Tools to Facilitate Communication During Physician-Patient Consultations in Cancer Care: An Overview of Systematic Reviews

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Abstract: Tools have been developed to facilitate communication and support information exchange between people diagnosed with cancer and their physicians. Patient-reported outcome measures, question prompt lists, patient-held records, tape recordings of consultations, decision aids, and survivorship care plans have all been promoted as potential tools, and there is extensive literature exploring their impact on patient outcomes. Eleven systematic reviews of studies evaluating tools to facilitate patient-physician communication were reviewed and summarized in this overview of systematic reviews. Across the systematic reviews, 87 publications reported on 84 primary studies involving 15,381 participants. Routine use of patient-reported outcome measures and feedback of results to clinicians can improve pain management, physician-patient communication, and symptom detection and control; increase utilization of supportive care; and increase patient involvement in care. Question prompt lists can increase the number of questions asked by patients without increasing consultation length and may encourage them to reflect and plan questions before the consultation. There is limited benefit in audio recording consultations or using patient-held records during consultations. Physicians should be supported by adequately resourced health services to respond effectively to the range of clinical and broader patient needs identified through the routine use of tools to facilitate communication.

Keywords: cancer, communication, malignancy, medicine, neoplasm, patient, patient-reported outcome measures, physician, referral and consultation, systematic review

Introduction

People living with cancer and undergoing treatment for cancer face complex decisions about treatment and symptom management in distressing circumstances. Decision making, psychosocial adjustment, adherence to treatment, and satisfaction with care are all influenced by relationships and communication with health care providers. 1 Effective communication increases people’s satisfaction, reduces distress, promotes faster recovery, and improves pain control, adherence to treatment, and quality of life. 1,2 Physicians also benefit from positive communication, as breakdowns in communication increase stress, decrease job satisfaction, and contribute to burnout. 3

Unfortunately, from 30% to 50% of people living with cancer in the United States report less than satisfactory communication with their care providers, 4 and a recent report by the National Institute of Medicine described cancer care as a “system in crisis,” 5 citing communication issues as barriers to quality care. 2 Sensitive, timely, and effective communication is therefore necessary to assist people living with cancer to understand their diagnosis, prognosis, and treatment options; help them navigate health care systems; aid in decision making;
and promote optimal symptom management and support.\textsuperscript{2,4,5} In recognition of these issues, the Institute of Medicine has developed a conceptual framework placing the person at the center of a supportive care system, underpinned by shared decision making.

Although physicians also value a shared decision-making model in principle, they are challenged by time constraints, high workloads, the nature of the condition being treated, insufficient communication training, and poor information systems.\textsuperscript{6} There also are variations in patient preferences for involvement in decision making, whereby there is a desire for involvement\textsuperscript{7}; however, preferences for the degree of involvement differ, depending on sociodemographic and disease factors. A collaborative approach to decision making is therefore promoted as ideal.\textsuperscript{8}

A vast array of tools are available for physicians to use during consultations with their patients. The primary aim of this study was to examine the evidence from systematic reviews of tools intended to facilitate communication during consultations between physicians and people diagnosed with cancer. The secondary aims were to appraise the quality of evidence, determine the effectiveness of tools on patient outcomes, and identify research gaps. The overall aim was to assist physicians in choosing which tools would be most appropriate, and evidence based, to use to improve outcomes for their patients.

**Materials and Methods**

**Protocol and Registration**

The search strategy and study selection methods were conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA)\textsuperscript{9} statement and Cochrane guidelines.\textsuperscript{10-12} The study protocol was registered on the PROSPERO database (CRD42015029188 and CRD42018112057) before study commencement.\textsuperscript{13,14} There were no deviations from the agreed protocol.

**Eligibility Criteria**

**Inclusion criteria**

The inclusion criteria were systematic reviews of primary intervention studies of tools used during consultations that aimed to facilitate communication between physicians and people diagnosed with cancer who were aged 18 years or older, with an established cancer diagnosis, at any stage in their disease trajectory. Because of the breadth of the topic and the large volume of published literature, we included only publications in English between the years 2005 and 2018. These dates were chosen because we commenced the review in 2015 and backdated 10 years to ensure currency and reduce chances of duplication of primary studies in the included reviews.

A broad definition of tools was applied, namely, any tool used to facilitate physician-patient communication during consultations. If the tool was completed by the patient before the consultation, it had to have been discussed and/or endorsed by the physician during the consultation to be considered for inclusion. We included articles reporting evidence for tools in any format (ie, booklet, audiotape, online, computer) that physicians or patients can use to facilitate communication during consultations, such as decision aids, care plans, question prompt lists, distress thermometers, and patient-reported outcome (PRO) measures. Many studies use PRO tools to measure outcomes in clinical trials or to evaluate clinical service delivery. However, this review was concerned with studies that use PRO measures to identify the current concerns of the patient. The individual patient concerns are then reported to the physician by way of a printed or electronic summary and are used to direct clinical care and monitor quality of care.\textsuperscript{15}

“Physicians” were defined as medical professionals directly involved in the management or care of persons with a cancer diagnosis, including oncologists and primary care physicians. This report presents evidence from one section of a broader overview of communication in cancer care, which also included nursing interventions, educational educations, communication skills training, and electronic communication methods to improve communication in cancer care. Given the extent of the subject and the large number of published systematic reviews, this overview focused on tools used by physicians to promote communication and interaction during consultations.

**Exclusion criteria**

We excluded systematic reviews if physicians were involved in less than 25% of the studies reported. We also excluded systematic reviews reporting studies of tools used before diagnosis, such as genomic analysis and genetic testing, cancer screening, and risk. We also excluded reviews reporting levels of unmet needs and prevalence studies of health outcomes because they were not tools used by physicians. Similarly, we excluded exploratory studies about communication needs, educational sessions not delivered by a physician, web-based education and support, and nursing and/or allied health-delivered interventions. We also excluded systematic reviews of decision aids designed for use outside of the physician-patient consultation that were not then discussed or endorsed during the physician-patient consultation (for a list of the excluded studies, see Supporting Table 1).

**Information Sources and Searches**

The search strategy was created with input from the authors and a medical librarian. Table 1 presents the search...
terms using the Participants, Intervention, Comparison, Outcome (PICO) question format. The PICO question informed the development of the search strategy, which comprised a combination of subject headings (eg, Medical Subject Headings) and synonyms relevant to the topic. Search terms were combined with Boolean operators “OR” and “AND,” and wildcards and truncations were used to maximize the search results. The searches were limited to peer-reviewed systematic reviews.

MEDLINE (Medical Literature Analysis and Retrieval System Online), EMBASE (Excerpta Medica Database) via Ovid, PsycINFO, the Cochrane Library, and the Cumulative Index to Nursing and Allied Health Literature Plus (CINAHL) were searched initially on November 17, 2015. Systematic reviews were sought that were published between January 1, 2005 and November 17, 2015. Subsequent searches were conducted on August 18 and 30, 2018, and October 17, 2018, to update the original review. On November 2, 2018, we searched the Cochrane library, DARE (Database of Abstracts of Reviews of Effects), and the PROSPERO database for review protocols.

First authors of included systematic reviews and content area experts were emailed to ask whether they could identify additional studies. Reference lists of included systematic reviews were hand searched to identify additional systematic reviews.

**Study Selection**

Results of the searches were downloaded into Covidence software to facilitate de-duplication and screening. Three reviewers (S.L., L.P., and O.C.) applied the agreed selection criteria to screen titles and abstracts independently, in duplicate. A fourth reviewer (C.J.) resolved conflicts, and consensus agreement was sought from all authors for the final included studies.

**Data collection process and data items**

A data extraction template was created to extract data on the aims of the systematic review, participants, interventions and comparators, included study designs, exclusion criteria, quality assessment, method(s) of synthesis, number of included studies, summary of results and conclusions, and outcomes. These data were extracted independently by 3 reviewers (S.L., O.C., and L.P.), and there were no conflicts.

**Synthesis of results**

Meta-analysis was not possible because of heterogeneity within and between the included reviews. Data were extracted into summary tables to assist with analysis under the following categories: review details; review objectives; inclusion criteria, including participants, interventions, comparison, outcomes, and study designs; exclusion criteria; quality appraisal; included study types and numbers; method of synthesis; outcomes; and conclusions. Summaries of results were grouped according to the types of tools and in a narrative synthesis.

**Quality of evidence**

The methodological quality of the included reviews was independently assessed by 2 authors (S.L. and O.C.) using the AMSTAR (A MeaSurement Tool to Assess systematic Reviews) 2 criteria. AMSTAR 2 criteria comprise 16 items to specifically assess the methodological quality of systematic reviews relating to review design, study selection and data extraction, literature searches, status of publication, inclusion and exclusion criteria, characteristics of studies, quality assessment processes, quality of included studies, conclusions, appropriateness of synthesis methods, assessment of publication bias, and conflict-of-interest statements. We calculated an overall confidence score according to AMSTAR 2 critical domains. All but one of the included systematic reviews were conducted before the publication of AMSTAR 2 standards in 2017 and would therefore not necessarily have reported information required to assess all the critical domains (Table 2). It is acknowledged that missing information may have impacted the overall confidence scores rather than poor-quality systematic review methods. We therefore contacted first authors of all included systematic reviews to clarify missing information before calculating the overall rating. Two authors responded; however, their responses did not affect the overall quality assessment of the reviews.
We were unable to apply the Cochrane Grading of Recommendations Assessment, Development and Evaluation (GRADE) criteria because of the clinical and methodological heterogeneity within and between the included systematic reviews, which precluded a meta-analysis of results of the included systematic reviews.

### Results

#### Study Selection

We identified 6995 records from 6 databases. Sixteen additional studies were identified from hand searching reference lists and experts (Fig. 1). Eleven systematic reviews met the inclusion criteria and thus were selected for inclusion in this overview.

#### Characteristics of Reviews

The 11 included systematic reviews reported a synthesis of primary studies of PRO measures, question prompt lists, audio recordings of consultations, and patient-held records. Seven systematic reviews exclusively reported PRO measures, one focused on patient-held records, one reviewed question prompt lists, and 2 reviews reported question prompt lists and audio recordings. Detailed characteristics and results of the 11 included systematic reviews are provided in Table 3. A list of primary studies included within the systematic reviews is provided (see Supporting Table 2). Duplication of reporting, where more than one included systematic review reported on the same primary study, is presented in Supporting Table 2. We adjusted for duplication of primary studies when calculating total participant numbers reported in this overview.

The primary studies included in the systematic reviews were conducted in the United States (n = 30), the United Kingdom (n = 26), Australia (n = 17), Canada (n = 14), the Netherlands (n = 11), Germany (n = 3), Sweden (n = 2), Norway (n = 2), Austria (n = 1), New Zealand (n = 1), Japan (n = 1), South Korea (n = 1), and Singapore (n = 1), and a final study was conducted in multiple European countries. Seven were published within the last 5 years. Trial participants were recruited from multiple settings: outpatient oncology clinics (n = 56 studies); hospitals in which the specific unit was not specified (n = 30 studies); the community, home, or primary care setting (n = 10 studies); radiotherapy units (n = 7 studies); chemotherapy units (n = 6 studies); and palliative care units (n = 1 study). Two systematic reviews did not report on recruitment settings. One review reported on the sex of study participants.

Across the 11 systematic reviews, 87 publications reported on 84 unique primary studies involving a total of 15,581 participants. Across the 11 systematic reviews, 39 primary studies examined the use of PRO measures, 13 examined the use of question prompt lists, and 12 examined the use of patient-held records (see Supporting Table 2). Therefore, 13 primary studies included in the systematic reviews that did not involve physicians (n = 9), were not an adult population (n = 1), and were not testing a tool (n = 4) were not included in these numbers.
Quality of Evidence Assessment and Risk of Bias
Among the 11 included systematic reviews, 9 were assessed as critically low confidence in the quality of evidence, and 2 were assessed as low quality rated against AMSTAR 2 criteria (Table 2).

Patient-reported outcome measures
PRO measures are structured questionnaires delivered either on paper or electronically by patients. They measure broad health and psychological and social issues, such as health-related quality of life, functional status, symptoms, overall well-being, satisfaction with care, and treatment adherence. PROs were originally used to measure outcomes in clinical trials or to evaluate clinical service delivery. Increasingly, they are being used in the clinical setting, where individual patient responses are reported to health professionals to direct clinical care and monitor quality of care.15 Seven systematic reviews reporting the routine collection of PROs met the inclusion criteria for this overview.17,18,20,21,24,25,27 The mean number of studies included in the systematic reviews was 23 (range, 6-34 studies), and there was a mix of randomized and nonrandomized trial designs, surveys, and mixed-methods studies. The included systematic reviews reporting results from 66 unique studies, which collected data using 82 different PRO measures (Table 4).17-27 The most frequently reported measure was the European Organization for Research and Treatment of Cancer (EORTC) Core Quality of Life Questionnaire (QL-Q-C30),20,21,25,27 which was used in 15 individual studies across 4 reviews. The EORTC QL-Q-C30 is a general cancer measure containing 30 questions asking patients to rate activities of daily living, physical symptoms, financial issues, and psychological issues on a scale from 1 (not a concern at all) to 4 (very much a concern). There is also an
| STUDY            | REVIEW OBJECTIVES                                           | NO. OF STUDIES/PARTICIPANTS | INTERVENTIONS                                      | OUTCOMES MEASURED                  | RESULTS                                                                                   | AUTHOR CONCLUSIONS                                                                                       |
|------------------|-------------------------------------------------------------|-----------------------------|---------------------------------------------------|-----------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Adam 2016¹⁷      | 1. To synthesize the evidence on interventions that have used patient-reported pain measurements to enhance the management of cancer-related pain by making these pain data available to patients and/or health care providers | N = 22 studies included (18 relevant) | Systematic collection of patient-reported pain data, alone or in combination with data on other symptoms or outcomes | Pain outcomes reported only within composite measures of QOL or distress scores | Pain: Meta-analysis of 12 trials—a statistically significant reduction in average pain intensity was found of approximately one-half a point out of 10 (mean difference, 0.59; 95% CI, −0.87 to −0.30); there was no significant difference in present pain intensity between control and intervention groups across 3 studies (mean difference, −0.20; 95% CI, −0.89 to 0.49) | Interventions that have used patient-reported measurements to enhance the management of cancer related pain have achieved modest reductions in cancer pain intensity. The studies demonstrate that patients with cancer can provide their own data to guide management. The challenges are to provide effective transfer of information and to ensure clinicians act on this information in order to improve pain control |
|                  | 2. To describe the interventions and their main components  | Patients with any cancer type, grade, stage, and prognosis experiencing pain relating to cancer or its treatment | Provision of the findings of a patient-administered questionnaire or scale to health care provider | Physical symptoms: An improvement in pain rating and an increase in analgesia use were found in one study; however, better physical functioning and less dyspnea were seen in the control group of another study | Patient satisfaction: Two studies found no difference in satisfaction between intervention and control groups |  |
|                  | 3. To determine whether the systematic collection of patient-reported pain data can improve cancer pain outcomes |                                                                 |                                                                                           | Consultation time: Three studies found no difference in consultation time between intervention and control groups |                                                                                     |                                                                                                          |
| Alsaleh 2013¹⁸   | 1. To review the evidence that the use of such scales influences patient management for randomized controlled trials | 6 Studies included | Provision of the findings of a patient-administered questionnaire or scale to health care provider | • QOL | Physical symptoms: An improvement in pain rating and an increase in analgesia use were found in one study; however, better physical functioning and less dyspnea were seen in the control group of another study | Evidence for the use of symptom questionnaires or QOL scales in daily clinical practice is limited. There is some evidence suggesting that this might improve communication between patients and health caregivers but, because this evidence is of low quality, this is also uncertain. Currently, there is no good evidence that routine administration of QOL questionnaires improves patient’s QOL or changes management. |
|                  | 2. To evaluate the evidence that the use of such scales resulted in better patient care (ie, improved outcomes) | Patients with cancer attending outpatient clinics |                                                                                           | • Morbidity | Patient needs: One study found no difference in needs between intervention and control groups | Communication: One study showed improved physician-patient communication and better physician awareness of QOL |                                                                                                          |
Table 3. Continued

| Study | Review Objectives | No. of Studies/Participants | Interventions Measured | Health Outcomes | Patient Satisfaction | Communication Effects | Author Conclusions |
|-------|-------------------|----------------------------|------------------------|-----------------|---------------------|----------------------|-------------------|
| 1. To examine the methodology and reporting quality of QPL interventions | 16 studies (13 included in analysis) | Use of QPLs by patients in isolation or in combination with other interventions to facilitate patient-physician communication | Depression: 5 studies found no difference between groups, 2 found a significant reduction in anxiety | Patient satisfaction: 12 studies measured satisfaction | Communication outcomes: 2 studies found no significant difference, while one study found a significant improvement in communication | Question asking: 4 studies found a significant increase in patient question asking for the intervention group, while 2 did not show a significant difference. | Depression: No evidence from 3 studies that QPL use can influence depression. |
| 2. To review the effectiveness of QPL interventions on communication, psychological and/or cognitive outcomes of patients with cancer | 20 participants were seeing the HP for the first time | Patients with cancer | Depression: No evidence | Communication: Improvement in communication between patients and health care providers | Psychological outcomes: | | |

Further details on patient stress, QoL, communication effects, and patient satisfaction are provided in the text. For example, one study found worse QoL in the intervention arm, while another showed no difference with attention control group, and another found no difference between intervention and control groups. Depression and anxiety were measured in different studies, with varying results.
### TABLE 3. Continued

| STUDY                  | REVIEW OBJECTIVES                                                                                                                                                                                                 | NO. OF STUDIES/ PARTICIPANTS | INTERVENTIONS                                                                 | OUTCOMES MEASURED                                                                 | RESULTS                                                                                                                                                                                                 | HEALTH OUTCOMES | PATIENT SATISFACTION | COMMUNICATION EFFECTS | AUTHOR CONCLUSIONS                             |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------|------------------------|-------------------------------------------------|
| Chen 2013²⁰            | 1. What is the impact of composite measures of PROs collected on patients with cancer during treatment with regard to:                                                                                              | 27 Studies included: 16 RCTs; 2 before-after, 9 observational (19 relevant) | Administration of PRO or composite PRO with feedback to clinician              | Patient-provider communication                                                                                                         | Monitoring treatment response: All 11 studies reporting on monitoring of treatment response found a strong or modest effect of implementing PROs on the increased monitoring activities of treatment response | Patient satisfaction: Among the 16 studies that reported results related to the impact on patient satisfaction, 13 studies reported a very strong to moderate positive effect on improved patient satisfaction; for the 3 studies that did not find such a positive effect, 1 study reported a possible ceiling effect | Patient-provider communications: Among the 23 studies that reported impact on communication, 21 studies reported a positive effect | Despite the existence of significant gaps in the evidence base, there is growing evidence in support of routine PRO collection in enabling better and patient-centered care in cancer settings |
|                        | 3. To gain more insight into the characteristics of QPL interventions (eg, the number and content of questions, and the mode of delivery)                                                                     |                              |                                                                                | Cognitive outcomes                                                                                                                  | Psychological adjustment: No evidence from 3 studies that QPL use influences psychological adjustment | Recall of information: Of 4 studies, 2 reported no influence, and 2 reported a significant effect of QPLs on recall of information |                              |                      |                        |                                                |
### Study Review Objectives

| Study | Review Objectives | No. of Studies/Participants | Interventions | Outcomes Measured | Results |
|-------|-------------------|-----------------------------|---------------|-------------------|---------|
| a)    | Provider behavior for improving care delivered | Adult patients with cancer attending inpatient, outpatient, and outreach services; doctors; nurses (<25%) | • Treatment response | Impact on health outcomes; Of 15 studies, 13 reported a positive impact on health outcomes, whereas 2 studies failed to find any such effect | Detecting unrecognized problems; Of the 16 studies reporting on detection of unrecognized problems, 15 reported a strong or moderate positive impact on detecting unrecognized problems; one study did not find any difference groups |
| b)    | Organizational changes within health care settings for improving processes and models of care (eg, targeting and tailoring care) | • Detection of unrecognized problems | Changes to patient management: Among 17 studies that reported on changes to patient management, 13 studies reported either a strong or modest positive effect on the changes to patient management, whereas 4 studies found no effect |
| c)    | Improving clinical outcomes for patients; and | • Changes to patient health behavior | Changes to patient management | |
| d)    | Improving patient experience of care (eg, self-care) | Patient satisfaction | |

2. What mechanisms are involved in the link between PROs and the impacts identified in 1(a)?

3. What factors moderate the extent of the impacts identified in 1(a)?

- Health outcomes
- Quality improvement
- Transparency, accountability, public reporting
| STUDY | REVIEW OBJECTIVES | NO. OF STUDIES/PARTICIPANTS | INTERVENTIONS | OUTCOMES MEASURED | RESULTS | HEALTH OUTCOMES | PATIENT SATISFACTION | COMMUNICATION EFFECTS | AUTHOR CONCLUSIONS |
|-------|-------------------|----------------------------|---------------|-------------------|---------|----------------|---------------------|----------------------|---------------------|
| Etkind 2015 | To systematically review evidence on capture and feedback of PCOMs in palliative care populations and determine the effects on processes and outcomes of care | 13 studies: 11 RCTs, a quasi-experimental study, an implementation study, and a pilot study (9 relevant) | Capture and transfer of PCOM information to physicians | Psychological/emotional: Moderate evidence for improved psychological and emotional QOL | Reporting of symptoms: Strong evidence to support increased reporting of symptoms with PCOM feedback | PCOMs feedback improves awareness of unmet need; allows professionals to act to address patients' needs, and benefits patients' emotional and psychological QOL |
|       |                   |                            |               | System performance (monitoring, planning, financing, evaluating, responding) | Limited evidence on the acceptability and feasibility of completing and feeding back PCOMs | Patient/provider congruence: Moderate evidence for increased congruence between patient/provider health-related QOL scores | Changes to patient management: Strong evidence for increased actions taken based on PCOMs |

Etkind 2015

1. Patients receiving palliative care in any health care setting or those with a life-limiting illness
2. Method of transfer of PCOM
3. Impact on clinician practice
4. Patient/provider satisfaction
5. Health outcomes
| STUDY                        | REVIEW OBJECTIVES                                                                 | NO. OF STUDIES/PARTICIPANTS | INTERVENTIONS                                                                 | OUTCOMES MEASURED | HEALTH OUTCOMES | PATIENT SATISFACTION | COMMUNICATION EFFECTS | AUTHOR CONCLUSIONS                                                                 |
|-----------------------------|-----------------------------------------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------|-------------------|-----------------|----------------------|----------------------|-------------------------------------------------------------------------------|
| Gaston & Mitchell 2005²¹    | To determine which interventions improve information giving and assist patients with advanced cancer to be involved in decision making | 47 studies overall, 25 studies included that considered interventions (23 relevant) Patients with advanced cancer (defined as locally recurrent or metastatic, such that palliation rather than cure was the goal) | Interventions aimed at improving information giving and patient participation in decision making | Not reported | Satisfaction scores were high in most studies testing interventions to improve information giving | Interventions to improve information giving. Consultation tapes were shown to have a small but measurable effect on knowledge and satisfaction with the encounter; individual summary letters were effective but increased the clinician’s workload, and tapes were preferred; giving more information did not increase patient anxiety levels | Not measured | Interventions to encourage participation. Question prompt sheets assist patients to obtain the information they desire but are most useful when endorsed and referred to by the physician; prompt sheets may improve the efficiency of consultations | Almost all patients expressed a desire for full information, but only approximately two-thirds wished to participate actively in decision making. Higher educational level, younger age, and female sex were predictive of a desire to participate in decision making. Active decision making was more common in patients with certain cancers (eg, breast) than others (eg, prostate). Several simple interventions, including question prompt sheets, audiotaping of consultations, and patient decision aids, were shown to facilitate such involvement |
| Gysels 2007²³              | To assess the effectiveness of the PHR in cancer care and identify impediments to its optimal functioning and evaluation | 13 studies included: 7 RCTs, 3 observational studies, 2 qualitative, and a survey evaluation of patients with cancer (all relevant) | Use of a patient-held record in cancer care with the purpose of improving communication and information exchange between and within different levels of care and to promote continuity of care and patients’ involvement in their own care | • QOL             | Patients’ views on the use of PHRs were largely positive, with a small proportion disliking it | Physician involvement: Low involvement and lack of interest in PHR were reported for physicians; main concerns were additional paperwork and duplication of medical records | Not measured | The evidence on the PHR in cancer care has produced equivocal findings on 3 levels: 1) the recurring null results for most of the outcomes measured in the RCTs that do not confirm the positive results in pilot studies or studies with a qualitative design; 2) the perceived usefulness of the PHR by HPs but their lack of interest in the actual use of the record; and 3) the diverse attitudes of patients in the acceptance and use of the PHR: some reject it while others become enthusiastic when they use it |
This review sought to answer the following research questions:

1. Which PROMs does the published English literature show have been implemented for use in routine cancer clinical practice and in what phases of the trajectory?

2. What are the barriers and enablers influencing clinical uptake of PROMs in routine care?

3. What is the impact of the routine use of PROMs on outcomes at the patient, provider, and system levels?

### TABLE 3. Continued

| STUDY | REVIEW OBJECTIVES | NO. OF STUDIES/PARTICIPANTS | INTERVENTIONS | OUTCOMES MEASURED | HEALTH OUTCOMES | PATIENT SATISFACTION | COMMUNICATION EFFECTS | AUTHOR CONCLUSIONS |
|-------|-------------------|----------------------------|---------------|-------------------|-----------------|----------------------|-----------------------|---------------------|
| Howell 2015 | This review sought to answer the following research questions: | 17 studies included (16 relevant) of patients with cancer or cancer survivors | Provision of PROMs to physician prior to consultation | - Communication  
- Information exchange  
- Patient satisfaction  
- Utilization of health services  
- Uncertainty | Patient outcomes: Four studies found no significant effect; one study found a significant overall effect on health-related QOL over time between the intervention and control arms | Patient satisfaction: Two RCTs reported a positive effect, but results failed to reach statistical significance | Patient-physician communication: PROM use led to improvement in communication related to emotional, psychosocial, physical, and cognitive problems between patients and physicians | PROMs implementation improves communication about symptoms and QOL |

- **Symptom management**: One study found that, when computerized PROM results were placed in patients’ files, patients were significantly less likely to report debilitat-

- **Perceived quality of care**: Studies too small and not comparable, but most perceived that PROMs improved care

- **Clinical decision making**: Three studies suggest use of PROMs may support clinical decision making; PROMs use may also facilitate the identification of the need for patient referral, with an increase in the rate of referrals to psychosocial care shown in some studies

- **Length of clinical encounter**: Several studies did not find a significant impact of PROMs implementation on the length of the clinical encounter

- **Early detection and monitoring of symptoms**: Four studies evaluated detection and control of symptoms and reported good effect

- **Acceptability**
| STUDY | REVIEW OBJECTIVES | NO. OF STUDIES/PARTICIPANTS | INTERVENTIONS | OUTCOMES MEASURED | RESULTS |
|-------|-------------------|-----------------------------|---------------|-------------------|---------|
| Kotronoulas 2014 | To examine whether routine use of PROMs by HPs can improve the quality of care patients receive during active anticancer treatment | 24 studies: 20 RCTs, 4 CTs (all relevant) of adult patients (aged ≥18 y) with cancer irrespective of disease stage who received any type of active anticancer treatment or supportive care | The provision of PROM-generated feedback to HPs or patients to improve the quality of patient care | **HEALTH OUTCOMES** | **PATIENT SATISFACTION** | **COMMUNICATION EFFECTS** | **AUTHOR CONCLUSIONS** |
| | | | | **Patient-clinician communication** | **Patient satisfaction with care and communication** | **Management of care** | Routine use of PROMs increases the frequency of discussion of patient outcomes during consultations. In some studies, PROMs are associated with improved symptom control, increased supportive care measures, and patient satisfaction. Patient adherence must be ensured, as well as additional support to clinicians who will respond to patient concerns and issues, with clear system guidelines in place to guide their responses. More research into PROM cost-benefit in terms of patient safety, clinician burden, and health services usage is needed. |
| | | | **Early detection and monitoring of symptoms** | **Physical symptoms:** Overall, positive effects with reduced symptom prevalence or severity were reported in 7 CTs (6 RCTs), mainly clinically and less frequently statistically significant | **Patient satisfaction with care and communication:** Satisfaction with care and/or communication with HPs was generally positive, although 8 CTs failed to show significant intervention effects | | |
| | | | **Clinical decision making** | **Management of care:** Ambiguous results: increase in analgesic prescription, diagnostic, and therapeutic services in some experimental groups | | | |
| | | | **Length of clinical encounter** | | | | |
| | | | **Enablers and barriers to successful implementation** | | | | |
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| STUDY | REVIEW OBJECTIVES | NO. OF STUDIES/ PARTICIPANTS | INTERVENTIONS | OUTCOMES MEASURED | HEALTH OUTCOMES | PATIENT SATISFACTION | COMMUNICATION EFFECTS | AUTHOR CONCLUSIONS |
|-------|------------------|-----------------------------|--------------|-----------------|----------------|---------------------|---------------------|-------------------|
| van den Meulen 2008 | To investigate the kinds of interventions that are effective in improving recall of medical information provided to patients with cancer | 10 studies included (all relevant) of patients with cancer who were given information about their diagnosis or treatment and doctors and/or nurses working in cancer care | Provision of information about diagnosis or treatment | Recall of information | Not measured | Not measured | Audiotapes of consultation: Five of 7 studies that examined the effect of audiotape on recall found a positive effect | There is evidence that audiotapes of the consultation, complementary to oral information, improve recall of information. Providing patients with an audiotape of information has no added value compared with a standard consultation only, and there is even limited evidence that this might inhibit patients' recall of information. Furthermore, there is limited evidence that the use of a QPS has a positive effect on recall of information, provided that the physician actively endorses this sheet. There is no evidence that providing patients with a summary letter improves recall |

- Psychological distress
- Patient satisfaction with treatment/care/consultation
- Patient behaviors/actions/adherence
- Patient-HP communication
- Patient-HP concordance in assessment
- HP engagement in assessment
- Patient safety
- Cost-effectiveness
- No. of contacts with clinicians
- Patient resources/services use

**RESULTS**

- Supportive care needs: Five CTs provided generally unclear evidence
- Timing of referrals: PROM feedback resulted in significantly earlier referrals in experimental groups
| STUDY | REVIEW OBJECTIVES | NO. OF STUDIES/ PARTICIPANTS | INTERVENTIONS | OUTCOMES MEASURED | HEALTH OUTCOMES | PATIENT SATISFACTION | COMMUNICATION EFFECTS | AUTHOR CONCLUSIONS |
|-------|-------------------|-----------------------------|---------------|-------------------|----------------|---------------------|----------------------|---------------------|
| Yang 2018<sup>27</sup> | To identify mechanisms through which PROs facilitate patient-clinician communication in the adult oncology population | 43 studies included (41 relevant) of adult patients with cancer/cancer survivors | PRO measures with feedback to physician | Patient-clinician communication | Symptom awareness: Increased both clinician and patient awareness of symptoms across reviewed qualitative and quantitative studies | No difference between groups | Prompted discussion: In 6 studies, both patients and physicians reported that PROs prompted patient-clinician discussions | The review suggests that PROs facilitate patient-clinician communication through various mechanisms that could perhaps contribute to improvements in symptom management and survival. The impact of PROs on clinical outcomes, however, remains poorly studied. |

PROs were defined as a standardized questionnaire used by patients to report on their symptoms, concerns, needs, QOL, or other aspects related to their health care or health status that is fed back to their clinicians.

Symptom severity: Of 3 studies, a decrease was noted in 2 studies, and no difference was noted in the other.

Audiotapes of information: No positive effect on recall compared with verbal information.

Summary letters: No evidence that providing patients with a letter after the consultation improves recall.

QPS: Limited scientific evidence that a QPS improves recall, but only when the physician is proactive in addressing patients' questions.

### TABLE 3. Continued

| STUDY | REVIEW OBJECTIVES | NO. OF STUDIES/PARTICIPANTS | INTERVENTIONS | OUTCOMES MEASURED | HEALTH OUTCOMES | PATIENT SATISFACTION | COMMUNICATION EFFECTS | AUTHOR CONCLUSIONS |
|-------|-------------------|-----------------------------|---------------|-------------------|----------------|---------------------|----------------------|--------------------|
|       | Streamlines consulta- |                             |               |                   |                |                     |                      |                    |
|       | tion: Among the      |                             |               |                  |                |                     |                      |                    |
|       | reviewed studies     |                             |               |                  |                |                     |                      |                    |
|       | (quantitative and    |                             |               |                  |                |                     |                      |                    |
|       | qualitative), the    |                             |               |                  |                |                     |                      |                    |
|       | use of PROs was      |                             |               |                  |                |                     |                      |                    |
|       | found to streamline  |                             |               |                  |                |                     |                      |                    |
|       | consultations by     |                             |               |                  |                |                     |                      |                    |
|       | guiding clinician-    |                             |               |                  |                |                     |                      |                    |
|       | initiated and        |                             |               |                  |                |                     |                      |                    |
|       | patient-initiated    |                             |               |                  |                |                     |                      |                    |
|       | communication        |                             |               |                  |                |                     |                      |                    |
|       | Depression: No        |                             |               | Facilitates      |                |                     |                      |                    |
|       | difference between   |                             |               | interprofessional|                |                     |                      |                    |
|       | groups                |                             |               | communication    |                |                     |                      |                    |
|       | Anxiety: No          |                             |               | Evidence from    |                |                     |                      |                    |
|       | difference between   |                             |               | 5 studies        |                |                     |                      |                    |
|       | groups                |                             |               | suggests PROs    |                |                     |                      |                    |
|       | QOL: No difference   |                             |               | might facilitate |                |                     |                      |                    |
|       | between groups       |                             |               | communication    |                |                     |                      |                    |
|       | Quality of life: No  |                             |               | between clinicians|                |                     |                      |                    |
|       | difference between   |                             |               | because         |                |                     |                      |                    |
|       | groups                |                             |               | PROs optimized  |                |                     |                      |                    |
|       | QPL, question prompt  |                             |               | information      |                |                     |                      |                    |
|       | list; GPS, questions  |                             |               | transfer        |                |                     |                      |                    |
|       | prompt sheet; RCT,    |                             |               |                  |                |                     |                      |                    |
|       | randomized control    |                             |               |                  |                |                     |                      |                    |
|       | trial.               |                             |               |                  |                |                     |                      |                    |

Abbreviations: CT, clinical trial; HP, health care professional; PCOM, patient-centered outcome measures; PHR, patient-held record; PROs, patient-reported outcomes; PROMs, patient-reported outcome measures; QOL, quality of life; QPL, question prompt list; GPS, questions prompt sheet; RCT, randomized control trial.
### TABLE 4. Patient-Reported Outcome Measures Included Across Systematic Reviews

| PATIENT-REPORTED OUTCOME MEASURES | SYSTEMATIC REVIEW | TOTAL NO. OF UNIQUE STUDIES |
|-----------------------------------|-------------------|-----------------------------|
| European Organization for Research and Treatment of Cancer (EORTC) Core Quality-of-Life Questionnaire (EORTC QLQ-C30) | Adam 2016,17 Alsaleh 2013,18 Chen 2013,20 Etkind 2015,21 Howell 2015,24 Kotronoulas 2014,25 Yang 201827 | 15 |
| EORTC QLQ Lung Cancer Module (EORTC QLQ-BN20) | Howell 201524 | 1 |
| EORTC QLQ Breast Cancer Module (EORTC QLQ-BR23) | Alsaleh 2013,18 Chen 2013,20 Etkind 2015,21 Howell 2015,24 Kotronoulas 2014,25 Yang 201827 | 3 |
| EORTC QLQ Colorectal Cancer Module (EORTC QLQ-CR38) | Chen 2013,20 Howell 2015,24 Kotronoulas 2014,25 Yang 201827 | 1 |
| EORTC QLQ Head and Neck Cancer Module (EORTC-QLQ-HN35) | Yang 201827 | 1 |
| Patient Satisfaction Questionnaire (PDIS) | Alsaleh 2013,18 Chen 2013,20 Kotronoulas 2014,25 Yang 201827 | 1 |
| Cancer Needs Questionnaire (CNQ) | Alsaleh 2013,18 Chen 2013,20 Kotronoulas 201425 | 1 |
| Beck Depression Inventory, short form (BDI) | Alsaleh 2013,18 Chen 2013,20 Kotronoulas 201425 | 1 |
| Hospital Anxiety and Depression Scale (HADS) | Alsaleh 2013,18 Chen 2013,20 Etkind 2015,21 Howell 2015,24 Kotronoulas 2014,25 Yang 201827 | 7 |
| Pain Management Index (PMI) | Adam 2016,17 Alsaleh 2013,18 Chen 2013,20 Kotronoulas 201425 | 1 |
| Telephone-Linked Care (TLC)-Chemo Alert | Adam 2016,17 Chen 2013,20 Yang 201827 | 1 |
| Symptom Track and Reporting (STAR) | Chen 2013,20 Howell 2015,24 Yang 201827 | 1 |
| Supportive Care Needs Survey (SCNS) | Chen 2013,20 Howell 2015,24 Kotronoulas 2014,25 Yang 201827 | 2 |
| Supportive Care Needs Survey (SCNS)—short | Howell 2015,24 Kotronoulas 2014,25 Yang 201827 | 1 |
| Symptom Monitor Extensive Questionnaire | Adam 2016,17 Chen 2013,20 Kotronoulas 2014,25 Yang 201827 | 1 |
| Functional Assessment of Cancer Therapy (FACT-G) | Chen 2013,20 Etkind 2015,21 Howell 2015,24 Kotronoulas 2014,25 Yang 201827 | 3 |
| Functional Assessment of Cancer Therapy Fatigue subscale (FACT-Fatigue) | Yang 201827 | 1 |
| FACT Head and Neck Questionnaire | Yang 201827 | 1 |
| Brief Pain Inventory (BPI) | Chen 201320 | 2 |
| Advanced Symptom Management Systems (ASyMS) | Chen 2013,20 Kotronoulas 2014,25 Yang 201827 | 2 |
| Stress Index Radio Oncology (SIRO) | Chen 2013,20 Yang 201827 | 2 |
| Distress Thermometer (DT) | Chen 2013,20 Kotronoulas 2014,25 Yang 201827 | 4 |
| Interactive tailored assessment (ITPA) | Adam 2016,17 Chen 2013,20 Kotronoulas 2014,25 Yang 201827 | 1 |
| Edmonton Symptom Assessment System (ESAS) | Chen 2013,20 Etkind 2015,21 Howell 2015,24 Yang 201827 | 4 |
| Symptoms and Quality of Life (SQLI) | Chen 201320 | 1 |
| Electronic Self-Report Assessment-Cancer (ESRA-C) | Adam 2016,17 Chen 2013,20 Howell 2015,24 Kotronoulas 2014,25 Yang 201827 | 2 |
| MD Anderson Symptom Inventory (MDASI) | Adam 2016,17 Chen 2013,20 Howell 201524 | 4 |
| Patient Care Monitor | Howell 201524 | 1 |
| Patient-Reported Outcomes-Common Terminology Criteria for Adverse Events (PRO-CTCAE) | Chen 2013,20 Howell 2015,24 Kotronoulas 2014,25 Yang 201827 | 2 |
| EuroQol Group 5-dimension quality-of-life instrument (EQ-5D) | Chen 2013,20 Howell 2015,24 Yang 201827 | 2 |
| Mood and Symptom Questionnaire (MSQ) | Howell 201524 | 1 |
| Cage Questionnaire for Alcohol Assessment (CAGE) | Howell 201524 | 1 |
| Edmonton Classification System for Cancer Pain (ECS-CP) | Howell 201524 | 1 |
| Functional Living Index—Cancer (FLIC) | Etkind 2015,21 Howell 2015,24 Kotronoulas 2014,25 Yang 201827 | 1 |
| Brief Profile of Mood States (Brief POMS) | Etkind 2015,21 Howell 2015,24 Kotronoulas 2014,25 Yang 201827 | 1 |
| Patient Satisfaction Questionnaire (PSQ) | Etkind 2015,21 Howell 2015,24 Kotronoulas 2014,25 Yang 201827 | 1 |
| Patient-Reported Outcome Management Information System (PROMIS) | Howell 2015,24 Yang 201827 | 2 |
| Expanded Prostate Cancer Index Composite (EPIC) | Howell 2015,24 Yang 201827 | 2 |
| Social Difficulties Index (SDI) | Howell 201524 | 1 |
### TABLE 4. Continued

| PATIENT-REPORTED OUTCOME MEASURES                                      | SYSTEMATIC REVIEW                                      | TOTAL NO. OF UNIQUE STUDIES |
|----------------------------------------------------------------------|---------------------------------------------------------|-----------------------------|
| Close Persons Questionnaire (CPQ)                                     | Howell 201522                                          | 1                           |
| Health-related quality of life (HRQOL)                               | Etkind 201521                                          | 1                           |
| Memorial Symptom Assessment Scale (MSAS)                             | Etkind 201522, Yang 201827                            | 2                           |
| Pain Assessment Checklist for Seniors with Limited Ability to Communicate (PACSLAC) | Etkind 201522                                         | 1                           |
| Medical Outcomes Study core questionnaire (MOS)                      | Etkind 201521                                          | 1                           |
| Short Form 36 (SF-36)                                                | Etkind 201521                                          | 1                           |
| Missoula-Vitas Quality of Life Index (MVQOLI)                        | Etkind 201521                                          | 1                           |
| Hospice Quality of Life Index 14 (HQLI 14)                          | Etkind 201521                                          | 1                           |
| Barriers Questionnaire (BQ-11)                                       | Adam 201617                                           | 1                           |
| Symptom Distress Scale (SDS)                                         | Adam 201617, Chen 2013,20, Howell 2015,24, Kotronoulas 2014,25, Yang 201827 | 2                           |
| Pain scale/diary                                                    | Adam 201617, Chen 2013,20, Howell 2015,24, Kotronoulas 2014,25, Yang 201827 | 3                           |
| Patient Health Questionnaire (PHQ-9)                                 | Adam 201617, Chen 2013,20, Howell 2015,24, Kotronoulas 2014,25, Yang 201827 | 1                           |
| Service Satisfaction Scale (SSS)                                     | Adam 201617, Chen 2013,20, Etkind 2015,21, Howell 2015,24, Yang 201827 | 1                           |
| Computerized Clinical Distress Support System (CDSS)                 | Adam 201617                                           | 1                           |
| Physical symptom scales                                              | Chen 2013,20, Howell 2015,24, Kotronoulas 2014,25, Yang 201827 | 1                           |
| Screening Inventory of Psychosocial Problems (SIPP)                  | Kotronoulas 2014,25, Yang 201827                       | 1                           |
| Psychological scan for cancer                                        | Chen 201320                                           | 1                           |
| Clinician Report (CR) from the Comprehensive Health Enhancement Support System (CHESS) | Etkind 201521                                         | 1                           |
| Symptom Monitoring and Reporting System for Lung Cancer (SyMon-L)    | Etkind 201521, Yang 201827                            | 1                           |
| Custom e-surveys                                                     | Yang 201627                                           | 1                           |
| Patient education program (PEP)                                      | Adam 201617                                           | 2                           |
| Treatment algorithm                                                  | Adam 201617                                           | 1                           |
| Karnofsky performance status                                         | Yang 201827                                           | 1                           |
| Daily care symptom cards CARES                                       | Kotronoulas 201425                                    | 1                           |
| Needs Assessment for Advanced Cancer Patients (NA-ACP)               | Kotronoulas 2014,25, Yang 201827                       | 1                           |
| C-PET Checklist for Patients on Endocrine Therapy (C-PET)            | Yang 201827                                           | 1                           |
| Chemotherapy Symptom Assessment Scale (CSAS)                         | Chen 2013,20, Kotronoulas 2014,25                      | 1                           |
| Interactive portal                                                   | Yang 201827                                           | 1                           |
| Rotterdam Symptom Checklist–Activity Subscale                        | Yang 201827                                           | 1                           |
| Patient Assessment Care and Education System                         | Chen 2013,20, Yang 201827                            | 1                           |
| General Health Questionnaire (GHQ-20)                                | Kotronoulas 201425                                    | 1                           |
| Washington Quality of Life (WQoL)                                    | Yang 201827                                           | 1                           |
| Auckland Quality of Life Questionnaire                               | Yang 201827                                           | 1                           |
| PRO-SELF Program: A Self Care Symptom Management Program (education) | Adam 201617                                           | 2                           |
| Pain experience scale                                                | Adam 201617                                           | 2                           |
| Computerized patient assessment                                      | Yang 201827                                           | 1                           |
| Communicating health assisted by Technology (CHAT)                   | Adam 201617                                           | 1                           |
| Patient Concerns Inventory Head and Neck (PCI-H&N)                   | Yang 201827                                           | 1                           |
| Somatic and Psychological Health Report (SPHERE) - Short             | Kotronoulas 201425                                    | 1                           |
| McGill-Melzack pain questionnaire                                   | Adam 201617, Yang 201827                            | 2                           |
| Patient-Generated Subjective Global Assessment                       | Yang 201827                                           | 1                           |
| Symptom Monitoring and Reporting System for Lung Cancer (SyMon-L)    | Etkind 201521                                          | 1                           |
overall health and quality-of-life rating from 1 (very poor) to 7 (excellent). The EORTC has numerous tumor, population, and clinical setting-specific questionnaires available on the EORTC website (eortc.org). The most commonly reported PRO measure specific to depression and anxiety was the Hospital Anxiety and Depression Scale (HADS), which was used in 7 of the individual studies.

Adam et al. conducted a meta-analysis of pain PROs and found that PRO feedback to physicians effected a statistically significant reduction in average overall pain intensity (mean difference, \(-0.59; 95\% \text{ CI}, -0.87 \text{ to } -0.30 \) \([P < .0001]\)) and nonsignificant difference in present pain intensity (mean difference, \(-0.20; 95\% \text{ CI}, -0.89 \text{ to } 0.49 \) \([P < .57]\)). The effect was attributed to an increase in symptom discussions, a reduction in the number of pain threshold events (compared with controls), improved guideline adherence, and clinical reinforcement of the existing pain-management plan.

Five of the 7 included systematic reviews of PRO use investigated the impact of routine collection of PROs before clinical consultations on patient satisfaction. Of these, 2 systematic reviews found that collection and use of PROs in consultations significantly improved patient satisfaction. However, the remaining 3 reviews found no difference. Discussion of PROs during consultations improved physician–patient communication, symptom detection, and symptom control; increased utilization of supportive care, and increased patient involvement in care. Patients and physicians were willing to engage in the use of PRO measures, and the benefits were greater when outcomes were discussed during consultations rather than being put into the patient’s medical record and/or not discussed during the physician–patient interaction.

Despite the positive improvements in certain aspects of communication and patient assessment, there were mixed results regarding changes to patient management or referral and little evidence of a positive benefit in regard to depression, anxiety, or quality of life. Some studies included in the systematic reviews found a decrease in the intensity of symptoms from physician discussion of PROs. The one included systematic review that focused on people receiving palliative care, (ie, patients with advanced disease receiving noncurative, specialist palliative care in oncology units, hospices, hospitals, or the community) found that PRO feedback to physicians facilitated symptom detection, increased discussions of health-related quality of life, improved clinician action on identified needs, and reduced caregiver and patient distress. However, there was no improvement in health-related quality of life or symptom burden.

Feedback to physicians of the results of patient completion of the EORTC QLQ-C30 measure, which was most frequently trialed, demonstrated equivocal to no difference in terms of patient satisfaction, consultation time, or patient management compared with no discussion of PROs or using the HADS. GRADE assessment demonstrated low confidence in the evidence for or against the routine use of quality-of-life measures.

Clinician attitudes toward PROs seemed to influence the effectiveness; for example, when clinicians did not see the value or the validity of PROs and preferred to rely on results from their own consultation, they did little to objectively improve communication. Furthermore, if there was a relatively high degree of patient satisfaction with communication to begin with, it was difficult to detect a significant improvement from PROs.

**Question prompt lists**

Question prompt lists are a structured list of questions provided to patients, who are then encouraged to choose relevant questions to ask during consultations with physicians. They aim to increase patient participation in consultations, improve patient knowledge, and promote information exchange.

Three systematic reviews reporting results of primary studies evaluating the use of question prompt lists met the inclusion criteria for this overview. One was a review focused entirely on question prompt lists, and 2 reviewed question prompt lists with other communication interventions. There was duplication of studies reported in these reviews: 1 review included all of the studies of question prompt lists reported in the systematic reviews by both van den Meulen et al. and Gaston and Mitchell plus 7 additional studies (see Supporting Table 2).

Fifteen randomized controlled trials (RCTs) and one controlled clinical trial were reported by Brandes et al. Eleven of the 16 studies were rated high quality using Cochrane risk-of-bias criteria. Four of the 11 high-quality studies reported on the number of questions asked during consultations as an outcome measure. All found that patients in the question prompt list group asked more questions during consultations. Of 4 high-quality studies that reported on the impact on consultation time as an outcome, 3 found no difference between groups, and one study of a question prompt list with 112 questions found an increase in consultation time.

The included systematic reviews found no difference in terms of patient satisfaction with the consultation, and there were mixed to equivocal results in terms of patient anxiety when a question prompt list was reviewed by the physician. Giving patients a question prompt list without physician review and endorsement was more likely to cause anxiety compared with usual care or physician discussion of the question prompt list. Overall, there was no effect of question prompt list use on depression, psychological
adjustment, or distress. However, there was a positive effect on recall of information and the number of questions asked, with no significant increase in consultation time.

Audio recording of consultations
Two systematic reviews reporting studies of audio-recording of consultations and providing a copy to the patient met the inclusion criteria for this overview. One high-quality and 3 low-quality primary studies found a positive effect of audio recordings on patients’ recall of information compared with standard care or a letter. Some studies within the reviews compared audio recordings of the consultation with audiotapes of general information about the patient’s cancer. People were more satisfied and had an increased perception of being informed when they received an audiotape of their consultation, whereas a tape recording of general information that did not contain the discussions with the physician had a negative effect on patient recall and was confusing. Variations in the time between the consultation and follow-up in the primary studies, which ranged from immediately after the consultation to 6 months after the intervention, limited meaningful comparisons of study outcomes.

Patient-held records
We found one systematic review reporting 7 primary RCTs of patient-held records in cancer care. The systematic review authors reported major limitations to the conduct of the primary trials, including recruitment and attrition, underpowered sample sizes, and a high level of satisfaction with communication at baseline.

The systematic review and evidence synthesis found no effect of patient-held records on patient satisfaction with communication, participation in care, or quality of life. There was also no effect on information seeking, information retention, or understanding. Only one of the primary trials reported in the systematic review found that patients with head and neck cancer perceived more support and reported fewer psychological problems and that health care providers felt better informed about other health care provider activities when a “logbook” was used in consultations compared with standard care. Overall, there was a low level of physician engagement in the studies of patient-held records, and this affected patient use and acceptability of the tools.

Patient information as tools to enhance physician-patient communication
As listed in Supporting Table 2, studies testing computer programs, written information and letters, and videos as tools to facilitate physician-patient communication in cancer were systematically reviewed. It was found that individual summary letters were effective but increased physicians’ workload and that written information had to be produced at a reading level suitable for the general population to be effective. Take-home written and video information also allowed for information sharing with family and friends.

Discussion
We identified, reviewed, and synthesized evidence for 4 types of tools to facilitate communication during physician-patient consultations: PRO measures, question prompt lists, patient-held records, and tape recordings of consultations and patient information.

Patient-Reported Outcome Measures
We only included systematic reviews of studies that used PRO measures before or within consultations and were discussed during consultations. We found that discussions of PROs during consultations facilitated patient-physician communication and improved the detection of symptoms. There was good-quality evidence that discussing pain-related outcomes during consultations can reduce overall pain intensity because they facilitated discussions about pain symptoms and pain management strategies. There is an extensive array of PRO measures that can be used and feedback provided during physician-patient consultations; however, we have not sufficiently established their efficacy to improve psychological outcomes for patients such as depression or anxiety. This may be because the PROs identify a broader range of needs, which may not be seen as the core work of a cancer physician, and the management of some issues may require referral to an allied health professional. For example, the EORTC-QLQ30, which was one of the most commonly tested measures, contains items about financial difficulties that may require social work intervention.

PRO measures vary in terms of data they collect and the reporting of data, as in who receives them and when. Electronic screening systems that can collect PRO measures and provide immediate feedback to physicians about their patients’ health have been established. The US National Institutes of Health has developed the Patient-Reported Outcomes Measurement Information System (PROMIS) as a centralized electronic repository and data collection facility to support the collection of PROs. PROMIS is a cooperative group of research sites that has applied mixed-methods research methodology to develop domain-specific measures of physical, mental, and social health across diseases. PROMIS reference values by age and stage at diagnosis within each cancer type have been developed with the aim of assisting clinicians to interpret patient-reported symptoms and health status.

In a nonblinded RCT, a patient-reported, online symptom-monitoring system (STAR) was compared with
usual care. STAR was to be completed weekly at home, and email alerts were sent to nurses when symptoms were worsening. Patients were encouraged to provide a STAR report to nurses and physicians during consultations. Quality of life measured at 6 months using the EuroQol Group 5-dimension quality-of-life instrument (EQ-5D) was rated higher in the intervention group than usual care (34% vs 18%), and there was a reduction in emergency room admissions (34% vs 41%). More participants in the STAR group were alive at 1 year. Almost two-thirds (63%) of STAR participants reported severe symptoms via email to nurses during the study. Nursing interventions in response to these emails included telephone counseling (77%), medication initiation or change, referral to hospital, chemotherapy dose modification, and ordering tests. As nursing interventions were used to manage severe symptoms, we cannot confidently say that these effects can be attributed entirely to the provision of the report to physicians during routine consultations.34 However, this demonstrates the effectiveness of using routine collection and feedback of PROs to improve patient outcomes. Work currently underway internationally by 2 of the authors (C.S. and C.J.) to implement the International Consortium of Health Care Outcomes Measurement (ICHOM) (ichom.org) data sets for 4 common cancers in public and private settings (ciccan.org) will include evaluation of electronic collection of PROs and feedback to consulting clinicians.

Question Prompt Lists
The included systematic reviews reported 11 quality primary studies demonstrating positive effects of question prompt lists to facilitate discussions between physicians and patients during consultations, with no negative issues reported.19 None of the studies measured unmet needs as an outcome. We acknowledge this as an important gap in the evidence, as it would be useful to know the effectiveness of the question prompt list in identifying unmet needs.

When discussed and endorsed by physicians, question prompt lists have the potential to improve information exchange and recall, and perhaps reduce patient anxiety.19,22,26 Question prompt lists therefore may be a useful tool to encourage patients to reflect and plan their questions before the consultation and, if endorsed by the physician, empower patients to initiate conversations that assist them with issues that are important to them.

Audio recording of consultations
There is mixed-quality evidence that audio recordings improve patient recall of information and thus limited evidence to support their routine adoption by physicians as a tool to facilitate communication during consultations22,26 and physician-patient interactions or to improve health outcomes.23 Only one high-quality systematic review found an improvement in recall.

One would assume that the effectiveness of audio recordings on patient recall of information would relate to the number of times patients listened to the recordings. Recall of information relies not only upon access to the information but also upon interpretation and understanding of the information provided to the patient. Age, level of education, health literacy, anxiety, and treatment side effects such as memory loss and confusion may be factors affecting the results of these studies and need to be taken into account when asking patients to recall information. None of the studies included in the systematic reviews were able to establish an effect of the audio recording of consultations on psychological outcomes for the participants in the studies. Timing of the measurement of recall was potentially a source of error or variation in effect as it was measured at different time points in the included studies. Future research could also consider the value of audio recordings for family members and/or caregivers.

Patient-held records
Patient-held records aim to facilitate communication between clinicians, improve care planning and provision, and provide information to people living with cancer. A systematic review of qualitative studies exploring patient experiences of using patient-held records in various settings found that patients valued them as a tool to document their condition and considered them as a useful source of information and a vehicle for sharing information between health care providers.35 Patients also reported that the patient-held record empowered them to ask questions and to be more in control. Negative aspects were that patients perceived they had greater responsibility for information sharing and that their care providers did not use the patient-held record.35

The included systematic review failed to demonstrate a benefit of patient-held records for people living with cancer. Although health care providers see the usefulness of patient-held records, they are often unmotivated to actually engage with them and use them in practice.23,35 Whether patient-held records are used as intended is also an issue, as health care providers may use them as a tool to convey technical information rather than to facilitate care coordination and shared communication. Heterogeneity of format and content of the patient-held records included in the reviews makes it difficult to confidently assess whether they improve collaboration and communication between health care providers and the impact on patient health outcomes. The limited effect was also attributed to recruitment difficulties, which meant that many of the studies were underpowered, and there was a low level of engagement by health professionals with the record.23
Tools to Facilitate Physician Consultations

This research was conducted by a multidisciplinary, national collaboration, including medical oncologists, a cancer surgeon, primary care physician, and oncology and palliative care nurses with extensive clinical and research expertise. We identified survivorship care plans, the distress thermometer, and decision aids as additional potential tools that could be useful to facilitate communication during physician consultations, which are also used in clinical practice. The studies of these tools did not meet the inclusion criteria for this review, either because they have not been trialed for use within the consultation or the studies have not been included in systematic reviews; however, their potential could be further explored.

Survivorship care plans, a form of patient-held record, have been suggested as a tool to facilitate communication between patients and physicians and have been evaluated in primary studies for their effect on health outcomes, satisfaction, and care coordination. Survivorship care plans are intended to provide individualized treatment summaries and ongoing care plans to improve coordination of care and communication between healthcare providers for long-term cancer survivors.6,36,37 Most studies of survivorship care plans have been performed among patients with breast cancer, followed by those with pediatric and colorectal cancers. Patients report a high degree of satisfaction with survivorship care plans; however, no significant effect on survivor distress, care coordination, or health outcomes was seen.36,37 There was minimal involvement of physicians in the trials of survivorship care plans, which meant that we were unable to establish the evidence for using them as tools to facilitate physician-patient interactions.6,36,37 Similar to the patient-held record, the effectiveness of survivorship care plans is likely to rely upon physician engagement with the plan.

Qualitative data support the clinical value of using the distress thermometer as a short screening tool for distress, depression, and anxiety in terms of satisfaction and ease of use.38 Although it has been found to be effective for excluding depression (negative predictive value, 93.4%), the positive predictive value for depression is weak (34.2%),39 and the HADS has been found to be a superior measure of anxiety among patients with cancer, affective disorders, and general distress.40

Decision aids are designed to enhance patient involvement in informed decision making by providing information, treatment options, and potential outcomes of treatment options. They are usually provided to the patient outside of the consultation and are designed to be discussed during the consultation. A study has shown that most have an educational component, such as a videotape or written information, seemingly with the vast majority using pamphlets or leaflets.6 Systematic reviews and meta-analyses of decision aids used outside consultations have found an increase in patient knowledge and satisfaction and a decrease in decisional conflict and decisional regret.6,41-43 A systematic review of the use of decision aids by people facing treatment or screening decisions across a vast range of clinical conditions found that they felt more knowledgeable, better informed, and clearer about their values.44 Decision aids assisted some people in having a more active role in decision making and more accurate risk perceptions. Whereas the 2017 systematic review by Stacey et al44 included a small number of studies (9%) relating to decision making for cancer treatment, these were not analyzed as a data subset and thus could not be included in this overview. A separate systematic review of decision aid use by people with cancer before or during consultations with physicians thus is warranted.

Strengths and Limitations

The strengths of this overview are the comprehensive search strategy; duplicate independent screening; eligibility, risk of bias, and quality of reporting assessments and data extraction that were undertaken by a multidisciplinary team of experts. The use of Covidence16 software supported independent screening in duplicate and an audit trail to reduce human error. We have also benefited from our searches of review protocol databases and contact with authors to engender confidence that we exhausted all available avenues to retrieve evidence for interventions that can be used to facilitate physician-patient interactions. By only including systematic reviews, however, we will have missed primary studies that have been completed and reported yet were not subject to systematic review.

Limitations of the studies reported in the included systematic reviews, and less than adequate reporting of the review processes, negatively influenced our confidence in the strength of evidence. Heterogeneity prohibited meta-analysis of the majority of primary studies in the included systematic reviews, aside from one. As this review excluded primary studies, we may not have captured all of the recent evidence for the tools and/or tools that have not been subjected to systematic review. Furthermore, although the setting and context of consultations may affect the quality of communication and interactions with physicians, these aspects were beyond the scope of the current review.

Implications

PRO measures and question prompt lists were found to be effective tools to facilitate various aspects of physician-patient consultations.57-22,24-27 Routine use of PROs with feedback to physicians can improve pain management,17 communication,20,21,24,25,27 symptom detection,21,24,27 and symptom control17,25 and increase utilization of supportive care21,25 and patient involvement in care.25 However, it is important that health services are adequately resourced to respond to the range of clinical and broader patient needs, which can be identified through
the routine use of PROs. Question prompt lists can increase the number of questions asked by patients without increasing consultation length and may encourage them to reflect and plan questions before the consultation. There seems to be limited benefit in providing audio recordings of consultations or patient-held records. The degree to which all of these tools have a positive impact on interactions and patient outcomes seems to be directly related to the degree of physician engagement, endorsement, and use during the consultation.

Although we identified a large body of research showing that certain interventions can improve patient-physician communication, there is still a need for more well-designed RCTs of novel interventions. With the growth in electronic medical records, we need to consider how best to integrate these with routine electronic collection of PROs and question prompt lists and to promote their use within the consultation. With greater technological integration of such tools, however, we must beware their potential to negatively affect patient-physician communication. The challenge remains how best to ensure that patients’ needs are identified in the context of time-constrained consultations and that health services are designed to meet these needs. Tools to improve the consultation process are one aspect of achieving this.

We recommend high-quality trials of the effectiveness of survivorship care plans, the distress thermometer, and use during the consultation. We recommend high-quality trials of the effectiveness of survivorship care plans, the distress thermometer, and use during the consultation.

Conclusions

We conducted an extensive literature search and found that, based on the available evidence, question prompt lists and PRO measures are the most effective tools to facilitate physician–patient communication and benefit people with a cancer diagnosis. PRO measures may be useful for identifying unmet needs and monitoring treatment response, but only if the information is provided to the physician during consultations. Physician engagement with these tools, therefore, is vital if they are to be effective in improving patient outcomes. Cancer services must support physicians by establishing clear referral pathways to respond to the broad range of needs identified through the routine use of the tools such as those included in this overview.

There is limited or low-quality evidence to support the use of survivorship care plans, patient-held records, and audio recordings in physician–patient consultations as a communication tool if the aim is to improve patient outcomes. Decision aids and survivorship care plans may be potentially useful; however, further evidence from high-quality clinical studies, involving physicians as participants, are required to recommend them.

References

1. Blanch-Hartigan D, Chawla N, Moser RP, Finney Rutten LJ, Hesse BW, Arora NK. Trends in cancer survivors’ experience of patient-centered communication: results from the Health Information National Trends Survey (HINTS). J Cancer Surviv. 2016;10:1067-1077. doi:10.1007/s11764-016-0550-7
2. Committee on Improving the Quality of Cancer Care: Addressing the Challenges of an Aging Population; Board of Health Care Services; Institute of Medicine; Levit L, Balogh E, Nass S, Ganz PA, eds. Delivering High-Quality Cancer Care: Charting a New Course for a System in Crisis. Washington, DC: National Academies Press; 2013. doi:10.17226/18359
3. Moore PM, Rivera S, Bravo-soto GA, et al. Communication skills training for healthcare professionals working with people who have cancer. Cochrane Database Syst Rev. 2018;2:CD003751. doi:10.1002/14651858.CD003751
4. Chewning B, Bylund CL, Shah B, Arora NK, Gueguen JA, Makoul G. Patient preferences for shared decisions: a systematic review. Patient Educ Couns. 2012;86:9-18. doi:10.1016/j.pec.2011.02.004
5. Rodin G, Mackay JA, Zimmermann C, et al. Clinician-patient communication: a systematic review. Support Care Cancer. 2009;17:627-644. doi:10.1007/s00520-009-0601-y
6. Waljee JF, Rogers MA, Alderman AK. Decision aids and breast cancer: do they influence choice for surgery and knowledge of treatment options? J Clin Oncol. 2007;25:1067-1073. doi:10.1200/JCO.2006.08.5472.
7. Drug and Therapeutics Bulletin. An introduction to patient decision aids. BMJ. 2013;347:f4147. doi:10.1136/bmj.f4147
8. Hubbard G, Kidd L, Donaghy E. Preferences for involvement in treatment decision making of patients with cancer: a review of the literature. Eur J Oncol Nurs. 2008;12:299-318. doi:10.1016/j.ejon.2008.03.004
9. Moher D, Liberati A, Tetzlaff J, Altman DG; PRISMA Group. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. BMJ. 2009;339:b2535. doi:10.1136/bmj.b2535
10. Higgins J, Green S, eds. Cochrane Handbook for Systematic Reviews of Interventions. Version 5.1. The Cochrane Collaboration 2011. handbook.cochrane.org. Accessed June 17, 2019.
11. Shea BJ, Grimshaw JM, Wells GA, et al. Development of AMSTAR: a measurement tool to assess the methodological quality of systematic reviews. BMJ. 2007;335:79-10. doi:10.1136/bmj.39363.701897.6E
12. Shea BJ, Reeves BC, Wells G, et al. AMSTAR 2: a critical appraisal tool for systematic reviews that include randomised or non-randomised studies of healthcare interventions, or both. BMJ. 2017;358:j4008. doi:10.1136/bmj.j4008
13. Pattuwaage L, Liquoriush S. Effective methods of giving health related information in cancer: an overview of synthesized evidence. PROSPERO 2015 CRD42015029188. crd.york.ac.uk/PROSPERO/display_record.php?ID=CRD42015029188. Accessed June 17, 2019.
14. Licquirish S, Pattu wage L, Cook O, et al. Tools that facilitate effective physician-patient interactions in cancer care: A systematic review of systematic reviews. PROSPERO 2018 CRD42018112057. crd.york.ac.uk/PROSPERO/display_record.php?ID=CRD42018112057. Accessed June 17, 2019.

15. Black N. Patient reported outcome measures could help transform healthcare. BMJ. 2013;346:f167. doi:10.1136/bmj.f167

16. Veritas Health Innovation. Covidence systematic review software. covidence.org. Accessed June 17, 2019.

17. Adam R, Burton CD, Bond CM, de Bruin M, Murchie P. Can patient-reported measures of pain be used to improve cancer pain management? A systematic review and meta-analysis. BMJ Support Palliat Care. 2017;7:70. doi:10.1136/bmjspcare-2016-001137

18. Alsaleh K. Routine administration of standardized questionnaires that assess aspects of patients’ quality of life in medical oncology clinics: a systematic review. J Egypt Natl Canc Inst. 2013;25:63-70. doi:10.1016/j.jnci.2013.03.001

19. Brandes K, Linn AJ, Butow PN, van Weert JC. The characteristics and effectiveness of Question Prompt List Interventions in oncology: a systematic review of the literature. Psychooncology. 2015;24:245-252. doi:10.1002/pon.3637

20. Chen J, Ou L, Hollis SJ. A systematic review of the impact of routine collection of patient reported outcome measures on patients, providers and health organisations in an oncologic setting. BMC Health Serv Res. 2013;13:211. doi:10.1186/1472-6963-13-211

21. Ekind SN, Davesson BA, Kwok W, et al. Capture, transfer, and feedback of patient-centered outcomes data in palliative care populations: does it make a difference? A systematic review. J Pain Symptom Manage. 2015;49:611-624. doi:10.1016/j.jpainsymman.2014.07.010

22. Gaston CM, Mitchel G. Information giving and decision-making in patients with advanced cancer: a systematic review. Soc Sci Med. 2005;61:2252-2264. doi:10.1016/j.socscimed.2005.04.015

23. Gysels M, Richardson A, Higginson IJ. Does the patient-held record improve continuity and related outcomes in cancer care: a systematic review. Health Expect. 2007;10:75-91. doi:10.1111/j.1369-7625.2006.00415.x

24. Howell D, Molloy S, Wilkinson K, et al. Patient-reported outcomes in routine cancer clinical practice: a scoping review of use, impact on health outcomes, and implementation factors. Ann Oncol. 2015;26:1846-1858. doi:10.1093/annonc/mdv181

25. Kotronoulas G, Kearney N, Maquire R, et al. What is the value of the routine use of patient-reported outcome measures toward improvement of patient outcomes, processes of care, and health service outcomes in cancer care? A systematic review of controlled trials. J Clin Oncol. 2014;32:1480-1501. doi:10.1200/JCO.2013.33.5948

26. van den Meulen N, Jansen V, van Dulmen S, Bensing J, van Weert J. Interventions to improve recall of medical information in cancer patients: a systematic review of the literature. Psychooncology. 2008;17:857-868. doi:10.1002/pon.1290

27. Yang LY, Manhas DS, Howard AF, Olson RA. Patient-reported outcome use in oncology: a systematic review of the impact on patient-clinician communication. Support Care Cancer. 2018;26:41-60. doi:10.1007/s00520-017-3665-7

28. Guyatt GH, Oxman AD, Vist GE, et al. GRADE: grading quality of evidence and strength of recommendations for diagnostic tests and strategies. Br Med J. 2008;336:1106-1110. doi:10.1136/bmj.39489.470347.AD; 10.1163/bmj.39500.677199.AE

29. Dimoska A, Butow PN, Lynch J, et al. Implementing patient question-prompt lists into routine cancer care. Patient Educ Couns. 2012;86:252-258. doi:10.1016/j.pec.2011.04.020

30. Higgins JP, Altman DG, Gotzsche PC, et al. The Cochrane Collaboration’s tool for assessing risk of bias in randomised trials. BMJ. 2011;343:d5928. doi:10.1136/bmj.d5928

31. Brandes K, Linn AJ, Butow PN, et al. Decision aids and breast cancer: do they influence choice for surgery and knowledge of treatment options? J Med Assoc Thail. 2007;90:992-997. doi:10.1016/pou.2007.01.020

32. Jensen RE, Potosky AL, Moinpour CM, et al. United States population-based estimates of Patient-Reported Outcomes Measurement Information System symptom and functional status reference values for individuals with cancer. J Clin Oncol. 2017;35:1913-1920. doi:10.1200/JCO.2016.71.4410

33. Alonso J, Bartlett SJ, Rose M, et al. The case for an international Patient-Reported Outcomes Measurement Information System ( PROMIS ) initiative. Health Qual Life Outcomes. 2013;11:210. doi:10.1186/1477-7525-11-210

34. Basch E, Deal AM, Kris MG, et al. Symptom monitoring with patient-reported outcomes during routine cancer treatment: a randomized controlled trial. J Clin Oncol. 2016;34:557-565. doi:10.1200/JCO.2015.63.0830

35. Sartain SA, Stressing S, Prieto J. Patients’ views on the effectiveness of patient-held records: a systematic review and thematic synthesis of qualitative studies. Health Expect. 2014;2666-2677. doi:10.1111/bex.12240

36. Brennan ME, Gormally JF, Butow P, Boyle FM, Spillane AJ. Survivorship care plans in cancer: a systematic review of care plan outcomes. Br J Cancer. 2014;111:1999-1908. doi:10.1038/bjc.2014.505

37. van de Poll-Franse LV, Nicolajez KA, Ezendam NP. The impact of cancer survivorship care plans on patient and health care provider outcomes: a current perspective. Acta Oncol. 2017;6:134-138. doi:10.1080/0284106X.2016.1266080

38. Snowden A, White CA, Christie Z, Murray E, McGowan C, Scott R. The clinical utility of the distress thermometer: a review. Br J Nurs. 2011;20:220-227. doi:10.12968/bjon.2011.20.4.220

39. Mitchell AJ. Pooled results from 38 analyses of the accuracy of distress thermometer and other ultra-short methods of detecting cancer-related mood disorders. J Clin Oncol. 2007;25:4670-4681. doi:10.1200/JCO.2006.10.0438

40. Luckett T, Butow PN, King MT, et al. A review and recommendations for optimal outcome measures of anxiety, depression and general distress in studies evaluating psychosocial interventions for English-speaking adults with heterogeneous cancer diagnoses. Support Care Cancer. 2010;18:1241-1262. doi:10.1007/s00520-010-0932-8

41. O’Brien MA, Whelan TJ, Villasis-Keever M, et al. Are cancer-related decision aids effective? A systematic review and meta-analysis. J Clin Oncol. 2009;27:974-985. doi:10.1200/JCO.2007.16.0101

42. Stacey D, Samant R, Bennett C. Decision making in oncology: a review of patient decision aids to support patient participation. CA Cancer J Clin. 2008;58:293-304. doi:10.3322/caac.2008.0006

43. Violette PD, Achoritas T, Alexander P, et al. Decision aids for localized prostate cancer treatment choice: systematic review and meta-analysis. CA Cancer J Clin. 2015;65:239-251. doi:10.3322/caac.21272

44. Stacey D, Legare F, Lewis K, et al. Decision aids for people facing health treatment or screening decisions. Cochrane Database Syst Rev. 2017;4:CD001431. doi:10.1002/14651858.CD001431.pub5

45. Damschroder LJ, Aron DC, Keith RE, Kirsh SR, Alexander JA, Lowery JC. Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. Implement Sci. 2009;4:50. doi:10.1186/1748-5908-4-50