**Supplementary Table 1:** Search terms, search strategy and number of articles retrieved by databases

|  |  |  |
| --- | --- | --- |
|  | Search term | Number of papers retrieved |
| Pubmed  | PsychInfo | Embase | CINAHL Plus |
| 1 | Lung neoplas\* . ti,ab | 1852 | 7 | 914 | 96 |
| 2 | lung cancer . ti,ab | 127444 | 2360 | 202274 | 39028 |
| 3 | lung carcinoma . ti, ab | 12382 | 74 | 17464 | 1561 |
| 4 | lung adenocarcinoma . ti,ab | 15095 | 31 | 22587 | 2999 |
| 5 | lung malignancy . ti, ab | 419 | 8 | 914 | 119 |
| 6 | lung tumo?r . ti, ab | 5001 | 26 | 7932 | 588 |
| 7 | lung sarcoma . ti,ab | 38 | 0 | 55 | 5 |
| 8 | non-small cell lung cancer . ti, ab | 53349 | 254 | 85767 | 16384 |
| 9 | non small cell lung cancer . ti,ab |  |  |  |  |
| 10 | lung AND squamous cell cancer . ti, ab | 293 | 0 | 545 | 32 |
| 11 | lung AND large cell carcinoma . ti, ab | 709 | 2 | 1431 | 17 |
| 12 | 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 | 145437 | 2337 | 228860 | 42540 |
| 13 | screen\* . ti, ab | 632078 | 78951 | 928450 | 170060 |
| 14 | mass screen\* . ti, ab | 2663 | 75 | 2615 | 393 |
| 15 | population screen\* . ti, ab | 2574 | 244 | 3980 | 745 |
| 16 | screening program\* . ti, ab | 22249 | 1822 | 34799 | 8340 |
| 17 | detect\* . ti, ab | 1693890 | 108518 | 2286663 | 218650 |
| 18 | test\* . ti, ab | 2372656 | 507650 | 3496093 | 556064 |
| 19 | early diagnosis . ti, ab | 54661 | 2852 | 84386 | 12609 |
| 20 | health check | 2837 | 304 | 4233 | 1107 |
| 21 | screening pilot | 155 | 12 | 296 | 77 |
| 22 | screening demonstration pilot | 9 | 0 | 6 | 1 |
| 23 | 13 OR 14 OR 15 OR 16 OR 17 OR 18 OR 19 OR 20 OR 21 OR 22 | 4092841 | 637445 | 5775220 | 831582 |
| 24 | LDCT . ti, ab | 961 | 26 | 1757 | 406 |
| 25 | low dose CT . ti, ab | 1973 | 15 | 4085 | 744 |
| 26 | low-dose CT . ti, ab |  |  |  |  |
| 27 | low dose computeri?ed tomog\* . ti, ab | 7 | 4 | 81 | 20 |
| 28 | low-dose computeri?ed tomog\* . ti, ab |  |  |  |  |
| 29 | low dose computed tomog\* . ti, ab | 1364 | 35 | 1972 | 640 |
| 30 | low-dose computed tomog\* . ti, ab |  |  |  |  |
| 31 | CT scan . ti, ab | 37444 | 819 | 84882 | 9476 |
| 32 | spiral CT . ti, ab (not included) | 1859 | 6 | 2669 | 347 |
| 32a | chest CT . ti,ab | **6709** | **25** | **14779** | **2034** |
| 33 | 24 OR 25 OR 26 OR 27 OR 28 OR 29 OR 30 OR 31 OR 32a (32 removed) | 41837 | 881 | 100558 | **12257** |
| 34 | inform\* . ti, ab | 1247731 | 446234 | 1764606 | 471882 |
| 35 | decision\* . ti, ab | 331445 | 160169 | 472188 | 143391 |
| 36 | provision\* . ti, ab | 81053 | 34830 | 110649 | 47112 |
| 37 | decision making . ti, ab | 129812 | 68584 | 175212 | 57854 |
| 38 | decision-making . ti, ab |  |  |  |  |
| 39 | decid\* | 64056 | 20891 | 107451 | 19843 |
| 40 | educat\* | 461865 | 348422 | 657568 | 315203 |
| 41 | 34 OR 35 OR 36 OR 37 OR 38 OR 39 OR 40 | 1893216 | 852684 | 2731287 | 858553 |
| 42 | (decision OR decision-making OR decision making OR information) AND (resource OR tool OR support tool OR aid OR intervention) . ti, ab | 169039 | 51621 | 238928 | 99024 |
| 43 | (video OR film OR campaign OR leaflet OR material OR pamphlet OR booklet OR brochure OR fl?er) AND (decision OR inform\*) . ti, ab | 56330 | 19501 | 132430 | 480538 |
| 44 | 42 OR 43 | 216895 | 68363 | 352421 | 145545 |
| 45 | individual decision making . ti, ab | 326 | 384 | 418 | 120 |
| 46 | individual decision-making . ti, ab |  |  |  |  |
| 47 | IDM . ti, ab | 448 | 114 | 640 | 164 |
| 48 | shared decision making . ti, ab | 9307 | 2415 | 12254 | 5387 |
| 49 | shared decision-making . ti, ab |  |  |  |  |
| 50 | SDM . ti, ab | 2775 | 685 | 3569 | 1052 |
| 51 | decision intervention\* . ti, ab | 19 | 6 | 28 | 11 |
| 52 | 45 OR 46 OR 47 48 OR 49 OR 50 OR 51 | 11564 | 3147 | 15063 | 5971 |
| 53 | questionnaire . ti, ab | 353898 | 138574 | 542051 |  |
| 54 | survey . ti, ab | 452361 | 193601 | 582022 |  |
| 55 | interview\* . ti, ab | 299344 | 252158 | 399434 |  |
| 56 | focus group . ti, ab | 25448 | 17132 | 32350 |  |
| 57 | self-report\* . ti, ab | 149808 | 129484 | 201687 |  |
| 58 | self report . ti, ab |  |  |  |  |
| 59 | randomi?ed controlled trial . ti, ab | 105049 | 21227 | 134714 |  |
| 60 | randomi?ed trial . ti, ab | 46100 | 6312 | 66239 |  |
| 61 | randomi?ed controlled study . ti, ab | 10805 | 1456 | 15376 |  |
| 62 | randomi?ed study . ti, ab | 20997 | 1357 | 33294 |  |
| 63 | RCT . ti, ab | 24433 | 4486 | 39769 |  |
| 64 | intervention stud\* . ti, ab | 19013 | 6529 | 24347 |  |
| 65 | experiment\* . ti, ab | 1445892 | 253777 | 1678039 |  |
| 66 | think?aloud | 1038 | 10 | 17 |  |
| 67 | 53 OR 54 OR 55 OR 56 OR 57 OR 58 OR 59 OR 60 OR 61 OR 62 OR 63 OR 64 OR 65 OR 66 | 2603742 | 840798 | 3302998 |  |
| 68 | uptake . ti, ab | 241582 | 13126 | 326974 | 33829 |
| 69 | attend\* . ti, ab | 144471 | 72495 | 241129 | 71652 |
| 70 | participa\* . ti, ab | 1148752 | 622146 | 1558695 | 524241 |
| 71 | inten\* . ti, ab | 791449 | 197336 | 1085409 | 228758 |
| 72 | opt out . ti, ab | 1570 | 587 | 2474 | 1056 |
| 73 | opt in . ti, ab | 733 | 292 | 1104 | 2535 |
| 74 | visit . ti, ab | 87496 | 15642 | 166200 | 73883 |
| 75 | choice . ti, ab | 210816 | 71580 | 296380 | 71836 |
| 76 | choose . ti, ab | 33762 | 20883 | 48850 | 13892 |
| 77 | chose . ti, ab | 19470 | 9754 | 31988 | 6438 |
| 78 | 68 OR 69 70 OR 71 OR 72 OR 73 OR 74 OR 75 OR 76 OR 77 | 2414261 | 892232 | 3356611 | 106269 |
| 79 | knowledge . ti, ab | 613256 | 227781 | 787437 | 195919 |
| 80 | comprehen\* . ti, ab | 339635 | 112471 | 451216 | 96972 |
| 81 | understand\* . ti, ab | 1100906 | 437577 | 1379176 | 2655077 |
| 82 | prefer\* . ti, ab | 356662 | 105220 | 461678 | 79367 |
| 83 | deci\* . ti, ab | 425570 | 180509 | 616793 | 164561 |
| 84 | engag\* . ti, ab | 176257 | 179433 | 229439 | 92875 |
| 85 | attitud\* . ti, ab | 115884 | 119537 | 150570 | 71974 |
| 86 | belief\* . ti, ab | 70366 | 93335 | 89073 | 43183 |
| 87 | perception\*. ti, ab | 223265 | 206521 | 276425 | 112708 |
| 88 | perceiv\* . ti, ab | 205875 | 190084 | 260627 | 113183 |
| 89 | aware\* . ti, ab | 199144 | 97662 | 294705 | 97012 |
| 90 | interest\* . ti, ab | 660977 | 188118 | 937879 | 115005 |
| 91 | willing\* . ti, ab | 37540 | 26991 | 55796 | 18577 |
| 92 | value . ti, ab | 706957 | 133323 | 1044411 | 285513 |
| 93 | certain . ti, ab | 263384 | 69002 | 341655 | 48935 |
| 94 | decisional conflict . ti, ab | 1107 | 394 | 1566 | 675 |
| 95 | 79 OR 80 OR 81 OR 82 OR 83 OR 84 OR 85 OR 86 OR 87 OR 88 OR 89 OR 90 OR 91 OR 92 OR 93 OR 94 | 4224600 | 1480524 | 5640399 | 1268911 |
| 96 | develop\* . ti, ab | 3430411 | 768967 | 4601156 |  |
| 97 | design\* . ti, ab | 1599852 | 365058 | 2037124 |  |
| 98 | create\* . ti, ab | 286692 | 106699 | 406503 |  |
| 99 | devise\* . ti, ab | 25991 | 5471 | 34341 |  |
| 100 | produce\* . ti, ab | 832838 | 126410 | 1022412 |  |
| 101 | 96 OR 97 OR 98 OR 99 OR 100 | 5354178 | 1154249 | 7011059 |  |

FINAL SEARCH STRING (106)

12 AND (23 OR 33) AND 44 AND (41 OR 52) AND (78 OR 95)

Lung cancer terms AND (screening/early detection OR LDCT/CT terms) AND decision resources/tools terms AND (decision-making terms OR individual and shared decision-making terms) AND (uptake/choice outcome terms OR knowledge/engagement/interest outcome terms)

EXCLUDED SEARCH TERMS

* Study design terms (67) were excluded as we were inclusive of all study designs.
* Similar resource ‘design’ terms (101) were excluded as these narrowed the search too much.

|  |  |  |
| --- | --- | --- |
| Heading | Sub-categories | Description |
| REFERENCES | Study author(s) | Study author(s)  |
|  | Study (title) | Title of the article or intervention |
|  | Study (year) | Year the article was published |
|  | DST name | Name of the decision support tool |
|  | DST source | Study reference for decision support tool or details of where it is openly available |
| WHAT | Study design  | Design of study (e.g., cross-sectional, quasi-experimental or observational) |
| WHY | Study aim/objectives  | Rationale of the study in relation to the decision support tool being developed/used/tested |
| FOR WHOM | Study population description  | Study inclusion criteria (including any specific lung cancer screening eligibility criteria used) |
| Study sample size | Final number of participants included in the study |
| Study sample characteristics | Age, gender, ethnicity, smoking status, socioeconomic factors |
| WHERE | Study country of origin  | Country in which the study of the decision support tool took place |
|  | Study setting  | Setting where the study of the decision support tool took place (e.g., healthcare consultation) |
| WHAT | DST description | The nature of the decision support tool including its components |
| DST objectives/ purpose  | The purpose the decision support tool  |
| DST content  | The topics of information included within the decision support tool (see Supplementary Table 2B) |
| DST decision-making context | Was the decision support tool designed to promote decision-making in the individual decision-making context or shared decision-making context? |
| DST theoretical basis  | Was a theoretical framework described by the study as being used to design or develop the decision support tool |
| DST standards/ guidelines  | Was the decision support tool developed according to standards or guidelines? |
| HOW | DST mode of delivery | What mode was used to deliver the resource (e.g., face-to-face, telephone, paper, video, internet)? |
| DST presentation methods | What methods were used to present the information in the decision support tool (see Supplementary Table 2C) |
| WHO  | DST target population | Description of the target population for which the decision support tool is intended (including any specific lung cancer screening eligibility criteria used) |
| WHEN | When is the DST used in the study? | At what point is the decision aid/resource delivered? E.g. openly available, before or after consultation |

**Supplementary Table 2A:** Data charting\* and extraction framework for contextual information

(\*derived from the Template for Intervention Description and Reporting (TIDIER) framework19)

**Supplementary Table 2B:** Data charting\* and extraction table for the topics of information content included within each decision support tool

(\*categories derived from the Template for Intervention Description and Reporting (TIDIER) framework19 and International Patient Decision Aids Standards instrument (IPDASi)13

|  |  |  |
| --- | --- | --- |
| Heading | Sub-categories | Description |
| Lung cancer screening eligibility | Eligibility criteria | Were the eligibility criteria for lung cancer screening described and what were these criteria? |
| Eligibility calculator | Was guidance included for working out eligibility for lung cancer screening (e.g., smoking pack-year calculator to estimate smoking exposure/history)? |
| Lung cancer screening benefitsa | Early diagnosis | Was the benefit of diagnosing lung cancer at an early stage described? |
| Any other benefits mentioned | Were any additional benefits of lung cancer screening described? |
| Lung cancer screening harms/risksa | Radiation | Was the risk of the level of radiation exposure during screening described? |
| Psychological harm | Was the risk of psychological distress described and in relation to which aspect of the screening pathway (e.g., screening process, waiting for results and potential further tests and procedures)? What type of psychological distress was described (e.g., stress, anxiety, worry)? |
| False positive | Was the risk of a false positive result described (i.e., when cancer is suspected and individual undergoes unnecessary diagnostic work-up but no cancer is present)? |
| False negative | Was the risk of a false negative result described (i.e., no abnormality found when in fact, cancer is present)? |
| Overdiagnosis | Was the risk of over-diagnosis described (i.e., the detection of lung cancer that would not have caused any harm in a person’s lifetime)? |
| Harms from follow-up tests/ diagnostic procedures | Was the risk of harm from further testing after the screening described (including biopsies, surgery and potential complications)? |
| Death even when lung cancer is detected | Was the risk of death even when lung cancer is detected through screening described? |
| Lung cancer information | Development  | Was an explanation of how lung cancer develops given? |
| Incidence or prevalence | Was therequency of lung cancer diagnosis within a population given? |
| Survival in population | Was the number of people diagnosed with lung cancer who receive treatment and survive described? |
| Survival from early stage | Was the number of people who survive lung cancer detected at an early stage described? |
| Symptoms | Were the warning signs or symptoms of lung cancer described? |
| Tobacco smoking as a risk factor | Was tobacco smoking described as a risk factor for lung cancer? |
| Risk factors other than tobacco smoking | Were any other risk factors for lung cancer described? |
| Questions/ tools for calculating individual risk | Was any tool provided forto calculate an individual’s risk of developing lung cancer? |
| Screening procedure | Information about the LDCT scan | Was information provided about what a LDCT scan is and its use? |
| Information about what having a LDCT scan is like (procedure) | Was information provided about what LDCT scans involve including what is expected of the patient, how the scan works and the length of time? |
| Information on what happens after screening (including follow up) | Was information provided about how long it takes to receive the results of screening and the need for yearly follow up screenings? |
| Screening resultsa | Negative/ normal | Was an explanation of a negative/normal screening result given, including its implications and the next steps? |
| Incidental/non-cancer finding | Was the possibility of finding other problems on the scan (not just lung cancer) that may need treatment explained? |
| Indeterminate finding/ surveillance of low-risk pulmonary nodule  | Was the possibility of needing further LDCT scans due to a low risk pulmonary nodule that requires surveillance explained? |
| Abnormal (urgent referral/ suspected cancer) | Was the possibility of abnormal findings that require further testing explained, including the next steps? |
| Lung cancer diagnosis | Was the possibility of needing diagnostic tests explained, including the types of test (e.g., biopsy)? |
| Lung cancer treatment options | Were the different treatment options for lung cancer explained? |
| Smoking cessation | Benefits | Were the positive effects of quitting smoking described? |
| Recommendation to stop smoking/ stay quit  | Did the DST advice stopping smoking or staying quit? |
| Information about how to stop smoking | Was information given about how to stop smoking and/or the type of support available? |
| Contact information/ signposting for smoking cessation support/ services | Were contact details (e.g., phone number, email, or websites) given for how to access smoking cessation organisations? |
| Values clarification | Implicit or explicit | Does the decision support tool implicitly support or explicitly advise (including strategies) the weighing up of the benefits and harms of lung cancer screening based on personal value systems (what matters most to the individual)? |
| Guidance in deliberation/ communication |  | Is guidance given to assist the individual in thinking about the options available, communicating the information to others and coming to a decision? |
| Personal stories |  | Are personal stories of individuals’ experiences of lung cancer screening and lung cancer diagnosis/treatment included? |
| Strategies to help understanding | Reading level  | Was the reading level of the decision support tool stated? |
| Different languages | Is the decision support tool available in languages other than English? |
| Decision prompts |  | Does the decision support tool prompt individuals to make a decision? |
| Shared decision-making prompt |  | Are factors included which aid the individual in having a conversation with their healthcare profession about lung cancer screening (e.g., list of questions/discussion points)? |
| Screening guidelines |  | Did the decision support tool include information about or adhere to national screening recommendations/guidelines? |
| Research evidence |  | Is the information provided described as being based on research evidence? |
| Other components |  | Any other aspect within the decision support tool that was previously not recorded or unique to a specific decision support tool |
| aThe methods used to present this information (including their probability) were also extracted. Please see Supplementary Tables 2C for details of these categories |

**Supplementary Table 2C:** Data charting\* and extraction table for the methods of information presentation (for lung cancer screening benefits, risks and types of result)

(\*categories derived from and a systematic review of communicative aspects of decision aids for prostate cancer20)

|  |  |  |
| --- | --- | --- |
| Heading | Sub-categories | Description |
| Methods used to quantify probability | Verbal  | Verbal value labels (e.g., “higher than”)  |
| Numerical  | Numerical methods (i.e., percentages, natural frequencies, absolute numbers) |
|  | Absolute/relative/ no probability  | Whether or not quantified, and if so whether absolute risk or relative risk (i.e., in relation to another population) used |
| Method of information presentation | Verbal | Written text and/or audio (i.e., narration) |
|  | Visual | Visual methods for presenting or comparing illustration proportions/quantity XX, including bar charts, icon arrays, table, cross-comparison grid, image/illustration |

**Supplementary Table 3:** Summary of studies and decision support tool (DST) characteristics

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Studies** | **Country** | **Design** | **Sample size** | **Purpose of DST** | **DST name/number** | **DST Description** |
| Sakoda et al., 2019 | USA | Quality improvement evaluation | 680 patients | Used within a patient education class taught by a clinician specialists (e.g., pulmonologist) for patients who are interested in lung cancer screening (LCS) to attend before a personal face-to-face shared decision making (SDM) visit occurs.  | 1. Lung cancer screening: Is it right for me?
 | 32 slide PowerPoint presentation  |
| 1. Is Lung Cancer Screening Right for Me?
 | 4-page patient leaflet |
| Carter-Harris et al., 2017 | USA | Development Study protocol | 10 participants | To prepare individuals for the SDM process about lung cancer screening.  | 1. LungTalk
 | Interactive narrated web program including audio, video, and animation segments (approx. 17 slides) |
| Mazzone et al., 2017 1\* | USA | Quantitative survey | 113 patients | To describe the benefits and harms of lung cancer screening during face-to-face counselling.  | 1. Making a value-based decision about lung cancer screening
 | 6-min narrated video slide show |
| To assist patients with the decision about participation in screening during a face-to-face counselling and SDM visits | 1. Should I screen?
 | Web-based tool in a question-and-answer format |
| Lau et al., 2015 1 | USA | Quasi-experimental design: a before-after study | 60 participants | To assist patients in making informed decisions regarding LCS by helping individuals to accurately recognize their own lung cancer risk, and the harms and benefits of screening, while considering their personal values and preferences. |
| Lau et al., 2014 1 | USA | Qualitative focus group (alpha testing) | 10 participants |
| **Studies** | **Country** | **Design** | **Sample size** | **Purpose of DST** | **DST name/number** | **DST Description** |
| Crothers et al.,2016 1,2\* | USA | Mixed-methods approach | 45 participants | To promote SDM and evaluate whether patient-centred communication using decision aids improves understanding of lung cancer screening benefits and harms. | 5. Should I screen?  | Web-based tool in a question-and-answer format |
| 1. Screening for lung Cancer
 | 6-page print by the Veterans Affairs (VA) Health Administration  |
| Greene et al.,2019 2 | USA | Qualitative interview study | 37 participants | Used by clinicians to help patients make informed decisions about whether to be screened by providing information about the harms and benefits of LCS and encourage patients to consider their personal preferences and values relevant to screening |
| Lillie et al., 2017 2 | USA | Observational survey study | 588 patients | Used before a call with the LCS coordinator for a discussion about screening. DST used to identify which factors patients consider most important in making LCS decisions. |
| Tanner et al., 2019 2\* | USA | Prospective observational study | 137 participants | To support patient-provider communication, understanding of the benefits and harms of LCS and understanding of cultural beliefs and values regarding screening.  |
| 1. Lung cancer screening program (Hollings Cancer Center)
 | 2-page brochure |
| Dharod et al., 2019 | USA | Single-arm pragmatic study | 81 patients | To inform patients of the risks and benefits of LCS prior to in-person shared decision making with a medical provider. Provides a personalized risk assessment to help them make a screening decision and receive screening. | 1. mPATH Lung
 | Web interactive (eligibility questionnaire + 2 min video + personal risk questionnaire) |
| **Studies** | **Country** | **Design** | **Sample size** | **Purpose of DST** | **DST name/number** | **DST Description** |
| Fagan et al.,2019 3\* | USA, Delaware | Feasibility study | 28 patients | Used to clarify preferences for LDCT screening and identify factors explaining preference before and during a telephone-delivered, primary care SDM intervention. | 1. Is lung cancer screening right for me? A Decision-making Tool for You andYour Health Care Professional
 | 2 page printed educational material |
| 1. EBSCO - Lung cancer screening: Yes or no? -
 | 1 page table aid |
| Han et al., 2019 4 | USA | Mixed-methods, pre-post intervention study | Quantitative N=60 patients Qualitative N=17 patients  | Used to structure conversations about the potential benefits, harms, and uncertainties of LDCT screening during pre-screening SDM counselling by pulmonary physicians  | 1. Frequently asked questions about lung cancer screening
 | 1 page, paper-based, encounter Decision aid (EDA) |
| Fukunaga et al., 2021 4 |   | A pre-post pilot intervention study | 23 Participants | Designed to guide a structured conversation between the patient and clinician during in-person SDM counselling. Explains the benefits and harms of LCS and elicits participants’ values and preferences about screening. |
| Hart et al.,2016 5 | USA | Development and evaluation |  12 healthcare providers | To help individuals considering screening to be aware of associated costs, potential risks, and benefits and to make decisions that adhere to their values. | 1. Computed Tomography Lung Cancer screening. Is it right for me?
 |  1 page DST |
| Manners et al., 2019 6 | Australia | Quasi-experimental pre-post pamphlet exposure design. | 55 participants | To improve the shared decision-making process for those approached to consider lung cancer screening. | 1. It’s your choice.
 | 11-page educational pamphlet  |
| **Studies** | **Country** | **Design** | **Sample size** | **Purpose of DST** | **DST name/number** | **DST Description** |
| Reuland et al., 2018 7 | USA | Quantitative pre-post study | 50 participants | To help patients understand the benefits of screening and screening-related harms including false positives and overdiagnosis | 1. Should I start having yearly screening for lung cancer? -
 |  6-minute video |
| Ruparel et al., 2019 8,9\* | UK | RCT | 229 participants | To provide information on LCS, its benefits and harms to individuals considering screening in addition to a discussion with a healthcare professional (HCP) to support the decision-making process. | 15. Lung cancer screening - the facts  | 5.46-minute video |
| 1. Lung Health Check: Information on what's involved
 | 12-page information leaflet |
| Sharma et al., 2018 10 | USA, New York State -  | RCT | 431 participants | To educate about the benefits, risks, and associated costs, of LCS and to assess the impact on participants seeking information regarding lung cancer screening. | 1. Lung cancer screening - Early detection saves lives -
 | 2-page educational brochure |
| Sharma et al., 2019 10 | USA, Buffalo | Qualitative research study | 21 participants |
| Volk et al., 2020 11 | USA | RCT | 516 participants | To help smokers’ preparation for having a conversation with a health care clinician about LCS. | 18. Lung cancer screening: Is it right for me? -  | 9.27-minute video |
| Volk et al., 2014 12 | USA | An uncontrolled, before-after design  | 52 patients | Designed to be used in primary care settings by candidates for lung cancer screening to promote informed screening decisions.  | 1. Lung cancer screening: Is it right for me?
 | 5-minute video |
| Lowenstein et al., 2018 12 | USA | RCT: A patient-centered outcomes research study | 10 advisory group members, 516 participants (for RCT) | To prepare patients to have a conversation with their primary care provider and not to sway patients to be for or against lung cancer screening. |
| Hoffman et al., 2018 12 | USA | Quantitative survey | 30 participants | To increase knowledge and understanding of decision-making values, and screening intentions |
| **Studies** | **Country** | **Design** | **Sample size** | **Purpose of DST** | **DST name/number** | **DST Description** |
| Roberts et al., 2021 13 | USA | Semi-structured interview | 10 participants  | To facilitate SDM by providing objective information to providers and patients | 1. the Risk-Based NLST Outcomes Tool (RNOT)
 | Interactive risk assessment web tool |
| Raz et al., 2020 | USA  | RCT | 1281 patients  | To provide information on lung cancer, LCS, eligibility, what to expect, anddecision-making assistance for eligible patients receiving smoking cessation counselling  | 1. Lung Cancer Screening: Options
 | Online educational video |
| Elliot et al., 2021 | USA | Clinic-randomized trial | 34 healthcare clinics | Used to give patient-specific treatment suggestions to help both patient and clinician understand the patient’s risk for cancers. SDM tool provided overview of screening benefits, risks, and structured decision making. | 1. The CPW and SDM tool: 'Lung cancer screening: making a choice'
 | 2-page SDM leaflet |
| \*Uses two DSTs within study |

**List of websites and reference for the studies and decision support tools in Supplementary Table 3**

References for openly available DSTs

5. Should I screen?: <https://shouldiscreen.com/English/home>

6. Screening for lung Cancer : <https://www.prevention.va.gov/docs/LungCancerScreeningHandout.pdf>

9. Is lung cancer screening right for me?: <https://effectivehealthcare.ahrq.gov/decision-aids/lung-cancer-screening/decisionmaking-tool.html>

11. FREQUENTLY ASKED QUESTIONS ABOUT LUNG CANCER SCREENING - [Fukunaga 2021.pdf](file:///C%3A%5CUsers%5Cmbasa%5CDropbox%5CMy%20PC%20%28LAPTOP-T871819E%29%5CDocuments%5CWORK%5CSCOPING%20REVIEW%5CNew%20DSTs%5CFukunaga%202021.pdf)

12. Tomography Lung Cancr screening. Is it right for me? - [Hart.pdf](file:///C%3A%5CUsers%5Cmbasa%5CDropbox%5CMy%20PC%20%28LAPTOP-T871819E%29%5CDocuments%5CWORK%5CArticles%5CHart.pdf)

13. IT'S YOUR CHOICE: [Manners -its your choice.pdf](file:///C%3A%5CUsers%5Cmbasa%5CDropbox%5CMy%20PC%20%28LAPTOP-T871819E%29%5CDocuments%5CWORK%5CDAs%5CManners%20-its%20your%20choice.pdf)

14. Should I start having yearly screening for lung cancer? - <https://vimeo.com/192026567/7754172812>

15. Lung cancer screening - the facts - <https://www.youtube.com/watch?v=U3oirXkufno>

16. Lung Health Check: Information on what's involved: [file:///C:/Users/mbasa/Downloads/AnnalsATS.201811-841OC\_ruparel\_data\_supplement.pdf](file:///C%3A/Users/mbasa/Downloads/AnnalsATS.201811-841OC_ruparel_data_supplement.pdf)

17. Lung cancer screening - Early detection saves lives - <https://link.springer.com/article/10.1007/s13187-018-1362-4/figures/1>

18. Lung cancer screening: Is it right for me? - <https://www.youtube.com/watch?v=wir3w1eUAJk&feature=youtu.be>

19. Lung cancer screening: Is it right for me?: https://www.youtube.com/watch?v=IczfHH4\_Lfg

20. the Risk-Based NLST Outcomes Tool (RNOT): <https://analysistools.cancer.gov/lungCancerScreening/#!/>

22.The Lung Cancer Risk Assessment Tool (LCRAT): <https://www.aats.org/aatsimis/AATSWeb/Resources/Lung_Cancer_Screening/AATSWeb/Association/About/Resources/Lung_Cancer_Risk_Assessment_Tool.aspx?hkey=29f118a8-d7a6-4bcd-a9b3-7e85484881b8>

References for studies reporting the DSTs

1. Roberts MC, Seaman EL, Klein WM, Ferrer RA, Han PK, Katki HA, Land SR, Liotta RA, Nations JA, Peterson PG. Patient Perspectives on the Risk-Based NLST Outcomes Tool for Lung Cancer Screening. Journal of Cancer Education. 2021 Mar 9:1-8.
2. Elliott TE, O'Connor PJ, Asche SE, Saman DM, Dehmer SP, Ekstrom HL, Allen CI, Bianco JA, Chrenka EA, Freitag LA, Harry ML. Design and rationale of an intervention to improve cancer prevention using clinical decision support and shared decision making: A clinic-randomized trial. Contemporary Clinical Trials. 2021 Mar 1;102:106271.
3. Raz DJ, Ismail MH, Haupt EC, Sun V, Park S, Alem AC, Gould MK. Improving Utilization of Lung Cancer Screening Through Incorporating a Video-Based Educational Tool Into Smoking Cessation Counseling. Clinical Lung Cancer. 2021 Mar 1;22(2):83-91.
4. Fukunaga MI, Balwan A, Janis JA, Gutheil C, Yahwak J, Han PK. Pilot Study of an Encounter Decision Aid for Lung Cancer Screening. Journal of Cancer Education. 2021 Jan 7:1-5.
5. Sakoda LC, Meyer MA, Chawla N, Sanchez MA, Blatchins MA, Nayak S, San K, Zin GK, Minowada G. Effectiveness of a patient education class to enhance knowledge about lung cancer screening: a quality improvement evaluation. Journal of Cancer Education. 2019 May 9:1-8.
6. Carter-Harris, L., Comer, R. S., Goyal, A., Vode, E. C., Hanna, N., Ceppa, D., & Rawl, S. M. (2017). Development and usability testing of a computer-tailored decision support tool for lung cancer screening: study protocol. *JMIR research protocols*, *6*(11), e225.
7. Crothers K, Kross EK, Reisch LM, Shahrir S, Slatore C, Zeliadt SB, Triplette M, Meza R, Elmore JG. Patients’ attitudes regarding lung cancer screening and decision aids. A survey and focus group study. Annals of the American Thoracic Society. 2016 Nov;13(11):1992-2001.
8. Dharod A, Bellinger C, Foley K, Case LD, Miller D. The reach and feasibility of an interactive lung cancer screening decision aid delivered by patient portal. Applied clinical informatics. 2019 Jan;10(01):019-27.
9. Fagan HB, Fournakis NA, Jurkovitz C, Petrich AM, Zhang Z, Katurakes N, Myers RE. Telephone-based shared decision-making for lung cancer screening in primary care. Journal of Cancer Education. 2019 May 9:1-8.
10. Greene PA, Sayre G, Heffner JL, Klein DE, Krebs P, Au DH, Zeliadt SB. Challenges to educating smokers about lung cancer screening: A qualitative study of decision making experiences in primary care. Journal of Cancer Education. 2019 Dec;34(6):1142-9.
11. Han PK, Lary C, Black A, Gutheil C, Mandeville H, Yahwak J, Fukunaga M. Effects of personalized risk information on patients referred for lung cancer screening with low-dose CT. Medical Decision Making. 2019 Nov;39(8):950-61.
12. Hart K, Tofthagen C, Wang HL. Development and Evaluation of a Lung Cancer Screening Decision Aid. Clinical journal of oncology nursing. 2016 Oct 1;20(5).
13. Lau YK, Caverly TJ, Cao P, Cherng ST, West M, Gaber C, Arenberg D, Meza R. Evaluation of a personalized, web-based decision aid for lung cancer screening. American journal of preventive medicine. 2015 Dec 1;49(6):e125-9.
14. Lau YK, Caverly TJ, Cherng ST, Cao P, West M, Arenberg D, Meza R. Development and validation of a personalized, web-based decision aid for lung cancer screening using mixed methods: a study protocol. JMIR research protocols. 2014;3(4):e78.
15. Lillie SE, Fu SS, Fabbrini AE, Rice KL, Clothier B, Nelson DB, Doro EA, Moughrabieh MA, Partin MR. What factors do patients consider most important in making lung cancer screening decisions? Findings from a demonstration project conducted in the Veterans Health Administration. Lung Cancer. 2017 Feb 1;104:38-44.
16. Manners D, Pettigrew S, Lake FR, Piccolo F, McWilliams AM, Brims FJ. Development and evaluation of a consumer information resource, including Patient Decision Aid, for lung cancer screening: a quasi-experimental study. Translational behavioral medicine. 2020 Apr;10(2):404-12.
17. Mazzone PJ, Tenenbaum A, Seeley M, Petersen H, Lyon C, Han X, Wang XF. Impact of a lung cancer screening counseling and shared decision-making visit. Chest. 2017 Mar 1;151(3):572-8.
18. Reuland DS, Cubillos L, Brenner AT, Harris RP, Minish B, Pignone MP. A pre-post study testing a lung cancer screening decision aid in primary care. BMC medical informatics and decision making. 2018 Dec;18(1):1-9.
19. Ruparel M, Quaife SL, Ghimire B, Dickson JL, Bhowmik A, Navani N, Baldwin DR, Duffy S, Waller J, Janes SM. Impact of a lung cancer screening information film on informed decision-making: a randomized trial. Annals of the American Thoracic Society. 2019 Jun;16(6):744-51.
20. Sharma A, Bansal-Travers M, Celestino P, Fine J, Reid ME, Hyland A, O’Connor R. Using a smoking cessation quitline to promote lung cancer screening. American journal of health behavior. 2018 Nov 1;42(6):85-100.
21. Sharma A, O’Connor R, Celestino P, Killion S, Griswold-Krupski L, Bansal-Travers M. Focus groups and in-depth interviews to guide the development of lung cancer screening informational materials. Journal of Cancer Education. 2019 Aug;34(4):712-8.
22. Volk RJ, Lowenstein LM, Leal VB, Escoto KH, Cantor SB, Munden RF, Rabius VA, Bailey L, Cinciripini PM, Lin H, Housten AJ. Effect of a patient decision aid on lung cancer screening decision-making by persons who smoke: a randomized clinical trial. JAMA network open. 2020 Jan 3;3(1):e1920362-.
23. Tanner NT, Banas E, Yeager D, Dai L, Halbert CH, Silvestri GA. In-person and telephonic shared decision-making visits for people considering lung cancer screening: an assessment of decision quality. Chest. 2019 Jan 1;155(1):236-8.
24. Volk RJ, Linder SK, Leal VB, Rabius V, Cinciripini PM, Kamath GR, Munden RF, Bevers TB. Feasibility of a patient decision aid about lung cancer screening with low-dose computed tomography. Preventive medicine. 2014 May 1;62:60-3.
25. Lowenstein LM, Escoto KH, Leal VB, Bailey L, Bevers TB, Cantor SB, Cinciripini PM, Jacobs LE, Esparza A, Godoy MC, Housten AJ. Randomized trial of a patient-centered decision aid for promoting informed decisions about lung cancer screening: implementation of a PCORI study protocol and lessons learned. Contemporary clinical trials. 2018 Sep 1;72:26-34.
26. Hoffman AS, Hempstead AP, Housten AJ, Richards VF, Lowenstein LM, Leal VB, Volk RJ. Using a patient decision aid video to assess current and former smokers’ values about the harms and benefits of lung cancer screening with low-dose computed tomography. MDM policy & practice. 2018 Apr;3(1):2381468318769886.

**Supplementary Table 4:** Summary of the components within each decision support tool (DST)

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **DST number (see Supplementary Table 3 for corresponding DST name and information)** | **TOTAL** |
|  |  | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** | **21** | **22** |  |
| **Screening eligibility** | **Criteria** | X | X | X | X | X | X | X | X | X | X |  | X | X | X |  | X | X | X | X | X | X | X | 20 |
| **Pack year Calculator** | X | X |  |  |  |  |  |  |  |  |  | X |  |  |  |  | X | X |  |  |  |  | 5 |
| **Benefits** | **Early diagnosis** | X | X | X | X | X |   |  | X |  | X | X | X | X |  | X | X | X | X | X |  | X |  | 16 |
| **Any other benefits mentioned** | X | X | X | X | X | X | X | X | X |  | X | X | X | X | X | X |  | X | X | X | X | X | 20 |
| **Harms** | **Radiation** | X | X | X | X | X | X |  | X | X |  | X | X | X | X | X | X |  | X | X |  | X | X | 18 |
| **Psychological harm**  | X | X | X | X | X | X |  |  |  |  | X |  | X | X | X | X |  |  |  |  | X |  | 12 |
| **False positive** | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |  | X | X | X | X | X | X | 21 |
| **False negative** |  |  |  |  |  |  |  |  |  | X | X |  | X |  | X |  |  | X |  |  |  |  | 5 |
| **Overdiagnosis** | X | X | X | X | X | X |  | X | X | X |  |  | X | X | X | X | X | X | X |  | X | X | 18 |
| **Harms from follow-up tests** | X | X | X | X | X | X | X | X | X | X | X | X | X | X |  | X |  | X | X |  | X |  | 18 |
| **Death even when cancer detected** | X | X |  |  |  |  |  | X | X | X |  |  |  | X |  |  |  |  |  |  |  |  | 6 |
| **Lung cancer information** | **Causes of LC** |  |  | X |  | X | X |  |  |  | X |  |  |  | X |  | X |  | X |  |  | X | X | 9 |
| **Incidence or prevalence** | X |  | X | X |  | X | X | X |  |  |  | X | X |  | X | X | X | X | X |  |  | X | 14 |
| **Survival in population** | X |  |  |  |  |  |  |  |  |  | X | X |  |  | X |  |  | X |  |  |  |  | 5 |
| **Survival from early stage** |  |  |  | X |  | X |  |  | X |  |  | X | X |  |  |  |  |  |  |  |  | X | 6 |
| **Symptoms** | X |  | X |  | X | X |  |  |  |  |  |  |  |  |  | X |  |  |  |  | X |  | 6 |
| **Tobacco smoking as a risk factor** | X | X | X |  | X |  |  |  | X |  | X |  | X | X | X | X | X | X | X |  | X |  | 14 |
| **Risk factors other than tobacco smoking** |  |  |  | X |  |  |  |  |  | X |  |  |  |  | X |  | X | X |  |  |  | 5 |
| **Tools for calculating individual risk** |  |  |  |  | X |  |  | X |  |  |  |  |  |  |  |  |  |  |  | X |  |  | 3 |
| **Screening procedure** | **Information about LDCT scan** | X | X | X | X | X | X | X | X |  | X | X | X | X | X | X | X | X | X | X |  | X | X | 20 |
| **Information about what having a LDCT scan is like (procedure)** | X |  | X |  | X | X | X | X |  | X |  | X | X |  | X | X | X | X | X |  | X | X | 16 |
| **Information on what happens after screening (including follow up)** | X |  | X |  | X | X | X | X | X |  |  |  | X | X | X | X |  | X | X |  | X | X | 15 |
| **Information of where to get screened (i.e., facilities offering screening)** | X |  | X | X |  |  |  |  | X |  |  |  |  |  |  |  |  |  | 4 |
| **LDCT Screening results = 16** | **Negative/ normal** |  |  |  |  |  |  |  |  |  |  |  |  | X |  | X | X |  | X | X |  | X | X | 7 |
| **Incidental/non-cancer finding** | X | X |  | X | X | X |  |  |  |  |  |  | X | X | X | X |  | X |  |  | X | X | 12 |
| **Indeterminate/ pulmonary dule (needs surveillance but low risk)**  | X |  | X |  |  |  |  |  |  | X | X | X | X |  |  |  |  | X | X | 8 |
| **Abnormal (urgent referral/ suspected cancer)** | X |  | X | X |  | X |  |  |  |  |  |  | X | X | X | X |  | X | X |  | X |  | 11 |
| **Lung cancer diagnosis** |  |  |  | X |  | X |  |  |  | X |  |  | X |  | X | X |  |  |  | X | X | X | 9 |
| **Lung cancer treatment options** |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X |  |  |  |  |  | X |  | 4 |
| **Smoking cessation = 18** | **Benefits of smoking cessation** | X | X | X |  | X | X | X |  | X |  | X |  | X | X | X | X | X | X | X |  | X |  | 16 |
| **Recommendation to stop smoking** |  |  |  |  |  | X |  |  |  |  |  |  |  | X | X |  | X |  | X | X | X | X | 8 |
| **Information about how to stop smoking** | X |  |  | X |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  | X | X | 5 |
| **Contact information/ signposting for smoking cessation services** | X |  |  | X | X |  |  | X |  |  |  | X | X |  | X | X | X | X | X |  |  | 11 |
| **Values clarification (implicit or explicit)** | X |  | X | X |  | X |  | X | X |  | X |  | X | X | X |  |  | X | X |  | X | X | 14 |
| **Guidance in deliberation** | X | X | X |  |  | X | X |  | X |  |  |  | X |  |  |  |  |  |  |  | X | X | 9 |
| **Personal stories** |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  | X |  |  |  |  |  | 2 |
| **Strategies to help understanding** | **Reading level**  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |  |  | X |  | 2 |
| **Different languages** | X | X |  |  | X |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |  |  | 4 |
| **Decision prompts** | X | X |  |  |  | X |  | X | X |  |  |  | X |  |  |  |  |  |  |  | X | X | 8 |
| **SDM prompt with HCP** | X |  | X |  |  |  |  | X |  | X |  |  | X | X | X | X | X | X | X | X | X | X | 14 |
| **National guidelines** | X | X |  | X | X |  |  | X |  |  |  |  |  |  |  |  |  | X |  |  |  | X | 4 |
| **Research evidence** | X | X | X | X | X | X | X |  | X |  | X | X | X | X | X | X | X | X | X | X | X | X | 20 |