Study	Engelhardt 2009[35]
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Advanced illness defined as: COPD, chronic heart failure or cancer.
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients with chronic obstructive pulmonary disease, chronic heart failure or cancer diagnoses including those of the oesophagus, trachea, colon, liver, pancreas, lung or uterus, cancers of the prostate or breast with metastasis, melanoma, leukaemia, lymphosarcoma, Hodgkin's disease or multiple myeloma. Patients with COPD or CHF were eligible if they had experienced 1 or more admissions to an intensive care unit or 2 or more acute-care admissions in the last 6 months.
Exclusion criteria	NR
Age, gender and ethnicity	Age - --: Gender (M:F): Define. Ethnicity: Intervention: 84.8% white, 15.2% non-white; usual care: 91% white, 9% non-white
Further population details	1. Frail elderly:
Indirectness of population	--
Interventions	(n=267) Intervention 1: Advance care directives. The 6-session model has the following 3 components: (1) nondirective health counselling, (2) education and (3) care coordination. AICCP was delivered by social workers and a health educator with 16 hours of initial training and with 20 hours of follow-up. AICCP meetings were face to face, lasting a mean of 59.0 (SD = 22.1) minutes, including brief follow-up telephone contacts. The mean number of sessions was 4.9 (SD = 2.1) (range 0-10 [mode, 6]), with 81.9% of patients completing 3 to 7 sessions. On average, caregivers attended 50% of sessions based on patient preference, caregiver availability, and need. The topics covered across sessions were structured in a biopsychosocial 3-domain format, including the following: (1)health-related topics included but were not limited to understanding illness, treatment expectations, emerging symptoms, adherence to treatment recommendations, communication with health professionals, and advance planning; (2) coping with loss of role, functional capacity or health status; evaluating whether situations are amenable to change or, if not, whether reactions to unchangeable situations are modifiable; and monitoring for anxiety or depression, interpersonal conflict and existential concerns; and (3) caregiving concerns, maximising health system benefits, home environmental modifications, home care, and long-term care planning. This structure was delivered using a nondirective health counselling format, patient education and care coordination. It facilitated recognition and normalisation of the consequences of living with on-going health problems in domains of function beyond physical health per se. It promoted identification of psychosocial needs and supports and facilitated initiation of discussions about ways to adapt to and compensate for losses induced by reduced health status. An electronic web tool operationalised each session of AICCP by providing a checklist of health education topics and tasks to be completed in interviews. For example, at these meetings, coordinators introduced advance planning. If an

Study	Engelhardt 2009[35]
	expected task was not addressed at a specified meeting, coordinators were given pop-up reminders to complete them at subsequent meetings. Health education also included, as needed, information about health-related benefits within their health system and their community. Duration 6 sessions. Concurrent medication/care: n/a. (n=265) Intervention 2: Usual Care. Usual care. Duration n/a. Concurrent medication/care: n/a
Funding	Academic or government funding (The Garfield Foundation)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ADVANCE CARE PLANNING versus USUAL CARE Protocol outcome 1: Quality of life at during study period - Actual outcome: SF-12 physical standardised score at Post -test; Group 1: mean 32.99 (SD 10.31); n=198, Group 2: mean 34.65 (SD 10.66); n=205; Risk of bias: All domain - High, Selection - Low, Blinding - Low, Incomplete outcome data - High, Outcome reporting - Low, Measurement - Low, Crossover - Low, Subgroups - Low, Other 1 - Low, Other 2 - Low, Other 3 - Low; Indirectness of outcome: No indirectness ; Baseline details: Age differed between the two groups but statistically controlled for; Group 1 Number missing: 69, Reason: nr; Group 2 Number missing: 60, Reason: nr Protocol outcome 2: Number of presentations to Emergency Department at during study period - Actual outcome: ED visits at Post- test; Group 1: mean 3.69 (SD 6.14); n=198, Group 2: mean 5.35 (SD 12.87); n=205; Risk of bias: All domain - High, Selection - Low, Blinding - Low, Incomplete outcome data - High, Outcome reporting - Low, Measurement - Low, Crossover - Low, Subgroups - Low, Other 1 - Low, Other 2 - Low, Other 3 - Low; Indirectness of outcome: No indirectness ; Baseline details: Age differed between the two groups but statistically controlled for; Group 1 Number missing: 69, Reason: nr; Group 2 Number missing: 60, Reason: nr - Actual outcome: SF-12 mental standardised score at Post-test; Group 1: mean 49.09 (SD 10.77); n=198, Group 2: mean 47.99 (SD 11.55); n=205; Risk of bias: All domain - High, Selection - Low, Blinding - Low, Incomplete outcome data - High, Outcome reporting - Low, Measurement - Low, Crossover - Low, Subgroups - Low, Other 1 - Low, Other 2 - Low, Other 3 - Low; Indirectness of outcome: No indirectness ; Baseline details: Age differed between the two groups but statistically controlled for; Group 1 Number missing: 69, Reason: nr; Group 2 Number missing: 60, Reason: nr - Actual outcome: McGill Quality of Life Questionnaire at Post- test; Group 1: mean 5.03 (SD 0.87); n=198, Group 2: mean 4.89 (SD 1.14); n=205; Risk of bias: All domain - Very high, Selection - Low, Blinding - Low, Incomplete outcome data - High, Outcome reporting - Low, Measurement - High, Crossover - Low, Subgroups - Low, Other 1 - Low, Other 2 - Low, Other 3 - Low; Indirectness of outcome: No indirectness ; Baseline details: Age differed between the two groups but statistically controlled for; Group 1 Number missing: 69, Reason: nr; Group 2 Number missing: 60, Reason: nr Protocol outcome 3: Number of admissions to hospital at After 28 days of first admission - Actual outcome: Inpatient admissions at Post- test; Group 1: mean 2.44 (SD 5.11); n=198, Group 2: mean 4.33 (SD 16.26); n=205; Risk of bias: All domain - High, Selection - Low, Blinding - Low, Incomplete outcome data - High, Outcome reporting - Low, Measurement - Low, Crossover - Low, Subgroups - Low, Other 1 - Low, Other 2 - Low, Other 3 - Low; Indirectness of outcome: No indirectness ; Baseline details: Age differed between the two groups but statistically controlled for; Group 1 Number missing: 69, Reason: nr; Group 2 Number missing: 60, Reason: nr	
Protocol outcomes not reported by the study	Avoidable adverse events at during study period; Patient and/ or carer satisfaction at during study period; Number of

Study	Engelhardt 2009[35]
	GP presentations at during study period; Readmission; Length of stay in programme at during study period; Number of radiology tests at during study period; Number of outpatient visits at during study period; Number of laboratory tests ordered at during study period; Number of home health visits at during study period; Number of pharmacy prescriptions at during study period; Length of hospital stay at during study period

Appendix E: Economic evidence tables

No studies were included.

Appendix F: GRADE tables

Table 6: Clinical evidence profile: Advance care planning versus usual care, RCT evidence

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Advance care planning	Control	Relative (95% CI)	Absolute		
Patient satisfaction												
1	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	131/133 (98.5%)	94.2%	RR 1.05 (1 to 1.09)	47 more per 1000 (from 0 more to 85 more)	⊕⊕⊕O MODERATE	CRITICAL
Family satisfaction												
1	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	Serious[2]	none	26/29 (89.7%)	77.8%	RR 1.15 (0.91 to 1.46)	117 more per 1000 (from 70 fewer to 358 more)	⊕⊕OO LOW	CRITICAL
Patient satisfaction (Better indicated by higher values)												
1	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	86	100	-	MD 0.09 higher (0.1 lower to 0.28 higher)	⊕⊕OO LOW	CRITICAL
Family satisfaction (problems reported) (Better indicated by lower values)												
1	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	67	76	-	MD 0.12 lower (0.22 to 0.02 lower)	⊕⊕OO LOW	CRITICAL
QOL: SF-12 Physical standardised score (Better indicated by higher values)												
1	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	Serious[2]	none	198	205	-	MD 1.66 lower (3.71 lower to 0.39 higher)	⊕⊕OO LOW	CRITICAL
QOL: SF-12 Mental standardised score (Better indicated by higher values)												

1	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	very serious[2]	none	198	205	-	MD 1.1 higher (1.08 lower to 3.28 higher)	⊕OOO VERY LOW	CRITICAL
McGill QOL questionnaire (Better indicated by lower values)												
1	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	198	205	-	MD 0.14 higher (0.06 lower to 0.34 higher)	⊕⊕OO LOW	CRITICAL
Number of ED visits (Better indicated by lower values)												
1	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	Serious[2]	none	198	205	-	MD 1.66 lower (3.62 lower to 0.3 higher)	⊕⊕OO LOW	CRITICAL
Number of inpatient admissions (Better indicated by lower values)												
1	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	Serious[2]	None	198	205	-	MD 1.89 lower (4.23 lower to 0.45 higher)	⊕⊕OO LOW	CRITICAL

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

Appendix G: Excluded clinical studies

Table 7: Studies excluded from the clinical review

Study	Exclusion reason
ALBERTA 2005[2]	Review paper checked for references.
ALIFRANGIS 2011[3]	Qualitative study. No outcomes of interest
ALLEN 2005[4]	Observational study (RCT evidence available).
AMERING 2005[5]	Incorrect population. Qualitative study.
AMJAD 2014[6]	No outcomes of interest
ANDERSON 1994[7]	No outcomes of interest
ARENSON 1996[8]	Narrative paper checked for references
ATKINSON 2003[9]	Qualitative study
ATTWOOD 2001[10]	Review does not match protocol
AU 2012[11]	No outcomes of interest
BRAUN 2006[12]	No outcomes of interest
BRAVO 2008[14]	Systematic review does not match protocol.
BRAVO 2012[13]	Methodological paper (no results reported)
BRIGGS 2004[15]	No outcomes of interest
BRINK 2008[16]	No outcomes of interest.
BROADWELL 1993[17]	Qualitative study
BRODY 2006[18]	Incorrect topic
CAMPBELL 2009[19]	Incorrect population
CAPEL 2012[20]	No outcomes of interest.
CAPLAN 2006[21]	Observational study (RCT evidence available).
CATIC 2013[22]	Incorrect intervention
CHEN 2014[24]	Observational study (RCT evidence available).
CLAYTON 2007[25]	Incorrect intervention
CONNORS 1995[26]	Multiple interventions without a clear focus on advance care planning, therefore ACP not tested in trial.
DEKORTE-VERHOEF 2014[27]	No outcomes of interest
DENING 2011A[29]	Systematic review checked for references
DEV 2013[31]	No outcomes of interest
DEVLEMINCK2016 [28]	Incorrect intervention. The objective of the study was to develop an intervention to support the initiation of advance care planning in general practice.
DONZE 2014[32]	Incorrect study design (case-control)
EFFIONG 2013[33]	Cochrane protocol does not sufficiently match protocol
EVANS 2012A[36]	Review checked for references
GADE 2008[37]	RCT of palliative care team provision; not advanced care planning.
GLAUDEMANS 2015 [39]	Structured review. Checked references

HAJIZADEH 2013[40]	Theoretical modeling
HENDERSON 1997[42]	Narrative paper
HESSE 1995[43]	Observational study (RCT evidence available).
HIRSCHMAN 2012[44]	No outcomes of interest
HO 2000[45]	Observational study (RCT evidence available).
HOFMANN 1992[46]	Narrative paper
HOUBEN 2014[48]	Methodological paper (no results reported)
HOUBEN 2014A[47]	Systematic review checked for references
HOUTTEKIER 2012[49]	Cochrane protocol (review not completed)
INDERSCHMITTEN 2011[50]	Methodological paper (no results reported)
ISHIHARA 1996[51]	No outcomes of interest
JAIN 2015 [52]	Systematic review. Checked references
JETHWA 2015[53]	Literature review. Checked references
JOHNSON 1995[54]	Observational study (RCT evidence available).
JONES 2011[55]	Not an RCT of advance care planning; a trial of whether patients wish to discuss ACP
KASSBARTELMES 2004[56]	Review paper checked for references
KHANDELWAL2015 [57]	Systematic review. Checked references
KHAZAAL 2009[58]	Incorrect population
LA PUMA 1991[59]	Narrative checked for references
LEVY 2008[60]	Observational study (RCT evidence available).
LUKAS 2013[61]	Observational study (RCT evidence available).
MEI 2014[62]	Systematic review does not match protocol.
MENTZ 2014[63]	Methodological paper (no results reported)
MEZEY 1996A[64]	No outcomes of interest
MITCHELL 2004[65]	Incorrect comparison (terminal care in nursing homes versus community)
MOLLOY 1991A[66]	Observational study (RCT evidence available).
MOLLOY 2000A[67]	Care planning not tested; education about the existence of directives
MORRISON 2005[68]	Social workers were randomized to ACP education, not patients randomized to receive or not receive ACP
MOTLEY 2013[69]	Review checked for references
MULARSKI 2007[70]	Systematic review does not match protocol
NICHOLAS 2011[75]	Observational study (RCT evidence available).
NICHOLAS 2014[74]	Observational study (RCT evidence available).
NORRIS 2007[76]	Qualitative study
OULTON 2015 [77]	Systematic review. Checked references. Studies included in the review were of methodology not considered in our protocol (surveys, interviews)
PAPAGEORGIOU 2002[79]	Incorrect population
PAPAGEORGIOU 2004[78]	Incorrect population
PIAMJARIYAKUL 2014[80]	Qualitative study
RABOW 2004[81]	Intervention group also received psychosocial support and family caregiver training.

RAYMOND 2014[82]	Review paper, incorrect population.
SAMPSON 2011 [29]	Incorrect intervention. The study aimed to assess the feasibility of implementing a 2 component intervention (palliative assessment and advance care planning) to improve end of life care for people with advance dementia.
SCHELLINGER 2011[83]	Observational study (RCT evidence available).
SCHMIDT 2014[84]	No outcomes of interest
SCHNEIDERMAN 1992[85]	No outcomes of interest
SHERWEN 2010[86]	Narrative
SOLLOWAY 2005[87]	Observational study (RCT evidence available).
SONG 2004[89]	Systematic review checked for references
SONG 2015 [90]	No protocol outcomes reported
Song2016A[88]	Systematic review- not AME patients. Advance care planning in patients with primary malignant brain tumours
SUDORE 2015[91]	Study protocol for a RCT
TENO 1994[94]	Observational study (RCT evidence available).
TENO 1997[92]	Incorrect comparison (advance directives that were documented on medical charts versus those that were not).
TENO 2007[93]	Observational study (RCT evidence available).
THOMAS 2006B[95]	Review paper checked for references
WENGERS 1996[96]	Incorrect comparison
WU 2008[98]	Observational study (RCT evidence available).
YOO 2013[99]	Observational study (RCT evidence available).

Appendix H: Excluded economic studies

No studies were excluded.