lower (1.07 to 0.73 lower)	⊕OOO VERY LOW	IMPORTANT
Length of stay (time spent in hospital in the last 2 months of life) - Palliative home care service versus usual care (Better indicated by lower values)												
1	observational studies	serious[a]	no serious inconsistency	serious[c]	no serious imprecision	none	160	242	-	MD 15.2 lower (18.08 to 12.32 lower)	⊕OOO VERY LOW	IMPORTANT

[a] Downgraded by 1 increment if the majority of the evidence was at high risk of bias, and downgraded by 2 increments if the majority of the evidence was at very high risk of bias
[b] The majority of the evidence had indirect outcomes (preferred place of death not reported)
[c] The majority of the evidence was based on indirect intervention.
[d] Downgraded by 1 increment if the confidence interval crossed 1 MID or downgraded by 2 increments if the confidence interval crossed both MIDs

Table 22: Clinical evidence profile: out of hours service (Specialist palliative care team) versus usual care in adults with progressive life-limiting conditions thought to be entering their last year of life

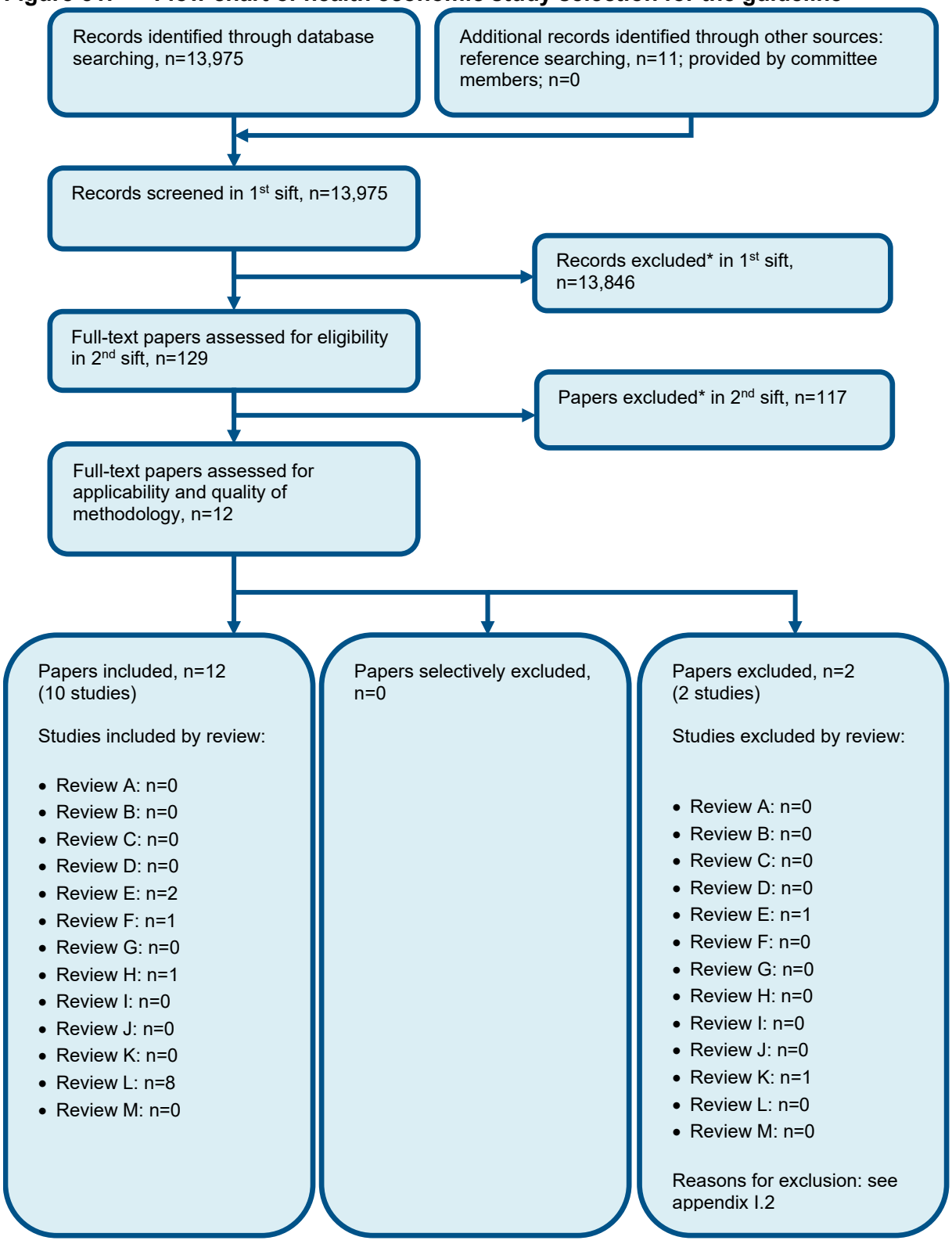
Quality assessment							No of patients		Effect		Quality	Importance
No of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Specialist Palliative Care team**	**Usual care**	**Relative (95% CI)**	**Absolute**		
Preferred and actual place of death (place of death - hospital) - Specialist palliative care team versus usual care												
1	observational studies	serious[a]	no serious inconsistency	serious[b]	no serious imprecision	none	503/3109 (16.2%)	28.5%	RR 0.57 (0.51 to 0.63)	123 fewer per 1000 (from 105 fewer to 140 fewer)	⊕OOO VERY LOW	CRITICAL
Hospitalisation (last 2 weeks of life) - Specialist palliative care team versus usual care												
1	observational studies	serious[a]	no serious inconsistency	no serious indirectness	serious[3c]	none	970/3109 (31.2%)	39.2%	RR 0.80 (0.74 to 0.85)	78 fewer per 1000 (from 59 fewer to 102 fewer)	⊕OOO VERY LOW	IMPORTANT
Number of visits to A&E (last two weeks of life) - Specialist palliative care team versus usual care												

1	observational studies	serious[a]	no serious inconsistency	no serious indirectness	no serious imprecision	none	896/3109 (28.8%)	34.4%	RR 0.84 (0.78 to 0.9)	55 fewer per 1000 (from 34 fewer to 76 fewer)	⊕OOO VERY LOW	IMPORTANT

[a] Downgraded by 1 increment if the majority of the evidence was at high risk of bias, and downgraded by 2 increments if the majority of the evidence was at very high risk of bias
[b] The majority of the evidence had indirect outcomes (preferred place of death not reported)
[c] Downgraded by 1 increment if the confidence interval crossed 1 MID or downgraded by 2 increments if the confidence interval crossed both MIDs

Appendix G: Health economic evidence selection

Figure 51: Flow chart of health economic study selection for the guideline



* Non-relevant population, intervention, comparison, design or setting; non-English language

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Appendix H: Health economic analysis

A cost analysis was conducted for different out-of-hours community interventions identified by the committee, from the literature or from the call for evidence (please see the details of the analysis in Appendix 1 of the guideline via the NICE website).

Appendix I: Excluded studies

I.1 Excluded clinical studies

Table 23: Studies excluded from the clinical review

Study	Exclusion reason
Adam 2014[2]	Case series
Adam 2015[1]	Not review population. Not Adults (aged 18 years or over) with progressive life limiting conditions thought to be entering their last year of life. Inappropriate study design (qualitative)
Ahlner-elmqvist 2004[4]	Incorrect interventions
Ahlner-elmqvist 2008[3]	no relevant outcomes (only baseline measures are reported)
Ali 2013[5]	Not guideline condition. Not review population
Almack 2012[6]	Incorrect interventions. Inappropriate study design (qualitative)
Anonymous 1982[7]	Inappropriate study design (report)
Armstrong 2013[8]	Inappropriate study design (conference abstract)
Asprey 2013[9]	Inappropriate study design (qualitative)
Ayris 2002[10]	Not review population. Inappropriate study design (review)
Badger 2009[11]	Incorrect interventions
Badger 2012[12]	Inappropriate study design
Bailey 2007[13]	Not guideline condition. Not review population. Inappropriate study design (non-comparative)
Baker 2012[14]	Incorrect interventions
Bakitas 2009[15]	Incorrect interventions
Baldry 2000[16]	inappropriate study design
Banerjee 2009[17]	Incorrect interventions. Inappropriate study design
Beck-Friis 1993[18]	Inappropriate study design (non-comparative)
Bekelman 2016[19]	Inappropriate comparison. Incorrect interventions
Bernacki 2015[20]	Incorrect interventions. Inappropriate study design (protocol only)
Bernard 2003[21]	Case series
Baldry 2000[16]	inappropriate study design
Banerjee 2009[17]	Incorrect interventions. Inappropriate study design
Beck-Friis 1993[18]	Inappropriate study design (non-comparative)
Bekelman 2016[19]	Inappropriate comparison. Incorrect interventions
Bernacki 2015[20]	Incorrect interventions. Inappropriate study design (protocol only)
Bernard 2003[21]	Case series
Birks 2011[22]	Inappropriate outcomes

Study	Exclusion reason
Braiteh 2007[23]	Incorrect interventions
Brown 2014[24]	Conference abstract
Brumley 2006[25]	Conference abstract
Buja 2015[26]	Not review population
Butler 2013[27]	No relevant outcomes
Capurro 2014[28]	Systematic review is not relevant to review question or unclear PICO. Incorrect interventions
Carduff 2014[29]	Incorrect interventions. Inappropriate study design
Carlebach 2010[30]	Inappropriate study design (qualitative)
Carr 2008[31]	inappropriate study design
Casarett 2008[32]	Incorrect interventions
Casson 2014[33]	Incorrect interventions
Collier 2016[34]	Incorrect interventions. Inappropriate study design (qualitative)
Connolly 2015[35]	Incorrect interventions. Inappropriate study design (qualitative)
Constantini 2003[36]	Incorrect interventions
Czapiuk 2010[37]	Conference abstract
Dawson 2015[38]	Systematic review is not relevant to review question or unclear PICO
De bock 2011[39]	Incorrect interventions. Incorrect study design (qualitative)
De san vicente 2015[40]	Conference abstract
Detering 2010[41]	Incorrect interventions
Dhiliwal 2015[42]	No relevant outcomes
Dimartino 2014[43]	Systematic review is not relevant to review question or unclear PICO
Doolittle 1998[45]	Inappropriate study design (report)
Doolittle 2000[44]	Incorrect interventions. No relevant outcomes
Downar 2013[46]	Incorrect interventions
Duffy 2018[47]	Inappropriate outcomes
Emanuel 1991[48]	Not review population. Incorrect interventions
Enguidandos 2005[49]	Incorrect interventions
Ennis 2015[50]	Incorrect interventions. Inappropriate study design (non-comparative)
Fergus 2010[51]	Inappropriate study design
Fergus 2010[51]	inappropriate study design (qualitative)
Finlay 2009[52]	Not review population. Incorrect interventions. Inappropriate study design (non-comparative)
Fontaine 2000[53]	Incorrect interventions
Foster 2001[54]	Not guideline condition. Not Adults (aged 18 years or over) with progressive life limiting conditions thought to be entering their last year of life. Not review population
Fredheim 2008[55]	Not review population. Incorrect interventions
Fukui 2011[56]	Incorrect interventions. Inappropriate study design (survey)
Gallagher 2013[58]	Incorrect interventions. Inappropriate study design (qualitative)
Gloth 2000[59]	Incorrect interventions. Inappropriate study design (non-comparative)
Goldschmidt 2006[60]	Incorrect interventions
Gomes 2011[62]	Incorrect interventions. Inappropriate study design

Study	Exclusion reason
Gomes 2013[61]	Incorrect interventions. Inappropriate study design (narrative review)
Gomes 2013[63]	inappropriate study design (narrative review)
Grabowski 2014[64]	Not review population
Grady 2003[65]	Inappropriate study design (non-comparative)
Grande 1999[66]	Not review population
Grande 2000[68]	Incorrect interventions
Grande 2000[68]	Not review population. Incorrect interventions
Grande 2004[67]	Incorrect interventions
Grogan 2016[69]	Inappropriate study design
Hall 2013[70]	Inappropriate study design (non-comparative)
Hanks 2002[71]	Incorrect interventions
Harden 2015[72]	Inappropriate study design (report)
Harvey 2016[73]	Conference abstract
Hennemann-Krause 2015[74]	Inappropriate study design
Herrera 2014[75]	Conference abstract
Hoexum 2012[76]	Inappropriate study design (non-comparative)
Holland 2014[78]	Not Adults (aged 18 years or over) with progressive life limiting conditions thought to be entering their last year of life. Not guideline condition. Incorrect interventions. Inappropriate study design (non-comparative)
Horsey 2012[79]	Incorrect interventions
Horwich 2009[80]	Not guideline condition. Not review population
Houben 2014[81]	Incorrect interventions. Inappropriate study design (protocol only)
Huang 2016[82]	Conference abstract
Hughes 1990[83]	Not guideline condition. Not review population
Hughes 2000[84]	Not guideline condition. Not review population. Incorrect interventions
Huibers 2009[85]	Not guideline condition. Incorrect study design
Hull 1991[86]	Inappropriate study design (qualitative)
Jacobsen 2011[87]	inappropriate comparison
Johnston 2012[88]	Incorrect interventions. Inappropriate study design (qualitative)
Jones 2007[89]	Incorrect interventions
Joseph 2016[90]	Systematic review is not relevant to review question or unclear PICO
Kassakian 1979[91]	Incorrect interventions
Kendall 2003[92]	Inappropriate study design (non-comparative)
Kerr 2006[93]	Inappropriate study design
King 2000[94]	Inappropriate study design (non-comparative)
King 2003[95]	Inappropriate study design (qualitative)
Klinger 2014[96]	Incorrect interventions. Inappropriate study design
Knight 2007[97]	Incorrect interventions
Laguna 2012[98]	Incorrect interventions
Lamont 2016[99]	Inappropriate study design. Incorrect interventions
Lawrence 2011[100]	Incorrect interventions. Inappropriate study design (qualitative)
Leibovitz 2004[101]	Inappropriate study design (non-comparative)

Study	Exclusion reason
Lloyd-Williams 2003[102]	Incorrect study design (non-comparative)
Lo 2009[103]	Incorrect interventions. No relevant outcomes
Luckett 2014[104]	Systematic review is not relevant to review question or unclear PICO. Systematic review: literature search not sufficiently rigorous
Lukas 2013[105]	Not review population. Incorrect interventions
Macdonald 1994[106]	Incorrect interventions
Magee 2015[107]	Inappropriate study design (non-comparative survey)
Main 2006[108]	Incorrect interventions. Inappropriate study design (non-comparative)
Marie curie cancer 2012[109]	Incorrect interventions. Inappropriate study design
Masella 2015[110]	Inappropriate study design
Mccorkle 1989[111]	Not review population
Mcwhinney 1994[112]	Incorrect interventions
Meier 1995[113]	Incorrect interventions
Miller 1996[114]	Not Adults (aged 18 years or over) with progressive life limiting conditions thought to be entering their last year of life. Incorrect interventions. Not review population
Mitchell 2005[115]	Incorrect interventions
Mitchell 2014[116]	Incorrect interventions
Mohren 2011[117]	Conference abstract
Molina 2013[118]	Incorrect interventions
Munday 2002[119]	Incorrect study design (non-comparative survey)
Neergaard 2009[122]	Incorrect interventions. Inappropriate study design (non-comparative)
Niemeyer-Guimaraes 2016[123]	Conference abstract
Noble 2003[124]	Incorrect interventions
Noble 2015[125]	Not relevant to PICO
Nyatanga 2013[126]	Inappropriate study design (commentary)
Pesut 2015[127]	Incorrect interventions. Inappropriate study design (non-comparative)
Phillips 2008[128]	Inappropriate study design. No relevant outcomes
Pimentel 2013[129]	Conference abstract
Plummer 2011[130]	Inappropriate study design
Porzio 2013[131]	Inappropriate study design (non-comparative)
Reineck 2013[134]	Incorrect interventions. Hospital based services (not community services)
Richards 2008[135]	Not review population
Richfield 2014[136]	Inappropriate study design (abstract only)
Rosenquist 1999[138]	Inappropriate study design (non-comparative)
Rouhollahi 2015[139]	Inappropriate study design
Schrijnemaekers 2005[141]	Incorrect interventions
Schweitzer 2009[144]	Incorrect interventions
Schweitzer 2011[142]	Inappropriate study design (qualitative)
Schweitzer 2016[143]	Incorrect interventions
Seamark 2014[145]	Incorrect interventions. Inappropriate study design (qualitative)
Shepperd 2009[147]	Not review population. Incorrect interventions

Study	Exclusion reason
Shepperd 2011[149]	Incorrect interventions
Shepperd 2016[148]	Incorrect interventions
Sheppherd 1998[150]	Systematic review is not relevant to review question or unclear PICO
Shields 1996[151]	Inappropriate study design (report)
Shimada 2016[152]	Inappropriate study design (non-comparative)
Shipman 2000[153]	Incorrect study design (non-comparative survey)
Shipman 2003[154]	Incorrect interventions
Skilbeck 2005[155]	Incorrect interventions. Inappropriate study design
Slack 2015[156]	Incorrect study design (narrative review)
Smeenk 1998[157]	Systematic review: literature search not sufficiently rigorous. Systematic review is not relevant to review question or unclear PICO
Smith 2014[158]	Incorrect interventions
Stewart 2011[159]	Not review population. Incorrect interventions. Inappropriate study design
Sulistio 2015[160]	Not review population. Not guideline condition
Swetenham 2014[161]	Inappropriate study design
Takahashi 2012[162]	Incorrect interventions
Tam 2014[163]	Incorrect interventions
Tan 2014[164]	Systematic review is not relevant to review question or unclear PICO. Incorrect interventions
Taubert 2010[165]	Inappropriate study design (qualitative)
Taubert 2010[166]	Incorrect study design (qualitative study)
Taubert 2011[167]	Inappropriate study design (qualitative)
Taylor Jr 2013[168]	Incorrect interventions. Inappropriate study design
Teno 2004[169]	Incorrect interventions
The national council for palliative 2011[170]	Incorrect study design (report)
Thoonsen 2011[171]	Incorrect interventions
Todd 2002[172]	Incorrect interventions. Inappropriate study design
Tramarin 1992[173]	Incorrect interventions
Travers 2002[174]	Inappropriate study design (intervention design; no results reported)
Travis 2015[175]	Inappropriate study design (commentary)
Van Gurp 2015[176]	Incorrect interventions. Inappropriate study design (qualitative)
Van Heest 2007[177]	Inappropriate study design (non-comparative cohort study)
Van Riet Paap 2014[178]	Inappropriate study design (study protocol)
Waller 2008[179]	Incorrect interventions. Inappropriate study design
Waller 2009[180]	Incorrect interventions. Conference abstract
Waller 2010[181]	Incorrect interventions. Inappropriate study design (protocol)
Walsh 1992[182]	Inappropriate study design (report)
Walshe 2008[183]	Inappropriate study design (qualitative)
Wiese 2009[184]	Inappropriate study design
Wilkes 2004[185]	Inappropriate study design (non-comparative)
Worth 2006[186]	Incorrect study design (qualitative study)
Zimmer 1982[187]	Not review population. Inappropriate study design

Study	Exclusion reason
Zimmer 1985[188]	Not review population
Zimmermann 2008[189]	Systematic review is not relevant to review question or unclear PICO

I.2 Excluded health economic studies

Table 24: Studies excluded from the health economic review

Reference	Reason for exclusion
Gage 2015[57]	This study was assessed as partially applicable with very serious limitations. It is not a cost utility analysis and the cost analysis does not take into account the cost of the intervention itself.