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Factors influencing the translation of shared cancer follow-up care into clinical practice: A systematic review

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TITLE PAGE

Title	Factors influencing the translation of shared cancer follow-up care into clinical practice: A systematic review
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FACTORS INFLUENCING THE TRANSLATION OF SHARED CANCER FOLLOW-UP CARE INTO CLINICAL PRACTICE: A SYSTEMATIC REVIEW

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ABSTRACT

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BACKGROUND The increasing incidence of cancer, coupled with improved survivorship, has increased demand for cancer follow-up care and the need to find alternative models of care. Shared cancer follow-up care in general practice is a safe option in terms of quality of life and cancer recurrence; however, there are barriers to translating this into practice. This review aimed to identify what factors influence translating shared cancer follow-up care into clinical practice.

METHODS Systematic review. Seven electronic databases: MEDLINE, Science Citation Index, Academic Search Complete, CINAHL, APA Psycinfo, Health Source: Nursing/Academic Edition, and Psychology and Behavioural Sciences Collection, were searched for published papers between 1999 to 2019. The narrative review included papers if they were available in full-text, English, peer-reviewed, and focused on cancer follow-up care.

RESULTS Twenty-nine papers were included in the final review. Five main themes emerged: (1) Reciprocal clinical information sharing is needed between oncologists and general practitioners, and needs to be timely and relevant; (2) Responsibility of care should be shared with the oncologist overseeing care (3) Need for clinical management guidelines and rapid referral to support general practitioners to provide shared follow-up care; (4) Continuity of care and satisfaction of care is vital for shared care; (5) General practitioners skills and knowledge to provide cancer follow-up care.

CONCLUSION The acceptability of shared cancer follow-up care is increasing. Several barriers still exist to translating this into practice. Work is required to develop a shared-care model that can support general practitioners whilst the oncologist can oversee the care and implement two-way communication between general and oncologists' clinics. The move towards integrating electronic health care records and web-based platforms for information exchange provides a promise to the timely exchange of information.

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Strengths and limitations of this study

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- This review was undertaken with a rigorous systematic methodology and has identified some important enablers to translate shared cancer follow-up care into clinical practice.
 - It has some limitations. Only published peer-reviewed literature was included, and it may therefore be subject to publication bias. Papers were limited to those in English, and there may be papers available in other languages that were not captured.
 - Given that healthcare practices vary internationally, this review may not reflect all practices. This review was limited to adult patients and excluded skin and blood cancers.

BACKGROUND

After active cancer treatment is complete, patients require ongoing follow-up care to treat late side effects, monitor recurrence, and provide psychosocial care (1–3). The duration and frequency of follow-up care depend on the type and stage of cancer and the treatment. Cancer follow-up models of care fall into sequential, parallel or shared-care models (4,5). Sequential care is when one provider delivers all healthcare. Parallel care is when the specialist manages cancer-related issues, and the general practitioner manages non-cancer-related health matters. Shared-care is a partnership between health professionals that improves the quality of patient care by integrating the delivery within and across the health service and enhances communication between providers (6). In cancer follow-up, parallel care is known as oncologist-led care and is the current most common model of care (7,8) and is usually provided in a hospital setting (9).

The Institute of Medicine (IOM) states that “cancer care is often not as patient-centred, accessible, coordinated or as evidenced-based as it should be” (10)p20. They emphasised the urgent need for new cancer models of care where health professionals work together to ensure that every patient receives care tailored to their particular situation (10). The IOM developed a conceptual framework to address the identified deficiencies that aimed to place the patient at the centre of care in a system that supports patients in making informed medical decisions consistent with their needs, values, and preferences. The framework highlighted the need for adequately trained staff, a coordinated workforce, evidence-based cancer care, and information technology to improve cancer care quality and patient outcomes.

Due to the growing number of cancer survivors and increased demand for follow-up consultations, the sustainability of the oncologist-led cancer follow-up model of care has been questioned (11–14). There has been limited progress in developing cancer follow-up models of care that address the person-centred care domains of respect for patients’ preferences, coordination and integration of care, information and education, continuity and transition, and access to care (15).

The evidence for the benefits of shared cancer follow-up models of care is growing (16–20). Randomised controlled trials have shown no difference in the recurrence rate or quality of life when a general practitioner provides cancer follow-up care compared to an oncologist (21–24). Despite acknowledging the benefits of

1
2 47 general practitioners' playing a greater role in cancer follow-up care, there are barriers to translating shared
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6 49 factors influence translating shared cancer follow-up care into clinical practice?"
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10 **METHOD**
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12 50 This systematic review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses
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14 51 (PRISMA) format (25): i) development of inclusion/exclusion criteria; ii) extraction and coding of study
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16 52 characteristics and findings; and iii) data analysis and synthesis of findings. This review was registered with
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18 53 PROSPERO (Reg No: CRD42020191538).
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23 54 **Eligibility criteria**
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25 55 Inclusion criteria: (a) general practitioner, patient, and/or oncologist perceptions of shared cancer follow-up
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27 56 care; (b) general practitioner involvement in cancer follow-up care; (c) intervention with the general practitioner
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29 57 involved in cancer follow-up care; (d) adults patients in the follow-up period; and (e) papers peer-reviewed,
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31 58 published in English between 1990 and 2020.
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35 59 Exclusion criteria: (a) commentary, editorial, literature review, protocol; (b) patients on active treatment; (c)
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37 60 palliative care; (d) surgical only treatment; (e) paediatric; (f) skin cancer, melanoma or blood cancer.
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42 61 **Information sources and search strategy**
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44 62 The search was conducted in the following seven electronic databases: MEDLINE, Science Citation Index,
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46 63 Academic Search Complete, CINAHL, APA Psycinfo, Health Source: Nursing/Academic Edition, and
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48 64 Psychology and Behavioural Sciences Collection. To ensure relevant results were obtained, search terms were
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50 65 developed using a modified version of the PICO (Population, Interest, Comparison and Outcome) Framework
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52 66 (26). The search terms were constructed and agreed upon by both authors. Alternative keywords for each search
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54 67 term (see Table 1) were combined using the Boolean operator 'OR' to ensure all possible variations were
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56 68 captured; the search was then refined by combining the searches with 'AND'. The wildcard '*' was used to allow
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58 69 for word truncations.
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Table 1. Search terms

PICO	Search terms
Population	"general practitioner" OR "primary care physician" OR "family physician" OR "family practitioner" OR GP OR doctor OR specialist OR oncologist
Interest	AND "model of care" OR "shared-care" OR "shared care" OR "follow-up care" OR "follow up care"
Outcome	AND Cancer OR oncolog* OR neoplasm

Study selection

Papers were imported into Zotero reference management software, and duplicates were removed. Both authors independently used a stepwise procedure to identify relevant papers. Risk of bias was systematically assessed by two researchers using separate checklists. TS performed the initial search and screened the titles and abstracts against the inclusion/exclusion criteria; the remaining texts were retrieved in full and screened against the inclusion/exclusion criteria. HS independently checked the results and compared her findings with the first author. The authors met with the final list of included/excluded papers and resolved any disagreement by discussion and consensus. A third reviewer was available in case consensus could not be reached between the first two reviewers. Reasons for exclusion were recorded.

Data collection and quality appraisal

The following data were extracted into a Microsoft Excel spreadsheet: first author, year, country, study type, aim, sample, methods, results and conclusion. The rigour of each included study was assessed by TS using the Joanne Briggs Institute (JBI) Critical Appraisal tools checklists (27) that use a three-point grading system: include, exclude and seek more information. These grades are based on desirable and undesirable effects, quality of evidence, values and preferences, and costs (27). The JBI suite was selected as it contains 13 checklists that provide consistency with reviewing the different types of papers without having to use different tools with different grading/scoring systems.

Data synthesis

Data were synthesised into themes using Braun and Clarke's six-step thematic analysis framework (28). Disagreements regarding the allocation of themes were resolved by discussion and consensus; the results of the thematic analysis are presently narratively.

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RESULTS

Study selection

The initial search yielded 797 papers after duplicates were removed. After reviewing the abstracts against the inclusion criteria, 678 were removed as they did not meet the inclusion criteria. The full text of the remaining 119 papers was examined in full, and a further 67 were removed. The remaining papers' reference lists were scanned to capture any additional papers that may have been missed in the initial search, resulting in four more papers being added. The resultant 56 papers were assessed for quality using the JBI critical appraisal tools, resulting in 27 papers being excluded due to poor methodological quality, bringing the final total to 29 papers (see Figure 1).

Study characteristics

Of the 29 included papers, seven were from the United States, six from Canada, four from Australia; the remaining papers were from the United Kingdom, The Netherlands, Denmark, Norway, Italy, Germany and France (see Table 2). Half of the papers were published in the last five years, with the sample sizes ranging from 10 to 2,053. There were 14 quantitative, 13 qualitative and two mixed-methods papers (see Table 2).

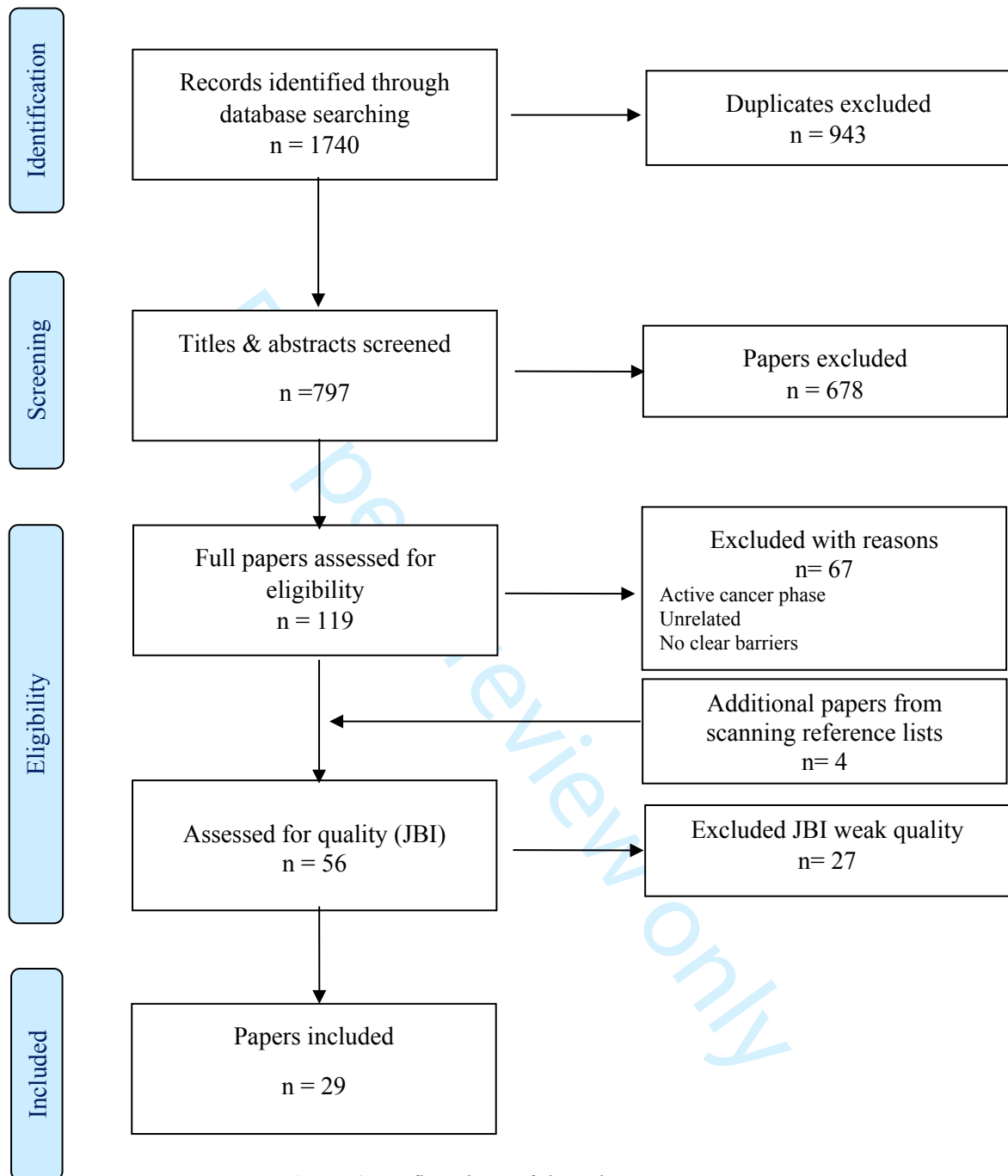


Figure 1. PRISMA flowchart of the selection process

Table 2. Summary of included papers

First Author, Year Country	Study aim	Sample & Methods	Results/Conclusion	Themes
Anvik, 2006 (29) Norway	To describe and analyse the role of the general practitioners during initial follow-up of patients treated for cancer, from the perspective of the patients, their relatives and their general practitioners.	17 general practitioners 91 patients Focus group, semi structured interviews, questionnaire / content analysis.	There is a place for GPs in cancer follow-up care. Patients have trust in the GP. GP will take on a greater role in follow-up care if there is good access to specialists. Follow-up plans will improve the care and cooperation. Patients and GPs are calling on hospitals to initiate a stronger collaboration.	Continuity of care Follow-up guidelines
Aubin, 2010 (30) Canada	To describe the actual and expected role of a family physicians at the different phases of cancer.	395 Lung patients Interview, questionnaire /quantitative analysis.	Oncologists are the main follow-up provider for patients and patients prefer oncologists to maintain overall responsibility. Patients would like their GP to be more involved to be achieved by better communication and collaboration.	Responsibility
Cheung, 2013 (31) United States	To assess how physician attitudes toward and self-efficacy with cancer follow-up affect preferences for different cancer survivorship models.	938 general practitioners 1088 oncologists Questionnaire / quantitative	Most GPs supported a shared care or GP model for follow-up (51%). Specialists prefer a specialist led model for follow-up (59%). GPs reported that they are already involved in screening and would be able to perform routine follow-up care (57%) and work-up recurrent cancers (74%). GPs with prior involvement in cancer surveillance more willing to assume greater follow-up responsibility.	GP skills Information sharing Responsibility
Dahlhaus, 2014 (32) Germany	To examine German general practitioners views on their involvement in the care of cancer patients.	30 general practitioners Semi-structured interviews / content analysis	GPs are well placed for follow-up care being aware of the patients' full medical history. GPs want to stay involved in cancer care and know how their patients are progressing. Slow or non-existent information sharing is a barrier to shared cancer care.	Continuity of care GP skills Information sharing
Dicicco-Bloom, 2013 (33) United States	To provide a better understanding of the nature of interactions among primary care clinicians, patients, and oncologist throughout the cancer care continuum to better understand the transition to survivorship.	11 primary care physicians 10 nurse practitioners Interviews / content analysis	GPs want to maintain contact with their patients to monitor their progress. The sharing of information differed between community oncologists and academic centres. GPs were unable to obtain regular updates on their patients. GPs wanted more guidance about follow-up screening and side-effects. GPs suggested that if there were better information sharing they were well placed to provide follow-up care. GPs addressed the importance of electronic medical records access.	Follow-up guidelines Information sharing
Fidjeland, 2015 (34) Norway	To explore general practitioners experiences with the provision of follow-up care for cancer patients, and their views on assuming greater responsibility.	317 general practitioners Questionnaire / quantitative	GPs felt confident in their knowledge and skills to provide follow-up care (78%). GPs hesitant to assume greater role in follow-up care due to increased workload. Some GPs (42%) more willing to take on follow-up care after three years (for gynaecology cancer).	Follow-up guidelines GP skills Responsibility
Franco, 2016 (35) Canada	To explore the experiences of survivors who are transitioning from tertiary to primary care.	13 Gastrointestinal and lymphoma patients Focus group, interview / descriptive analysis	A strong enabler to shared cancer care was the patients' relationship with their GP. Patients have to be ready to transfer their care. Patients needed to know that the information on the follow-up care process had been passed from the specialist to the GP.	Continuity of care GP skills
Grunfeld, 1999 (24) United Kingdom	To assess the effect on patients' satisfaction of transferring primary responsibility for follow-up of women with breast cancer in remission from hospital outpatients clinics to general practice.	296 Breast patients Questionnaire / Randomised controlled trial, quantitative	Patients in the RCT had greater satisfaction with the follow-up care provided by the GP, compared with the oncologist. Patient relationship with GP and ability for patients to make an informed choice is important. Patient informed choice is important.	Continuity of care
Hall, 2011 (36) United Kingdom	To conduct a modelling exercise for shared follow-up and to explore the opinions and experiences of both the patients and the general practitioners involved.	18 patients 6 general practitioners 5 patients Semi-structured interviews / content analysis	Most patients support shared cancer care, provided there is robust support from specialist. There are many benefits for rural patients, and some urban patients, for cancer follow-up closer to home with their GP. GPs and patients have concerns about the GP gaining and maintaining clinical skills.	Follow-up guidelines GP skills Responsibility
Hanks, 2008 (37) Australia	To identify and compare the roles of general practitioners and colorectal cancer management in Australia.	15 general practitioners Colorectal cancer Interview / thematic analysis	Shared cancer follow-up care is influenced by the GP and patient, and GP and specialist relationship. Improvement in GP and specialist relationship and communication could lead to better shared care.	Continuity of care Follow-up guidelines Information sharing Responsibility

Haq, 2013 (38)	To document information needs from the perspectives of breast care patients, family physicians, and oncology specialists health care providers. To design and implement a supportive care plan based on identified needs. To evaluate the pilot supportive care plans effectiveness at addressing these gaps.	Phase 1: 21 breast patients 8 general practitioners 6 specialists Phase 2: 18 breast patients 5 general practitioners 3 specialists Focus group / interviews / content analysis	GPs feel ill-equipped to provide cancer follow-up care and felt unsure of their role and what to specifically do. A single source of information, was clear "ABCD" instructions of what to do is needed. The care plan made the GP feel more engaged with the patients care. The follow-up guidelines gave GPs more confidence in their abilities assume greater responsibility in cancer follow-up care.	Follow-up guidelines Information sharing
Hudson, 2012 (39)	To examine patient perspectives and preferences on primary care physician roles in their cancer follow-up care.	42 breast & prostate patients Semi-structured interviews	Most patients prefer follow-up care with the specialists. Barriers identified was GP lack of expertise, limited involvement during treatment, lack of continuity of care. Opportunities for cancer care include GP screening, supplementing care appointments between GPs and specialists, GP provide follow-up care when "enough time has passed".	Continuity of care GP skills
Hudson, 2016 (40)	To explore cancer survivors' experiences of patient-centred cancer follow-up care provided by primary care physicians and oncologists.	305 breast & prostate patients Interviews / immersion analysis and descriptive analysis	There are reported differences between breast and prostate patients for their follow-up care. Patients rated GPs higher for coordination of care and comprehensive care compared to specialists. Breast patients had a stronger relationship with the specialists compared to with their GP. Prostate patients rated GPs higher for all items, compared to breast patients.	Continuity of care
Klabunde, 2017 (41)	To explore factors that may affect cancer survivors' post-treatment communication and care coordination.	357 oncologists Questionnaire/ descriptive statistics	Half of the oncologists reported they communicated directly with the patient's GP about post-treatment status. Written communication the most frequently used method, followed by phone, electronic health records, email. Oncologists' reliance on written correspondence to communicate with GPs may be a barrier to care coordination.	Information sharing
Lang, 2017 (42)	To assess the role of general practitioners in German cancer care from patients' perspective.	740 patients Questionnaire/ descriptive statistics	Patients want their GP to play an active role in the cancer journey. It was suggested that earlier integration of the GP would be helpful. It recommended a shared care model where the GPs are supported by the specialists and are provided with additional training in cancer care.	Continuity of care Responsibility
Laporte, 2017 (43)	To examine how women experienced the post-treatment management of breast cancer and perceived the role of the general practitioner in follow-up care	21 breast patients Semi-structured interviews / thematic analysis	Patients felt abandoned at the end of treatment and desired support. Patients appreciated the ease of contacting their GP. Patients accepted follow-up care with their GP provided there was a close working relationship with the specialist.	Continuity of care Responsibility
Lawn, 2017 (44)	To explore Australian cancer survivors' views on shared care: what cancer survivors need from shared care; enablers and barriers to advancing shared care; and what successful shared care looks like.	11 patients 2 carers 8 clinicians Forum / content analysis	Patients need to be at the centre of the care. Information sharing and communication processes between health professionals and services is important for successful shared care. It was perceived the GPs lacked the skills and confidence for shared care.	GP skills Information sharing
Lizama, 2015 (45)	To investigate general practitioners' perceptions about communication when providing cancer care.	648 general practitioners Questionnaire / quantitative content analysis	Detailed and timely communication between GPs and specialists is imperative for shared cancer care. GPs want to be kept in the loop, and to be provided with follow-up care information to provide continuity of care. Timely transfer of relevant information between primary care providers and specialists is essential. The development of interprofessional relationship is important to engage GPs in cancer care.	Continuity of care Follow-up guidelines Information sharing
Nielsen, 2003 (46)	To determine the effect of a shared care programme on the attitudes of newly referred cancer patients towards the healthcare system and their health-related quality of life and performance status, and to assess patients' reports on contacts with their general practitioner.	248 patients Questionnaires / Randomised controlled trial, quantitative analysis	The shared care programme had a positive effect on patient evaluation of cooperation between primary and secondary healthcare. Young people rated GPs knowledge higher than those in the control group. No significant difference in quality of life between the intervention group and control group.	Follow-up guidelines Information sharing
Nyarko, 2015 (47)	To evaluate cancer survivors' perspectives on primary care physician-delivered survivorship care.	352 patients Questionnaire / quantitative analysis	Patients were less likely to perceive their GPs as knowledgeable about cancer follow-up, late or long-term management of side effects from treatment. Patients rate their GP highly for satisfaction for overall care. Patients noted that communication between the	Continuity of care GP skills Information sharing

			GP and specialist was poor. There is a need to educate GP and improve communication.	
O'Brien, 2015 (48)	To understand the experiences of family physicians using survivorship care plans to support the follow-up of breast cancer patients.	123 general practitioners Breast cancer Interviews / Randomised controlled trial, content analysis	Most GPs felt comfortable providing care after 3-5 years after diagnosis. GPs found survivorship care plans useful, but that they still lacked information. Effective strategies for two-way communication between family physicians and oncologists are still lacking.	Follow-up guidelines GP skills Information sharing
Potosky, 2011 (49)	To compare primary care physicians and oncologists with regard to their knowledge, attitudes, and practices for follow-up care of breast and colon cancer survivors.	1029 general practitioners 1130 medical oncologists Questionnaire / quantitative	Specialists believe GPs are less likely to have the skills to conduct follow-up care for breast cancer and care of late side effects from treatment. Effective communication between GPs and specialists has the ability to increase GP confidence in their ability to perform follow-up care.	GP skills Responsibility
Puglisi, 2017 (50)	To investigate the views of medical oncologists, general practitioners, and patients about the various surveillance strategies.	329 medical oncologists 380 general practitioners 350 patients Questionnaire / quantitative	Most GPs claim that cancer follow-up care should be provided in collaboration between GPs and oncologists. Most GPs and oncologists have a poor relationship. Most patients believe there is no real collaboration between GPs and oncologists. Collaboration is poor and should be improved.	GP skills Information sharing Responsibility
Roorda, 2013 (51)	To explore a) the discharge of breast cancer patients to primary care by specialists, at the end of hospital follow-up and b) the experiences and views of general practitioners regarding transfer of follow-up to the primary care setting.	502 general practitioners Questionnaire / quantitative	Forty percent of GPs were willing to accept responsibility for follow-up care earlier than five years. The barriers to shared care were communication, patient preference for specialist, GPs knowledge and skill for cancer follow-up care. Development of administrative tools and guidelines would help facilitate shared follow-up.	Follow-up guidelines Information sharing Responsibility
Roorda, 2014 (52)	To explore patients' preferences for follow-up in primary care versus secondary care.	70 patients Semi-structured interviews / descriptive content analysis	The majority of patients prefer cancer follow-up care to be provided by the same care provider. The majority preferred specialist follow-up (75%). Patients were concerned with GPs knowledge and skills to provide follow-up care. However 57% would accept follow-up care with their GP, provided there is good communication between the GP and specialist.	Continuity of care Information sharing
Schütze, 2017 (53)	To explore the views of breast and colorectal cancer survivors, their oncologist and general practitioners, about general practitioners taking a more active role in long-term cancer follow-up care.	22 breast & colorectal patients 16 oncologists 18 general practitioners Semi-structured interviews / thematic analysis and triangulation	A staged, shared-care follow-up model was found to be acceptable for most participants. It was important for GPs to have specialist cancer knowledge, an interest in cancer, and time to provide follow-up care. It is important for the specialist to oversee the care and maintaining overall responsibility. Cancer services and primary health need to work collaboratively to develop a model that engages the GP sooner and is supported by robust information and communication systems.	Follow-up guidelines GP skills Information sharing Responsibility
Sisler, 2012 (54)	To examine at a population level how colorectal cancer survivors evaluate the continuity and quality of their follow-up care after treatment, particularly for those in the care of a primary care provider.	246 patients Questionnaire / descriptive statistics	Most patients evaluate their GP favourably when their follow-up care was transferred from the specialist to the GP. Patients with more complex issues rated their specialist more favourably. Clarification of responsibilities between providers is needed and interventions to coordinate care.	Continuity of care Responsibility
Vanhuyse. 2007 (55)	To explore if patient transfer back to the family physician for follow-up was a potential option.	193 breast patients Descriptive statistics	Not all patients are appropriate for follow-up care with the GP. Transferring follow-up care from the specialist to the GP reduces the workload of the specialist. GPs require adequate resources and information on providing follow-up care.	Follow-up guidelines Information sharing
Walter, 2015 (56)	To determine the current practice and views of general practitioners in England regarding cancer survivorship care.	500 general practitioners Questionnaires / descriptive analysis	The majority of GPs felt that cancer follow-up care can be shared, with the specialist maintaining overall responsibility. GPs felt confident in their ability to provide follow-up care. GPs would benefit from more information and communication to improve their ability to provide cancer reviews.	Follow-up guidelines Responsibility

Thematic Analysis

Five themes were identified and are discussed below. Themes are ordered from the highest number of instances of articles within each them; however, frequency does not necessarily equate to order of importance (28).

Reciprocal clinical information sharing

Sixteen papers referred to the importance of timely and quality sharing of clinical information between health professionals (31–33,37,38,41,44–48,50–53,55). Information sharing within healthcare is complex and fundamental for effective and efficient shared care (38,41,45). The primary method to share clinical information between doctors and patients was face-to-face verbal communication (33); between oncologists and general practitioners, it was written correspondence, followed by phone, integrated electronic health records and email (38,41).

Despite written communication being the primary method for information sharing, general practitioners were not provided quality and timely clinical information from oncologists to manage cancer follow-up care (32,33,45,52,55). One paper found that only half of the oncologists said that they directly shared clinical information about their patients to the general practitioner (41); another reported that around half of general practitioners received the transfer of clinical information from the oncology clinic (51). Not sharing clinical information with general practitioners results in many general practitioners not having clear instructions on follow-up and how to act in case of complications (45,51) and leaves patients to be the conduit to transfer clinical information verbally between the oncologist and general practitioner (44,47).

Due to inefficiencies with written correspondence, survivorship care plans (a record of cancer, treatment follow-up care plan) were developed to improve the transfer of information between the patient, general practitioner, and oncologist (38,51,52). Mixed results about the usefulness of survivorships care plans have been obtained: one paper found that the plans effectively addressed some of the information needs of both breast patients and their general practitioners (38); another found that the clinical information was basic, and the follow-up information provided to the general practitioner was information they already knew (48).

The use of electronic medical records between general practice and oncologists was identified as being more valuable than survivorship care plans (33,45).

A combined approach of using verbal and written correspondence for information sharing during shared care follow-up positively affected the patient evaluation of the cooperation between the general practitioners and oncologists (46). This was achieved by providing a discharge summary with structured details of the investigation, treatment, physical, psychological, and social problems, and specific information about what the oncologists expected the general practitioner to do during the follow-up period (46). Direct phone contact with the oncologist was available for further clarification on the written correspondence if required (46).

Eight papers discussed issues with one-way information sharing: written information from the oncologist to the general practitioner (32,33,37,38,41,45,50,55). Shared cancer follow-up care relies on the two-way transfer of information between all health professionals involved in patient care (33,36,48). Four papers highlighted the need to further develop health information technology to assist the two-way information sharing process and improve the timeliness and quality of information between general practitioners and oncologists (44–46,53).

Responsibility for follow-up care

Thirteen papers discuss responsibility for follow-up care (30,31,34,36,37,42,43,49–51,53,54,56). There was a preference from patients, general practitioners and oncologists, for oncologists to maintain overall responsibility for cancer follow-up care (30,31,49,50,53). Oncologists were more likely to prefer an oncologist-led model instead of a shared-care or general practitioner-led model, as oncologists felt that they had the specialised knowledge for follow-up care (31), and general practitioners did not (31,49,50). However, oncologists were receptive to general practitioners taking a greater role in the more standardised aspects of follow-up care (53). Oncologists felt that improved collaboration between themselves and general practitioners was required for shared cancer follow-up care (50) and that defined roles would be needed for shared care to be feasible (53). However, oncologists preferred that they maintain primary responsibility for the patient's care, even if they were sharing the care of the patient with the general practitioner (31,49,50,53).

General practitioners reported that they were already involved in the care of their cancer patients from the initial work-up of diagnostic tests and diagnosis, monitoring pathology results, and coordinating long-term screening (31,56), and welcomed a greater role in cancer follow-up care (29,31,32,34,45,48,49,53). General practitioners viewed shared-care positively (36) and preferred a shared model compared to the oncologist-led model (31,49). General practitioners perceived that they could provide an important role in the follow-up phase for their patients and provide a more person-centred care approach (32). However, general practitioners felt that oncologists should maintain overall responsibility and provide overarching support to general practitioners and oversee the patient's results and progress (29,36,42,43,53,56).

Patients identified oncologists as having the primary responsibility in their current cancer journey, except when cancer progressed to an advanced phase and palliation (where the general practitioner became more involved in their partnership with a palliation team) (30). Many patients preferred the oncologist-led follow-up model and a parallel approach to follow-up care where the oncologist managed cancer-related issues and the general practitioner non-cancer-related health matters (30). Despite the limited involvement that general practitioners have in cancer follow-up care, patients indicated that they would appreciate their general practitioners taking a greater role in their long-term care if the oncologist remained involved (30,42,53). Additionally, patients were more likely to accept a shared-care model if the general practitioner was directly supported by their oncologist (42), as this reassured patients that they remained directly linked into the hospital system (53).

Need for clinical management guidelines and rapid referrals

Thirteen papers discussed the need for clear clinical management follow-up guidelines to support general practitioners in shared follow-up care (29,33,34,36–38,45,46,48,51,53,55,56). General practitioners were more willing to take a greater role in follow-up care if they were provided appropriate follow-up clinical management guidelines (51) and more guidance about follow-up screening and side effects of cancer treatment (56). Specific follow-up guidelines (29,33), specifically templates (56), could be in the form of a printable checklist or using validated instruments (38) and would reassure general practitioners that they

1 181 were addressing aspects critical for the particular patients' care (33,56). However, any guidelines developed
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3 182 would need to be succinct (48).
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7 183 Clinical management guidelines that were best-practice or written by the oncologists would provide a safety
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9 184 net for recurrence or other serious events (53). Any clinical management guidelines that were completed
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11 185 needed to be sent to the oncologist to oversee and continue to monitor the patient's progress and to be able
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13 186 to address any issues that arose quickly (53). Patients have shown positive results for not feeling "left in
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15 187 the limbo" (46) p267 when the oncologist has supplied specific follow-up details to the general
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17 188 practitioners.
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22 189 Two papers (37,48) highlighted that for general practitioners to play a greater role in cancer follow-up care,
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24 190 along with the provision of clinical management guidelines, they also need assurance of a rapid referral
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26 191 back to the oncologist if recurrence is detected.
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29
30 192 *Continuity of care and satisfaction of care*
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32 193 Thirteen papers referred to the importance of continuity of care, satisfaction of care and accessibility
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34 194 (24,29,32,35,37,39,40,42,43,45,47,52,54). Continuity of care for cancer patients refers to having the same
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36 195 health professional providing the care and having an ongoing doctor-patient relationship (24,35,43). Many
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38 196 patients reported having developed a relationship with their oncologist during the diagnosis and active
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40 197 treatment phase and subsequently felt "dumped" (45) p155 when experiencing a high turnover of
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42 198 oncologists due to registrar involvement. Some patients found this lack of continuity of care during the
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44 199 follow-up phase distressing (43,45). Additionally, some general practitioners also felt that they were
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46 200 disconnected from their patients during the follow-up care stage (32).
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51 201 A patient's relationship with their general practitioner and oncologist influences their acceptance and
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53 202 readiness for shared cancer follow-up care (35). Patients had a stronger relationship with their general
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55 203 practitioner than their oncologist (24,32) and had stronger feelings of trust because of their long-standing
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57 204 relationship (43). However, patients who had a poorer relationship with their general practitioner or did not
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59 205 have a regular general practitioner were less likely to accept or be ready for their care to transition away
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from the oncologist (35). Breast cancer patients were the only tumour group that felt they had a stronger relationship with their oncologist and would prefer their oncologist to maintain follow-up (40).

Continuity of care is strongly associated with patients' satisfaction of care (40,54). Despite breast patients having a stronger relationship with their oncologist, a randomised controlled trial found that breast patients had higher satisfaction of care with their general practitioner than their oncologist (24). This satisfaction of care rating was related to service delivery (the time to see doctor and the time spent with the doctor), the consultation (discussion, explanation and examination), and continuity of care (same doctor that knows their history) (24). The authors reported that almost 90% of patients in the general practice follow-up group saw a doctor who knew them well, compared to approximately 50% of patients in the hospital group. Patient satisfaction with continuity of care significantly increased (24) in the general practice follow-up group. Similar results were found in another study with colorectal patients, who indicated high levels of satisfaction of care with continuity of care in general practice (54).

The distance a patient travels for their follow-up care influenced continuity of care and satisfaction. General practitioners in rural areas and some urban areas were found to provide improved continuity of care to their patients (37,52). In a rural setting that provided cancer follow-up care, general practitioners reported that care was strengthened by a good working relationship with the oncologist (37).

General practitioners' knowledge and skills

Twelve papers discussed the knowledge and skills of general practitioners for shared care (31,32,34–36,39,44,47–50,53). Perceptions differed regarding general practitioners' skills and abilities to take a greater role in cancer follow-up care, and in some cases, limited acceptance for the general practitioners to be involved in cancer follow-up care (35,39). Many general practitioners stated they felt confident in their skills to provide cancer follow-up care (48,49) and reported that they could provide routine cancer follow-up care by detecting and arranging diagnostic testing pathology and offer psychosocial support (32,34). Some general practitioners highlighted their essential role in providing holistic care and how their involvement could generally improve overall cancer care (32). However, other general practitioners had concerns about gaining and maintaining the clinical skills needed to conduct cancer follow-up care (31,36). Some oncologists and patients also felt that general practitioners did not have the specialised knowledge of

specific treatment side effects and how to manage these and felt that general practitioners required upskilling to take on shared care (49,50,53).

Patients, general practitioners, and oncologists confidence in shared cancer care increased if general practitioners received extra training on short-term and long-term side effects (36,39,43). Another method identified to upskill general practitioners was integrating the general practitioner earlier in the patients' care (34,39). General practitioners are usually involved in the initial screening and diagnosis, and then again as cancer progressed to late-stage and palliative care. Earlier engagement of the general practitioner during active treatment would upskill them in managing acute side effects, which will help in the long-term follow-up period (44). Regardless of how the extra training occurred, general practitioners still wanted ongoing support from oncologists (53).

DISCUSSION

We identified factors that influenced translating shared cancer follow-up care into practice were: Reciprocal clinical information sharing, responsibility for follow-up care, need for clinical management guidelines and rapid referral, continuity of care and satisfaction of care, and general practitioners' skills and knowledge. Whilst some themes were similar to the findings of a recently published systematic review (57). We also found the need for reciprocal, two-way communication and establishing a mechanism for the oncologist to maintain overall responsibility for overseeing the follow-up care.

The need for reciprocal two-way communication is supported by a recent study that reviewed current e-care plans between cancer centres and general practices (58). They did not identify a system that integrated general practice systems and hospital systems to address two-way communication (58). This highlights the need for infrastructure to support the transfer of information between general practitioners and oncologists for successful shared cancer care. Whilst a current randomised controlled trial protocol exists to explore shared cancer care for colorectal patients (59). This protocol does not specify how this transfer of information to the hospital oncologist will be achieved. The one study that has trialled and reported on the secure transfer of clinical information into the hospital with cancer patients to collect patient-reported outcomes (60), used a web-based platform PROsaiq (61), where the patient could complete a clinical assessment from home. The information subsequently transferred into the patients' hospital medical record

and allowed the oncologist to monitor the patients' progress (60). This type of web-based health technology has been evaluated as feasible and secure to use in the clinical setting (60) and offers promise for a technological platform to use for reciprocal information sharing.

We found that oncologists, patients, and general practitioners want and need the oncologist to maintain responsibility and oversee the patient's cancer follow-up care. This is a challenging barrier to address due to medical legalities. The health professional that provides the consultation is legally responsible for the appointment outcome; therefore, a general practitioner that provides cancer follow-up care is responsible for that consultation. This issue is similar to cancer multi-disciplinary team meetings with clinicians holding concerns about the legal framework, despite the known benefits of multi-disciplinary care (62). Consequently, it would be challenging to establish a shared care follow-up model, where the oncologist is responsible without establishing a legal framework. However, finding a mechanism for the oncologist to be involved and oversee the patient's follow-up care may be more feasible, provided there is a strong administrative and organisational infrastructure to support coordinated efforts (51). This would be dependent on the successful transfer of information from general practice to the hospital.

The need for follow-up clinical management guidelines and rapid review is also dependent on the reciprocal transfer of information. General practitioners who have used follow-up guidelines developed by oncologists have shown positive results (38). Patients believed the follow-up consultation was more detailed and comprehensive compared to oncologist-led follow-up (63,64). Despite the efforts to develop and utilise follow-up guidelines, there needs to be health technology infrastructure or better integration for general practitioners to access any guidelines developed.

One notable finding was that despite the evidence that cancer follow-up care in general practice is safe (65,66), perceptions still exist that general practitioners do not have the necessary skills and knowledge for cancer follow-up care. This may be in part due to medical hegemony and power differentials (67), where the general practitioner is viewed as inferior in the medical hierarchy to the oncologist. Perception plays a powerful role in health psychology and is a determinant of behaviour (68) and can influence the patient's, general practitioners and oncologists preference for cancer follow-up care.

Another factor that will determine shared cancer follow-up is the relationship (either positive or negative) the patient has with their general practitioner and oncologist and if they have continuity of care. Higher levels of satisfaction of care with having their general practitioner involved have been reported for both breast cancer patients (24) and colorectal cancer patients (69). A shared cancer follow-up model of care will not suit everyone, and any decision a patient makes about their follow-up care will be based on their own circumstances, perceptions, experience, values and needs.

Strengths and limitations

- This review was undertaken with a rigorous systematic methodology and has identified some important enablers for shared cancer follow-up care.
- It has some limitations. Only published peer-reviewed literature was included, and it may therefore be subject to publication bias. Papers were limited to those in English, and there may be papers available in other languages that were not captured.
- Given that healthcare practices vary internationally, this review may not reflect all practices. This review was limited to adult patients and excluded skin and blood cancers.

CONCLUSION

Shared care is an alternative model to the oncologist-led cancer follow-up model of care. The model is dependent on the patients' personal preferences and relationship with their health care providers. A shared cancer follow-up model of care relies on the oncologist maintaining overall responsibility and being able to oversee the care, effective two-way information sharing between general practitioners and oncologists, and the provision of follow-up guidelines. Oncologists and general practitioners support a shared-care model of care; however, any model developed needs to be evaluated for feasibility and acceptability (70). The barriers to a shared cancer follow-up model of care between general practitioners and oncologists are complex and require a multifaceted approach. To improve the acceptability and feasibility of shared cancer follow-up care, researchers and health professionals in both primary and secondary care need to work collaboratively to address the barriers and translate the research into practice. Further research is required to better understand the use of health technology to bridge the information-sharing gap and explore the feasibility and acceptability of shared cancer follow-up care for oncologists, general practitioners, and patients.

AUTHOR CONTRIBUTIONS

Both authors conducted the search, screening of articles and assessed their rigour. TS conducted the hand searching. TS summarised the findings from the studies into one document and created the initial code frame. TS drafted the original manuscript for her thesis, assisted by HS. Both authors reviewed revisions and approved the final manuscript.

COMPETING INTERESTS

None to declare

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Data availability statement

All data relevant to the study are included in the article.

Disclaimer

Patients or the public were not involved in the design, or conduct, or reporting, or dissemination plans of our research.

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PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			LINE
Title	1	Identify the report as a systematic review.	1
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	39-48
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	48-49
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	54, 86
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	61
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Table1
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	70
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	78
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	79-80
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	79-80
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	81
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	72, 77
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting bias(s)).	76
Certainty	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	



PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
assessment			
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	90 Figure 1
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	
Study characteristics	17	Cite each included study and present its characteristics.	Table 2
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	245
	23b	Discuss any limitations of the evidence included in the review.	293
	23c	Discuss any limitations of the review processes used.	293
	23d	Discuss implications of the results for practice, policy, and future research.	306
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	53
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	53
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	321
Competing interests	26	Declare any competing interests of review authors.	318
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	325



PRISMA 2020 Checklist

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71
For more information, visit: <http://www.prisma-statement.org/>

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Factors influencing the translation of shared cancer follow-up care into clinical practice: A systematic review

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TITLE PAGE

Title Factors influencing the translation of shared cancer follow-up care into clinical practice: A systematic review

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FACTORS INFLUENCING THE TRANSLATION OF SHARED CANCER FOLLOW-UP CARE INTO CLINICAL PRACTICE: A SYSTEMATIC REVIEW

ABSTRACT

1 BACKGROUND The increasing incidence of cancer, coupled with improved survivorship, has

2 increased demand for cancer follow-up care and the need to find alternative models of care. Shared

3 cancer follow-up care in general practice is a safe option in terms of quality of life and cancer

4 recurrence; however, there are barriers to translating this into practice. This review aimed to identify

5 factors that influence the translation of shared cancer follow-up care into clinical practice.

6 METHODS Systematic review. Seven electronic databases: MEDLINE, Science Citation Index,

7 Academic Search Complete, CINAHL, APA Psycinfo, Health Source: Nursing/Academic Edition, and

8 Psychology and Behavioural Sciences Collection, were searched for published papers between 1999 to

9 2019. The narrative review included papers if they were available in full-text, English, peer-reviewed,

10 and focused on cancer follow-up care.

11 RESULTS Twenty-nine papers were included in the final review. Five main themes emerged: (1)

12 Reciprocal clinical information sharing is needed between oncologists and general practitioners, and

13 needs to be timely and relevant; (2) Responsibility of care should be shared with the oncologist

14 overseeing care (3) Need for clinical management guidelines and rapid referral to support general

15 practitioners to provide shared follow-up care; (4) Continuity of care and satisfaction of care is vital for

16 shared care; (5) General practitioners skills and knowledge to provide cancer follow-up care.

17 CONCLUSION The acceptability of shared cancer follow-up care is increasing. Several barriers still

18 exist to translating this into practice. Work is required to develop a shared-care model that can support

19 general practitioners whilst the oncologist can oversee the care and implement two-way communication

20 between general and oncologists' clinics. The move towards integrating electronic health care records

21 and web-based platforms for information exchange provides a promise to the timely exchange of

22 information.

Strengths and limitations of this study

• This review was undertaken with a rigorous systematic methodology and has identified some

important enablers to translate shared cancer follow-up care into clinical practice.

• It has some limitations. Only published peer-reviewed literature was included, and it may

therefore be subject to publication bias. Papers were limited to those in English, and there may

be papers available in other languages that were not captured.

• Given that healthcare practices vary internationally, this review may not reflect all practices.

This review was limited to adult patients and excluded skin and blood cancers.

BACKGROUND

After active cancer treatment is complete, patients require ongoing follow-up care to treat late side effects, monitor recurrence, and provide psychosocial care(1–3). The duration and frequency of follow-up care depend on the type and stage of cancer and the treatment. Cancer follow-up models of care fall into sequential, parallel or shared-care models(4,5). Sequential care is when one provider delivers all healthcare. Parallel care is when the specialist manages cancer-related issues, and the general practitioner manages non-cancer-related health matters. Shared-care is a partnership between health professionals that improves the quality of patient care by integrating the delivery within and across the health service and enhances communication between providers(6). In cancer follow-up, parallel care is known as oncologist-led care and is the current most common model of care(7,8) and is usually provided in a hospital setting(9).

The Institute of Medicine (IOM) states that “cancer care is often not as patient-centred, accessible, coordinated or as evidenced-based as it should be”(10, p20). They emphasised the urgent need for new cancer models of care where health professionals work together to ensure that every patient receives care tailored to their particular situation(10). The IOM developed a conceptual framework to address the identified deficiencies that aimed to place the patient at the centre of care in a system that supports patients in making informed medical decisions consistent with their needs, values, and preferences. The framework highlighted the need for adequately trained staff, a coordinated workforce, evidence-based cancer care, and information technology to improve cancer care quality and patient outcomes.

Due to the growing number of cancer survivors and increased demand for follow-up consultations, the sustainability of the oncologist-led cancer follow-up model of care has been questioned(11–14). There has been limited progress in developing cancer follow-up models of care that address the person-centred care domains of respect for patients’ preferences, coordination and integration of care, information and education, continuity and transition, and access to care(15).

The evidence for the benefits of shared cancer follow-up models of care is growing(16–20). Randomised controlled trials have shown no difference in the recurrence rate or quality of life when a

1
2 48 general practitioner provides cancer follow-up care compared to an oncologist(21–24). Despite
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4 49 acknowledging the benefits of general practitioners’ playing a greater role in cancer follow-up care,
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6 50 there are barriers to translating shared cancer follow-up care into practice. The specific research
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8 51 question for this systematic review was, “What factors influence translating shared cancer follow-up
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10 52 care into clinical practice?”
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14 **METHOD**

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16 53 A protocol with defined objectives, study selection criteria and approaches to assess study quality was
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18 54 developed and registered with PROSPERO Reg No: CRD42020191538 (Supplementary File 1). This
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20 55 systematic review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses
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22 56 (PRISMA) format(25) and statement (Supplementary File 2): i) development of inclusion/exclusion
23
24 57 criteria; ii) extraction and coding of study characteristics and findings; and iii) data analysis and
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26 58 synthesis of findings. Both quantitative and qualitative papers were included in this narrative systematic
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28 59 review. This systematic review was part of a larger on shared cancer follow-up care, approved by
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30 60 [removed for review purposes], (2020ETH00301).
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35 **Eligibility criteria**

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37 62 Inclusion criteria: (a) general practitioner, patient, and/or oncologist perceptions of shared cancer
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39 63 follow-up care; (b) general practitioner involvement in cancer follow-up care; (c) intervention with the
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41 64 general practitioner involved in cancer follow-up care; (d) adults patients in the follow-up period; and
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43 65 (e) papers peer-reviewed, published in English between January 1999 and December 2019.
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48 66 Exclusion criteria: (a) commentary, editorial, literature review, protocol; (b) patients on active treatment;
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50 67 (c) palliative care; (d) surgical only treatment; (e) paediatric; (f) skin cancer, melanoma or blood cancer
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52 68 (these were excluded as the follow-up regime varies to solid tumour follow-up).
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56 **Information sources and search strategy**

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58 70 The search was conducted in the following seven electronic databases: MEDLINE, Science Citation
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60 71 Index, Academic Search Complete, CINAHL, APA Psycinfo, Health Source: Nursing/Academic
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Edition, and Psychology and Behavioural Sciences Collection. To ensure relevant results were obtained, search terms were developed using a modified version of the PICO (Population, Interest, Comparison and Outcome) Framework(26)..The search terms were constructed and agreed upon by both authors. The second author is a skilled academic who teaches literature searching and research methods at the postgraduate level and has experience conducting systematic reviews, and a university librarian was also consulted. Alternative keywords for each search term (see Table 1) were combined using the Boolean operator 'OR' to ensure all possible variations were captured; the search was then refined by combining the searches with 'AND'. The wildcard '*' was used to allow for word truncations. The search string is attached as Supplementary File 3.

Table 1. Search terms

PICO	Search terms
Population	"general practitioner" OR "primary care physician" OR "family physician" OR "family practitioner" OR GP OR doctor OR specialist OR oncologist
Interest	AND "model of care" OR "shared-care" OR "shared care" OR "follow-up care" OR "follow up care"
Outcome	AND Cancer OR oncolog* OR neoplasm

Study selection

Papers were imported into Zotero reference management software, and duplicates were removed. Both authors independently used a stepwise procedure to identify relevant papers. Risk of bias was systematically assessed by two researchers using separate checklists. TS performed the initial search and screened the titles and abstracts against the inclusion/exclusion criteria; the remaining texts were retrieved in full and screened against the inclusion/exclusion criteria. HS independently checked the results and compared her findings with the first author. The authors met with the final list of included/excluded papers and resolved any disagreement by discussion and consensus. A third reviewer from the broader research team was available in case consensus could not be reached between the first two reviewers. Reasons for exclusion were recorded.

Data collection and quality appraisal

The following data were extracted into a Microsoft Excel spreadsheet: first author, year, country, study type, aim, sample, methods, results and conclusion. The rigour of each included study was assessed by

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94 TS using the Joanne Briggs Institute (JBI) Critical Appraisal tools checklists(27) that use a three-point
95 grading system: include, exclude and seek more information. These grades are based on desirable and
96 undesirable effects, quality of evidence, values and preferences, and costs(27). The JBI suite was
97 selected as it contains 13 checklists that provide consistency in reviewing the different types of papers
98 without using different tools with different grading/scoring systems.

99 **Data synthesis**

100 TS summarised the results, discussion and conclusion of the included papers into one Microsoft Excel
101 document. Both authors then synthesised the findings into themes using Braun and Clarke’s six-step
102 thematic analysis framework(28). Disagreements regarding the allocation of themes were resolved by
103 discussion and consensus; the results of the thematic analysis are presently narratively.

104 **RESULTS**

105 **Study selection**

106 The initial search yielded 797 papers after duplicates were removed. After reviewing the abstracts
107 against the inclusion criteria, 678 were removed as they did not meet the inclusion criteria. The full text
108 of the remaining 119 papers was examined in full, and a further 67 were removed. The remaining papers'
109 reference lists were scanned to capture any additional papers that may have been missed in the initial
110 search, resulting in four more papers being added. The resultant 56 papers were assessed for quality
111 using the JBI critical appraisal tools, resulting in 27 papers being excluded due to poor methodological
quality, bringing the final total to 29 papers (see Figure 1).

112 **Study characteristics**

113 Of the 29 included papers, seven were from the United States, six from Canada, four from Australia; the
114 remaining papers were from the United Kingdom, The Netherlands, Denmark, Norway, Italy, Germany
115 and France (see Table 2). Half of the papers were published in the last five years, with the sample sizes
116 ranging from 10 to 2,053. There were 16 quantitative and 13 qualitative papers (see Table 2).

[insert Fig 1 here]

Table 2. Summary of included papers

First Author, Year Country	Study aim	Methodology, Sample & Methods	Results/Conclusion	Themes
Anvik, 2006(29) Norway	To describe and analyse the role of the general practitioners during initial follow-up of patients treated for cancer, from the perspective of the patients, their relatives and their general practitioners.	17 general practitioners 91 patients Qualitative - interviews and focus groups, qualitative analysis	There is a place for GPs in cancer follow-up care. Patients have trust in the GP. GP will take on a greater role in follow-up care if there is good access to specialists. Follow-up plans will improve the care and cooperation. Patients and GPs are calling on hospitals to initiate a stronger collaboration.	Continuity of care Follow-up guidelines
Aubin, 2010(30) Canada	To describe the actual and expected role of a family physicians at the different phases of cancer.	395 Lung patients Quantitative - questionnaire, descriptive analysis	Oncologists are the main follow-up provider for patients and patients prefer oncologists to maintain overall responsibility. Patients would like their GP to be more involved to be achieved by better communication and collaboration.	Responsibility
Cheung, 2013(31) United States	To assess how physician attitudes toward and self-efficacy with cancer follow-up affect preferences for different cancer survivorship models.	938 general practitioners 1088 oncologists Quantitative - questionnaire, statistical analysis	Most GPs supported a shared care or GP model for follow-up (51%). Specialists prefer a specialist led model for follow-up (59%). GPs reported that they are already involved in screening and would be able to perform routine follow-up care (57%) and work-up recurrent cancers (74%). GPs with prior involvement in cancer surveillance more willing to assume greater follow-up responsibility.	GP skills Information sharing Responsibility
Dahlhaus, 2014(32) Germany	To examine German general practitioners views on their involvement in the care of cancer patients.	30 general practitioners Qualitative- interviews, qualitative analysis	GPs are well placed for follow-up care being aware of the patients' full medical history. GPs want to stay involved in cancer care and know how their patients are progressing. Slow or non-existent information sharing is a barrier to shared cancer care.	Continuity of care GP skills Information sharing
Dicicco-Bloom, 2013(33) United States	To provide a better understanding of the nature of interactions among primary care clinicians, patients, and oncologist throughout the cancer care continuum to better understand the transition to survivorship.	11 primary care physicians 10 nurse practitioners Qualitative- interviews, qualitative analysis	GPs want to maintain contact with their patients to monitor their progress. The sharing of information differed between community oncologists and academic centres. GPs were unable to obtain regular updates on their patients. GPs wanted more guidance about follow-up screening and side-effects. GPs suggested that if there were better information sharing they were well placed to provide follow-up care. GPs addressed the importance of electronic medical records access.	Follow-up guidelines Information sharing
Fidjeland, 2015(34) Norway	To explore general practitioners experiences with the provision of follow-up care for cancer patients, and their views on assuming greater responsibility.	317 general practitioners Quantitative- questionnaire, descriptive analysis	GPs felt confident in their knowledge and skills to provide follow-up care (78%). GPs hesitant to assume greater role in follow-up care due to increased workload. Some GPs (42%) more willing to take on follow-up care after three years for gynaecology cancer).	Follow-up guidelines GP skills Responsibility
Franco, 2016(35) Canada	To explore the experiences of survivors who are transitioning from tertiary to primary care.	13 Gastrointestinal and lymphoma patients Qualitative- interviews and focus group, qualitative analysis	A strong enabler to shared cancer care was the patients' relationship with their GP. Patients have to be ready to transfer their care. Patients needed to know that the information on the follow-up care process had been passed from the specialist to the GP.	Continuity of care GP skills
Grunfeld, 1999(24) United Kingdom	To assess the effect on patients' satisfaction of transferring primary responsibility for follow-up of women with breast cancer in remission from hospital outpatients clinics to general practice.	296 Breast patients Quantitative- RCT, questionnaire, descriptive analysis	Patients in the RCT had greater satisfaction with the follow-up care provided by the GP, compared with the oncologist. Patient relationship with GP and ability for patients to make an informed choice is important. Patient informed choice is important.	Continuity of care
Hall, 2011(36) United Kingdom	To conduct a modelling exercise for shared follow-up and to explore the opinions and experiences of both the patients and the general practitioners involved.	18 patients 6 general practitioners 5 patients Qualitative- interviews, qualitative analysis	Most patients support shared cancer care, provided there is robust support from specialist. There are many benefits for rural patients, and some urban patients, for cancer follow-up closer to home with their GP. GPs and patients have concerns about the GP gaining and maintaining clinical skills.	Follow-up guidelines GP skills Responsibility

Hanks, 2008(37)	To identify and compare the roles of general practitioners and colorectal cancer management in Australia.	15 general practitioners Colorectal cancer	Shared cancer follow-up care is influenced by the GP and patient, and GP and specialist relationship. Improvement in GP and specialist relationship and communication could lead to better shared care.	Continuity of care Follow-up guidelines Information sharing Responsibility
Australia		Qualitative- interviews, qualitative analysis		
Haq, 2013(38)	To document information needs from the perspectives of breast care patients, family physicians, and oncology specialists health care providers. To design and implement a supportive care plan based on identified needs. To evaluate the pilot supportive care plans effectiveness at addressing these gaps.	Phase 1: 21 breast patients 8 general practitioners 6 specialists Phase 2: 18 breast patients 5 general practitioners 3 specialists	GPs feel ill-equipped to provide cancer follow-up care and felt unsure of their role and what to specifically do. A single source of information, with clear “ABCD” instructions of what to do is needed. The care plan made the GPs feel more engaged with the patients care. The follow-up guidelines gave GPs more confidence in their abilities assume greater responsibility in cancer follow-up care.	Follow-up guidelines Information sharing
Canada		Qualitative- focus group and interviews, qualitative analysis		
Hudson, 2012(39)	To examine patient perspectives and preferences on primary care physician roles in their cancer follow-up care.	42 breast & prostate patients	Most patients prefer follow-up care with the specialists. Barriers identified was GP lack of expertise, limited involvement during treatment, lack of continuity of care. Opportunities for cancer care include GP screening, supplementing care appointments between GPs and specialists, GP provide follow-up care when enough time has passed”.	Continuity of care GP skills
United States		Qualitative- interviews, qualitative analysis		
Hudson, 2016(40)	To explore cancer survivors' experiences of patient-centred cancer follow-up care provided by primary care physicians and oncologists.	305 breast & prostate patients	There are reported differences between breast and prostate patients for their follow-up care. Patients rated GPs higher for coordination of care and comprehensive care compared to specialists. Breast patients had a stronger relationship with the specialists compared to with their GP. Prostate patients rated GPs higher for all items, compared to breast patients.	Continuity of care
United States		Quantitative- questionnaire, descriptive analysis		
Klabunde, 2017(41)	To explore factors that may affect cancer survivors' post-treatment communication and care coordination.	357 oncologists	Half of the oncologists reported they communicated directly with the patient's GP about post-treatment status. Written communication the most frequently used method, followed by phone, electronic health records, email. Oncologists' reliance on written correspondence to communicate with GPs may be a barrier to care coordination.	Information sharing
United States		Quantitative- questionnaire, descriptive statistics		
Lang, 2017(42)	To assess the role of general practitioners in German cancer care from patients' perspective.	740 patients	Patients want their GP to play an active role in the cancer journey. It was suggested that earlier integration of the GP would be helpful. It recommended a shared care model where the GPs are supported by the specialists and are provided with additional training in cancer care.	Continuity of care Responsibility
Germany		Quantitative- questionnaire, descriptive statistics		
Laporte, 2017(43)	To examine how women experienced the post-treatment management of breast cancer and perceived the role of the general practitioner in follow-up care	21 breast patients	Patients felt abandoned at the end of treatment and desired support. Patients appreciated the ease of contacting their GP. Patients accepted follow-up care with their GP provided there was a close working relationship with the specialist.	Continuity of care Responsibility
France		Qualitative- interviews, qualitative analysis		
Lawn, 2017(44)	To explore Australian cancer survivors' views on shared care: what cancer survivors need from shared care; enablers and barriers to advancing shared care; and what successful shared care looks like.	11 patients 2 carers 8 clinicians	Patients need to be at the centre of the care. Information sharing and communication processes between health professionals and services is important for successful shared care. It was perceived the GPs lacked the skills and confidence for shared care.	GP skills Information sharing
Australia		Qualitative- forum, qualitative analysis		
Lizama, 2015(45)	To investigate general practitioners' perceptions about communication when providing cancer care.	648 general practitioners	Detailed and timely communication between GPs and specialists is imperative for shared cancer care. GPs want to be kept in the loop, and to be provided with follow-up care information to provide continuity of care. Timely transfer of relevant information between primary care providers and specialists is essential. The development of interprofessional relationship is important to engage GPs in cancer care.	Continuity of care Follow-up guidelines Information sharing
Australia		Quantitative- questionnaire, descriptive statistics		

Nielsen, 2003(46)	To determine the effect of a shared care programme on the attitudes of newly referred cancer patients towards the healthcare system and their health-related quality of life and performance status, and to assess patients' reports on contacts with their general practitioner.	248 patients Quantitative- RCT, questionnaire, descriptive statistics	The shared care programme had a positive effect on patient evaluation of cooperation between primary and secondary healthcare. Young people rate GPs knowledge higher than those in the control group. No significant difference in quality of life between the intervention group and control group.	Follow-up guidelines Information sharing
Denmark				
Nyarko, 2015(47)	To evaluate cancer survivors' perspectives on primary care physician-delivered survivorship care.	352 patients Quantitative- questionnaire, descriptive statistics	Patients were less likely to perceive their GPs as knowledgeable about cancer follow-up, late or long-term management of side effects from treatment. Patients rate their GP highly for satisfaction for overall care. Patients noted that communication between the GP and specialist was poor. There is a need to educate GP and improve communication.	Continuity of care GP skills Information sharing
United States				
O'Brien, 2015(48)	To understand the experiences of family physicians using survivorship care plans to support the follow-up of breast cancer patients.	123 general practitioners Breast cancer Qualitative- RCT, interviews, qualitative analysis	Most GPs felt comfortable providing care after 3-5 years after diagnosis. GPs found survivorship car plans useful, but that they still lacked information. Effective strategies for two-way communication between family physicians and oncologists are still lacking.	Follow-up guidelines GP skills Information sharing
Canada				
Potosky, 2011(49)	To compare primary care physicians and oncologists with regard to their knowledge, attitudes, and practices for follow-up care of breast and colon cancer survivors.	1029 general practitioners 1130 medical oncologists Quantitative- questionnaire, descriptive statistics	Specialists believe GPs are less likely to have the skills to conduct follow-up care for breast cancer and care of late side effects from treatment. Effective communication between GPs and specialists has the ability to increase GP confidence in their ability to perform follow-up care.	GP skills Responsibility
United States				
Puglisi, 2017(50)	To investigate the views of medical oncologists, general practitioners, and patients about the various surveillance strategies.	329 medical oncologists 380 general practitioners 350 patients Quantitative- questionnaire, descriptive statistics	Most GPs claim that cancer follow-up care should be provided in collaboration between GPs and oncologists. Most GPs and oncologists have a poor relationship. Most patients believe there is no real collaboration between GPs and oncologists. Collaboration is poor and should be improved.	GP skills Information sharing Responsibility
Italy				
Roorda, 2013(51)	To explore a) the discharge of breast cancer patients to primary care by specialists, at the end of hospital follow-up and b) the experiences and views of general practitioners regarding transfer of follow-up to the primary care setting.	502 general practitioners Quantitative- questionnaire, descriptive statistics	Forty percent of GPs were willing to accept responsibility for follow-up care earlier than five years. The barriers to shared care were communication, patient preference for specialist, GPs knowledge and skill for cancer follow-up care. Development of administrative tools and guidelines would help facilitate shared follow-up.	Follow-up guidelines Information sharing Responsibility
The Netherlands				
Roorda, 2014(52)	To explore patients' preferences for follow-up in primary care versus secondary care.	70 patients Qualitative- interviews, qualitative analysis	The majority of patients prefer cancer follow-up care to be provided by the same care provider. The majority preferred specialist follow-up (75%). Patients were concerned with GPs knowledge and skills to provide follow-up care, however 57% would accept follow-up care with their GP, provided there is good communication between the GP and specialist.	Continuity of care Information sharing
The Netherlands				
Schütze, 2017(53)	To explore the views of breast and colorectal cancer survivors, their oncologist and general practitioners, about general practitioners taking a more active role in long-term cancer follow-up care.	22 breast & colorectal patients 16 oncologists 18 general practitioners Qualitative- interviews, qualitative analysis and triangulation	A staged, shared-care follow-up model was found to be acceptable for most participants. It was important for GPs to have specialist cancer knowledge, an interest in cancer, and time to provide follow-up care. It is important for the specialist to oversee the care and maintaining overall responsibility. Cancer services and primary health need to work collaboratively to develop a model that engages the GP sooner and is supported by robust information and communication system.	Follow-up guidelines GP skills Information sharing Responsibility
Australia				
Sisler, 2012(54)	To examine at a population level how colorectal cancer survivors evaluate the continuity and quality of their follow-up care after treatment, particularly for those in the care of a primary care provider.	246 patients Quantitative- questionnaire, descriptive statistics	Most patients evaluate their GP favourably when their follow-up care was transferred from the specialist to the GP. Patients with more complex issues rated their specialist more favourably. Clarification of responsibilities between providers is needed and interventions to coordinate care.	Continuity of care Responsibility
Canada				

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Vanhuyse. 2007(55) Canada	To explore if patient transfer back to the family physician for follow-up was a potential option.	193 breast patients Quantitative- questionnaire, descriptive statistics	Not all patients are appropriate for follow-up care with their GP. Transferring follow-up care from the specialist to the GP reduces the workload of the specialist. GPs require adequate resources and information on providing follow-up care.	Follow-up guidelines Information sharing
Walter, 2015(56) United Kingdom	To determine the current practice and views of general practitioners in England regarding cancer survivorship care.	500 general practitioners Quantitative- questionnaire, descriptive statistics	The majority of GPs felt that cancer follow-up care can be shared, with the specialist maintaining overall responsibility. GPs felt confident in their ability to provide follow-up care. GPs would benefit from more information and communication to improve their ability to provide cancer reviews.	Follow-up guidelines Responsibility

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117 **Thematic Analysis**

118 Five themes were identified and are discussed below. Themes are ordered from the highest number of
119 instances of articles within each them; however, frequency does not necessarily equate to order of
120 importance(28).

121 *Reciprocal clinical information sharing*

122 Sixteen papers referred to the importance of timely and quality sharing of clinical information between
123 health professionals(31–33,37,38,41,44–48,50–53,55). Information sharing within healthcare is
124 complex and fundamental for effective and efficient shared care(38,41,45). The primary method to
125 share clinical information between doctors and patients was face-to-face verbal communication(33);
126 between oncologists and general practitioners, it was written correspondence, followed by phone,
127 integrated electronic health records and email(38,41).

128 Despite written communication being the primary method for information sharing, general practitioners
129 were not provided quality and timely clinical information from oncologists to manage cancer follow-
130 up care(32,33,45,52,55). One paper found that only half of the oncologists said that they directly shared
131 clinical information about their patients to the general practitioner(41); another reported that around
132 half of general practitioners received the transfer of clinical information from the oncology clinic(51).
133 Not sharing clinical information with general practitioners results in many general practitioners not
134 having clear instructions on follow-up and how to act in case of complications(45,51) and leaves
135 patients to be the conduit to transfer clinical information verbally between the oncologist and general
136 practitioner(44,47).

137 Due to inefficiencies with written correspondence, survivorship care plans (a record of cancer, treatment
138 follow-up care plan) were developed to improve the transfer of information between the patient, general
139 practitioner, and oncologist(38,51,52). Mixed results about the usefulness of survivorships care plans
140 have been obtained: one paper found that the plans effectively addressed some of the information needs
141 of both breast patients and their general practitioners(38); another found that the clinical information

was basic, and the follow-up information provided to the general practitioner was information they already knew(48). The use of electronic medical records between general practice and oncologists was identified as being more valuable than survivorship care plans(33,45).

Using verbal and written correspondence for information sharing during shared care follow-up positively affected the patient evaluation of the cooperation between the general practitioners and oncologists(46). This was achieved by providing a discharge summary with structured details of the investigation, treatment, physical, psychological, and social problems, and specific information about what the oncologists expected the general practitioner to do during the follow-up period(46). Direct phone contact with the oncologist was available for further clarification on the written correspondence if required(46).

Eight papers discussed issues with one-way information sharing: written information from the oncologist to the general practitioner(32,33,37,38,41,45,50,55). Shared cancer follow-up care relies on the two-way transfer of information between all health professionals involved in patient care(33,36,48). Four papers highlighted the need to further develop health information technology to assist the two-way information sharing process and improve the timeliness and quality of information between general practitioners and oncologists(44–46,53).

Responsibility for follow-up care

Thirteen papers discuss responsibility for follow-up care(30,31,34,36,37,42,43,49–51,53,54,56). There was a preference from patients, general practitioners and oncologists, for oncologists to maintain overall responsibility for cancer follow-up care(30,31,49,50,53). Oncologists were more likely to prefer an oncologist-led model instead of a shared-care or general practitioner-led model, as oncologists felt that they had the specialised knowledge for follow-up care(31), and general practitioners did not(31,49,50). However, oncologists were receptive to general practitioners taking a greater role in the more standardised aspects of follow-up care(53). Oncologists felt that improved collaboration between themselves and general practitioners was required for shared cancer follow-up care(50) and that defined

roles would be needed for shared care to be feasible(53). However, oncologists preferred that they maintain primary responsibility for the patient's care, even if they were sharing the care of the patient with the general practitioner(31,49,50,53).

General practitioners reported that they were already involved in the care of their cancer patients from the initial work-up of diagnostic tests and diagnosis, monitoring pathology results, and coordinating long-term screening(31,56), and welcomed a greater role in cancer follow-up care(29,31,32,34,45,48,49,53). General practitioners viewed shared care positively(36) and preferred a shared model compared to the oncologist-led model(31,49). General practitioners perceived that they could provide an important role in the follow-up phase for their patients and provide a more person-centred care approach(32). However, general practitioners felt that oncologists should maintain overall responsibility and provide overarching support to general practitioners and oversee the patient's results and progress(29,36,42,43,53,56).

Patients identified oncologists as having the primary responsibility in their current cancer journey, except when cancer progressed to an advanced phase and palliation (where the general practitioner became more involved in their partnership with a palliation team)(30). Many patients preferred the oncologist-led follow-up model and a parallel approach to follow-up care where the oncologist managed cancer-related issues and the general practitioner non-cancer-related health matters(30). Despite the limited involvement that general practitioners have in cancer follow-up care, patients indicated that they would appreciate their general practitioners taking a greater role in their long-term care if it the oncologist remained involved(30,42,53). Additionally, patients were more likely to accept a shared-care model if the general practitioner was directly supported by their oncologist(42), as this reassured patients that they remained directly linked into the hospital system(53).

Need for clinical management guidelines and rapid referrals

Thirteen papers discussed the need for clear clinical management follow-up guidelines to support general practitioners in shared follow-up care(29,33,34,36–38,45,46,48,51,53,55,56). General

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3 192 practitioners were more willing to take a greater role in follow-up care if they were provided appropriate
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5 193 follow-up clinical management guidelines(51) and more guidance about follow-up screening and side
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7 194 effects of cancer treatment(56). Specific follow-up guidelines(29,33), specifically templates(56), could
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9 195 be in the form of a printable checklist or using validated instruments(38) and would reassure general
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11 196 practitioners that they were addressing aspects critical for the particular patients' care(33,56). However,
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13 197 any guidelines developed would need to be succinct(48).

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18 198 Clinical management guidelines that were best-practice or written by the oncologists would provide a
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20 199 safety net for recurrence or other serious events(53). Any clinical management guidelines that a general
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22 200 practitioner completed would need to be sent to the oncologist to oversee and continue to monitor the
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24 201 patient's progress and to be able to address any issues that arose quickly(53). Patients have shown
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26 202 positive results for not feeling "left in the limbo"(46, p267) when the oncologist has supplied specific
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28 203 follow-up details to the general practitioners.

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33 204 Two papers(37,48) highlighted that for general practitioners to play a greater role in cancer follow-up
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35 205 care, along with the provision of clinical management guidelines, they also need assurance of a rapid
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37 206 referral back to the oncologist if recurrence is detected.

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41 207 *Continuity of care and satisfaction of care*

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43 208 Thirteen papers referred to the importance of continuity of care, satisfaction of care and
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45 209 accessibility(24,29,32,35,37,39,40,42,43,45,47,52,54). Continuity of care for cancer patients refers to
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47 210 having the same health professional providing the care and having an ongoing doctor-patient
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49 211 relationship(24,35,43). Many patients reported having developed a relationship with their oncologist
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51 212 during the diagnosis and active treatment phase and subsequently felt "dumped"(45, p155) when
52
53 213 experiencing a high turnover of oncologists due to registrar involvement. Some patients found this lack
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55 214 of continuity of care during the follow-up phase distressing(43,45). Additionally, some general
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57 215 practitioners also felt that they were disconnected from their patients during the follow-up care
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59 216 stage(32).

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5 217 A patient's relationship with their general practitioner and oncologist influences their acceptance and
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7 218 readiness for shared cancer follow-up care(35). Patients had a stronger relationship with their general
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9 219 practitioner than their oncologist(24,32) and had stronger feelings of trust because of their long-standing
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11 220 relationship(43). However, patients who had a poorer relationship with their general practitioner or did
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13 221 not have a regular general practitioner were less likely to accept or be ready for their care to transition
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15 222 away from the oncologist(35). Breast cancer patients were the only tumour group that felt they had a
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17 223 stronger relationship with their oncologist and would prefer their oncologist to maintain follow-up(40).
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22 224 Continuity of care is strongly associated with patients' satisfaction of care(40,54). Despite breast
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24 225 patients having a stronger relationship with their oncologist, a randomised controlled trial found that
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26 226 breast patients had higher satisfaction of care with their general practitioner than their oncologist(24).
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28 227 This satisfaction of care rating was related to service delivery (the time to see doctor and the time spent
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30 228 with the doctor), the consultation (discussion, explanation and examination), and continuity of care
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32 229 (same doctor that knows their history)(24). The authors reported that almost 90% of patients in the
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34 230 general practice follow-up group saw a doctor who knew them well, compared to approximately 50%
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36 231 of patients in the hospital group. Patient satisfaction with continuity of care significantly increased(24)
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38 232 in the general practice follow-up group. Similar results were found in another study with colorectal
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40 233 patients, who indicated high levels of satisfaction of care with continuity of care in general practice(54).
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44 234 The distance a patient travels for their follow-up care influenced continuity of care and satisfaction.
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46 235 General practitioners in rural areas and some urban areas were found to provide improved continuity of
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48 236 care to their patients(37,52). In a rural setting that provided cancer follow-up care, general practitioners
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50 237 reported that care was strengthened by a good working relationship with the oncologist(37).
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55 238 *General practitioners' knowledge and skills*

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57 239 Twelve papers discussed the knowledge and skills of general practitioners for shared care(31,32,34–
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59 240 36,39,44,47–50,53). Perceptions differed regarding general practitioners' skills and abilities to take a
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3 241 greater role in cancer follow-up care, and in some cases, limited acceptance for the general practitioners
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5 242 to be involved in cancer follow-up care(35,39). Many general practitioners stated they felt confident in
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7 243 their skills to provide cancer follow-up care (48,49) and reported that they could provide routine cancer
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9 244 follow-up care by detecting and arranging diagnostic testing pathology and offer psychosocial
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11 245 support(32,34). Some general practitioners highlighted their essential role in providing holistic care and
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13 246 how their involvement could generally improve overall cancer care(32). However, other general
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15 247 practitioners had concerns about gaining and maintaining the clinical skills needed to conduct cancer
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17 248 follow-up care(31,36). Some oncologists and patients also felt that general practitioners did not have
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19 249 the specialised knowledge of specific treatment side effects and how to manage these and felt that
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21 250 general practitioners required upskilling to take on shared care(49,50,53).
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26 251 Patients, general practitioners, and oncologists confidence in shared cancer care increased if general
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28 252 practitioners received extra training on short-term and long-term side effects(36,39,43). Another
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30 253 method identified to upskill general practitioners was integrating the general practitioner earlier in the
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32 254 patients' care(34,39). General practitioners are usually involved in the initial screening and diagnosis,
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34 255 and then again as cancer progressed to late-stage and palliative care. Earlier engagement of the general
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36 256 practitioner during active treatment would upskill them in managing acute side effects, which will help
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38 257 in the long-term follow-up period(44). Regardless of how the extra training occurred, general
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40 258 practitioners still wanted ongoing support from oncologists(53).
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44 **DISCUSSION**
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46 259 This systematic review analysed both qualitative and quantitative studies to provide a comprehensive
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48 260 picture of factors that influence the translation of shared cancer follow-up care into clinical practice for
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50 261 solid tumours (for example breast, prostate, colorectal, lung). We found reciprocal clinical information
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52 262 sharing, responsibility for follow-up care, need for clinical management guidelines and rapid referral,
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54 263 continuity of care and satisfaction of care, and general practitioners' skills and knowledge were
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56 264 important factors. Whilst some themes we identified are similar to the findings of a recently published
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58 265 systematic review(57), we add to the knowledge based by highlighting the need for reciprocal, two-way
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266 communication and establishing a mechanism for the oncologist to maintain overall responsibility for
267 overseeing the follow-up care.

268 The need for reciprocal two-way communication is supported by a recent study that reviewed current
269 e-care plans between cancer centres and general practices(58). They did not identify a system that
270 integrated general practice systems and hospital systems to address two-way communication(58). This
271 highlights the need for infrastructure to support the transfer of information between general practitioners
272 and oncologists for successful shared cancer care. Whilst a current randomised controlled trial protocol
273 exists to explore shared cancer care for colorectal patients(59). This protocol does not specify how this
274 transfer of information to the hospital oncologist will be achieved. The one study that has trialled and
275 reported on the secure transfer of clinical information into the hospital with cancer patients to collect
276 patient-reported outcomes(60), used a web-based platform PROsaiq(61), where the patient could
277 complete a clinical assessment from home. The information subsequently transferred into the patients'
278 hospital medical record and allowed the oncologist to monitor the patients' progress(60). This type of
279 web-based health technology has been evaluated as feasible and secure to use in the clinical setting(60)
280 and offers promise for a technological platform to use for reciprocal information sharing.

281 We found that oncologists, patients, and general practitioners want and need the oncologist to maintain
282 responsibility and oversee the patient's cancer follow-up care. This is a challenging barrier to address
283 due to medical legalities. The health professional that provides the consultation is legally responsible
284 for the appointment outcome; therefore, a general practitioner that provides cancer follow-up care is
285 responsible for that consultation. This issue is similar to cancer multi-disciplinary team meetings with
286 clinicians holding concerns about the legal framework, despite the known benefits of multi-disciplinary
287 care(62). Consequently, it would be challenging to establish a shared care follow-up model, where the
288 oncologist is responsible without establishing a legal framework. However, finding a mechanism for
289 the oncologist to be involved and oversee the patient's follow-up care may be more feasible, provided
290 there is a strong administrative and organisational infrastructure to support coordinated efforts(51). This
291 would be dependent on the successful transfer of information from general practice to the hospital.

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3 292 The need for follow-up clinical management guidelines and rapid review is also dependent on the
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5 293 reciprocal transfer of information. General practitioners who have used follow-up guidelines developed
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7 294 by oncologists have shown positive results(38). Patients believed the follow-up consultation was more
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9 295 detailed and comprehensive compared to oncologist-led follow-up(63,64). Despite the efforts to
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11 296 develop and utilise follow-up guidelines, there needs to be health technology infrastructure or better
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13 297 integration for general practitioners to access any guidelines developed.
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18 298 One notable finding was that despite the evidence that cancer follow-up care in general practice is
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20 299 safe(65,66), perceptions still exist that general practitioners do not have the necessary skills and
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22 300 knowledge for cancer follow-up care. This may be in part due to medical hegemony and power
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24 301 differentials(67), where the general practitioner is viewed as inferior in the medical hierarchy to the
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26 302 oncologist. Perception plays a powerful role in health psychology and is a determinant of behaviour(68)
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28 303 and can influence the patient's, general practitioners and oncologists preference for cancer follow-up
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30 304 care.
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33 305 Another factor that will determine shared cancer follow-up is the relationship (either positive or
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35 306 negative) the patient has with their general practitioner and oncologist and if they have continuity of
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37 307 care. Higher levels of satisfaction of care with having their general practitioner involved have been
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39 308 reported for both breast cancer patients(24) and colorectal cancer patients(69). A shared cancer follow-
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41 309 up model of care will not suit everyone, and any decision a patient makes about their follow-up care
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43 310 will be based on their own circumstances, perceptions, experience, values and needs.
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47 311 This review was undertaken with a rigorous systematic methodology and has identified some important
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49 312 enablers for shared cancer follow-up care. The review included both quantitative and qualitative studies
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51 313 and therefore comprehensively captures the available evidence. This review has some limitations. The
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53 314 selected databases searched were chosen as they contained the most relevant and up to date information
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55 315 on the topic. However, it is possible that some papers catalogued on other databases could have been
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57 316 missed. There was limited data captured from oncologists which may make it difficult to define the
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59 317 extent of barriers to shared care from their perspective. Only published peer-reviewed literature was
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included, and it may therefore be subject to publication bias. Papers were limited to those in English, and there may be papers available in other languages that were not captured. Given that healthcare practices vary internationally, this review may not reflect all practices. This review was limited to adult patients and excluded skin and blood cancers therefore the results may not be extrapolated to paediatrics and all cancer types.

CONCLUSION

Shared care is an alternative model to the oncologist-led cancer follow-up model of care. The model is dependent on the patients' personal preferences and relationship with their health care providers. A shared cancer follow-up model of care relies on the oncologist maintaining overall responsibility and being able to oversee the care, effective two-way information sharing between general practitioners and oncologists, and the provision of follow-up guidelines. Oncologists and general practitioners support a shared-care model of care; however, any model developed needs to be evaluated for feasibility and acceptability(70). The barriers to a shared cancer follow-up model of care between general practitioners and oncologists are complex and require a multifaceted approach. To improve the acceptability and feasibility of shared cancer follow-up care, researchers and health professionals in both primary and secondary care need to work collaboratively to address the barriers and translate the research into practice. Further research is required to better understand the use of health technology to bridge the information-sharing gap and explore the feasibility and acceptability of shared cancer follow-up care for oncologists, general practitioners, and patients.

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Both authors conducted the search, screening of articles and assessed their rigour. TS conducted the hand searching. TS summarised the findings from the studies into one document and created the initial code frame. TS drafted the original manuscript for her thesis, assisted by HS. Both authors reviewed revisions and approved the final manuscript.

COMPETING INTERESTS

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344 None to declare

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351 **Patient and public involvement**

352 No patient involved

353

354 **Data availability statement**

355 All data relevant to the study are included in the article.

356 **Disclaimer**

357 Patients or the public were not involved in the design, or conduct, or reporting, or dissemination plans of our
358 research.

359 Figure 1. The preferred reporting for systematic reviews and meta-analyses (PRISMA) diagram representing the
360 systematic literature search.

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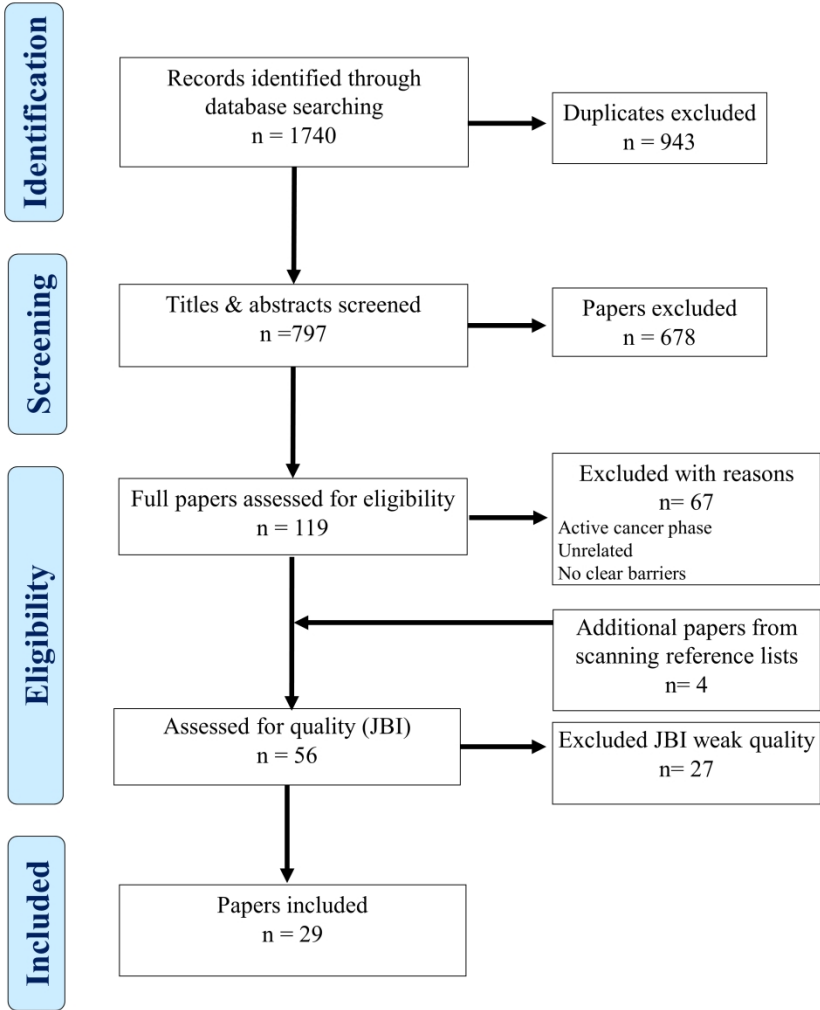
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PRISMA flowchart of the selection process

266x355mm (300 x 300 DPI)

To enable PROSPERO to focus on COVID-19 submissions, this registration record has undergone basic automated checks for eligibility and is published exactly as submitted. PROSPERO has never provided peer review, and usual checking by the PROSPERO team does not endorse content. Therefore, automatically published records should be treated as any other PROSPERO registration. Further detail is provided [here](#).

Citation

Tiffany Sandell. The barriers and enablers to shared cancer follow-up care: a systematic review. PROSPERO 2020 CRD42020191538 Available from: https://www.crd.york.ac.uk/prosperto/display_record.php?ID=CRD42020191538

Review question [1 change]

'What are the enablers and barriers to cancer follow-up shared care for patients, general practitioners and oncologists?

Searches

- MEDLINE, Science Citation Index, Academic Search Complete, CINAHL, APA PsycINFO, Health Source: Nursing/Academic edition and Psychology and Behavioural Sciences Collection

-1999 to 2019

-peer reviewed papers published in full

-human subjects

Types of study to be included

All study designs will be included:observational, case controlled,

cohort, cross-sectional, randomised, pilot studies, mixed methods, and qualitative.

Condition or domain being studied [1 change]

This study aims to systematically review the literature that focuses on barriers and enablers of shared cancer follow-up care between general practitioners in the community care setting and oncologists in the hospital setting.

Participants/population [1 change]

Inclusion criteria: a) research that directly assessed general practitioners or a shared model of care with a hospital or oncologist; b) patients were adults that received chemotherapy or radiotherapy treatment and were now in the follow-up care period.

Exclusion criteria : a) they were a commentary, editorial or protocol; b) did not identify barriers or enablers to shared care; c) patients were on active treatment; d) were about palliative care; e) surgical only treatment; f) paediatric; g) skin cancer, melanoma or blood cancer.

Intervention(s), exposure(s)

During the follow-up care period.

Comparator(s)/control

General practitioner and oncologist

Context

A study will be included if it addresses the communication and preferences between the general practitioner and oncologist.

Main outcome(s) [1 change]

By identifying the barriers and enablers, it will allow for the development of a model of care that addresses the issues.

- barriers

- enablers

Measures of effect

none

Additional outcome(s)

none

Measures of effect

none

Data extraction (selection and coding)

Two reviewers (TS and HS) will independently use a stepwise procedure to identify relevant articles.

TS will perform the initial search and screen the titles and abstracts against the inclusion/exclusion criteria, the remaining texts will be retrieved in full and screened against the inclusion/exclusion criteria.

HS will independently checked the results and compare her findings with the first author.

In case of disagreement, the reviewers will meet and reach consensus through discussion.

Thematic analysis will be the method for research synthesis. The first step will be to develop descriptive themes based on the text, followed by generating analytical themes with a descriptive approach to present the findings.

Results will be exported from Zotera Reference Managing system to Microsoft Excel to create a database on: author, year, study type, cancer type, sample size, study aim, data collection and analysis; outcomes, barrier/enablers.

Risk of bias (quality) assessment

Two reviewers will independently assess risk of bias.

Joanne Briggs critical appraisal tools will be used to assess the quality.

A pre-designed Excel template will be used to collate these assessments.

Appraising reviewers will resolve disagreements about risk of bias by discussion.

Strategy for data synthesis

A systematic narrative synthesis will be provided to analyse the relationships within and between the included studies.

The synthesis will be developed using the narrative synthesis framework as described in CRD:

1. Develop theory around intervention

2. Preliminary synthesis - grouping of populations, interventions and outcomes

3. Explore relationships within and between studies

4. Assess robustness of synthesis

Analysis of subgroups or subsets

There is no planned investigation of subgroups

Contact details for further information

Tiffany Sandell
tem785@uowmail.edu.au

Organisational affiliation of the review

Wollongong Hospital and University of Wollongong

Review team members and their organisational affiliations

Mrs Tiffany Sandell. Wollongong Hospital and University of Wollongong

Type and method of review

Narrative synthesis, Systematic review

Anticipated or actual start date

01 July 2020

Anticipated completion date

30 September 2020

Funding sources/sponsors

This review is unfunded.

Conflicts of interest

None known

Language

English

Country

Australia

Stage of review

Review Ongoing

Subject index terms status

Subject indexing assigned by CRD

Subject index terms

MeSH headings have not been applied to this record

Date of registration in PROSPERO

11 July 2020

Date of first submission

10 June 2020

Stage of review at time of this submission

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Stage	Started	Completed
Preliminary searches	No	No
Piloting of the study selection process	Yes	No
Formal screening of search results against eligibility criteria	No	No
Data extraction	No	No
Risk of bias (quality) assessment	No	No
Data analysis	No	No

The record owner confirms that the information they have supplied for this submission is accurate and complete and they understand that deliberate provision of inaccurate information or omission of data may be construed as scientific misconduct.

The record owner confirms that they will update the status of the review when it is completed and will add publication details in due course.

Versions
11 July 2020



PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			LINE
Title	1	Identify the report as a systematic review.	1
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	39-48
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	48-49
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	54, 86
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	61
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Table1 Supplementary file 1
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	70
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	78
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	79-80
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	79-80
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	81
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	93 (Narrative)
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	91
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	NA
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	Table 2
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	72, 77
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	NA
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	NA
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases). For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml	76



PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	90 Figure 1
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	NA
Study characteristics	17	Cite each included study and present its characteristics.	Table 2
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	85
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	Table 2
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	Table 2
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	NA
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	NA
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	NA
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	NA
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	Table 2
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	245
	23b	Discuss any limitations of the evidence included in the review.	293
	23c	Discuss any limitations of the review processes used.	293
	23d	Discuss implications of the results for practice, policy, and future research.	306
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	53
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	53
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	321
Competing interests	26	Declare any competing interests of review authors.	318
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	325



PRISMA 2020 Checklist

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71
For more information, visit: <http://www.prisma-statement.org/>

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Supplementary File 3. Search String

Databases: MEDLINE, Science Citation Index, Science Citation Index, Academic Search Complete, CINAHL, APA Psycinfo, Health Source: Nursing/Academic Edition, and Psychology and Behavioural Sciences Collection

Search String:

("general practitioner" OR "primary care physician" OR "family physician" OR "family practitioner" OR GP OR doctor OR specialist OR oncologist) AND ("model of care" OR "shared-care" OR "shared care" OR "follow-up care" OR "follow up care") AND (Cancer OR oncolog* OR neoplasm)

Limits:

Date range: 01/01/1999 - 31/12/2019

Language: English

Available: online, full-text, peer-reviewed

BMJ Open

Factors influencing the translation of shared cancer follow-up care into clinical practice: A systematic review

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2021-055460.R2
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Primary Subject Heading:	Oncology
Secondary Subject Heading:	General practice / Family practice, Oncology, Patient-centred medicine, Public health
Keywords:	ONCOLOGY, Organisation of health services < HEALTH SERVICES ADMINISTRATION & MANAGEMENT, PUBLIC HEALTH

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TITLE PAGE

Title Factors influencing the translation of shared cancer follow-up care into clinical practice: A systematic review

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Word count 4,070 (excluding figures, tables, references)

Keywords Shared care, cancer, follow-up, survivorship, general practitioner, oncologist

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FACTORS INFLUENCING THE TRANSLATION OF SHARED CANCER FOLLOW-UP CARE INTO CLINICAL PRACTICE: A SYSTEMATIC REVIEW

ABSTRACT

BACKGROUND The increasing incidence of cancer, coupled with improved survivorship, has increased demand for cancer follow-up care and the need to find alternative models of care. Shared cancer follow-up care in general practice is a safe option in terms of quality of life and cancer recurrence; however, there are barriers to translating this into practice. This review aimed to identify factors that influence the translation of shared cancer follow-up care into clinical practice.

METHODS Systematic review. Seven electronic databases: MEDLINE, Science Citation Index, Academic Search Complete, CINAHL, APA Psycinfo, Health Source: Nursing/Academic Edition, and Psychology and Behavioural Sciences Collection, were searched for published papers between January 1999 to December 2021. The narrative review included papers if they were available in full-text, English, peer-reviewed, and focused on shared cancer follow-up care.

RESULTS Thirty-eight papers were included in the final review. Five main themes emerged: (1) Reciprocal clinical information sharing is needed between oncologists and general practitioners, and needs to be timely and relevant; (2) Responsibility of care should be shared with the oncologist overseeing care; (3) General practitioners skills and knowledge to provide cancer follow-up care; (4) Need for clinical management guidelines and rapid referral to support general practitioners to provide shared follow-up care; (5) Continuity of care and satisfaction of care is vital for shared care.

CONCLUSION The acceptability of shared cancer follow-up care is increasing. Several barriers still exist to translating this into practice. Work is required to develop a shared-care model that can support general practitioners whilst the oncologist can oversee the care and implement two-way communication between general and oncologists' clinics. The move towards integrating electronic health care records and web-based platforms for information exchange provides a promise to the timely exchange of information.

Strengths and limitations of this study

- This review was undertaken with a rigorous systematic methodology and has identified some important enablers to translate shared cancer follow-up care into clinical practice.
- It has some limitations. Only published peer-reviewed literature was included, and it may therefore be subject to publication bias. Papers were limited to those in English, and there may be papers available in other languages that were not captured.
- Given that healthcare practices vary internationally, this review may not reflect all practices. This review was limited to adult patients and excluded skin and blood cancers.

BACKGROUND

After active cancer treatment is complete, patients require ongoing follow-up care to treat late side effects, monitor recurrence, and provide psychosocial care(1–3). The duration and frequency of follow-up care depend on the type and stage of cancer and the treatment. Cancer follow-up models of care fall into sequential, parallel or shared-care models(4,5). Sequential care is when one provider delivers all healthcare. Parallel care is when the specialist manages cancer-related issues (oncologist-led), and the general practitioner manages non-cancer-related health matters. Parallel care that is oncologist-led is the current most common model of care(6,7) and is usually provided in a hospital setting(8). Shared-care is a partnership between health professionals that improves the quality of patient care by integrating the delivery within and across the health service and enhances communication between providers(9).

The Institute of Medicine (IOM) states that “cancer care is often not as patient-centred, accessible, coordinated or as evidenced-based as it should be”(10). They emphasised the urgent need for new cancer models of care where health professionals work together to ensure that every patient receives care tailored to their particular situation(10). The IOM developed a conceptual framework to address the identified deficiencies that aimed to place the patient at the centre of care in a system that supports patients in making informed medical decisions consistent with their needs, values, and preferences. The framework highlighted the need for adequately trained staff, a coordinated workforce, evidence-based cancer care, and information technology to improve cancer care quality and patient outcomes.

Due to the growing number of cancer survivors and increased demand for follow-up consultations, the sustainability of oncologist-led parallel care has been questioned(11–14). There has been limited progress in developing cancer follow-up models of care that address the person-centred care domains of respect for patients’ preferences, coordination and integration of care, information and education, continuity and transition, and access to care(15).

The evidence for the benefits of shared cancer follow-up models of care is growing(16–20). Randomised controlled trials have shown no difference in the recurrence rate or quality of life when a general practitioner provides cancer follow-up care compared to an oncologist(21–24). Despite acknowledging the benefits of general practitioners’ playing a greater role in cancer follow-up care,

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there are barriers to translating shared cancer follow-up care into practice. The specific research question for this systematic review was, “What factors influence translating shared cancer follow-up care into clinical practice?”

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A protocol with defined objectives, study selection criteria and approaches to assess study quality was developed and registered with PROSPERO Reg No: CRD42020191538 (Supplementary File 1). This systematic review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) format(25) and statement (Supplementary File 2): i) development of inclusion/exclusion criteria; ii) extraction and coding of study characteristics and findings; and iii) data analysis and synthesis of findings. Both quantitative and qualitative papers were included in this narrative systematic review. This systematic review was part of a larger study on shared cancer follow-up care, approved by [removed for review purposes], (2020ETH00301).

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Inclusion criteria: (a) general practitioner, patient, and/or oncologist perceptions of shared cancer follow-up care; (b) general practitioner involvement in shared cancer follow-up care (not a substitution of care); (c) intervention with the general practitioner involved in shared cancer follow-up care; (d) adults patients in the follow-up period; and (e) papers peer-reviewed, published in English between January 1999 and December 2021.

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Exclusion criteria: (a) commentary, editorial, literature review, protocol; (b) patients on active treatment; (c) palliative care; (d) surgical only treatment; (e) paediatric; (f) skin cancer, melanoma or blood cancer (these were excluded as the follow-up regime varies to solid tumour follow-up).

Information sources and search strategy

The search was conducted in the following seven electronic databases: MEDLINE, Science Citation Index, Academic Search Complete, CINAHL, APA Psycinfo, Health Source: Nursing/Academic Edition, and Psychology and Behavioural Sciences Collection. To ensure relevant results were obtained, search terms were developed using a modified version of the PICO (Population, Interest, Comparison and Outcome) Framework(26). The search terms were constructed and agreed upon by both authors. The second author is a skilled academic who teaches literature searching and research methods at the postgraduate level and has experience conducting systematic reviews, and a university librarian was also consulted. Alternative keywords for each search term (see Table 1) were combined using the Boolean operator 'OR' to ensure all possible variations were captured; the search was then refined by combining the searches with 'AND'. The wildcard '*' was used to allow for word truncations. The search string is attached as Supplementary File 3.

Table 1. Search terms

PICO	Search terms
Population	"general practitioner" OR "primary care physician" OR "family physician" OR "family practitioner" OR GP OR doctor OR specialist OR oncologist AND
Interest	"model of care" OR "shared-care" OR "shared care" OR "follow-up care" OR "follow up care"
Outcome	AND Cancer OR oncolog* OR neoplasm

Study selection

Papers were imported into Zotero reference management software, and duplicates were removed. Both authors independently used a stepwise procedure to identify relevant papers. Risk of bias was systematically assessed by two researchers using separate checklists. TS performed the initial search and screened the titles and abstracts against the inclusion/exclusion criteria; the remaining texts were retrieved in full and screened against the inclusion/exclusion criteria. HS independently checked the results and compared her findings with the first author. The authors met with the final list of included/excluded papers and resolved any disagreement by discussion and consensus. A third reviewer from the broader research team was available in case consensus could not be reached between the first two reviewers. Reasons for exclusion were recorded.

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Data collection and quality appraisal

The following data were extracted into a Microsoft Excel spreadsheet: first author, year, country, study type, aim, sample, methods, results and conclusion. The rigour of each included study was assessed by both authors using the Joanne Briggs Institute (JBI) Critical Appraisal tools checklists(27) that use a three-point grading system: include, exclude and seek more information. These grades are based on desirable and undesirable effects, quality of evidence, values and preferences, and costs(27). The JBI suite was selected as it contains 13 checklists that provide consistency in reviewing the different types of papers without using different tools with different grading/scoring systems.

Data synthesis

TS summarised the results, discussion and conclusion of the included papers into one Microsoft Excel document. Both authors then synthesised the findings into themes using Braun and Clarke’s six-step thematic analysis framework(28). Disagreements regarding the allocation of themes were resolved by discussion and consensus; the thematic analysis results are presently narratively.

Patient and public involvement

Patients and members of the public were not involved in this study. We intend to engage the public in disseminating our results, including social media engagement, newsletters, and conferences.

RESULTS

Study selection

The initial search yielded 1145 papers after duplicates were removed. After reviewing the abstracts against the inclusion criteria, 1047 were removed as they did not meet the inclusion criteria. The full text of the remaining 98 papers was examined in full, and a further 59 were removed. The remaining papers' reference lists were scanned to capture any additional papers that may have been missed in the initial search. The resultant 39 papers were assessed for quality using the JBI critical appraisal tools, resulting in 1 paper being excluded due to poor methodological quality, bringing the final total to 38 papers (see Figure 1).

[insert Fig 1 here]

116 Study characteristics

117 Of the 38 included papers, eleven were from the United States, nine from Australia, six from Canada;
118 the remaining papers were from the United Kingdom, The Netherlands, Denmark, Norway, Italy,
119 Singapore, Germany and France (see Table 2). Half of the papers were published in the last five years,
120 with the sample sizes ranging from 20 to 2,159. There were 20 quantitative, 17 qualitative and one
121 mixed-methods papers (see Table 2).

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Table 2. Summary of included papers

First Author, Year Country	Study aim, methodology & methods	Results/Conclusion	Themes
Anvik, 2006(29) Norway	To explore patient, relatives and GP views of the GPs role during initial cancer follow-up. Qual- Int, FG.	Patients have trust in the GP. GP require good access to specialists. Follow-up plans will improve the care and cooperation. Hospitals to initiate a stronger collaboration.	CC, G
Aubin, 2010(30) Canada	To describe the actual and expected role of a GP in the different phases of cancer. Quant- Quest.	Patients prefer oncologists to maintain overall responsibility. Patients would like their GP to be more involved, requires better communication and collaboration.	Res
Aubin, 2012(4) Canada	To compare patient, GP and specialist expectations of GP involvement during cancer phases. Quant- Quest.	Differing views of GP role. GPs perceived themselves as involved in shared care; GP responsibility to be clearly outlined, and effective communication implemented.	Res, Inf
Berkowitz, 2018(31) United States	To explore preferences and knowledge of GPs in the care of head and neck cancer survivors. Quant- Quest.	32% of GPs felt confident they could manage late/long-term side effects; 30% believed they were responsible for care after one year, and 81% after five years.	Res, Sk
Brennan, 2010(32) Australia	To explore follow-up practices and attitudes to alternative models of cancer care. Quant & Qual- Quest.	Specialists are supportive of sharing follow-up care. Survivorship care plan would improve care. 96% of specialists felt GPS needed more training.	Inf, Res, Sk
Brennan, 2011(33) Australia	To explore experiences with follow-up care and attitudes to alternative models of cancer care. Qual- Int	Patients relied on their specialist, but open to their GP playing a role. Communication seen as a barrier. Positive view on care plans.	Inf, CC
Cheung, 2013(34) United States	To assess how physician attitudes & self-efficacy affect preferences for cancer models of care. Quant- Quest.	51% GPs support shared care. 59% specialists preferred a specialist-led model. 57% GPs able to perform routing follow-up care. Prior involvement increases willingness.	Sk, Inf, Res
Coschi, 2021(35) Canada	To assess oncologists' attitudes and beliefs regarding sharing/transitioning survivorship care. Quant- Quest.	There is a current lack of routine sharing. Absence of formal policies & guidelines. Patient preference and loss of patient outcome data are barriers.	FG, Inf, Res
Crabtree, 2020(36) United States	To understand how GPs perceive their role to cancer survivors. 38 GPs. Qual- Int.	The majority of GPs felt follow-up care was within their role. Some GPs did not feel adequately educated about the needs of cancer survivors.	Res, SK
Dahlhaus, 2014(37) Germany	To examine German GPs views on their involvement in the care of cancer patients. Qual- Int.	GPs are well placed for follow-up care. GPs want to stay involved in cancer care. Slow or non-existent information sharing is a barrier to shared cancer care.	CC, Inf, Sk
Del Giudice, 2009 (38) Canada	To determine GP willingness and timeframe for GP-led follow-up model. Quant- Quest.	GPs willing to take over responsibility of routine follow-up care after two to three years. Require a letter, follow-up guidelines, rapid referrals.	G
Dicicco-Bloom, 2013(39) United S	To provide a better understanding among GPs, patients, and oncologist through cancer care. Qual- Int.	GPs want regular updates of their patients, and are well placed for care. GPs wanted guidance about follow-up screening and side-effects and better information sharing.	G, Inf
Doose, 2019(40) United States	To examine patient & health system factors in shared care & quality of cancer care. Quant- Quest.	No significant relationships between shared care and quality indicators of cancer care. Survivorship care plans may improve the quality of cancer care.	Inf
Fidjeland, 2015(41) Norway	To explore GP experiences and view providing cancer follow-up and taking a greater role. Quant- Quest.	78% GPs felt confident in their knowledge and skills to provide follow-up care. Some GPs (42%) were more willing to take on follow-up care after three years.	G, Res Sk
Fok, 2020(42) Singapore	To explore GP perspectives of a shared-care programme with oncologists. Qual- Int, FG.	GPs willing to share the care but recommended role definition, training, clinical protocols, resources and access to oncologist's consultation.	Res, Sk
Hall, 2011(43) United Kingdom	To explore the opinions and experiences of patients and GPs involved in shared care. Qual- Int.	Most patients support shared cancer care, if there is robust support from specialist. GPs and patients have concerns about the GP gaining and maintaining clinical skills.	G, Res, Sk
Hanks, 2008(44) Australia	To identify and compare the roles of GPs & colorectal cancer management in Australia. Qual- Int.	Shared cancer follow-up care is influenced relationships. Improvement in GP and specialist relationship and communication could lead to better shared care.	CC, G, Inf, Res
Haq, 2013(45) Canada	To document information needs of breast cancer patients, GPs, & oncology specialists. Qual- FG, Int.	GPs feel ill-equipped and felt unsure of their role. The care plan made the GP feel more engaged. Guidelines gave GPs more confidence in cancer follow-up care.	G, Inf
Hudson, 2012(46) United States	To examine patient perspectives and preferences on GP roles in their cancer follow-up care. Qual-Int.	Most patients prefer follow-up care with the specialists. Barriers identified was GP lack of expertise, limited involvement during treatment, lack of continuity of care.	CC, Sk
Hudson, 2016(47) United States	To explore cancer survivors' experiences of follow-up care provided by GPs and oncologists. Quant- Ques.	Patients rated GPs higher for coordination of care & comprehensive care. Prostate patients rated GPs higher for all items, compared to breast patients.	CC

1	Klabunde, 2013(48)	To assess GPs and oncologists' roles in providing cancer follow-up care. Quant- Quest.	Over 50% of GPs reported co-managing with an oncologist. GPs had a preference for a shared model care, and receipt of treatment summaries from oncologists.	Res, Inf, Sk
2	United States			
3	Klabunde, 2017(49)	To explore factors that affect cancer patients follow-up communication & coordination. Quant- Quest.	Half the oncologists communicated with the GP. Oncologists' reliance on written correspondence to communicate with GPs may be a barrier to care coordination.	Inf
4	United States			
5	Lang, 2017(50)	To assess the role of GPs in German cancer care from patients' perspective. Quant- Quest.	Patients want their GP to play an active role. A shared care model where the GPs are supported by the specialists and have extra training is recommended.	CC, Res
6	Germany			
7	Laporte, 2017(51)	To examine how women experienced the post-treatment & perceived the role of the GP. Qual- Int.	Patients felt abandoned at the end of treatment. Patients accepted follow-up care with their GP provided there was a close working relationship with the specialist.	CC, Res
8	France			
9	Lawn, 2017(52)	To explore cancer survivors' views on shared care: what cancer survivors need. Qual- G.	Patients need to be at the centre of the care. Information sharing between health professionals is important. It was perceived the GPs lacked the skills for shared care.	Inf, Sk
10	Australia			
11	Lizama, 2015(53)	To investigate GPs perceptions about communication when providing cancer care. Quant- Quest.	GPs want to be kept in the loop and want follow-up information. Timely transfer of relevant information between primary care providers and specialists is essential.	CC, G, Inf
12	Australia			
13	Nielsen, 2003(54)	To determine the effect of shared care on the attitudes of cancer patients towards the healthcare system and their health-related quality of life. Quant- RCT, Quest.	Young people rated GPs knowledge higher than the control group. No significant difference in quality of life between the intervention group and control group.	G, Inf
14	Denmark			
15	Potosky, 2011(55)	To compare GPs & oncologists' knowledge, attitudes, and practices for follow-up care. Quant- Quest.	Specialists believe GPs lack the skills. Effective communication between GPs and specialists can increase GP confidence in their ability to perform follow-up care.	Res, Sk
16	United States			
17	Puglisi, 2017(56)	To investigate the views of oncologists, GPs, and patients about surveillance strategies. Quant- Quest.	Most GPs claim that cancer follow-up care should be shared with oncologists. Most GPs and oncologists have a poor relationship and patients report poor collaboration.	SK, Inf, Res
18	Italy			
19	Roorda, 2013(57)	To explore the discharge of breast cancer patients to GPs & the experiences and views of GPs. Quant- Quest	The barriers to shared care were communication, patient preference, & GPs knowledge & skills. Development of guidelines would facilitate shared follow-up.	G, Inf, Res
20	The Netherlands			
21	Schütze, 2017(58)	To explore the views of cancer survivors, oncologist and GPs, about GPs involved in follow-up care. Qual- Int.	It was important for GPs to have knowledge and an interest in cancer. It was important for the specialist to oversee the care and maintain overall responsibility.	G, Res, Sk, Inf,
22	Australia			
23	Sisler, 2012(59)	To examine how patients evaluate the continuity & quality of their follow-up care with GP. Quant- Quest.	Patients evaluate the GP favourably; patients with complex issues rated their specialist higher. Role clarification between providers is needed.	CC, Res
24	Canada			
25	Tan, 2018(60)	To explore how non-English and English-speaking patients perceive care to be coordinated. Qual- Int.	Both groups described similar barriers to care, but non-English-speaking participants described additional communication difficulties and perceived discrimination.	Res, Inf
26	Australia			
27	Taylor, 2020(61)	To examine the experiences of patients and healthcare professionals of follow-up in primary care. Qual- Int.	There is a lack of clear policies and practices. Disparities in knowledge, understanding, processes and pathways. Unclear roles and responsibilities.	Res, Inf
28	United Kingdom			
29	Vuong, 2020(62)	To explore views on patient suitability for long-term colorectal cancer shared care. Qual- Int.	Stronger systems such as cancer-specific training, survivorship care protocols, shared information systems, care coordination and navigational supports are needed.	Inf, G
30	Australia			
31	Walter, 2015(63)	To determine the current practice & views of GPs in England about cancer survivorship care. Quant- Quest	GPs felt that cancer follow-up care can be shared, with the specialist maintaining overall responsibility. GPs felt confident in their ability to provide follow-up care.	G, Res
32	United Kingdom			
33	White, 2021(64)	To explore shared follow-up care model to understand information needs. Qual- FG	Women need evidence for the effectiveness of shared follow-up care. Clear descriptions of GP and specialist roles is needed.	Inf, Sk
34	Australia			
35	Weaver, 2014(65)	To describe survivors' perception of provider involvement in follow-up care. Quant- Quest.	Care is more likely to be rated as high quality when one main provider is identified & an oncology specialist is involved.	Inf
36	United States			

KEY – CC:Continuity of care; FG:Focus Group; G:Follow-up guidelines; GP:General practitioner; Inf:Information sharing; Int:Interview; Qual:Qualitative; Quant:Quantitative, Quest:questionnaire; Res:Responsibility; Sk= GP Skills.

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122 **Thematic Analysis**

123 Five themes were identified and are discussed below. Themes are ordered from the highest number of
124 instances of articles within each them; however, frequency does not necessarily equate to order of
125 importance(28).

126 *Reciprocal clinical information sharing*

127 Twenty-three papers referred to the importance of timely and quality sharing of clinical information
128 between health professionals. Information sharing within healthcare is complex and fundamental for
129 effective and efficient shared care(45,49,53). The primary method to share clinical information between
130 doctors and patients was face-to-face verbal communication(39); between oncologists and general
131 practitioners, it was written correspondence, followed by phone, integrated electronic health records
132 and email(45,49).

133 Despite written communication being the primary method for information sharing, general practitioners
134 were not provided quality and timely clinical information from oncologists to manage cancer follow-
135 up care(33,37,39,53,57). One paper found that only half of the oncologists said that they directly shared
136 clinical information about their patients with the general practitioner(49); another reported that around
137 half of general practitioners received the transfer of clinical information from the oncology clinic(57).
138 Not sharing clinical information with general practitioners results in many general practitioners not
139 having clear instructions on follow-up and how to act in case of complications(53,57,61) and leaves
140 patients to be the conduit to transfer clinical information verbally between the oncologist and general
141 practitioner(33,52).

142 Due to inefficiencies with written correspondence, survivorship care plans (a record of cancer, treatment
143 follow-up care plan) were developed to improve the transfer of information between the patient, general
144 practitioner, and oncologist(32,45,57). Survivorship care plans may effectively address some of the
145 information needs of both breast patients and their general practitioners(45), and the provision of a plan
146 from the oncologist to the general practitioners is associated with a higher likelihood of sharing follow-
147 up care(48). However, the use of electronic medical records between general practice and oncologists
148 was identified as being more valuable than survivorship care plans(39,53).

Using verbal and written correspondence for information sharing during shared care follow-up positively affected the patient evaluation of the cooperation between the general practitioners and oncologists(54). This was achieved by providing a summary with structured details of the investigation, treatment, physical, psychological, and social problems, and specific information about what the oncologists expected the general practitioner to do during the follow-up period(54). Direct phone contact with the oncologist was available for further clarification on the written correspondence if required(54) .

Seven papers discussed issues with one-way information sharing: written information from the oncologist to the general practitioner(37,39,44,45,49,53,56). Shared cancer follow-up care relies on the two-way transfer of information between all health professionals involved in patient care(39), as oncologists need to receive important clinical outcome data about the patient from the general practitioner(35). Five papers highlighted the need to further develop health information technology to assist the two-way information sharing process and improve the timeliness and quality of information between general practitioners and oncologists(52–54,62,64). There is a need for shared information systems that are connected between the oncologist and the general practitioner to support care, and fast-track options to the hospital system when patients are unwell(62). Additionally, it was important for patients to know that both care providers could see the results of a follow-up consultation so they could act upon if needed(64).

Responsibility for follow-up care

Twenty-two papers discuss responsibility for follow-up care(4,30–32,34–36,41–44,50,51,55–61,63). There was a preference from patients, general practitioners and oncologists, for oncologists to maintain overall responsibility for cancer follow-up care(30,34,35,55,56,58). Oncologists were more likely to prefer an oncologist-led model instead of a shared-care or general practitioner-led model, as oncologists felt that they had the specialised knowledge for follow-up care(34), and general practitioners did not(34,55,56). However, oncologists were receptive to sharing care with general practitioners taking a greater role in the more standardised aspects of follow-up care(32). Oncologists felt that improved collaboration between themselves and general practitioners was required for shared cancer follow-up

176 care(50) and that defined roles would be needed for shared care to be feasible(58,61). However,
177 oncologists preferred that they maintain primary responsibility for the patient's care, even if they were
178 sharing the care of the patient with the general practitioner(34,55,56,58).

179 General practitioners reported that they were already involved in the care of their cancer patients from
180 the initial work-up of diagnostic tests and diagnosis, monitoring pathology results, and coordinating
181 long-term screening(4,34,63), and welcomed a greater role in cancer follow-up care(34,41,55,58).
182 General practitioners viewed shared care positively(36,43) and preferred a shared model compared to
183 the oncologist-led model(34,55). General practitioners perceived that they could provide an important
184 role in the follow-up phase for their patients and provide a more person-centred care approach(37) and
185 help address unmet psychosocial needs(42). However, general practitioners felt that oncologists should
186 maintain overall responsibility and provide overarching support to general practitioners and oversee the
187 patient's results and progress(43,50,51,58,63).

188 Patients identified oncologists as having the primary responsibility in their current cancer journey,
189 except when cancer progressed to an advanced phase and palliation (where the general practitioner
190 became more involved in their partnership with a palliation team)(30). Many patients preferred the
191 oncologist-led follow-up model and a parallel approach to follow-up care where the oncologist managed
192 cancer-related issues and the general practitioner non-cancer-related health matters(4,30). Despite the
193 limited involvement of general practitioners in cancer follow-up care, patients indicated that they would
194 appreciate their general practitioners taking a greater role in their long-term care if the oncologist
195 remained involved(30,50,58). Additionally, patients were more likely to accept a shared-care model if
196 the general practitioner was directly supported by their oncologist(50), as this reassured patients that
197 they remained directly linked into the hospital system(58).

198 *General practitioners' knowledge and skills*

199 Fifteen papers discussed the knowledge and skills of general practitioners for shared
200 care(31,32,34,36,37,41–43,46,48,52,55,56,58,64). Perceptions differed regarding general practitioners'
201 skills and abilities to take a greater role in cancer follow-up care, and in some cases, limited acceptance
202 for the general practitioners to be involved in cancer follow-up care(36,46,64). Many general

practitioners stated they felt confident in their skills to provide cancer follow-up care(48,55) and reported that they could provide routine cancer follow-up care by detecting and arranging diagnostic testing pathology and offer psychosocial support(37,41). Some general practitioners highlighted their essential role in providing holistic care and how their involvement could generally improve overall cancer care(37). General practitioners who agreed they had the skills to provide follow-up care were more likely to prefer a shared care model(48). However, other general practitioners had concerns about gaining and maintaining the clinical skills needed to conduct cancer follow-up care(31,34,42,43). Some oncologists and patients also felt that general practitioners did not have the specialised knowledge of specific treatment side effects and how to manage these and felt that general practitioners required upskilling to take on shared care(55,56,58).

Patients, general practitioners, and oncologists confidence in shared cancer care increased if general practitioners received extra training on short-term and long-term side effects(32,43,46). Another method identified to upskill general practitioners was integrating the general practitioner earlier in the patients' care(41,46). General practitioners are usually involved in the initial screening and diagnosis, then again as cancer progresses to late-stage and palliative care. Earlier engagement of the general practitioner during active treatment would upskill them in managing acute side effects, which will help in the long-term follow-up period(32). Regardless of the extra training, general practitioners still wanted ongoing support from oncologists(58).

Need for clinical management guidelines and rapid referrals

Fourteen papers discussed the need for clear clinical management follow-up guidelines to support general practitioners in shared follow-up care(29,35,38,39,41,43–45,53,54,57,58,62,63). The lack of clear guidelines was a barrier to transitioning to a shared care follow-up model between oncologists and general practitioners (35). However, general practitioners were more willing to take a greater role in follow-up care if they were provided appropriate follow-up clinical management guidelines(38,57) and more guidance about follow-up screening and side effects of cancer treatment(63). Specific follow-up guidelines(29), specifically templates(63), could be in the form of a printable checklist or using validated instruments(45) and would reassure general practitioners that they were addressing aspects

critical for the particular patients' care. Having clear guidelines could help address perceptions that general practitioners did not have the adequate skills to be involved in shared care (62).

Clinical management guidelines that were best-practice or written by the oncologists would provide a safety net for recurrence or other serious events(58). Any clinical management guidelines that a general practitioner completed would need to be sent to the oncologist to oversee and continue to monitor the patient's progress and to be able to address any issues that arose quickly(58). Patients have shown positive results for not feeling "left in the limbo"(54, p267) when the oncologist has supplied specific follow-up details to the general practitioners.

Two papers(38,44) highlighted that for general practitioners to play a greater role in cancer follow-up care, along with the provision of clinical management guidelines, they also need assurance of a rapid referral back to the oncologist if recurrence is detected.

Continuity of care and satisfaction of care

Ten papers referred to the importance of continuity of care, satisfaction of care and accessibility(29,33,37,44,46,47,50,51,53,59). Continuity of care for cancer patients refers to having the same health professional providing the care and having an ongoing doctor-patient relationship(33,51). Many patients reported having developed a relationship with their oncologist during the diagnosis and active treatment phase and subsequently felt "dumped"(53, p155) when experiencing a high turnover of oncologists due to registrar involvement. Some patients found this lack of continuity of care during the follow-up phase distressing(51,53). Additionally, some general practitioners felt disconnected from their patients during the follow-up care stage(37) and felt excluded(33).

A patient's relationship with their general practitioner and oncologist influences their acceptance and readiness for shared cancer follow-up care(47). Patients had a stronger relationship with their general practitioner than their oncologist(37) and had stronger feelings of trust because of their long-standing relationship(51). Breast cancer patients were the only tumour group that felt they had a stronger relationship with their oncologist and would prefer their oncologist to maintain follow-up(33,47).

Continuity of care is strongly associated with patients' satisfaction of care(47,59). Most patients are satisfied when their general practitioner becomes more involved in their cancer follow-up care(59). Additionally, the distance a patient travels for their follow-up care influenced continuity of care and satisfaction. General practitioners in rural areas and some urban areas were found to provide improved continuity of care to their patients(44). In a rural setting that provided cancer follow-up care, general practitioners reported that care was strengthened by a good working relationship with the oncologist(44).

DISCUSSION

This systematic review analysed both qualitative and quantitative studies to provide a comprehensive picture of factors that influence the translation of shared cancer follow-up care into clinical practice for solid tumours (for example breast, prostate, colorectal, lung). We found reciprocal clinical information sharing, responsibility for follow-up care, general practitioners' skills and knowledge, the need for clinical management guidelines and rapid referral, and continuity of care and satisfaction of care were important factors. Whilst some themes we identified are similar to the findings of a recently published systematic review(66), we add to the knowledge base by highlighting the need for reciprocal, two-way communication and establishing a mechanism for the oncologist to maintain overall responsibility for overseeing the follow-up care.

The need for reciprocal two-way communication is supported by a recent study that reviewed current e-care plans between cancer centres and general practices(67). They did not identify a system that integrated general practice systems and hospital systems to address two-way communication(67). This highlights the need for infrastructure to support the transfer of information between general practitioners and oncologists for successful shared cancer care. Whilst a current randomised controlled trial protocol exists to explore shared cancer care for colorectal patients(68). This protocol does not specify how this transfer of information to the hospital oncologist will be achieved. The one study that has trialled and reported on the secure transfer of clinical information into the hospital with cancer patients to collect patient-reported outcomes(69), used a web-based platform PROsaiq(70), where the patient could complete a clinical assessment from home. The information subsequently transferred into the patients'

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3 281 hospital medical record and allowed the oncologist to monitor the patients' progress(69). This web-
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5 282 based health technology has been evaluated as feasible and secure to use in the clinical setting(65) and
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7 283 offers promise for a technological platform for reciprocal information sharing.
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10 284 We found that oncologists, patients, and general practitioners want and need the oncologist to maintain
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12 285 responsibility and oversee the patient's cancer follow-up care. This is a challenging barrier to address
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14 286 due to medical legalities. The health professional that provides the consultation is legally responsible
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16 287 for the appointment outcome; therefore, a general practitioner that provides cancer follow-up care is
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18 288 responsible for that consultation. This issue is similar to cancer multi-disciplinary team meetings with
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20 289 clinicians holding concerns about the legal framework, despite the known benefits of multi-disciplinary
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22 290 care(71). Consequently, it would be challenging to establish a shared care follow-up model, where the
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24 291 oncologist is responsible without establishing a legal framework. However, finding a mechanism for
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26 292 the oncologist to be involved and oversee the patient's follow-up care may be more feasible, provided
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28 293 there is a strong administrative and organisational infrastructure to support coordinated efforts(57). This
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30 294 would depend on the successful transfer of information from general practice to the hospital.
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34 295 The need for follow-up clinical management guidelines and rapid review also depends on the reciprocal
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36 296 transfer of information. General practitioners using follow-up guidelines developed by oncologists have
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38 297 shown positive results(45). Patients believed the follow-up consultation was more detailed and
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40 298 comprehensive than oncologist-led follow-up(72,73). Despite the efforts to develop and utilise follow-
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42 299 up guidelines, there needs to be health technology infrastructure or better integration for general
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44 300 practitioners to access any guidelines developed.
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47 301 One notable finding was that despite the evidence that cancer follow-up care in general practice is
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49 302 safe(74,75), perceptions still exist that general practitioners do not have the necessary skills and
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51 303 knowledge for cancer follow-up care. This may be in part due to medical hegemony and power
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53 304 differentials(76), where the general practitioner is viewed as inferior in the medical hierarchy to the
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55 305 oncologist. Perception plays a powerful role in health psychology and is a determinant of behaviour(77)
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57 306 and can influence the patient's, general practitioners and oncologists preference for cancer follow-up
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59 307 care.
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Another factor that will determine shared cancer follow-up is the relationship (either positive or negative) the patient has with their general practitioner and oncologist and if they have continuity of care. Higher levels of satisfaction of care with having their general practitioner involved have been reported for both breast cancer patients(24) and colorectal cancer patients(78). A shared cancer follow-up model of care will not suit everyone, and any decision a patient makes about their follow-up care will be based on their own circumstances, perceptions, experience, values and needs.

This review was undertaken with a rigorous systematic methodology and has identified some important enablers for shared cancer follow-up care. The review included quantitative and qualitative studies and comprehensively captures the available evidence. This review has some limitations. The selected databases searched were chosen as they contained the most relevant and up to date information on the topic. However, it is possible that some papers catalogued on other databases could have been missed. Whilst two reviewers independently screened the results against the inclusion/exclusion, Cohen's Kappa value was not used to calculate the inter-rater agreement, so the precision of the inclusion criteria is unknown. There was limited data captured from oncologists which may make it difficult to define the extent of barriers to shared care from their perspective. Only published peer-reviewed literature was included and may therefore be subject to publication bias. Papers were limited to those in English, and there may be papers available in other languages that were not captured. Given that healthcare practices vary internationally, this review may not reflect all practices. This review was limited to adult patients and excluded skin and blood cancers; therefore, the results may not be extrapolated to paediatrics and all cancer types.

CONCLUSION

Shared care is an alternative model to the oncologist-led cancer follow-up model of care. The model is dependent on the patients' personal preferences and relationship with their health care providers. A shared cancer follow-up model of care relies on the oncologist maintaining overall responsibility and overseeing the care, effective two-way information sharing between general practitioners and oncologists, and the provision of follow-up guidelines. Oncologists and general practitioners support a shared-care model of care; however, any model developed needs to be evaluated for feasibility and

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335 acceptability. The barriers to a shared cancer follow-up model of care between general practitioners and
336 oncologists are complex and require a multifaceted approach. To improve the acceptability and
337 feasibility of shared cancer follow-up care, researchers and health professionals in both primary and
338 secondary care need to work collaboratively to address the barriers and translate the research into
339 practice. Further research is required to better understand the use of health technology to bridge the
340 information-sharing gap and explore the feasibility and acceptability of shared cancer follow-up care
341 for oncologists, general practitioners, and patients.

AUTHOR CONTRIBUTIONS

Both authors conducted the search, screening of articles and assessed their rigour. TS conducted the hand searching. TS summarised the findings from the studies into one document and created the initial code frame. TS drafted the original manuscript, assisted by HS. Both authors reviewed revisions and approved the final manuscript.

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COMPETING INTERESTS

None declared.

ETHICS APPROVAL

As this systematic review is based exclusively on published literature, no ethics approval was required. However, this review was part of a larger study on shared cancer follow-up care, approved by [removed for review purposes], (2020ETH00301).

Data availability statement

Data are available upon reasonable request.

Figure 1. The preferred reporting for systematic reviews and meta-analyses (PRISMA) diagram representing the systematic literature search.

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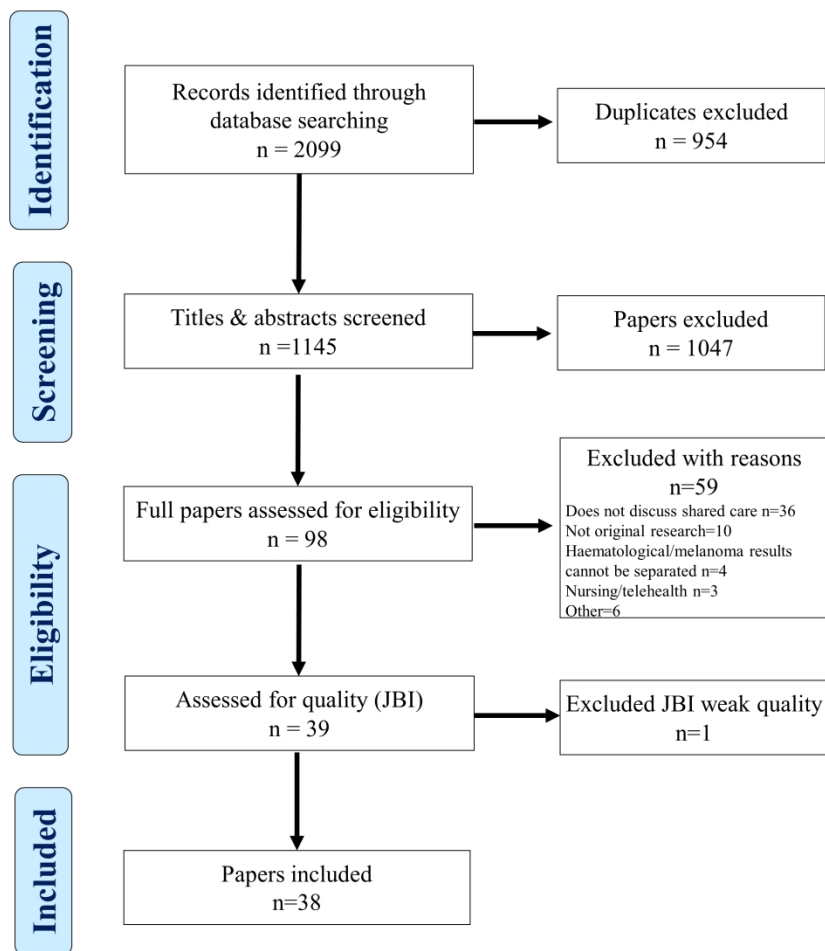
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To enable PROSPERO to focus on COVID-19 submissions, this registration record has undergone basic automated checks for eligibility and is published exactly as submitted. PROSPERO has never provided peer review, and usual checking by the PROSPERO team does not endorse content. Therefore, automatically published records should be treated as any other PROSPERO registration. Further detail is provided [here](#).

Review methods were amended after registration. Please see the revision notes and previous versions for detail.

Citation

Tiffany Sandell, Heike Schütze. Factors influencing the translation of shared cancer follow-up care into clinical practice: A systematic review. PROSPERO 2020 CRD42020191538 Available from: https://www.crd.york.ac.uk/prospERO/display_record.php?ID=CRD42020191538

Review question [1 change]

What factors influence translating shared cancer follow-up care into clinical practice?

Searches [1 change]

- MEDLINE, Science Citation Index, Academic Search Complete, CINAHL, APA PsycINFO, Health Source: Nursing/Academic edition and Psychology and Behavioural Sciences Collection

-1999 to 2021

-peer reviewed papers published in full

-human subjects

Types of study to be included

All study designs will be included:observational, case controlled, cohort, cross-sectional, randomised, pilot studies, mixed methods, and qualitative.

Condition or domain being studied [1 change]

This study aims to systematically review the literature that focuses on factors influencing the translation of shared cancer follow-up care into clinical practice.

Participants/population [2 changes]

Inclusion criteria: (a) general practitioner, patient, and/or oncologist perceptions of shared cancer follow-up care; (b) general practitioner involvement in cancer follow-up care; (c) intervention with the general practitioner involved in cancer follow-up care; (d) adults patients in the follow-up period; and (e) papers peer-reviewed, published in English between 1990 and 2021.

Exclusion criteria: (a) commentary, editorial, literature review, protocol; (b) patients on active treatment; (c) palliative care; (d) surgical only treatment; (e) paediatric; (f) skin cancer, melanoma or blood cancer.

Intervention(s), exposure(s)

During the follow-up care period.

Comparator(s)/control

General practitioner and oncologist

Context

A study will be included if it addresses the communication and preferences between the general practitioner and oncologist.

Main outcome(s) [1 change]

By identifying factors that influence implementing shared cancer follow-up care, it will allow for the development of a model of care that addresses the issues.

- barriers

- enablers

Measures of effect

none

Additional outcome(s)

none

Measures of effect

none

Data extraction (selection and coding)

Two reviewers (TS and HS) will independently use a stepwise procedure to identify relevant articles.

TS will perform the initial search and screen the titles and abstracts against the inclusion/exclusion criteria, the remaining texts will be retrieved in full and screened against the inclusion/exclusion criteria.

HS will independently checked the results and compare her findings with the first author.

In case of disagreement, the reviewers will meet and reach consensus through discussion.

Thematic analysis will be the method for research synthesis. The first step will be to develop descriptive themes based on the text, followed by generating analytical themes with a descriptive approach to present the findings.

Results will be exported from Zotera Reference Managing system to Microsoft Excel to create a database on: author, year, study type, cancer type, sample size, study aim, data collection and analysis; outcomes, barrier/enablers.

Risk of bias (quality) assessment

Two reviewers will independently assess risk of bias.

Joanne Briggs critical appraisal tools will be used to assess the quality.

A pre-designed Excel template will be used to collate these assessments.

Appraising reviewers will resolve disagreements about risk of bias by discussion.

Strategy for data synthesis

A systematic narrative synthesis will be provided to analyse the relationships within and between the included studies.

The synthesis will be developed using the narrative synthesis framework as described in CRD:

1. Develop theory around intervention
2. Preliminary synthesis - grouping of populations, interventions and outcomes
3. Explore relationships within and between studies
4. Assess robustness of synthesis

Analysis of subgroups or subsets

There is no planned investigation of subgroups

Contact details for further information

Tiffany Sandell
tem785@uowmail.edu.au

Organisational affiliation of the review

Wollongong Hospital and University of Wollongong

Review team members and their organisational affiliations [1 change]

Mrs Tiffany Sandell. Wollongong Hospital and University of Wollongong
Dr Heike Schütze. University of Wollongong

Type and method of review

Narrative synthesis, Systematic review

Anticipated or actual start date

01 July 2020

Anticipated completion date [1 change]

22 July 2022

Funding sources/sponsors

This review is unfunded.

Conflicts of interest

None known

Language

English

Country

Australia

Stage of review [1 change]

Review Completed not published

Subject index terms status

Subject indexing assigned by CRD

Subject index terms

Humans; Neoplasms

Date of registration in PROSPERO

11 July 2020

Date of first submission

10 June 2020

Stage of review at time of this submission [1 change]

Stage	Started	Completed
Preliminary searches	Yes	Yes
Piloting of the study selection process	Yes	Yes
Formal screening of search results against eligibility criteria	Yes	Yes
Data extraction	Yes	Yes
Risk of bias (quality) assessment	Yes	Yes
Data analysis	Yes	Yes

Revision note

updated date range as suggested by journal editor.

The record owner confirms that the information they have supplied for this submission is accurate and complete and they understand that deliberate provision of inaccurate information or omission of data may be construed as scientific misconduct.

The record owner confirms that they will update the status of the review when it is completed and will add publication details in due course.

Versions

11 July 2020

16 June 2022

17 June 2022

21 July 2022

02 August 2022



PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			LINE
Title	1	Identify the report as a systematic review.	1
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	39-48
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	48-49
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	54, 86
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	61
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Table1 Supplementary file 1
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	70
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	78
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	79-80
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	79-80
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	81
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	93 (Narrative)
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	91
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	NA
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	Table 2
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	72, 77
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	NA
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	NA
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases). For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml	76

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PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	90 Figure 1
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	NA
Study characteristics	17	Cite each included study and present its characteristics.	Table 2
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	85
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	Table 2
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	Table 2
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	NA
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	NA
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	NA
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	NA
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	Table 2
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	245
	23b	Discuss any limitations of the evidence included in the review.	293
	23c	Discuss any limitations of the review processes used.	293
	23d	Discuss implications of the results for practice, policy, and future research.	306
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	53
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	53
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	321
Competing interests	26	Declare any competing interests of review authors.	318
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	325



PRISMA 2020 Checklist

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71
For more information, visit: <http://www.prisma-statement.org/>

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Supplementary File 3. Search String

Databases: MEDLINE, Science Citation Index, Academic Search Complete, CINAHL, APA Psycinfo, Health Source: Nursing/Academic Edition, and Psychology and Behavioural Sciences Collection

Search String:

("general practitioner" OR "primary care physician" OR "family physician" OR "family practitioner" OR GP OR doctor OR specialist OR oncologist) AND ("model of care" OR "shared-care" OR "shared care" OR "follow-up care" OR "follow up care") AND (Cancer OR oncolog* OR neoplasm)

Limits:

Date range: 01/01/1999 - 31/12/2021

Language: English

Available: online, full-text, peer-reviewed