Shared decision making in cardiology – a systematic review and meta-analysis

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Supplementary material

Table S1 PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	Title
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	Abstract
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	Introduction
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	Introduction
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	Methods
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	Methods
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Methods
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	Methods
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	Methods
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	Methods
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	Methods
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	Methods, Table 3
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	Methods, Figures 2-4
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	Methods

Section and Topic	Item #	Checklist item	Location where item is reported
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	Methods
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	Methods
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	Methods
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	Methods
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	Methods
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	Methods, Figure 4
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	Methods
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	Results
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	Figure 1
Study characteristics	17	Cite each included study and present its characteristics.	Results, Table 1-2
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Table 3
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	Table 2
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	Figure 2-3, Table 3
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	Results, Figure 2-3
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	N/A
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	Supplement
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	Figure 4

Section and Topic	Item #	Checklist item	Location where item is reported
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	Results
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	Discussion
	23b	Discuss any limitations of the evidence included in the review.	Discussion
	23c	Discuss any limitations of the review processes used.	Discussion
	23d	Discuss implications of the results for practice, policy, and future research.	Discussion
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	Methods
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	Methods
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	N/A
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	Title page
Competing interests	26	Declare any competing interests of review authors.	Title page
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	N/A

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

For more information, visit: http://www.prisma-statement.org/

Tables S2-S4: Search strategy for Cochrane database, PubMed and Web of Science

Table S2: Cochrane database

ID	Search	Hits
#1	((shar* or inform*) near/3 (decision* or aid* or deciding* or choice*)):ti,ab,kw (Word variations have been searched)	4748
#2	((decision* or choice*) near/3 (making* or support* or behaviour*)):ti,ab,kw (Word variations have been searched)	17061
#3	((patient* or consumer*) near/3 (involvement* or involving* or participation* or participating*)):ti,ab,kw (Word variations have been searched)	12970
#4	((nurse* or physician* or clinician* or doctor* or general practitioner* or gps or health care professional* or healthcare professional* or health care provider* or healthcare provider* or resident*) near/3 (patient* or consumer* or people*)):ti,ab,kw (Word variations have been searched)	86035
#5	#1 or (#2 and #3) or (#2 and #4) or (#3 and #4)	10673
#6	(random*):ti,ab,kw (Word variations have been searched)	1037720
#7	((Myocard* or Arrhythm* or Valv* or Fibrill* or Tachycard* or Bradycard* or Heart or Angin* or Coronar* or Ischaemi* or Ischemi* or Card* or Aort* or Mitral or Vascular or Infarct* or Conduction or Channelopathy or "Diastolic dysfunction" or "Systolic dysfunction" or Atri* or Ventric* or Palpitatio* or Arter* or Hypertensi* or Cardiac pac* or Pacemaker or Endocarditis or electrocardiogra* or electrophysiolog*)):ti,ab,kw (Word variations have been searched)	507265
#8	#5 AND #6 AND #7	3759

Table S3: Pubmed

Search	Query	Results
#8	Search: **#5 AND #6 AND #7**	3,132
#7	Search: **(Myocard* or Arrhythm* or Valv* or Fibrill* or Tachycard* or Bradycard* or Heart or Angin* or Coronar* or Ischaemi* or Ischemi* or Card* or Aort* or Mitral or Vascular or Infarct* or Conduction or Channelopathy or "Diastolic dysfunction" or "Systolic dysfunction" or Atri* or Ventric* or Palpitatio* or Arter* or Hypertensi* or Cardiac pac* or Pacemaker or Endocarditis or electrocardiogra* or electrophysiolog*)**	8,612,598
#6	Search: **random***	1,428,482
#5	Search: **#1 OR (#2 AND #3) OR (#2 AND #4) OR (#3 AND #4)**	42,918
#4	Search: **(professional-patient relations[mh] or ((nurses[mh] or physicians[mh] or nurse*[ti] or physician*[ti] or clinician*[ti] or doctor*[ti] or general practitioner*[ti] or gps[ti] or health care professional*[ti] or healthcare professional*[ti] or health care provider*[ti] or healthcare provider*[ti] or resident*[ti]) and (patients[mh] or patient*[ti] or consumer*[ti] or people*[ti])))**	183,732
#3	Search: **(patient participation[mh] or patient participation*[tiab] or consumer participation*[tiab] or patient involvement*[tiab] or consumer involvement*[tiab] or ((patient*[ti] or consumer*[ti]) and (involvement*[ti] or involving*[ti] or participation*[ti] or participating*[ti])))**	38,488
#2	Search: **(decision making[mh:noexp] or decision support techniques[mh:noexp] or decision support systems, clinical[mh] or choice behaviour[mh:noexp] or decision making*[tiab] or decision support*[tiab] or choice behaviour*[tiab] or ((decision*[ti] or choice*[ti]) and (making*[ti] or support*[ti] or behaviour*[ti])))**	262,949
#1	Search: **(shared decision*[tiab] or sharing decision*[tiab] or informed decision*[tiab] or informed choice*[tiab] or decision aid*[tiab] or ((share*[ti] or sharing*[ti] or informed*[ti]) and (decision*[ti] or deciding*[ti] or choice*[ti])))**	22,933

Table S4: Web Of Science:

Set	Results	
		Web Of Science Core Collection, search performed on 25/01/2021
# 8	3,877	#5 AND #6 AND #7
		Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC *Timespan=All years*

# 7	4,694,446	TI=(Myocard* or Arrhythm* or Valv* or Fibrill* or Tachycard* or Bradycard* or Heart or Angin* or Coronar* or Ischaemi* or Ischemi* or Card* or Aort* or Mitral or Vascular or Infarct* or Conduction or Channelopathy or "Diastolic dysfunction" or "Systolic dysfunction" or Atri* or Ventric* or Palpitatio* or Arter* or Hypertensi* or Cardiac pac* or Pacemaker or Endocarditis or electrocardiogra* or electrophysiolog*) OR AB=(Myocard* or Arrhythm* or Valv* or Fibrill* or Tachycard* or Bradycard* or Heart or Angin* or Coronar* or Ischaemi* or Ischemi* or Card* or Aort* or Mitral or Vascular or Infarct* or Conduction or Channelopathy or "Diastolic dysfunction" or "Systolic dysfunction" or Atri* or Ventric* or Palpitatio* or Arter* or Hypertensi* or Cardiac pac* or Pacemaker or Endocarditis or electrocardiogra* or electrophysiolog*) OR KP=(Myocard* or Arrhythm* or Valv* or Fibrill* or Tachycard* or Bradycard* or Heart or Angin* or Coronar* or Ischaemi* or Ischemi* or Card* or Aort* or Mitral or Vascular or Infarct* or Conduction or Channelopathy or "Diastolic dysfunction" or "Systolic dysfunction" or Atri* or Ventric* or Palpitatio* or Arter* or Hypertensi* or Cardiac pac* or Pacemaker or Endocarditis or electrocardiogra* or electrophysiolog*)
		Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC *Timespan=All years*
# 6	1,939,078	TI=random* OR AB=random* OR KP=random*

		Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC *Timespan=All years*
# 5	233,699	#1 OR (#2 AND #3) OR (#2 AND #4) OR (#3 AND #4)
		Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC *Timespan=All years*

# 4	594,976	TI=(professional-patient relations OR ((nurses OR physicians OR nurse* OR physician* OR clinician* OR doctor* OR general practitioner* OR gps OR health care professional* OR healthcare professional* OR health care provider* OR healthcare provider* OR resident*) AND (patients OR patient* OR consumer* OR people*))) OR AB=(professional-patient relations OR ((nurses OR physicians OR nurse* OR physician* OR clinician* OR doctor* OR general practitioner* OR gps OR health care professional* OR healthcare professional* OR health care provider* OR healthcare provider* OR resident*) AND (patients OR patient* OR consumer* OR people*))) OR KP=(professional-patient relations OR ((nurses OR physicians OR nurse* OR physician* OR clinician* OR doctor* OR general practitioner* OR gps OR health care professional* OR healthcare professional* OR health care provider* OR healthcare provider* OR resident*) AND (patients OR patient* OR consumer* OR people*)))
		Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC *Timespan=All years*

# 3	326,204	TI=(patient participation OR patient participation* OR consumer participation* OR patient involvement* OR consumer involvement* OR ((patient* OR consumer*) AND (involvement* OR involving* OR participation* OR participating*))) OR AB=(patient participation OR patient participation* OR consumer participation* OR patient involvement* OR consumer involvement* OR ((patient* OR consumer*) AND (involvement* OR involving* OR participation* OR participating*))) OR KP=(patient participation OR patient participation* OR consumer participation* OR patient involvement* OR consumer involvement* OR ((patient* OR consumer*) AND (involvement* OR involving* OR participation* OR participating*))) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC* *Timespan=All years*

# 2	703,259	TI=(decision making OR decision support techniques OR decision support systems, clinical OR choice behaviour OR decision making OR decision support* OR choice behaviour*OR ((decision* OR choice*) AND (making*OR support*OR behaviour*))) OR AB=(decision making OR decision support techniques OR decision support systems, clinical OR choice behaviour OR decision making OR decision support* OR choice behaviour*OR ((decision* OR choice*) AND (making*OR support*OR behaviour*))) OR KP=(decision making OR decision support techniques OR decision support systems, clinical OR choice behaviour OR decision making OR decision support* OR choice behaviour*OR ((decision* OR choice*) AND (making*OR support*OR behaviour*)))
		Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC *Timespan=All years*
# 1	155,420	TI=(shared decision* OR sharing decision* OR informed decision* OR informed choice* OR decision aid* OR ((share* OR sharing* OR informed*) AND (decision* OR deciding* OR choice*))) OR AB=(shared decision* OR sharing decision* OR informed decision* OR informed choice* OR decision aid* OR ((share* OR sharing* OR informed*) AND (decision* OR deciding* OR choice*))) OR KP=(shared decision* OR sharing decision* OR informed decision* OR informed choice* OR decision aid* OR ((share* OR sharing* OR informed*) AND (decision* OR deciding* OR choice*)))

		Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC *Timespan=All years*
		Timespan
		All years (1900 - 2021)
		Web of Science Core Collection: Citation Indexes
		Science Citation Index Expanded (SCI-EXPANDED) --1900-present
		Social Sciences Citation Index (SSCI) --1900-present
		Arts & Humanities Citation Index (A&HCI) --1975-present
		Conference Proceedings Citation Index- Science (CPCI-S) --1990-present
		Conference Proceedings Citation Index- Social Science & Humanities (CPCI-SSH) --1990-present
		Book Citation Index– Science (BKCI-S) --2008-present

		Book Citation Index– Social Sciences & Humanities (BKCI-SSH) --2008-present
		Emerging Sources Citation Index (ESCI) --2015-present
		Web of Science Core Collection: Chemical Indexes
		Current Chemical Reactions (CCR-EXPANDED) --1985-present
		(Includes Institut National de la Propriete Industrielle structure data back to 1840)
		Index Chemicus (IC) --1993-present

Table S5: Outcomes of included studies - expanded

Reference		Decisional conflict (mean (SD), unless stated otherwise; 100 point scale unless stated otherwise)	Decisional regret (mean (SD), unless stated otherwise)	Decisional satisfaction (mean (SD), unless stated otherwise)	Decisional anxiety (mean (SD), unless stated otherwise)	Knowledge / Specified SDM scale (mean (SD), unless stated otherwise)
Allen	2018	Control (UC), mean (SE):	Control (UC),			Control (UC), mean% (SE):

		- BL1 20.2 (1.99) - BL2 16.5 (1.95) - 1mo 15.5 (1.89) - 6mo 15.4 (1.89) Intervention (PtDA), mean (SE): - BL1 23.4 (2.24) - BL2 18.4 (2.23) - 1mo 17.9 (2.17) - 6mo 14.2 (2.21)	mean (SE): 1mo = 14.3 (2.15) 6mo 12.1 (2.28); Intervention (PtDA), mean (SE): 1mo 17.9 (2.84) 6mo 19.1 (2.96)			- BL1 59.5 (1.9) - BL2 64.9 (1.8) - 1mo 67.8 (1.9) - 6mo 68.6 (1.8) Intervention (PtDA), mean% (SE): - BL1 59.1 (2.2) - BL2 70.0 (2.1) - 1mo 66.4 (2.3) - 6mo 67.1 (2.2)
Carroll	2017	Pre consult, mean (SD): - UC = 49.4 (18.6) - PtDA = 27.3 (18.4) Post implant, mean (SD): - UC = 29.9 (13.3) - PtDA = 21.2 (11.7)				The number (%) of participants scoring greater than 3/5 of the knowledge questions correct - PtDA = 19 (47.5) - UC = 9 (23.1)
Case	2019	PtDA group had increased medical knowledge of CAD ($p<0.001$) and decreased decisional conflict ($p<0.001$); specific values		Both groups reported high satisfaction with decision		Performance on questionnaire devised by authors: - PtDA 81 % (mean 8.05+/-1.29) - UC 70% (mean 6.94+/-

		not provided.				1.44)
Coylewright	2016	PtDA = 18.5 (CI 14.8 to 22.3) UC = 21.5 (CI 17.4 to 25.7)				PtDA = 60.3% (CI 47.5 to 73.2) UC = 39.6% (CI 25.5 to 53.7)
Doll	2019	UC = 24.3 (15.8) PtDA = 21.3 (14.0)				Performance on 6-item survey: - UC = 2.2 (1.0) - PtDA = 2.7 (1.3)
Fraenkel	2012	Informed subscale of DCS (no SE provided for values): - PtDA = 13.0 - UC =24.8 Values clarity subscale of DCS (no SE provided for values): - PtDA = 6.4 - UC = 21.0				Performance on questionnaire assessing knowledge of medications (no SE provided for values): - PtDA = 61% - UC = 31% Performance on questionnaire assessing knowledge of medication side effects (no SE provided for values): - PtDA = 49% - UC = 37%
Hess	2012	PtDA = 22.3 (CI 18.1 - 26.4) UC 43.3 (CI 32.2 - 39.6)				Seven knowledge questions: - PtDA = 3.6 (CI 3.4-3.9) - UC = 3.0 (CI 2.7-3.2) Correctly assessed 45-d risk for ACS: - PtDA = 24 patients

						(25%) - UC = 1 patient (1%) OPTION scale: - PtDA 26.6 (CI 24.9 - 28.2) - UC 7.0 (CI 5.9 - 8.1)
Hess	2016	PtDA = 43.5 (15.3) UC = 46.4 (14.8)				Eight knowledge questions: - PtDA = 4.2 (1.5%) - UC = 3.6 (1.5%) Correctly assessed 45 day risk for ACS: - PtDA = 10 patients (2.2%) - UC = 2 patients (0.4%) Correctly assessed 45 day risk for ACS within 10%: - PtDA = 293 patients (65.0%) - UC = 81 patients (18.1%) OPTION scale: - PtDA = 18.3(9.4) - UC = 7.9(5.4)

Holbrook	2007	Mean total DCS (5 point scale) = 2.1 (SD 0.4); no UC group for comparison in this study				Significant improvement in knowledge of AF after PtDA regardless of format (p<0.01); no UC group for comparison in this study
Kostick	2018	PtDA: - Baseline = 23.1 (20.7) - 1-week = 15.7 (11.8) UC: - Baseline = 29.3 (19.3) - 1-week= 17.4 (14.7)	PtDA = 11.5 (13.3) UC = 12.9 (16.6)	PtDA = 82.5 (13.8) UC = 82.8 (16.1)		Questionnaire with total sum 100 points PtDA: - Baseline = 45.6 (22.2) - 1-week = 67.8 (15.6) - 1-month = 64.3 (14.0) UC: - Baseline = 43.8 (18.3) - 1-week = 59.3 (12.4) - 1-month = 60.6 (12.0) CollaboRATE PtDA - 1-week = 88.4 (19.3) - 1-month = 90.4 (14.3) UC - 1-week = 90.0 (15.6) - 1-month = 89.8 (17.2)

						SDM-9: PtDA - 1-week = 84.8 (16.8) - 1-month = 87.5 (12.8) UC - 1-week = 84.3 (13.6) - 1-month = 85.2 (15.0)
Kunneman	2020	PtDA = 16.6 (14.4) UC = 17.9 (14.9) Difference -1.2 (-3.2 to 0.6).				Scoring 5 or 6 correct of total 6 questions about anticoagulation treatment for AF: - PtDA = 77.5% - UC = 72.5% - No significant difference; P = 0.15 OPTION-12: - PtDA = 33 (10.8) - UC = 29.1 (13.1) - Adjusted mean difference 4.2 (2.8 and 5.6) points
Lewis	2020	2-4 Weeks: - PtDA = 8.0 (13.8) - UC = 14.3 (18.4) - Group difference = -6.2 (CI -18.7 to 6.2)				Knowledge only assessed at 2-4 weeks, assessed using 6 true or false questions: - PtDA = 77.4% (16.8) - UC = 51.1% (24.0)

		6 Months: - PtDA = 16.2 (13.5) - UC = 14.6 (16.1) - Group difference = 1.6 (CI -10 to 13.3) 12 Months: - PtDA = 14.1 (17.1) - UC = 11.4 (13.7) - Group difference = 2.7 (-9.8 to 15.1)				- Group difference = 26.3% (CI 10.4 to 42.1)
McAlister	2005	5 Point Scale - PtDA = 1.6 (SD 0.5) - UC = 1.7 (SD 0.5) - p=0.05				
Man-Son-Hing	1999	5-Point Scale - PtDA = 1.65 (0.45) - UC = 1.74 (0.54) - No statistically significant difference (P=0.14)		PtDA = 96.4% UC = 95.3% Difference 1.1 (no CI provided)		Assessed with 24 knowledge questions. AF and stroke related (6 questions): - PtDA = 93.4% - UC = 90.2% - Difference = 3.2 (CI -4.5 to 10.9) Aspirin- related (9 questions): - PtDA = 68.3% - UC = 52.4% - Difference = 15.9 (CI 4.6 to 27.2)

						Warfarin-related (9 questions): - PtDA = 78.4 % - UC = 63.5% - Difference = 14.9 (CI 4.6 to 25.2)
Morgan	2000			PtDA vs UC: 71% vs 70% (CI -3% to 7%, p = 0.5)		20 true/false questions (15 for patients not eligible for angioplasty). Reported on mean percentage score. PtDA vs UC: 75% vs 62% (CI 8% to 18%, p<0.001)
Schwalm	2012	PtDA = 14.8 (10.5) UC = 19.5 (16.7) p=0.04				Assessed with 5 questions. - PtDA = 3.0/5 (1.5) - UC = 2.0/5 (1.3) - p<0.01
Thomas	2013	DCS total score (Overall patients): - PtDA = 35 (2.9) - UC = 34.1 (3.5) - p=0.33				Knowledge of SCA and ICDs improvement (Overall Patients): - PtDA = 8.4 (2.7) to 10.8 (2.1) - UC = 7.4 (3.9) to 9.7 (2.9) - No significant difference Information retention at 1 week: - PtDA = 10.8 (1.5) - UC = 9.0 (4.1) - No significant difference
Thomson	2007	Pre Clinic PtDA vs UC: Difference = 0.02 (-0.22 to			Overall pre and post clinic mean change =	Knowledge scores (0-10) reported separately for aspirin

		0.26) Post clinic PtDA vs UC: Difference = -0.18 (CI -0.34 to -0.01) At 3 month follow up, PtDA vs UC: Difference = -0.15 (CI -0.37 to 0.06)			-4.57 (CI -6.3 to -2.84); no significant difference between PtDA and UC groups in reduction in anxiety	and warfarin for each group at pre-clinic, post clinic and at 3 months. No difference was found at any point between PtDA vs UC.

Table S6: Instruments used for measurement of outcomes in each study

Reference		Outcomes measured	Instrument used	Time points of measurement
Allen	2018	Decisional conflict	Decisional conflict scale - Validated (O'Connor et al)	Baseline, 1 month, 6 months
		Decisional regret	Decision regret scale - Validated (Brehaut et al)	1 month, 6 months

		Knowledge	10 item knowledge test developed by the research team and validated by clinicians and patients	Baseline, 1 month, 6 months
Carroll	2017	Decisional conflict	1. Decisional conflict scale (as above) 2. SURE test (4 item screening test – Developed by Legare et al, validated by Ferron et al)	Prior to intervention and following the procedure (ICD implantation)
		Knowledge	5 knowledge-based questions developed by the inter-disciplinary team	Prior to intervention and following the procedure (ICD implantation)
Case	2019	Decisional conflict	Decisional conflict scale (as above)	Not specified
		Decisional satisfaction	Decisional satisfaction scale developed by Holmes-Rovner et al	Not specified
		Knowledge	10 item quiz developed by the research team	Not specified
Coylewright	2016	Decisional conflict	Decisional conflict scale (as above)	Pre- and post- intervention
		Knowledge	Total correct out of 10 questions developed by the research team, and specific knowledge that PCI does not reduce risk of MI compared with OMT alone	Pre- and post- intervention
Doll	2019	Decisional conflict	Decisional conflict scale (as above)	Pre- and post- intervention
		Knowledge	6 item knowledge scale developed by the research team	Pre- and post- intervention
Fraenkel	2012	Decisional	Informed and Values Clarity subscales of the Decisional	Pre- and post- intervention

		conflict	Conflict Scale	
		Knowledge	Knowledge scale developed by research team	Pre- and post- intervention
Hess	2012	Decisional conflict	Decisional conflict scale (as above)	30 days post intervention
		Knowledge	7 item knowledge scale developed by research team	30 days post intervention
Hess	2016	Decisional conflict	Decisional conflict scale (as above)	Pre- and post- intervention
		Knowledge	Knowledge scale developed by the research team	Pre- and post- intervention
Holbrook	2007	Decisional conflict	Decisional conflict scale (as above)	Pre- and post- intervention
		Knowledge	10 item knowledge scale developed by the research team	Pre- and post- intervention
Kostick	2018	Decisional conflict	Decisional conflict scale (as above)	Immediately post intervention, and at 1 week
		Decisional regret	Decision regret scale (as above)	1 month post intervention
		Decisional satisfaction	Decisional satisfaction scale (as above)	1 month post intervention
		Knowledge	Validated knowledge scale developed by the research team	Immediately post intervention, at 1 week and at 1 month
Kunneman	2020	Decisional	Decisional conflict scale (as above)	Pre- and post- intervention

		conflict		
		Knowledge	Knowledge scale developed by the research team	Pre- and post- intervention
Lewis	2020	Decisional conflict	Decisional conflict scale (as above)	2-4 weeks post intervention, 6 months, 12 months
		Knowledge	6 true/false questions developed by the research team	2-4 weeks post intervention
McAlister	2005	Decisional conflict	Decisional conflict scale (as above)	2 weeks post intervention
		Knowledge	Estimate of biannual stroke risk	2 weeks post intervention
Man-Son-Hing	1999	Decisional conflict	Decisional conflict scale (as above)	1-4 days post intervention
		Decisional satisfaction	6 questions using 5-point Likert scale	1-4 days post intervention
		Knowledge	23 item knowledge scale developed by the research team	1-4 days post intervention
Morgan	2000	Decisional satisfaction	12 Item decision making process questionnaire developed by Barry et al (with small adjustments)	Pre- intervention and at the time of treatment (at least 1 month post intervention)
		Knowledge	20 true/false questions developed by the research team	Pre- intervention and at the time of treatment (at least 1 month post intervention)
Schwalm	2012	Decisional	Decisional conflict scale (as above)	Not specified

		conflict		
		Knowledge	Knowledge scale developed by the research team	Not specified
Thomas	2013	Decisional conflict	Decisional conflict scale (as above)	1 week post intervention
		Knowledge	13-item knowledge scale developed by the research team	Pre-intervention, post-intervention, after 1 week
Thomson	2007	Decisional conflict	Decisional conflict scale (as above)	Pre-intervention, post-intervention, at 3 months
		Decisional anxiety	State Trait Anxiety Inventory developed by Spielberg et al	Pre-intervention, post-intervention
		Knowledge	Knowledge scale	Pre-intervention, post-intervention, at 3 months

O'Connor AM. User Manual - Decisional Conflict Scale (16 item question format) [document on the internet]. Ottawa: Ottawa Hospital Research Institute; Copyright 1993 [updated 2010; cited 2011 07 25]. 16p. Available from https://decisionaid.ohri.ca/docs/develop/User_Manuals/UM_Decisional_Conflict.pdf .

O'Connor AM. Validation of a decisional conflict scale. Med Decis Mak. 1995; 15:25–30.

O'Connor AM, Bennett CL, Stacey D, Barry M, Col NF, Eden KB, Entwistle VA, Fiset V, Holmes-Rovner M, Khangura S, Llewellyn-Thomas H, Rovner D. Decision aids for people facing health treatment or screening decisions. Cochrane Database Syst Rev. 2009;(3):CD001431.

Legare F, Kearing S, Clay K, Gagnon S, D'Amours D, Rousseau M, O'Connor A. Are you SURE?: Assessing patient decisional conflict with a 4-item screening test. Can Fam Physician. 2010;56:e308–14.

Ferron Parayre A, Labrecque M, Rousseau M, Turcotte S, Legare F. Validation of SURE, a four-item clinical checklist for detecting decisional conflict in patients. Med Decis Mak. 2014;34:54–62.

Holmes-Rovner M, Kroll J, Schmitt N, et al. Patient satisfaction with health care decisions: the satisfaction with decision scale. Med Decis Making 1996;16:58–64.

Brehaut JC, O'Connor AM, Wood TJ, Hack TF, Siminoff L, Gordon E and Feldman- Stewart D. Validation of a decision regret scale. *Medical Decision Making*. 2003;23:281-292

Michael J. Barry and Daniel C. Cherkin and C. Yuchiao and Floyd J. Fowler and Steven J Skates, A Randomized Trial of a Multimedia Shared Decision-Making Program for Men Facing a Treatment Decision for Benign Prostatic Hyperplasia. *Management and Clinical Outcomes*. 1997;1:5-14

Spielberger CD, Gorsuch RL, Lushene RE. The state-trait anxiety inventory. Palo Alto, California: Consulting Psychiatrists Press, 1969.

Table S7: Summary of instruments' characteristics

	Instrument used	**What is being measured**	**Why is it being measured**	**How is it being measured**	**Psychometric properties**
Decisional conflict	Well validated scale: Decisional	1) Health-care consumers' uncertainty in making a health-related decision; 2) the factors contributing to the uncertainty; and 3)	Lowering decisional conflict (through intervention) increases the feeling of making a better decision, avoidance of 'changing the	Various formats: clinical practice format (1 version), and research format (3 versions) statement format,	Very frequently used in research

	conflict scale (A.M. O'Connor)	health-care consumers' perceived effective decision making	mind' and higher satisfaction.	question format, low literacy format. See link below.	Reliability: Test-retest correlations and Cronbach's alpha >0.78 Construct validity: -Related to constructs of knowledge, regret, and discontinuance. -Discriminated between groups who make and delay decisions Tool response to change -before and after studies Possesses predictive validity
Decisional regret	Well validated scale: Decision	Distress or remorse after a health care decision	Greater involvement of patients in health care decisions may lead to higher levels of regret, a very	Five statements rated on a 5-point Likert scale:	Very frequently used in research

	regret scale (J.C. Brehaut et al)		negative emotion.		Reliability: Cronbach's alpha: 0.81-0.92 Construct validity: Scale correlates with satisfaction with the decision, decisional conflict and overall rated quality of life.
Decisional satisfaction	Well validated scale: Satisfaction with decision scale M. Holmes-Rovner et al	Satisfaction with decision made	Higher satisfaction a very positive emotion. Satisfaction with a decision is thought to predict patients' certainty to carry out decision.	Six statements rated on a 5-point Likert scale:	Frequently used: Reliability: Cronbach's alpha = 0.86 Construct validity: Scale correlates with decisional conflict, confidence in decision, knowledge and other scales.
Decisional	Well validated	Two forms of anxiety:	Anxiety (with a decision)	Fourty statements rated	Extensive use in

anxiety	instrument (C.D. Spielberger et al): State Trait Anxiety Inventory (STAI).	State anxiety and trait anxiety.	may lead to dissatisfaction with care and discontinuation of treatment	on a 4-point Likert scale. Twenty items were developed for 'trait anxiety' and 20 items for 'state anxiety'.	assessment of anxiety and depression, less frequently used in relation to shared decision making.

Brehaut JC, O'Connor AM, Wood TJ, Hack TF, Siminoff L, Gordon E, Feldman-Stewart D. Validation of a decision regret scale. Med Decis Making. 2003 Jul-Aug;23(4):281-92.

Holmes-Rovner M, Kroll J, Schmitt N, Rovner DR, Breer ML, Rothert ML, Padonu G, Talarczyk G. Patient satisfaction with health care decisions: the satisfaction with decision scale. Med Decis Making 1996; Jan-Mar; 16(1):58-64. doi: 10.1177/0272989X9601600114.

O'Connor AM. Validation of a decisional conflict scale. Med Dec Making 1995; 15(1): 25-30

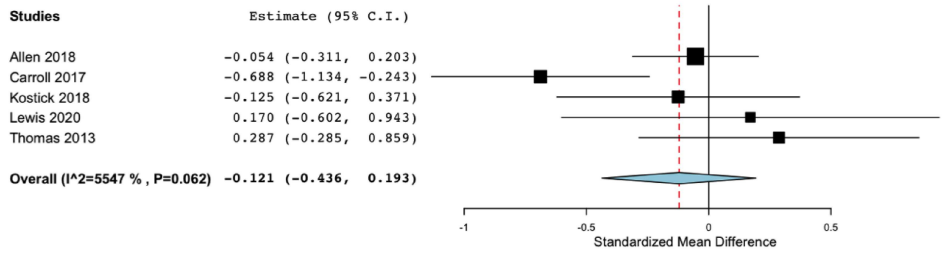
O'Connor AM. User Manual – Decisional Conflict Scale (16 item statement format). Ottawa: Ottawa Hospital Research Institute; 1993. Available at http://decisionaid.ohri.ca/docs/develop/User_Manuals/UM_Decisonal_Conflict.pdf.

O'Connor AM. User Manual – Decision Regret Scale. Ottawa: Ottawa Hospital Research Institute, 1996. Available at http://decisionaid.ohri.ca/docs/develop/User_Manuals/UM_Regret_Scale.pdf

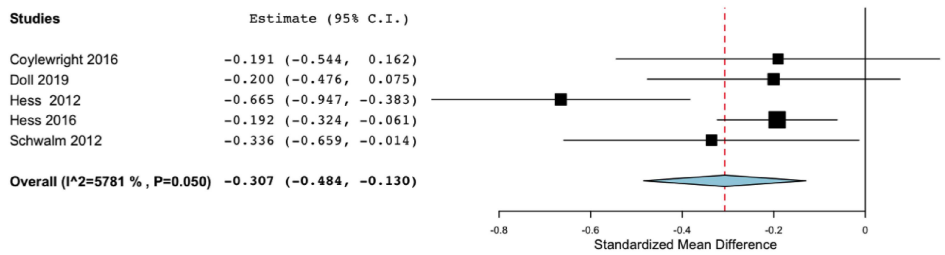
Spielberger CD, Gorsuch RL, Lushene RE. The state-trait anxiety inventory. Palo Alto, California: Consulting Psychiatrists Press, 1969.

Figure S1: Subgroup analysis for decisional conflict and knowledge stratified according to cardiac condition

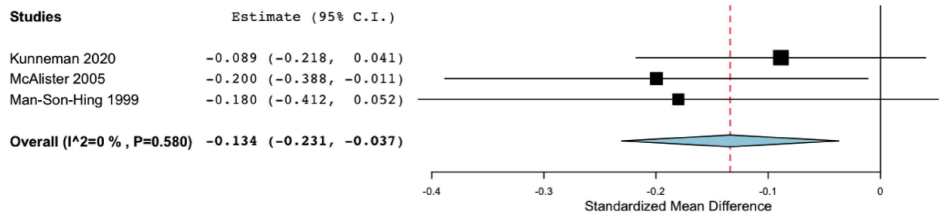
A) Cardiac devices (e.g. ICDs) and left ventricular assist devices (LVAD) – decisional conflict



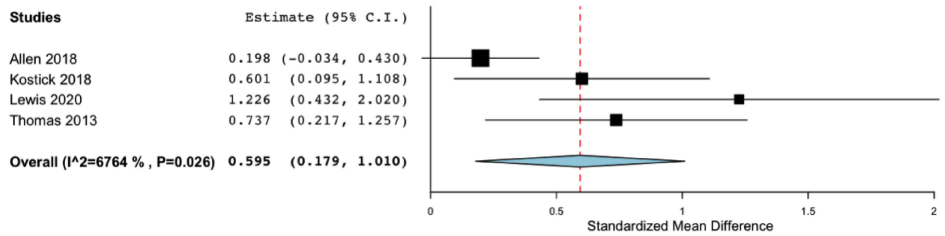
B) Coronary artery disease – decisional conflict



C) Atrial fibrillation – decisional conflict



D) Cardiac devices (e.g. ICDs) and left ventricular assist devices (LVAD) – knowledge



E) Coronary artery disease – knowledge

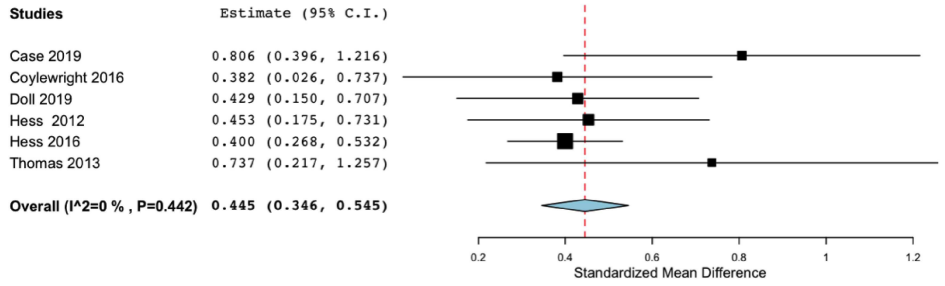
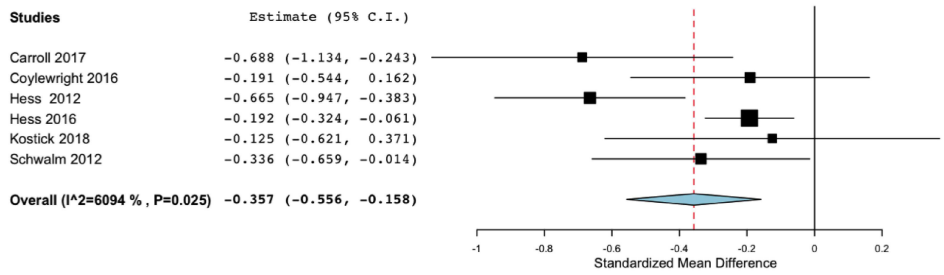
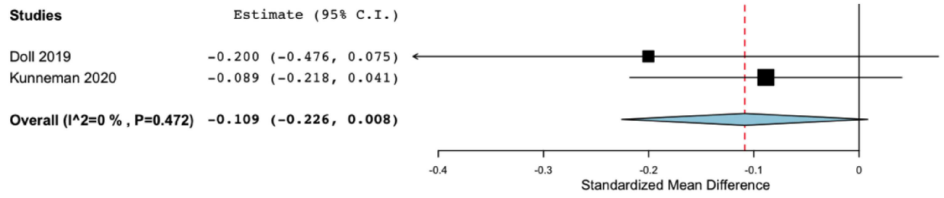


Figure S2: Subgroup analysis for decisional conflict and knowledge stratified according to decision aid used

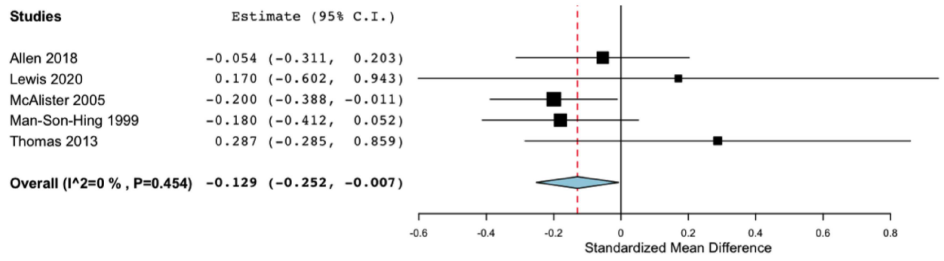
A) Printed decision aids – decisional conflict



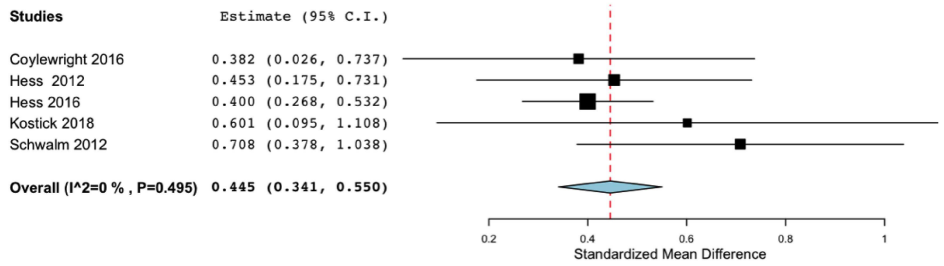
B) Computer or web-based decision aids – decisional conflict



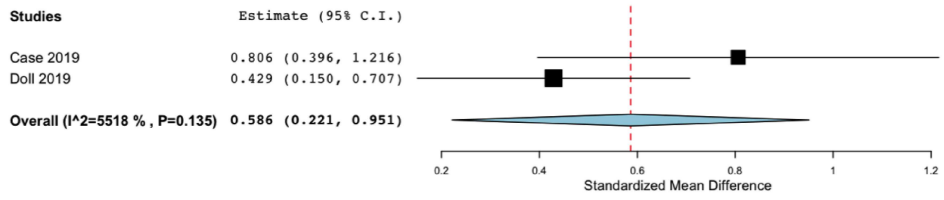
C) Mixed and other decision aids – decisional conflict



D) Printed decision aids – knowledge



E) Computer or web-based decision aids – knowledge



F) Mixed and other decision aids – knowledge

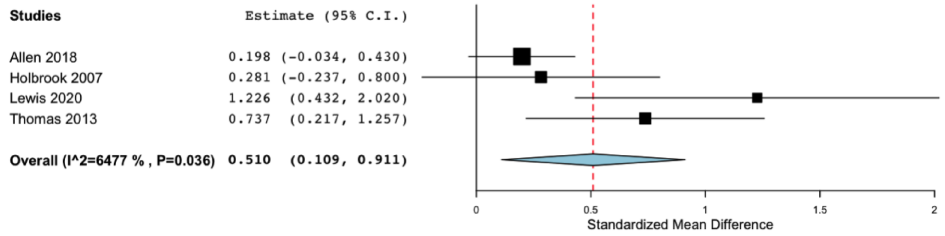


Figure S3: Leave-one-out sensitivity analysis