

Supplementary file

The impact of decision aids used during clinical encounters on clinician outcomes and consultation length: A systematic review

Supplementary table

Table S1: Characteristics of the included studies

Study, year of publication Country	Design	Randomisation	Setting	Clinicians	Health care question addressed	Intervention	Control
Coylewright, 2016 ¹ USA (RCT)	2-arm parallel RCT, single centre	At patient level Out of 36 clinicians, 24 had DA encounters and 25 had usual care encounters	Hospital-based outpatient cardiology practices (general and interventional cardiology clinic)	RCT: n=36 Interventional cardiologist, non-invasive cardiologists, physician assistant, cardiac catheterization laboratory physician Extenders Interview study: n=13	Choose between optimal medical therapy and percutaneous coronary intervention (in stable coronary artery disease)	PCI (percutaneous coronary intervention) Choice DA	Usual care
Coylewright, 2017 ² (nested study)	Nested qualitative study (semi-structured interviews)						
Hess, 2016 ³ USA	2-arm parallel RCT, multicentre	At patient level 436 post visit clinician surveys completed in DA group and 430 in usual care group	Emergency Departments	n=361 Emergency clinicians (emergency physicians, nurse practitioners, and physician assistants)	Choose between admission for observation and further cardiac testing (cardiac stress testing or coronary computed tomography angiography) or referral for outpatient evaluation (in patients with low risk chest pain)	Chest Pain Choice DA	Usual care
Hess, 2012 ⁴ USA	2-arm, parallel RCT single centre	At patient level	Emergency Department of tertiary care hospital	n=51 Physicians (including residents), physician-assistants, nurse practitioners	Choose between emergency department observation unit admission and urgent cardiac stress testing or follow-up with a physician within 72 hours (in patients with low risk chest pain)	Chest Pain Choice DA	Usual care
Perestelo-Pérez, 2016 ⁵ Spain	2-arm parallel cluster RCT, multicentre	At clinician group level 15 clinicians in the DA group, 14 in the usual care group	Primary care centres	n=29 Physicians	Take a statin yes/no	Statin Choice DA	Usual care
Nannenga, 2009 ⁶ USA	2-arm parallel RCT, single centre	At patient and clinician level	Subspecialty clinic for diabetes at tertiary hospital	n=16 Endocrinologists specializing in diabetes	Take a statin yes/no	Statin Choice DA	Standard patient education pamphlet

Study, year of publication Country	Design	Randomisation	Setting	Clinicians	Health care question addressed	Intervention	Control
Thomson, 2007 ⁷ United Kingdom	2-arm, parallel RCT, multicentre	At patient level	Two research clinics deriving patients from general practices	care (consultants and fellows) n=2 One doctor per clinic, trained in delivering either the DA or guidelines	Warfarin anticoagulation or aspirin treatment to reduce the risk of stroke (in patients with atrial fibrillation)	DARTS II (Decision Analysis in Routine Treatment II) DA	Paper-based guidelines (control)
Wamer, 2015 ⁸ USA	2-arm parallel RCT, single centre	At patient level Separate groups of clinicians delivered the decision aid (n = 18) and usual care (n = 6) to minimize the potential for contamination.	Preoperative evaluation centre at a tertiary hospital	n=24 Physician assistants, an internist, anaesthesiologists and anaesthesiology residents	Choose between three options: continue smoking, attempt a period of temporary abstinence, and attempt to quit smoking for good (in smokers evaluated in preparation for elective surgery	DA Smoking Cessation Around the Time of Surgery	Usual care
Mathers, 2012 ⁹ United Kingdom (RCT) Brown, 2014 ¹⁰ (nested study)	2-arm parallel cluster RCT, multicentre Nested mixed-methods study (interviews and observations of consultations)	At clinician group/practice level The nested study focused on eight encounters within the RCT	General practices (25 practices in the DA group, 24 in the control group)	n: not specified Patients' primary care clinicians for diabetes care (general practitioner or practice nurse)	Start insulin (in patients with type 2 diabetes mellitus) yes/no	PANDAs (Patients AND Decision Aids) DA	Usual care
Karagiannis, 2016 ¹¹ Greece	2-arm parallel cluster RCT, multicentre	At clinician group/practice level 101 clinicians in DA group, 103 un	Primary and secondary care practices	n=204 Physicians, physician assistants, and nurse practitioners	Choose between different anti-hyperglycaemic drugs for treatment of type 2 diabetes mellitus	Diabetes Medication Choice DA	Usual care

Study, year of publication Country	Design	Randomisation	Setting	Clinicians	Health care question addressed	Intervention	Control
		usual care group					
Mullan, 2009 ¹² USA	2-arm cluster parallel RCT, multicentre	At clinician level 21 clinicians in the DA group, 19 clinicians in the control group	Primary care and family medicine sites	n=40 Physicians, physician assistants, and nurse practitioners	Choose between different anti-hyperglycaemic drugs for treatment of type 2 diabetes mellitus	Diabetes Medication Choice DA	Usual care
Denig, 2014 ¹³ The Netherlands	2-arm parallel RCT, multicentre	At clinician group/ practice level for computer-based versus printed DA At patient level for DA versus control	General practices	n=25 Nurse practitioner, nurse, or specialised assistant for diabetes care	Set treatment goals in diabetes and choose treatment options of risk factors including: statin, angiotensin-converting enzyme (ACE) inhibitor, healthy life style	DA for prioritising treatment goals in diabetes	Usual care
LeBlanc, 2015 (Osteoporosis) ¹⁴ USA	3-arm parallel RCT, multicentre	At patient level 22 clinicians administered DA, 28 clinicians were in the control group	Primary care practices	n=50 Physicians, physician-assistants, nurse practitioners	Take bisphosphonates yes/no	Osteoporosis Choice DA	1. Provision of the patient's risk of fracture (obtained from FRAX calculator) only to the clinician 2. Usual care
Montori, 2011 ¹⁵ USA	2-arm parallel RCT, multicentre	At patient level Out of 60 clinicians, 39 administered DA, 33 administered usual care)	General medicine and primary care practices	n=60 Primary care clinicians	Take bisphosphonates yes/no	Osteoporosis Choice DA	Usual care

Study, year of publication Country	Design	Randomisation	Setting	Clinicians	Health care question addressed	Intervention	Control
LeBlanc, 2015 (Antidepressants) ¹⁶ USA	2-arm parallel cluster RCT, multicentre	At clinician group/practice level 66 clinicians in DA group, 51 in usual care group)	Primary care practices	n=117 Clinicians (including residents)	In adults with moderate to severe depression: considering treatment with an antidepressant	Depression Medication Choice DA	Usual care
Loh, 2007 ¹⁷ Germany	2-arm parallel cluster RCT, multicentre	At clinician level 20 clinicians in the DA group, 10 in the control group patients recruited by each physician were viewed as clusters	General practices associated as teaching practices with University Hospital	n=30 Primary care physicians	Choose between treatment options for newly diagnosed depression	Multi-faceted shared decision making program	Usual care
Légaré, 2012 ¹⁸ Canada	2-arm parallel cluster RCT, multicentre	At clinician group/practice level 77 clinicians in the DA group, 72 clinicians in the control group	Family practice teaching units (walk-in clinics)	n= 149 Family physicians, including physician teachers and residents Physicians who had participated in the DECISION+ trial were excluded.	Take antibiotics for acute respiratory infections yes/no	DECISION+2: multi-faceted shared decision making training program (modified from DECISION+)	Usual care
Légaré, 2011 ¹⁹ Canada	2-arm parallel cluster RCT, multicentre	At clinician group/practice level 18 clinicians in the DA group, 15 clinicians in the control group	Family medicine groups	n= 33 Family physicians	Take antibiotics for acute respiratory infections yes/no	DECISION+:multi-faceted shared decision making training program	DECISION+ participation delayed for 6 months
Anthierens, 2015 ²⁰ Belgium, England, Netherlands,	Qualitative study (semi-structured interviews)	At clinician group/practice level 53 practices in DA group, 55	General practices	n= 372 (total in all 3 arms) Physicians in primary care	Take antibiotics for acute respiratory infections yes/no	Training in enhanced communication skills for physicians and Interactive booklet on antibiotics for acute	Usual care (other arms, not analysed in our review)

Study, year of publication Country	Design	Randomisation	Setting	Clinicians	Health care question addressed	Intervention	Control
Poland, Spain and Wales	nested in cluster RCT using a 2x2 factorial design, multicentre	practices in usual care group 66 clinicians were interviewed in the nested study				respiratory-tract infections for clinical encounter	included CRP group and DA+CRP group)
Walczak, 2017 ²¹ Australia	2-arm parallel RCT, multicentre	At patient level, stratified by clinician. 1:1 balanced randomisation codes for each clinician.	Cancer treatment centres affiliated with major hospitals	Two senior nurses (one with palliative care background and one with emergency medicine background) had meetings with patients approximately one week before visits with an oncologist.	Discuss information regarding prognosis, end-of-life, future care, advance care planning (in patients with various advanced, incurable cancer diagnoses and an oncologist-assessed 2–12 month life expectancy	Nurse-led communication support program using a question prompt list	Usual care
Leigh, 2011 ²² Australia, Canada	2-arm parallel RCT, international multicentre	At patient level, stratified by clinician.	Hospital-based outpatient cancer clinics	n=13 Medical oncologists with expertise in colorectal cancer	Take first-line (palliative) chemotherapy for metastatic colorectal cancer yes/no	Booklet with accompanying audiotape or compact disc for patients to take home	Usual care (standard medical oncology consultation)
Ozanne, 2007 ²³ USA	2-arm parallel RCT, single centre	At patient level	High-risk breast cancer prevention program, breast care centre prevention clinic at one university	n=4 Multidisciplinary group of physicians including surgeons, internists, and gynaecologists, all with expertise in breast cancer prevention	Choose between different breast cancer prevention options (for women at high risk of developing breast cancer)	DA for breast cancer prevention	Usual care
Whelan, 2003 ²⁴ Canada, USA	2-arm parallel RCT, international multicentre	At patient level	Regional cancer centres in Ontario and one general hospital in California	n=22 Medical oncologists	Take adjuvant chemotherapy in lymph node-negative breast cancer yes/no	"Decision Board"	Usual care
Bekker, 2004 ²⁵	1-arm parallel	At patient level	Hospital-based prenatal	n: not specified	Choose between different options for prenatal diagnosis	Integration of "prompts" (based on	Usual care (routine

Study, year of publication Country	Design	Randomisation	Setting	Clinicians	Health care question addressed	Intervention	Control
United Kingdom	RCT, single centre		diagnosis clinic	"The same professional delivered the routine and intervention consultations"	of Down syndrome (in women who had a screen-positive maternal serum screening test result for Down syndrome)	decision analysis (methodology) into clinical encounter	consultation without "prompts")

CRP: C-reactive protein

DA: decision aid

n: number

RCT: randomised controlled trial

USA: United States of America

References

1. Coylewright M, Dick S, Zmolek B, et al. PCI Choice Decision Aid for Stable Coronary Artery Disease: A Randomized Trial. *Circ Cardiovasc Qual Outcomes* 2016;9(6):767-76. doi: <https://dx.doi.org/10.1161/CIRCOUTCOMES.116.002641>
2. Coylewright M, O'Neill ES, Dick S, et al. PCI Choice: Cardiovascular clinicians' perceptions of shared decision making in stable coronary artery disease. *Patient Educ Couns* 2017;100(6):1136-43. doi: <https://dx.doi.org/10.1016/j.pec.2017.01.010>
3. Hess EP, Hollander JE, Schaffer JT, et al. Shared decision making in patients with low risk chest pain: prospective randomized pragmatic trial. *BMJ* 2016;355:i6165. doi: <https://dx.doi.org/10.1136/bmj.i6165>
4. Hess EP, Knodler MA, Shah ND, et al. The chest pain choice decision aid: a randomized trial. *Circulation Cardiovascular quality and outcomes* 2012;5(3):251-9. doi: 10.1161/circoutcomes.111.964791 [published Online First: 2012/04/13]
5. Perestelo-Perez L, Rivero-Santana A, Boronat M, et al. Effect of the statin choice encounter decision aid in Spanish patients with type 2 diabetes: A randomized trial. *Patient Educ Couns* 2016;99(2):295-9. doi: <https://dx.doi.org/10.1016/j.pec.2015.08.032>
6. Nannenga MR, Montori VM, Weymiller AJ, et al. A treatment decision aid may increase patient trust in the diabetes specialist. The Statin Choice randomized trial. *Health expectations : an international journal of public participation in health care and health policy* 2009;12(1):38-44. doi: 10.1111/j.1369-7625.2008.00521.x [published Online First: 2009/03/03]
7. Thomson RG, Eccles MP, Steen IN, et al. A patient decision aid to support shared decision-making on anti-thrombotic treatment of patients with atrial fibrillation: randomised controlled trial. *Quality & safety in health care* 2007;16(3):216-23. doi: 10.1136/qshc.2006.018481 [published Online First: 2007/06/05]
8. Warner DO, LeBlanc A, Kadimpati S, et al. Decision Aid for Cigarette Smokers Scheduled for Elective Surgery. *Anesthesiology* 2015;123(1):18-28. doi: <https://dx.doi.org/10.1097/ALN.0000000000000704>
9. Mathers N, Ng CJ, Campbell MJ, et al. Clinical effectiveness of a patient decision aid to improve decision quality and glycaemic control in people with diabetes making treatment choices: a cluster randomised controlled trial (PANDAs) in general practice. *BMJ Open* 2012;2(6)
10. Brown I, Bradley A, Ng CJ, et al. Investigating active ingredients in a complex intervention: a nested study within the Patient and Decision Aids (PANDAs) randomised controlled trial for people with type 2 diabetes. *BMC research notes* 2014;7:347. doi: 10.1186/1756-0500-7-347 [published Online First: 2014/06/09]
11. Karagiannis T, Liakos A, Branda ME, et al. Use of the Diabetes Medication Choice Decision Aid in patients with type 2 diabetes in Greece: a cluster randomised trial. *BMJ Open* 2016;6(11):e012185. doi: <https://dx.doi.org/10.1136/bmjopen-2016-012185>
12. Mullan RJ, Montori VM, Shah ND, et al. The diabetes mellitus medication choice decision aid: a randomized trial. *Archives of internal medicine* 2009;169(17):1560-8. doi: 10.1001/archinternmed.2009.293 [published Online First: 2009/09/30]
13. Denig P, Schuling J, Haaijer-Ruskamp F, et al. Effects of a patient oriented decision aid for prioritising treatment goals in diabetes: pragmatic randomised controlled trial. *Bmj* 2014;349:g5651. doi: 10.1136/bmj.g5651 [published Online First: 2014/09/27]
14. LeBlanc A, Wang AT, Wyatt K, et al. Encounter Decision Aid vs. Clinical Decision Support or Usual Care to Support Patient-Centered Treatment Decisions in

Osteoporosis: The Osteoporosis Choice Randomized Trial II. *PLoS One* 2015;10(5):e0128063. doi: 10.1371/journal.pone.0128063 [published Online First: 2015/05/27]

15. Montori VM, Shah ND, Pencille LJ, et al. Use of a decision aid to improve treatment decisions in osteoporosis: the osteoporosis choice randomized trial. *The American journal of medicine* 2011;124(6):549-56. doi: 10.1016/j.amjmed.2011.01.013 [published Online First: 2011/05/25]
16. LeBlanc A, Herrin J, Williams MD, et al. Shared Decision Making for Antidepressants in Primary Care: A Cluster Randomized Trial. *JAMA Internal Medicine* 2015;175(11):1761-70. doi: <https://dx.doi.org/10.1001/jamainternmed.2015.5214>
17. Loh A, Simon D, Wills CE, et al. The effects of a shared decision-making intervention in primary care of depression: a cluster-randomized controlled trial. *Patient education and counseling* 2007;67(3):324-32. doi: 10.1016/j.pec.2007.03.023 [published Online First: 2007/05/19]
18. Legare F, Labrecque M, Cauchon M, et al. Training family physicians in shared decision-making to reduce the overuse of antibiotics in acute respiratory infections: a cluster randomized trial. *CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne* 2012;184(13):E726-34. doi: 10.1503/cmaj.120568 [published Online First: 2012/08/01]
19. Legare F, Labrecque M, LeBlanc A, et al. Training family physicians in shared decision making for the use of antibiotics for acute respiratory infections: a pilot clustered randomized controlled trial. *Health expectations : an international journal of public participation in health care and health policy* 2011;14 Suppl 1:96-110. doi: 10.1111/j.1369-7625.2010.00616.x [published Online First: 2010/07/16]
20. Anthierens S, Tonkin-Crine S, Cals JW, et al. Clinicians' views and experiences of interventions to enhance the quality of antibiotic prescribing for acute respiratory tract infections. *Journal of General Internal Medicine* 2015;30(4):408-16. doi: <http://dx.doi.org/10.1007/s11606-014-3076-6>
21. Walczak A, Butow PN, Tattersall MH, et al. Encouraging early discussion of life expectancy and end-of-life care: A randomised controlled trial of a nurse-led communication support program for patients and caregivers. *International Journal of Nursing Studies* 2017;67:31-40. doi: <https://dx.doi.org/10.1016/j.ijnurstu.2016.10.008>
22. Leighl NB, Shepherd HL, Butow PN, et al. Supporting treatment decision making in advanced cancer: a randomized trial of a decision aid for patients with advanced colorectal cancer considering chemotherapy. *Journal of clinical oncology : official journal of the American Society of Clinical Oncology* 2011;29(15):2077-84. doi: 10.1200/jco.2010.32.0754 [published Online First: 2011/04/13]
23. Ozanne EM, Annis C, Adduci K, et al. Pilot trial of a computerized decision aid for breast cancer prevention. *The breast journal* 2007;13(2):147-54. doi: 10.1111/j.1524-4741.2007.00395.x [published Online First: 2007/02/27]
24. Whelan T, Sawka C, Levine M, et al. Helping patients make informed choices: a randomized trial of a decision aid for adjuvant chemotherapy in lymph node-negative breast cancer. *Journal of the National Cancer Institute* 2003;95(8):581-7. [published Online First: 2003/04/17]
25. Bekker HL, Hewison J, Thornton JG. Applying decision analysis to facilitate informed decision making about prenatal diagnosis for Down syndrome: a randomised controlled trial. *Prenatal diagnosis* 2004;24(4):265-75. doi: 10.1002/pd.851 [published Online First: 2004/04/06]