Review Article

Overview of Systematic Reviews of Advance Care Planning: Summary of Evidence and Global Lessons

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Abstract

Background. Advance care planning (ACP) involves important decision making about future medical needs. The high-volume and disparate nature of ACP research makes it difficult to grasp the evidence and derive clear policy lessons for policymakers and clinicians.

Aim. The aim of this study was to synthesize ACP research evidence and identify relevant contextual elements, program features, implementation principles, and impacted outcomes to inform policy and practice.

Design. An overview of systematic reviews using the Cochrane Handbook of Systematic Reviews of Interventions was performed. Study quality was assessed using a modified version of the AMSTAR (A MeaSurement Tool to Assess Reviews) tool.

Data Sources. MEDLINE, EBM Reviews, Cochrane Reviews, CINAHL, Global Health, PsycINFO, and EMBASE were searched for ACP-related research from inception of each database to April 2017. Searches were supplemented with gray literature and manual searches. Eighty systematic reviews, covering over 1660 original articles, were included in the analysis.

Results. Legislations, institutional policies, and cultural factors influence ACP development. Positive perceptions toward ACP do not necessarily translate into more end-of-life conversations. Many factors related to patients' and providers' attitudes, and perceptions toward life and mortality influence ACP implementation, decision making, and completion. Limited, low-quality evidence points to several ACP benefits, such as improved end-of-life communication, documentation of care preferences, dying in preferred place, and health care savings. Recurring features that make ACP programs effective include repeated and interactive discussion sessions, decision aids, and interventions targeting multiple stakeholders.

Conclusions. Preliminary evidence highlights several elements that influence the ACP process and provides a variety of features that could support successful, effective, and sustainable ACP implementation. However, this evidence is compartmentalized and limited. Further studies evaluating ACP as a unified program and assessing the impact of ACP for different populations, settings, and contexts are needed to develop programs that are able to unleash ACP's full potential. J Pain Symptom Manage 2018;56:436–459. *© 2018 The Authors. Published by Elsevier Inc. on behalf of American Academy of Hospice and Palliative Medicine. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).*

Key Words
Advance care planning, end-of-life care, palliative care, overview, systematic reviews

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Introduction

Advance care planning (ACP) refers to an ongoing process in which patients, their families, and health care providers reflect on the patient's goals and values and discuss how these should inform their current and future medical care.[1,2] Ideally, these preferences should be documented, so that this information follows the patient across health care settings to be actioned when needed.[3] The Institute of Medicine, a U.S. nonprofit organization that provides guidance on issues related to biomedical science, medicine, and health, recommends ACP to better align individuals' health care goals and preferences with the services they will ultimately receive.[4]

When appropriately conducted, ACP may benefit patients (increased autonomy, dignity, peace, and intimacy at the moment of death), their families (less intense grieving, less likelihood of developing psychiatric conditions), and the health care system (decreased resource utilization and costs).[5] However, currently, there are no clear, widely accepted guidelines on how to implement ACP, so that it brings forth its full potential across all health systems and populations.

Although there is substantial research on ACP, available studies and systematic reviews (SRs) usually focus on isolated aspects pertaining to ACP within wider end-of-life (EOL) and palliative care interventions,[6–8] on different processes within the ACP concept (such as use of decision aids[9–11] and EOL communication strategies[12–14]), or on different outcome measures,[15,16] or looking at the application of ACP on specific diseases or patient groups.[17–19] The decision faced by policymakers or health system administrators when introducing an ACP program involves a comprehensive and overarching approach to elucidate where, to whom, and how ACP should be implemented. The compartmentalization in the available evidence makes it difficult for clinicians and policymakers to grasp all the elements that matter when developing an ACP program, and such a piecemeal approach to research may overlook important aspects or neglect critical contextual factors that influence ACP implementation.

In sum, the field is missing a comprehensive overview of this evidence, bringing together all these disparate elements to understand the role they play within ACP. An overview of systematic reviews will provide policymakers and decision makers with the evidence they need, by compiling all this information into a single, accessible document, summarizing evidence to support policy, clinical, and research decision making.[20–22] A summary of evidence of all ACP-relevant studies—particularly in terms of organization, content, process, and outcomes—will better support the design and implementation of ACP. This will benefit countries and institutions contemplating the introduction of ACP.

Research Aim

The main objective of this overview of SRs is to identify and integrate the relevant evidence that has emerged from the literature to narrow the current translational gap from research to practice and update the current knowledge base on ACP. This study will provide insights about the elements that play a major role in ACP, so that they are taken into account when designing ACP programs. We synthesize evidence about the full spectrum of ACP-related research coming from both clinical practice and research, on ACP contextual elements, program features, and implementation principles to derive relevant lessons for ACP clinicians, health system administrators, and policymakers.

Methods

For this overview, we define ACP as the process involving discussions, usually close to the EOL, whereby patients state their preferences for future treatment (including proxy designation, preferred place of care, and place of death) before they can no longer make care decisions.[2] These discussions may or may not be documented, but it is essential that there is tangible proof that the discussions took place. Methods for this overview were developed based on criteria for conducting overviews of reviews in the Cochrane Handbook of Systematic Reviews of Interventions to ensure methodological rigor and minimize the risk of bias.[23]

Search Strategies

We searched for articles published from the inception of each database up to July 2016, in our first stage, through the following electronic databases: MEDLINE, EBM Reviews and Cochrane Reviews through OVID; CINAHL, Global Health, and PsycINFO through EBSCO; and EMBASE. We developed three search strategies (Appendix I) in collaboration with our medical librarian to maximize sensitivity and specificity for each search engine. Two main strings of terms were developed: one pertained to ACP and its related concepts and keywords and the second string to the methodological filter for SRs, derived from the guidelines described in the Canadian Agency for Drugs and Technologies' Database Search Filters and the Health Information Research Unit's Search Strategies.[24,25] We also manually searched Google and Google Scholar to ensure the completeness of our overview. In addition, we searched three gray literature databases: base-search.net, Opengrey.org, and science.gov. Later, and to account for reviews published in the past 12 months, we performed an update of the search in April 2017. References were managed using EndNote X7, developed by Clarivate Analytics. (Clarivate Analytics, Philadelphia, PA).[26]

Eligibility Criteria

As per our definition, we included reviews with a primary focus on ACP—those that examined ACP or any of its related aspects such as its effectiveness, barriers/facilitators, completion rates, types of ACP tools used, decision aids, communication strategies, and economic impact. We also included reviews that may not focus on ACP but may include ACP as one of the key outcomes or results.

We developed an a priori exclusion and inclusion criteria scheme (Appendix II) and included SRs that mentioned Advance Medical Directives, Do-Not-Resuscitate (DNR), Do-Not-Hospitalize (DNH), and Lasting Power of Attorney as well as ACP, if they describe that a discussion between patient and medical professional took place in any setting. Furthermore, studies that covered concepts inherent in the definition of ACP such as EOL decision making, treatment preferences, and surrogate decision making are included.

We excluded reviews if they 1) focused only on calculating completion rates of advance medical directives and did not mention any EOL care discussions or interventions; 2) included only pediatric patients (aged <18 years old); or 3) focused on advance treatment directives for psychiatric conditions, which are not related to EOL and involve different dynamics and aims (i.e., to improve recovery-oriented outcomes and be used for psychiatric crises)[27] other than the ACP process addressed in this study.

We included SRs that 1) are titled or expressly stated to be systematic reviews within the abstract, or text and/or 2) followed systematic review principles including at least a comprehensive search strategy and quality appraisal of included studies.[28] To comprehensively cover the ACP literature, there were no restrictions on study designs, populations, or settings. No language, geographical, or publication date restrictions were applied.

Screening and Selection of Studies

Two authors (G. J. and W. S. T.) independently screened titles, abstracts, and keywords to identify relevant studies for full-text review. Three authors (G. J., W. S. T. and A. K. V.) independently screened full texts for final inclusion. Discrepancies were resolved through discussion and consensus.

Data Extraction and Critical Appraisal of Included Studies

We developed a data extraction table (Appendix III) that included general information, topic of paper, PICO (population, interest, context, outcomes), methodology, results, and conclusions and future research.

Full data extraction of all the included studies was performed by the lead author (G. J.). A second author (A. K. V.) performed data extraction on a random sample of 20% of the included studies and results were compared for consistency. There were minimal discrepancies (10%) that were resolved by discussion and reappraisal. The second author also reviewed the data extraction performed by the lead author for the remaining studies.

We assessed the quality of included SRs to evaluate their methodological rigor and strength of the evidence they provide, using a modified version of the AMSTAR tool, an 11-item checklist widely used to evaluate the methodological quality of mainly quantitative systematic reviews.[29] We modified this tool as described in the study by Lou et al.,[30] where Items 9 and 10 were adapted and excluded, respectively, to evaluate SRs that followed a narrative approach, and used qualitative or mixed methodologies.

Our adapted checklist contained 10 items (Appendix IV) for a maximum score of 10. A review that adequately met all the 10 criteria was considered to be of the highest quality. The quality rating was as follows: a score (out of 10 criteria) rating of 8 to 10 is considered as high quality, 4 to 7 as moderate quality and 3 or less as low quality.[31] The quality scores were not used to exclude articles from our overview but to inform about the quality of research and guide the interpretation of results. Similar to the data extraction process, G. J. performed quality assessment on all studies and A. K. V. performed the same process on a random sample of 20% of the studies. There were no discrepancies. The second author also reviewed the quality appraisal performed by the lead author for the remaining articles.

Data Analysis, Synthesis, and Presentation

Data analysis was informed by the Framework Method involving thematic analysis.[32–34] Two reviewers (G. J. and W. S. T.) identified recurrent themes in the literature to develop the standardized extraction form in Microsoft Excel (Appendix III), which was used to categorize information along predetermined categories. Through reflection and iteration, thematic categories were further refined to derive a final set of codes to interpret the results. The data are presented using a narrative, descriptive approach, typically used in cases where the research question dictates the inclusion of a wide range of research designs, including qualitative and/or quantitative findings.[35] We follow the ACP process from its contextual factors, to the mechanisms involved in its implementation, and ultimately its outcomes (Table 1).[36] Given the heterogeneity of the included studies, it was not possible

Table 1
Analytical Framework (Context-Mechanism-Outcomes (CMO) Configuration[36]) and Corresponding ACP Aspects

CMO Construct	Description	Related ACP Aspect
Context	Aspects related to the structure, culture, agency, and relations and the interplay between them	Legal environment, institutional policy; culture, race, and ethnic influences; patients' and providers' perceptions and receptivity to ACP, and factors influencing this receptivity
Mechanism	Mechanisms related to roles, practices, resources, processes; to ideas or propositional formulations about structure, culture, agency, or relations; to beliefs and reasons for action or nonaction; to duties, responsibilities, rights, power	Factors influencing ACP implementation; barriers and facilitators related to patients, family caregivers, and health care providers influencing ACP initiation, decision making, and completion of the process; operational/administrative barriers; surrogate designation-related aspects
Outcome	Transformation, invariance, or reproduction obtained from the aspects related to the mechanism listed previously	Preferences, general reported outcomes, types of ACP interventions, and corresponding outcomes

CMO = context-mechanism-outcomes; ACP = advance care planning.

to pool results or use meta-analytical approaches and to estimate the magnitude of each of the effects from the evidence.

This work was based on publicly available literature and did not require ethics approval.

Results

Search Results and General Studies' Characteristics

Overall, after removing duplicates and performing title/abstract screening, a total of 146 articles were subjected to full-text screening, from which 80 SRs

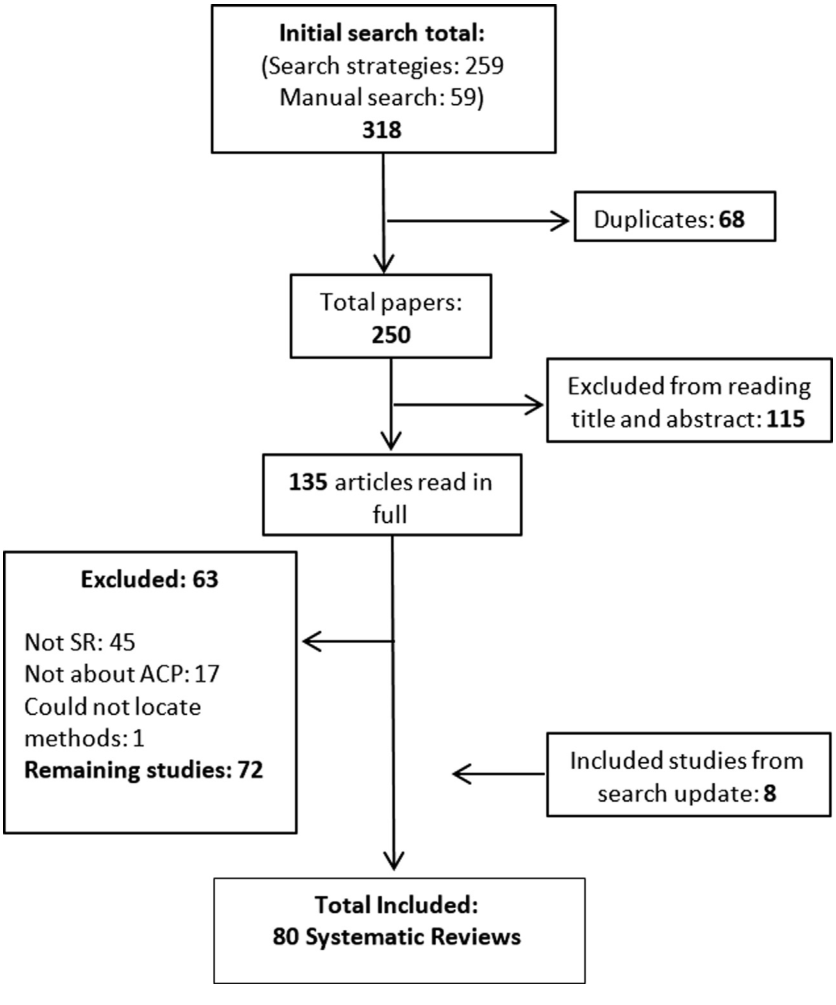

Fig. 1. PRISMA diagram of search results. ACP = advance care planning; SR = systematic review.

were deemed appropriate for inclusion and analysis, as shown in the PRISMA flowchart in Figure 1.

Sixty percent ($n = 48$) of the included SRs have been published since 2014, and the majority come from high-income Western countries such as the U.S. (represented in 79% of the SRs, $n = 63$), Canada (in 44% of the SRs, $n = 35$), Australia (in 38%, $n = 30$), and the U.K. (in 35%, $n = 28$). Over half of the SRs (59%, $n = 47$) used descriptive/narrative synthesis or thematic/content analysis, and 39% ($n = 31$) of SRs included only quantitative studies in their analyses. Thirteen percent of the SRs ($n = 10$) performed meta-analysis. In terms of the main topics explored, 15 SRs (19%) studied ACP as part of an EOL/palliative care intervention, 12 (15%) focused on EOL decision aids or decision making, and ACP research/implementation for specific patient groups, facilitators/barriers to ACP, and communication/discussion strategies were the main topics for 10 SRs (13%) each. Most of the included SRs (65%, $n = 52$) fall under the moderate-quality category, and 30% ($n = 24$) qualify as low-quality studies. Only 5% ($n = 4$) of them are of high quality.

There is a great variability in the way the SRs approached or conceptualized ACP. Several SRs used the term ACP as a general concept and grouped all their analyzed interventions together, even if they differed in their objectives and methodologies. These use ACP as an umbrella term and discuss the impact of ACP as a whole. Other SRs, whose focus was to examine differences depending on types or characteristics of interventions, separated the interventions and provided their features and associated outcomes individually. These may be ACP interventions or other interventions (such as palliative care interventions or educational interventions) that impact ACP or ACP-related outcomes.

For detailed characteristics of each included SR, see Appendix V.

Evidence Summary From Included Studies

ACP Context. ACP context refers to the setting in which an ACP program is implemented involving local institutional structures, cultures, agency and relations, and the complex interplay between them.

Legal and Policy Environment. There is a diversity in policy approaches to ACP across, and even within, countries.[37] The lack of a clear legal framework creates confusion about the legal status of ACP and hinders ACP implementation,[38] causing patients and family members to question its utility. Hence, ACP needs to be supported by strong policy initiatives at the health system and at the institutional level, as reflected by positive changes in staff, family, and patient outcomes after EOL policy implementation through the likes of the Patient Self-Determination Act in the U.S. and the Golden Standard Framework for Care Homes in the U.K.[39,40]

On the one hand, health system policies need to be directed at the ground level of service provision, as best clinical practices without systemic support are unlikely to produce positive change.[38] Policy reforms that include incentives, advocate for a multidisciplinary approach (i.e., involving professionals from different disciplines who are additionally trained in palliative care), and enhance EOL communication will help overcome current, ground-level barriers.[38,41] On the other hand, there needs to be a focus on developing competent educational policies and training programs to better equip health care professionals with the necessary skill set to work with patients in meeting their ACP needs and to promote best practices on the ground.[35]

At the institutional level, the lack of governance and management policy to create a supportive culture for EOL care negatively impacts the working environment that are conducive to interdisciplinary teamwork,[42] thus impeding ACP implementation.

Ethnic, Cultural, and Spiritual Influences. Multiple streams of research explore the role of ethnicity or race on ACP because they impact EOL perceptions and receptivity toward EOL care. Cultural and racial values influence perceived burden on family members, preferences for life-sustaining treatments, understanding of living wills, and completion rates of advance directives (ADs) and ACP.[43] For example, as compared to Caucasian Americans in the U.S., use of hospices progressively diminished among Hispanic Americans, African Americans, and Asian Americans.[44,45] Similarly, documentation of ADs, living wills, durable powers of attorney, and/or DNR orders was lower in all these minorities compared to Caucasians.[46]

Although most research exploring racial and ethnic differences toward ACP has been conducted in the U.S. (specifically looking at minorities differing from Caucasian populations),[42,44,45,47] research from Asian populations demonstrates a strong reliance on physicians and family when making ACP-related decisions for EOL treatments.[48] For example, instead of appealing to self-determination and autonomy, Chinese culture values collective, familial decision making and defers health care decisions to physicians' authority.[48] Therefore, numerous studies advocate for cultural sensitivity and embracing different social and spiritual needs when devising ACP interventions.[46,49,50]

Perceptions and Receptivity to ACP. There is overall a positive view toward ACP and AD discussions among both patients and health care professionals. Patients see ACP as a way of ensuring their wishes are known and respected and aiding their families to make decisions on their behalf.[51,52] Physicians see ACP and AD conversations as an important part of their professional responsibility,[52] whereas nurses consider ACP a safeguard for patient's autonomy and prepare them for future scenarios.[53]

Despite positive perceptions, patients, caregivers, and health care professionals evidently avoid EOL discussions and documentation because these deal with an emotionally difficult topic.[54,55] Yet, the level of comfort with these discussions depends on people's knowledge and previous experiences with the process of dying and death,[56] as greater exposure to both makes people less avert to explore this topic.

To improve ACP receptivity, the SRs recurrently mention the need for educating the public so that they are aware that ACP serves to empower patients by helping them to set goals for future care so as to better cope with uncertainty.[50,57] Equally important is educating family members of older/ill relatives to prepare them to make informed care decisions when the need arises.[51,57] In contrast with the collective values reflected in studies that involved Asian populations, SRs from Western countries emphasize individuals' autonomy and self-determination as completing ACP and ADs serves to ensure that patients' wishes and care decisions are protected and respected by health care staffs.[18,53]

Similarly, SRs involving nurses in ACP provision reveal that knowledge about the practical and legal issues,[35] as well as proficiency in communication skills,[53] plays important roles in health care professionals' willingness to engage in ACP. Studies of palliative care programs show that educational interventions are effective in improving the quality of ACP rendered by physicians,[8] thus enhancing ACP outcomes such as increasing patient-surrogate wishes' congruence, and increased knowledge and communication with patients.[58] There is also a need for improving skills and attitudes of health care professionals, so that they provide better quality ACP,[59] by conveying the right information, giving useful advice, and showing empathy.[18] Improving providers' skills will facilitate ACP initiation, implementation, and meeting patients' wishes.[60]

Receptivity toward these discussions also depends on having good relationships between all involved stakeholders (i.e., between patient, family, and professional caregiver), in addition to good family dynamics.[35]

ACP Implementation. ACP implementation refers to all the aspects influencing the introduction of ACP such as providing information to patients and carers, facilitating discussion, completing, recording, revising, and updating ACP-related documents, as well as the application of this information when needed.[61] Available evidence reveals multiple barriers and facilitators, for patients and health care professionals, for having ACP conversations.

Barriers and Facilitators

Patient and Family Caregiver Level. At the patient and family caregiver level, there are several barriers for ACP implementation. Lack of preparedness among patients and carers makes it difficult to initiate ACP conversations.[62] In the context of dementia care, the unpredictable nature of the disease, the degree of patient's involvement, the emotional distress on the family, and discrepancies between family and health care professionals may also act as barriers to making care decisions.[63] Family carers of patients with dementia, for instance, want practical support but often report unavailability from health care professionals.[63] Other factors that hinder ACP decision making and completion include discrepancies about the amount of information patients and caregivers want to know, and patients deferring responsibility to family members or physicians.[64]

Conversely, patient factors associated with higher rates of ACP include older age, higher education levels, and diagnosis of more severe health conditions.[17] For example, there are higher rates of ACP in cancer patients compared to noncancer patients.[38] Diagnosis of dementia, on the other hand, can either act as a barrier to ACP or prompt early planning before patients are more severely impaired.[52] Comorbidity and poor functional status were associated with less invasive and more stable EOL care preferences.[43,65]

Health Care Provider Level. Research underscores the central role of health care professionals, particularly physicians,[52,56,66] in initiating EOL discussions.[18,67] There is a mixed evidence on the appropriate timing for ACP conversations, with some studies recommending earlier initiation, while others finding discussions more useful at a later stage of patient care.[52,54] Barriers to initiate ACP conversations include prognosis uncertainty.[38] For specific diseases such as congestive heart failure or chronic obstructive pulmonary disease, it is even more complicated to initiate EOL conversations as these diseases are not directly linked to dying and conversations may inflict negative reactions from patients.[41] In addition, there is a lack of information regarding the best setting for ACP discussions,[56] and little research has examined the triggers for a referral from curative cancer treatment to palliative care services.[49]

Additional problems to communication exist,[68] such as the lack of communication skills and preparedness exhibited by medical residents when trying to support patients making decisions at the EOL.[69] Factors that support the initiation of ACP discussions include having a clearer picture of disease trajectory, physicians' skills for gauging patients' willingness to discuss ACP, ACP knowledge, and length of relationship with patient.[51,59,66] ACP and AD completion increased with disease progression, with disease severity (e.g., cancer), and with health care professionals initiating the discussions.[55,59,67] Different conversation techniques like indirect talk may be useful when a clinician wishes to test whether it is "the right time" to pursue these issues and the use of hypothetical questions may encourage on-topic talk.[14] An SR points out the need to invest time in relationship building so that strategies for ACP implementation carefully consider timing and receptiveness and are family and patient centered.[66]

Institutional and Operational Level. Other issues emerge at the institutional and operational level. Administrative barriers include issues related to legalistic paperwork, administrative systems for monitoring and accessing records, and lack of information flow.[45,52] There is also a lack of resources and time devoted to ACP,[45] shortage of manpower and poor staff preparation,[70] and difficulties arising from the ACP process not being embedded in routine care,[35] which hinder actualizing advance care plans.[62] Operational issues involving health care providers include prognosis being poorly documented or overestimated,[58] difficulties explaining forms, getting clinicians' signatures, and transferring the information across settings.[71] Health care professionals also reported the pressure to see a large number of patients and difficulty of scheduling timely follow-up visits.[52]

Surrogate Designation. An essential aspect of ACP implementation involves incorporating and designating a surrogate decision maker, and several SRs focused on this topic.[70,72–74] It is important for the patient to appoint someone who knows them well, usually a family member or spouse, given that patients are more concerned with whom will make the decision than with the decision itself.[72] Although surrogates try to do the right thing by protecting and advocating for their family member,[74] being a proxy decision maker can be stressful and anxiety producing.[72,73] Focus should be placed on providing surrogates with appropriate information and supporting them emotionally.[70,72]

ACP Interventions and Outcomes

The included SRs analyzed the impact of ACP against a diversity of outcomes. As mentioned previously, we found that the studies differed in the way they conceptualized ACP, and either looked at it as whole concept regardless of differences in interventions or tried to elucidate differences depending on the type of ACP interventions studied.

Different Types of ACP Interventions and Corresponding Outcomes. From the SRs, we were able to classify ACP interventions into five main categories: 1) interventions providing information or educational content (either for patients, caregivers, or professionals); 2) interventions testing decision aids or communication strategies; 3) interventions exploring a subtype of ACP (such as interventions to increase AD completion, or DNR/DNH orders); 4) ACP interventions per se (which include complex or extensive interventions) or specific forms of ACP (e.g., the physician orders for life-sustaining treatments [POLSTs] or others); and 5) those that sought to improve palliative or EOL care (and which either include ACP as part of the intervention, or impacted ACP as part of its outcomes). Details about the interventions as presented in the SRs are provided in Table 2.

In the first group, a large number of interventions were either informational or educational,[12,64,75–79,91] many focusing on specific groups of patients and settings. This type of intervention facilitated documentation of preferences and enhanced communication between patients and surrogates,[12] and increased AD completion.[53,59,64,65,85,86,92] The most successful ones at increasing AD completion were those that combined computer, video, and discussion elements instead of only providing written material; those directed at both patients and providers instead of being directed to single stakeholders; and those providing group education and information multiple times as opposed to a one-off event.

The second group includes interventions that focused on decision aids or on improving decision making and those that explored communication or discussion strategies. Decision aids improved knowledge about ADs, ACP, treatment options, and goals of care[9,51,81,82]; increased AD completion and ACP status and discussions[9,81]; and decreased decisional conflict.[9,51] Decision aids in video format improved informed treatment choice and increased patient confidence in decision making, and patients were less likely to choose aggressive care interventions.[9,19,81] There was, however, an unclear impact of decision aids on ADs being included in the medical record, on improving treatment agreement between patients and surrogates, and on improving satisfaction or decreasing anxiety.[9,82]

Communication interventions, which included communication skills training for health care professionals as well as communication guides/techniques for patients, showed mixed results. While some increased documentation of ADs and patient-surrogate congruence about goals of care,[58,83] others did not have much impact (most commonly, those not including interaction with a provider).[12]

Table 2
Interventions Studied in the Included SRs

Reference (Number of Included Studies)	Population	Intervention	Context	Outcome Summary (ACP-Related, Values Included if Provided)
1. Interventions providing information or education about ACP or EOL				
Durbin[75] (12 RCTs and four non-RCTs)	Patients	One computer educational intervention (against control)	Varied	- Inconclusive
		Six combined written and verbal educational interventions (against control)		- One of five studies demonstrated effectiveness of combined written and verbal interventions in increasing percent of newly completed ADs
		One combined written and computer educational intervention (against control)		- Inconclusive
		Three combined written and verbal vs. written only (all RCTs)		- Combined written and verbal interventions were significantly ($P < 0.05$) more effective than single written interventions in increasing percent of newly completed ADs
		One combined written, verbal, and video vs. written only (RCT)		- A combined written, verbal, and video educational intervention was significantly ($P < 0.05$) more effective than a single written intervention in increasing percent of newly completed ADs
Hanson[76] (16 studies total)	Patient (education interventions for changing EOL care) values represent % of patients before and after intervention (eight studies)[a]	Written materials and discussion with material	Outpatients	- Increased patients' preferences (AD), 0% compared to 15%
		Discussion with researcher	Outpatients	- Patients' preferences unchanged (AD), 10% compared to 15%
		Written materials and educational meeting	Volunteer	- Increased patients' preferences (AD), 31% compared to 46%
		Mailed written materials	Inpatient	- Increased patients' preferences (proxy), 0% compared to 19%
		Several discussions with social worker	Outpatients	- Increased patients preference' (new proxy), 68%; (new AD), 71%
		Written materials and discussion with physician	Outpatients	- Increased patients' preferences (AD), 3% compared to 23%
		Mailed written materials	Inpatient	- Patients' preferences unchanged (proxy), 11% compared to 13%
		Discussion with patient representative	Inpatient	- Increased patients' preferences (proxy), 6% compared to 48%
	Physician (education interventions for changing EOL care) values represent % of patients before and after intervention (five studies)[a]	Expert modeling, extra clinic time	Home care/nursing homes	- Increased patients' preferences (AD)
		Physician lecture chart reminders, "talking points"	Outpatient	- Increased patients' preferences (proxy)
		Case conference, feedback	Inpatient	- Decreased use of life-sustaining treatments (LSTs) (discussions beyond DNR), 68% compared to 86%

(*Continued*)

Table 2
Continued

Reference (Number of Included Studies)	Population	Intervention	Context	Outcome Summary (ACP-Related, Values Included if Provided)
		Chart reminder, feedback, new AD form	Inpatient	- Increased patient discussion (AD), 33% compared with 51%; decreased use of LSTs (DNR, 22% compared with 19%; discussion will change treatment, 3% to 13%
		Case conference, mentoring	ICU	- Increased patient discussion, 83% had earlier discussion; decreased use of LSTs (days in ICU), 46% decrease
	Physicians and patients (education interventions for changing EOL care) values represent % of patients before and after intervention (three studies)[a]	Patient and family (proxy) education, chart form	Nursing home	- Increased patients' preferences (new AD), 100%; no change in LSTs (treatment)
		Brief physician education, patient form, chart forms, and sticker	Outpatient	- Increase patients' preferences (new AD), 66%; no change in LSTs; no change in cost
		Research nurse, discussion of patients' preferences and prognosis, chart forms	Inpatients	- No difference for any outcome
Jezewski[77] (25 studies)	Patients	Didactic interventions to increase AD completion (only present information, may include video components and written materials)	N/A	- AD completion ranged from 0% to 34%
		Interactive interventions to increase AD completion (information plus discussion with a knowledgeable person)		- AD completion ranged from 23% to 71%
		Interactive, and group education vs. single individual education		- Twice as effective for group session
		Provision of information several days before admission and at the time of admission vs. only at the time of admission		- AD completion: 40% for information given twice vs. 4% for only at the time of admission
Patel[78] (nine studies)	Patients	Intervention, directed at the patient, included at least one of 1) written, audio, or video material vs. 2) direct counseling (face-to-face discussion with a clinician) about advance care directives	N/A	- The pooled odds ratio and 95% confidence interval, using a random-effects model was 3.71 [1.46−9.40] with $P < 0.001$ for the test of heterogeneity, indicating a clinically important and statistically significant effect.
Ramsaroop[64] (18 studies)	Patients and HC providers	Direct patient−health care professional interactions, using iterative interactions over multiple visits	Various	- Unadjusted pooled effect size of 0.50 (95% CI = 0.17−0.83), indicating moderate overall positive effect favoring AD interventions; after adjustment, pool effect 1.15.
	Patients	Passive education of patients with written materials and no direct counseling	Primary care	- Ineffective for increasing ADs completion in primary care
Tamayo[79] (seven studies total)	Various	Passive informative material (posters, leaflets, or videos)	Various	- No significant increase in AD completion rates
	Various	Interactive informative interventions	Various	- Increases AD completion rate, especially when including multiple sessions

Walczak[12] (45 studies total)[a]	Patients	EOL communication educational interventions (two studies)	N/A	- More positive attitudes to, and comfort with, EOL planning, greater power of attorney completion, knowledge, and recall - Lower hospital readmission
	Caregivers	Structured EOL family conference with bereavement brochure (one study)	N/A	- Significantly reduced the impact of patients' illness and death on caregivers, caregivers' psychological morbidity, expressions of guilt, and provision of nonbeneficial treatments to patients after deciding to withdraw life-sustaining treatment - Increased patient and nursing staff input into EOL discussions - Did not impact life-sustaining treatment decision (dialysis withdrawal, or time in ICU from treatment withdrawal to death)
	Caregivers	Structured EOL family conference without bereavement brochure (one study)	N/A	- Significant reduction in the impact of caregiving challenges including worry and life interference - Increased confidence to manage caregiving challenges
2. Interventions exploring decision aids/decision making or communication strategies				
Aslakson[9] (39 studies evaluating 30 unique decision aids)	Patients	Video-based ACP decision aid formats	Perioperative (acute) settings	- Data supporting benefit ($P < 0.001$) for informed treatment choice, opinions regarding decision aid, and patient-centered outcomes
	Patients	Paper-based ACP decision aid formats	Perioperative (acute) settings	- Study findings suggest that there are more data supporting potential benefit ($P < 0.001$) for ACP status
Chung[80] (20 studies)	Health professionals (medical trainees, and nurse practitioners)	EOL communication skills training (majority of interventions used combination of didactic lectures, small group discussions, and role-play with direct observation and feedback)	Mostly teaching hospitals	- Eight studies (two RCTs) found training was associated with improved self-efficacy (SMD 0.57; $P < 0.001$; very low–quality evidence) - Four studies (two RCTs) found training was associated with increase in knowledge scores (SMD 0.76; $P < 0.001$; low-quality evidence) - Eight studies (three RCTs) found training was associated with improved communication scores (SMD 0.69; $P < 0.001$; very low–quality evidence)
Jain[81] (10 RCTs, seven reporting on patients' preferences, four about ACP knowledge and with poolable data, four trials on AD completion)	Patients	All interventions compared an ACP video decision aid to assist with choices about future use of life-sustaining treatments against a non-ACP video decision aid (verbal description, pamphlet, usual care, etc.)	Outpatient primary care or oncology settings	- Patients were less likely to indicate a preference for CPR (risk ratio, 0.50 [95% CI 0.27–0.95]; $I^2 = 65\%$; heterogeneity $P = 0.01$) - Video decision aids resulted in greater knowledge scores compared with

(*Continued*)

Table 2

Continued

Reference (Number of Included Studies)	Population	Intervention	Context	Outcome Summary (ACP-Related, Values Included if Provided)
				control (standardized mean difference, 0.58 [95% CI 0.39−0.77]; $I^2 = 0\%$; heterogeneity $P = 0.99$) - There may be a small effect of video decision aids on this outcome, but with a wide 95% CI including no effect (risk ratio, 1.11 [95% CI 0.85−1.46]; $I^2 = 44\%$; heterogeneity $P = 0.15$)
O'Connor[82] (17 studies)	Patients facing health treatment or screening decisions	"More complex" decision aids vs. no or "simpler" intervention. All aids included information on the clinical problem in addition to information on the options and outcomes.	Varied (major surgery, circumcision of boys, testing for prostate antigens, and other screenings)	- Improved average knowledge scores for the options and outcomes by 13 to 25 points out of 100 (weighted mean difference = 19.95%; CI 14−25) - Positive impact on decisional conflict in three of four studies, with reductions ranging from 0.2 to 0.4 out of 5 (weighted mean difference = 0.3; CI 0.1−0.4) - All studies (studying this outcome) showed that decision aids were better than usual care or simpler aids in improving patients' perceptions of "feeling informed." - In three studies, decision aids increased proportion of participants assuming a more active role in decision making compared with usual case control (pooled relative risk = 2.27; CI 1.3−4) - No significant results regarding decision aids improving satisfaction. Four studies showed that the use of decision aids did not affect patients' anxiety
Sessana[51] (17 studies, eight intervention studies)	N/A	Mailed, written AD educational materials, including state-specific AD guidelines and forms Addition of a mailed AD educational video	N/A	- Increased AD placement in medical records - Did not add to the effect of written materials
	Older adults	Moderate-level, well-written, easily understood AD educational materials, in addition to easily accessed assistance regarding AD document completion	N/A	- May increase AD use, knowledge, and familiarity
	Elderly outpatients	Brief and prepared physician-initiated AD discussions	N/A	- Did not increase elderly outpatients' comprehension of ADs
	Patients	One-time intervention consisting of AD educational information, the provision of AD documents, and encouragement to discuss and complete an AD	N/A	- Did not significantly increase the number of patients obtaining, discussing, or completing an AD

	N/A	Physician-initiated AD discussion	N/A	- Discussion was found nondistressing, positively viewed by sample participants, and encouraged participants to continue thinking about and discussing AD issues with family members
	Health care proxy	Physicians using "Talking Points" (a guide summarizing key points in New York State proxy law) as a counseling guide to initiate HC proxy discussion with their patients, combined with copies of language-appropriate proxy forms being placed on patient charts for patients to take home, language-appropriate HC proxy counseling using translators, and chart flagging as a physician reminder to discuss ADs	N/A	- Increased health care proxy appointment
	Health care proxy and patient	The STEP program to facilitate health care professional (HCP) discussion between older adults and their potential or designated health care agent	N/A	- Significantly increased HC proxy communication scores, HC proxy knowledge, and HC proxy understanding of the role and responsibility of a health care agent
Song 2016[19] (19 studies reviewed, two interventions)	Primary malignant brain tumor patient	Video of goals of care decision support tool to facilitate ACP in brain tumor patients. Video-complemented verbal descriptions	N/A	- No participants in the video tool group preferred life-prolonging care, 4.4% preferred basic care, 91.3% preferred comfort care, and only 4.4% were uncertain ($P < 0.0001$), while in participants in the verbal narrative group, 25.9% of participants preferred life-prolonging care, 51.9% basic care, and 22.2% comfort care
	Primary malignant brain tumor patient	Impact of pilot program of comprehensive palliative care (including provision ACP) on place of death, rehospitalization, and cost-effectiveness	Home care	- 61% were assisted at home until the EOL, 22.2% died in hospital, and 16.8% died in inpatient hospice - Hospitalization readmission rates and intensive care unit utilization in the last two months of life were significantly lower than the control group who did not receive home assistance (16.7 vs. 38%, respectively; $P < 0.001$)
Oczkowski[83] (67 studies)	Patients	Structured communication tools for EOL decision making (i.e., traditional decision aid in any format (paper, video, computer, etc.), and other structured approaches to help with decision making, including organized meeting plans, patient education interventions on EOL care options, reminders, or mailing of ADs); interventions included verbal discussions alone ($n = 9$ studies), paper tools alone ($n = 9$ studies), verbal discussion with paper tool ($n = 20$ studies), videos ($n = 12$	Ambulatory care settings	- 12 RCTs at "low" or "uncertain" risk of bias that reported on the documentation of ADs: pooled estimate of effect was statistically significant (RR 1.92, 95% CI = 1.43−2.59 $P < 0.001$, low-quality evidence) - Four RCTs at "low" or "uncertain" risk of bias reported on ACP discussions: associated with statistically significant increase in the frequency of advance care planning discussions (RR 2.31, 95% CI = 1.25−4.26, $P = 0.007$, low-quality evidence)

(*Continued*)

Table 2
Continued

Reference (Number of Included Studies)	Population	Intervention	Context	Outcome Summary (ACP-Related, Values Included if Provided)
		studies), computer programs ($n = 4$ studies), complex multimodal interventions ($n = 10$ studies), and interventions directed at HCPs rather than patients or SDMs ($n = 3$)		- Two studies, one "low" risk of bias, other "unclear" risk of bias, reported were associated with a statistically significant increase in concordance of care with care desired by patients (RR 1.17, 95% CI 1.05–1.30, $P = 0.004$, low-quality evidence)
Walling[58] (number of studies not reported)[a]	Multiple	Patient-physician communication techniques	N/A	- Can increase documentation of ADs
	Physicians	Educational interventions and communication and care planning interventions	N/A	- Increased the ability of physicians to elicit patients' preferences - Increased patient-surrogate congruence in goals of care
Walczak[12] (45 studies total)[a]	Patient	Patient-held medical record intervention and provision of audio recording of consultation (two studies)	N/A	- Unaffected outcomes
	Caregivers	Web-based communication intervention with automatic report of concerns to clinicians (one study)		- No impact on caregiver preparedness or burden of the caregiver role - Significantly reduced caregiver negative mood
	Health care professionals	Communication skills training interventions with (19 studies) and without (one study) role-play, one computer-based and two as part of quality improvement interventions		- Largely consistent in impacting changes in skill, comfort, self-efficacy, preparedness, and knowledge or attitude in relation to specific communication skills such as delivering bad news ($n = 18$, 90%)
3. Subcomponents of ACP (e.g., interventions aimed at increasing AD completion or effects of DNR orders, etc.)				
Brinkman-Stoppelenburg[84] (113 studies)[a]	N/A	DNR orders	N/A	- Associated with a decreased use of CPR (four of five studies) and an increased use of hospice and palliative care (six out of six studies). A majority of studies showed a decrease in life-sustaining treatments (12 of 21 studies)
		DNH orders		- Decrease in hospitalization (eight of nine studies), a decrease in life-sustaining treatments (three of three studies), and an increase in hospice and/or palliative care (five of five studies)
		Advance directives (including living wills and durable powers of attorney)		- Associated with an increase in hospice and palliative care (five of seven studies). For other outcomes, the results were mixed
Houben[85] (56 studies)	N/A	Interventions: 1) advance directives (focused on completion of ADs, including (durable powers of attorney, living wills, limitation of care forms, 26	N/A	- Both interventions increased the likelihood of completion of ADs (OR 3.26; $P < 0.00001$) and the likelihood of occurrence of EOL care discussions

		studies) vs. 2) communication in addition to ADs (focused on communication about ACP, 30 studies).		between patients and health care professionals (OR 2.82; $P < 0.00001$). Effects of both interventions for these outcomes were comparable - Interventions including the communication aspect improved concordance between patient's preferences and received care (OR 4.66; $P = 0.03$)
Sumalinog[86] (16 studies, two included in meta-analysis)	Patients (homeless individuals)	Interventions to assist homeless persons in the completion of ADs; self-guided (provided with ACP document and written materials) vs. counselor-guided (additionally meeting a counselor for one-on-one assistance)	N/A	- Counselor-guided interventions resulted in statistically significant increased likelihood of completing AD compared to self-guided (RR 2.6; $P < 0.00001$)
4. ACP complex interventions and specific ACP “brands”				
Austin[10] (38 studies, seven studies testing four decision tools for ACP)	Moderately, chronically ill older patients	52-page workbook *Your Life, Your Choices* on ACP and 30-minute visit with social worker, vs. packet of AD forms	Outpatient settings	- Increased patient report of ACP discussions after index visit (64% vs. 28%; $P < 0.001$); increased ACP-related notes written by the clinicians (48% vs. 23% of the medical records, respectively; $P = 0.001$)
	Moderately ill older patients	12-page advance directive document modified for low health literacy, available in English or Spanish, vs. standard AD	Outpatient settings	- Improved ease of use and understanding (69.1% vs. 48.7%; $P < 0.001$); increased completion of advance directives in six months (18.5% vs. 7.7%; $P = 0.03$)
	Moderate to severely ill ovarian cancer patients	Web site information on ovarian cancer, shared decision making, advance directive completion, and palliative care consultation, vs. usual care, clinical docs available on web site	Outpatient settings	- No effect on completion of advance directives ($P = 0.220$); no effect on palliative care consultation ($P = 0.440$)
	Moderately ill older patients	Verbal description followed by a two-minute video showing features of advanced dementia, vs. verbal description of advanced dementia	Outpatient and rural outpatient	- Increased choice of comfort care as primary goal (Group 1: 86% vs. 64%; $P = 0.003$; Group 2: 91% vs. 72%; $P < 0.001$); increased concordance between patients and surrogates (100% vs. 33%; $P = 0.015$); decreased choice of life-prolonging care as primary goal (0% vs. 16%; $P = 0.047$)
Baidoobonso[87] (evidence-based analysis used data from 30 studies)	N/A	Single-provider planning discussions (compared to no discussions or only provision of information with no human interaction)	N/A	- Improve families' satisfaction with EOL care and concordance between patients' and families' wishes - Reduce the likelihood of receiving hospital care and the number of days spent in hospital - Increase completion of ACP processes and documents, and the likelihood of receiving hospice care
		Team-based discussions (compared to no discussions or only provision of information with no human interaction)		- Increase patients' satisfaction and the completion of ACP documents and processes

(*Continued*)

Table 2
Continued

Reference (Number of Included Studies)	Population	Intervention	Context	Outcome Summary (ACP-Related, Values Included if Provided)
		Earlier planning care discussions (compared to no discussions or only provision of information with no human interaction)		- Reduce the number of days spent in intensive care and decrease the use of outpatient services - Associated with reduced hospital care and with increased hospice care
Brinkman-Stoppelenburg[84] (113 studies total)[a]	N/A	Advance care planning (including let me decide AD program, respecting choices program, physician orders for life-sustaining treatment (POLST) program, let me talk program, making advance care planning a priority (MAPP) program, and several self-developed interventions such as conversations with a trained care planning mediator, a social work intervention, an AD tool, and a pathway tool for present and advance directives)	N/A	- Studies on complex ACP pertain to a range of outcomes and were associated with an increase in compliance with patients' end-of-life wishes (three of four studies), results for other outcomes were mixed
Dixon[88] (18 studies total)	Various	Several ACP programs (project CARE, optimizing advanced complex illness support, advanced illness coordinated care program, let me decide, SUPPORT, among others)	Various	- Half of the included studies on interventions report statistically significant associations between intervention and health care savings
Hickman[71] (23 studies)	Various	POLST	Various	- Decisions to withhold interventions are usually honored - Orders for Sections A (resuscitation) and B (medical interventions) are largely consistent with treatments received - Orders for comfort measures in Section B are associated with lower rates of hospitalization and hospital death
Walczak[12] (45 studies total)[a]	Multifocal	ACP (three studies)	N/A	- Improved treatment preference, congruence between patients and surrogates, and perceived quality of EOL communication - Reduced decision conflict in one study, but not in a second study - Comfort with decision making, psychospiritual well-being, anxiety, and knowledge of ACP were unaffected
	Patients	ACP interventions (two studies)		- Significantly higher EOL preference stability and improved discussion and communication of preferences - Significantly decreased satisfaction with health care services in one instance

				- Quality of life, anxiety, and depression were unaffected
Wickson[89] (six studies total)[a]	Patients	Let me decide	N/A	- Increased ACP documentation, fewer hospitalizations, and less resource use
		Let me talk		- Increased knowledge of residents' ACP for staff and families, improved quality of residents' life, and stability of health care choices
		Social work strategy to enhance ACP documentation		- Increased documentation of specific ACP and adherence to residents' and family members' preferences
5. Interventions aimed at improving palliative or EOL care				
Hall[6] (three studies)	Residents of care homes for older people	Palliative care service delivery interventions, which included referrals to external palliative care services and/or palliative care training for care home staff.	Older people residential homes	- In two studies, higher referral to hospice services in their intervention group six months after intervention; one study, fewer hospital admissions and days in hospital in the intervention group; one study, higher proportion of residents in the intervention group had DNR orders, had these easily identifiable on their chart, and had advance care plan discussions documented
Kavalieratos[7] (for ACP, 10 trials assessed)	Patients and caregivers	Palliative care interventions (among the five trials that reported statistically significant improvements, three were at high risk of bias and two were at unclear risk of bias)	Palliative care	- Of the outcomes narratively synthesized, palliative care was associated with improved advance care planning, greater patients' and caregivers' satisfaction with care, and lower health care utilization
	Patients with lung cancer	One trial at low risk of bias trial of early specialist palliative care in patients with lung cancer	Palliative cancer care	- No association with documentation of resuscitation preferences ($P = 0.05$)
Khandelwal[90] (22 studies)	Patients	Palliative care consultations on ICU admissions as an outcome (three studies)	Hospitals	- The mean relative risk reduction for ICU admissions associated with interventions was 37% (SD, 23%)
	Patients	Advance care planning intervention and palliative care consultations on ICU length of stay (two RCTs)	Inpatient, outpatient	- No change or inconclusive
	Patients (10 trials) Hospital or ICU (four trials)	Ethics or palliative care consultations/interventions (four RCTs, 10 non-RCTs) reporting on ICU LOS	ICU	- The mean relative risk reduction for ICU LOS associated with all palliative care interventions in the ICU setting was 26% (SD, 23%) - When restricting to palliative care interventions in the ICU setting that were directly targeted at the level of individual patients, the mean relative risk reduction was 33% (SD, 23%)
Lorenz 2008[8] (for ACP, nine systematic reviews and 32 intervention studies)	Various	Multicomponent (palliative care interventions) (those that engage values, involve skilled facilitators, and include patients, caregivers, and providers). Interventions include	Various	- Increase advance directives - Can increase the rates and effectiveness of communication about late-life goals and advance care planning

(*Continued*)

Table 2
Continued

Reference (Number of Included Studies)	Population	Intervention	Context	Outcome Summary (ACP-Related, Values Included if Provided)
		multidisciplinary decision making, ACP workbook, peer mentoring, ethics team consultation, preoperative structured care planning, nursing home quality improvement, effects of directives on mutual understanding		
Walling[58] (number of studies not reported)[a]	N/A	Other ACP interventions—many times as one component of a palliative care intervention to effect hospice enrollment	N/A	- Positive effects on patients' satisfaction, patients' knowledge, and psychological adjustment
		Palliative care/coordinated care interventions		- Can increase documentation of ADs
Wickson[89] (six studies total)[a]	Patients	Palliative care quality improvement programs	N/A	- Increased ACP discussion documentation
		Intervention aiming to improve hospice service		- Appropriate palliation or EOL care services in accordance with ACP and health care preferences
Martin[91] (13 studies, results do not specify outcomes for each intervention)[b]	Various	Five of the interventions were an educational program: two ACP education for health care staff and three ACP education for health care staff, residents, and families.	Nursing homes	- ACP reduces hospitalization of nursing home residents. Interestingly, where studied, mortality was not decreased by hospitalization - Actions are highly consistent with resident's wishes when their ACP is completed and lead to decreased usage of unwanted life-sustaining treatments. - Residents with ACP have a high incidence of dying in their preferred place of death, which was more often, in the nursing home. ACP was found to lead to increased and earlier community palliative care referrals - QOL and satisfaction with the dying process were rarely measured in the studies reviewed - For DNR studies, one found no difference in medical treatments to residents with full code vs. DNR orders. The second found those with DNR orders less likely to be hospitalized than those without
	Various	Five studies involved introduction or evaluation of a new ACP form in the facility.	Nursing homes	
	Various	Two studies involved an ACP program with a palliative care initiative	Nursing homes	
	Residents with lower respiratory infections	One study involved observation of the effect of DNR orders on medical treatments	Nursing homes	

SR = systematic review; ACP = advance care planning; EOL = end-of-life; ADs = advance directives; DNR = Do-Not-Resuscitate; N/A = not available or not applicable; HC = health care; DNH = Do-Not-Hospitalize; OR = odds ratio; LOS = length of stay; QOL = quality of life; RCT = randomized controlled trial; SMD = standardized mean difference; CPR = cardiopulmonary resuscitation; RR = risk ratio; SDMs = substitute decision makers.

[a] Systematic reviews that include more than one type of intervention.

[b] Review mentions the different interventions but groups all the outcomes together. Therefore, all the interventions are grouped together and not in their corresponding classification.

Communication skills training for health care professionals improved skills, comfort, self-efficacy, preparedness, and knowledge or attitudes in relation to specific communication skills such as delivering bad news.[12,80]

In the third category, interventions that aimed to impact subcomponents of ACP (such as effects of DNR orders or ADs) increased the completion of ADs and the occurrence of EOL care discussions between patients and health care professionals,[85] especially if they had a counselor guiding the process.[86] AD interventions with a focus on communication also improved concordance between patient's preferences and received EOL care.[85] The effects of DNR orders were associated with decreased use of cardiopulmonary resuscitation (CPR), increased use of hospice and palliative care, and a decrease in life-sustaining treatments. DNH orders showed a decrease in hospitalization, a decrease in life-sustaining treatments, and an increase in hospice and/or palliative care.[84]

In the fourth category, complex ACP interventions varied in format and the SRs differed in the amount of details provided on each intervention (Table 2). A two-minute video for ACP discussions, a modified ACP for lower health literacy, and an ACP workbook increased ACP discussions held, completion of ADs, and choice of comfort care as primary goal, whereas a web site had no effect on completion of ADs or on palliative care consultations.[10] Single-provider discussions, team-based discussions, and earlier planning care discussions were all associated with lower use of health services, and both single-provider and team-based discussions also increased the completion of ACP processes.[87] ACP interventions aimed at more than one type of stakeholder (i.e., not only at patients, but also including surrogates or providers); improved treatment preference, congruence between patients and surrogates, and perceived quality of EOL communication; and reduced decisional conflict, while several other outcomes (quality of life, anxiety and depression, comfort with decision making, psychospiritual well-being, knowledge of ACP) were unaffected.[12] Extensive ACP programs (compared to providing written documents alone) may be more effective at increasing frequency of out-of-hospital and out-of-ICU care, increasing compliance with patients' wishes and satisfaction with care,[84] and may drive health care savings.[88]

For specific "brands" of ACP, the POLST was associated with withheld treatments when requested and with lower rates of hospitalization and hospital deaths when orders for comfort measures were in place.[71] Other programs such as the "let me decide" program showed increased ACP documentation, fewer hospitalizations, and less resource use.[89] The "let me talk" program increased ACP knowledge among care home residents, staffs, and families as well as improved quality of care and stability of health care choices.[89] Social work strategies to enhance ACP documentation increased adherence to care home residents' and family members' preferences.[89]

For the fifth category, palliative care interventions (in several different configurations, see Table 2) seemed to result in care home residents and patients having higher proportions of DNR orders, more ACP discussions documented, and higher documentation of ADs.[6,8,89] In addition, palliative care was associated with improved ACP and greater EOL care satisfaction for caregivers and patients,[7] with improved communication about late-life goals,[8] and lower health care utilization and ICU admissions and length of stay.[7,90] However, some palliative care trials resulted in no association between intervention and the documentation of preferences.[7] An ACP intervention that included a palliative care consultation had no change in ICU length of stay.[90]

Undifferentiated ACP Interventions and Corresponding Outcomes. The SRs that did not differentiate between individual types of interventions reported that ACP that was broadly conceptualized was associated with increased documentation of EOL preferences, as well as increased use and completion rates of durable powers of attorneys or ADs,[92] which helped shift decision responsibility from health care teams to patients and their families.[53] ACP was also beneficial at increasing EOL discussions with patients, family members, and physicians,[19,37,55,71,92] clarifying patients' choices and raising awareness,[55] and improving communication between patients and clinicians,[19] and between nursing homes and hospitals.[71] ACP interventions were also found to increase patients' and families' satisfaction with care and giving patients stronger feelings of being "cared for" and "in control," which provided a greater peace of mind and a sense of relief.[55,92] ACP also had an effect on preventing or decreasing use of unwanted life-sustaining treatments.[55,91]

Preparing ADs and earlier discussions of EOL issues improved surrogate accuracy with patients' wishes.[53,72] However, surrogates' confidence in their choices was found to be higher than their measured accuracy,[88] reflecting a disconnect between surrogates and patients. Some SRs found that when ACPs were completed, nursing home residents' and motor neuron disease patients' preferences were consistently honored in terms of the treatment they received, although this finding comes from low-quality evidence.[55,91] In addition, those that had completed an ACP had a higher incidence of dying at their preferred place of death: nursing home residents tended to die in their nursing homes,[91] and patients with primary malignant brain tumor tended to die in their home or hospice.[19] ACP was also found to improve the transition from acute to terminal care and was associated with earlier community palliative care referrals.[39,91]

In terms of resource use or cost outcomes, ACP interventions, hospice use, and programs such as the POLST can lower hospitalization rates and use of resources,[39,92,93] especially for nursing home residents.[88,91] In addition, there were associations between ACP and reductions in ICU use and admissions, and ICU length of stay.[88,90] However, all the studies exploring ACP and costs mention that the information regarding the source of cost savings is limited and that only preliminary conclusions can be made owing to poorly defined and heterogeneous interventions.[88,90,93,94]

A summary of ACP interventions and outcomes can be seen in Table 3.

Discussion

This overview of systematic reviews synthesized available evidence on ACP, revealing key contextual elements, program features, types of interventions, and outcomes that influence its design and implementation. Overall, despite the large amount of research analyzed, the quality of current evidence is limited with mixed results and outcomes, and therefore should be interpreted with caution. It is clear that the SRs' divergent results are dependent on the interventions examined.

The evidence derived from the analysis of available SRs provides different layers of information, which may be of use when thinking about implementing an ACP program. First, there should be an assessment of whether ACP is the most appropriate intervention in terms of what needs to be achieved, by identifying the outcomes that ACP is able to influence (Table 3). As seen in the results, ACP may increase EOL discussion rates, documentation of EOL preferences, and completion of several ACP-related documents (Lasting Powers of Attorney, ADs, etc.). In addition, it may increase incidence of dying in preferred place of death, be associated with earlier palliative care referrals, and improve communication between health care professionals and patients and their families. Although the evidence on ACP costs and resources is nondefinitive, there is a tendency to report associations between health care savings and

Table 3
ACP Interventions and Outcomes Summary

Type of Intervention	Outcome	Ref. Examples
ACP (broadly conceptualized), associated with:	Improved surrogate and patient's wishes concordance	53,72
	Concordance between wishes and received care (for some groups of patients)	55,91
	Higher incidence for preferred place of death (for some groups of patients)	39,91
	Increased ACP-related documentation	92
	Increased occurrence of discussions	19,37,55,71,92
	Decreased use of unwanted life-sustaining treatments	55,91
	Lower use of resources and hospitalization rates	39,88,91,92
Different types of ACP interventions/different interventions impacting ACP		
Information/educational interventions	Facilitated documentation of preferences; enhanced communication between patients and surrogates	12
	Increased AD completion	64,75,76
Decision aids/communication interventions	Improved knowledge about ADs, ACP treatment options and goals of care	9,51,81,82
	Increased AD completion and ACP status and discussions	9,82
	Decreased decisional conflict	9,51
	Improved skills, comfort, preparedness and knowledge about ACP for health professionals	12,80
AD/DNR/DNH, and so on, interventions	Increased AD completion and occurrence of EOL discussions	85,86
	Associated with decreased use of CPR; increased use of hospice and palliative care	84
	Decrease in life-sustaining treatments	84
ACP complex interventions	Increased occurrence of ACP decisions, completion of ADs, and preferences for comfort care	10
	Lower use of services and increased completion of ACP processes	87
	Improved preference congruence between patient and surrogate; reduced decisional conflict	12
	Increased frequency of out-of-hospital and out-of-ICU care; health care savings	84,88
Palliative care interventions	Higher documentation of ACP-related documents	6,8,89
	Higher EOL care satisfaction	7
	Improved communication about late-life goals	8

ACP = advance care planning; AD = advance directive; CPR = cardiopulmonary resuscitation; DNR = Do-Not-Resuscitate; DNH = Do-Not-Hospitalize; EOL = end-of-life.

decreased use of resources with ACP programs. A limited number of higher quality studies demonstrate ACP may be pragmatically beneficial for certain population groups, settings, and outcomes. For instance, ACP is associated with health care savings for people living in nursing homes and for those with dementia living in the community.[88] There is also high-quality evidence about single-provider discussions improving concordance between patients' and families' wishes in EOL care decisions and outcomes.[91]

Once it has been established that ACP is the appropriate intervention based on its associated benefits, it is important to understand the country context and culture in which the ACP program is going to be implemented. Studies from Western countries, which provide the bulk of the evidence, emphasize the reliance on autonomy as a driver for ACP, while evidence from Asian countries reveals that patients prefer to incorporate family and community into their decisions and to rely on the opinion of physicians. Examples like this showcase that an ACP model developed, say, in the U.S. cannot just be transferred to China or Hong Kong as it is. It needs to be contextualized and adapted to the local realities for it to work.

In addition, it is important to define the way to approach ACP. A key and constant message from the SRs is to use a "whole-system strategic approach." This means to see ACP as an interconnected set of elements relying on each other, instead of focusing separately on its individual components. As such, there is a need to set up the structural basis from a systems perspective to include legislations and policy structures to positively influence health care institutions as well as the social aspects and cultural awareness promoting ACP.[12,35,38] Its different components, such as organization, funding, and availability of skilled staff, should be set up concurrently.[70] In a similar manner, the evidence shows that interventions are more effective when they involve patients, caregivers, and providers, at the same time.[12]

The next layer of information pertains to the design of the ACP program itself. There are several features of ACP programs that were consistently associated with improved outcomes. The provision of information should include interactive sessions with a knowledgeable person, capable of discussing and addressing concerns,[77,79] given that providing materials, such as videos or pamphlets, on their own did not have meaningful effects. In addition, these sessions should be iterative and repeated so as to maximize ACP effectiveness.[77,79] Another important factor relates to the implementation of ACP across different settings, so that the process follows the patients across their EOL journey (e.g., from the community to the general practitioner clinic, to the hospital, and then to the hospice).[15,95]

Finally, several SRs reinforced the need for new innovations to support ACP programs. For example, the use of Information and Communication Technologies to provide ACP information and education could reduce costs and make programs more easily scalable.[96] There is also a need to improve the storage and retrieval systems of ACP records, for example, through the use of electronic ADs,[53] so that they are readily available when needed. To have a more standardized and uniform program, the same ACP model should be implemented across entire regions or countries.[53] Finally, to reach the largest amount of people who need it, the implementation of ACP may need to expand beyond hospital or health care institution settings to a large community-shared model.[97] A summary of the elements supporting a successful ACP implementation is in Table 4.

Table 4
Elements Supporting Successful ACP Implementation

Main Factor	Specific Elements	Ref. Examples
Whole-system strategic approach	Address social and cultural beliefs of people and health systems, and structural constraints of health and legal systems influencing ACP	35,38
	Focus on all different components such as organization, funding, and skilled staff, including available doctors	70
	Interventions targeting multiple stakeholders (patients, caregivers, providers) concurrently	12
Successful ACP program features	Interactive information interventions with knowledgeable person, to discuss and address concerns	77,79
	Repeated conversations to increase ACP stimuli, effective for patient education and increasing AD completion	77,79
	Implement ACP and concurrent evaluations across different settings (patients use multiple sites for EOL care over time)	15,95
	Use strategies to solve EOL conflicts (e.g., use of ethics and mediations, improved communication, application of guidelines, and skills training)	68
Innovations for ACP support	Scalable programs to improve quality of EOL and reduce costs (e.g., such as use of ICTs to provide ACP information and education)	96
	Improving storage and retrieval system of ACP records (e.g., electronic ADs)	53
	Implementation of same ACP model across entire regions	
	Move ACP from a hospital-based to community-shared model	97

ACP = advance care planning; AD = advance directive; EOL = end-of-life; ICTs = Information and Communication Technologies.

Given the differences in results and multiplicity of factors and caveats, it is difficult to determine at this point a gold-standard ACP that is suitable for most contexts (social, cultural, regional), population groups, and settings. However, conceptualizing ACP as a whole process (instead of as a collection of individual, disjointed steps), composed of many interconnected elements and stakeholders, may provide insight on how to evaluate it better and produce higher quality evidence to improve its implementation and potential.

Strengths and Limitations of This Overview of SRs

This overview is characterized by a number of strengths and limitations, which should be considered when interpreting this work. One of the strengths is the comprehensive definition of ACP we have adopted, which allowed us to include articles explicitly related to ACP, as well as research that may not be considered as ACP on its own but that is definitely part of the ACP process. In addition, by analyzing systematic reviews, we were able to incorporate research coming from over 1660 original articles, guidelines, and reports and thus provide as vast a picture as possible of the evidence regarding ACP.

As with any SR, one potential limitation pertains to our search strategy not being able to capture all available evidence. However, our comprehensive definition and inclusion of aspects regardless of the presence of the "ACP" term should help include the relevant research to meet our objectives. The inclusion of only SRs might have excluded important research in other formats but provides a minimum standard of methodological and scientific quality.

Our greatest cause for concern was the lack of quality of the available studies; therefore, the evidence at this point is preliminary and most of the recommendations are based on associations. In addition, the considerable heterogeneity in how ACP is defined and analyzed makes it difficult to distil which benefits or impacts come specifically from which type of intervention. Higher quality, more holistic approaches, and clearer definitions are needed to explore specific research questions and identify the effect of specific interventions. Finally, most of the current evidence comes from U.S., U.K., Australia, and a few other western European countries limiting the generalizability of these findings.

Conclusions

ACP is an essential tool to facilitate important decision making on future medical care preferences. The large body of studies exploring ACP in recent years reflects the importance it has gained. ACP is associated with positive patient, health care professional, and health system outcomes such as increased EOL discussions and documentation of preferences, as well as health care savings in some contexts for specific populations. This overview highlights several features for developing more effective, successful, and sustainable ACP. Such a program needs a supporting policy and cultural environment, backed by knowledgeable health care professionals willing to lead and embrace the process, so as to improve the life of patients at the end of life. The lack of high-quality research warrants further investigations evaluating ACP as a unified program and assessing the impact of ACP for different populations, settings, and contexts, to obtain solid evidence to support healthy and sustainable ACP development in the global context.

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References

1. Detering KM, Silveira MJ. Advance care planning and advance directives: UpToDate 2016. Available from http://www.uptodate.com/contents/advance-care-planning-and-advance-directives. Accessed August 26, 2016.

2. Sudore RL, Lum HD, You JJ, et al. Defining advance care planning for adults: a consensus definition from a multidisciplinary Delphi panel. J Pain Symptom Manage 2017;53:821–832.e1.

3. Hickman SE, Hammes BJ, Moss AH, Tolle SW. Hope for the future: achieving the original intent of advance directives. Hastings Cent Rep 2005. Spec No:S26–30.

4. IOM (Institute of Medicine). Dying in America: Improving quality and honoring individual preferences near the end of life. Washington, DC: The National Academies Press, 2014.

5. Lum HD, Sudore RL, Bekelman DB. Advance care planning in the elderly. Med Clin North Am 2015;99:391–403.

6. Hall S, Kolliakou A, Petkova H, Froggatt K, Higginson IJ. Interventions for improving palliative care for older people living in nursing care homes. Cochrane Database Syst Rev 2011:CD007132.

7. Kavalieratos D, Corbelli J, Zhang D, et al. Association between palliative care and patient and caregiver outcomes:

a systematic review and meta-analysis. JAMA 2016;316: 2104–2114.

8. Lorenz KA, Lynn J, Dy SM, et al. Evidence for improving palliative care at the end of life: a systematic review. Ann Intern Med 2008;148:147–159.

9. Aslakson RA, Schuster AL, Reardon J, et al. Promoting perioperative advance care planning: a systematic review of advance care planning decision aids. J Comp Eff Res 2015; 4:615–650.

10. Austin CA, Mohottige D, Sudore RL, Smith AK, Hanson LC. Tools to promote shared decision making in serious illness: a systematic review. JAMA Intern Med 2015; 175:1213–1221.

11. Butler M, Ratner E, McCreedy E, Shippee N, Kane RL. Decision aids for advance care planning: an overview of the state of the science. Ann Intern Med 2014;161:408–418.

12. Walczak A, Butow PN, Bu S, Clayton JM. A systematic review of evidence for end-of-life communication interventions: who do they target, how are they structured and do they work? Patient Educ Couns 2016;99:3–16.

13. Bernacki RE, Block SD. American College of Physicians High Value Care Task F. Communication about serious illness care goals: a review and synthesis of best practices. JAMA Intern Med 2014;174:1994–2003.

14. Parry R, Land V, Seymour J. How to communicate with patients about future illness progression and end of life: a systematic review. BMJ support 2014;4:331–341.

15. Mularski RA, Dy SM, Shugarman LR, et al. A systematic review of measures of end-of-life care and its outcomes. Health Serv Res 2007;42:1848–1870.

16. Lorenz KA, Lynn J, Dy S, et al. Quality measures for symptoms and advance care planning in cancer: a systematic review. J Clin Oncol 2006;24:4933–4938.

17. Harrison Dening K, Jones L, Sampson EL. Advance care planning for people with dementia: a review. Int Psychogeriatr 2011;23:1535–1551.

18. Luckett T, Sellars M, Tieman J, et al. Advance care planning for adults with CKD: a systematic integrative review. Am J Kidney Dis 2014;63:761–770.

19. Song K, Amatya B, Voutier C, Khan F. Advance care planning in patients with primary malignant brain tumors: a systematic review. Front Oncol 2016;6:223.

20. Smith V, Devane D, Begley CM, Clarke M. Methodology in conducting a systematic review of systematic reviews of healthcare interventions. BMC Med Res Methodol 2011;11: 15.

21. Silva V, Grande AJ, Vlegas de Carvalho AP, Cabrera Martimbianco AL, Riera R. Overview of systematic reviews - new type of study. Part II. Sao Paulo Med J 2015;133: 206–217.

22. Bravata DM, McDonald KM, Shojania KG, Sundaram V, Owens DK. Challenges in systematic reviews: synthesis of topics related to the delivery, organization, and financing of health care. Ann Intern Med 2005;142(12 Pt 2): 1056–1065.

23. Becker LA, Oxman AD. Chapter 22: overview of reviews. In: Higgins JPT, Green S, eds. Cochrane Handbook for Systematic Reviews of Interventions, Version 510 [updated March 2011]. The Cochrane Collaboration, 2011.

24. Canadian Agency for Drugs and Technologies in Health (CADTH). Strings Attached: CADTH's Database Search Filters 2016. Available from https://www.cadth.ca/resources/finding-evidence/strings-attached-cadths-database-search-filters. Accessed July 25, 2016.

25. Health Information Research Unit (HIRU). Search Filters for MEDLINE in Ovid Syntax and the PubMed translation: McMaster University; 2016. Available from http://hiru.mcmaster.ca/hiru/HIRU_Hedges_MEDLINE_Strategies.aspx. Accessed July 25, 2016.

26. Clarivate Analytics. EndNote X7 2016. Philadelphia, PA.

27. Zelle H, Kemp K, Bonnie RJ. Advance directives in mental health care: evidence, challenges and promise. World Psychiatry 2015;14:278–280.

28. Black AD, Car J, Pagliari C, et al. The impact of eHealth on the quality and safety of health care: a systematic overview. PLoS Med 2011;8:e1000387.

29. Shea BJ, Grimshaw JM, Wells GA, et al. Development of AMSTAR: a measurement tool to assess the methodological quality of systematic reviews. BMC Med Res Methodol 2007; 7:10.

30. Lou S, Carstensen K, Jorgensen CR, Nielsen CP. Stroke patients' and informal carers' experiences with life after stroke: an overview of qualitative systematic reviews. Disabil Rehabil 2017;39:301–313.

31. Bashi N, Karunanithi M, Fatehi F, Ding H, Walters D. Remote monitoring of patients with heart failure: an overview of systematic reviews. J Med Internet Res 2017;19:e18.

32. Mays N, Pope C. Rigour and qualitative research. Bmj 1995;311:109–112.

33. Ritchie J, Lewis J. Qualitative research practice: A guide for social science students and researchers. London: Sage, 2003.

34. Gale NK, Heath G, Cameron E, Rashid S, Redwood S. Using the framework method for the analysis of qualitative data in multi-disciplinary health research. BMC Med Res Methodol 2013;13:117.

35. Gilissen J, Pivodic L, Smets T, et al. Preconditions for successful advance care planning in nursing homes: a systematic review. Int J Nurs Stud 2017;66:47–59.

36. de Souza DE. Elaborating the Context-Mechanism-Outcome configuration (CMOc) in realist evaluation: a critical realist perspective. Evaluation 2013;19:141–154.

37. Smith C, Jaffray L, Ellis I. Electronic advance care planning in community: nurses' role. GSTF Digital Library. Annual Worldwide Nursing Conference (WNC 2013); Singapore, Singapore. 2013

38. Lovell A, Yates P. Advance Care Planning in palliative care: a systematic literature review of the contextual factors influencing its uptake 2008-2012. Palliat Med 2014;28: 1026–1035.

39. Oliver DP, Porock D, Zweig S. End-of-life care in U.S. nursing homes: a review of the evidence. J Am Med Dir Assoc 2004;5:147–155.

40. Kinley J, Froggatt K, Bennett MI. The effect of policy on end-of-life care practice within nursing care homes: a systematic review. Palliat Med 2013;27:209–220.

41. Siouta N, van Beek K, Preston N, et al. Towards integration of palliative care in patients with chronic heart failure

and chronic obstructive pulmonary disease: a systematic literature review of European guidelines and pathways. BMC Palliat Care 2016;15:18.

42. Johnson KS, Elbert-Avila KI, Tulsky JA. The influence of spiritual beliefs and practices on the treatment preferences of African Americans: a review of the literature. J Am Geriatr Soc 2005;53:711–719.

43. Frost DW, Cook DJ, Heyland DK, Fowler RA. Patient and healthcare professional factors influencing end-of-life decision-making during critical illness: a systematic review. Crit Care Med 2011;39:1174–1189.

44. LoPresti MA, Dement F, Gold HT. End-of-Life care for people with cancer from ethnic minority groups: a systematic review. Am J Hosp Palliat Care 2016;33:291–305.

45. Wicher CP, Meeker MA. What influences African American end-of-life preferences? J Health Care Poor Underserved 2012;23:28–58.

46. Rahemi Z, Williams CL. Older adults of underrepresented populations and their end-of-life preferences: an integrative review. ANS Adv Nurs Sci 2016;39:E1–E29.

47. Sanders JJ, Robinson MT, Block SD. Factors impacting advance care planning among African Americans: results of a systematic integrated review. J Palliat Med 2016;19: 202–227.

48. Lee MC, Hinderer KA, Kehl KA. A systematic review of advance directives and advance care planning in Chinese people from eastern and western culture. J Hosp Palliat Nurs 2014;16:76–85.

49. Schofield P, Carey M, Love A, Nehill C, Wein S. 'Would you like to talk about your future treatment options'? Discussing the transition from curative cancer treatment to palliative care. Palliat Med 2006;20:397–406.

50. Zager BS, Yancy M. A call to improve practice concerning cultural sensitivity in advance directives: a review of the literature. Worldviews Evid Based Nurs 2011;8:202–211.

51. Sessanna L, Jezewski MA. Advance directive decision making among independent community-dwelling older adults: a systematic review of health science literature. J Appl Gerontol 2008;27:486–510 25p.

52. Sharp T, Moran E, Kuhn I, Barclay S. Do the elderly have a voice? Advance care planning discussions with frail and older individuals: a systematic literature review and narrative synthesis. Br J Gen Pract 2013;63:e657–e668.

53. Ke LS, Huang X, O'Connor M, Lee S. Nurses' views regarding implementing advance care planning for older people: a systematic review and synthesis of qualitative studies. J Clin Nurs 2015;24:2057–2073.

54. Layson RT, Adelman HM, Wallach PM, Pfeifer MP, Johnston S, McNutt RA. Discussions about the use of life-sustaining treatments: a literature review of physicians' and patients' attitudes and practices. End of Life Study Group. J Clin Ethics 1994;5:195–203.

55. Murray L, Butow PN. Advance care planning in motor neuron disease: a systematic review. Palliat Support Care 2016;14(4):411–432.

56. Johnson S, Butow P, Kerridge I, Tattersall M. Advance care planning for cancer patients: a systematic review of perceptions and experiences of patients, families, and healthcare providers. Psychooncology 2015.

57. Tong A, Cheung KL, Nair SS, Kurella Tamura M, Craig JC, Winkelmayer WC. Thematic synthesis of qualitative studies on patient and caregiver perspectives on end-of-life care in CKD. Am J Kidney Dis 2014;63:913–927.

58. Walling A, Lorenz KA, Dy SM, et al. Evidence-based recommendations for information and care planning in cancer care. J Clin Oncol 2008;26:3896–3902.

59. De Vleminck A, Houttekier D, Pardon K, et al. Barriers and facilitators for general practitioners to engage in advance care planning: a systematic review. Scand J Prim Health Care 2013;31:215–226.

60. Lewis E, Cardona-Morrell M, Ong KY, Trankle SA, Hillman K. Evidence still insufficient that advance care documentation leads to engagement of healthcare professionals in end-of-life discussions: a systematic review. Palliat Med 2016;30:807–824.

61. Emanuel LL, Danis M, Pearlman RA, Singer PA. Advance care planning as a process: structuring the discussions in practice. J Am Geriatr Soc 1995;43:440–446.

62. Lund S, Richardson A, May C. Barriers to advance care planning at the end of life: an explanatory systematic review of implementation studies. PLoS One 2015;10:e0116629.

63. Lord K, Livingston G, Cooper C. A systematic review of barriers and facilitators to and interventions for proxy decision-making by family carers of people with dementia. Int Psychogeriatr 2015;27:1301–1312.

64. Ramsaroop SD, Reid MC, Adelman RD. Completing an advance directive in the primary care setting: what do we need for success? J Am Geriatr Soc 2007;55:277–283.

65. Auriemma CL, Nguyen CA, Bronheim R, et al. Stability of end-of-life preferences: a systematic review of the evidence. JAMA Intern Med 2014;174:1085–1092.

66. van der Steen JT, van Soest-Poortvliet MC, Hallie-Heierman M, et al. Factors associated with initiation of advance care planning in dementia: a systematic review. J Alzheimers Dis 2014;40:743–757.

67. Song MK. Effects of end-of-life discussions on patients' affective outcomes. Nurs Outlook 2004;52:118–125.

68. Mpinga EK, Chastonay P, Rapin CH. [End of life conflicts in palliative care: a systematic review of the literature]. Rech Soins Infirm 2006:68–95.

69. Gorman TE, Ahern SP, Wiseman J, Skrobik Y. Residents' end-of-life decision making with adult hospitalized patients: a review of the literature. Acad Med 2005;80:622–633.

70. Fosse A, Schaufel MA, Ruths S, Malterud K. End-of-life expectations and experiences among nursing home patients and their relatives—a synthesis of qualitative studies. Patient Educ Couns 2014;97:3–9.

71. Hickman SE, Keevern E, Hammes B. Use of the Physician Orders for Life-Sustaining Treatment program in the clinical setting: a systematic review of the literature. J Am Geriatr Soc 2015;63:341–350.

72. Meeker MA, Jezewski MA. Family decision making at end of life. Palliat Support Care 2005;3:131–142.

73. Wendler D, Rid A. Systematic review: the effect on surrogates of making treatment decisions for others. Ann Intern Med 2011;154:336–346.

74. Kim H, Deatrick JA, Ulrich CM. Ethical frameworks for surrogates' end-of-life planning experiences. Nurs Ethics 2017;24:46–69.

75. Durbin CR, Fish AF, Bachman JA, Smith KV. Systematic review of educational interventions for improving advance directive completion. J Nurs Scholarsh 2010;42:234–241.

76. Hanson LC, Tulsky JA, Danis M. Can clinical interventions change care at the end of life? Ann Intern Med 1997;126:381–388.

77. Jezewski MA, Meeker MA, Sessanna L, Finnell DS. The effectiveness of interventions to increase advance directive completion rates. J Aging Health 2007;19:519–536.

78. Patel RV, Sinuff T, Cook DJ. Influencing advance directive completion rates in non-terminally ill patients: a systematic review. J Crit Care 2004;19:1–9.

79. Tamayo-Velazquez MI, Simon-Lorda P, Villegas-Portero R, et al. Interventions to promote the use of advance directives: an overview of systematic reviews. Patient Educ Couns 2010;80:10–20.

80. Chung HO, Oczkowski SJ, Hanvey L, Mbuagbaw L, You JJ. Educational interventions to train healthcare professionals in end-of-life communication: a systematic review and meta-analysis. BMC Med Educ 2016;16:131.

81. Jain A, Corriveau S, Quinn K, Gardhouse A, Vegas DB, You JJ. Video decision aids to assist with advance care planning: a systematic review and meta-analysis. BMJ Open 2015;5:e007491.

82. O'Connor AM, Rostom A, Fiset V, et al. Decision aids for patients facing health treatment or screening decisions: systematic review. Bmj 1999;319:731–734.

83. Oczkowski SJ, Chung HO, Hanvey L, Mbuagbaw L, You JJ. Communication tools for end-of-life decision-making in ambulatory care settings: a systematic review and meta-analysis. PLoS ONE 2016;11:e0150671.

84. Brinkman-Stoppelenburg A, Rietjens JA, van der Heide A. The effects of advance care planning on end-of-life care: a systematic review. Palliat Med 2014;28:1000–1025.

85. Houben CH, Spruit MA, Groenen MT, Wouters EF, Janssen DJ. Efficacy of advance care planning: a systematic review and meta-analysis. J Am Med Dir Assoc 2014;15:477–489 13p.

86. Sumalinog R, Harrington K, Dosani N, Hwang SW. Advance care planning, palliative care, and end-of-life care interventions for homeless people: a systematic review. Palliat Med 2016;3:3.

87. Baidoobonso S. Patient care planning discussions for patients at the end of life: an evidence-based analysis. Ont Health Technol Assess Ser 2014;14:1–72.

88. Dixon J, Matosevic T, Knapp M. The economic evidence for advance care planning: systematic review of evidence. Palliat Med 2015;29:869–884.

89. Wickson-Griffiths ASK, Ploeag J, McAiney C. A review of advance care planning programs in long-term care homes: are they dementia friendly? Nurs Res Pract 2014;2014:875897.

90. Khandelwal N, Kross EK, Engelberg RA, Coe NB, Long AC, Curtis JR. Estimating the effect of palliative care interventions and advance care planning on ICU utilization: a systematic review. Crit Care Med 2015;43:1102–1111.

91. Martin RS, Hayes B, Gregorevic K, Lim WK. The effects of advance care planning interventions on nursing home residents: a systematic review. J Am Med Dir Assoc 2016;17:284. 293 10p.

92. Weathers E, O'Caoimh R, Cornally N, et al. Advance care planning: a systematic review of randomised controlled trials conducted with older adults. Maturitas 2016;91:101–109.

93. Klingler C, In der Schmitten J, Marckmann G. Does facilitated Advance Care Planning reduce the costs of care near the end of life? Systematic review and ethical considerations. Palliat Med 2016;30:423–433.

94. Taylor JS, Heyland DK, Taylor SJ. How advance directives affect hospital resource use. Systematic review of the literature. Can Fam Physician 1999;45:2408–2413.

95. Biondo PD, Lee LD, Davison SN, Simon JE. Advance Care Planning Collaborative R, Innovation Opportunities P. How healthcare systems evaluate their advance care planning initiatives: results from a systematic review. Palliat Med 2016;23:23.

96. Ostherr K, Killoran P, Shegog R, Bruera E. Death in the digital age: a systematic review of information and communication Technologies in end-of-life care. J Palliat Med 2016;19:408–420.

97. Wang CW, Chan CL. End-of-life care research in Hong Kong: a systematic review of peer-reviewed publications. Palliat Support Care 2015;13:1711–1720.

98. Kelly B, Rid A, Wendler D. Systematic review: individuals' goals for surrogate decision-making. J Am Geriatr Soc 2012;60:884–895.

99. Lim CE, Ng RW, Cheng NC, Cigolini M, Kwok C, Brennan F. Advance care planning for haemodialysis patients. Cochrane Database Syst Rev 2016;7:CD010737.

100. Petriwskyj A, Gibson A, Parker D, Banks S, Andrews S, Robinson A. Family involvement in decision making for people with dementia in residential aged care: a systematic review of quantitative literature. Int J Evid Based Healthc 2014;12:64–86.

101. Qaseem A, Snow V, Shekelle P, et al. Evidence-based interventions to improve the palliative care of pain, dyspnea, and depression at the end of life: a clinical practice guideline from the American College of Physicians. Ann Intern Med 2008;148:141–146.

102. Raymond M, Warner A, Davies N, Nicholas N, Manthorpe J, Iliffe S. Palliative and end of life care for people with dementia: lessons for clinical commissioners. Prim Health Care Res Dev 2014;15:406–417.

103. Robinson L, Dickinson C, Rousseau N, et al. A systematic review of the effectiveness of advance care planning interventions for people with cognitive impairment and dementia. Age Ageing 2012;41:263–269.

104. Sizoo EM, Pasman HR, Dirven L, et al. The end-of-life phase of high-grade glioma patients: a systematic review. Support Care Cancer 2014;22:847–857.

Appendix

Appendix I. Search Strategies

For OVID

1 exp Advance Care Planning/
2 (Advance Healthcare planning or advance health#care plan*).mp.
3 (advance medical plan* or (advance medical adj3plan*).mp.
4 (Advance care plan* or (advance care adj3plan*)).mp.
5 (Advance care adj3 (directive* or statement* or decision*).mp.
6 (Advance adj3 (directive* or statement* or decision*)).mp.
7 (Advance medical adj3 (directive* or statement* or decision*)).mp.
8 (Disease specific plan* or (disease* specific adj3 plan*)).mp.
9 ((Chronic illness* or progressive illness*) adj3 plans).mp.
10 (Patient advance plan* or (patient advance adj3 plan*)).mp.
11 (Patient advance adj3 (directive* or statement* or decision*)).mp.
12 exp Living Wills/
13 Living will*.mp.
14 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13
15 metaanalysis.pt.
16 metaanalysis/ or systematic review/ or metaanalysis as topic/ or "meta analysis (topic)"/ or "systematic review (topic)"/
17 ((systematic* adj3 (review* or overview*)) or (methodologic* adj3 (review* or overview*))).ti,ab,kf,kw.
18 ((integrative adj3 (review* or overview*)) or (collaborative adj3 (review* or overview*)) or (pool*adj3 analy*)).ti,ab,kf,kw.
19 ((quantitative adj3 (review* or overview* or synthes*)) or (research adj3 (integrati* or overview*))).ti,ab,kf,kw.
20 (data synthes* or data extraction* or data abstraction*).ti,ab,kf,kw.
21 (handsearch* or hand search*).ti,ab,kf,kw.
22 (meta regression* or metaregression*).ti,ab,kf,kw.
23 (metaanaly* or metaanaly* or systematic review*).mp,hw.
24 (medline or cochrane or pubmed or medlars or embase or cinahl).ti,ab,hw.
25 (comparative adj3 (efficacy or effectiveness)).ti,ab,kf,kw.
26 (outcomes research or relative effectiveness).ti,ab,kf,kw.
27 ((indirect or indirect treatment or mixedtreatment) adj comparison*).ti,ab,kf,kw.
28 or/
29 14 and 28 154 Advanced

For EBSCO

S1 (MH "Advance Care Planning+")
S2 Advance Care Planning
S3 (advance healthcare planning or advance health#care plan*)
S4 (advance medical plan* or (advance medical N3 plan*))
S5 (advance care plan* or (advance care N3 plan*))
S6 (advance care N3 (directive* or statement* or decision*))
S7 (advance N3 (directive* or statement* or decision*))
S8 (MH "Advance Directives+") or (DE "Advance Directives+")
S9 (disease-specific plan* or (disease* specific N3 plan*))
S10 ((chronic illness* or progressive illness*) N3 plans)
S11 (patient advance plan* or (patient advance N3 plan*))
S12 (patient advance N3 (directive* or statement* or decision*))
S13 (patient advance N3 (directive* or statement* or decision*))
S14 (MH "Living Wills+")
S15 living N3 will*
S16 S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15
S17 (TI (systematic* n3 review*)) or (AB (systematic* n3 review*)) or (TI (systematic* n3 bibliographic*)) or (AB (systematic* n3 bibliographic*)) or (TI (systematic* n3 literature)) or (AB (systematic* n3 literature)) or (TI (comprehensive* n3 literature))
S18 (AB (comprehensive* n3 literature)) or (TI (comprehensive* n3 bibliographic*)) or (AB (comprehensive* n3 bibliographic*))

S19 (TI (integrative n3 review)) or (AB (integrative n3 review)) or (JN "Cochrane Database of Systematic Reviews") or (TI (information n2 synthesis)) or (TI (data n2 synthesis)) or (AB (information n2 synthesis)) or (AB (data n2 synthesis)) or (TI (data n2 extract*)) or (AB (data n2 extract*))
S20 (TI (medline or pubmed or psyclit or cinahl or (psycinfo not "psycinfo database") or "web of science" or scopus or embase)) or (AB (medline or pubmed or psyclit or cinahl or (psycinfo not "psycinfo database") or "web of science" or scopus or embase))
S21 MH "Systematic Review") or (MH "Meta Analysis") or (TI (meta-analy* or metaanaly*)) or (AB (meta- analy* or metaanaly*))
S22 S17 OR S18 OR S19 OR S20 OR S21
S23 S16 AND S22
S24 S23 Limiters—Exclude MEDLINE records
S25 S24 Limiters—Age Groups: All Adult; Age Groups: Adulthood (18 yrs & older)

For EMBASE

1 exp patient care/
2 advance care planning.mp.
3 (advance healthcare planning or advance health#care plan*).mp.
4 (advance medical plan* or (advance medical adj3 plan*)).mp.
5 (advance care plan* or (advance care adj3 plan*)).mp.
6 (advance care adj3 (directive* or statement* or decision*)).mp.
7 (advance adj3 (directive* or statement* or decision*)).mp.
8 (advance medical adj3 (directive* or statement* or decision*)).mp.
9 (disease-specific plan* or (disease* specific adj3 plan*)).mp.
10 ((chronic illness* or progressive illness*) adj3 plans).mp. More
11 (patient advance plan* or (patient advance adj3 plan*)).mp.
12 (patient advance adj3 (directive* or statement* or decision*)).mp.
13 exp Living Will/
14 living will*.mp.
15 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 10314
16 1 and 15
17 meta-analysis.tw.
18 systematic review.tw.
19 17 or 18
20 16 and 19
21 limit 20 to exclude medline journals
22 lim it 21 to embase

Appendix II
Inclusion and Exclusion Criteria

Criteria	Include	Exclude
Study type	• Systematic reviews that 1) have been defined by the authors to be within title, abstract, or text and/or that 2) present evidence from the description of the methods that systematic review principles had been used in searching and appraising the evidence.	• Articles that are not systematic reviews, including: ○ Original studies ○ Discussion pieces ○ Opinions ○ Editorials ○ Narrative reviews ○ Critical reviews
Population	• Adult patients (healthy or with any disease/condition) • Caregivers (formal or informal, relatives, spouses, etc.) • Health care professionals (physicians, nurses, social workers, etc.) • Health care managers/administrators	• Pediatric populations (under 18 years of age)
Study design	• Qualitative studies • Quantitative studies • Mixed	• No restrictions
Study setting	• Acute care settings • Intermediate/long-term care settings • Community settings, including patients' homes • Inpatient/outpatient settings	• No restrictions
Study focus	• ACP as a primary topic of interest • Any subtopic of interest within ACP including (but not limited to) effectiveness, barriers/facilitators, completion rates, types of ACP, communication strategies, decision aids, cost-effectiveness, and so on. • Palliative and/or end-of-life studies for which ACP is a key indicator or outcome • Studies that covered concepts inherent in the definition of ACP such as end-of-life decision making, treatment preferences, and surrogate decision making	• Studies focusing only on advanced medical directives, Do-Not-Resuscitate orders, lasting powers of attorney, or any other medical planning tool if an ACP discussion was not described or held • Studies focused only on increasing the completion rates of advance medical directives with no reference to an ACP-related discussion • Studies focused on advance treatment directives for individuals diagnosed with mental illnesses
Publication status	• All languages • Peer-reviewed journal publications • Gray literature	• No language or time restrictions

ACP = advance care planning.

Appendix III
Data Extraction Form

General information
- Authors
- Year
- Title
- Journal
- Reported research question(s)

Topic of paper
- Communication/discussion strategies
- Cost or resource use
- Type of ACP
- Effectiveness of ACP
- Examination of EOL and/or palliative care
- Experiences, perceptions, and attitudes
- Outcome measures for ACP
- Factors influencing ACP
- Decision making/decision aids
- ACP research/implementation for specific disease/patient group/setting
- Others: specify
- Topic of interest within the paper (if any)

PICO
- Population
- Interest: objectives/details
- Context (settings)
- Outcomes

Methodology
- Search strategy (databases, hand search)
- Timeframe
- Language
- Included research studies (quantitative or qualitative)
- Type of quantitative studies
- Quality appraisal tool
- Type of ACP included
- Data synthesis

Results
- No. of studies reviewed
- No. of studies by type of ACP
- No. of countries included
- Summary of results
- Conclusions
- Additional details

ACP = advance care planning; EOL = end-of-life.

Appendix IV

Quality Appraisal Items

Item 1	Was an "a priori" design provided?
Item 2	Was there duplicate study selection and data extraction?
Item 3	Was a comprehensive literature search performed?
Item 4	Was the status of publication (i.e., gray literature) used as an inclusion criterion?
Item 5	Was a list of studies (included and excluded) provided?
Item 6	Were the characteristics of the included studies provided?
Item 7	Was the scientific quality of the included studies assessed and documented?
Item 8	Was the scientific quality of the included studies used appropriately in formulating conclusions?
Item 9	Were the processes of data synthesis clear and transparent with reference to a specific and appropriate methodology?
Item 10	Was the conflict of interest stated?

Appendix V
Included Studies' Characteristics

Authors	Year	Main Topic	Specific Objective	No. of Included Studies	Countries of Included Studies[a]	Systematic Review Analysis and Result Presentation	Methodologies of Included Studies (if Available)[b]	Explicit Risk of Bias (RoB) Assessment?	Quality Score (out of 10)[c]
Aslakson et al.[9]	2015	Decision making/ decision aids	Identify possible decision aids to promote perioperative ACP and summarize findings	39	USA, Canada, Spain, Japan	Meta-analysis (for 25 articles); narrative synthesis	Quantitative (22 RCTs, 17 observational)	Yes (22 RCTs and 13 pre-post, low RoB; 10 RCTs and three pre-post, medium or high RoB)	7
Auriemma et al.[65]	2014	Examination of EOL and/or palliative care	Addressing the stability of patients' EOL preferences, and identification of patient characteristics associated with preference changes	59	At least USA, England, the Netherlands, Canada, Israel, New Zealand, Australia (only from quantitative studies; no country information from qualitative ones)	Narrative synthesis; graphic depiction of preference stability across studies for quantitative studies	Quantitative (25) and qualitative (31)	No	6
Austin et al.[10]	2015	Decision making/ decision aids	Identify tools relevant to treatment decisions of seriously ill patients and caregivers; evaluate the quality of evidence for these tools; and summarize their effect on outcomes and accessibility for clinicians	38	At least USA, Canada, Australia, and Korea	Category development to describe the degree of change in patient-centered outcomes	Quantitative (17 RCTs, 21 observational)	Yes (11 RCTs, low RoB; five RCTs, medium RoB; one RCT, high RoB)	6
Baidoobonso et al.[87]	2014	Communication/ discussion strategies	Study patient care planning discussions that optimize the quality of EOL care for patients with advanced disease, informal caregivers, and providers	54	USA, UK, Australia, France, Canada	Studies divided into two subgroups (single-provider or team-based planning discussions); within subgroups, studies were pooled if same design and used (or did not use) a tool to facilitate discussions	Quantitative (13 RCTs, 31 observational) and systematic reviews (10)	Yes (RoB assessed for topic, not available for each study)	6

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Authors	Year	Main Topic	Specific Objective	No. of Included Studies	Countries of Included Studies[a]	Systematic Review Analysis and Result Presentation	Methodologies of Included Studies (if Available)[b]	Explicit Risk of Bias (RoB) Assessment?	Quality Score (out of 10)[c]
Biondo et al.[97]	2016	Outcome measures for ACP	Investigate measurements that health care systems have used to evaluate implementation of ACP initiatives	46	USA, Australia, UK, Canada, Germany, and Hong Kong	Outcomes themed into categories that were then mapped onto a conceptual framework	Quantitative (five RCTs, 41 observational)	No	5
Brinkman-Stoppelenburg et al.[84]	2014	Effectiveness of ACP	Study the effects of ACP on EOL care	113	Most from USA and Canada	Not reported	Quantitative (six RCTs, 107 observational)	No	5
Chung et al.[80]	2016	Others	Evaluate the effectiveness of educational interventions to train health care professionals in EOL communication skills compared to usual teachings.	20	USA, UK, Australia, Switzerland	Meta-analysis for outcomes of interests after assessment of statistical heterogeneity using I^2 statistic	Quantitative (six RCTs, 14 observational)	Yes (three RCTs, high RoB; three RCTs, uncertain RoB	7
De Vlemuinck et al.[59]	2013	Factors influencing ACP	Identify the perceived factors that hinder or facilitate GPs engaging in ACP	16	USA, UK, the Netherlands, Australia, Belgium, Canada, Singapore, and Israel	Not reported	Quantitative (7), qualitative (9)	No	6
Dixon et al.[88]	2015	Cost or resource use	Systematically review the literature for empirical studies reporting on economic outcomes potentially associated with ACP	18	USA, UK, Canada, and Singapore	Not reported	Quantitative (four RCTs, one cluster RCT, 13 observational)	No	5
Durbin et al.[75]	2010	Others	Systematically analyze evidence about one outcome (percent of newly completed ADs), focusing on the effectiveness of 1) types of educational interventions vs. controls and 2)	16	USA and Canada	RCTs and non-RCTs were analyzed separately. RCTs used to draw conclusions about nature of evidence on effectiveness of types of educational interventions; non-RCTs used to	Quantitative (12 RCTs, four non-RCTS)	No	6

			combined educational interventions over single educational interventions.			report whether an intervention resulted in harm			
Fosse et al.[70]	2014	Experiences, perceptions, and attitudes	Identify and synthesize qualitative research findings about nursing home patients' and relatives' expectations and experiences on how doctors can contribute to quality EOL care	14	USA, Canada, Sweden, Norway	Meta-ethnography	Qualitative (14)	No	4
Frost et al.[43]	2011	Factors influencing ACP	Determine which factors relevant to the provision of critical care are known to influence EOL decision making among health care providers and patients	102	At least Canada, Austria, Belgium, USA, Eastern Europe, Brazil, Australia, Scotland	Tabulation of frequency of significant factors in each category (no meta-analysis); summary of findings, present detailed qualitative description	Quantitative (one RCT, 101 observational)	No	5
Gilisen et al.[35]	2017	Factors influencing ACP	Identify the preconditions for implementing and organizing ACP in the nursing home setting	38	Studies described from Australia, Europe, USA, and Asia	Inductive thematic analysis and narrative synthesis	Quantitative (6, one RCT), qualitative (14), systematic reviews (11), and other reviews (7)	No	6
Gorman et al.[69]	2005	Decision making/ decision aids	Critically evaluate medical literature regarding residents' experiences with EOL decision-making process, identify elements that contribute to organizational framework of residents' EOL decision-making process, and suggest areas for future empiric research to help achieve educational goals	26	USA, Canada, the Netherlands, Australia, and France, and two multicountries	Narrative synthesis (identification of emerging factors, key findings, key flaws, and themes were summarized)	Quantitative (20 observational) and qualitative (6)	No	6

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Authors	Year	Main Topic	Specific Objective	No. of Included Studies	Countries of Included Studies[a]	Systematic Review Analysis and Result Presentation	Methodologies of Included Studies (if Available)[b]	Explicit Risk of Bias (RoB) Assessment?	Quality Score (out of 10)[c]
Hall et al.[6]	2014	Examination of EOL and/or palliative care	Determine effectiveness of multicomponent palliative care service delivery interventions for residents of care homes for older people, to describe range and quality of outcome measures reported	3	USA	Narrative synthesis	Quantitative (two RCTs, one observational)	Yes (all three studies, poor quality and at some RoB)	9
Hanson et al.[76]	1997	Examination of EOL and/or palliative care	Describe characteristics of successful clinical interventions at EOL	16	USA	Grouping of studies by target population; narrative description of whether an intervention led to changes in the four desirable clinical outcomes (no meta-analysis)	Quantitative (seven RCTs, nine observational)	No	3
Harrison Dening et al.[17]	2011	ACP research/ implementation for specific patient group or setting	Study what are the facilitators and inhibitors of ACP with people with dementia, and the key themes that emerge from the literature	17	USA, Australia, UK, the Netherlands	Identification of key themes and narrative review synthesis	Quantitative (11 observational), quantitative (1), and mixed methods (5)	No	5
Hickman et al.[71]	2015	Others	Describe and evaluate available evidence regarding use of the POLST and identify directions for future research on the POLST	23	USA (Oregon, Wisconsin, New York, California, North Carolina, Washington, and multistate)	Not reported	Unclear if quantitative or qualitative studies (10 used chart review, three chart review and interview, two survey and chart review, six survey alone, two survey and interview)	No	2
Houben et al.[85]	2014	Effectiveness of ACP	Study the efficacy of ACP interventions	56	Not reported	Interventions classified in 1) advance directives	Quantitative (all RCTs)	No	7

						(focused on completion of ADs) and 2) communication (focused on communication about ACP). Meta-analysis and ORs were calculated when possible (12 articles)			
Jain et al.[81]	2015	Decision making/ decision aids	Determine the impact of ACP video decision aids on patients' preferences for life-sustaining treatments and other ACP-related outcomes, compared with non—video-based interventions	10	USA	For each outcome, meta-analysis performed for summary estimate effect, when possible. If not, a complete case analysis was used	Quantitative (all RCTs)	Yes (three RCTs, low RoB (5 or 4 out of 5), five RCTs moderate RoB (3 out of 5), two RCTs high RoB (1 out of 5)	5
Jezewski et al.[77]	2007	Effectiveness of ACP	Explore the state of the science regarding the effectiveness of interventions designed to increase AD completion rates among various populations	25	USA, Canada	Matrix method to organize data and synthesize findings	Quantitative (14 RCTs, 11 observational)	No	3
Johnson et al.[42]	2005	Factors influencing ACP	Identify spiritual beliefs that may influence treatment preferences throughout the course of illness, identify spiritual beliefs that may specifically guide treatment decisions at EOL for African Americans, discuss implications for clinical practice	40	USA	Studies divided into two: 1) those examining treatment decisions throughout the course of illness and 2) those specifically examining treatment decisions at EOL, including attitudes about ACP, life-sustaining treatments, physician-assisted dying, hospice care. Results	Quantitative (25), qualitative (11), and mixed methods (4)	No	3

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Authors	Year	Main Topic	Specific Objective	No. of Included Studies	Countries of Included Studies[a]	Systematic Review Analysis and Result Presentation	Methodologies of Included Studies (if Available)[b]	Explicit Risk of Bias (RoB) Assessment?	Quality Score (out of 10)[c]
						divided into categories based on shared themes			
Johnson et al.[56]	2015	Experiences, perceptions, and attitudes	Report on the views or experiences of stakeholders regarding ACP and synthesize ACP literature focusing on cancer patients	40	USA, UK, Germany, Belgium, Italy, Australia, Taiwan, and Canada	Thematic analysis	Quantitative (19), qualitative (17), and mixed methods (4)	No	5
Kavalieratos, et al.[7]	2016	Examination of EOL and/or palliative care	Conduct a systematic review of palliative care RCTs to provide an up-to-date summary of palliative care outcomes and perform meta-analyses to estimate the association of palliative care with patient QOL, symptom burden, and survival	58	Not reported	Narrative synthesis; meta-analysis (for patient QOL, symptom burden, and survival outcomes studies)	Quantitative (15 RCTs, rest observational)	Yes (six interventions at low RoB, 26 at high RoB, 11 at unclear RoB)	6
Ke et al.[53]	2015	Experiences, perceptions, and attitudes	To explore nurses' experiences and perspectives regarding implementation of ACP for older people	18	Australia, Canada, New Zealand, South Africa, Switzerland, UK, and USA	Thematic synthesis of qualitative research to perform a meta-synthesis	Qualitative (18)	No	4
Kelly et al.[98]	2012	Decision making/ decision aids	Explore how individuals want treatment decisions to be made for them, in the absence of an AD; evaluate whether the current practice of relying on the next of kin, and instructing them to use substituted judgment	40	USA, Canada, France, Japan, Sweden, Australia, Singapore	Narrative synthesis	Quantitative (26, no RCTs) and qualitative (14)	No	6

			standard, promote individuals' goals						
Khandelwal et al.[90]	2015	Cost or resource use	Study whether ACP interventions lead to a reduction in ICU admissions for adult patients with life-limiting illnesses; whether ACP planning and palliative care interventions reduce ICU LOS; and whether it is possible to provide estimates of the magnitude of these effects	22	Not reported	Studies grouped by outcomes: ICU admissions and ICU LOS. Aggregated mean relative risk reduction of ICU admissions and LOS when applicable (no meta-analysis possible)	Quantitative (nine RCTs, 13 observational)	No	5
Kim et al.[74]	2017	Experiences, perceptions, and attitudes	Identify the types of ethical frameworks used to address surrogates' experiences in EOL care planning for incapacitated adults and the most common themes or patterns found in surrogate decision-making research	30	USA, Canada, Norway, Germany	Content analysis	Qualitative	No	4
Kinley et al.[40]	2011	Examination of EOL and/or palliative care	Identify the impact of implementing EOL care policy with regard to the use of the GSFCH, the LCP (or an Integrated Care Pathway for the last days of life), and educational/training interventions to support the provision of EOL care within a UK nursing care home context	8	UK	Not reported	Quantitative	No	6

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Authors	Year	Main Topic	Specific Objective	No. of Included Studies	Countries of Included Studies[a]	Systematic Review Analysis and Result Presentation	Methodologies of Included Studies (if Available)[b]	Explicit Risk of Bias (RoB) Assessment?	Quality Score (out of 10)[c]
Klingler et al.[93]	2015	Cost or resource use	Describe the cost implications of ACP programs and discuss ethical conflicts arising in this context	7	USA and Canada	Narrative synthesis	Quantitative (four RCTs, three observational)	No	7
Layson et al.[54]	1994	Communication/ discussion strategies	Investigate whether patients and physicians discuss LSTs and if they want to discuss the use of LSTs; investigate whether they want to discuss the use of LSTs, and what are the reasons they do not discuss the use of LSTs; investigate how well physicians understand patients' preferences for LSTs after discussion, and what are the best ways to discuss the elective use of LSTs to insure that patients clearly communicate their preferences	44	Not reported	Qualitative summary	Not reported	No	2
Lee et al.[48]	2014	Experiences, perceptions, and attitudes	Explore the attitudes, knowledge, and willingness to discuss or complete AD and ACP in Chinese people residing in Western countries compared with Chinese	15	China, Hong Kong and Singapore, Canada, and USA	Theme extraction using narrative systematic review approach	Quantitative (7), qualitative (6), and mixed methods (2)	No	6

			populations in Eastern countries						
Lewis et al.[60]	2016	Communication/discussion strategies	Investigate whether the presence of an Advance Care Document or equivalent would enhance clinicians' involvement in initiating EOL discussions and whether that engagement was perceived or measured as effective	24	UK, USA, other European countries, Australia, Japan, and Israel	Textual narrative and thematic analysis	Quantitative (6, no RCTs), qualitative (10), and mixed methods (8)	No	7
Lim et al.[99]	2016	ACP research/implementation for specific patient group or setting	Determine if ACP in hemodialysis patients can result in fewer hospital admissions or less use of treatments with life-prolonging or curative intent, and if patient's wishes were followed at EOL	2	USA	Planned meta-analysis, but unable to perform it. Narrative description.	Quantitative (two RCTs)	Yes (unclear RoB for both studies)	8
LoPresti et al.[44]	2016	Examination of EOL and/or palliative care	Identify and summarize what inequities exist in EOL care by ethnic/racial groups and examine possible reasons why these disparities or preferences exist in EOL care, for identifying interventions and improving care	25	USA	Not reported	Quantitative (20 observational) and qualitative (5)	No	2
Lord et al.[63]	2015	Decision making/decision aids	Identify barriers and facilitators to carer proxy decision making, and interventions designed to help carers make proxy decisions and their effectiveness	30	At least, from USA, Canada, and UK	Not reported	Quantitative (two RCTs, eight observational) and qualitative (20)	No	2

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Authors	Year	Main Topic	Specific Objective	No. of Included Studies	Countries of Included Studies[a]	Systematic Review Analysis and Result Presentation	Methodologies of Included Studies (if Available)[b]	Explicit Risk of Bias (RoB) Assessment?	Quality Score (out of 10)[c]
Lorenz et al.[16]	2006	Outcome measures for ACP	Explore the availability of quality-of-care measures and the evidence supporting those measures to assess pain, depression, dyspnea, and ACP for patients with cancer. Identify gaps in knowledge about quality measurement from the currently available literature, including absence of measures or measures lacking evidence of their scientific soundness for the population of cancer patients as a whole or for specific subpopulations	25 (ACP related)	Not reported	Not reported	Not applicable (measures and indicators)	No	4
Lorenz et al.[8]	2008	Examination of EOL and/or palliative care	Identify the critical elements for clinicians to address when caring for persons coming to the EOL, investigate what do definitions of the EOL suggest about identifying patients who could benefit from palliative approaches; identify what treatment strategies work well for pain,	41 (ACP related)	At least USA, Canada, Western Europe, Australia, and New Zealand	Qualitative synthesis	Systematic reviews (9) and intervention studies (32)	No	6

			dyspnea, and depression and what elements are important in ACP for patients coming to the EOL; identify what elements of collaboration and consultation are effective in promoting improved EOL care and what elements of assessment and support are effective for serving caregivers, including family, when patients are coming to the EOL						
Lovell and Yates[38]	2014	Factors influencing ACP	Identify the contextual factors that have influenced the uptake of ACP in "real-world" palliative care settings	27	USA, UK, Australia, Belgium, the Netherlands, China, and Taiwan	Thematic synthesis, grouping common results under main headings, then subheadings added as themes emerged	Quantitative (7), qualitative (17), and mixed methods (3)	Yes (no details given per study)	4
Luckett et al.[18]	2014	ACP research/implementation for specific patient group or setting	Inform future ACP practice and research in chronic kidney disease	55	USA and others (no more details)	Narrative approach using tabulation, textual descriptions, grouping and clustering, thematic and content analysis	Quantitative (48, 40 descriptive, eight interventions), and qualitative (6)	Yes (only for intervention studies; six at high RoB, two at moderate RoB)	4
Lund et al.[62]	2015	Factors influencing ACP	Investigate the factors that promote or inhibit the routine incorporation of ACPs in clinical practice	13	UK, Canada, USA, Australia	Directed content analysis, using an analytic framework informed by Normalization Process Theory	Qualitative	No	4
Martin et al.[91]	2016	ACP research/implementation for specific patient group or setting	Identify the effects of ACP interventions on nursing home residents	18	USA, Australia, Hong Kong, Canada, UK, Singapore, and the Netherlands	Narrative synthesis	Quantitative (one RCT, 12 observational), and systematic reviews (5)	Yes (one study at low RoB, two at moderate RoB, eight at high RoB, two at very high RoB)	7

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Appendix V
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Authors	Year	Main Topic	Specific Objective	No. of Included Studies	Countries of Included Studies[a]	Systematic Review Analysis and Result Presentation	Methodologies of Included Studies (if Available)[b]	Explicit Risk of Bias (RoB) Assessment?	Quality Score (out of 10)[c]
Meeker and Jezewski[72]	2005	Decision making/ decision aids	Enhance understanding of the phenomenon of family surrogate decision making at the end of life	55	Not reported	Not reported	Qualitative and quantitative	No	2
Mpinga et al.[68]	2006	Examination of EOL and/or palliative care	Evaluate the extent and the quality of the research related to EOL conflicts in palliative care	102	USA, UK, Switzerland, Canada, France, Australia, the Netherlands, Japan, Singapore, Chile, Israel, Denmark, Germany, and New Zealand	Narrative synthesis	Quantitative (87) and qualitative (15)	No	3
Mularski et al.[15]	2007	Outcome measures for ACP	Identify psychometrically sound measures of outcomes in EOL care and characterize their use in intervention studies	153	Not reported	Characterization of measures and organization by domains of interest	Not applicable (measures and indicators)	No	3
Murray and Butow[55]	2016	ACP research/ implementation for specific patient group or setting	Summarize what is known about the prevalence, content, patient/ caregiver benefits, health care professional awareness/ support, and health care outcomes associated with ACP in the motor neuron disease setting	16	USA, Germany, Denmark, UK, Australia, and multicentered (USA + Canada, UK + Australia)	Narrative synthesis and thematic analysis	Quantitative (12) and qualitative (4)	No	5
O'Connor et al.[82]	1999	Decision making/ decision aids	Determine whether decision aids improve decision making and outcomes for patients facing	17	Not reported	Meta-analysis for specific decision (14 studies); descriptive synthesis for each study	Quantitative (all RCTs)	No	3

			treatment or screening decisions						
Oczkowski et al.[83]	2016	Decision making/ decision aids	Determine, among adults in ambulatory care settings, the effect of structured communication tools for EOL decision making on completion of ACP	67	North America, Asia, Europe, Australia	Meta-analysis (for 18 studies); similar studies pooled using random-effects model for each outcome	Quantitative (46 RCTs, 21 observational)	Yes (12 RCTs low RoB, 15 RCTs high RoB, 20 RCTs uncertain RoB)	7
Oliver et al.[39]	2004	Examination of EOL and/or palliative care	Explore the state of research evidence in EOL care in U.S. nursing homes	43	USA	Descriptive analysis, categorization, and interpretation. Content categories developed	Quantitative (23) and qualitative (20)	No	2
Ostherr et al.[95]	2016	Communication/ discussion strategies	Identify Information and Communication Technologies (ICTs) being used in EOL communication and compare the effectiveness of different ICTs in EOL communication	38	USA, Canada, UK, the Netherlands, Spain, Australia, Japan, Korea, India	Not reported	Quantitative (17 RCTs, 21 observational)	Yes (five studies had moderate RoB (4/7), remaining 33 studies had high RoB (3/7 or lower)	5
Parry et al.[14]	2014	Communication/ discussion strategies	Gather and synthesize evidence from conversation and discourse analytic studies of how people address difficult and uncertain future matters in their health care–related conversations	19	Not reported	Aggregative approach, drawing together findings through structured summaries and comparing and connecting findings with one another	Qualitative	No	5
Patel et al.[78]	2004	Effectiveness of ACP	Systematically evaluate whether advance health care planning interventions directed at adult patients without terminal illness	9	USA	Meta-analysis; calculated odds ratio for completion rate of AD, and random-effects model to generate pooled odds	Quantitative (all RCTs)	No	8

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Appendix V
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Authors	Year	Main Topic	Specific Objective	No. of Included Studies	Countries of Included Studies[a]	Systematic Review Analysis and Result Presentation	Methodologies of Included Studies (if Available)[b]	Explicit Risk of Bias (RoB) Assessment?	Quality Score (out of 10)[c]
			influence the completion rate of advance directives			ratios and 95% intervals			
Petriwskyj et al.[100]	2014	Decision making/ decision aids	Identify the decision makers for people with dementia living in residential care and explore their experience when making the decision. Identify barriers or facilitators to decision making by families and the impact of decision-making processes on family members. Explore the impact of collaborative decision making with family on the person with dementia and identify the processes or strategies family decision makers use	11 (quantitative papers)	USA, the Netherlands, China	Narrative synthesis	Quantitative (one RCT, 10 observational)	No	4
Qaseem et al.[101]	2008	Examination of EOL and/or palliative care	Identify the critical elements for clinicians to address when caring for persons coming to the EOL, investigate what do definitions of the EOL suggest about identifying patients who could benefit from palliative	41 (ACP related)	At least USA, Canada, Western Europe, Australia, and New Zealand	Qualitative synthesis of evidence	Systematic reviews (9) and intervention studies (32)	No	3

			approaches, identify what treatment strategies work well for pain, dyspnea, and depression, and what elements are important in ACP for patients coming to the EOL. Identify what elements of collaboration and consultation are effective in promoting improved EOL care, and what elements of assessment and support are effective for serving caregivers, including family, when patients are coming to the EOL						
Rahemi et al.[46]	2016	Examination of EOL and/or palliative care	Critically analyze the research concerning EOL preferences among older adults of underrepresented groups	21	USA, Australia, UK	Thematic analysis	Quantitative (15), qualitative (4), and mixed (2)	No	3
Ramsaroop et al.[64]	2007	Factors influencing ACP	Critically review investigations designed to increase advance directive completion in the primary care setting and use meta-analytic techniques to quantify their effects	18	USA	Meta-analysis (for 15 of the included studies); reported difference in completion rates between arms, effect sizes were computed, and pooled effect sizes were calculated	Quantitative (12 RCTs, six observational)	No	2
Raymond et al.[102]	2014	Examination of EOL and/or palliative care	Synthesize information about management of EOL care in	8	USA, UK, and Canada	Critical interpretive synthesis	Systematic reviews	No	2

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Appendix V
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Authors	Year	Main Topic	Specific Objective	No. of Included Studies	Countries of Included Studies[a]	Systematic Review Analysis and Result Presentation	Methodologies of Included Studies (if Available)[b]	Explicit Risk of Bias (RoB) Assessment?	Quality Score (out of 10)[c]
			people with dementia using review papers						
Robinson et al.[103]	2012	Effectiveness of ACP	Review systematically the effectiveness of ACP interventions in people with cognitive impairment and dementia	4	USA, Canada, and Australia	Narrative summary	Quantitative (one RCT, three observational)	Yes (no detail scores per study, "all studies had some RoB")	7
Sanders et al.[47]	2016	Factors influencing ACP	Explore how factors that impact ACP for African Americans relate to each other	52	USA	Model development using qualitative research synthesis	Quantitative (38, three RCTs) and qualitative (14)	Yes (no scoring provided)	6
Schofield et al.[49]	2006	Communication/ discussion strategies	Explore how to facilitate discussions for a sensitive transition from curative to palliative care	57	Not reported	Not reported	Quantitative (five RCTs), qualitative and systematic reviews (3)	No	3
Sessana and Jezewski[51]	2008	Decision making/ decision aids	Explore the current state of science in nursing and health science literature regarding advance directive decision making among independent community-dwelling older adults	17	USA (assumed)	Garrard's matrix method to organize data and synthesize findings	Quantitative (five RCTs, nine observational) and qualitative (3)	No	1
Sharp et al.[52]	2013	Communication/ discussion strategies	Identify whether ACP discussions are being held, what are individuals' and HCPs' attitudes and preferences to timing of discussions, and what are the barriers and	26	USA and UK	Narrative synthesis	Quantitative (no RCTs) and qualitative	Yes (attempt to assess risk of bias; 16 studies high RoB, 10 moderate RoB)	6

			facilitators of discussions						
Siouta et al.[41]	2016	Examination of EOL and/or palliative care	Systematically review guidelines and pathways of integrated palliative care for people with advanced chronic heart failure and chronic obstructive pulmonary disease in Europe	19	Guidelines from UK, the Netherlands, multicountry; pathways from Spain and UK	Narrative synthesis	Not applicable (guidelines and pathways)	No	6
Sizoo et al.[104]	2014	Examination of EOL and/or palliative care	Outline the current knowledge on the EOL phase of high-grade glioma (HGG) patients and identify interventions that improve quality of life and dying, and/or quality of care for HGG patients in the EOL phase	17	UK, Germany, USA, Austria, Italy, Sweden, the Netherlands	Narrative synthesis	Quantitative (10), qualitative (5), and intervention studies (2)	No	2
Smith et al.[37]	2013	ACP research/ implementation for specific patient group or setting	Identify the role of nurses and/or nursing in the evidence-based models for electronic ACP for community-dwelling older adults	2	USA and Japan	Not reported	Quantitative (one RCT, one observational)	No	2
Song et al.[19]	2016	ACP research/ implementation for specific patient group or setting	Present an evidence-based overview of ACP in patients with primary malignant brain tumors	19	USA, Italy, Australia, Germany, Austria, the Netherlands, UK, multicentered	Thematic analysis, narrative synthesis	Quantitative (one RCT, 17 observational) and qualitative (1)	Yes (high RoB for all studies)	8
Song[67]	2004	Communication/ discussion strategies	Explore the effect of discussions about EOL care on patients' affective outcomes and examine the characteristics of the discussions, including individuals involved in and	7	Not reported	Not reported	Quantitative (five RCTs, two observational)	No	2

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Appendix V
Continued

Authors	Year	Main Topic	Specific Objective	No. of Included Studies	Countries of Included Studies[a]	Systematic Review Analysis and Result Presentation	Methodologies of Included Studies (if Available)[b]	Explicit Risk of Bias (RoB) Assessment?	Quality Score (out of 10)[c]
			the context of the discussions in the current literature						
Sumalinog et al.[86]	2016	ACP research/ implementation for specific patient group or setting	To summarize and evaluate the evidence surrounding advance care planning, palliative care, and end-of-life care interventions for homeless persons.	6	Canada, USA, Sweden	Meta-analysis (for two RCTs); narrative evaluation with major themes identified	Quantitative (two RCTs, two observational) and qualitative (2)	Yes (three studies, high RoB, one study moderate RoB, two N/A)	7
Tamayo-Velazquez et al.[79]	2010	Effectiveness of ACP	To identify, appraise, and synthesize the results of systematic reviews of the literature that examines the effectiveness of interventions to increase advance directive completion rate	7	Not applicable	Narrative synthesis	Systematic reviews (7)	No	5
Taylor et al.[94]	1999	Cost or resource use	To assess whether advance directives influence resource use by hospitalized patients	6	USA	Not reported	Quantitative (two RCTs, four observational)	No	4
Tong et al.[57]	2014	Experiences, perceptions, and attitudes	To describe patients' and caregivers' perspectives on conservative treatment and end-of-life care in chronic kidney disease	26	Thailand, Australia, Sweden, USA, Canada, Ireland UK, the Netherlands	Thematic synthesis	Qualitative	No	4
Van der Steen et al.[66]	2014	Factors influencing ACP	To identify factors associated with initiation of advance care planning (ACP) regarding end-of-	33	USA, UK, the Netherlands, Belgium, Canada, and Australia	Category development of factors	Quantitative (11), qualitative (21), and mixed methods (1)	No	2

			life issues in dementia						
Walczak et al.[12]	2016	Communication/discussion strategies	To identify and synthesize evidence for interventions targeting end-of-life communication	45	UK, USA, Hong Kong, the Netherlands, France, Japan, Australia, Germany, Canada, Italy	Narrative synthesis and categorization	Quantitative (18 RCTs, 27 observational)	No	4
Walling et al.[58]	2008	Communication/discussion strategies	Identify evidence supporting high-quality clinical practices for information and care planning in the context of cancer care as part of the RAND Cancer Quality—Assessing Symptoms, Side Effects, and Indicators of Supportive Treatment Project	NR	Not reported	Not reported	Not reported	No	4
Wang and Chan[96]	2015	Examination of EOL and/or palliative care	Examine EOL care research undertaken in an Eastern cultural context—Hong Kong—with the hope of better informing EOL care professionals and policymakers and providing lessons for other countries or areas that share similar EOL care challenges	107	Hong Kong	Thematic analysis	Quantitative (72, no RCTs), qualitative (30), and mixed methods (5)	No	3
Weathers et al.[92]	2016	ACP research/implementation for specific patient group or setting	Examine the impact of ACP on several outcomes (including symptom management, quality of care, and health care utilization) in older people across all health care settings.	9	USA, Australia, Canada, UK	Not reported	Quantitative (all RCTs)	Yes (overall high RoB for all studies)	5

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Appendix V
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Authors	Year	Main Topic	Specific Objective	No. of Included Studies	Countries of Included Studies[a]	Systematic Review Analysis and Result Presentation	Methodologies of Included Studies (if Available)[b]	Explicit Risk of Bias (RoB) Assessment?	Quality Score (out of 10)[c]
Wendler and Rid[73]	2011	Decision making/ decision aids	Assess the effect on surrogates of making treatment decisions for adults who cannot make their own decisions	40	USA, Canada, France, and Norway	Thematic analysis	Quantitative (10), qualitative (29), and mixed methods (1)	No	6
Wicher and Meeker[45]	2012	Factors influencing ACP	Examine and synthesize the state of science from published research focused on end-of-life preferences and the influences on those preferences among African Americans	46	USA	Garrard's matrix methods to organize studies and determine major concepts	Quantitative (16, two RCTs), qualitative (14), and mixed methods or data analysis studies (16)	No	2
Wickson-Griffiths et al.[89]	2014	ACP research/ implementation for specific patient group or setting	Identify the impacts of programs used to promote ACP in long-term care homes and whether they include a consideration of the values that are important to persons with dementia and their family members	6	USA, Hong Kong, Canada	Not reported	Quantitative (two RCTs, four observational)	No	4
Zager et al.[50]	2011	Others	Identify whether an AD that uses culturally sensitive descriptive terms compared to the standard AD affects utilization of ADs, in a rural community extended care facility	10	USA	Narrative synthesis	Quantitative (5, two RCTs), qualitative (3), and systematic reviews (2)	No	5

ACP = advance care planning; EOL = end-of-life; OR = odds ratio; RCT = randomized controlled trial; GPs = general practitioners; GSFCH = Gold Standards Framework in Care Homes Programme; LCP = Liverpool Care Pathway.

[a] Countries either explicitly reported or derived from the text as presented in the systematic review.

[b] Quality assessment based on a modified AMSTAR checklist as described by Lou S., Carstensen K., Jorgensen C.R., and Nielsen C.P. Stroke patients' and informal carers' experiences with life after stroke: an overview of qualitative systematic reviews. Disability and rehabilitation. 2017; 39(3):301-13.

[c] For qualitative research articles, information divided into RCTs or observational (when available), as described in National Council for Osteopathic Research, 2014, Quantitative research methods (available at http://www.ncor.org.uk/wp-content/uploads/2014/03/Quantitative_research_methods.pdf).