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[Qualitative Review]

Healthcare workers' perceptions and experiences of communicating with people over 50 years of age about vaccination: a qualitative evidence synthesis

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ABSTRACT

Background

Infectious diseases are a major cause of illness and death among older adults. Vaccines can prevent infectious diseases, including against seasonal influenza, pneumococcal diseases, herpes zoster and COVID-19. However, the uptake of vaccination among older adults varies across settings and groups.

Communication with healthcare workers can play an important role in older people's decisions to vaccinate. To support an informed decision about vaccination, healthcare workers should be able to identify the older person's knowledge gaps, needs and concerns. They should also be able to share and discuss information about the person's disease risk and disease severity; the vaccine's effectiveness and safety; and practical information about how the person can access vaccines. Therefore, healthcare workers need good communication skills and to actively keep up-to-date with the latest evidence. An understanding of their perceptions and experiences of this communication can help us train and support healthcare workers and design good communication strategies.

Objectives

To explore healthcare workers' perceptions and experiences of communicating with older adults about vaccination.

Search methods

We searched MEDLINE, CINAHL and Scopus on 21 March 2020. We also searched Epistemonikos for related reviews, searched grey literature sources, and carried out reference checking and citation searching to identify additional studies. We searched for studies in any language.

Selection criteria

We included qualitative studies and mixed-methods studies with an identifiable qualitative component. We included studies that explored the perceptions and experiences of healthcare workers and other health system staff towards communication with adults over the age of 50 years or their informal caregivers about vaccination.

Data collection and analysis

We extracted data using a data extraction form designed for this review. We assessed methodological limitations using a list of predefined criteria. We extracted and assessed data regarding study authors' motivations for carrying out their study. We used a thematic synthesis approach to analyse and synthesise the evidence. We used the GRADE-CERQual (Confidence in the Evidence from Reviews of Qualitative research) approach to assess our confidence in each finding. We examined each review finding to identify factors that may influence intervention implementation and we developed implications for practice.

Main results

We included 11 studies in our review. Most studies explored healthcare workers' views and experiences about vaccination of older adults more broadly but also mentioned communication issues specifically. All studies were from high-income countries. The studies focused on doctors, nurses, pharmacists and others working in hospitals, clinics, pharmacies and nursing homes. These healthcare workers discussed different types of vaccines, including influenza, pneumococcal and herpes zoster vaccines. The review was carried out before COVID-19 vaccines were available.

We downgraded our confidence in several of the findings from high confidence to moderate, low or very low confidence. One reason for this was that some findings were based on only small amounts of data. Another reason was that the findings were based on studies from only a few countries, making us unsure about the relevance of these findings to other settings.

Healthcare workers reported that older adults asked about vaccination to different extents, ranging from not asking about vaccines at all, to great demand for information (high confidence finding). When the topic of vaccination was discussed, healthcare workers described a lack of information, and presence of misinformation, fears and concerns about vaccines among older adults (moderate confidence).

The ways in which healthcare workers discussed vaccines with older adults appeared to be linked to what they saw as the aim of vaccination communication. Healthcare workers differed among themselves in their perceptions of this aim and about their own roles and the roles of older adults in vaccine decisions. Some healthcare workers thought it was important to provide information but emphasised the right and responsibility of older adults to decide for themselves. Others used information to persuade and convince older adults to vaccinate in order to increase 'compliance' and 'improve' vaccination rates, and in some cases to gain financial benefits. Other healthcare workers tailored their approach to what they believed the older adult needed or wanted (moderate confidence).

Healthcare workers believed that older adults' decisions could be influenced by several factors, including the nature of the healthcare worker–patient relationship, the healthcare worker's status, and the extent to which healthcare workers led by example (low confidence).

Our review also identified factors that are likely to influence how communication between healthcare workers and older adults take place. These included issues tied to healthcare workers' views and experiences regarding the diseases in question and the vaccines; as well as their views and experiences of the organisational and practical implementation of vaccine services.

Authors' conclusions

There is little research focusing specifically on healthcare workers' perceptions and experiences of communication with older adults about vaccination. The studies we identified suggest that healthcare workers differed among themselves in their perceptions about the aim of this communication and about the role of older adults in vaccine decisions. Based on these findings and the other findings in our review, we have developed a set of questions or prompts that may help health system planners or programme managers when planning or implementing strategies for vaccination communication between healthcare workers and older adults.

PLAIN LANGUAGE SUMMARY

Healthcare workers' perceptions and experiences of communicating with older adults about vaccination

The aim of this systematic review was to explore healthcare workers' perceptions and experiences of communicating with older adults about vaccination. We searched for and analysed relevant qualitative studies and included 11 studies.

Key messages

We found few studies that explored healthcare workers' perceptions and experiences of communicating with older adults about vaccination. The studies we found suggested that healthcare workers differed among themselves in what they saw as the aim of vaccine communication and the role of older adults in vaccine decisions. Based on our findings, we developed a set of questions to help planners and programme managers when planning or implementing vaccination communication strategies between healthcare workers and older adults.

What did the review study?

Vaccines are available to prevent infectious diseases in older adults, including vaccines against seasonal influenza, pneumococcal diseases, herpes zoster (shingles) and COVID-19. But older adults do not always use the vaccines available to them.

Communication with healthcare workers can play an important role in older people's decisions to vaccinate. To support an informed decision about vaccination, healthcare workers should be able to identify the older person's knowledge gaps, needs and concerns. They should also be able to share and discuss information about the person's disease risk and disease severity; the vaccine's effectiveness and safety; and practical information about how the person can access vaccines. Therefore, healthcare workers need good communication skills and to actively keep up-to-date with the latest evidence. An understanding of their perceptions and experiences of vaccine communication can help us train and support healthcare workers and design good communication strategies.

What were the main findings of this review?

We included 11 studies in our review. All studies were from high-income countries. The studies focused on doctors, nurses, pharmacists and others working in hospitals, clinics, pharmacies and nursing homes. The healthcare workers discussed different types of vaccines, including influenza, pneumococcal and herpes zoster vaccines. The review was carried out before COVID-19 vaccines were available.

We downgraded our confidence in several of the findings from high confidence to moderate, low or very low confidence. One reason for this was that some findings were based on only small amounts of data. Another reason was that the findings were based on studies from only a few countries, making us unsure about the relevance of these findings to other settings.

Healthcare workers reported that older adults asked about vaccination to different extents, ranging from not asking about vaccines at all, to great demand for information (high confidence in this finding). When the topic of vaccination was discussed, healthcare workers described a lack of information, and presence of misinformation, fears and concerns about vaccines among older adults (moderate confidence).

The ways in which healthcare workers discussed vaccines with older adults appeared to be linked to what they saw as the aim of vaccination communication. Healthcare workers differed among themselves in their perceptions of this aim and about their own roles and the roles of older adults in vaccine decisions. Some healthcare workers thought it was important to provide information but emphasised the right and responsibility of older adults to decide for themselves. Others used information to persuade and convince older adults to vaccinate in order to increase 'compliance' (the extent to which a person correctly follows health advice) and 'improve' vaccination rates, and in some cases to gain financial benefits. Other healthcare workers tailored their approach to what they believed the older adult needed or wanted (moderate confidence).

Healthcare workers believed that older adults' decisions could be influenced by several factors, including the nature of the healthcare worker–patient relationship, the healthcare worker's status and the extent to which healthcare workers led by example (low confidence).

Our review also identified factors that are likely to influence how communication between healthcare workers and older adults takes place. These included issues tied to healthcare workers' views and experiences regarding the diseases in question and the vaccines, and their views and experiences of the organisational and practical implementation of vaccine services.

How up-to-date is this review?

We searched for studies published up to 21 March 2020.

SUMMARY OF FINDINGS

Summary of findings 1. Summary of qualitative findings table

Summary of review finding	GRADE-CERQual assessment of confidence in the evidence	Explanation of GRADE-CERQual assessment	Studies contributing to the review finding ¹
<p>Finding 1. Healthcare workers reported that older adults asked about vaccination to different extents, ranging from not asking about vaccines at all in some settings to great demand in other settings.</p>	High confidence	No/very minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, no/very minor concerns regarding adequacy and no/very minor concerns regarding relevance.	Badertscher 2012 ; Huston 2019 ; Lehmann 2014
<p>Finding 2. When the topic of vaccination was discussed, healthcare workers described a lack of information, and presence of misinformation, fears and concerns about vaccines among older adults.</p>	Moderate confidence	No/very minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, minor concerns regarding adequacy and minor concerns regarding relevance	Badertscher 2012 ; Ellen 2018 ; Huston 2019 ; Raftopoulos 2008 ; Wray 2007
<p>Finding 3. The manner in which healthcare workers discussed vaccines with older adults appeared to be linked to what they saw as the aim of vaccination communication. Healthcare workers differed among themselves in their perceptions of this aim and about their own roles and the roles of older adults in vaccine decisions. Some healthcare workers thought it was important to provide information but emphasised the right and responsibility of older adults to decide for themselves. Other healthcare workers used information to persuade and convince older adults to vaccinate in order to increase 'compliance' and 'improve' vaccination rates, and in some cases to gain financial benefits. A third group of healthcare workers tailored their approach to what they believed the older adult needed or wanted.</p>	Moderate confidence	Minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, no/very minor concerns regarding adequacy and moderate concerns regarding relevance	Badertscher 2012 ; Eilers 2015 ; Ellen 2018 ; Hinshaw 2011 ; Huston 2019 ; Hutt 2010 ; Lasser 2008 ; Lehmann 2014 ; Raftopoulos 2008 ; Wray 2007 ; Zaouk 2019
<p>Finding 4. Healthcare workers in community-based and primary care settings described how older adults often followed their vaccine recommendations. Healthcare workers believed that this influence was linked to trust, which in turn was linked to long-lasting relationships and sometimes also to shared cultural or language backgrounds.</p>	Low confidence	Minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, moderate concerns regarding adequacy and moderate concerns regarding relevance	Eilers 2015 ; Ellen 2018 ; Huston 2019 ; Lasser 2008 ; Wray 2007
<p>Finding 5. Nurses, pharmacists and doctors suggested that some older adults preferred or were more likely to be influenced by some types of healthcare workers, particularly doctors. Some healthcare workers suggested that this was linked to doctors' perceived status and prestige.</p>	Low confidence	No/very minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, moderate concerns regarding adequacy and moderate concerns regarding relevance	Eilers 2015 ; Ellen 2018 ; Huston 2019 ; Hutt 2010 ; Wray 2007

<p>Finding 6. Some healthcare workers who had chosen not to have the influenza vaccine themselves noted that they would still promote this vaccine to older people. However, other healthcare workers suggested that it was easier to convince older adults to accept vaccines if the healthcare workers themselves believed in the advantages of vaccination and if they led by example in accepting vaccination.</p>	<p>Low confidence</p>	<p>Minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, moderate concerns regarding adequacy and moderate concerns regarding relevance</p>	<p>Ellen 2018; Lehmann 2014; Raftopoulos 2008</p>
<p>Finding 7. Across different healthcare settings, healthcare workers generally regarded infections such as influenza, pneumococcal disease and herpes zoster as having serious enough consequences for older adults to justify a vaccine.</p>	<p>Moderate confidence</p>	<p>Minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, no/very minor concerns regarding adequacy and moderate concerns regarding relevance</p>	<p>Eilers 2015; Ellen 2018; Lehmann 2014; Raftopoulos 2008; Wray 2007; Zaouk 2019</p>
<p>Finding 8. Healthcare workers' exposure to certain infectious diseases in their clinical practice could influence their views of disease severity or the priority they gave its prevention.</p>	<p>Moderate confidence</p>	<p>No/very minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, moderate concerns regarding adequacy and no/very minor concerns regarding relevance</p>	<p>Badertscher 2012; Eilers 2015</p>
<p>Finding 9. Not all healthcare workers were convinced of the effectiveness of vaccines for older adults, and emphasised the importance of evidence about benefits and harms.</p>	<p>Moderate confidence</p>	<p>No/very minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, moderate concerns regarding adequacy and minor concerns regarding relevance</p>	<p>Badertscher 2012; Eilers 2015</p>
<p>Finding 10. A few healthcare workers were not convinced of the <i>usefulness</i> of vaccines for older adults with serious underlying illnesses and poor quality of life, and a small number of GPs suggested that in some cases it might be more merciful to let weaker older adults die of diseases such as influenza or pneumonia.</p>	<p>Very low confidence</p>	<p>No/very minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, serious concerns regarding adequacy and serious concerns regarding relevance</p>	<p>Eilers 2015</p>
<p>Finding 11. Some healthcare workers did not think age in itself should be the only indicator for vaccination, but also pointed to other factors such as their medical history and living arrangements.</p>	<p>Moderate confidence</p>	<p>No/very minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, moderate concerns regarding adequacy and no/very minor concerns regarding relevance</p>	<p>Eilers 2015; Raftopoulos 2008</p>
<p>Finding 12. Healthcare workers did not always prioritise vaccination services for older adults when faced with limited time and other, more acute health issues.</p>	<p>Moderate confidence</p>	<p>Minor concerns regarding methodological limitations, minor concerns regarding coherence, no/very minor concerns regarding adequacy and no/very minor concerns regarding relevance</p>	<p>Badertscher 2012; Huston 2019; Lasser 2008; Lehmann 2014; Zaouk 2019</p>
<p>Finding 13. Across settings, providers sometimes offered vaccine services opportunistically (for in-</p>	<p>High confidence</p>	<p>No/very minor concerns regarding methodological limitations,</p>	<p>Eilers 2015; Ellen 2018; Huston 2019;</p>

<p>stance, when attending appointments about other healthcare issues) or at designated timepoints (for instance, during vaccination days), and had different opinions about the practicalities of the different approaches.</p>		<p>no/very minor concerns regarding coherence, minor concerns regarding adequacy, and no/very minor concerns regarding relevance</p>	<p>Hutt 2010; Lasser 2008</p>
<p>Finding 14. Some healthcare workers complained of having limited knowledge about vaccination for older adults and wanted more training. Ongoing training was seen as important because of staff turnover. However, some healthcare workers complained about a lack of time for training.</p>	<p>Low confidence</p>	<p>Minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, moderate concerns regarding adequacy and moderate concerns regarding relevance</p>	<p>Huston 2019; Hutt 2010; Zaouk 2019</p>
<p>Finding 15. The extent to which healthcare workers regarded vaccine services as part of their role and responsibilities varied. Some providers saw it as part of their role, others were concerned about encroaching on the roles of other providers, and others were unclear about who was responsible.</p>	<p>Moderate confidence</p>	<p>No/very minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, moderate concerns regarding adequacy, and no/very minor concerns regarding relevance</p>	<p>Eilers 2015; Hinshaw 2011; Huston 2019; Lehmann 2014</p>
<p>Finding 16. Providers' access to patient data, including patients' vaccination history or information about their comorbidities, sometimes influenced their ability to offer vaccination services.</p>	<p>Moderate confidence</p>	<p>Minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, minor concerns regarding adequacy, and no/very minor concerns regarding relevance</p>	<p>Eilers 2015; Hinshaw 2011; Huston 2019</p>

¹The GRADE-CERQual evidence profile for each finding is available in [Appendix 1](#)

BACKGROUND

Description of the topic

The world's population is growing older. The United Nations estimates that people over 65 years of age will constitute 12% of the world's population by 2030, and 16% by 2050 (UN 2019). As a person becomes older, their immune system gradually deteriorates and they become more vulnerable to infections (Montecino-Rodriguez 2013). This is a major cause of illness and death among older adults, and healthcare systems in most countries are dealing with large numbers of older people with severe infectious disease-related health problems (Cassini 2018). While work on this review was ongoing, the COVID-19 pandemic was added to the list of infectious diseases that represent a serious risk for older adults (WHO 2020).

Healthy ageing is defined by the World Health Organization (WHO) as "the process of developing and maintaining the functional ability that enables well-being in older age" (WHO 2015). The prevention of infectious diseases through immunisation can be an important component of ensuring healthy ageing. Vaccines are now available for several infectious diseases of relevance for older adults, including seasonal influenza, pneumococcal diseases, herpes zoster (shingles) and COVID-19. Older adults may also benefit from booster doses of vaccines for pertussis, diphtheria, tetanus and polio. But while vaccination programmes for children have been a central element of health systems across the world for decades, vaccinations among older adults have far less uptake. In 2003, the World Health Assembly urged countries with national influenza vaccination policies to aim for vaccination coverage of the elderly population of at least 75% by 2010 (WHO 2003). However, many low- and middle-income countries have no national influenza vaccination policies (Ortiz 2016). While these policies are more common in high-income countries, most countries have still not achieved this goal and many remain far below target (OECD 2019). The existence of national policies for the prevention of other relevant diseases also varies greatly (ECDC 2020), and uptake of these vaccines is often low (Drieskens 2020; Kanitz 2012; Williams 2017). In 2020, the WHO identified older people as a priority group for the COVID-19 vaccines (WHO 2020), and this is reflected in many national plans and policies. However, our knowledge regarding uptake of COVID-19 vaccines is still emerging.

Factors influencing vaccine uptake among older adults and communication about vaccines

This review focused on communication between healthcare workers and older adults about vaccination. Work in the field of communication theory has conceptualised "communication" as "the way people create, convey, select, and interpret the messages that inform and shape their lives," within their context or environment (Ruben 2017). This view of communication moves away from more linear models that see communication as a one-way process in which a sender transmits a message to a receiver, who is then influenced by this message (Ruben 2017). Rather, it takes a more interactional perspective, with the aim of taking into account the complexity of the relationship between the sender and the receiver and the multi-directionality of the communication process (Ruben 2017).

Communication with healthcare workers can play an important role in older people's decision to vaccinate. However, as the definition above suggests, communication takes part within a

specific context, and the contents of this communication and the person's decision to vaccinate or not are shaped by a number of factors that are likely to vary depending on the context. One such factor is the extent to which there is "evidence for action," including evidence of vaccine effectiveness (Aguado 2018). Systematic reviews of the safety and effectiveness of vaccines for preventing herpes zoster, influenza and pneumococcal disease among older adults conclude that they may be effective in preventing these diseases (Demicheli 2018; Gagliardi 2019; Winje 2019). However, the reviews also showed evidence gaps and uncertainties regarding the size of the effect, the effectiveness of vaccines over time, and their effectiveness among different subgroups of older adults. In addition, one of these reviews suggested that the herpes zoster vaccine probably has some adverse effects (Gagliardi 2019). And while the evidence suggests that several COVID-19 vaccines are safe and effective, there is still uncertainty about long-term safety and effectiveness (Cavaleri 2021), although this evidence is rapidly changing.

Another factor is whether there are national policies or recommendations on vaccines for older people (Doherty 2018). As described above, this varies from country to country. Vaccination processes and systems can influence people's access to vaccines (Aguado 2018); other barriers to uptake include cost (Kan 2018), transportation issues (Kan 2018), and the complexity of adult vaccine schedules and pathways (Aguado 2018). Equally important is the extent to which there is an individual and community demand for vaccines (Aguado 2018). Systematic reviews point to several issues associated with older adults' decisions to use or not use vaccines in general (Eilers 2014), and influenza vaccines specifically (Kan 2018; Ward 2008). These include demographic factors such as people's age, gender, ethnic background or immigration status, income and education level, and the extent to which they live with other people; knowledge and information sources; health status or self-perceived health status, lifestyle, health habits and use of services; perceived susceptibility to and perceived severity of the disease; personal experiences with the disease; perceptions about the vaccine's efficacy and the possibility of adverse effects; the extent to which they receive advice, information and recommendations (e.g. from healthcare workers, family members or friends); and the accessibility and affordability of the vaccine (Eilers 2014; Jain 2017; Kan 2018; Ward 2008). The type of healthcare worker giving these recommendations may also play a role (Kan 2018; Ward 2008).

Supporting informed vaccine decisions through communication between healthcare workers and older adults

The factors described above can all potentially influence the communication between healthcare workers and older people and can affect the older person's access to vaccines and vaccine uptake. However, communication between healthcare workers and older adults is not simply a means of convincing the individual to accept the vaccine. It can also have, as its main objective, to support the individual's informed choice. In an informed decision-making situation, the older person may choose to vaccinate but may also choose not to. However, this should not be a result of a lack of awareness of, or misinformation about, factors such as the risk or severity of the disease; vaccine effectiveness or adverse effects; national policies or guidelines; or vaccine costs or availability. When communicating with older adults about vaccines, the healthcare worker should therefore ideally be able to identify the individual's knowledge gaps, needs and concerns. They should also

be able to share and discuss evidence-based information about the individual's disease risk, the severity of the disease, and the vaccine's effectiveness and safety; and practical information about how the individual can access vaccines. This places demands on the capability of the healthcare worker to understand and keep up-to-date with the underlying information. Equally important are the demands on healthcare workers' communication skills, including an awareness of the relational dimensions of communication and the uneven distribution of power and expertise in the healthcare worker–patient relationship (Rimal 2009; Ruben 2016). Ruben argues that health communication interactions should be viewed as cross-cultural encounters that require careful observation, listening and care in translation (Ruben 2016). It is important that healthcare workers consider each individual's needs, views, and levels of understanding, and tailor information about vaccination accordingly. They also need to communicate this information in a way that is accessible. To have these skills requires training, support, time, opportunity and self-awareness. During a pandemic situation such as COVID-19, the urgency of the situation can make it particularly difficult to meet these requirements, although prior training, skills and awareness of vaccination communication in general are likely to be helpful.

Many healthcare workers are also encouraged to vaccinate themselves in order to protect their patients. One systematic review exploring healthcare workers' perceptions of influenza vaccines suggests that they are influenced by many of the same issues as older adults when deciding whether to vaccinate themselves (Lorenc 2017). These include their perceptions of their susceptibility to influenza, the severity of influenza, the vaccine's efficacy and the possibility of adverse effects. Some healthcare workers justify their views with reference to scientific evidence, while others refer to 'non-standard views' about health and a belief in alternative therapies. As healthcare workers' perspectives on vaccination are likely to influence communication with older people, healthcare workers need to be aware of their own perceptions if they are to support informed decision-making among older people. These are not small demands, and require training, support, time, opportunity and self-awareness.

How this review might inform or supplement what is already known in this area

Several reviews have focused on the topic of older adults and vaccinations (see Table 1). These reviews have explored healthcare workers' views and experiences of vaccinations offered to older adults and to healthcare workers themselves; factors that influence older adults' vaccine uptake and the effectiveness of interventions to increase vaccine uptake among older adults. These reviews provide interesting and relevant information. However, most of these focus on vaccines for seasonal influenza, some have a Western focus and most searched for English-language studies only. None of the published reviews focused specifically on communication regarding vaccination for older adults. Our Cochrane Review aimed to explore healthcare workers' perceptions and experiences about communication strategies specifically, including the factors that healthcare workers consider likely to facilitate or hamper the use of these strategies. We explored this for all types of vaccines targeted at older adults, in any country. Therefore, our review aimed to add valuable information to this body of work.

Through this review, we aimed to explore healthcare workers' own perceptions and experiences of communicating with older adults about vaccination issues. This can help us understand more about how best to train health workers and design good communication strategies. This review is part of an EU-funded project entitled VITAL (Vaccines and Infectious diseases in the Ageing population) that aims to develop strategies to train and educate healthcare workers about vaccines and vaccination communication for older adults. This will involve developing a framework containing comprehensive and innovative educational resources for healthcare workers engaged in the care of older adults. To ensure that the framework addresses the needs of healthcare workers, we need a clear understanding of their views and experiences of communicating with older adults and informal caregivers about vaccination, and factors that influence this communication. In addition to providing information for the VITAL project, the findings of this synthesis will be helpful to health service managers and other stakeholders involved in developing strategies to enhance the uptake of vaccination among older adults.

OBJECTIVES

To explore healthcare workers' perceptions and experiences of communicating with older adults about vaccination.

METHODS

When preparing this review, we used the Cochrane Effective Practice and Organisation of Care group's Protocol and Review Template for Qualitative Evidence Synthesis (Glenton 2020a).

Criteria for considering studies for this review

Types of studies

- We included primary studies that used qualitative study designs such as ethnography, phenomenology, case studies, grounded theory studies and qualitative process evaluations. We included studies that used both qualitative methods for data collection (e.g. focus group discussions, individual interviews, observation, diaries, document analysis, open-ended survey questions) and qualitative methods for data analysis (e.g. thematic analysis, framework analysis, grounded theory).
- We included both published and unpublished studies in any language (see also section on 'Translation of languages other than English,' below).
- We included studies regardless of when they were undertaken or published.
- We included mixed-methods studies where it was possible to extract the data that were collected and analysed using qualitative methods.
- We included studies regardless of whether they were conducted alongside studies of the effectiveness of interventions or not.
- We excluded studies that collected data using qualitative methods but did not analyse these data using qualitative analysis methods (e.g. open-ended survey questions where the response data were analysed using descriptive statistics only).
- We did not exclude studies based on our assessment of methodological limitations. Instead, we used information about methodological limitations to assess our confidence in the review findings.

Topic of interest

We included studies where the main focus was directly relevant to the focus of our review, that is:

- healthcare workers' perceptions and experiences about communicating with older adults and their informal caregivers about vaccination;
- healthcare workers' perceptions and experiences of training and education in vaccination communication with older adults, including the factors that healthcare workers consider as likely to facilitate or hamper the use of these training and education strategies.

Preliminary searches suggested that few studies have the issues listed above as their primary focus. Therefore, we also included studies that focused on:

- healthcare workers' perceptions and experiences of vaccines and vaccine uptake among adults of any age (providing there are data that specifically refer to their perceptions and experiences of older adults and vaccines);
- healthcare workers' perceptions and experiences of vaccines and vaccine uptake among healthcare workers (providing there are data that specifically refer to their perceptions and experiences of older adults and vaccines).

While the focus of these studies differs from the focus of this review, we assumed that such studies might also include data about healthcare workers' perceptions and experiences about older adults and vaccination communication specifically.

Types of participants

We were primarily interested in the perceptions and experiences of healthcare workers and other health system staff rather than the perceptions and experiences of older adults. Therefore, we included studies that explored the views and experiences of the following participants.

- Any healthcare worker involved in delivering vaccination to older adults, or advising or providing information on vaccination to older adults or their informal caregivers, or both. We defined these groups as follows:
 - healthcare workers: included doctors, nurses, lay health workers, pharmacists or other types of healthcare workers working in any setting, including home-based or community settings, primary care hospitals or nursing homes. This also included student healthcare workers if they were providing healthcare as part of their training;
 - older adults: we defined an older adult as any person aged over 50 years. We chose this cut-off to align with the VITAL project, and because at least one vaccine targeted at older adults (Shingrix for shingles) is recommended in some countries, including the US and Canada, for adults of 50 years and older. The VITAL project organises "older adults" into pre-elderly (aged 50 to 64 years) and elderly (aged 65 years and over). Therefore, we considered stratifying according to age group as part of any subgroup analysis. However, we conducted no subgroup analyses because we did not have sufficient data (see below);
 - informal caregivers: we defined an informal caregiver in this context as anyone directly involved in caring for a person

aged over 50 years, often a family member or friend, making the decision to vaccinate that person (where that person could not make that decision themselves) or having the responsibility for helping that person to access immunisation services. This person was not caring for the individual as a formal healthcare worker.

- Any person involved in training healthcare workers to deliver vaccines to, or communicate about vaccines with, older adults.
- Health service managers and other staff involved in, or responsible for, communicating with older adults about vaccination services.

This review focused on healthcare workers who communicated to older adults about vaccines because of their age. We excluded studies that focused on healthcare worker communication with older adults who were offered vaccines because they were considered medical high-risk groups in relation to their immune status (e.g. older adults with haematological cancers or who were HIV-positive) and who were, therefore, likely to require a much wider range of vaccinations as part of specialised care services.

Types of communication

- We included studies that described communication between a healthcare worker and a person aged over 50 years or their informal caregiver. For the purposes of this review, we defined a communication intervention as "a purposeful, structured, repeatable and adaptable strategy to inform and influence individual and community decisions in relation to personal and public health participation, disease prevention and promotion, policy-making, service improvement and research" (Hill 2011; Lewin 2011). A communication strategy implemented by a health authority could have included more than one intervention and have multiple purposes for communicating about vaccination. We had planned to use the comprehensive "Communicate to vaccinate" taxonomy of vaccination communication interventions to organise communication interventions outlined in the included studies (Kaufman 2017). However, we were unable to use this taxonomy partly because the studies were poorly described and it was not possible to categorise them, and partly because the studies we included did not always explore clearly defined interventions.
- We included studies of any type of bidirectional communication, including face-to-face interactions during a doctor's consultation; discussions of vaccination in a group setting, such as a care home; and communication via digital, analogue or printed communication in which a healthcare worker is involved directly (e.g. healthcare workers communicating with older adults via text messaging, apps or other communication channels). This included text messages that were sent by healthcare workers to groups of older adults, if each older adult was able to reply to the message, for example to request further information.
- We excluded studies of communication that was not mediated through a healthcare worker or did not involve communication between an older person and a healthcare worker in any direct way (e.g. untargeted communication via mass media channels such as radio, television and the Internet).

Search methods for identification of studies

Electronic searches

The EPOC Information Specialist developed the search strategies in consultation with the review authors.

We searched the following electronic databases on 20 March 2020:

- MEDLINE and Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Daily and Versions 1946 to March 19, 2020, Ovid;
- Cinahl 1981 – present, EbscoHost;
- Scopus, Elsevier

We developed search strategies for each database. We applied no limits on language or publication date. We searched all databases from inception to 20 March 2020. We searched the Epistemonikos database of systematic reviews for related reviews from inception to 21 March 2020 (www.epistemonikos.org).

See [Appendix 2](#) for these search strategies.

Grey literature

We conducted a grey literature search on 19 May 2020 in the following sources to identify studies not indexed in the databases listed above:

- OpenGrey (www.opengrey.eu);
- Grey Literature Report (New York Academy of Medicine; www.greylit.org)

See [Appendix 2](#) for these search strategies.

Searching other resources

We searched the Epistemonikos database for related systematic reviews on 21 March 2021 (<https://www.epistemonikos.org/>). We reviewed the reference lists of all the included studies and key references (i.e. relevant systematic reviews). We conducted a cited reference search for all included studies in Web of Science Core Collection, Clarivate Analytics.

We selected the included studies that most closely matched the review objectives. We conducted a 'related studies' search for these in Google Scholar and assessed the first two pages of that search for potentially relevant studies. We assessed qualitative studies identified through the linked review of intervention effectiveness carried out as part of the VITAL project. Finally, we contacted researchers with expertise relevant to the review topic to request studies that might meet our inclusion criteria.

Selection of studies

Two review authors (of CG, BC, SL, MW, BAW, RE) independently assessed each title and abstract of the identified records to evaluate eligibility. We retrieved the full text of all the papers identified as potentially relevant by both review authors. Two review authors then independently assessed these papers. We resolved disagreements by discussion or, when required, by involving a third review author. Where appropriate, we contacted the study authors for further information. Where review authors were also authors of identified studies, they did not assess these studies for inclusion.

We included a PRISMA flow diagram to show our search results and the process of screening and selecting studies for inclusion. Where the same study (i.e. using the same sample and methods) was presented in different reports, we collated these reports so that each study (rather than each report) was the unit of interest in our review. We included a [Characteristics of excluded studies](#) table listing studies that we excluded from our review at full-text stage, and the main reasons for exclusion.

Language translation

For titles and abstracts that were published in a language in which none of the review team were proficient (i.e. languages other than English, Scandinavian languages, German, French, Hungarian, Dutch and Spanish), we carried out an initial translation through open source software (Google Translate). If this translation had indicated inclusion, or if the translation was inadequate to make a decision, we planned to retrieve the full text of the paper and to ask members of Cochrane networks or other networks proficient in that language to assist us in assessing the full text of the paper for inclusion. If a paper in a particular language could not be assessed, we planned to list it as "awaiting classification," to ensure transparency in the review process. However, none of the titles and abstracts we translated were assessed as relevant and these further stages were therefore not necessary.

Sampling of studies

Qualitative evidence synthesis aims for variation in concepts rather than an exhaustive sample, and large amounts of study data can impair the quality of the analysis. Once we had identified all studies that were eligible for inclusion, we assessed whether their number or data richness was likely to represent a problem for the analysis, and whether we should consider selecting a sample of studies ([EPOC 2019](#)). Due to the relatively low number of included studies, we decided not to select a sample of studies, but instead to extract data from all included studies.

Data extraction

We used a data extraction form designed specifically for this review. We extracted information about first author, publication date, study language, country, healthcare setting (e.g. nursing home or primary healthcare clinic), type and number of healthcare workers, type of vaccine and characteristics of older adults (e.g. women over 65 years). We also extracted information about how the study was designed, conducted and funded. Finally, we extracted all data relevant to the review objective, including descriptions of themes and categories as well as illustrative quotes. One review author (CG) extracted data from all the sampled studies. One additional review author (of BC, SL, RE or MW) double-checked the data extraction performed by the first review author and verified that all relevant data were extracted. Where review authors were also authors of a study included in the review, they did not extract data from that study.

Assessing the methodological limitations of included studies

Our inclusion criteria specify that studies needed to use both qualitative data collection and analysis methods. This criterion also constitutes a basic quality threshold. In addition, at least two review authors (of CG, BC, SL, MW, RE) independently assessed methodological limitations for each study using a list of criteria

that we have used in previous Cochrane Reviews (Ames 2017; Ames 2019; Houghton 2020; Karimi-Shahanjarini 2019; Munabi-Babigumira 2017). This list was originally based on the Critical Appraisal Skills Programme (CASP) tool (CASP 2018), but has since gone through several iterations. For instance, we did not include questions about the appropriateness of qualitative methodology or the specific research design used as this was already covered in our inclusion criteria.

We assessed methodological limitations according to the following domains.

- Were the settings and context described adequately?
- Was the sampling strategy described, and was this appropriate?
- Was the data collection strategy described and justified?
- Was the data analysis described, and was this appropriate?
- Were the claims made/findings supported by sufficient evidence?
- Was there evidence of reflexivity?
- Did the study demonstrate sensitivity to ethical concerns?
- Any other concerns?

We resolved disagreements by discussion or, when required, by involving a third review author. One review author (RE) was also an author of one of the included studies and did not assess the methodological limitations of this study.

We reported our assessments in a 'Methodological limitations' table. We used these assessments to support our GRADE-CERQual (Confidence in the Evidence from Reviews of Qualitative research) assessment of our confidence in the review findings.

Assessing study author motivation

We also decided to extract and assess data regarding the study authors' motivations for carrying out the study. We were particularly interested in the extent to which the goal of the study was to increase vaccine uptake or whether study authors were interested in studying healthcare workers' views and behaviour for other reasons. While it is both common and legitimate to design studies that have some type of behavioural change as their ultimate goal, we were interested in how this motivation may have influenced the study. Two review authors (of RE, SL, CG) independently assessed the papers categorising them as:

- studies where the authors' motivation was to increase vaccine uptake; and
- studies where the authors had a more nuanced or neutral motivation; for instance, study authors who sought to describe a phenomenon such as vaccine behaviour, but who did not see behavioural change as their ultimate goal.

This part of the analysis also informed our assessments of study author reflexivity, as part of our assessment of methodological limitations (see above).

Data management, analysis and synthesis

Data synthesis

Based on our previous experiences within the topic of vaccinations and communication (Ames 2017), we suspected that the data we extracted would mainly offer thin description and that

it was likely to be largely descriptive as opposed to highly theorised or conceptual. This proved to be the case. Therefore, we decided to analyse and synthesise qualitative evidence using a thematic synthesis approach. Thematic synthesis is one of several approaches recommended by the Cochrane Qualitative and Implementation Methods Group (Noyes 2018), and may be particularly appropriate for this type of data.

We applied the following process in our data extraction and synthesis. First, one review author (CG) chose the article judged to most closely answer the review objectives. This was done by comparing the objective or main topic of interest of each article with the objective and main topic of interest of our review and choosing the best match, which we determined was Lasser 2008.

Two review authors (BC and CG) coded this article using a thematic analysis approach. We created a data extraction sheet based on the codes that emerged from this article and then coded the subsequent articles using the data extraction sheet. We made additions to the data extraction sheet where new codes emerged from the subsequent articles. We repeated this process until we had extracted and coded data from all the articles. Three other review authors (SL, MW, RE) verified data extraction and added any other data that they considered should be extracted and coded. During this process, we only coded data that we judged to be of direct relevance to the review topic (i.e. vaccine communication) and did not code data that we judged to be of no relevance to this topic. When we were in doubt about the relevance of the data, we chose to code it.

Two review authors (CG and BC) grouped data from across the studies that had been given the same codes. We then synthesised these data to create review findings. In some cases, this synthesis process led us to develop primarily descriptive findings that closely reflected the findings developed by the authors of the individual studies. In other cases, the synthesis process allowed us to go beyond the findings of the individual studies and develop new concepts, understandings or hypotheses (Thomas 2008).

Once we had drafted the findings, we shared them with the remaining co-review authors for review. Finally, we re-read the included studies to check that we have extracted all data relevant to the findings.

Assessing the transferability of the findings and conducting subgroup analyses

Using the TRANSFER approach (Munthe-Kaas 2020), we attempted to identify factors that could influence the transferability of our review findings to the contexts of interest in our review. We identified four stakeholders from diverse settings who had knowledge of, or experience with, the topic of the review. These included one policymaker from Slovenia and three healthcare workers from Brazil, South Africa and Norway working in primary healthcare, nursing home and hospital settings. (Unfortunately, the participant from South Africa had to leave the meeting early because of a work emergency.) Three of these stakeholders were also older adults.

We invited these stakeholders to participate in a structured discussion using the TRANSFER conversation guide (Munthe-Kaas 2020). During this discussion, we asked them to identify contextual factors that they believed were likely to influence the review

findings. These stakeholders identified multiple transferability factors, including factors tied to the older adult (their age, health, education levels, cultural backgrounds, and urban or rural residence); the healthcare worker (type of healthcare worker, healthcare workers' own vaccine uptake, and whether they were familiar to the patient); the healthcare setting; and the vaccine (type of vaccine, cost) and the age of the study. The review team had originally planned to prioritise these factors and use them as a basis for study sampling strategies and subgroup analyses. However, we did not sample studies or carry out subgroup analyses due to the small number of included studies in the review. We did, however, consider these factors when assessing the 'relevance' component of our GRADE-CERQual assessment (see below). We also considered these factors when carrying out our analysis.

Assessing our confidence in the review findings

Two review authors (CG, BC) used the GRADE-CERQual approach to assess our confidence in each finding (Lewin 2018a), based on the following four key components.

- Methodological limitations of included studies: the extent to which there were concerns about the design or conduct of the primary studies that contributed evidence to an individual review finding.
- Coherence of the review finding: an assessment of how clear and cogent (i.e. well-supported or compelling) the fit was between the data from the primary studies and a review finding that synthesised those data.
- Adequacy of the data contributing to a review finding: an overall determination of the degree of richness and quantity of data supporting a review finding.
- Relevance of the included studies to the review question: the extent to which the body of evidence from the primary studies supporting a review finding was applicable to the context (perspective or population, phenomenon of interest, setting) specified in the review question.

After assessing each of the four components, we made a judgement about our overall confidence in the evidence supporting the review finding. We judged confidence as being high, moderate, low or very low. Three other review authors (MW, RE, SL) examined our assessments and based a final assessment on consensus among these review authors. All findings started as high confidence and were downgraded if there were important concerns regarding any of the GRADE-CERQual components.

Summary of qualitative findings table and evidence profile

We presented summaries of the findings and our assessments of confidence in these findings in the summary of qualitative findings table. We presented detailed descriptions of our confidence assessment in an evidence profile (Lewin 2018b).

Developing implications for practice

Once we had finished preparing the review findings, three review authors (CG, SL, BAW) examined each finding, identified factors that could influence the implementation of the intervention and developed prompts for future implementers (Appendix 3). These prompts were not intended to be recommendations but were phrased as questions to help implementers consider the

implications of the review findings within their context. We sent the prompts to a selection of stakeholders (including relevant healthcare workers, researchers, communication advisers and older adults) to gather their feedback about the relevance of these prompts and the manner in which they were phrased and presented. After making any necessary edits in response to this feedback, we presented the prompts in the 'Implications for practice' section of this review.

Integrating the review findings with reviews of effectiveness

When preparing our review protocol (Glenton 2020b), we planned to explore how we could integrate our review findings with those of a related Cochrane Review assessing the effectiveness of interventions to increase the uptake of influenza vaccination in people aged 60 years and older in the community (Thomas 2018), and with those of a non-Cochrane intervention review that was part of the VITAL project and that focused on educational and training interventions for healthcare workers communicating to older adults about vaccination (Wennekes 2021). We originally considered the use of a matrix model approach similar to that used in Candy 2011. This would have involved exploring whether the interventions studied in these reviews contained the features of vaccination communication that our review identified as potentially important to the implementation of communication strategies. However, our use of the matrix model approach in other syntheses had mixed success because of the poor reporting of the interventions in the studies of intervention effectiveness (Ames 2017; Ames 2019; Munabi-Babigumira 2017). This made it difficult to assess whether the factors we identified as potentially important in our review were being ignored by trialists and others when developing interventions or whether they had considered these factors but not reported their impact on the intervention design. Instead, we decided to use the findings of our review to encourage better reporting of vaccination communication interventions, both in these reviews and individual studies.

We used the Template for Intervention Description and Replication (TIDieR) checklist as our starting point (Hoffmann 2014). We then examined each of our review findings and assessed how these could be used to elaborate on the TIDieR checklist items. We have presented these in an additional publication (Glenton 2021).

Review author reflexivity

In keeping with quality standards for reflexivity within qualitative research, we maintained a reflexive stance throughout all stages of the review process. We considered how our individual and collective views, beliefs and experiences could have influenced the choices we made in terms of the scope of the review and our review methods; our interpretation of the data and our interpretation of our own findings.

Four of the six review authors (CG, SL, BW, BC) are over 50 years of age. Five of the review authors (CG, SL, BW, MW, RE) are also employed by national public health institutes: three (CG, SL, BW) at the Norwegian Institute of Public Health and two (MW, RE) at the National Institute of Public Health and the Environment in the Netherlands. The sixth review author (BC) works at a university. Three review authors (CG, SL, BC) are social scientists who primarily work with research related to health systems issues. The other review authors are: a public health researcher who primarily works

in the field of vaccines (BW); a health scientist, primarily working in the field of social sciences on vaccination in older people (including the VITAL project) and antibiotic resistance (RE); and a PhD candidate, working on the VITAL project (MW).

None of the review authors provide patient care, including vaccine-related services, to older adults. While this may have allowed us to approach the data with an open mind, it may also have hindered our ability to understand all the issues raised by healthcare providers in these studies.

Considering our status as mostly 'older adults' – and reflecting our own personal values as well as our institutes' recommendations – we support the individual's right to make their own healthcare decisions, including about vaccination. We also believe it is important for people to have easy access to evidence-based information about vaccination, including information about adverse effects, evidence gaps and uncertainties. However, we also have a public health perspective, and regard adherence to the currently recommended vaccines as an important public health measure.

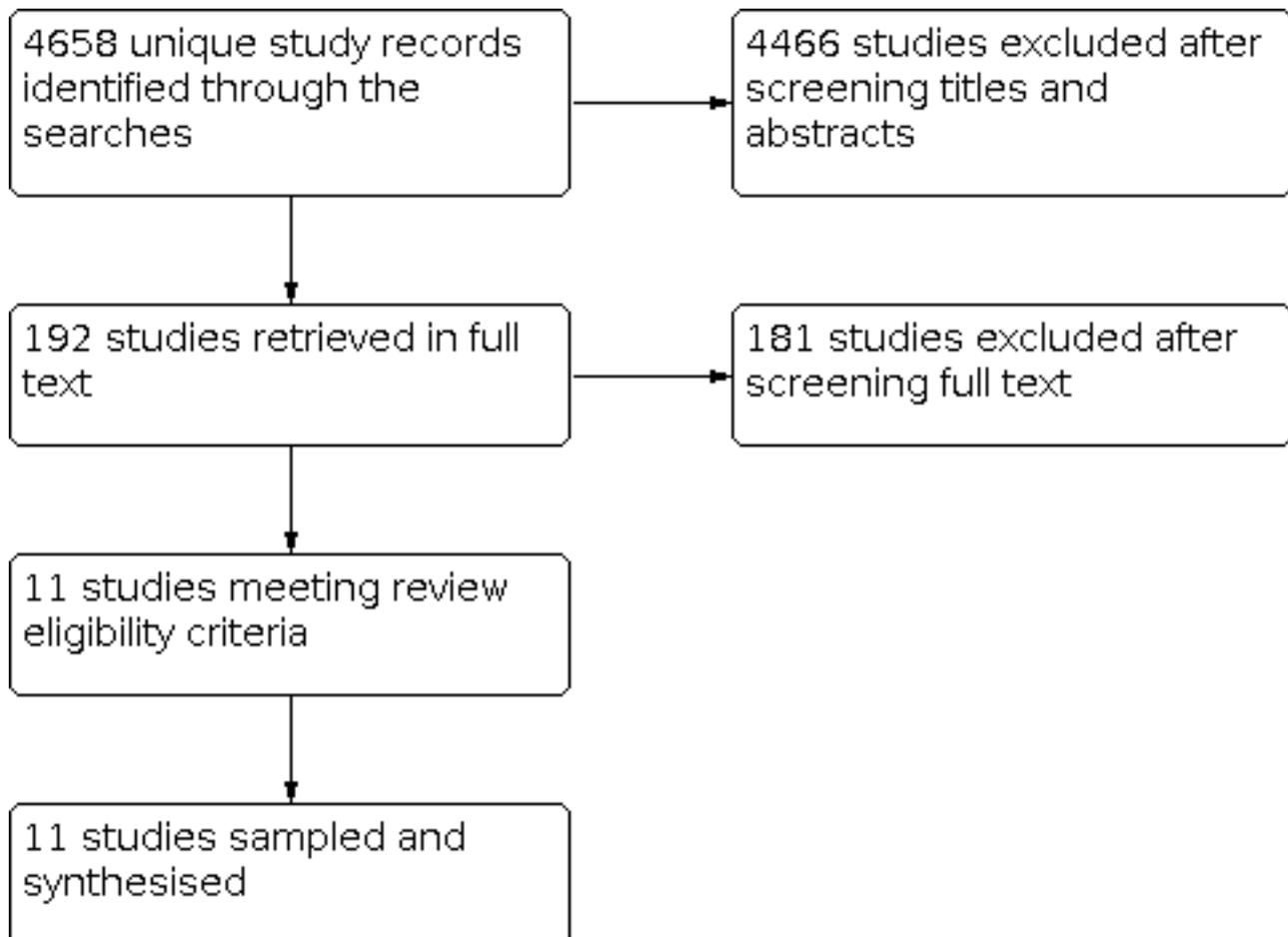
We continued to discuss and be aware of the potential tensions between the perspectives of the individual and public health perspectives throughout the review process. The topic of vaccines for older adults and the possible tension between individual and public health perspectives gained new relevance during the COVID-19 pandemic. In this context, we regarded the delivery of these vaccines as a crucial part of a public health emergency response. However, we continue to regard the individual's right to receive neutral, evidence-based information about benefits and harms and to make his or her own vaccine decision as at least as important as during non-pandemic situations.

RESULTS

Results of the search

We included 11 studies in our review ([Badertscher 2012](#); [Eilers 2015](#); [Ellen 2018](#); [Hinshaw 2011](#); [Huston 2019](#); [Hutt 2010](#); [Lasser 2008](#); [Lehmann 2014](#); [Raftopoulos 2008](#); [Wray 2007](#); [Zaouk 2019](#); [Figure 1](#)). These studies were published between 2007 and 2019 and were all published in English.

Figure 1. Study flow diagram.



Description of the studies

Study methods: the study authors gathered data using individual, semi-structured interviews ([Badertscher 2012](#); [Eilers 2015](#); [Ellen 2018](#); [Hinshaw 2011](#); [Huston 2019](#); [Hutt 2010](#); [Lasser 2008](#); [Lehmann](#)

[2014](#); [Wray 2007](#); [Zaouk 2019](#)), focus group interviews ([Raftopoulos 2008](#); [Wray 2007](#)), and observations ([Lasser 2008](#)); and analysed these data using various qualitative content analysis approaches.

Study focus: only one studies focused specifically on communication between healthcare workers and older adults about vaccination (Lasser 2008). Eight other studies explored healthcare workers' perceptions and experiences of vaccine delivery and vaccine uptake more broadly but included references to communication with older adults (Badertscher 2012; Eilers 2015; Ellen 2018; Huston 2019; Hinshaw 2011; Hutt 2010; Wray 2007; Zaouk 2019). Two studies focused on healthcare workers' perceptions and experiences of vaccines and vaccine uptake among healthcare workers themselves although also referred to communication with older adults about vaccines (Lehmann 2014; Raftopoulos 2008).

Study countries: all studies were set in high-income countries: four in Europe (Switzerland, the Netherlands, Belgium, Germany, Greece) (Badertscher 2012; Eilers 2015; Lehmann 2014; Raftopoulos 2008); four in the US (Huston 2019; Hutt 2010; Lasser 2008; Wray 2007); one in Canada (Hinshaw 2011); one in Australia (Zaouk 2019); and one in Israel (Ellen 2018).

Study settings and participants: three studies took place among doctors and nurses in primary and community healthcare services (Badertscher 2012; Eilers 2015; Lasser 2008). Three studies took place among different types of healthcare workers in hospital settings (Hinshaw 2011; Lehmann 2014; Zaouk 2019). Three studies took place among different types of healthcare workers in a mix of settings, including surgical and medical hospital departments, emergency departments, outpatient clinics, doctors' clinics, community clinics and public health services (Ellen 2018; Raftopoulos 2008; Wray 2007). One study took place among pharmacists in pharmacies (Huston 2019); and one study took place among staff at nursing homes (Hutt 2010). None of the studies explored the views and experiences of people involved in training healthcare workers to deliver vaccines or to communicate about vaccines with older adults.

Older adults: in five studies, the older adults referred to were over 64 or 65 years old (Badertscher 2012; Ellen 2018; Hinshaw 2011; Lasser 2008; Zaouk 2019), and in one study they were over 50 years old (Eilers 2015). The other studies did not specify the ages of the older adults. There was little or no reference to informal caregivers in any of the studies.

Vaccine types: the healthcare workers discussed vaccines to prevent influenza (Eilers 2015; Ellen 2018; Hinshaw 2011; Hutt 2010; Lasser 2008; Lehmann 2014; Raftopoulos 2008; Wray 2007), pneumococcal disease (Badertscher 2012; Eilers 2015; Hutt 2010; Zaouk 2019), herpes zoster (Eilers 2015; Huston 2019) and pertussis (Eilers 2015).

Type of communication: the types of communication described in the studies generally involved face-to-face interactions.

Funding sources: authors of three studies declared they had received funding for the study from pharmaceutical companies (Badertscher 2012; Huston 2019; Lehmann 2014). The authors reported that these funders did not have any influence on the study or reported the funding as "unrestricted." Authors of four studies reported that their studies were funded by government agencies or ministries of health (Eilers 2015; Hutt 2010; Lasser 2008; Wray 2007). Other funders included the Jerusalem College of Technology (Ellen 2018); the American Cancer Society (Lasser 2008), and The International Council of Nurses (Raftopoulos 2008). Authors of one

studies declared that they received no funding (Zaouk 2019), while one study provided no information about funding (Hinshaw 2011).

Methodological limitations of the studies

Most studies gave some description, even if very brief, of the context, participants, sampling, methods and analysis. However, we found poor or no reporting of researcher reflexivity across all the studies. In particular, discussions or reflections around study authors' own perceptions of vaccination and the extent to which they regarded increased compliance or informed decision-making as the ultimate goal of their research were generally lacking. This lack of discussion and reflection was of particular concern in studies carried out by researchers working at agencies or institutions that were likely to have an interest in increasing vaccine uptake and in studies funded by these agencies or by pharmaceutical companies.

All but one of the studies collected data through individual or focus group interviews. We considered this an appropriate type of data collection method when exploring people's views and this is reflected in our assessment of methodological limitations. However, only one study also observed healthcare worker behaviour. In several of our findings, healthcare workers described what could be perceived as 'ideal behaviour' and we were concerned about social desirability bias. The use of more participant or non-participant observation would have allowed us to learn more about healthcare worker experiences when communicating with older adults and would have given us an opportunity to use methods triangulation.

See [Table 2](#) for the assessment of methodological limitations.

Study authors' motivations

In most cases, authors considered their study of healthcare workers' perceptions and experiences of vaccination as a means to achieving the goal of increasing vaccination uptake. This motivation was made explicit by study authors in six studies (Ellen 2018; Huston 2019; Hutt 2010; Lasser 2008; Raftopoulos 2008; Wray 2007). In these studies, vaccine effectiveness was described by the study authors in unnuanced, positive terms ("one of the most effective tools," "breakthrough," essential"). Therefore, low uptake was described as a concern and the aim of the studies was to 'increase compliance and encourage older people to get vaccinated,' 'enhance vaccination delivery,' help increase' or 'improve' vaccination rates, 'identify barriers to and facilitators of completion' and 'overcome barriers to' vaccine uptake. In the sixth study, study authors referred throughout the paper to the use of 'patient-centred communication' strategies, including 'sharing of power and responsibility,' which initially indicated to us that they were focused on shared decision-making (Lasser 2008). However, closer inspection showed that the study authors regarded these strategies as tools for addressing barriers to vaccine acceptance.

Study authors' motivations were less explicit for four studies as these did not refer directly to increased vaccination uptake in their study aims. However, they did refer to this goal indirectly or in the discussion section of the paper (Badertscher 2012; Hinshaw 2011; Lehmann 2014; Zaouk 2019).

We assessed the study authors' motivations in one study (Eilers 2015) as descriptive and more 'neutral' with regards to vaccination uptake. Here, the study authors described vaccine effectiveness in nuanced terms ("effectiveness is inconsistent," "could reduce,"

"may be cost effective"). They also pointed out that as vaccines are recommended to older adults, the current low uptake is worthy of investigation, and the aim of the studies was to "explore or investigate healthcare workers' vaccine-related attitudes and behaviour." This study was led by one of the review authors and was, therefore, assessed by two other review authors.

Confidence in the review findings

Using the GRADE-CERQual approach, we assessed two findings as high confidence, nine findings as moderate confidence, four findings as low confidence and one finding as very low confidence.

Our main concerns were connected to the relevance of the supporting studies and the adequacy of the data. For several findings, the data were assessed as only partially relevant, mainly because the included studies came from a small range of settings and we were concerned about the relevance of these studies to other settings. In addition, several of the findings were supported by data that was thin or from only a small number of studies.

Our explanation of the GRADE-CERQual assessment for each review finding is shown in the evidence profiles (see [Appendix 1](#)).

Review findings

We organised our findings into two categories. In the first category, we focused on findings that were directly relevant to healthcare worker–older adult communication, including healthcare workers' views and experiences of older adults' information needs, the aim of the communication and healthcare workers' and adults' roles in decision-making. In the second category, we present findings that were not directly about communication. However, they did refer to 'prerequisites for communication,' that is, factors that were likely to influence how communication between healthcare workers and older adults took place. These included healthcare workers' views and experiences regarding the diseases in question and the vaccines; as well as their views and experiences of the organisational and practical implementation of vaccine services.

Summaries of each finding and their GRADE-CERQual assessment are available in [Summary of findings 1](#).

Category 1: healthcare workers' views and experiences of older adults' information needs, knowledge and perceptions; of the aim of vaccination communication; and of healthcare workers' and older adults' roles in decision-making

Finding 1. Healthcare workers reported that older adults asked about vaccination to different extents, ranging from not asking about vaccines at all in some settings to great demand in other settings (high-confidence finding)

General practitioners (GP) in one study did not mention the pneumococcal vaccine in consultations with older adults ([Badertscher 2012](#)). One reason they gave for this was that they had never had a patient ask about the vaccine and that some patients did not even know that this vaccine existed ([Badertscher 2012](#)). Healthcare workers in European hospitals also reported that they were very rarely asked about influenza vaccination ([Lehmann 2014](#)). US pharmacists, in contrast, described a greater patient demand for vaccines ([Huston 2019](#)).

Finding 2. When the topic of vaccination was discussed, healthcare workers described a lack of information, and

presence of misinformation, fears and concerns about vaccines among older adults (moderate-confidence finding)

Healthcare workers working in different healthcare settings described older adults as having a lack of information, and presence of misinformation, fears and concerns about vaccines in general and the influenza vaccine in particular. This included a fear of adverse effects; a fear that they would get influenza or influenza-like symptoms, and a 'lack of faith' in vaccine effectiveness ([Badertscher 2012](#); [Ellen 2018](#); [Huston 2019](#); [Raftopoulos 2008](#); [Wray 2007](#)). Some healthcare workers described older adults who believed that they were not susceptible to influenza, did not believe that influenza was a severe disease, or regarded themselves as healthy and therefore did not feel that they needed vaccination ([Ellen 2018](#); [Raftopoulos 2008](#); [Wray 2007](#)). Healthcare workers pointed to several reasons for older adults' positive or negative views about vaccines. These included their experiences with the disease and perceived disease severity ([Huston 2019](#)); experiences with the vaccine ([Ellen 2018](#)); influence from social groups and the media; religious beliefs or personal ideology; people's socioeconomic backgrounds ([Ellen 2018](#)); and a distrust in the medical system ([Wray 2007](#)). However, in one study that compared the views and experiences of healthcare workers and patients, healthcare workers appeared to be unaware of older adults' concerns about drug interactions and allergic reactions to the influenza vaccine:

"Providers also missed out on an educational opportunity, since many of the African American participants wanted to discuss the possibility of interactions with them" (Wray 2007, page 929).

Finding 3. The manner in which healthcare workers discussed vaccines with older adults appeared to be linked to what they considered the aim of vaccination communication. Healthcare workers differed among themselves in their perceptions of this aim and about their own roles and the roles of older adults in vaccine decisions. Some healthcare workers thought it was important to provide information but emphasised the right and responsibility of older adults to decide for themselves. Other healthcare workers used information to persuade and convince older adults to vaccinate in order to increase 'compliance' and 'improve' vaccination rates (a phenomenon that has been referred to as "informed compliance"), and, in one study of pharmacists, to gain financial benefits through increased sales. A third group of healthcare workers tailored their approach to what they believed the older adult needed or wanted (moderate-confidence findings)

Healthcare workers differed in how they described the aim of their communication about vaccines with older adults and how they perceived their own and the older adults' roles in vaccine decisions.

Some healthcare workers emphasised the role of providing older adults with information about benefits and harms while emphasising the individual's right and responsibility to make their own decision. Belgian hospital-based healthcare workers emphasised that their role was to inform people about the benefits of vaccination but that it was the older adult's decision:

"Not really my responsibility. They still decide that themselves. But you can tell your opinion and the advice, the recommendation to do it" (hospital-based immuniser, Belgium) (Lehmann 2014, page 8).

Australian emergency nurses described themselves as providers of information and education about vaccination as well as vaccine promoters, but also referred to older people as responsible for their own vaccinations:

"We assume that they [the elderly] are responsible for their own vaccination and they have completed whatever schedule they're supposed to" (emergency nurse, Australia) (Zaouk 2019).

Similarly, in the Netherlands, some GPs saw themselves as key providers of evidence-based information about vaccination but emphasised that the decision to vaccinate was the older adult's own:

"I'll give advice, I won't tell them what to do" (GP, the Netherlands) (Eilers 2015, page 5).

These Dutch GPs also referred to the older adult's right to choose when they discussed the pros and cons of using combination vaccines. While combination vaccines had logistical advantages for the GPs themselves as less work was required to order and provide the vaccines, they acknowledged that this would complicate the individual's right to choose one vaccine and not the other. Swiss GPs did not discuss their perceptions of their and their patients' roles in the decision-making process directly but referred to the fact that they often did not discuss the pneumococcal vaccine because older adults did not ask about it, suggesting that they regarded older adults as at least partly responsible (Badertscher 2012).

In contrast to this approach, some healthcare workers described using information about the vaccine and the disease to persuade and convince older adults to vaccinate, a phenomenon that has been referred to by other authors as "informed compliance" (Stapleton 2002). They did so in order to increase compliance and improve vaccination rates, and in some cases to gain financial benefits. Greek nurses working in different healthcare settings said that they would 'persuade,' 'recommend' and 'motivate' older people to have the influenza vaccine (Raftopoulos 2008). Israeli nurses, mostly based in primary care and the community, also described how they and other community members 'urge,' 'convince,' 'encourage' and 'advocate for' vaccines in order to achieve 'compliance' and increased uptake (Ellen 2018). Staff at US-based nursing homes referred to pressure and support from the nursing home corporation to improve vaccination rates. In one of the homes, the director of nursing stated that when a resident refused vaccination,

"education was provided to the resident and family detailing the importance and benefits of vaccination, and the vaccine was then re-offered." This [Director of Nursing] stated, "Our vaccination rates improved to almost 99%" (Hutt 2010, page 368).

US-based pharmacists and pharmacy technicians who had recently started to provide vaccines also considered themselves as vaccine promoters and advocates. They described their focus on increasing vaccine delivery and meeting targets as partly driven by their desire to benefit the older adult but also as motivated by financial benefits through increased sales (Huston 2019). Hospital staff in Canada did not discuss their perceptions of their and their patients' roles in the decision-making process directly but referred to their goal of "maximising vaccination" (Hinshaw 2011).

Among primary care workers (doctors and nurse practitioners) in the US, study authors described how they used communication strategies that were 'patient-centred,' including 'the sharing of power and responsibility' when decisions were made. However, the healthcare workers appear to be using these strategies in order to 'convince' patients and 'facilitate acceptance' of the influenza vaccine:

"Example 2 demonstrates how a [primary care provider] is able to convince a patient, initially reluctant to have an influenza vaccine, to receive the vaccine by the end of the visit. The [primary care provider] uses several tools to facilitate the patient's acceptance of the vaccine: he or she revisits the topic throughout the encounter, giving the patient an opportunity to think about it, and empowers the patient by allowing her to choose which arm for the injection" (Lasser 2008, page 5).

Finally, some healthcare workers described tailoring their approach according to what they believed the older adult needed or wanted. For instance, some Dutch GPs explained how their role depended on the needs and desires of the individual older adult:

"Well, that is really just about what you do as a doctor and what the patient likes to see and get. And by now, I do know my elderly patients, and some, well they like to discuss things and then you go along, and others expect to get more directions, and then you tell them what they should do" (GP, the Netherlands) (Eilers 2015, page 5).

Healthcare workers in different healthcare settings in the US described themselves as providers of information as well as awareness raisers and promoters of vaccines. At the same time,

"Providers also pointed out that patients often voice concerns about not having enough information to make informed decisions, and that patients rely on convenience and doctors' recommendations when deciding about vaccination" (Wray 2007, page 928).

German and Dutch hospital-based healthcare workers described recommending the influenza vaccine, particularly to high-risk groups:

"I don't recommend it to every patient, patients that have a heightened risk: immunocompromised patients, patients with lung diseases, patients aged 65 years and older. To them I do recommend it strongly" (hospital-based immuniser, Germany/the Netherlands) (Lehmann 2014, page 8).

Finding 4. Healthcare workers in community-based and primary care settings described how older adults often followed their vaccine recommendations. Healthcare workers believed that this influence was linked to trust, which in turn was linked to long-lasting relationships and sometimes also to shared cultural or language backgrounds (low-confidence finding)

Healthcare workers from community-based or primary care settings described how older adults often followed their recommendations to receive vaccines (Wray 2007), and believed that this was linked to trust (Eilers 2015; Ellen 2018; Lasser 2008). One Israeli primary care nurse explained:

"it's like they trust me completely ... like they have faith in me, and say—she knows, I do what she tells me to do" (nurse, primary care, Israel) (Ellen 2018, page 161).

Dutch GPs considered this trust the result of the long-lasting patient–doctor relationship and the perceived prestige of GPs by older adults:

"In general, we will have been in touch with the elderly for years, have treated them for years, so yes, alright, that implies we have built up trust, and that makes it rather easy to advise them, or means, for instance, that such advice will be taken. And that is what you see happen with the influenza vaccination" (GP, the Netherlands) (Eilers 2015, page 5).

In the US-based primary care study, authors also made the connection between uptake of recommended vaccines and the high levels of trust they observed between primary care providers and their patients. They suggested that this was tied to the fact that these relationships had lasted over time and may also have been tied to the cultural backgrounds of the patients and the fact that they shared a similar language and cultural background as the doctor (Lasser 2008). In another study from the US, providers described how many African Americans distrusted the medical system as a whole, but still trusted their doctor (Wray 2007). Related to this, US-based pharmacists pointed to problems with "floater" pharmacists (pharmacists who were not regular staff) as they knew the patient less well and sometimes duplicated discussions with patients about vaccines (Huston 2019).

Finding 5. Nurses, pharmacists and doctors suggested that some older adults preferred or were more likely to be influenced by some types of healthcare workers, particularly doctors. Some healthcare workers suggested that this was linked to doctors' perceived status and prestige (low-confidence finding)

Nurses and other healthcare workers suggested that doctors were the most influential source of information when older adults were deciding about vaccines (Ellen 2018; Wray 2007).

"Doctors have a much greater influence than nurses ... in my opinion, because they see the doctors as more knowledgeable than the nurses. The issue still isn't raised that sometimes the nurses know more ... the doctor's position is very important to them ... the doctor is many times perceived as a god, and that's it, you can't dispute [it]" (nurse, primary care, Israel) (Ellen 2018, page 162). "What I did see a lot of this year, is that if the doctor called, and not the nurses, then people came" (nurse, primary care, Israel) (Ellen 2018, page 163).

Dutch GPs also pointed to the perceived prestige of GPs (Eilers 2015), while nurses working in nursing homes suggested that promotion of the vaccine by the medical director played an important role in increasing vaccination rates (Hutt 2010).

However, in one US-based programme where pharmacists had begun to provide vaccine services, they reported that while some patients preferred to discuss immunisations with their physician, others were comfortable getting vaccines from the pharmacist (Huston 2019).

Finding 6. Some healthcare workers who had chosen not to have the influenza vaccine themselves noted that they would still promote this vaccine to older people. However, other healthcare workers suggested that it was easier to convince older adults to accept vaccines if the healthcare workers themselves believed in the advantages of vaccination and if

they led by example in accepting vaccination (low-confidence finding)

In two studies, doctors (Lehmann 2014) and nurses (Raftopoulos 2008) who had decided not to have the influenza vaccine themselves still said they would persuade older people to have the influenza vaccine because they believed it was an adequate preventive measure for this age group. Many of them had recommended and administered the influenza vaccine to their older relatives previously (Raftopoulos 2008). However, nurses in another study suggested that if they personally believed in the merits of vaccination, it was much easier to convince their patients to choose vaccination (Ellen 2018). One nurse explained,

"I think that it is really very hard to be in a situation that you need to recommend something to someone when you don't believe in it ... it seems to me that it's really a matter of conviction, if you believe in something, you can convince the other of it" (nurse, primary care, Israel) (Ellen 2018, page 162).

In the same study, nurses also suggested that patients felt encouraged to choose vaccination if the healthcare workers themselves were vaccinated:

"If they (the team) get vaccinated, it influences [the patients]. They (the patients) come and really ask, 'Are you vaccinated? Who is not vaccinated?' People ask and want to know. A person if he believes it will help, he can relay that message forward. Nurses that don't believe that it's effective, they can't relay the message" (nurse, primary care, Israel) (Ellen 2018, page 163).

Category 2: healthcare workers' views and experiences regarding diseases and vaccines and the organisational and practical implementation of vaccine services

Finding 7. Across different healthcare settings, healthcare workers generally regarded infections such as influenza, pneumococcal disease and herpes zoster as having serious enough consequences for older adults to justify a vaccine (moderate-confidence finding)

Healthcare workers from different healthcare settings believed that vaccines could be particularly important for older people (Eilers 2015; Ellen 2018; Lehmann 2014; Raftopoulos 2008; Wray 2007; Zaouk 2019). They described diseases such as influenza (Lehmann 2014; Wray 2007), pneumococcal diseases and herpes zoster (Eilers 2015) as serious illnesses with potentially severe consequences for older adults, thereby justifying vaccination. In the Dutch study, pertussis was not perceived by GPs as severe enough among older people to justify vaccination, but they did perceive it as a threat to infants and, therefore, regarded vaccination of older people as useful as it could contribute to herd immunity (Eilers 2015).

Finding 8. Healthcare workers' exposure to certain infectious diseases in their clinical practice could influence their views of disease severity or the priority they gave its prevention (moderate-confidence findings)

While healthcare workers generally regarded diseases such as influenza, pneumococcal disease and herpes zoster as sufficiently serious to justify a vaccine, authors of the Dutch GP study reported that GPs' perceptions of disease severity also appeared to be influenced by the extent to which they encountered patients with the disease. In this study, GPs were often not consulted when

patients experienced pneumococcal disease, herpes zoster and pertussis; while herpes zoster was the illness they saw most (Eilers 2015). Swiss GPs explained that they rarely discussed the pneumococcal vaccine in consultations with older adults because they gave this particular vaccine low priority (Badertscher 2012). A key reason for this was that they had hardly ever seen patients with confirmed invasive pneumococcal disease in their own practice and it was generally not perceived as a problem in daily practice. The authors noted that,

"in Switzerland, hospitalization of patients with severe health problems is not mandatorily initiated by the GP. So most of the patients with a severe pneumococcal infection are not seen by their GP, but go directly into the hospital on their own. The resulting rarity of the pneumococcal disease in daily practice obviously worsens the lack of awareness of a GP" (Badertscher 2012, page 971).

Finding 9. Not all healthcare workers were convinced of the effectiveness of vaccines for older adults, and emphasised the importance of evidence about benefits and harms (moderate-confidence finding)

In the Netherlands, most GPs regarded the seasonal influenza vaccine useful, but some questioned its effectiveness (Eilers 2015). Swiss GPs also referred to a lack of evidence about the effectiveness of the pneumococcal vaccine (Badertscher 2012). GPs in both studies emphasised the importance of evidence-based practice and the need for data regarding disease epidemiology, vaccine effectiveness and possible adverse effects among older adults (Badertscher 2012; Eilers 2015):

"The vaccination rate could be positively influenced if the existing data would be declared clearly and GPs would be transparently informed about the benefits and harms of the vaccination ... Number needed to vaccinate, number needed to harm ... Really proved in good studies ..." (GP, Switzerland) (Badertscher 2012, page 970).

Finding 10. A few healthcare workers were not convinced of the usefulness of vaccines for older adults with serious underlying illnesses and poor quality of life, and a small number of GPs suggested that in some cases it might be more merciful to let weaker older adults die of diseases such as influenza or pneumonia (very low-confidence finding)

In the study of Dutch GPs, a few argued that vaccinating older adults was not always the correct approach, and that, in some cases, it might be more merciful to let them die of influenza:

"Once again, those who die of it [the flu] will be the weaker brothers and sisters, who are already confined to bed, or suffer from Parkinson's or a serious case of COPD, or whatever. And then the end is actually merciful" (GP, the Netherlands) (Eilers 2015, page 3).

A small number of GPs made similar comments about pneumococcal disease, which was referred to as an old man's best friend:

"Oh, well no, I mean if you are 85 and your life isn't rosy, or you have really had enough, pneumococcal disease, pneumonia, can be a kind way to depart" (GPs, the Netherlands) (Eilers 2015, page 3).

Finding 11. Some healthcare workers did not consider age in itself should be the only indicator for vaccination, but also

pointed to other factors such as a person's medical history and living arrangements (moderate-confidence finding)

In some studies, healthcare workers explained that their decision to motivate older people to get a vaccine was not based on age alone, but also on factors including their medical history (Eilers 2015; Raftopoulos 2008), and whether they lived alone or with a family (Raftopoulos 2008).

Finding 12. Healthcare workers did not always prioritise vaccination services for older adults when faced with limited time and other, more acute health issues (moderate-confidence finding)

Another reason why Swiss GPs explained that they did not discuss the pneumococcal vaccine with their patients was because more acute problems had to be solved first. Therefore, there was often no time to discuss less prioritised topics, such as pneumococcal vaccination or preventive topics in general (Badertscher 2012). Nurses working in an emergency department felt that this was not always a suitable place to provide vaccination screening and were reluctant to initiate any care that was not predominantly emergency based or part of routine work (Zaouk 2019):

"... we don't consider it as an emergency ... it goes to the bottom of our list of things to do" (RN008). "If the patient comes in really sick, it's more important to get them inside and seen ... It's not something that comes to the top of your head with the elderly" (emergency nurse, Australia) (Zaouk 2019, page 3).

"[immunisation status screening] would come down to priority. Is that vaccination going to change anything now? Is it going to help with their sepsis now?" (emergency nurse, Australia) (Zaouk 2019, page 3).

A lack of time, and duties that were perceived as more acute or important, were also referred to in other studies as reasons for why healthcare workers in hospitals and primary care settings did not talk about vaccinations with patients (Lasser 2008; Lehmann 2014). Similarly, pharmacists described a lack of time to deliver vaccines because of high workload, inadequate help and other systems factors; and a perceived pressure to hurry from other patients waiting in line (Huston 2019):

"Engaging with talkative patients, while positive for customer loyalty, negatively affected time availability" (study author discussing pharmacists' experiences) (Huston 2019, page 214).

However, authors of one study observed that many primary care workers were able to take the time to raise preventive issues, including vaccines (Lasser 2008).

Finding 13. Across settings, providers sometimes offered vaccine services opportunistically (for instance, when attending appointments about other healthcare issues) or at designated timepoints (for instance, during vaccination days), and had different opinions about the practicalities of the different approaches (high-confidence findings)

Healthcare workers in different healthcare settings sometimes used the opportunities they had to offer vaccine services. Nurses (Ellen 2018) and pharmacists (Huston 2019) described approaching people who were visiting the health clinic or pharmacy for other reasons to promote or deliver vaccines:

"Participants also took an opportunistic approach regarding patients who attended the health clinic for other reasons, first of all, timing—if somebody can come for a blood test and suddenly he leaves with ... a blood pressure test, a flu vaccine, weight and height [checks]. It's like the timing is very important, to catch them, to get them when they are coming in for something minor ..." (nurse, primary care, Israel) (Ellen 2018, page 162).

Vaccine services were also provided at designated timepoints. For instance, in one study, community-based nurses visited people in their homes to increase access to vaccines, organised dedicated days for seasonal influenza vaccines, and gave people who wanted a vaccine priority (Ellen 2018). Other primary care workers organised walk-in clinics with no appointment needed and used existing patient registries to invite individuals from target groups (Lasser 2008); while staff at nursing homes systematically asked new residents about their vaccination status and organised regular influenza vaccination clinics (Hutt 2010).

GPs in one study had different opinions about the practicalities of annual influenza vaccination programmes (Eilers 2015). Some saw the execution of the influenza vaccination programme as an extensive undertaking and "a lot of bother." Others considered that the extra workload would be acceptable if financial compensation was forthcoming. Others, in contrast, argued that the work only took a few extra hours per year (Eilers 2015). Some GPs preferred any additional vaccines to be implemented within the influenza vaccination programme to keep things simple. To achieve this, they argued for similar selection criteria and for the use of combination vaccines.

Finding 14. Some healthcare workers complained of having limited knowledge about vaccination for older adults and wanted more training. Ongoing training was seen as important because of staff turnover. However, some healthcare workers complained about a lack of time for training (low-confidence finding)

Some healthcare workers complained of knowledge limitations about vaccination for older adults. In one study, a pharmacist complained that technicians were unable to answer questions from clients and regularly had to call the pharmacist for help (Huston 2019). In another study, emergency nurses expressed a lack of knowledge about vaccines for older adults, and said that education on this topic had been minimal (Zaouk 2019):

"[T]hey did stress it [education in university] for kids, but not the elderly" (emergency nurses, Australia) (Zaouk 2019, page 3).

In general, these emergency nurses were willing to learn more and were happy to provide information regarding vaccines to older people (Zaouk 2019):

"I think that if I knew there were certain vaccinations that older people were supposed to have then that in itself would make me think that it was important" (RN001), "I would like to promote it, if I knew it was good for them" (RN002), "well I have to know what the vaccination schedule is first" (RN002) (emergency nurses, Australia) (Zaouk 2019, page 3).

Pharmacists appreciated the opportunity to call study personnel to discuss strategies that worked for other pharmacies and appreciated receiving training and continued education regarding

vaccine recommendations, including updates to recommendations (Huston 2019):

"The training definitely helped because before doing those continued educations, I was thoroughly confused throughout the pneumonia because the way they kept changing guidelines it seemed like every year. I was like, "Are you kidding me? Wait a minute. This is different again? I just got the old one down! Ugh!" (pharmacist, US) (Huston 2019, page 213).

However, one pharmacist complained that they did not have time to complete study education videos during work hours (Huston 2019). Directors of nursing in one study pointed to the importance of continual staff education because of staff turnover (Hutt 2010).

Finding 15. The extent to which healthcare workers regarded vaccine services as part of their role and responsibilities varied. Some healthcare workers saw it as part of their role, others were concerned about encroaching on the roles of other providers, and others were unclear about who was responsible (moderate-confidence findings)

In studies conducted in clinics, hospitals, nursing homes and pharmacies, the extent to which staff regarded vaccine services for older adults as their role and responsibility varied. In the Dutch study, GPs all agreed that prevention was part of their job (Eilers 2015). They argued that GPs should be the preferred provider for all vaccinations and that the GP's clinic should be the central point for any new vaccination campaigns (Eilers 2015).

In the pharmacy-based study, pharmacists were initially hesitant to start the programme due to fears of pushback from doctors or damaging existing doctor–pharmacist relationships. However, pharmacists experienced that more doctors were becoming open to pharmacists as immunisers (Huston 2019):

"We were kind of skeptical at first ... we thought it [doing pneumococcal and zoster immunizations] was kind of stepping on the physician's toes and we didn't want to do something that they were offering because we wanted to work with them ... Well, it [the immunization environment] kinda flipped now. Now they [the physicians] don't want to do it [immunizations]. You can tell they don't want to do it, so we kept on seeing the demand so yeah. Myself and another pharmacist here got our certificates and all and we decided we'd go ahead and do it [We Immunize]" (pharmacist, US) (Huston 2019, page 210).

In one hospital-based study, most respondents supported influenza immunisation as an important in-hospital intervention. However, roles and responsibilities regarding vaccine services varied across hospital units. In some units, doctors took on some roles whereas in other units, nurses and pharmacists took on the same roles (Hinshaw 2011). In this same study,

"several respondents indicated the importance of a 'champion' who took personal responsibility for optimising processes on the unit to maximize vaccination' and suggested that 'it would be helpful to have a designated vaccination nurse who would be responsible for influenza vaccine throughout the hospital to standardize processes'" (Hinshaw 2011).

In another hospital-based study, staff saw advising older adults about vaccines as the task of the responsible practitioner (although it was unclear from the paper whether this was a hospital-based

practitioner), and therefore avoided giving this advice if they did not have this role (Lehmann 2014).

Finding 16. Providers' access to patient data, including patients' vaccination history or information about their comorbidities, sometimes influenced their ability to offer vaccination services (moderate-confidence findings)

Dutch GPs argued that they were best placed to offer vaccinations that were based on comorbidity criteria as they had access to patients' medical history (Eilers 2015). In the hospital-based study from Canada, healthcare workers were concerned about their lack of access to vaccination records, which was a particular problem when individuals with cognitive impairment or their guardians could not recall whether they had already received the influenza vaccine (Hinshaw 2011). In the pharmacy-based study, pharmacists noted that because they did not have a record of each individual's immunisation history, they sometimes repeated discussions that had taken place earlier with these individuals:

"... in general there is no record as to what we have, or who we have talked to and who we have not. For example, my technician A is talking to somebody, doesn't mean that technician B the next time is not going to talk to them. They don't know that A has talked" (pharmacist, US) (Huston 2019, page 214).

DISCUSSION

Our review identified 11 studies that met our inclusion criteria, only one of which focused specifically on communication between healthcare workers and older adults about vaccination. The apparent lack of attention paid by researchers to this topic may reflect a general lack of acknowledgement of communication as an intervention that can be studied in and of itself.

The authors of the studies we identified in our review were often motivated by a desire to increase vaccine uptake and did not generally discuss the possible tension between public health goals and the rights of the individual, a reflection of the general lack of study author reflexivity. We identified a similar pattern in research exploring the public's views of the swine flu vaccine (Carlsen 2016). For most of these study authors, their goal of achieving a better understanding of people's perceptions about the swine flu vaccine was seen as a means to the goal of increasing public compliance with government vaccination programmes. While some authors referred to concepts such as shared decision-making and informed choice, they did not discuss the potential tension between these approaches and the goal of increasing vaccine compliance (Carlsen 2016).

Healthcare workers in our review described a lack of information, and presence of misinformation, fears and concerns about vaccines among older adults. As communication was not the main focus of the studies, we know relatively little about how these healthcare workers responded to people's information gaps and concerns. Our review showed that some healthcare workers responded by offering information but leaving the decisions to the older adults, apparently reflecting a support of the 'informed choice' approach (Charles 1999). Others appeared to be using information to *convince* older adults to take the vaccine. This is an approach which Stapleton and colleagues have described as "informed compliance" in their study of the use of evidence-based leaflets in maternity care (Stapleton 2002). Here, Stapleton and colleagues

described how "cultural barriers within the maternity services encourage informed compliance, even though staff adopted the rhetoric of informed choice." One particular example of this from our own review is the Lasser study, which referred to strategies such as 'patient-centred communication' and 'sharing of power and responsibility' but where the aim of this communication is to 'convince' patients and 'facilitate acceptance' of the influenza vaccine (Lasser 2008).

One of the challenges we encountered in our review was the lack of reflexivity among study authors, particularly regarding their views of vaccines and the roles of older adults in decision-making. This meant that it was not straightforward to distinguish study authors' views and perspectives from those of the healthcare workers participating in their studies. Therefore, we are uncertain whether healthcare workers share with study authors the same apparent lack of awareness about the tension between informed or shared decision-making and the goal of increasing compliance. However, where healthcare workers are using information primarily to achieve patient adherence, there is reason to be concerned that they might be presenting information in ways that overstate the intervention's benefits, understate the risks or overstate the potential for harm without the intervention (Stapleton 2002).

Healthcare workers in our review also described how patients' decisions to vaccinate were sometimes influenced by the level of trust between the healthcare worker and the patient, by the status of the healthcare worker or through leading by example. These strategies need more exploration to determine if they are being used in a way that supports shared or informed decisions (Charles 1999), or are simply being used to persuade older adults to adhere to vaccine recommendations. For instance, a trusting relationship could create an environment that enhances communication and makes patients feel more able to ask questions (Freeman 2010; Stapleton 2002). In contrast, 'blind' trust may deter the patient from asking questions (Rolfe 2014), while an imbalance of power between healthcare providers and older adults could also reinforce compliance (Stapleton 2002).

While levels of awareness around the goals of shared decision-making and increasing compliance may vary, research suggests that the principle of patient involvement is widely supported by healthcare workers working with older adults in many settings (Wetzels 2004).

This requires, however, that healthcare workers make the correct assumptions about how much information and participation each individual actually wants. In one systematic review exploring barriers and facilitators to implementing shared decision-making, healthcare providers frequently explained that this approach was not applicable to certain types of patients, leading the review authors to suspect that "health professionals might be screening a priori which patients will prefer or benefit from shared decision-making" (Légaré 2008). Again, in our own review, we were hampered by the fact that communication was not the main focus of the studies. Therefore, we know little about how healthcare workers assess older adults' willingness to be involved in vaccine decisions. Where assumptions were made, these were likely to be context-specific and to reflect society's views of older adults and of the relationship between patients and providers. Healthcare worker behaviour is also likely to be influenced by the level of awareness about communication and decision-making in the

training of healthcare providers and by existing national guidance and legislation around patient rights.

At the time of writing, three COVID-19 vaccines have been approved for emergency use by the WHO (WHO 2021), and others are being assessed for approval. The WHO has identified older people as a priority group for these vaccines (WHO 2020), and this recommendation has been followed through in many countries. However, as the delivery of these vaccines is still very new, we know little about how vaccination communication is taking place in practice and how this communication is perceived by healthcare workers and older adults. The urgency of the current situation may lead government authorities to focus on vaccine uptake, and it is likely to be particularly challenging to develop processes that can support informed decisions in these circumstances. However, the newness of the COVID-19 vaccines and initial uncertainties regarding long-term effectiveness and adverse effects, particularly with regard to the oldest age groups, implies that access to information and the opportunity to participate in decision-making is more important than ever. While the current threat of infection may create high vaccine demands among members of the public, they may also be particularly aware of these uncertainties when new vaccines with limited long-term data are introduced (Carlsen 2016). Healthcare workers need the skills to be able to deal with these questions and concerns, and need to find communication approaches that balance public health needs with the rights of the individual to make his or her own informed decision. In guidance developed by colleagues at the Norwegian Public Health Institute, and where preliminary results from this review are referenced, healthcare workers are encouraged to listen and try to understand what people's concerns are; provide information about the vaccine and the infection, including what we know and what we do not know; provide information about the risk of adverse effects and the risk of not getting the vaccine; and give people an opportunity to make a new appointment where healthcare providers do not have answers to their questions or where people would like to change their decision (NIPH 2021). Future research should explore the extent to which this type of communication is taking place.

Limitations of the review

We only identified 11 relevant studies for this review. Although we searched key databases, it is possible that other search strategies, including searches focusing on research published in journals and databases that are not specific to health, would have identified additional studies.

AUTHORS' CONCLUSIONS

Implications for practice

Below is a series of questions that may help health system planners or programme managers in ministries of health, public health institutes, health professional organisations, healthcare facilities, nursing homes and other settings who plan, implement or manage communication between healthcare workers and older adults about vaccination. These questions build on the findings of this review. Therefore, they are limited by our findings. As these findings do not cover all types of settings and communication strategies, there are likely to be gaps. In addition, the importance of these questions to your setting may vary.

Clarifying the aim of communication about vaccination

1. Communication aim: there is a potential tension between the public health goal of *increasing vaccination uptake* and the goal of supporting the individual's *informed decision*. Have the authorities in your setting made it clear what they see as the aim of vaccination communication with older adults and what the older adult's role in the decision-making process should be?

Healthcare workers' views and attitudes about communication and decision-making

2. Older adults' rights and preferences: where the overall aim of communication is to support informed decisions, do healthcare workers in your setting acknowledge and respect the older adult's right to information and the right to make his or her own decision? Do healthcare workers acknowledge that older adults may want different quantities of information, may not want to make the decision themselves, or may lack the capacity to do so?

3. Communication training: have healthcare workers been provided with appropriate initial and ongoing training in communication or shared decision-making skills, or both? Does this training reinforce the message that healthcare workers should avoid introducing their own criteria for determining who should and should not receive vaccines?

4. Awareness around influence: are healthcare workers aware of the influence they may have on older adults' decisions and how they use this influence? For instance, in some settings the opinions of some healthcare workers such as doctors may have more influence than those of other types of healthcare workers. For all healthcare workers, can this influence be used positively to create an atmosphere of trust that supports good communication rather than simply a tool to persuade older adults to be compliant?

5. Healthcare workers' vaccine uptake: are healthcare workers who have been offered a vaccine themselves but have declined it still willing to offer neutral and balanced information to older adults about this vaccine?

The healthcare worker–older adult relationship

6. Part of healthcare workers' role? Do healthcare workers regard communication about preventive services such as vaccination as part of their role? Is this role made clear in their professional education and through regulations and job descriptions? Is it clear how the responsibility to communicate about vaccines is distributed across different parts of the health system? If this role has recently been given to a group of healthcare workers, have their professional bodies been involved in the planning and implementation of communication tasks?

7. Established relationship? Do older adults in your setting already have an established relationship with a particular healthcare worker that may increase trust in communication? If so, is that healthcare worker involved in communication with older adults regarding vaccination?

8. Initiating the conversation: is it part of the healthcare worker's responsibility, rather than that of the older adults, to raise the issue of vaccination, and has this responsibility been made part of a routine in clinical practice?

9. **Supporting vulnerable older adults:** do healthcare workers have guidance and support when communicating with older adults who do not have the capacity to make their own decisions?

10. **Language issues:** do healthcare workers have guidance and support when communicating with older adults who do not speak the majority language in their setting?

Practical issues when communicating with older adults

11. **Time:** do healthcare workers have sufficient time to discuss vaccine-related issues with older adults?

12. **Context:** are healthcare workers offering vaccine services opportunistically (for instance, when attending appointments about other healthcare issues) or at designated timepoints (for instance, during vaccination days), and what implications does this have for communication? For instance, will there be time to talk, to send information beforehand so that the older adult is sufficiently prepared to be able to make a decision?

13. **Disease information:** do healthcare workers have a good understanding of the disease that the vaccine is intended to prevent, particularly if this is a disease that they are not likely to see in their own practice? Do they have easy access to up-to-date information about its severity and its prevalence in their setting? And is this information provided in ways that they can share easily with older adults?

14. **Addressing key concerns:** do healthcare workers have easy access to up-to-date, evidence-based information that addresses the questions, fears and concerns about vaccines that older adults commonly have in their setting? Is this information provided in ways that they can share easily with older adults?

15. **Vaccine information:** do healthcare workers have easy access to up-to-date, evidence-based information about the effectiveness of the vaccine as well as potential adverse effects? Is this information provided in ways that they can share easily with older adults?

16. **Patient data:** do healthcare workers have easy access to the patient information they need when discussing vaccines with an older adult or making a recommendation? For instance, people may not remember if they have already had the vaccine. Where it is important to avoid 'over-vaccination,' do healthcare workers have easy access to the person's vaccination history? In addition, where the person's age is not the only indicator but where other underlying health conditions also play a role, do they have easy access to the person's medical data?

17. **Agreement with recommendations:** do healthcare workers support current recommendations about who should receive the vaccine?

Implications for future research

The following implications for research are based on our assessment of the studies included in this review and our GRADE-CERQual assessments of the review findings.

Future researchers in the field of vaccines and vaccination communication should consider and be explicit about the motivations driving their research, and whether their ultimate aim is to increase vaccine uptake, support informed choice, or other

perspectives. Researchers should also consider the extent to which their own perspectives, places of work or sources of funding have influenced the aim, design and conduct of their research.

More primary research on vaccine decision-making and communication about vaccines between healthcare workers and older adults is needed. This includes research in nursing home settings as well as research focusing on communication with older adults and their family members or other informal caregivers in situations where that person cannot make that decision themselves. Future researchers could also explore how vaccination communication between healthcare workers and older adults differs when this communication takes place opportunistically versus through planned appointments or outreach.

Future researchers should consider collecting data through participant or non-participant observation in order to explore healthcare worker practice to complement the data about healthcare worker views and experiences gathered through interviews and focus groups.

More primary research is needed in a broader range of settings, including low- and middle-income settings.

Future research should also consider exploring the influence of demographic factors including age, gender, ethnic background, income and education level, on health worker-older adult communication.

This review was started before vaccines to prevent COVID-19 were available. Future researchers should consider studying communication to older adults about vaccines developed in the context of a pandemic and compare the nature of this communication as well as older adults' communication needs and how this compares to communication around other vaccines.

Our review has identified several factors that may influence the implementation of vaccination communication strategies for older adults. However, it is difficult to assess whether trialists and others have taken factors such as these into consideration when developing interventions as reporting is often poor (Hoffmann 2014). This poor reporting also makes it difficult to replicate the interventions. Therefore, future trialists should consider how they can improve the quality of their reporting.

In a related publication (Glenton 2021), we have suggested several ways in the TIDieR (Template for Intervention Description and Replication) checklist (Hoffmann 2014) could be elaborated on specifically for interventions to enhance communication between healthcare workers and older adults regarding vaccination.

Researchers working in this field should also consider using other taxonomies that are available, such as the COMMVAC taxonomy of communication interventions for childhood vaccination (Kaufman 2017).

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CHARACTERISTICS OF STUDIES
Characteristics of included studies [ordered by study ID]
Badertscher 2012
Study characteristics

Country	Switzerland
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Healthcare workers' perceptions and experiences of communicating with people over 50 years of age about vaccination: a qualitative evidence synthesis (Review)

Badertscher 2012 *(Continued)*

Study aim	"(T)he aim of our qualitative study was to investigate individual GPs' views on the pneumococcal vaccination. We particularly focus on reasons for the known gap between governmental recommendations for the pneumococcal vaccination and performance in the primary care setting. With our study, we explicitly wanted to investigate why the pneumococcal vaccination was so rarely provided by GPs."
Type and number of healthcare worker participants	20 GPs
Healthcare setting and characteristics of older adults	General practices. GPs were expected to offer the pneumococcal vaccine to everyone aged > 64 years but also to all at-risk patients of any age. The results discussed these patients as one group. However, it was implicit that most patients they referred to were older adults that were offered the vaccine because of their age.
Type of vaccine(s)	Pneumococcal vaccine (recommended in Switzerland to all adults aged > 64 years at the time of the study)
Methods of data collection and analysis	Semi-structured, open-ended interviews. Qualitative content analysis
Funding sources for the study/conflict of interest	"The study was funded by a grant from Sanofi Pasteur MSD AG, Switzerland. The sponsor did not have any influence on the study design, content or evaluation of the results. Apart from this, the authors declare no further conflicts of interest."
Notes	

Eilers 2015
Study characteristics

Country	The Netherlands
Study aim	"Despite positive attitudes regarding the current vaccinations, little is known about GPs' attitudes regarding vaccination of older persons in general, or regarding the potential candidate vaccines for this population. Given this lack of knowledge, the aim of this qualitative study was to explore these attitudes among Dutch GPs."
Type and number of healthcare worker participants	10 GPs
Healthcare setting and characteristics of older adults	General practices – 3 within an academic hospital, 3 individual practices, and 4 in a practice based in a healthcare centre. Adults aged > 50 years
Type of vaccine(s)	Herpes zoster vaccine, pneumococcal vaccine, pertussis vaccine, influenza vaccine
Methods of data collection and analysis	Semi-structured, face-to-face interviews. Thematic survey principles
Funding sources for the study/conflict of interest	Funded by the Dutch Ministry of Health, Welfare and Sport. "The authors declare that they have no competing interests."

Hinshaw 2011 (Continued)

Funding sources for the study/conflict of interest	No information on funding provided. "Conflict of interest: None to report."
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Notes

Huston 2019
Study characteristics

Country	USA
Study aim	"The goals of this qualitative project were to explore: 1. pharmacist's perceptions of the We Immunize program in terms of its acceptability, impact and feasibility with regard to real-world implementation; 2. pharmacist-perceived facilitators and barriers influencing success in immunisation delivery enhancement."
Type and number of healthcare worker participants	14 pharmacists
Healthcare setting and characteristics of older adults	Pharmacies. The type of older adults the pharmacists were referring to was sometimes not specified. However, it was implicit that most were older adults that were offered the vaccine because of their age.
Type of vaccine(s)	Pneumococcal and zoster vaccines
Methods of data collection and analysis	Semi-structured qualitative telephone interviews. Thematic analysis
Funding sources for the study/conflict of interest	"This work was supported by Merck & Co through the Investigator Initiated Study mechanism (#53380). Funders played no part in the study design, data collection, data analysis or manuscript preparation." "The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article."

Notes

Hutt 2010
Study characteristics

Country	USA
Study aim	"Objectives: Determine whether a comprehensive approach to implementing national consensus guidelines for nursing home acquired pneumonia (NHAP), including influenza and pneumococcal vaccination, improves resident subject and staff vaccination rates. Following the intervention, a qualitative study was undertaken to better understand the successes, challenges and barriers to the main study intervention."
Type and number of healthcare worker participants	16 Directors of Nursing, 2 Assistant Directors of Nursing, 9 liaison nurses, 2 staff development co-ordinators, and 2 Divisional Directors of Clinical Care of each corporate division.

Hutt 2010 (Continued)

Healthcare setting and characteristics of older adults	Older women residing in nursing homes.
Type of vaccine(s)	Seasonal influenza and pneumococcal vaccines
Methods of data collection and analysis	Semi-structured interviews. Transcripts from the qualitative interviews were analysed using content coding and a qualitative descriptive data analytic process.
Funding sources for the study/conflict of interest	Supported by a grant from the Agency for Health Care Research and Quality, RO1-HS13608. The authors did not refer to the issue of conflict of interest.
Notes	

Lasser 2008
Study characteristics

Country	USA
Study aim	"The primary objectives were (1) to describe the dialogue between primary care providers and elderly patients about influenza vaccines and colorectal cancer screening and (2) to identify both potential barriers to and facilitators of completion of these preventive services."
Type and number of healthcare worker participants	7 primary care providers (physicians and nurse practitioners)
Healthcare setting and characteristics of older adults	2 urban community health centres in greater Boston Patients aged ≥ 65 years, who spoke English, Spanish or Haitian Creole, and who had not received an influenza vaccine in the current year
Type of vaccine(s)	Influenza vaccine
Methods of data collection and analysis	Questionnaires, observation with detailed descriptive field notes and in-depth interviews. The authors read all transcripts and field notes and discussed the details of each encounter. They identified potential barriers to and facilitators of completion of preventive services that emerged in these discussions, as well as specific patient-centred communication strategies. They reviewed and critiqued interim versions of the main barriers and facilitators in an iterative process.
Funding sources for the study/conflict of interest	"This study was supported by grant TS-1300 CDC Cooperative Agreement No. U50/CCU3300860 from the Centers for Disease Control and Prevention. Dr Lasser's work was also supported by Mentored Research Scholar Grant MRSMT-05-007-01-CPPB from the American Cancer Society." The authors did not refer to the issue of conflict of interest.
Notes	

Lehmann 2014
Study characteristics

Healthcare workers' perceptions and experiences of communicating with people over 50 years of age about vaccination: a qualitative evidence synthesis (Review)

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Lehmann 2014 (Continued)

Country	Belgium, the Netherlands, Germany
Study aim	"(T)o gain a direct and more in-depth understanding of the beliefs underlying the decision to get vaccinated against influenza of healthcare providers that are already known, as well as allowing for the possibility to identify beliefs that have not been captured by previous quantitative studies."
Type and number of healthcare worker participants	47 Belgian healthcare providers, 45 Dutch healthcare providers and 31 German healthcare providers. No specific information given about the type of healthcare providers, but study participation was open to all types.
Healthcare setting and characteristics of older adults	3 hospitals. The study looked at healthcare providers' views and attitudes towards being vaccinated themselves. These providers cared for all types of patients, but we extracted data that specifically referred to older adults.
Type of vaccine(s)	Influenza vaccine
Methods of data collection and analysis	Semi-structured interviews. Content analysis based on a combination of a deductive and a general inductive approach. The deductive analysis was based on concepts of the Reasoned Action Approach.
Funding sources for the study/conflict of interest	"This study was funded by an unrestricted educational grant from Abbott Health Care Products B.V.2." "The authors declare that they have no competing interests."
Notes	

Raftopoulos 2008
Study characteristics

Country	Greece
Study aim	"To explore the knowledge, attitudes and beliefs of nurses in Greece towards influenza vaccination."
Type and number of healthcare worker participants	30 nurses
Healthcare setting and characteristics of older adults	Nurses who worked in various healthcare settings such as hospitals, emergency departments, outpatient clinics, surgical and medical hospital departments in private and public healthcare facilities as well as nurses who specialised in public health nursing. Study focused on nurses' knowledge, attitudes and beliefs about being vaccinated themselves. These nurses worked with a range of patient groups, but only study data dealing with older adults was extracted.
Type of vaccine(s)	Seasonal influenza vaccine
Methods of data collection and analysis	4 focus groups. Content analysis, using the Health Belief Model as a theoretical framework
Funding sources for the study/conflict of interest	The research is part of a larger project funded by The International Council of Nurses. The authors did not refer to the issue of conflict of interest.
Notes	

Wray 2007
Study characteristics

Country	USA
Study aim	"Why are older African Americans less likely than whites to get a flu vaccination? [...] In light of this disparity, we explored barriers to flu vaccination among this population, including concerns over safety and adverse events, and the role that health care providers can play in overcoming these issues."
Type and number of healthcare worker participants	14 professionals (nurses, physicians' assistants and vaccination programme administrators) working in clinics that offered the influenza vaccine
Healthcare setting and characteristics of older adults	Local hospitals, doctors' clinics, health departments and clinics. Older African American adults who were ambivalent about getting an influenza vaccination.
Type of vaccine(s)	Influenza vaccine
Methods of data collection and analysis	Focus group and interviews. In pairs, research team members coded each of the transcripts independently, reviewed and discussed their codes and then came to agreement on the final codes. Coded transcripts were entered into Atlas.ti (Atlas.ti GmbH, Berlin, Germany), a qualitative data analysis software program, and were analysed with summary reports drafted for each focus group and interview.
Funding sources for the study/conflict of interest	"This research was funded by grant #6465 from the National Immunization Program at the Centers for Disease Control and Prevention, via Special Interest Project 11, to the Prevention Research Center at the Saint Louis University School of Public Health." "The authors reported no potential conflicts of interest relevant to this article."
Notes	

Zaouk 2019
Study characteristics

Country	Australia
Study aim	"The aim of this study is to understand what nurses knew about vaccination in the elderly and to examine the practices and attitudes surrounding immunisation status screening."
Type and number of healthcare worker participants	9 emergency nurses
Healthcare setting and characteristics of older adults	People aged > 65 years visiting the emergency department of a large suburban Local Health District
Type of vaccine(s)	Pneumococcal vaccine
Methods of data collection and analysis	Semi-structured interviews. Thematic analysis
Funding sources for the study/conflict of interest	No funding was received for the study.

Zaouk 2019 (Continued)

The authors declared no conflicts of interest associated with the study.

Notes

GP: general practitioner.

Characteristics of excluded studies [author-defined order]

Study	Reason for exclusion
Braxton 2010	Study explored healthcare workers' views and experiences of vaccines for adults of all ages and it was not possible to extract data that were specifically relevant for adults aged > 50 years.
Clarke 2007	Study explored healthcare workers' views and experiences of vaccines for adults of all ages and it was not possible to extract data that were specifically relevant for adults aged > 50 years
Cutrona 2016	Study explored healthcare workers' views and experiences of vaccines for adults of all ages and it was not possible to extract data that were specifically relevant for adults aged > 50 years.
Davis 2005	Study explored healthcare workers' views and experiences of vaccines for adults of all ages and it was not possible to extract data that were specifically relevant for adults aged > 50 years.
Fisher 2019	Study explored healthcare workers' views and experiences of vaccines for adults of all ages and it was not possible to extract data that were specifically relevant for adults aged > 50 years.
Ho 2016	Study explored healthcare workers' views and experiences of vaccines for adults of all ages and it was not possible to extract data that were specifically relevant for adults aged > 50 years.
Hurley 2019	Study explored healthcare workers' views and experiences of vaccines for adults of all ages and it was not possible to extract data that were specifically relevant for adults aged > 50 years.
Kulczyck 2017	Study explored healthcare workers' views and experiences of vaccines for adults of all ages and it was not possible to extract data that were specifically relevant for adults aged > 50 years.
Landis 1995	Study explored healthcare workers' views and experiences of vaccines for adults of all ages and it was not possible to extract data that were specifically relevant for adults aged > 50 years.
MacDougall 2015a	Study explored healthcare workers' views and experiences of vaccines for adults of all ages and it was not possible to extract data that were specifically relevant for adults aged > 50 years.
MacDougall 2016	Study explored healthcare workers' views and experiences of vaccines for adults of all ages and it was not possible to extract data that were specifically relevant for adults aged > 50 years.
MacDougall 2015b	Study explored healthcare workers' views and experiences of vaccines for adults of all ages and it was not possible to extract data that were specifically relevant for adults aged > 50 years.
Zwar 2007	Study explored healthcare workers' views and experiences of vaccines for adults of all ages and it was not possible to extract data that were specifically relevant for adults aged > 50 years.
Yonas 2012	Study explored healthcare workers' views and experiences of vaccines for adults of all ages and it was not possible to extract data that were specifically relevant for adults aged > 50 years.
Manca 2018a	Study explored healthcare workers' views and experiences of vaccines for adults of all ages and it was not possible to extract data that were specifically relevant for adults aged > 50 years.

Study	Reason for exclusion
Manca 2018b	Study explored healthcare workers' views and experiences of vaccines for adults of all ages and it was not possible to extract data that were specifically relevant for adults aged > 50 years.
Seymour 2014	Study explored healthcare workers' views and experiences of vaccines for adults of all ages and it was not possible to extract data that were specifically relevant for adults aged > 50 years.
Omura 2014	Study explored healthcare workers' views and experiences of vaccines for adults of all ages and it was not possible to extract data that were specifically relevant for adults aged > 50 years.
Martinez 2016	Study explored healthcare workers' views and experiences of vaccines for adults of all ages and it was not possible to extract data that were specifically relevant for adults aged > 50 years.
Marcu 2015	Study explored healthcare workers' views and experiences of vaccines for adults of all ages and it was not possible to extract data that were specifically relevant for adults aged > 50 years.
Willis 2007	Study explored healthcare workers' views and experiences of vaccines for adults of all ages and it was not possible to extract data that were specifically relevant for adults aged > 50 years.
Nowalk 2012	Study explored healthcare workers' views and experiences of vaccines for adults of all ages and it was not possible to extract data that were specifically relevant for adults aged > 50 years.
Mueller 2007	Study explored healthcare workers' views and experiences of vaccines for adults of all ages and it was not possible to extract data that were specifically relevant for adults aged > 50 years.

ADDITIONAL TABLES

Table 1. Summary of related systematic reviews

Author/ date	Title	Review objective	Included studies
Bach 2019	Addressing common barriers in adult immunizations: a review of interventions	To assess the effectiveness of interventions in adults that aimed to address barriers to vaccine uptake.	Controlled studies or before-after studies English-language studies of adults aged ≥ 18 years. Studies relevant to US context
Eilers 2014	Factors affecting the uptake of vaccination by the elderly in Western society	To explore factors related to vaccine uptake by elderly people.	Qualitative and quantitative studies English-language studies of adults aged ≥ 50 years from Western countries
Kan 2018	Factors influencing seasonal influenza vaccination behaviour among elderly people: a systematic review	To explore behaviour-related factors influencing influenza vaccination among elderly people.	Cross-sectional, longitudinal and qualitative studies English-language studies of adults aged ≥ 60 years. No restriction on country
Lorenc 2017	Seasonal influenza vaccination of healthcare workers: systematic review of qualitative evidence	To explore healthcare workers' perceptions and experiences of vaccination for seasonal influenza.	Qualitative studies English-language studies of healthcare workers

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Table 1. Summary of related systematic reviews (Continued)

			No restriction on country
Nagata 2013	Social determinants of health and seasonal influenza vaccination in adults ≥65 years: a systematic review of qualitative and quantitative data	To assess the social determinants of health preventing adults aged ≥ 65 years from accessing and accepting seasonal influenza vaccination.	Qualitative and quantitative studies English-language studies of adults aged ≥ 65 years No restriction on country
Rusli 2018	Maximising influenza vaccination awareness and uptake among older adults in Singapore	To identify the need and priorities for influenza vaccination and strategies to increase uptake among adults aged < 65 years.	Papers from peer-reviewed journals English-language studies published between 2001 and 2016 No restriction on country
Thomas 2018	Interventions to increase influenza vaccination rates of those 60 years and older in the community	To assess the effectiveness of access, provider, system and societal interventions to increase the uptake of influenza vaccination.	Randomised trials or cluster-randomised trials Adults aged ≥ 60 years No restriction on study language or country
Ward 2008	A review of the factors involved in older people's decision-making with regard to influenza vaccination: a literature review	To explore factors involved in older people's decision-making with regard to influenza vaccination.	Papers from peer-reviewed journals English-language studies of adults aged ≥ 65 years Studies relevant to UK context

Table 2. Assessment of methodological limitations

Study ID	Are the setting/s and context described adequately?	Is the sampling strategy described, and is this appropriate?	Is the data collection strategy described and is it appropriate? ^a	Is the data analysis described, and is this appropriate?	Are the claims made/findings supported by sufficient evidence?	Is there evidence of reflexivity?	Does the study demonstrate sensitivity to ethical concerns?	Overall assessment of methodological limitations
Badertscher 2012	Yes	Partial	Yes	Yes	Yes	No	Yes	Minor concerns
Eilers 2015	Yes	Yes	Yes	Yes	Yes	No	Yes	Minor concerns
Ellen 2018	Yes	Yes	Yes	Yes	Yes	No	Yes	Minor concerns
Hinshaw 2011	Partial	No	No	No	Unclear	No	Yes	Moderate concerns
Huston 2019	Yes	Yes	Yes	Yes	Yes	Partial	Yes	Minor concerns
Hutt 2010	Yes	Yes	Partial	Yes	Yes	No	No	Minor concerns
Lasser 2008	Yes	Yes	Yes	Yes	Yes	Partial	Yes	No or very minor concerns
Lehmann 2014	Partial	Yes	Yes	Yes	Yes	Partial	Yes	No or very minor concerns
Raftopoulos 2008	Yes	Yes	Yes	Yes	No	No	Yes	Serious concerns
Wray 2007	Yes	No	Partial	Partial	Yes	No	Yes	Moderate concerns
Zaouk 2019	Yes	Yes	No	Yes	Yes	No	Yes	Minor concerns

^aWe assessed the data collection strategies as appropriate for most of these studies. However, for some review findings, we noted that a concern was that none of the contributing studies had collected data using observation of practice.

APPENDICES

Appendix 1. GRADE-CERQual evidence profile

Summarised review finding	Methodological limitations	Coherence	Adequacy	Relevance	GRADE-CERQual assessment of confidence	References
<p>Finding 1. Healthcare workers reported that older adults asked about vaccination to different extents, ranging from not asking about vaccines at all in some settings to great demand in other settings.</p>	No/very minor concerns	No/very minor concerns	<p>No/very minor concerns</p> <p>The underlying data was relatively thin and came from few studies. However, we assessed the finding as simple and descriptive with fewer demands on data richness and data quantity.</p>	No/very minor concerns	<p>High confidence</p> <p>No/very minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, no/very minor concerns regarding adequacy and no/very minor concerns regarding relevance</p>	<p>Badertscher 2012; Huston 2019; Lehmann 2014</p>
<p>Finding 2. When the topic of vaccination was discussed, healthcare workers described a lack of information, and presence of misinformation, fears and concerns about vaccines among older adults.</p>	No/very minor concerns	No/very minor concerns	<p>Minor concerns</p> <p>Minor concerns regarding adequacy because of few studies and thin data.</p>	<p>Moderate concerns</p> <p>Moderate concerns about relevance because the studies came from a small range of geographical, high-income settings and it is possible that older adults' knowledge and views of vaccines differs in other countries or settings.</p>	<p>Moderate confidence</p> <p>No/very minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, minor concerns regarding adequacy, and minor concerns regarding relevance.</p>	<p>Badertscher 2012; Ellen 2018; Huston 2019; Raftopoulos 2008; Wray 2007</p>

(Continued)

<p>Finding 3. The manner in which healthcare workers discussed vaccines with older adults appeared to be linked to what they saw as the aim of vaccination communication. Healthcare workers differed among themselves in their perceptions of this aim and about their own roles and the roles of older adults in vaccine decisions. Some healthcare workers thought it was important to provide information but emphasised the right and responsibility of older adults to decide for themselves. Other healthcare workers used information to persuade and convince older adults to vaccinate in order to increase 'compliance' and 'improve' vaccination rates, and in some cases to gain financial benefits. A third group of healthcare workers tailored their approach to what they believed the older adult needed or wanted.</p>	<p>Minor concerns</p> <p>Minor concerns about the possibility of social desirability bias as the healthcare providers were describing what they may have perceived as 'ideal behaviour.' The underlying data were all interview-based, and it was possible that qualitative studies using observation could have shown a different pattern. This was potentially compounded by a general lack of reflexivity among the research authors as it was unclear what they themselves saw as ideal behaviour and how their own roles and perspectives could have influenced their collection and interpretation of the data.</p>	<p>No/very minor concerns</p>	<p>No/very minor concerns</p>	<p>Moderate concerns</p> <p>Moderate concerns about relevance because the studies came from a small range of geographical, high-income settings and it is possible that the relationship between healthcare workers and older adults differs in other countries or settings.</p>	<p>Moderate confidence</p> <p>Minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, no/very minor concerns regarding adequacy, and moderate concerns regarding relevance.</p>	<p>Badertscher 2012; Eilers 2015; Ellen 2018; Hinshaw 2011; Huston 2019; Hutt 2010; Lasser 2008; Lehmann 2014; Raftopoulos 2008; Wray 2007; Zaouk 2019</p>
<p>Finding 4. Healthcare workers in community-based and primary care settings described how older adults often followed their vaccine recommendations. Healthcare workers believed that this influence was linked to trust, which in turn was linked to long-lasting relationships and sometimes also to shared cultural or language backgrounds.</p>	<p>Minor concerns</p> <p>Minor concerns about the possibility of social desirability bias as the healthcare providers were describing what they may have perceived as 'ideal behaviour.' The underlying data were all interview-based, and it was possible that qualitative studies using observation could have shown a different pattern. This was potentially compounded by a general lack of reflexivity among the research authors as it was unclear what they them-</p>	<p>No/very minor concerns</p>	<p>Moderate concerns</p> <p>Moderate concerns regarding adequacy because this was an explanatory finding that was supported by relatively few studies and thin data.</p>	<p>Moderate concerns</p> <p>Moderate concerns about relevance because the studies came from a small range of geographical, high-income settings and it is possible that the relationship between healthcare workers and older adults differs in other coun-</p>	<p>Low confidence</p> <p>Minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, moderate concerns regarding adequacy, and moderate concerns regarding relevance.</p>	<p>Eilers 2015; Ellen 2018; Huston 2019; Lasser 2008; Wray 2007</p>

(Continued)

selves saw as ideal behaviour and how their own roles and perspectives could have influenced their collection and interpretation of the data.

tries or settings.

<p>Finding 5. Nurses, pharmacists and doctors suggested that some older adults preferred or were more likely to be influenced by some types of healthcare workers, particularly doctors. Some healthcare workers suggested that this was linked to doctors' perceived status and prestige.</p>	<p>No/very minor concerns</p>	<p>No/very minor concerns</p>	<p>Moderate concerns</p> <p>Moderate concerns regarding adequacy because this was an explanatory finding that was supported by relatively few studies and very thin data.</p>	<p>Moderate concerns</p> <p>Moderate concerns about relevance because the studies came from a small range of geographical, high-income settings and it was possible that the relationship between healthcare workers and older adults differed in other countries or settings.</p>	<p>Low confidence</p> <p>No/very minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, moderate concerns regarding adequacy and moderate concerns regarding relevance.</p>	<p>Eilers 2015; Ellen 2018; Huston 2019; Hutt 2010; Wray 2007</p>
<p>Finding 6. Some healthcare workers who had chosen not to have the influenza vaccine themselves noted that they would still promote this vaccine to older people. However, other healthcare workers suggested that it was easier to convince older adults to accept vaccines if the healthcare workers themselves believed in the advantages of vaccination and if they led by example in accepting vaccination.</p>	<p>Minor concerns</p> <p>Minor concerns about the possibility of social desirability bias as the healthcare providers are describing what they may perceive as 'ideal behaviour.' The underlying data were all interview-based, and it was possible that qualitative studies using observation could have shown a different pattern. This was compounded by the lack of reflexivity among the research authors as it was unclear what they themselves saw as ideal behaviour and how their own roles and perspectives could have influenced their collection and in-</p>	<p>No/very minor concerns</p>	<p>Moderate concerns</p> <p>Moderate concerns regarding adequacy because this was an explanatory finding that was supported by relatively few studies and very thin data.</p>	<p>Moderate concerns</p> <p>Moderate concerns about relevance because the studies came from a small range of geographical, high-income settings and it was possible that the relationship between healthcare workers and older adults differs in other countries or settings.</p>	<p>Low confidence</p> <p>Minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, moderate concerns regarding adequacy, and moderate concerns regarding relevance.</p>	<p>Ellen 2018; Lehmann 2014; Raftopoulos 2008</p>

(Continued)

terpretation of the data.

<p>Finding 7. Across different healthcare settings, healthcare workers generally regarded infections such as influenza, pneumococcal disease and herpes zoster as having serious enough consequences for older adults to justify a vaccine.</p>	<p>Minor concerns</p> <p>Minor concerns about the possibility of social desirability bias as the healthcare providers were describing what they may have perceived as 'ideal behaviour.' The underlying data were all interview-based, and it was possible that qualitative studies using observation could have shown a different pattern. This was compounded by the lack of reflexivity among the research authors as it was unclear what they themselves saw as ideal behaviour and how their own roles and perspectives could have influenced their collection and interpretation of the data.</p>	<p>No/very minor concerns</p>	<p>No/very minor concerns</p>	<p>Moderate concerns</p> <p>Moderate concerns about relevance because the studies came from a small range of geographical, high-income settings and it is possible that healthcare providers' knowledge and views of vaccine-preventable diseases among older adults differs in other countries or settings.</p>	<p>Moderate confidence</p> <p>Minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, no/very minor concerns regarding adequacy and moderate concerns regarding relevance.</p>	<p>Eilers 2015; Ellen 2018; Lehmann 2014; Raftopoulos 2008; Wray 2007; Zaouk 2019</p>
<p>Finding 8. Healthcare workers' exposure to certain infectious diseases in their clinical practice could influence their views of disease severity or the priority they gave its prevention.</p>	<p>No/very minor concerns</p>	<p>No/very minor concerns</p>	<p>Moderate concerns</p> <p>Moderate concerns regarding adequacy because of few studies and very thin data.</p>	<p>No/very minor concerns</p>	<p>Moderate confidence</p> <p>No/very minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, moderate concerns regarding adequacy and no/very minor concerns regarding relevance.</p>	<p>Badertscher 2012; Eilers 2015</p>
<p>Finding 9. Not all healthcare workers were convinced of the effectiveness of vaccines for older adults, and emphasised the importance of evidence about benefits and harms.</p>	<p>No/very minor concerns</p>	<p>No/very minor concerns</p>	<p>Moderate concerns</p> <p>Moderate concerns regarding adequacy because of few studies and very thin data.</p>	<p>Minor concerns</p> <p>Minor concerns about relevance because the studies came from a small range of geographical,</p>	<p>Moderate confidence</p> <p>No/very minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, moderate con-</p>	<p>Badertscher 2012; Eilers 2015</p>

(Continued)

high-income settings and it was possible that healthcare providers' attitudes to vaccines and to evidence differs in other countries or settings.

cerns regarding adequacy and minor concerns regarding relevance.

Finding 10. A few healthcare workers were not convinced of the <i>usefulness</i> of vaccines for older adults with serious underlying illnesses and poor quality of life, and a small number of GPs suggested that in some cases it might be more merciful to let weaker older adults die of diseases such as influenza or pneumonia.	No/very minor concerns	No/very minor concerns	Serious concerns Serious concerns regarding adequacy because this finding was based on 1 study and thin data.	Serious concerns Serious concerns about relevance because the studies came from only 1 setting in the Netherlands and it is likely that healthcare providers' views regarding older adults and ageing differs in other countries or settings.	Very low confidence No/very minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, serious concerns regarding adequacy and serious concerns regarding relevance.	Eilers 2015
Finding 11. Some healthcare workers did not think age in itself should be the only indicator for vaccination, but also pointed to other factors such as their medical history and living arrangements.	No/very minor concerns	No/very minor concerns	Moderate concerns Moderate concerns regarding adequacy because of few studies and thin data.	No/very minor concerns	Moderate confidence No/very minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, moderate concerns regarding adequacy, and no/very minor concerns regarding relevance.	Eilers 2015; Raftopoulos 2008
Finding 12. Healthcare workers did not always prioritise vaccination services for older adults when faced with limited time and other, more acute health issues.	Minor concerns Some concern about the possibility of social desirability bias as the healthcare providers may have	Minor concerns Minor concerns regarding coherence	No/very minor concerns	No/very minor concerns	Moderate confidence Minor concerns regarding methodological limitations, mi-	Badertscher 2012; Huston 2019; Lasser 2008; Lehmann

(Continued)

been justifying why they were not following what they may have perceived as 'ideal behaviour.' And as the data were all interview-based, it was possible that qualitative studies using observation could have shown a different pattern. This was compounded by the lack of reflexivity among the research authors as it was unclear what they themselves saw as ideal behaviour and how their own roles and perspectives could have influenced their collection and interpretation of the data.

because it was not entirely clear why healthcare workers in 1 article made time available for vaccines whereas others perceived that they had no time available (Lasser 2008).

nor concerns regarding coherence, no/very minor concerns regarding adequacy and no/very minor concerns regarding relevance.

2014; Zaouk 2019

<p>Finding 13. Across settings, providers sometimes offered vaccine services opportunistically (for instance, when attending appointments about other healthcare issues) or at designated timepoints (for instance, during vaccination days), and had different opinions about the practicalities of the different approaches.</p>	<p>No/very minor concerns</p>	<p>No/very minor concerns</p>	<p>Minor concerns Minor concerns regarding adequacy because of thin data.</p>	<p>No/very minor concerns</p>	<p>High confidence No/very minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, minor concerns regarding adequacy, and no/very minor concerns regarding relevance.</p>	<p>Eilers 2015; Ellen 2018; Huston 2019; Hutt 2010; Lasser 2008</p>
<p>Finding 14. Some healthcare workers complained of having limited knowledge about vaccination for older adults and wanted more training. Ongoing training was seen as important because of staff turnover. However, some healthcare workers complained about a lack of time for training.</p>	<p>Minor concerns Some concern about the possibility of social desirability bias as the healthcare providers may have been justifying why they were not following what they may have perceived as 'ideal behaviour.' And as the data was all interview-based, it is possible that qualitative studies using observation could have shown a different pattern. This was compounded by the lack of reflexivity</p>	<p>No/very minor concerns</p>	<p>Moderate concerns Minor concerns regarding adequacy because of few studies and thin data.</p>	<p>Moderate concerns Moderate concerns about relevance because the studies came from a small range of geographical, high-income settings and it is likely that healthcare providers' access to training dif-</p>	<p>Low confidence Minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, moderate concerns regarding adequacy and moderate concerns regarding relevance.</p>	<p>Huston 2019; Hutt 2010; Zaouk 2019</p>

(Continued)

ty among the research authors as it was unclear what they themselves saw as ideal behaviour and how their own roles and perspectives could have influenced their collection and interpretation of the data.

fers in other countries or settings.

Finding 15. The extent to which healthcare workers regarded vaccine services as part of their role and responsibilities varied. Some providers saw it as part of their role, others were concerned about encroaching on the roles of other providers and others were unclear about who was responsible.

Minor concerns

Minor concerns regarding methodological limitations because 1 of the 4 papers supporting this finding was very poorly reported and the quality of this study was therefore difficult to assess.

No/very minor concerns
Moderate concerns

Moderate concerns regarding adequacy because of few studies and thin data.

No/very minor concerns
Moderate confidence

No/very minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, moderate concerns regarding adequacy and no/very minor concerns regarding relevance.

Eilers 2015; Hinshaw 2011; Huston 2019; Lehmann 2014

Finding 16. Providers' access to patient data, including patients' vaccination history or information about their comorbidities, sometimes influenced their ability to offer vaccination services.

Minor concerns

Minor concerns regarding methodological limitations because 1 of the 3 papers supporting this finding was very poorly reported and the quality of this study was therefore difficult to assess.

No/very minor concerns
Minor concerns

Minor concerns regarding adequacy because of few studies and thin data.

No/very minor concerns
Moderate confidence

Minor concerns regarding methodological limitations, no/very minor concerns regarding coherence, minor concerns regarding adequacy and no/very minor concerns regarding relevance.

Eilers 2015; Hinshaw 2011; Huston 2019

Appendix 2. Search strategies

MEDLINE and Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Daily and Versions 1946 to March 19, 2020, Ovid (searched 20.03.2020)

#	Searches	Results
1	exp Vaccines/	225255
2	exp Immunization/	172736

(Continued)

3	(vaccin* or immuni*).ti,ab,kf.	530955
4	or/1-3	618129
5	Aged/	3026801
6	"Aged, 80 and over"/	893990
7	Frail Elderly/	11081
8	Middle Aged/	4280600
9	"Health Services for the Aged"/	17533
10	(middle age or aged or elderly or senior? or adult? or old or older).ti,ab,kf.	2906590
11	or/5-10	6829813
12	4 and 11	109946
13	Qualitative Research/	52587
14	Interviews as Topic/	60749
15	(qualitative or interview* or thematic analysis or themes or mixed method?).ti,ab,kf.	529958
16	or/13-15	548562
17	12 and 16	3720

CINAHL 1981-present, EbscoHost (searched 20.03.2020)

#	Query	Results
S1	(MH "Vaccines+")	46,967
S2	(MH "Immunization+")	27,198
S3	TI (vaccin* or immuni*) OR AB (vaccin* or immuni*)	67,171
S4	S1 OR S2 OR S3	86,303
S5	(MH "Middle Age")	1,049,783
S6	(MH "Aged")	835,373
S7	(MH "Aged, 80 and Over")	304,680
S8	(MH "Centenarians")	53

(Continued)

S9	(MH "Frail Elderly")	8,137
S10	(MH "Health Services for the Aged")	6,749
S11	TI ("middle age" or aged or elderly or senior or seniors or adult or adults or old or older) OR AB ("middle age" or aged or elderly or senior or seniors or adult or adults or old or older)	752,809
S12	S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11	1,742,935
S13	S4 AND S12	20,801
S14	(MH "Qualitative Studies+")	164,758
S15	(MH "Structured Interview")	11,628
S16	(MH "Semi-Structured Interview")	72,943
S17	(MH "Interviews")	167,435
S18	(MH "Thematic Analysis")	73,150
S19	TI (qualitative or interview* or "thematic analysis" or themes or "mixed method" or "mixed methods") OR AB (qualitative or interview* or "thematic analysis" or themes or "mixed method" or "mixed methods")	327,221
S20	S14 OR S15 OR S16 OR S17 OR S18 OR S19	462,014
S21	S13 AND S20	1,774
S22	S21 [Exclude MEDLINE records]	671

Scopus, Elsevier (searched 20.03.2020)

((KEY(vaccine OR vaccination OR immunization)) AND (KEY("middle aged" OR aged OR "frail elderly" OR "very elderly"))) AND (KEY("qualitative research" OR interview OR "semi structured interview" OR "thematic analysis" OR "qualitative analysis"))) OR (TITLE-ABS(vaccin* OR immuni*) AND TITLE-ABS("middle age" OR aged OR elderly OR senior OR seniors OR adult OR adults OR old OR older) AND TITLE-ABS(qualitative OR interview* OR "thematic analysis" OR themes OR "mixed method" OR "mixed methods")) AND NOT INDEX(medline)

Epistemonikos, Epideemonikos Foundation: <https://www.epistemonikos.org/> (searched 21.03.2020)

Title/Abstract: (vaccin* OR immuni*) AND ("middle age" OR aged OR elderly OR senior OR seniors OR adult OR adults OR old OR older) AND (qualitative OR interview* OR "thematic analysis" OR themes OR "mixed method" OR "mixed methods")

Grey literature (searched 19.05.20)

OpenGrey (www.opengrey.eu) (vaccin* OR immuni*) AND ("middle age" OR aged OR elderly OR senior* OR adult* OR old OR older) AND (qualitativ* OR interview* OR themes OR "mixed method" OR "mixed methods")

(Continued)

The Grey Literature Report
 (<http://www.greylit.org/>)

‘immunization adults’
 ‘vaccin adult’
 ‘qualitative’

Appendix 3. Moving from the review findings to implications for practice and suggestions for reporting standards

Synthesis finding	Implications for practice ('IP')	Elaboration of TIDieR checklist items for interventions to enhance communication between health-care workers and older adults regarding vaccination
Finding 1. Healthcare workers reported that older adults asked about vaccination to different extents, ranging from not asking about vaccines at all in some settings to great demand in other settings (high-confidence finding).	(IP8) Initiating the conversation: is it part of the healthcare worker's responsibility, rather than that of the older adults, to raise the issue of vaccination, and has this responsibility been made part of a routine in clinical practice?	(TIDieR item 6: how) Describe how the communication intervention has been integrated into the healthcare worker's routine practice, including whether the healthcare worker is expected to raise the issue of vaccination or whether this is usually left to the older adult.
Finding 2. When the topic of vaccination was discussed, healthcare workers described a lack of information, and presence of misinformation, fears and concerns about vaccines among older adults (moderate-confidence finding).	(IP14) Addressing key concerns: do healthcare workers have easy access to up-to-date, evidence-based information that addresses the questions, fears and concerns about vaccines that older adults commonly have in their setting? Is this information provided in ways that they can share easily with older adults? (IP15) Vaccine information: do healthcare workers have easy access to up-to-date, evidence-based information about the effectiveness of the vaccine as well as potential adverse effects? Is this information provided in ways that they can share easily with older adults? (IP13) Disease information: do healthcare workers have a good understanding of the disease that the vaccine is intended to prevent, particularly if this is a disease that they are not likely to see in their own practice? Do they have easy access to up-to-date information about its severity and its prevalence in their setting? Is this information provided in ways that they can share easily with older adults?	(TIDieR item 3: what materials) Describe the content of any informational material provided to the older adult. Does it cover the questions, fears and concerns that older adults commonly have in their setting? (TIDieR item 9: tailoring) Describe the content of any informational material that the healthcare worker is expected to share with the older adult and whether the healthcare worker can easily tailor this information to the needs and preferences of the individual older adult.
Finding 3. The manner in which healthcare workers discussed vaccines with older adults appeared to be linked to what they saw as the aim of vaccination communication. Healthcare workers differed among themselves in their perceptions of this aim and about their own roles and the roles	(IP1) Communication aim: there is a potential tension between the public health goal of <i>increasing vaccination uptake</i> and the goal of supporting the individual's <i>informed decision</i> . Have the authorities in your setting made it clear what they see as the aim of vaccination communication with older adults and what the older adult's role in the decision-making process should be? (IP2) Older adults' rights and preferences: where the overall aim of communication is to support informed	(TIDieR item 2: why) Define what you see as the overall aim of the intervention. In addition to the aim of increasing vaccination adherence, does the intervention aim to support the individual's informed choice, including giving them access to evidence-based, neutral information and the opportunity for shared de-

Healthcare workers' perceptions and experiences of communicating with people over 50 years of age about vaccination: a qualitative evidence synthesis (Review)

(Continued)

of older adults in vaccine decisions. Some healthcare workers thought it was important to provide information but emphasised the right and responsibility of older adults to decide for themselves. Other healthcare workers used information to persuade and convince older adults to vaccinate in order to increase 'compliance' and 'improve' vaccination rates, and in some cases to gain financial benefits. A third group of healthcare workers tailored their approach to what they believed the older adult needed or wanted (moderate-confidence finding).

decisions, do healthcare workers in your setting acknowledge and respect the older adult's right to information and the right to make his or her own decision? Do healthcare workers acknowledge that older adults may want different amounts of information, may not want to make the decision themselves, or may lack the capacity to do so?

(IP3) Communication training: have healthcare workers been provided with appropriate initial and ongoing training in communication or shared decision-making skills, or both? Does this training reinforce the message that healthcare workers should avoid introducing their own criteria for determining who should and should not receive vaccines?

decision-making? And if so, have you made this explicit?

(TIDieR item 5: who provided) Describe the content of any training given to the healthcare worker. Does it include a clarification of the aim of the communication; and a discussion of their role and the role of the older adults in vaccination communication and decision-making?

(TIDieR item 5: who provided) Describe the content of any training given to the healthcare worker. Does this training reinforce the message that healthcare workers should avoid introducing their own criteria for determining who should and should not receive vaccines?

Finding 4. Healthcare workers in community-based and primary care settings described how older adults often followed their vaccine recommendations. Healthcare workers believed that this influence was linked to trust, which in turn was linked to long-lasting relationships and sometimes also to shared cultural or language backgrounds (low-confidence finding).

(IP9) Language issues: do healthcare workers have guidance and support when communicating with older adults who do not speak the majority language in their setting?

(IP7) Do older adults in your setting already have an established relationship with a particular healthcare worker that may increase trust in communication? If so, is that healthcare worker involved in communication with older adults regarding vaccination?

(TIDieR item 5: who provided) Describe the relationship between the healthcare worker and the older adult. Do they already have an established relationship (for instance, are they the older adult's family doctor or nursing home staff) or is it likely that the older adult will be meeting them for the first time (for instance, during a hospital appointment)?

(TIDieR item 9: tailoring). Describe any routines that have been put in place to facilitate communication with older adults who do not speak the majority language.

Finding 5. Nurses, pharmacists and doctors suggested that some older adults preferred or were more likely to be influenced by some types of providers, particularly doctors. Some healthcare workers suggested that this was linked to doctors' perceived status and prestige (low-confidence finding).

(IP4) Awareness around influence: are healthcare workers aware of the influence they may have on older adults' decisions and how they use this influence? For instance, in some settings the opinions of some healthcare workers such as doctors may carry more weight than those of other types of healthcare workers. For all healthcare workers, can this influence be used positively to create an atmosphere of trust that supports good communication rather than simply a tool to persuade older adults to be compliant?

(TIDieR item 5: who provided) Describe the relationship between the healthcare worker and the older adult. Do they already have an established relationship (for instance, are they the older adult's family doctor or nursing home staff) or is it likely that the older adult will be meeting them for the first time (for instance, during a hospital appointment)?

Finding 6. Some healthcare workers who had chosen not to have the influenza vaccine themselves noted that they would still promote this vaccine to older people. However, other healthcare workers suggested that it was easier to convince older adults to ac-

(IP5) Healthcare workers' vaccine uptake: are healthcare workers who have been offered a vaccine themselves but have declined it still willing to offer neutral and balanced information to older adults about this vaccine?

(TIDieR item 5: who provided) Where possible and if they are also a vaccine target group, describe the proportion of healthcare workers who have received the vaccine themselves.

(TIDieR item 5: who provided) Describe the content of any training given

(Continued)

cept vaccines if the healthcare workers themselves believed in the advantages of vaccination and if they led by example in accepting vaccination (low-confidence finding).

en to the healthcare worker. Does it emphasise the value of providing neutral, evidence-based information about the disease and the vaccine?

Finding 7. Across different healthcare settings, healthcare workers generally regarded infections such as influenza, pneumococcal disease and herpes zoster as having serious enough consequences for older adults to justify a vaccine (moderate-confidence finding).

(IP17) Agreement with recommendations: do healthcare workers support current recommendations about who should receive the vaccine?

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Finding 8. Healthcare workers' exposure to certain infectious diseases in their clinical practice could influence their views of disease severity or the priority they gave its prevention (moderate-confidence finding).

(IP13) Disease information: do healthcare workers have a good understanding of the disease that the vaccine is intended to prevent, particularly if this is a disease that they are not likely to see in their own practice? Do they have easy access to up-to-date information about its severity and its prevalence in their setting?

(TIDieR item 3: what materials) Describe the content of any informational or training material provided to the healthcare worker. Does it include neutral, evidence-based and up-to-date information about the severity of the disease in question and its prevalence in their setting?

Finding 9. Not all healthcare workers were convinced of the effectiveness of vaccines for older adults, and emphasised the importance of evidence about benefits and harms (moderate-confidence finding).

(IP15) Vaccine information: do healthcare workers have easy access to up-to-date, evidence-based information about the effectiveness of the vaccine as well as potential adverse effects?

(IP17) Agreement with recommendations: do healthcare workers support current recommendations about who should receive the vaccine?

(TIDieR item 3: what materials) Describe the content of any informational or training material provided to the healthcare worker. Does it include neutral, evidence-based and up-to-date information about the vaccine's effectiveness and adverse effects?

Finding 10. A few healthcare workers were not convinced of the usefulness of vaccines for older adults with serious underlying illnesses and poor quality of life, and a small number of GPs suggested that in some cases it might be more merciful to let weaker older adults die of diseases such as influenza or pneumonia (very low-confidence finding).

(IP3) Communication training: have healthcare workers been provided with appropriate initial and ongoing training in communication or shared decision-making skills, or both? Does this training reinforce the message that healthcare workers should avoid introducing their own criteria for determining who should and should not receive vaccines?

(IP17) Agreement with recommendations: do healthcare workers support current recommendations about who should receive the vaccine?

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Finding 11. Some healthcare workers did not think age in itself should be the only indicator for vaccination, but also pointed to other factors such as their medical history and living arrangements (moderate-confidence finding).

(IP3) Communication training: have healthcare workers been provided with appropriate initial and ongoing training in communication or shared decision-making skills, or both? Does this training reinforce the message that healthcare workers should avoid introducing their own criteria for determining who should and should not receive vaccines?

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(Continued)

(IP17) Agreement with recommendations: do healthcare workers support current recommendations about who should receive the vaccine?

Finding 12. Healthcare workers did not always prioritise vaccination services for older adults when faced with limited time and other, more acute health issues (moderate-confidence finding).

(IP11) Time: do healthcare workers have sufficient time to discuss vaccine-related issues with older adults?

(TIDieR item 6: how) Describe how the intervention has been integrated into the healthcare worker's routine practice, including whether the healthcare worker has sufficient time to deliver the intervention.

Finding 13. Across settings, providers sometimes offered vaccine services opportunistically (for instance, when attending appointments about other healthcare issues) or at designated timepoints (for instance, during vaccination days), and had different opinions about the practicalities of the different approaches (high-confidence finding).

(IP12) Context: are healthcare workers offering vaccine services opportunistically (for instance, when attending appointments about other healthcare issues) or at designated timepoints (for instance, during vaccination days), and what implications does this have for communication? For instance, will there be time to talk, to send information beforehand so that the older adult is sufficiently prepared to be able to make a decision?

(TIDieR item 7: where) Describe the extent to which the intervention is delivered to older adults opportunistically (for instance, when attending appointments about other healthcare issues) or at designated timepoints (for instance, during vaccination days).

Finding 14. Some healthcare workers complained of having limited knowledge about vaccination for older adults and wanted more training. Ongoing training was seen as important because of staff turnover. However, some healthcare workers complained about a lack of time for training (low-confidence finding).

(IP15) Vaccine information: do healthcare workers have easy access to up-to-date, evidence-based information about the effectiveness of the vaccine as well as potential adverse effects? Is this information provided in ways that they can share easily with older adults?

(TIDieR item 3: what materials) Describe the content of any informational material provided to the healthcare worker. Does it cover the questions, fears and concerns that older adults commonly have in their setting?

(IP13) Disease information: do healthcare workers have a good understanding of the disease that the vaccine is intended to prevent, particularly if this is a disease that they are not likely to see in their own practice? Do they have easy access to up-to-date information about its severity and its prevalence in their setting? And is this information provided in ways that they can share easily with older adults?

(TIDieR item 3: what materials) Describe the content of any informational or training material provided to the healthcare worker. Does it include neutral, evidence-based and up-to-date information about the severity of the disease in question and its prevalence in their setting?

(TIDieR item 3: what materials) Describe the content of any informational or training material provided to the healthcare worker. Does it include neutral, evidence-based and up-to-date information about the vaccine's effectiveness and adverse effects?

Finding 15. The extent to which healthcare workers regarded vaccine services as part of their role and responsibilities varied. Some providers saw it as part of their role, others were concerned about encroaching on the roles of other providers, and others were unclear about

(IP6) Part of healthcare workers' role? Do healthcare workers regard communication about preventive services such as vaccination as part of their role? Is this role made clear in their professional education and through regulations and job descriptions? Is it clear how the responsibility to communicate about vaccines is distributed across different parts of the health system? If this role has recently been given to a group of healthcare workers, have their professional bodies

(TIDieR item 5: who provided) Describe the content of any training given to the healthcare worker. Does it discuss their responsibility for vaccination communication in relation to other healthcare workers or other parts of the health services? Have relevant stakeholders, such as professional bodies, been involved in the content and delivery of the training?

(Continued)

who was responsible (moderate-confidence finding).

been involved in the planning and implementation of communication tasks?

Finding 16. Providers' access to patient data, including patients' vaccination history or information about their comorbidities, sometimes influenced their ability to offer vaccination services (moderate-confidence finding).

(IP16) Patient data: do healthcare workers have easy access to the patient information they need when discussing vaccines with an older adult or making a recommendation? For instance, people may not remember if they have already had the vaccine. Where it is important to avoid 'overvaccination,' do healthcare workers have easy access to the person's vaccination history? In addition, where the person's age is not the only indicator but where other underlying health conditions also play a role, do they have easy access to the person's medical data?

(IP9) Supporting vulnerable older adults: do healthcare workers have guidance and support when communicating with older adults who do not have the capacity to make their own decisions?

(TIDieR item 5: how) Describe how healthcare workers access relevant patient data, including information about the person's vaccine history or underlying health conditions.

(TIDieR item 9: tailoring) Describe any routines that have been put in place to address communication issues with older adults who do not have the capacity to make their own decisions.

IP: implications for practice; TIDieR: Template for Intervention Description and Replication.

HISTORY

Protocol first published: Issue 8, 2020

CONTRIBUTIONS OF AUTHORS

SL, CG and BAW conceptualised the review.

CG, BC, SL, MW, BAW and RE screened potential studies for inclusion.

CG, BC, SL, MW and RE extracted the study data and carried out the assessment of the methodological limitations of the included studies.

CG and SL carried out the TRANSFER process.

CG and BC coded the data and drafted the findings, and thereafter shared these with the remaining co-authors for review.

CG and BC carried out the GRADE-CERQual assessments of the findings and MW, RE and SL checked these assessments.

CG, RE and SL assessed study author motivation.

CG, SL and BAW developed the implementations for practice and research.

All authors reviewed and commented on all drafts of this review.

CG is the guarantor of the review.

DECLARATIONS OF INTEREST

CG: no financial conflicts of interest. CG is an EPOC editor but was not involved in the editorial process for this review.

BC: no financial conflicts of interest.

SL: no financial conflicts of interest. SL is the Joint Co-ordinating Editor for EPOC but was not involved in the editorial process for this review.

MW: no financial conflicts of interest.

BAW: no financial conflicts of interest.

RE: no financial conflicts of interest. RE was a co-author on one of the included papers and was, therefore, excluded from the screening, data extraction and assessment of this paper.

Several non-financial issues, including personal, political and academic factors, could have influenced the review authors' input when conducting this review. The review authors have discussed this further in the sections on reflexivity in the 'Methods' and 'Result's sections.

SOURCES OF SUPPORT

Internal sources

- South African Medical Research Council, South Africa

Simon Lewin receives additional funding from the South African Medical Research Council.

External sources

- This review was undertaken within the Vaccines and Infectious Diseases in the Ageing Population (VITAL) consortium. The VITAL project has received funding from the Innovative Medicines Initiative 2 Joint Undertaking (JU) under grant agreement No 806776. The JU receives support from the European Union's Horizon 2020 research and innovation programme and EFPIA. Cochrane's Conflict of Interest Arbiters have considered this case and determined that the Innovative Medicines Initiative funding for the review does not breach the Cochrane Commercial Sponsorship Policy. Their decision is based on the fact that there is no direct funding by the pharmaceutical industry. IMI's funding is part of a partnership, with controls and legislation around how the money is spent, and there seems to be extensive canvassing to set the research agenda, which must also align with EU and WHO goals, Other

DIFFERENCES BETWEEN PROTOCOL AND REVIEW

We made the following changes from our protocol ([Glenton 2020b](#)).

Our assessment of the included studies' methodological limitations indicated a general lack of reflexivity from study authors. Therefore, we decided to extract and assess data on study author motivation as part of the review (see description in 'Methods' section).

We made a slight change to the wording of the objective. In the protocol version, the objective was presented as follows: "The aim of this systematic review was to explore healthcare workers' perceptions and experiences of communication between themselves and older adults about vaccination." The current objective is now presented as follows: "The aim of this systematic review was to explore healthcare workers' perceptions and experiences of communicating with older adults about vaccination."

INDEX TERMS

Medical Subject Headings (MeSH)

Age Factors; Caregivers; *Communication; Decision Making; *Health Knowledge, Attitudes, Practice; Health Personnel [*psychology]; Herpes Zoster Vaccine [administration & dosage]; Influenza Vaccines [administration & dosage]; Persuasive Communication; Pneumococcal Vaccines [administration & dosage]; Professional-Family Relations; Qualitative Research; Vaccination [*psychology] [statistics & numerical data]; Vaccines [*administration & dosage]

MeSH check words

Aged; Humans; Middle Aged