Evidence tabellen en GRADE profielen

Evidence tabellen en GRADE profielen behorende bij de uitgangsvragen die via de GRADE methodiek zijn uitgewerkt.

Onderzoeksvraag 1: effectiviteit proactieve zorgplanning

Wat zijn de (on)gunstige effecten van proactieve zorgplanning ten opzichte van geen proactieve zorgplanning bij patiënten die palliatieve zorg ontvangen?

Patients	Patiënten die palliatieve zorg ontvangen of zorgverleners die palliatieve zorg verlenen
Intervention	Proactieve zorgplanning
Comparator	Geen proactieve zorgplanning
Outcome	Patiënttevredenheid, kwaliteit van leven, kwaliteit van leven van mantelzorger, belasting van de patiënt (in tijd en ervaring), belasting van de mantelzorger (in tijd en ervaring), belasting van de zorgverlener (in tijd en ervaring), kosten, kwaliteit van sterven

Evidence tables

Systematic reviews

Sloan, 2021							
Included studies in the review	**Study characteristics**	**Patient characteristics**	**Intervention (I)**	**Comparison / control (C)**	**Follow-up**	**Outcome measures and effect size**	**Comments**
A. Au (2012) B. Curtis (2018) C. Doorenbos (2016) D. Kirchhoff (2012) E. Perry (2005) F. Song (2009)	Type of study: RCT's or non-randomized trials with a concurrent or historical comparison group Search date: May 2020 Number of included studies: N=6 Country All USA Source of funding:	N total at baseline: A. 376 B. 537 C. 80 D. 313 E. 203 F. 116 Age, years (mean): Not reported Disease category: A. COPD patients B. Patients with lung cancer, COPD, heart	A. Pre-visit survey addressing preferences, barriers, and facilitators for communication about EOL care. Clinicians received a one-page, patient-specific feedback form based on survey responses and communication tips. Patients also received a feedback form. B. Jumpstart-Tips. Patients completed survey questions to identify preferences, barriers, and facilitators for communication about EOL care. Clinicians received information and communication tips based on	A. Completed questionnaires but did not receive feedback. B. Enhanced usual care, which included completion of surveys and regular contact with study personnel. C. Usual care. D. Usual care, a standard advance directive counseling assessment on	Length of follow-up: A. 2 weeks B. 3 months C. 2 weeks D. post-death follow-up E. 2 to 4 months F. 3 months	Patient satisfaction: Three out of four studies suggest patient satisfaction may improve with shared decision-making. All used the Quality of Communication questionnaire. Au (2012) reported a 5.7 point difference between two groups (p=0.03). Curtis (2018) reported mean values of 4.6 and 2.1 points in the intervention and control group respectively (p=0.01). Doorenbos (2016) reported a score of 5.8 in the intervention and 4.5 in the control group (p=0.03). Patient symptoms of depression/anxiety: Unable to draw conclusions.	Also included 5 qualitative implementation studies, which are not reported here.

	Agency for Healthcare Research and Quality (AHRQ), U.S. Department of Health and Human Services (HHS) <u>Inclusion criteria:</u> – Adults aged 18 years or older with serious life-threatening chronic illness (other than those only with cancer) and their caregivers, being seen in ambulatory settings – palliative care shared decision-making tools and resources for clinicians and patients and/or caregivers in ambulatory settings – reported outcomes of interest – published in English – US-based study <u>Exclusion criteria:</u> None	failure, cirrhosis, or ESRD C. Patients with heart failure with EF < 40% D. Patients with heart failure or ESRD E. ERSD patients F. ERSD patients	the survey. Patients also received a summary of the survey and suggestions for having a goals-of-care conversation with the clinician. C. Goal of Care communication intervention consisting of phone-based, pre-visit coaching about HF therapies and advance directive completion, delivered by a nurse. Patients and clinicians received a one-page summary. D. Single interview lasting 1 to 1.5 hours to assess patient and caregiver understanding and experience with illness, assist caregiver in preparing to be a decision-makes, and assist in documentation of patient EOL preferences. E. Arm 1: Printed materials prepared by the National Kidney Foundation. Arm 2: Peer mentoring; peers contacted patient participants 8 times, which included 5 phone contacts and 3 face-to-face meetings. F. Sharing Patients' Illness Representation to Increase Trust (SPIRIT), up to 1-hour, single session interview with.a patient-caregiver dyad, delivered by a trained nurse to enhance communication between patients and caregivers about EOL care.	admission, and an offering of additional information, if interested. E. No study materials, only routine care. F. Usual care.	<u>Loss-to-follow-up:</u> Not reported	<u>Concordance between patient preferences and care received:</u> Two studies reported on this. Kirchhoff (2012) reported that 74% of intervention patients and 62% of control patients received care concordant with initial choices (no statistics). In the study of Curtis (2018), 70% of intervention patients and 57% of control patients reported goal-concordant care (p=0.08). <u>Caregiver satisfaction:</u> Unable to draw conclusions. <u>Advance directives documentation:</u> Three studies showed an increase in documentation. Curtis (2018) showed that 62% of the intervention group and 17% of the control group documented goals-of-care conversations (p<0.01). Perry (2005) showed that completion of an advance directive was 35% in a peer-mentoring group, compared to 12% in a group receiving printed material and 10% in the control group (p<0.01). Doorenbos (2016) showed 16% in the intervention group compared to 7.7% in the control group (p=0.24).	

Nishikawa, 2020							
Included studies in the review	**Study characteristics**	**Patient characteristics**	**Intervention (I)**	**Comparison / control (C)**	**Follow-up**	**Outcome measures and effect size**	**Comments**
A. Briggs (2004) B. Denvir (2016) C. El-Jawahri (2016) D. Kirchhoff (2010) E. Menon (2016) F. Metzger (2016) G. O'Donnell (2018) H. Rogers (2017) I. Sidebottom (2015)	Type of study: RCTs Search date: 10 October 2019 Number of included studies: N=9 Country: A. USA B. UK C. USA D. USA E. USA F. USA G. USA H. USA I. USA Source of funding: National Institute for Health Research (NIHR) Inclusion criteria: – Adults with a clinical diagnosis of heart failure or reduced ejection fraction – Trials that implement ACP practices Exclusion criteria: None	N total at baseline: A. 27 B. 50 C. 246 D. 338 E. 120 F. 29 G. 50 H. 150 I. 232 Age, years (mean): A. 68.7 B. 81.1 C. 81 D. 71.4 E. 66.4(I), 68.4(C) F. 62.6(I), 62.3(C) G. 74.7(I), 69.2(C) H. 71.9(I), 69.8(C) I. 76(I), 70.9(C) Disease category: A. NYHA class III or IV, or ESRD B. Unscheduled admission with HF or ACS C. NYHA class III or IV or II with precence of end stage comorbidity D. NYHA II, III or IV, or ESRD and comorbidity E. Various severe diseases	A. 1-hour PC-ACP interview consisting of 5 stages. B. 1-hour semi-structured meeting with trial cardiologist and nurse, followed by 2x 1-hour meetings with trial nurse in patient's home at 6 and 12 weeks. Also ongoing telephone support for 12 weeks. C. 6-minute goals-of-care video, and a checklist reviewing ACP. D. PC-ACP interview consisting of 5 stages. E. Received explicit verbal instructions to use the values inventory as a starting point for future care planning. F. SPIRIT-HF, a structured, guided discussion of 1-hour, containing 5 steps. Afterwards, a written summary of the discussion. G. Structured goals of care conversation with social worker, with telephone contact during the 6-month follow-up period. H. Palliative Care in Heart Failure (PAL-HF), managed by palliative care nurse.	A. Participants were approached on admission and asked if they had an advance directive or if they would like more information. B. Usual care. C. Participants listened to a description of the 3 goals of care used in the intervention arm read out loud by the RA's. D. Usual care. E. Usual care. F. Usual care. G. Printed materials containing information about ACP. H. Managed by a cardiologist-directed team with HF expertise. I. Usual care.	Length of follow-up: A. At completion of intervention B. 12 weeks C. Not reported D. Until after death E. Not reported F. 2 weeks G. 6 months H. 24 weeks I. 6 months Loss-to-follow-up: A. 0 B. 6 C. 128 D. 25 E. 3 F. 0 G. 19 H. 69 I. 97	Concordance between participants' preferences and end-of-life care: RR 1.19 (95%CI 0.91-1.55) Participants' QoL: The QoL scores in the ACP groups was on average 0.06 SDs higher (95%CI -0.26;0.38) than in the usual care groups Completion of documentation by medical staff regarding ACP processes: RR 1.68 (95%CI 1.23-2.29) Participants' depression: The depression score in the ACP groups was on average 0.58 SDs (95%CI -0.82;-0.34) lower than in the usual care groups. Quality of communication: Mean difference -0.4 (95%CI -1.61;0.81) Participants' decisional conflict: Mean difference -0.26 (95%CI -0.55;0.02) Use of hospice services:	Seven studies were included in the meta-analyses. Two studies did not report on prespecified outcomes.

		F. At least 30 days post-LVAD placement G. NYHA II-IV with 1 or more risk factors for poor prognosis H. NYHA III or IV I. Acute heart failure	I. Palliative care consult within 24 hours of order.			HR 1.60 (95%CI 0.58;4.38)	

Lin, 2019							
Included studies in the review	**Study characteristics**	**Patient characteristics**	**Intervention (I)**	**Comparison / control (C)**	**Follow-up**	**Outcome measures and effect size**	**Comments**
A. El-Jawahri (2010) B. Epstein (2013) C. Volandes (2013) D. Jones (2011) E. Stein (2013) F. Clayton (2007) G. Rodenbach (2017) H. Epstein (2017) I. Walczak (2017)	Type of study: RCTs Search date: 31 March 2017 Number of included studies: N=9 Country: A. USA B. USA C. USA D. UK E. Australia F. Australia G. USA H. USA I. Australia Source of funding: None Inclusion criteria: All RCTs testing an ACP intervention for advanced cancer patients in the last 12 months of their life Exclusion criteria:	N total at baseline: A. 50 B. 56 C. 150 D. 77 E. 120 F. 174 G. 180 H. 265 I. 110 Age: Not reported. Disease category: A. Malignant giloma B. Progressive pancreas or hepatobiliary cancer C. Lung, colon, or breast cancer (advanced) D. Bowel, prostrate, or gynaecological cancer (recurrent, advanced) E. Colorectal, lung, other cancer (metastatic)	A. 6-min video with verbal narrative of goals-of-care. B. 30min video decision aids with image of cardiopulmonary resuscitation and mechanical ventilation. C. 3-min video depicting a patient on a ventilator and cardiopulmonary resuscitation being performed on a simulated patient. D. Meeting with a trained medical staff using a checklist of topic domains. E. Semi-structured discussion with a psychologist using a pamphlet called ‘Living with Advanced Cancer’. F. Provision of a question prompt list to patients before consultation with physicians.	A. Verbal narrative of goals-of-care. B. Verbal narrative about cardiopulmonary resuscitation and mechanical ventilation. C. Verbal narrative describing cardiopulmonary resuscitation. D. Usual care E. Usual care F. Standard consultation G. Usual care H. Usual care I. Usual care	Length of follow-up: Not reported. Loss-to-follow-up: Not reported.	Quality of life / Symptoms: Studies showed no difference in patients’ depression and anxiety, or quality of life.	The systematic review was mainly focused on the conceptual models of ACP.

	Paediatric patients, studies focusing on interventions for promoting ACP completion rates or reporting non-primary data.	F. Gastrointestinal, lung, other cancer (advanced) G. Non-hematologic cancer (advanced) H. Stage III or IV cancer I. Lung, prostate, or bowel/anus cancer (advanced)	G. Communication coaching with a question prompt list for patients before the consultation with oncologist. H. Values and options in cancer care (VOICE). I. Communication support programme				

Brinkman-Stoppelenburg, 2014							
Included studies in the review	**Study characteristics**	**Patient characteristics**	**Intervention (I)**	**Comparison / control (C)**	**Follow-up**	**Outcome measures and effect size**	**Comments**
For all included studies, see reference list in the review.	Type of study: Empirical studies on ACP. Experimental (n=6) and observational (n=107) Search date: December 2012 Number of included studies: N= 113 Country: US (n=91) Canada (n=5) Other (n=17) Source of funding: No funding Inclusion criteria: – Studies concerning quantitative research – Reporting on: effects on medical treatment in the last phase of life, effects on quality of life and patients' and families' satisfaction with care, effects on patients' and families' prevalence and/or severity of symptoms – Both intervention and observational studies with control group	Number of patients in study: 0-100: n=13 101-500: n=35 501-1000: n=16 >1000: n=49 Setting: Community (n=9) Nursing home (n=37) Hospital (n=37) Hospital ICU (n=18) Outpatient clinic (n=1) Mixed (n=12)	Type of ACP in study: Do Not Resuscitate order: n=52 Do Not Hospitalize order: n=16 Advance directive/living will/durable power of attorney: n=45 Complex ACP intervention: n=20	Not reported	Length of follow-up: Not reported Loss-to-follow-up: Not reported	Quality of life/quality of care/satisfaction: Decreased (n=1), increased (n=5), mixed results (n=1), no difference (n=12) Patients' and families' symptoms: Decreased (n=5), mixed results (n=1), no difference (n=7) Life-sustaining treatment: Decreased (n=28), increased (n=3), mixed results (n=7), no difference (n=13) Hospice and/or palliative care: Increased (n=18), mixed results (n=3), no difference (n=2) Hospitalization/length of stay: Decreased (n=21), Increased (n=5), mixed result (n=1), no difference (n=8)	-

	Studies published on paper in English between January 2000 and December 2012 Exclusion criteria: – Studies in which ACP is only part of a more complex intervention – Studies on children – Studies on psychiatric patients – Studies on hypothetical situations – Studies solely on effects on costs of care, on patients' preferences or on completion of ACP documents					ICU admission/length of stay: Decreased (n=2), increased (n=3), no difference (n=3) Cardiopulmonary resuscitation: Decreased (n=4), no difference (n=1) Compliance with patients' end of life wishes: Increased (n=3), no difference (n=3)	

Primary studies

Duenk, 2017						
Study characteristics	**Patient characteristics**	**Intervention (I)**	**Comparison / control (C)**	**Follow-up**	**Outcome measures and effect size**	**Comments**
Type of study: Pragmatic cluster controlled trial Setting: General hospitals Country: The Netherlands Source of funding: The Netherlands Organization for Health Research and Development-ZonMw	Inclusion criteria: – Acute exacerbation of COPD – Above 18 years of age – Poor prognosis as defined by meeting two or more of the 11 indicators for poor prognosis Exclusion criteria: – Unable to speak Dutch – Severe cognitive disorder – Already treated by a specialized palliative care team (SPCT) N total at baseline: Intervention: 90 Control: 138 Important prognostic factors Age, mean (SD): I: 68.67 (9.08) C: 68.45 (9.54)	Additional proactive palliative care from a specialized palliative care team (SPCT). Patients had a first consultation with the SPCT during the initial hospitalization, or the latest within 1 week after hospital discharge. Thereafter, the SPCT had monthly meetings with the patient in the outpatient setting for 1 year or until death.	Usual care	Length of follow-up: 12 months Loss-to-follow: Not reported Incomplete outcome data: Intervention: 46 (51%) Reasons not reported Control: 82 (59%) Reasons not reported	Quality of Life / Symptoms: Measured with the St George Respiratory Questionnaire (SGRQ) at 3, 6, 9 and 12 months. No significant differences between both groups at all timepoints for the SGRQ total score and the symptoms and activity subscales. There was a significant difference between groups in the change scores of the impact subscale at 6 months (-5.73 vs 0.86, p=0.04). There were no differences in QoL as measured with the McGill Quality of Life questionnaire. There were no differences in anxiety or depression during follow-up. Patient burdening: No differences in readmission rates.	-

	Sex: I: 51.1% M C: 46.4% M In the intervention group, compared to the control group, more patients had severe dyspnea scores, were living alone, and were suffering from CHF. No substantial differences were seen between groups on baseline outcome measures.					

Johnson, 2018						
Study characteristics	**Patient characteristics**	**Intervention (I)**	**Comparison/ control (C)**	**Follow-up**	**Outcome measures and effect size**	**Comments**
Type of study: RCT Setting: Outpatient and inpatient departments of oncology centres Country: Australia Source of funding: The National Health and Medical Research Council	Inclusion criteria: – Age 18 years or older – Diagnosis of incurable cancer – Expected survival time of 3-12 months – Prior systemic anticancer therapy – Ability to complete questionnaires and have an ACP conversation in English Exclusion criteria: – Previously completed formal ACP – Patients without an adult family member/friend (FM) to participate in the trial with them	The ACP intervention is delivered in a structured meeting between the patient, their FM and the ACP facilitator, conducted within 2 weeks of study enrolment. The ACP facilitator reviewed the patient's medical notes and met with the patient's oncologist prior to intervention delivery to discuss medical goals of care, appropriate treatment options and the patient's prognosis.	Usual Care	Length of follow-up: Max. 3 years Loss-to-follow-up: Intervention: 37 (35.6%) Reasons: withdrew (n=16), died before first follow-up (n=17), missed session (n=4) Control: 27 (26.0%) Reasons: withdrew (n=5), died before first follow-up (n=19), missed session (n=3) Incomplete outcome data:	Patient satisfaction: No difference in patient satisfaction with care or FM satisfaction with care. Patient burdening: Concordance between documented preferences and end of life care received was higher in the ACP arm for CPR (75% vs 23%, p<0.01), ICU admissions (28% vs 11%, p<0.01), and ventilation (49% vs 12%, p<0.01). There was no difference in concordance between chemotherapy received in last 4 week, surgery, 'other' significant interventions in the last 2 weeks, or other goals of care. Caregiver burdening: There was no evidence of differences between groups in FM stress, distress, physical well being before or after death. There was greater improvement in mental well being from baseline to the bereavement interview in the usual care group (p<0.01).	-

	N total at baseline: Intervention: 104 Control: 104 Important prognostic factors: Age: I: 66 years C: 65 years Sex: I: 53.9% M C: 52.9% M Baseline demographic and clinical variables were similar between the arms.			Intervention: 51 (49.0%) Reasons not reported. Control: 41 (39.4%) Reasons not reported.	Quality of death: Concordance between documented preferences and place of death (49% vs 26%, p<0.01) was higher in the ACP arm.	

Malhotra, 2020						
Study characteristics	**Patient characteristics**	**Intervention (I)**	**Comparison / control (C)**	**Follow-up**	**Outcome measures and effect size**	**Comments**
Type of study: RCT Setting: Hospital Country: Singapore Source of funding: Lien Centre for Palliative Care of Duke-NUS Medical School and Ministry of Health-Health Services Research of Singapore	Inclusion criteria: – NYHA III or IV – 21 years or older Exclusion criteria: None N total at baseline: Intervention: 282 Control: 189 Important prognostic factors: Age, mean (SD): I: 64 (12) C: 65 (13) Sex: I: 79.6% M C: 77.3% M	Trained certified non-clinician facilitators provided ACP based on the Respecting Choices Model, an internationally recognized model of ACP. Facilitator explored and documented patient preferences for EOL treatments (comfort care/limited additional treatment/full treatment), cardiopulmonary resuscitation (CPR; yes/no) and place of death. Patients nominated a surrogate who was encouraged to be present during ACP discussion. Facilitators discussed with the treating physician, who was involved in outpatient medical decision-making, any issues raised during the session. The ACP document, signed by patient, surrogate, facilitator, and physician, was filed in national electronic health records.	Usual care	Length of follow-up: At least 1 year. Loss-to-follow-up: Not reported. Incomplete outcome data: Not reported.	Receiving EOL treatments consistent with preference: Intervention group: 35%, Control: 44%; (p= .47). Dying at place of choice: ACP: 52%, Control: 51% (p =1.00). Decisional conflict: At first follow-up, patients in the intervention group had lower decisional conflict (beta = 10.8, p< .01) and were more likely to have discussed preferences with surrogates (beta=1.3, p=	-

	Baseline characteristics were well matched between arms.				.04). Subsequent follow-ups showed no difference.	

Skorstengaard, 2019						
Study characteristics	**Patient characteristics**	**Intervention (I)**	**Comparison / control (C)**	**Follow-up**	**Outcome measures and effect size**	**Comments**
Type of study: RCT Setting: Hospital Country: Denmark Source of funding: Kraeftens Bekaempelse and TrygFonden	Inclusion criteria: – More than 18 years – Has relatives – NYHA III-IV, shortness of breath, persistent symptoms, at least 2 acute episodes that require iv treatment over the last 6 months, cardiac cachexia; or – COPD with MRC of 3 or more, FEV of 50% or lower, 2 or more exacerbations in 1 year and in need of oxygen at home; or – Interstitial lung disease with a GAP score of 2 or higher; or – Patients with upper GI, pancreatic, and head and neck cancer, patients with prostate cancer at the start of chemotherapy and patients in second or later line of chemotherapy. Exclusion criteria: – Expected to die within 1 month N total at baseline: Intervention: 102 Control: 103 Important prognostic factors: Age, mean: I: 69.2 C: 68.7 Sex: I: 51% M	Formal physician-led ACP discussion within 2 weeks after the randomization, lasting 45 minutes on average. The dialogue was inspired by the Respecting Patient Choices Program and the Gold Standards Framework. The ACP discussion was documented.	Usual care.	Length of follow-up: At least 17 months Loss-to-follow-up: I: 21 non-responders, 2 died before receiving intervention C: 11 non-responders	Fulfillment of preferred place of death: 52% in the intervention group compared to 35% in the control group (p=0.22). Hospital admission at end of life: 23% in intervention group and 49% in control group (p=0.07). Actual place of death: 40% of intervention group patients died at home, compared to 17% of control group patients (p=0.01).	-

	C: 49.5% M No significant differences between groups in baseline characteristics.					

Korfage 2020						
Study characteristics	**Patient characteristics**	**Intervention (I)**	**Comparison / control (C)**	**Follow-up**	**Outcome measures and effect size**	**Comments**
Type of study: RCT (cluster) Setting: Hospital Country: Europe (6 countries) Source of funding: QualityEuropean Union 7th framework programme	Inclusion criteria: – Advanced lung or colorectal cancer – WHO performance status 0-3 – Estimated life expectancy of at least 3 months – Competent to give consent Exclusion criteria: None N total at baseline: Intervention: 445 Control: 685 Important prognostic factors: Age, mean: I: 66 years C: 66 years Sex: I: 39% female C: 40% female Diagnosis: I: 62% lung cancer, 38% colorectal cancer	ACTION RC: an adapted and integrated version of 2 of the 3 stages of Respecting Choices. It includes facilitated structured ACP conversations (1 or 2 conversations), the My preferences form, and information leaflets.	Usual care	Length of follow-up: 12 months Loss-to-follow-up: I: 114 C: 87	No significant difference in change in EORTC emotional functioning score, symptom score, coping, satisfaction with care, patient involvement in decision-making, or shared decision making at follow-up. Hospitalization rates did not differ between the two groups.	-

	C: 50% lung cancer, 50% colorectal cancer					

Peltier, 2017						
Study characteristics	**Patient characteristics**	**Intervention (I)**	**Comparison / control (C)**	**Follow-up**	**Outcome measures and effect size**	**Comments**
Type of study: Retrospective review of prospectively collected observational data Setting: Tertiary oncology setting Country: USA Source of funding: Not reported.	Inclusion criteria: – Patients referred to Surgical or Medical Oncology – Met a certified facilitator – Died following the implementation of the program Exclusion criteria: None reported. N total at baseline: Intervention: 24 Control: 45 Important prognostic factors: Sex: I: 41.7% M C: 57.8% M Patients enrolled in the intervention program were proportionally more likely to belong to a racial minority (20% vs 83%).	Honoring Choices Wisconsin: a state-wide initiative designed to increase advocacy and education around ACP, utilizing a trained facilitator framework modelled after “Respecting Choices”.	Usual care	Length of follow-up: 4 months Loss-to-follow-up: n.a. Incomplete outcome data: n.a.	Patient burdening: No difference in risk to be submitted to an ICU (17.8% vs 12.5%, p=0.57) or to be admitted to a hospice (74.4% vs 79.2%, p=0.66), Quality of death: No difference in risk to die in a hospice (53.3% vs 70.8%, p=0.37).	Pilot trial with limited comparable outcome data. High risk of bias.

Risk of bias

Systematic reviews

Sloan, 2021		
Item	**Yes, partial yes or no**	**Explanation**

1. Did the research questions and inclusion criteria for the review include the components of PICO?	Yes	
2. Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol?	No	Not reported
3. Did the review authors explain their selection of the study designs for inclusion in the review?	No	No rationale given.
4. Did the review authors use a comprehensive literature search strategy?	Partial	Multiple sources used plus reference lists checked. However, search is somewhat simple and there are language restrictions and restrictions on country were study was done.
5. Did the review authors perform study selection in duplicate?	Yes	
6. Did the review authors perform data extraction in duplicate?	No	
7. Did the review authors provide a list of excluded studies and justify the exclusions?	Yes	Listed in figure
8. Did the review authors describe the included studies in adequate detail?	Partial	Listed in table, but some information, such as patient characteristics and outcomes per study are missing
9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?	Yes	Cochrane risk of bias tool
10. Did the review authors report on the sources of funding for the studies included in the review?	Yes	Listed in table
11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results?	n.a.	
12. If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis?	n.a.	
13. Did the review authors account for RoB in individual studies when interpreting/ discussing the results of the review?	Yes	They report the strength of evidence for each finding
14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?	No	
15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?	n.a.	
16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?	No	The authors declared no conflict of interest.

Nishikawa, 2020		
Item	**Yes, partial yes or no**	**Explanation**

1. Did the research questions and inclusion criteria for the review include the components of PICO?	Yes	
2. Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol?	No	Not reported
3. Did the review authors explain their selection of the study designs for inclusion in the review?	No	No rationale is given
4. Did the review authors use a comprehensive literature search strategy?	Yes	Searched 7 databases without restrictions on language, and also looked at unpublished material. Reference lists were checked as well.
5. Did the review authors perform study selection in duplicate?	Yes	
6. Did the review authors perform data extraction in duplicate?	Yes	
7. Did the review authors provide a list of excluded studies and justify the exclusions?	Yes	Listed in table.
8. Did the review authors describe the included studies in adequate detail?	Yes	
9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?	Yes	Used Cochrane tool
10. Did the review authors report on the sources of funding for the studies included in the review?	Yes	
11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results?	Yes	
12. If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis?	Yes	
13. Did the review authors account for RoB in individual studies when interpreting/ discussing the results of the review?	Yes	
14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?	Yes	
15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?	No	Not done because of limited number of included studies.
16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?	No	The authors declared no conflict of interest.

Lin, 2019		
Item	**Yes, partial yes or no**	**Explanation**
1. Did the research questions and inclusion criteria for the review include the components of PICO?	No	Control and outcomes not clearly defined
2. Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol?	Yes	Prospectively registered at PROSPERO
3. Did the review authors explain their selection of the study designs for inclusion in the review?	No	No rationale for only including RCTs

4. Did the review authors use a comprehensive literature search strategy?	Yes	Eight electronic databases were searched and key journals were hand-searched
5. Did the review authors perform study selection in duplicate?	No	
6. Did the review authors perform data extraction in duplicate?	Partial	Data extraction was checked by second author
7. Did the review authors provide a list of excluded studies and justify the exclusions?	Yes	Listed in figure
8. Did the review authors describe the included studies in adequate detail?	Yes	Listed in table
9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?	Yes	Cochrane risk of bias tool used
10. Did the review authors report on the sources of funding for the studies included in the review?	No	
11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results?	n.a.	
12. If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis?	n.a.	
13. Did the review authors account for RoB in individual studies when interpreting/ discussing the results of the review?	Yes	
14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?	No	
15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?	n.a.	
16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?	No	The authors declared no conflicts of interest.

Brinkman-Stoppelenburg, 2014		
Item	**Yes, partial yes or no**	**Explanation**
1. Did the research questions and inclusion criteria for the review include the components of PICO?	Yes	
2. Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol?	No	Not reported
3. Did the review authors explain their selection of the study designs for inclusion in the review?	Yes	
4. Did the review authors use a comprehensive literature search strategy?	Partial	Multiple electronic databases were searched, however with restrictions to language and date
5. Did the review authors perform study selection in duplicate?	Partial	Independent process not entirely clear from description
6. Did the review authors perform data extraction in duplicate?	No	Not reported
7. Did the review authors provide a list of excluded studies and justify the exclusions?	No	No reasons for exclusion reported
8. Did the review authors describe the included studies in adequate detail?	No	Not all studies are described

9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?	Partial	Adaptation of the tool proposed by Higginson
10. Did the review authors report on the sources of funding for the studies included in the review?	No	
11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results?	n.a.	
12. If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis?	n.a.	
13. Did the review authors account for RoB in individual studies when interpreting/ discussing the results of the review?	Yes	
14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?	Yes	
15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?	No	
16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?	No	The authors reported no conflicts of interest.

Primary studies

Author, publication year	**Random sequence generation (selection bias)**	**Allocation concealment (selection bias)**	**Blinding of patient and personnel (performance bias)**	**Blinding of outcome assessor (detection bias)**	**Follow-up and ITT or per protocol analysis (attrition bias)**	**Selective reporting**	**Other bias**
Duenk, 2017	High risk *Randomization not possible, thus a cluster controlled trial*	High risk *Cluster controlled*	High risk *Clinicians not blinded.*	n.a.	Low risk *Analyses followed an ITT principle.*	Low risk *Registered outcomes were reported in publication.*	
Johnson, 2018	Low risk *Randomised centrally, using an interactive voice response system*	Low risk *Randomisation took place after enrolment and baseline assessment.*	High risk *No, not possible*	Low risk *Assessors were blinded to the allocated treatment group.*	High risk *No ITT analysis*	Unclear *Not reported.*	High risk *Of the 444 patients eligible, only 47% participated. In addition, high rate of non-adherence.*
Malhotra, 2020	Low risk *Used block randomization with computerized number generator*	Low risk *Randomisation took place after enrolment and baseline assessment.*	High risk *No, not possible*	Unclear *Not reported*	Low risk *Analyses followed an ITT principle*	Low risk *Registered outcomes were reported in publication.*	High risk *Only 63% actually received the intervention. In addition, no flowchart indicating why many patients were not eligible.*

Skorstengaard, 2019	Low-risk *Computerized randomization by non-research staff*	Low risk *Randomisation took place after enrollment*	High risk *No, not possible*	n.a.	Low risk *Analyses followed an ITT principle*	Medium risk *Additional outcomes are reported in separate publication. Some outcomes changed after registration.*	High risk Data for primary outcome available for less than 50%
Korfage, 2020	Low risk *Computerized randomization by study coordinator*	High risk *Cluster randomized trial*	High risk *No, not possible*	n.a.	Low risk *Analyses followed an ITT principle*	Low risk *Registered outcomes were reported in publication.*	High risk *Large loss to follow-up*

GRADE profiles

ACP vergeleken met geen ACP in patiënten die palliatieve zorg ontvangen

Patiënten of populatie: Patiënten die palliatieve zorg ontvangen of zorgverleners die palliatieve zorg verlenen
Setting: Palliatieve zorg
Interventie: ACP
Controle: Geen ACP

Uitkomsten	**Impact**	**Aantal deelnemers (studies)**	**Certainty of the evidence (GRADE)**
Patiënttevredenheid	Combinatie van observationele studies met enkele RCT's. De meeste studies vonden een klein of geen verschil in patiënttevredenheid, wat op veel verschillende manieren werd gemeten.	(observationele studies)	⨁◯◯◯ ZEER LAAG a,b
Kwaliteit van leven	Combinatie van observationele studies en RCT's. Er was geen uniforme methode voor het meten van kwaliteit van leven. De meeste studies vonden geen verschil tussen beide groepen. Geen van de studies vond een negatief effect van de interventie op kwaliteit van leven.	(observationele studies)	⨁◯◯◯ ZEER LAAG a,c
Belasting van de patiënt	Combinatie van observationele studies en RCT's. Belasting werd voornamelijk uitgedrukt in zorggebruik. Enkele studies toonden een afname in ziekenhuisopnames en ligduur en een toename in hospice gebruik. Anderen toonden geen verschil.	(observationele studies)	⨁◯◯◯ ZEER LAAG a,d
Belasting van de mantelzorger	Slechts één RCT met hoog risico op bias.	(observationele studies)	⨁◯◯◯ ZEER LAAG a,e
Kwaliteit van sterven	Combinatie van observationele studies en RCT's. Enkele studies toonden een gunstig effect van de interventie op overeenkomst tussen levenseinde behandeling voorkeuren en ontvangen zorg.	(observationele studies)	⨁◯◯◯ ZEER LAAG a

ACP vergeleken met geen ACP in patiënten die palliatieve zorg ontvangen

Patiënten of populatie: Patiënten die palliatieve zorg ontvangen of zorgverleners die palliatieve zorg verlenen
Setting: Palliatieve zorg
Interventie: ACP
Controle: Geen ACP

Uitkomsten	Impact	Aantal deelnemers (studies)	Certainty of the evidence (GRADE)

GRADE Working Group grades of evidence
High certainty: We are very confident that the true effect lies close to that of the estimate of the effect
Moderate certainty: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different
Low certainty: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect
Very low certainty: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect

Toelichtingen
a. Risk of bias van toepasselijke studies als hoog gescoord.
b. Geen uniforme methode voor het meten van patiënttevredenheid en inconsistentie van resultaten.
c. Geen uniforme methode voor het meten van kwaliteit van leven en inconsistentie van resultaten.
d. Geen uniforme methode voor het meten van belasting van de patiënt en inconsistentie van resultaten.
e. Geen uniforme methode voor het meten van belasting van de mantelzorger en inconsistentie van resultaten.

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Onderzoeksvraag 2: waarden en voorkeuren van patiënten, naasten en zorgverleners

Wat zijn de waarden en voorkeuren van patiënten, naasten en zorgverleners ten aanzien van proactieve zorgplanning?

Patients	Patiënten die palliatieve zorg ontvangen, hun naasten, of zorgverleners die palliatieve zorg verlenen
Intervention	Proactieve zorgplanning
Comparator	n.v.t.
Outcome	Ervaringen en voorkeuren t.a.v. proactieve zorgplanning van patiënten, hun naasten en hun zorgverleners

Evidence tables

Author, Year	Aim/Objective	Population or condition	Number of databases searched (search date)	Number of studies included	Designs of studies	Countries of studies	Risk of bias
Cottrell, 2020	To develop and refine an initial theory on engagement in ACP for people with MS and to identify ways to improve its uptake for those who desire it.	Patients with multiple sclerosis or patients living with a significant physical disability	6 (August 2019)	33	13 qualitative 7 quantitative 1 mixed methods 7 opinion/ expert panel-based 3 case studies 3 literature reviews	USA (7) UK (7) Canada (7) Germany (4) Netherlands (2) Australia (1) Italy (1) Peru (1) Turkey (1)	Dixon-Woods Onduidelijk
Hall, 2019	To synthesize literature reviews pertaining to patients' and informal carers' perspectives on ACP discussions.	Adults at end-of-life	5 (July 2018)	55 systematic reviews (1.303 primary studies)	45 systematic (style) reviews 5 scoping reviews 2 integrative reviews 1 meta-etnography 1 realist 1 Garrard's matrix method	Not reported	AMSTAR High (risk of bias for primary studies is unclear)
McDermott, 2018	To explore how cultural factors influence ACP for patients with progressive incurable disease and	Adults with progressive, incurable disease and their caregivers	6 (March 2017)	27	20 quantitative 4 qualitative	USA (20) Hawaii (1) Ireland (1)	Mixed Methods Appraisal Tool

	how ACP might be made cross-culturally appropriate.				3 mixed methods	Japan (1) New Zealand (1) the Netherlands (1) US+Australia (1) US+Japan (1)	Medium risk (veelal indirect bewijs)
Nimmons, 2020	To explore the experiences of ACP for people with Parkinson disease or atypical parkinsonian disorders, their family carers and healthcare professionals.	Parkinson disease or atypical parkinsonian disorders (progressive supranuclear palsy, multiple system atrophy and corticobasal degeneration	5 (April 2019)	27	15 qualitative 12 quantitative	USA (10) UK (7) Ireland (2) Canada (3) the Netherlands (2) Australia (1) Italy (1) Singapore (1)	Critical Appraisal Skills Programme Low – medium risk
Ora, 2021	To uncover what is known about patients with chronic obstructive pulmonary disease and their experiences with advance care planning.	Patients with chronic obstructive pulmonary disease	5 (August 2019)	7	7 qualitative	Australia (3) UK (2) Canada (2)	No critical appraisal
Schichtel, 2019	To investigate the barriers and facilitators to the implementation of ACP by clinicians in heart failure.	All healthcare professionals providing end-of-life care for patients suffering from heart failure	12 (July 2018)	17	17 qualitative	UK (11) Australia (2) Canada (1) Sweden (1) USA (1) Belgium (1)	Critical Appraisal Skills Programme Low risk
Silies, 2021	To explore the experiences and attitudes of informal caregivers, and their knowledge, regarding ACP.	Caregivers of adult care-dependent persons	4 (October 2020)	57	45 qualitative 5 quantitative 7 mixed methods	Not reported	Critical Appraisal Skills Programme Unclear
Vanderhaeghen, 2019	To give an overview on what hospitalists experience as barriers and helpful factors for having advance care planning conversations.	Hospital nurses and physicians	6 (October 2016)	23	20 qualitative 3 mixed methods	USA (16) Germany (2) Canada (1) New Zealand (1) Switzerland (1)	Critical Appraisal Skills Programme Moderate

						South Korea (1), Israel (1)	
Wendrich-van Dael, 2020	To establish the strength of the evidence and provide decision makers with a clear understanding of what is known about ACP for people living with dementia.	People living with dementia, family or informal carers or healthcare professionals	5 (July 2018)	19 systematic reviews (318 primary studies) and 11 primary studies.	19 reviews 2 quantitative 9 qualitative	Not reported	AMSTAR-2 High risk

Author, year	Main findings
Cottrell, 2020	The review identified six context-mechanism-outcome (CMO) hypotheses: 1 Cumulative losses (e.g. loss of physical functions, roles, paid employment) lead to acceptance of MS as a progressive condition and the creation of a new self-identity where ACP is relevant. This new awareness led to an increased willingness to engage in ACP. The most common recommendation to initiate discussions was after people with MS experienced key triggers, as participants were unwilling to receive information, education or decision support before that. 2 A relationship grounded on trust and empathy was essential when engaging in ACP discussions. This provided a safe space empowering people with MS to share fears and hopes for the future. 3 The presence of family was important to both the people with MS and the health professionals. Some people with MS considered ACP a way to alleviate feeling like a burden. 4 People with MS see ACP as a tool for enabling control and autonomy in decision-making. 5 Confidence and communication skills were important mechanisms to facilitate ACP completion. Health professional distance and paternalism were perceived as barriers. Beneficial communication included strategies that included legitimizing and confirming the person with MS's experience, considering MS in the context of that person's life, and assisting them to find the language to describe their illness situation. 6 ACP was reported to mitigate the fear of experiencing a distressing or 'bad' death and may be a motivating factor for some people with MS. Previous experiences of witnessing death facilitates or hinders engagement in ACP.
Hall, 2019	The review addressed four questions: 1 How ACP discussions are held? Discussions were happening most often with patients who were older, white, female, well educated, and had cancer or comorbidities. The duration of ACP discussion varied from 5 to 90 minutes in the study, all of which were found acceptable by patients and carers. Patients and carers would prefer all stakeholders to be involved in ACP discussion. 2 Initiation of ACP discussions: Overall, there was a preference among patients and carers for health care professionals (e.g. doctors or nurses) to initiate ACP discussions. There is a preference for ACP to be initiated by professionals who know the patient and family well, and who are well trained in ACP facilitation. 3 Timing of ACP discussions: This is mixed and depends on illness. Some patients and carers prefer earlier discussion, and some prefer to wait until deterioration of health. In the context of cancer for example, patients and carers preferred to delay ACP discussion until treatment options had been exhausted. For other diseases such as COPD, a lack of knowledge among patients about the terminal nature of COPD could present a challenge to identifying when best to begin ACP discussions. Several reviews found preferences for recurring ACP discussions. 4 Perceived value of ACP discussions: Patients and carers generally viewed ACP discussions as positive and worthwhile. Patients valued honest discussions about prognosis and after ACP discussions, reported benefits such as feeling more confident about end-of-life issues, worrying less about the future, feeling more at peace and in control, and having better communication. However, many reviews also highlighted more complex emotions, depending on the illness. Patients and carers both gained some feelings of protection and relief from ACP but also had concerns about its value given that preferences might change, the future is unpredictable, and decisions made during ACP might not be feasible. Some older people did not see much value in ACP discussions because they had passive expectations that 'somebody else' would make decisions, including God, their families, or health care professionals. There are also cultural differences. African Americans showed a mistrust of health services, while Chinese people tend not to question the

	authority of the physician. These findings all highlighted how the emphasis on individual autonomy that is fundamental to Western notions of ACP may not be valued by all cultures.
McDermott, 2018	This review explored the influence of cultural factors on ACP: 1 A common finding was that, for seriously ill patients in the US, nonwhite ethnicity was associated with lower acceptability of formal ACP processes. Greater levels of religiosity appear to be a factor in this association. 2 Additional cultural factors thought to influence the acceptability of ACP were patients' degree of trust in clinicians and the wider health care system, and their comfort discussing death and EOL issues. 3 Formal ACP processes need better evaluation for cultural sensitivity, as some forms are not acceptable to some cultural groups. More informal, discussion-based ACP may be more acceptable in some cultural groups.
Nimmons, 2020	Findings were grouped into five themes: 1 What is involved in ACP discussions? Advance care planning discussions included a range of topics, but coverage was inconsistent and there was a lack of standardization on what should be included. Advance care planning resulted in greater patient choice in determining end-of-life preferences, yet these decisions were not always adhered to or shared with physicians. 2 When and how are ACP discussion initiated? People with parkinsonian disorders often felt it was left to them to initiate ACP but would prefer the HCP to initiate the discussion. There was variability in views when the ACP should be initiated as it depends on several patient and disease-related factors, patient readiness, as well as HCP willingness to discuss the topic. This often resulted in discussions first taking place in response to a crisis, e.g. hospital admission. Whilst the majority of patients do not want to have discussions at the time of diagnosis, a proportion of patients would like to have discussions early. Advance care planning should be team-based and person-centered with family input. 3 Barriers to ACP discussions in patients and carers included lack of knowledge about progression of parkinsonian disorders and about palliative care. Barriers to ACP discussions in HCPs included deficit in skills, knowledge, lack of resources and time to undertake ACP discussions. Features of advanced disease can limit the ability to have ACP discussions. 4 Role of the professional: Multidisciplinary team access to and collaboration with palliative care services were facilitators to delivering effective ACP, leading to clear plans and appropriate access to specialist palliative care services. Both general and specialist palliative care approaches should be available, depending on need at the time. 5 Role of family carers: Carers were a key facilitator to ACP but could also be a barrier if emotionally burdened.
Ora, 2021	Findings were grouped into four analytical themes: 1 COPD patients were generally open to ACP discussions and appreciated being given an opportunity to express their preferences for care. In order to be ready to engage with ACP discussions, patients need to acknowledge the incurable nature of their illness, work through difficult emotions and considered their meaning of life and death. 2 Timing is a consideration for patients whereby some may want to engage in early discussion about the future, while others wait until they are close to death. Patients found it difficult to imagine future scenarios and commit to the types of treatments they may accept or decline, as their decisions could change depending on the scenario. 3 To successfully engage in ACP, patients with COPD reported needing trust, rapport and open communication with a health professional who knew them and had a good understanding of their illness. 4 Patients want HCPs to raise treatment options and concerns for the future and revisit them as they change of time. Many patients stated they value their family members' participation.
Schichtel, 2019	Significant themes for barriers to engagement of clinicians with ACP in heart failure were the following: 1 Lack of disease-specific knowledge about palliative care in heart failure. 2 Lack of skills in communicating ACP with a patient suffering from heart failure. 3 Lack of collaboration between healthcare professionals to reach consensus on when ACP is indicated. 4 The high emotional impact on the healthcare professional when undertaking ACP. Important themes for facilitators to help clinicians engage with ACP in heart failure were the following: 1 Being competent in the use of ACP and the clinical management of end-stage heart failure.

	2 Being able to provide holistic EOLC when using ACP. 3 Having a trusting and long-term relationship with the patient and carers. 4 A patient initiating an ACP conversation. 5 Being able to deliver ACP at a time and place appropriate for the patient.
Silies, 2021	This study yielded four phases: 1 Life before: HCPs' focus regarding life before should be on the assessment of the dyad's context, shared experiences and culture dealing with death and dying, their individual conceptualization of ACP as well as their relationships with the care recipient and the extended family. A meta-synthesis by Ke et al. analyzed the perspectives of older people regarding ACP and found attitudes on life and death as well as family relationships to influence their willingness to engage in ACP. To maintain dignity at the end of life, they found truthful information, available resources and family support to be crucial. These perspectives of older people on ACP are like those experienced by family caregivers and both should be considered by ACP facilitators. 2 ACP process: The focus regarding the ACP process should be on clarifying conceptualization of ACP, initiating and offering repeated opportunities for ACP, showing a caring attitude and empathic communication, thus strengthening relationships, and cooperating with caregivers to support care recipients' ACP engagement. Most emphasized personal skills to facilitate a more open conversation adjusted to patients' needs and supportive to create a trusting relationship. 3 Utilization of ACP and decision-making: In utilization of ACP and decision-making, healthcare professionals' focus should be on respecting caregivers' roles and their knowledge of the care recipient, reassuring them in decision-making. Caregivers expect ACP as well as end-of-life care to be person-centered, expressing care recipients' personality and 'essence of being'. Foundation of such a person-centered care is a 'dynamic relationship' among all participants in a care setting. HCPs should be aware of their own relationship with the caregiver, treating them not as inferiors but creating a 'partnership in care'. 4 Life after: HCP should focus on caregivers' adjustment to bereavement, supporting them to accept their decisions in retrospect and to develop new roles to prevent illness in caregivers themselves. A scoping review of ACP intervention studies following the 'Organizing Framework for Advance Care Planning Outcomes' found that in the domain 'health outcomes', all studies showed improvement on surrogates'/families' depression, anxiety, post-traumatic stress disorder and complicated grief, suggesting that successful ACP can fulfil this aim satisfyingly.
Vanderhaeghen, 2019	The study had the following findings: 1 Physicians stressed the importance of being able to build up a relationship with patients and families, which is necessary to be able to communicate difficult themes. Taking time was seen as an important mediating factor in this process. However, close relationships were also seen to make ACP conversations more difficult (too much involvement emotionally). Many believed that, if they empathized too much with the family, their own personal emotional burden would be too great. 2 Physicians report being hesitant about withholding life-prolonging interventions and chose invasive treatment because they fear legal repercussions. A second encountered difficulty for exploration is eliciting the patients' values and wishes when patients are not mentally capable of thinking about decisions. Physicians suggested that having information about a patient's broader values and goals for healthcare would be more useful for guiding care than specific treatment decisions that are often highly context dependent. 3 Physicians report that the values coming forth from cultural influence, play a role when they engage in patient/family interactions. 4 Written agreements are seen both as helpful and as a barrier in ACP conversations. They think AD's are not adapted to particular realities, because it does not capture the complex reality of many decisions. 5 Physicians report that having not conducted many ACP conversations, makes it challenging and withholds them from engaging in conversations. 6 There is great subjectivity in decision-making, with characteristics such as religion, experience and personality playing a role. 7 Having ACP conversations gives discomfort for physicians.
Wendrich-van Dael, 2020	Six themes were identified by this study: 1 Tailoring the approach and timing to the needs of people with dementia. It was described as finding the right moment as a balancing act between an individual's understanding of the implications of a dementia diagnosis and their diminishing decision-making capacity.

	2 Variability in capacity and willingness to engage in ACP highlights the differences between how people with dementia and their carers engage in ACP. People with dementia appeared to show little distress about engaging in ACP conversations whilst carers often found the decision-making tasks stressful and challenging. 3 Roles and responsibilities of healthcare professionals: they are identified both by themselves, as well as by people with dementia and their carers, as the most appropriate party to initiate ACP conversations. 4 Impact of relationships on ACP highlights that complex family dynamics can hinder ACP conversations, while a trusting relationship between carers and healthcare professionals can facilitate ACP conversations. 5 Education and training were identified as important in preparing and enabling people to engage in ACP. 6 Lack of resources supporting ACP captures the time, skills and access to training materials that staff often require to be confident in ACP and achieve quality conversations.

Risk of bias

Cottrell, 2020		
Item	Yes, partial yes or no	Explanation
1. Did the research questions and inclusion criteria for the review include the components of PICO?	Yes	
2. Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol?	Yes	
3. Did the review authors explain their selection of the study designs for inclusion in the review?	Yes	
4. Did the review authors use a comprehensive literature search strategy?	Yes	
5. Did the review authors perform study selection in duplicate?	Yes	
6. Did the review authors perform data extraction in duplicate?	Yes	
7. Did the review authors provide a list of excluded studies and justify the exclusions?	No	
8. Did the review authors describe the included studies in adequate detail?	Yes	
9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?	Yes	
10. Did the review authors report on the sources of funding for the studies included in the review?	No	
11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results?	n.a.	
12. If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis?	n.a.	
13. Did the review authors account for RoB in individual studies when interpreting/ discussing the results of the review?	Yes	
14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?	n.a.	
15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?	n.a.	
16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?	Yes	Funded by MS society

Hall, 2019		
Item	Yes, partial yes or no	Explanation
1. Did the research questions and inclusion criteria for the review include the components of PICO?	Yes	
2. Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol?	No	
3. Did the review authors explain their selection of the study designs for inclusion in the review?	Yes	
4. Did the review authors use a comprehensive literature search strategy?	Yes	
5. Did the review authors perform study selection in duplicate?	Yes	
6. Did the review authors perform data extraction in duplicate?	No	
7. Did the review authors provide a list of excluded studies and justify the exclusions?	No	
8. Did the review authors describe the included studies in adequate detail?	Yes	
9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?	Yes	
10. Did the review authors report on the sources of funding for the studies included in the review?	No	
11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results?	n.a.	
12. If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis?	n.a.	
13. Did the review authors account for RoB in individual studies when interpreting/ discussing the results of the review?	Yes	
14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?	n.a.	
15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?	n.a.	
16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?	Yes	Funded by NIHR

McDermott, 2018		
Item	Yes, partial yes or no	Explanation
1. Did the research questions and inclusion criteria for the review include the components of PICO?	Yes	
2. Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol?	Yes	
3. Did the review authors explain their selection of the study designs for inclusion in the review?	Yes	
4. Did the review authors use a comprehensive literature search strategy?	Yes	
5. Did the review authors perform study selection in duplicate?	No	
6. Did the review authors perform data extraction in duplicate?	No	
7. Did the review authors provide a list of excluded studies and justify the exclusions?	No	
8. Did the review authors describe the included studies in adequate detail?	Yes	

9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?	Yes	
10. Did the review authors report on the sources of funding for the studies included in the review?	No	
11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results?	n.a.	
12. If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis?	n.a.	
13. Did the review authors account for RoB in individual studies when interpreting/ discussing the results of the review?	Yes	
14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?	n.a.	
15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?	n.a.	
16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?	No	

Nimmons, 2020		
Item	Yes, partial yes or no	Explanation
1. Did the research questions and inclusion criteria for the review include the components of PICO?	Yes	
2. Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol?	Yes	
3. Did the review authors explain their selection of the study designs for inclusion in the review?	Yes	
4. Did the review authors use a comprehensive literature search strategy?	Yes	
5. Did the review authors perform study selection in duplicate?	Yes	
6. Did the review authors perform data extraction in duplicate?	Yes	
7. Did the review authors provide a list of excluded studies and justify the exclusions?	No	
8. Did the review authors describe the included studies in adequate detail?	Yes	
9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?	Yes	
10. Did the review authors report on the sources of funding for the studies included in the review?	No	
11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results?	n.a.	
12. If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis?	n.a.	
13. Did the review authors account for RoB in individual studies when interpreting/ discussing the results of the review?	Yes	
14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?	n.a.	
15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?	n.a.	
16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?	No	

Ora, 2021

Item	Yes, partial yes or no	Explanation
1. Did the research questions and inclusion criteria for the review include the components of PICO?	No	
2. Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol?	No	
3. Did the review authors explain their selection of the study designs for inclusion in the review?	Yes	
4. Did the review authors use a comprehensive literature search strategy?	Partial	
5. Did the review authors perform study selection in duplicate?	No	
6. Did the review authors perform data extraction in duplicate?	No	
7. Did the review authors provide a list of excluded studies and justify the exclusions?	No	
8. Did the review authors describe the included studies in adequate detail?	Yes	
9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?	No	
10. Did the review authors report on the sources of funding for the studies included in the review?	No	
11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results?	n.a.	
12. If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis?	n.a.	
13. Did the review authors account for RoB in individual studies when interpreting/ discussing the results of the review?	Yes	
14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?	n.a.	
15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?	n.a.	
16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?	No	

Schichtel, 2019		
Item	Yes, partial yes or no	Explanation
1. Did the research questions and inclusion criteria for the review include the components of PICO?	Yes	
2. Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol?	No	
3. Did the review authors explain their selection of the study designs for inclusion in the review?	Yes	
4. Did the review authors use a comprehensive literature search strategy?	Yes	
5. Did the review authors perform study selection in duplicate?	Yes	
6. Did the review authors perform data extraction in duplicate?	No	
7. Did the review authors provide a list of excluded studies and justify the exclusions?	Yes	
8. Did the review authors describe the included studies in adequate detail?	Yes	
9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?	Yes	

10. Did the review authors report on the sources of funding for the studies included in the review?	No	
11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results?	n.a.	
12. If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis?	n.a.	
13. Did the review authors account for RoB in individual studies when interpreting/ discussing the results of the review?	Yes	
14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?	n.a.	
15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?	n.a.	
16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?	No	

Silies, 2021		
Item	Yes, partial yes or no	Explanation
1. Did the research questions and inclusion criteria for the review include the components of PICO?	Yes	
2. Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol?	No	
3. Did the review authors explain their selection of the study designs for inclusion in the review?	Yes	
4. Did the review authors use a comprehensive literature search strategy?	Yes	
5. Did the review authors perform study selection in duplicate?	Yes	
6. Did the review authors perform data extraction in duplicate?	No	
7. Did the review authors provide a list of excluded studies and justify the exclusions?	No	
8. Did the review authors describe the included studies in adequate detail?	Yes	
9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?	Yes	
10. Did the review authors report on the sources of funding for the studies included in the review?	No	
11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results?	n.a.	
12. If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis?	n.a.	
13. Did the review authors account for RoB in individual studies when interpreting/ discussing the results of the review?	Yes	
14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?	n.a.	
15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?	n.a.	
16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?	Yes	Funded by German Federal Ministry of Education and Research

Vanderhaeghen, 2019		
Item	Yes, partial yes or no	Explanation
1. Did the research questions and inclusion criteria for the review include the components of PICO?	Yes	
2. Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol?	Yes	
3. Did the review authors explain their selection of the study designs for inclusion in the review?	Yes	
4. Did the review authors use a comprehensive literature search strategy?	Yes	
5. Did the review authors perform study selection in duplicate?	Partial	Only title/abstract selection was done in duplicate
6. Did the review authors perform data extraction in duplicate?	No	
7. Did the review authors provide a list of excluded studies and justify the exclusions?	No	
8. Did the review authors describe the included studies in adequate detail?	Yes	
9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?	Yes	
10. Did the review authors report on the sources of funding for the studies included in the review?	No	
11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results?	n.a.	
12. If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis?	n.a.	
13. Did the review authors account for RoB in individual studies when interpreting/ discussing the results of the review?	Yes	
14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?	n.a.	
15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?	n.a.	
16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?	No	

Wendrich-van Dael, 2020		
Item	Yes, partial yes or no	Explanation
1. Did the research questions and inclusion criteria for the review include the components of PICO?	Yes	
2. Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol?	Yes	
3. Did the review authors explain their selection of the study designs for inclusion in the review?	Yes	
4. Did the review authors use a comprehensive literature search strategy?	Yes	
5. Did the review authors perform study selection in duplicate?	No	

6. Did the review authors perform data extraction in duplicate?	No	
7. Did the review authors provide a list of excluded studies and justify the exclusions?	No	
8. Did the review authors describe the included studies in adequate detail?	Yes	
9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?	Yes	
10. Did the review authors report on the sources of funding for the studies included in the review?	No	
11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results?	n.a.	
12. If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis?	n.a.	
13. Did the review authors account for RoB in individual studies when interpreting/ discussing the results of the review?	Yes	
14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?	n.a.	
15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?	n.a.	
16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?	Yes	Funded by Marie Curie Innovative Training Network, NIHR and Research Foundation Flanders

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Onderzoeksvraag 3: surprise question, dubbele surprise question en SPICT

Wat is de diagnostische accuratesse dan wel wat zijn de klinimetrische eigenschappen van de surprise question, de dubbele surprise question of de SPICT?

Patients	Patiënten die mogelijk palliatieve zorg nodig hebben
Intervention	Surprise question, dubbele surprise question en/of de SPICT
Comparator	Geen instrument of een ander instrument
Outcome	Diagnostische accuratesse (sensitiviteit, specificiteit, AUC), klinimetrische eigenschappen

Evidence tables

Systematic reviews

Downar, 2017							
Included studies in the review	**Study characteristics**	**Patient characteristics**	**Intervention (I)**	**Comparison / control (C)**	**Follow-up**	**Outcome measures and effect size**	**Comments**
A. Barnes, 2008 B. Moss, 2008 C. Cohen, 2010 D. Moss, 2010 E. Da Silva, 2013 F. Pang, 2013 G. Reilly, 2013 H. Khan, 2014 I. Moroni, 2014 J. Vick, 2015 K. Gerlach, 2016 L. Amro, 2016 M. Lefkowits, 2016 N. Carmen, 2016 O. Lakin, 2016	Type of study: Prospective studies Search date: October 2016 Number of included studies: N= 15 Source of funding: Toronto General/Toronto Western Hospital Foundation Inclusion criteria: – Prospective cohort study with SQ asked of study participants – At least 6 months follow-up Exclusion criteria: – Retrospectively asked SQ	N total at baseline: A. 231 B. 147 C. 1026 D. 853 E. 344 F. 367 G. 85 H. 500 I. 231 J. n.r. K. 828 L. 201 M. 263 N. 49 O. n.r. Diagnosis/ procedure/ practice: A. CHF B. Hemodialysis C. Hemodialysis D. Cancer E. Hemodialysis F. Peritoneal dialysis	Surprise question	Not applicable	Length of follow-up (months): A. 12 B. 12 C. 6 D. 12 E. 12 F. 12 G. 12 H. 6 I. 12 J. 12 K. 18 L. 12 M. 12 N. 12 O. 12 Loss-to-follow-up (%): A. 8 B. 0 C. 15 D. 3 E. 0 F. 0	Sensitivity: 67.0% (95%CI 55.7-76.7) Specificity: 80.2% (95%CI 73.3-85.6) LR+: 3.4 (95%CI 2.8-4.1) LR-: 0.41 (95%CI 0.32-0.54) PPV: 37.1% (95%CI 30.2-44.6) NPV: 93.1% (95%CI 91.0-94.8) AUC: 0.81 (95%CI 0.78-0.86)	

		G. Respiratory disease H. Critically ill I. Cancer J. Cancer K. Cancer L. Hemodialysis M. Cancer N. Hemodialysis O. PCP			G. 0 H. 0 I. 0 J. 0 K. 0 L. 0 M. 0 N. 0 O. 0		

Primary studies

Ermers, 2021						
Study characteristics	**Patient characteristics**	**Intervention (I)**	**Comparison / control (C)**	**Follow-up**	**Outcome measures and effect size**	**Comments**
Type of study: Prospective cohort Setting: Medical Oncology outpatient clinic Country: The Netherlands Source of funding: None	Inclusion criteria: – Patients visiting the outpatient clinic – Age 18 years or over Exclusion criteria: None N total at baseline: 382 Important baseline characteristics: Gender: 44.3% female Mean age: 59 (SD 15)	Double surprise question	N.A.	1 year	*Original surprise question* Sensitivity: 87.3% (95%CI 79.9-92.7) Specificity: 67.7 (95%CI 61.6-73.3) PPV: 54.8% (95%CI 47.4-62.0) NPV: 92.1% (95%CI 87.4-95.5) *Additional surprise question* Sensitivity: 59.2% (95%CI 49.1-68.8) Specificity: 74.1% (95%CI 63.5-83.0) PPV: 73.5% (95%CI62.7-82.6) NPV: 60.0% (95%CI 50.0-69.4) *Double surprise question* Sensitivity: 51.7% (95%CI 42.3-61.0) Specificity: 91.6% (95%CI 87.5-94.6) PPV: 73.5% (95%CI 62.7-82.6) NPV: 80.7% (95%CI 75.8-85.1)	

Veldhoven, 2019

Study characteristics	Patient characteristics	Intervention (I)	Comparison / control (C)	Follow-up	Outcome measures and effect size	Comments
Type of study: Prospective cohort Setting: GP practice Country: The Netherlands Source of funding: None	Inclusion criteria: – All patients aged 75 years or older Exclusion criteria: None N total at baseline: 292 Important baseline characteristics: Gender: 60% female Mean age: 84 (SD 5.46)	Double surprise question	N.A.	1 year	*Original surprise question* Sensitivity: 92.3% (95%CI 74.9-99.1) Specificity: 48.5% (95%CI 42.4-54.7) PPV: 14.9% (95%CI 9.8-21.4) NPV: 98.5% (95%CI 94.6-99.8) *Additional surprise question* Sensitivity: 41.7% (95%CI 22.1-33.4) Specificity: 91.2% (95%CI 85.2-95.4) PPV: 45.5% (95%CI 24.4-67.8) NPV: 89.9% (95%CI 83.7-94.4)	

Tripp, 2021						
Study characteristics	**Patient characteristics**	**Intervention (I)**	**Comparison / control (C)**	**Follow-up**	**Outcome measures and effect size**	**Comments**
Type of study: Retrospective cohort Setting: Hospital Country: USA Source of funding: Not reported	Inclusion criteria: – Patients admitted for acute exacerbation of COPD – Primary residence in Maine or New Hampshire Exclusion criteria: None N total at baseline: 428 Important baseline characteristics: Gender: 51% female Age: 65% under 76	Surprise question (30 days or 1 year)	N.A.	1 year	30-day surprise question Sensitivity: 0.12 (95%CI 0.02-0.38) Specificity: 0.95 (95%CI 0.93-0.97) PPV: 0.11 (95%CI 0.01-0.33) NPV: 0.96 (95%CI 0.94-0.98) PLR: 2.68 (95%CI 0.68-10.64) NLR: 0.92 (95%CI 0.76-1.11) 1-year surprise question Sensitivity: 0.47 (95%CI 0..36-0.58) Specificity: 0.75 (95%CI 0.70-0.80) PPV: 0.35 (95%CI 0.26-0.45)	

					NPV: 0.83 (95%CI 0.78-0.88) PLR: 1.90 (95%CI 1.40-2.59) NLR: 0.70 (95%CI 0.57-0.87)	

De Bock, 2018						
Study characteristics	**Patient characteristics**	**Intervention (I)**	**Comparison / control (C)**	**Follow-up**	**Outcome measures and effect size**	**Comments**
Type of study: Retrospective cohort Setting: Hospital Country: Belgium Source of funding: Not reported	Inclusion criteria: – All patients admitted to an acute geriatric ward Exclusion criteria: None N total at baseline: 435 Important baseline characteristics: Gender: 61.4% female Age (median, IQR): 84, 80-88	SPICT	N.A.	1 year	The AUC of the general indicators of SPICT (0.76, 95%CI 0.71-0.80) and the clinical indicators of SPICT (0.75, 95%CI 0.70-0.79) did not differ significantly (p=0.64). Using a cut-off value of 2 for the general indicators and a cut-off value of 1 for the clinical questions, SPICT can predict one-year mortality with a sensitivity of 0.84 and a specificity of 0.58.	

Mitchell, 2018						
Study characteristics	**Patient characteristics**	**Intervention (I)**	**Comparison / control (C)**	**Follow-up**	**Outcome measures and effect size**	**Comments**
Type of study: RCT Setting: GP practices Country: Australia Source of funding: RACGP Foundation	Inclusion criteria: – Patients 70 years or older Exclusion criteria: None N total at baseline: 4365 Important baseline characteristics: *SQ/SPICT group* Gender: 33.6% female	Surprise question + SPICT	Intuition	1,5 years	*Surprise question* Sensitivity: 53.2% (95%CI 48.1-58.3) Specificity: 89.6% (95%CI 85.5-93.7) PPV: 14.0% (95%CI 8.8-19.1) NPV: 98.4% (95%CI 97.5-99.2) *Surprise question + SPICT* Sensitivity: 34.0% (95%CI 25.3-42.8) Specificity: 95.8% (95%CI93.0-98.6)	

	Age (mean, SD): 79.1 (6.9) *Intuition group* Gender: 29.8% female Age (mean, SD): 77.9 (6.3)				PPV: 20.5% (95%CI 12.6-28.4) NPV: 97.9% (95%CI 96.8-99.0)	

Mudge, 2018						
Study characteristics	**Patient characteristics**	**Intervention (I)**	**Comparison / control (C)**	**Follow-up**	**Outcome measures and effect size**	**Comments**
Type of study: Prospective cohort Setting: Hospital Country: Australia Source of funding: Metro North Hospitals and Health Service	Inclusion criteria: – All adult inpatients on a single day Exclusion criteria: – Maternity and neonatal ward – Mental health unit – Day treatment admissions N total at baseline: 513 Important baseline characteristics: Gender: 46.2% female Age (mean, SD): 60.2 (18.9)	Surprise question + SPICT	N.A.	1 year	*Surprise question only* Sensitivity: 90.2 (95%CI 82.2-95.4) Specificity: 55.8 (95%CI 50.9-60.6) PPV: 30.9 (95%CI 28.2-33.6) NPV: 96.3 (95%CI 93.3-98.0) Accuracy: 62.0 (95%CI 57.6-66.2) *Surprise question + SPICT (two or more general indicators)* Sensitivity: 78.3 (95%CI 68.4-86.2) Specificity: 71.7 (95%CI 67.2-76.0) PPV: 37.7 (95%CI 33.4-42.2) NPV: 93.8 (95%CI 91.1-95.7) Accuracy: 72.9 (95%CI 68.8-76.7) *Surprise question + SPICT (two or more general indicators plus one or more advanced disease indicators)* Sensitivity: 65.2 (95%CI 54.6-74.9) Specificity: 84.8 (95%CI 81.0-88.1) PPV: 48.4 (95%CI 41.7-55.1) NPV: 91.8 (95%CI 89.4-93.7) Accuracy: 81.3 (95%CI 77.6-84.6)	

Piers, 2021						
Study characteristics	**Patient characteristics**	**Intervention (I)**	**Comparison / control (C)**	**Follow-up**	**Outcome measures and effect size**	**Comments**
Type of study: Prospective cohort Setting: Hospital Country: Belgium	Inclusion criteria: – Age 75 years and over – Admitted to acute geriatric unit and cardiology unit – Stay longer than 48 hours	SPICT	N.A.	1 year	Geriatric ward Sensitivity: 0.82 (95%CI 0.66-0.91) Specificity: 0.49 (95%CI 0.40-0.55) Partial AUC: 0.822	

Source of funding: Marie-Therese De Lava, King Baudouin Foundation	Exclusion criteria: – Patients transferred from other wards N total at baseline: 458 Important baseline characteristics: Gender: 51% female Age: 53% under 85 years				Cardiology ward Sensitivity: 0.69 (95%CI 0.42-0.87) Specificity: 0.67 (95%CI 0.55-0.77) Partial AUC: 0.65	

Risk of bias

Systematic reviews

Downar, 2017		
Item	**Yes, partial yes or no**	**Explanation**
1. Did the research questions and inclusion criteria for the review include the components of PICO?	N.A.	
2. Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol?	No	
3. Did the review authors explain their selection of the study designs for inclusion in the review?	Yes	
4. Did the review authors use a comprehensive literature search strategy?	Yes	
5. Did the review authors perform study selection in duplicate?	Yes	
6. Did the review authors perform data extraction in duplicate?	Yes	
7. Did the review authors provide a list of excluded studies and justify the exclusions?	Yes	
8. Did the review authors describe the included studies in adequate detail?	Yes	
9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?	Yes	
10. Did the review authors report on the sources of funding for the studies included in the review?	No	
11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results?	Yes	
12. If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis?	No	
13. Did the review authors account for RoB in individual studies when interpreting/ discussing the results of the review?	No	
14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?	Yes	
15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?	Yes	
16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?	No	

Primary studies

De Bock, 2018						
Study:	**A. Risk of Bias**	**Yes/ no/ unclear**	**Notes**	**B. Concern of applicability**	**Low/ high/ unclear**	**Notes**
1. Patient selection	Was a consecutive or random sample of patients enrolled?	Unclear		Is there concern that the included patients do not match the review question?	n.a.	
	Was a case-control design avoided?	n.a.				
	Did the study avoid inappropriate exclusions?	Yes				
	Risk of Bias: Unclear					
2. Index test	Were the index test results interpreted without knowledge of the results of the reference standard?	Unclear		Is there concern that the index test, its conduct, or interpretation differ from the review question?	No	
	If a threshold was used, was it pre-specified?	n.a.				
	Risk of Bias: Unclear					
3. Reference standard	Is the reference standard likely to correctly classify the target condition?	Yes		Is there concern that the target condition as defined by the reference standard does not match the review question?	No	
	Were the reference standard results interpreted without knowledge of the results of the index test?	n.a.				
	Risk of Bias: Low					
4. Flow and timing	Was there an appropriate interval between index test(s) and reference standard?	Yes		N.a.	n.a.	n.a.
	Did all patients receive a reference standard?	Yes				
	Did patients receive the same reference standard?	Yes				
	Were all patients included in the analysis?	Unclear				
	Risk of Bias: Unclear					

Ermers, 2021						
Study:	**A. Risk of Bias**	**Yes/ no/ unclear**	**Notes**	**B. Concern of applicability**	**Low/ high/ unclear**	**Notes**
1. Patient selection	Was a consecutive or random sample of patients enrolled?	Yes		Is there concern that the included patients do not match the review question?	n.a.	
	Was a case-control design avoided?	n.a.				
	Did the study avoid inappropriate exclusions?	Yes				
	Risk of Bias: Low					
2. Index test	Were the index test results interpreted without	Yes			No	

	knowledge of the results of the reference standard?			Is there concern that the index test, its conduct, or interpretation differ from the review question?		
	If a threshold was used, was it pre-specified?	n.a.				
	Risk of Bias: Low					
3. Reference standard	Is the reference standard likely to correctly classify the target condition?	Yes		Is there concern that the target condition as defined by the reference standard does not match the review question?	No	
	Were the reference standard results interpreted without knowledge of the results of the index test?	n.a.				
	Risk of Bias: Low					
4. Flow and timing	Was there an appropriate interval between index test(s) and reference standard?	Yes		N.a.	n.a.	n.a.
	Did all patients receive a reference standard?	Yes				
	Did patients receive the same reference standard?	Yes				
	Were all patients included in the analysis?	No	3 patients lost to follow-up			
	Risk of Bias: Low					

Mitchell, 2018						
Study:	**A. Risk of Bias**	**Yes/ no/ unclear**	**Notes**	**B. Concern of applicability**	**Low/ high/ unclear**	**Notes**
1. Patient selection	Was a consecutive or random sample of patients enrolled?	No		Is there concern that the included patients do not match the review question?	n.a.	
	Was a case-control design avoided?	n.a.				
	Did the study avoid inappropriate exclusions?	Yes				
	Risk of Bias: High					
2. Index test	Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		Is there concern that the index test, its conduct, or interpretation differ from the review question?	No	
	If a threshold was used, was it pre-specified?	n.a.				
	Risk of Bias: Low					
3. Reference standard	Is the reference standard likely to correctly classify the target condition?	Yes		Is there concern that the target condition as defined by the reference standard does not match the review question?	No	
	Were the reference standard results interpreted without knowledge of the results of the index test?	n.a.				
	Risk of Bias: Low					

4. Flow and timing	Was there an appropriate interval between index test(s) and reference standard?	Yes		N.a.	n.a.	n.a.
	Did all patients receive a reference standard?	Yes				
	Did patients receive the same reference standard?	Yes				
	Were all patients included in the analysis?	No	416 lost to follow-up			
	Risk of Bias: High					

Author, publication year: Mudge, 2018						
Study:	**A. Risk of Bias**	**Yes/ no/ unclear**	**Notes**	**B. Concern of applicability**	**Low/ high/ unclear**	**Notes**
1. Patient selection	Was a consecutive or random sample of patients enrolled?	Yes		Is there concern that the included patients do not match the review question?	n.a.	
	Was a case-control design avoided?	n.a.				
	Did the study avoid inappropriate exclusions?	Yes				
	Risk of Bias: Low					
2. Index test	Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		Is there concern that the index test, its conduct, or interpretation differ from the review question?	No	
	If a threshold was used, was it pre-specified?	n.a.				
	Risk of Bias: Low					
3. Reference standard	Is the reference standard likely to correctly classify the target condition?	Yes		Is there concern that the target condition as defined by the reference standard does not match the review question?	No	
	Were the reference standard results interpreted without knowledge of the results of the index test?	n.a.				
	Risk of Bias: Low					
4. Flow and timing	Was there an appropriate interval between index test(s) and reference standard?	Yes		N.a.	n.a.	n.a.
	Did all patients receive a reference standard?	Yes				
	Did patients receive the same reference standard?	Yes				
	Were all patients included in the analysis?	No	27 lost to follow-up			
	Risk of Bias: Low					

Author, publication year: Piers, 2021

Study:	A. Risk of Bias	Yes/ no/ unclear	Notes	B. Concern of applicability	Low/ high/ unclear	Notes
1. Patient selection	Was a consecutive or random sample of patients enrolled?	Yes		Is there concern that the included patients do not match the review question?	n.a.	
	Was a case-control design avoided?	n.a.				
	Did the study avoid inappropriate exclusions?	Yes				
	Risk of Bias: Low					
2. Index test	Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		Is there concern that the index test, its conduct, or interpretation differ from the review question?	No	
	If a threshold was used, was it pre-specified?	n.a.				
	Risk of Bias: Low					
3. Reference standard	Is the reference standard likely to correctly classify the target condition?	Yes		Is there concern that the target condition as defined by the reference standard does not match the review question?	No	
	Were the reference standard results interpreted without knowledge of the results of the index test?	n.a.				
	Risk of Bias: Low					
4. Flow and timing	Was there an appropriate interval between index test(s) and reference standard?	Yes		N.a.	n.a.	n.a.
	Did all patients receive a reference standard?	Yes				
	Did patients receive the same reference standard?	Yes				
	Were all patients included in the analysis?	No	14 lost to follow-up			
	Risk of Bias: Low					

Tripp, 2021						
Study:	**A. Risk of Bias**	**Yes/ no/ unclear**	**Notes**	**B. Concern of applicability**	**Low/ high/ unclear**	**Notes**
1. Patient selection	Was a consecutive or random sample of patients enrolled?	Yes		Is there concern that the included patients do not match the review question?	n.a.	
	Was a case-control design avoided?	n.a.				
	Did the study avoid inappropriate exclusions?	Yes				
	Risk of Bias: Low					
2. Index test	Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		Is there concern that the index test, its conduct, or interpretation differ from the review question?	No	
	If a threshold was used, was it pre-specified?	n.a.				

	Risk of Bias: Low					
3. Reference standard	Is the reference standard likely to correctly classify the target condition?	Yes		Is there concern that the target condition as defined by the reference standard does not match the review question?	No	
	Were the reference standard results interpreted without knowledge of the results of the index test?	n.a.				
	Risk of Bias: Low					
4. Flow and timing	Was there an appropriate interval between index test(s) and reference standard?	Yes		N.a.	n.a.	n.a.
	Did all patients receive a reference standard?	Yes				
	Did patients receive the same reference standard?	Yes				
	Were all patients included in the analysis?	No	11 lost to follow-up			
	Risk of Bias: Low					

Veldhoven, 2019						
Study:	**A. Risk of Bias**	**Yes/ no/ unclear**	**Notes**	**B. Concern of applicability**	**Low/ high/ unclear**	**Notes**
1. Patient selection	Was a consecutive or random sample of patients enrolled?	Yes		Is there concern that the included patients do not match the review question?	n.a.	
	Was a case-control design avoided?	n.a.				
	Did the study avoid inappropriate exclusions?	Yes				
	Risk of Bias: Low					
2. Index test	Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		Is there concern that the index test, its conduct, or interpretation differ from the review question?	No	
	If a threshold was used, was it pre-specified?	n.a.				
	Risk of Bias: Low					
3. Reference standard	Is the reference standard likely to correctly classify the target condition?	Yes		Is there concern that the target condition as defined by the reference standard does not match the review question?	No	
	Were the reference standard results interpreted without knowledge of the results of the index test?	n.a.				
	Risk of Bias: Low					
4. Flow and timing	Was there an appropriate interval between index test(s) and reference standard?	Yes		N.a.	n.a.	n.a.
	Did all patients receive a reference standard?	Yes				
	Did patients receive the same reference standard?	Yes				

	Were all patients included in the analysis?	No	20 lost to follow-up			
	Risk of Bias: Low					

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