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*“Renewing Vision”*

**5B Poster – Theme: Cancer**

**Chair: Dr Aisling Jennings**



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# A Bibliometric Analysis of Interventions to Enhance Public Awareness of Cancer Symptoms

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## Introduction

- Cancer is a major global contributor to mortality and morbidity.<sup>1</sup>
- Late-stage diagnoses significantly impair treatment outcomes.<sup>2,3</sup>
- Heightened public awareness of cancer symptoms may prompt earlier help-seeking behaviours and improve diagnosis timing.<sup>4,5</sup>
- Effectiveness of interventions to increase symptom recognition remains uncertain.<sup>5</sup>

**Aim: To understand publication trends of studies with interventions to raise awareness of cancer symptoms to identify under researched cancers, geographic areas, interventions .**

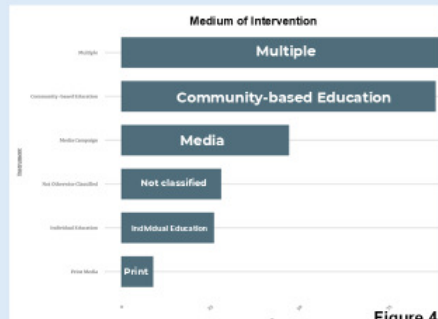
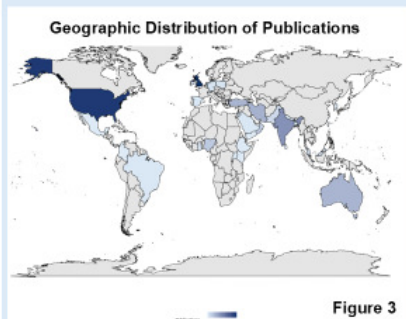
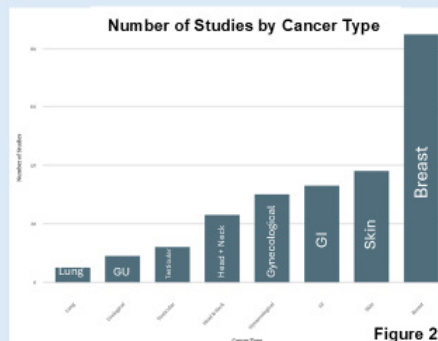
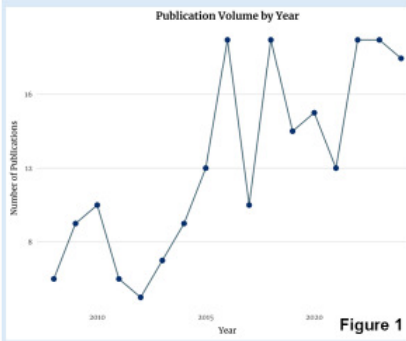
## Methods

- Search via MEDLINE, EMBASE, PsycINFO, Scopus, Web of Science, ProQuest, Cochrane Library, Cumulative Index to Nursing and Allied Health Literature (CINAHL).
- Search strategy included MeSH terms and keywords related to:
  - (1) cancer awareness
  - (2) early presentation
  - (3) Interventions
- Eligibility criteria included **age 18y+**, **interventions to increase awareness, comparative study design; excluded screening interventions for asymptomatic individuals.**
- Relevant data items extracted via pre-piloted pro forma.
- Interventions were classified into categories based on their delivery method, including:

<b>Education</b>	<ul style="list-style-type: none"> <li>• Community Education</li> <li>• Individual Education</li> </ul>
<b>Media</b>	<ul style="list-style-type: none"> <li>• Print</li> <li>• Digital</li> <li>• Broadcast &amp; Outdoor Media</li> </ul>
<b>Misc.</b>	<ul style="list-style-type: none"> <li>• Dual approach</li> <li>• Multi-faceted</li> </ul>

## Results & Key Findings

- 12,579 studies screened; **264 included** in final bibliometric analysis
- **2016, 2018, 2022 and 2023** published most studies, ~19 studies per year. (Figure 1)
  - Publications **rising** between 2008 - 2023
- **Most studied breast cancer** (85 studies), skin cancer (38), gynaecological (30), oral cancer (21). (Figure 2).
- **United Kingdom** (51) conducted most studies; United States (48). (Figure 3)
- Most common intervention was **community-based instruments** (88); then multifaceted instruments (34) and dual approach interventions (57). (Figure 4)
- Most frequent study design: **Before-and-After studies & RCTs**



## Implications



- This analysis identifies the interventions and outcomes that have been **most frequently reported in literature** in efforts to enhance public awareness of cancer symptoms.
  - Need for **future** research to focus on under-researched **geographic areas (outside of the UK, USA), cancers (lung and genitourinary).**
- This information can help researchers, funders, and policymakers to **better understand where research efforts have been focused and where evidence gaps exist.**
- Addressing these gaps may contribute to the **development and funding of more effective interventions to enhance public awareness and promote earlier cancer diagnosis.**

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This work is part of a larger effort led by the **PRICAN Research Group** to increase cancer symptom recognition.

# A Hybrid Systematic Review of Barriers and Facilitators to Implementing Lung Cancer Screening in Community Settings

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## Background

- Lung cancer remains a leading cause of cancer-related mortality in Ireland, accounting for 1 in 5 of all cancer deaths in 2020-2022.
- Lung cancer screening (LCS) using **low-dose computed tomography (LDCT)** reduced lung cancer specific mortality by 20%.
- Aspects of LCS implementation include recruitment, infrastructure, program design, and policy – among others.
- An examination of the barriers and facilitators to these aspects of implementation of LCS is needed**
- Integration of these findings** will inform strategies that enhance community-based screening implementation for better patient outcomes

## Objectives

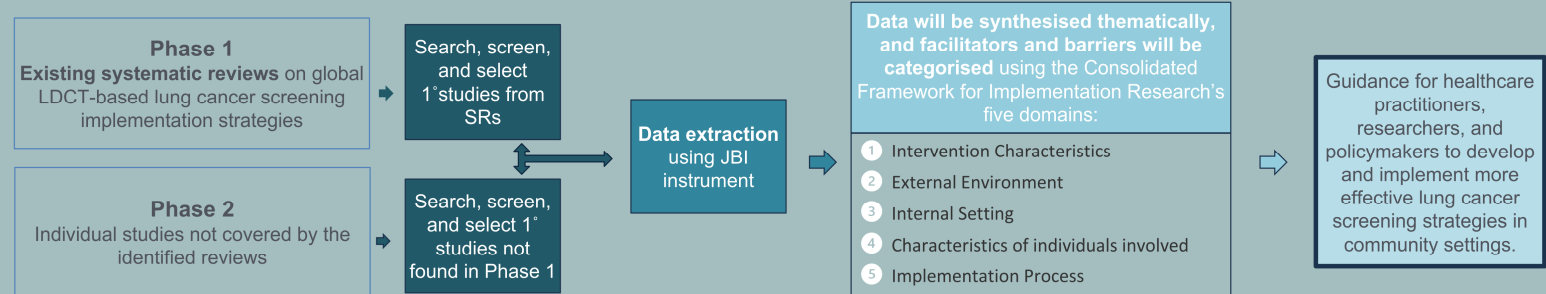
This hybrid systematic review incorporates multiple data sources and search strategies to capture a broader range of relevant studies than a traditional systematic review. The objectives include:

- Synthesising the qualitative and quantitative evidence** on barriers and facilitators to community-based lung cancer screening.
- Analysis of the existing evidence** to inform best practices for screening implementation.
- Proposing actionable, evidence-based recommendations** to enhance screening implementation in community settings.

Ultimately, these findings can drive better screening and help save patient's lives

## Methods

This hybrid systematic review was conducted in two phases outlined below.



Populations of interest included adults eligible for screening and stakeholders responsible for implementing the screening. Screening and review of studies was done on Rayyan Software, and eligibility determination were applied by 2 separate reviewers (Table 1).

**Table 1:** Eligibility Determination & Data Extraction Process

Eligibility Question	How to Handle
1 Is this study about lung cancer?	Exclude if other types of cancer only
2 Is this study about lung cancer screening (LCS)?	Exclude if other parts of continuum only (e.g. Symptomatic LC, Nodule management, Treatment)
3 Is this study about LCS implementation?	Exclude if not implementation related (e.g. efficacy), otherwise eligible
Data Extraction Question	How to Handle
4 Is this an eligible systematic review?	Phase 1 (see methods for data to be extracted)
5 Is this an eligible primary study?	Phase 2 (see methods for data to be extracted)
6 If unclassified, what is the reason for ineligibility?	Exclude e.g. non-primary studies, non-systematic reviews, editorials

## Interim Results

Phase 1: A preliminary search of 6 databases:



Trends established from these reviews thus far are as follows:

Domain	Facilitators ✓	Barriers ✗
1	Strong evidence for LDCT screening	Complex eligibility criteria
2	Tailored outreach with collaboration in communities	Socioeconomic disparities, geographic access, and lack of awareness
3	Strong leadership in healthcare systems	EMR system issues fragment care
4	Strong provider-patient rapport	Stigma, fear of diagnosis, and distrust
5	Localized screening programs and structured guidelines	Time constraints and lack of culturally tailored implementation

Next steps include continuing to screen the remaining articles and apply eligibility criteria for selection. Repeat for Phase 2 and extract and synthesise the data from both phases.



**FUNDING:** This research was supported by the RCSI Research Summer School, in conjunction with the PRICAN Scholars Network, a medical research mentorship programme coordinated by the PRICAN Research Group ("Primary Care Research into Cancer"), based in RCSI University, Dublin.



# Recruitment Strategies for Lung Cancer Screening: An Umbrella Review of Effectiveness in Low-Participation Sub-cohorts

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## Background

- Lung Cancer is the leading cause of cancer mortality
- Screening with low-dose computed tomography reduces mortality by 20%
- Participation is often below 15%
- Compared to 60-75% for other cancer screening programmes
- Barriers include limited accessibility, stigma, fear of diagnosis and misconceptions contributing to poor uptake
- Various recruitment strategies: personalised invitations, media campaigns, and primary care referrals have been implemented, but effectiveness across populations remains unclear

## Objectives

- Understand the impact of different recruitment approaches on participation rates, population reach, and adherence for developing evidence-based strategies that effectively engage high-risk populations.
- Identify and systematically analyse existing systematic reviews that evaluate recruitment strategies for LCS, with a focus on high-risk populations such as smokers and individuals from low socioeconomic backgrounds.
  - Compare and synthesise evidence on the effectiveness of different recruitment methods
  - Assess the quality and methodological rigour of included systematic reviews using AMSTAR 2, identifying strengths, limitations, and potential biases.
  - Summarise evidence gaps and highlight areas for future research, particularly regarding the integration of digital recruitment strategies and their impact on participation rates.

### AIM of Umbrella Review

To consolidate findings from multiple systematic reviews to compare recruitment strategies, assess their effectiveness across different healthcare settings, and identify gaps in the evidence. By synthesising data across studies, it aims to inform the design of more effective, targeted recruitment interventions for LCS implementation.

## Methods

This umbrella review follows Joanna Briggs Institute (JBI) guidelines and adheres to the Preferred Reporting Items for Overviews of Reviews (PRIOR) checklist. The protocol is pre-registered on the Open Science Framework (osf.io).

**Databases searched:** MEDLINE via Ovid, Embase, Scopus, Web of Science, CINAHL, and Cochrane Library and systematic review registries (PROSPERO, Joanna Briggs Institute Database)

**Eligibility Criteria: Systematic Reviews are included if they meet the following criteria:**

- Population: Patients enrolled in a lung cancer screening (LCS) programme or explicitly eligible for LCS
- Exposure (observational studies): Recruitment strategies designed to increase LCS uptake, such as direct invitations, media campaigns, digital outreach, or community-based approaches.
- Intervention (interventional studies): Strategies aimed at improving LCS participation, including patient navigation, general practitioner (GP) referrals, or digital opt-in models.
- Comparison: No intervention (usual care) or alternative recruitment strategies.
- Outcomes: Screening uptake rates, adherence, knowledge and awareness of LCS, patient experience, or barriers and facilitators to participation.

### Study Selection & Data Extraction:

- Two independent reviewers will screen studies using Rayyan software.
- A structured data extraction form is developed to ensure consistency and completeness in capturing relevant information.
- Key variables are extracted from each included systematic review: **Study characteristics, Recruitment strategies assessed, Populations studied, Outcomes reported, Methodological quality**

## Preliminary Narrative Findings

- Multiple-domain interventions are more successful in improving uptake in LCS (i.e., combining decision aids with behavioural interventions)
- Digital decision aids are the most studied and most effective intervention for LCS recruitment
- Targeted and personalised recruitment interventions are understudied compared with population and referral based interventions



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## Preliminary Data Review:

Author, Year	Study Design	Population	Intervention (n=No of studies)	Outcome Measurement
Robertson, 2021	SR	Current smokers, aged 55-74	Postcards, internet resources, media campaigns	% LCS uptake
Lin, 2022	SR	Current and former smokers	Questionnaires, focus groups, interviews	% LCS uptake
Teo, 2019	SR	Men and women, aged 40-59	Mailed leaflets	% self-reported screening
Ruco, 2021	SR/MA	Current and former smokers	Social media	% LCS uptake after campaign
Satah, 2024	SR/MA	Current and former smokers	Decision aids, psychological information	LCS participation rates
Lam, 2020	SR/MA	Current and former smokers	Dedicated co-ordinator, reminder letters, mobile LDCT	% LCS uptake
Korn, 2023	SR	Adults over age 18	Social determinants of Health	Absolute increase
Odole, 2024	SR	Adults 45-80, high risk	Electronic health records, decision aids	Focus groups
Dodd, 2023	SR	Current and former smokers	Awareness campaign, behavioural interventions	Cancer Stigma Scale
Saab, 2021	SR	Men and women age 55-74	Campaigns, decision aids, education sessions	Survey, questionnaires
Kunitomo, 2022	SR	Men and women, any race	Referrals	% uptake LCS

## Implications

Findings will inform LCS recruitment strategies in Europe, contributing to the EU4Health-funded EUCanScreen programme.

- This review will support efforts to improve uptake, reduce disparities and enhance early detection and survival outcomes.
- This review and further research in the area may influence resource allocation provided that a greater in

## Next Steps:

### Umbrella Review and Report

- Sensitivity Search
- Complete Data Extraction
- Risk of Bias (AMSTAR-2)
- Synthesis:
  - Bibliometric Analysis
  - Categorisation of Interventions
  - Narrative Synthesis of SR findings
    - Which interventions work?
    - What is the effect size?
    - Is the effect subpopulation dependent?
      - Current smokers vs ex-smokers
      - Heavy smokers vs non-heavy smokers
      - Age/gender

- Report for EUCan on Heavy smokers specifically

# General Practice Focused Strategies to Increase Participation in Lung Cancer Screening – A Systematic Review.



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## Introduction

Lung cancer is the leading cause of cancer-related mortality worldwide. Despite this, the uptake of lung cancer screening (LCS) using low-dose CT is substantially low in comparison to established cancer screening programmes. Additionally, those at higher risk of the disease are the least likely to participate in screening, including current smokers and those experiencing socioeconomic deprivation.

General practice plays a vital role in screening through the identification of eligible individuals and overcoming participation barriers. Given the low rates of participation, it is important to understand which, if any, strategies from general practice could improve the effectiveness of a national programme.

## Aims

1. Assess the effects of various strategies implemented in General Practice to increase participation in Lung Cancer Screening.
2. Determine the most effective means of patient recruitment within General Practice.

## Methods

### Search Strategy

Searches of electronic databases and trial registries were conducted using a combination of MeSH terms and keywords relating to LCS. Searches were limited from January 2000 to March 2023.

### Study selection & Data Extraction

One reviewer evaluated the titles and abstracts against the eligibility criteria. A random selection of 45% of abstracts was double-reviewed by a combination of independent reviewers. One reviewer used the Template for Intervention Description and Replication (TIDieR) checklist for extraction.

## Methods

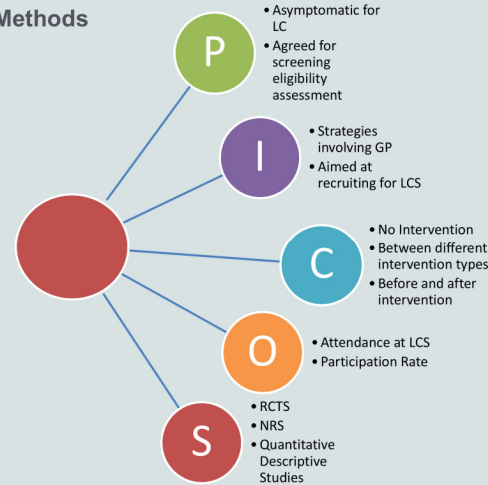
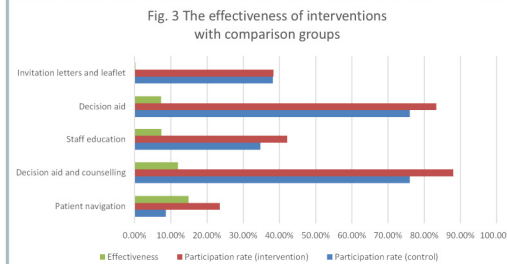


Fig. 1- PICOS Eligibility Criteria

## Interventions



## Effectiveness of Interventions



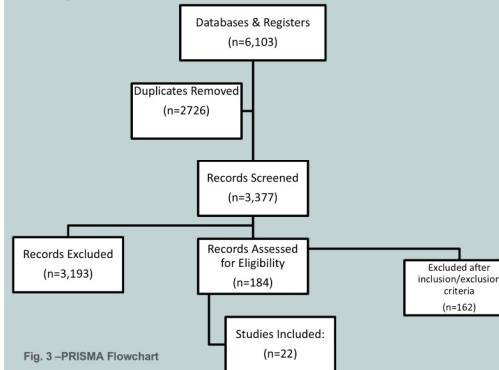
## Discussion

This systematic review found strategies that are patient-centred and involve high levels of patient engagement are the most effective. Strategies which involve shared decision-making and patient education are likely to improve informed decision-making and result in higher participation. Furthermore, the most effective strategies are often the most complex and multifaceted, with more BCs incorporated in their design.

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## Results

### Study Selection and Characteristics



## INTRODUCTION & BACKGROUND A Global Challenge:

Lung cancer is the leading cause of cancer-related mortality worldwide, and delays in presentation and diagnosis result in late-stage detection and poorer outcomes.

Because of significant contextual differences between high-income and low-/middle-income countries, strategies effective in one setting are not universally applicable, necessitating tailored solutions that integrate stakeholder needs, provide culturally competent care, and account for diverse local contexts.

**Why a Realist Review?** We chose a realist synthesis approach to uncover how: Contexts influence outcomes and by what mechanisms this may occur



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# A Realist Review of Pathways to Lung Cancer Diagnosis in LMICs

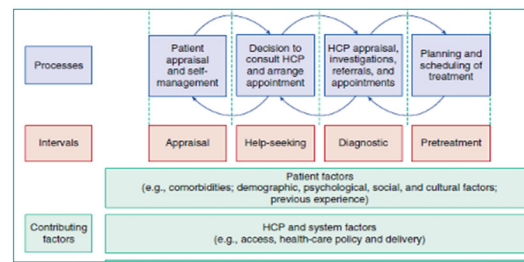


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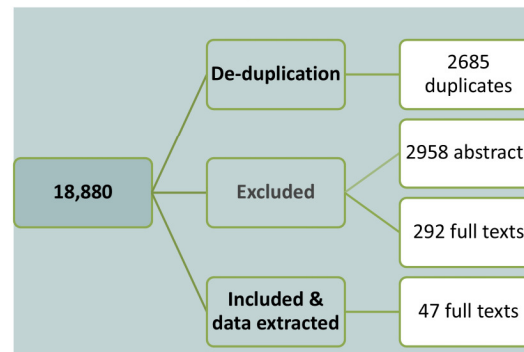
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### Search Strategy

Population	Lung cancer OR lung neoplasms OR lung malignancy OR carcinoma OR lung tumour OR lung* OR pulmo*); (cancer* OR neoplas* OR malignan* OR tumo* OR symptom* OR sign* "developing country" OR "Low and middle income countries" OR LMIC OR "emerging nations" OR "developing nations"
Intervention	diagnosis OR early detection OR screen* OR "symptom appraisal" OR campaign OR programme OR trial OR education OR "symptom awareness" OR intervention OR patient OR "health provider" OR "health system"
Comparison	"standard care" OR "usual care" OR "no intervention"
Outcomes	help-seeking OR health-seeking OR access OR intentions OR behaviour OR strateg* OR model* OR efficacy OR effectiveness* OR uptake OR quality OR acceptability OR service provision OR service delivery OR healthcare cost OR cost effectiveness OR healthcare provision OR cost-effectiveness OR barrier



## Major Themes & Impact Drivers

### Access To Specialists

- If geography limits access, providing transport leads to earlier stage diagnosis

### Language: Dialects & Diction

- If materials require educational attainment, patients will face delays and late-stage diagnosis.

### Socioeconomic Status

### Cultural Factors: Guilt, Shame, & Stigma

### What's Next:

Development of Comprehensive Programme Theory.

Survey & Interview Local Stakeholders

Generate Interventions and Validate

Provide Scalable Policy Recommendations

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## Background

- **Global Health Challenge:** Lung cancer represents a significant global health challenge, and accounts for a substantial proportion of cancer-related deaths worldwide.
- **Limitations of Traditional Screening:** Traditional population-based lung cancer screening has raised concerns due to its limitations, including risks of overdiagnosis, unnecessary invasive procedures, and the underrepresentation of high-risk groups in screening programs.
- **Benefits of Risk Stratified Screening:** Risk-stratified screening programmes outperform traditional population-based criteria in identifying high-risk individuals, and may offer a superior balance between the benefits and harms of screening.
- **Utilising PPI to Improve Screening Acceptability:** By involving patients and the public in the development process, interventions can be designed which better align with the needs and preferences of the target population; a key factor in determining success of personalised screening.

## Objective

This protocol outlines a study which seeks to integrate public perspectives to inform the design of a tailored LCS programme aligned with the needs and preferences of the Irish population.

## The Traditional Lung Cancer Screening Dilemma



Number Needed to Screen (NNS): 320



Number Needed to Harm (NNH): 3

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# Using a Citizen Jury and Discrete Choice Experiment to Inform Personalised Lung Cancer Screening

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## Methods

This is a mixed-methods study comprising a number of separate but interconnected phases:

1. **Phase 1:** A citizen jury of 15-20 people will participate in informed deliberation on the key themes surrounding the benefits and trade-offs of population-based versus risk-stratified screening.
2. **Phase 2:** Thematic analysis will be used to analyse qualitative data from the citizen jury discussions, ensuring that public perspectives of the patient population directly shape the design of the Discrete Choice Experiment (DCE).
3. **Phase 3:** A Discrete Choice Experiment (DCE) will be designed with the aim of quantitatively assessing preferences for key screening attributes, such as screening interval, modality, false positive and overdiagnosis rates, and mortality reduction.
4. **Phase 4:** The Discrete Choice Experiment will be administered to ~400 participants representative of the patient population, via electronic survey. Participants will be shown a series of hypothetical screening scenarios and asked them to choose between them.
5. **Phase 5:** Conditional logit models will be used to estimate participants' preferences for different attributes of lung cancer screening, as well as publicly acceptable trade-offs between the harms and benefits of screening.

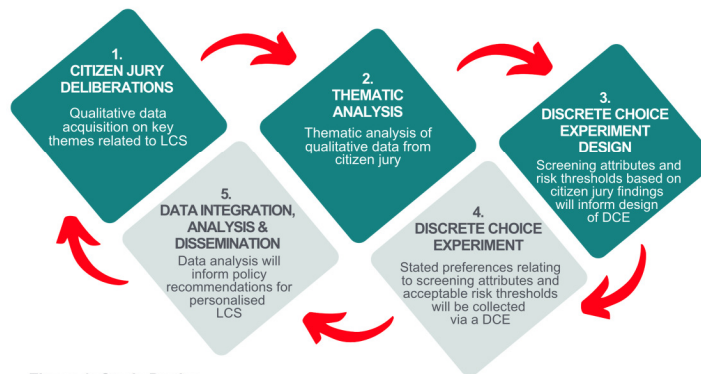
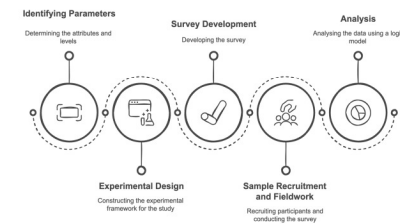


Figure 1: Study Design



PRiCAN

Figure 2: Discrete Choice Experiment



## Implications for Policy/ Practice

- **Enhance Effectiveness, Reduce Harms & Improve Efficiency:** Contribute to the improvement of lung cancer detection by refining risk-based screening criteria to better identify high-risk individuals, and while reducing overdiagnosis, false positives, and invasive procedures among lower-risk individuals.
- **Increase Public Acceptability & Uptake of LCS:** Integrate patient and public involvement (PPI) to ensure screening aligns with the needs of the population, increasing acceptability & uptake.
- **Inform Policy & Practice:** Generate evidence to support the implementation of a risk-stratified screening programme that balances effectiveness, safety, and resource allocation.

**FUNDING** The researcher is a recipient of the Irish Research Council Employment Based Scholarship 2018. This research was supported by the RCSI University of Medicine and Health Sciences and the Irish Research Council



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# Exploring the Role of Digital Scribes in Enhancing Cancer Care Outcomes in Primary Healthcare: A Scoping Review

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## Background & Objectives

### Challenges in Primary Care:

- Limited consultation time, cognitive overload, and administrative burdens.
- Electronic health records (EHRs) significantly increase documentation workload.
- General practitioners (GPs) spend 30–50% of their time on administrative tasks, reducing direct patient care.
- Workflow inefficiency negatively impacts clinician well-being and patient outcomes.

### Role of Digital Scribes:

- AI and natural language processing (NLP)-powered digital scribes proposed to reduce administrative burden.
- Capabilities: transcribing patient-clinician interactions, generating clinical summaries, and populating EHR fields.
- Potential benefits: improved workflow efficiency and documentation accuracy.

### Evidence & Uncertainties:

- Research suggests increased clinician productivity, higher provider satisfaction, and better patient experience.
- Unclear broader impact in primary care settings.
- Potential for improving timely diagnoses in conditions like cancer.

## AIM

This scoping review aims to synthesize current literature on the effectiveness, benefits, and challenges associated with digital scribe implementation in primary care settings.

## RESEARCH QUESTIONS

- How are digital scribes used in primary care based on study design, population, and technology?
- How do digital scribes impact documentation, history-taking, decision-making, and clinician-patient communication?
- What is the effect of digital scribes on early disease detection, diagnostic accuracy, and timeliness of diagnosis?
- What logistical, legal, and ethical challenges affect digital scribe use in primary care?

## Methods

### Eligibility Criteria (Table 1):

- Population: Studies involving primary care clinicians or patients in primary care settings.
- Concept: AI-driven digital scribes used for documentation, decision support, or workflow optimization.
- Context: Primary care settings, with a focus on cancer-related outcomes such as early detection, diagnostic accuracy, and timeliness of diagnosis.

Step	Concept	Question	Exclusion label
1	Digital Audio Scribe	Does this paper deal with digital audio scribes?	"NotDigitalAudioScribe"
2	Primary Care	Does this paper deal with digital audio scribes used in a primary care setting?	"NotPrimaryCare"
3	Cancer Outcome	Does this paper discuss the association between patterns in digital audio scribes and subsequent cancer patient outcome (diagnosis/incidence/risk/prognosis)?	"NotCancerOutcome"
4	(INCLUDE)	If negative to all the above, then include	n/a

Table 1. Screening algorithm

### Study Selection & Data Extraction:

- Two independent reviewers will screen studies using Rayyan software.
- Extracted data will include study characteristics, digital scribe technology type, implementation details, and reported outcomes.
- Thematic synthesis examined digital scribes' impact on documentation, cancer detection, workflow efficiency, clinician burnout, patient interactions, and ethical concerns like privacy, bias, and liability.

## RESULTS

A total of 9 publications met the inclusion criteria for this scoping review, namely within the setting of primary care (Table 2).

### Study Designs:

- Publications varied in methodology; four used interventional study designs.

Majority were descriptive reviews or expert opinions on AI scribes.

### Potential Benefits of AI Scribes:

- Reduces physician burnout.
- Decreases documentation time.
- Increases referrals and efficiency in linking primary and secondary care.
- Enhances patient-physician interaction.

### Barriers to Implementation:

- Medico-legal concerns and patient privacy issues.

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Table 2: Publications meeting inclusion criteria

Name	Year	Methodology
Envisioning an artificial intelligence documentation assistant for future primary care consultations: A co-design study with general practitioners	Aug 2020	Co-design workshop qualitative method with 16 GPs with thematic analysis.
The effect of remote scribes on primary care physicians' wellness, EHR satisfaction, and EHR use	Dec 2022	Pre-post, non-randomized controlled evaluation of a remote scribe pilot program in academic primary care practices comparing those who used the scribes (39) vs controls (68). A descriptive analysis was conducted.
Association of Medical Scribes in Primary Care With Physician Workflow and Patient Experience	Nov 2018	12-month crossover study of 18 primary care physicians randomly assigned to start the first 3-month period with or without scribes and then alternated exposure every 3 months for 1 year. A 6-question survey was completed after each study period and patients were surveyed after scribed visits.
Implementing Digital Scribes to Reduce Electronic Health Record Documentation Burden Among Cancer Care Clinicians: A Mixed-Methods Pilot Study	Mar 2023	Mixed-methods longitudinal pilot study design implementing digital scribes (DS) in a cancer center with a survey conducted at baseline and one month after use with a semi-structured interview with clinicians.
Evidence synthesis, digital scribes, and translational challenges for artificial intelligence in healthcare	Dec 2020	Literature Review (AI scribe used in general in healthcare)
Artificial intelligence scribes in primary care	Sept 2024	Short Communication (AI scribe used in general in healthcare)
The Utility and Implications of Ambient Scribes in Primary Care	Feb 2024	Literature Review (Use of AI scribes in primary care)
The Most Disruptive Near-Term Use of AI in Cancer Care: Patient Empowerment Through Software Agents	Oct 2024	Literature Review (Cancer Care and AI)
Artificial Intelligence in Oncology: Current Landscape, Challenges, and Future Directions	May 2024	Literature Review (Cancer Care and AI)

## Implications

- Publications found in this review emphasize the clinical utility of AI scribes, with additional considerations for improving implementation and uptake in primary care. While AI scribes in cancer care have been more thoroughly studied in secondary care, further research is needed to support their widespread use in primary care.
- While limited literature has directly assessed the impact of AI scribes on cancer outcomes in primary care, reduced physician burnout and improved efficiency are expected to support clinical acumen and improve diagnostic accuracy.
- AI scribes may allow more time and capacity for identifying and referring at-risk patients to secondary oncology services.

## Limitations

- The novelty of AI-powered digital scribes, particularly in primary care cancer detection, resulted in a limited number of studies available for inclusion. This limitation restricted the depth of synthesis and highlighted gaps rather than offering definitive conclusions.
- Language bias, due to the inclusion of only English-language studies, limited the generalisability of findings, especially in understanding global applications of digital scribes in diverse healthcare systems.
- Anticipated heterogeneity in study designs, outcomes, and technologies posed challenges for synthesising findings into a cohesive narrative.
- These limitations, inherent to scoping reviews, underscored the importance of identifying gaps and informing future research.