

## Evidence check

7 October 2020

Rapid evidence checks are based on a simplified review method and may not be entirely exhaustive, but aim to provide a balanced assessment of what is already known about a specific problem or issue. This brief has not been peer-reviewed and should not be a substitute for individual clinical judgement, nor is it an endorsed position of NSW Health.

## Elective surgical procedures, non-surgical alternatives and shared decision-making

### Evidence check question

- 1) What non-surgical alternatives to elective surgery have been reported in literature?
- 2) What evidence is available on the impact of shared decision-making interventions and tools on decisions regarding elective surgical procedures?

### In brief

#### Question 1: Non-surgical alternatives to elective surgery management of patients

- Non-surgical alternatives management refers to treatments that avoid surgery and other invasive procedures.
- This review identified 151 surgical procedures for which non-surgical alternatives have been reported in recent systematic reviews (2015-present).
- The most common types of conditions reporting non-surgical alternatives to elective surgery were orthopaedic injuries and degenerative conditions, cardiovascular conditions, and cancers.
- Non-surgical options include active surveillance (or 'watchful waiting'), delayed surgery, and (non-operative) medical treatment.

#### Question 2: The impact of shared decision-making

- This review is about shared decision-making between clinicians and patients for management of patients by surgical treatment or non-surgical alternatives.
- Interventions to promote or integrate shared decision-making for elective surgical treatments and procedures included:
  - a decision-making checklist, which led to an informed decision to defer urogenital sinus surgery(1)
  - patient education provided by a multidisciplinary team, which led to more informed and confident decision-making in patients considering treatment options for prostate cancer (2)

- counselling based on the individual's risks and benefits, which led to non-surgical decisions in those considering nerve sparing procedures during radical prostatectomy (3)
- pre-consultation interactive multimedia interventions and written and/or verbal communication provided before and during consultations, leading to less patients opting for surgical procedures(4)
- individualised decision surveys using adaptive conjoint analysis, which led to more respondents expressing informed preferences for operative treatment after first-time anterior shoulder dislocation(5)
- an interactive voice recognition application connecting patients to a health coach, which led to greater preference-sensitive surgery rate than in the control group.(6)
- Patient decision aids are the most frequently reported shared decision-making tool.(4, 7-9)
- A 2020 systematic review found that the impact on patients' treatment decisions varied by shared decision-making intervention types; for example, the use of interactive multimedia interventions resulted in less patients opting for elective surgery as compared to the provision of written materials only.(4)
- In seven studies, shared decision-making interventions led to the decision to choose non-surgical treatment or management options over elective surgery.(1, 3, 4, 6-8, 10) A 2017 Cochrane review of 105 randomised controlled trials found that the use of decision aids reduced the number of people choosing major elective surgery in favour of less invasive options (RR 0.84; 95% CI: 0.73-0.97; 17 studies; N = 3,108).(8)
- Short and long-term implications of using a decision aids may differ.(9) For example, while some patients may choose medication over surgery, this may simply delay surgery until a later point. This delay may lead to short-term cost savings, but it may also possibly lead to a more complicated or expensive surgery at a later date, increasing the total lifetime costs.
- Compared to usual care, shared decision-making interventions increased patient or parental knowledge about treatment options and certainty about their decisions.(2, 11) Authors of a Cochrane review evaluated 50 decision aids for various surgical procedures, screening (e.g. prostate cancer, colon cancer, prenatal), genetic testing, and medication treatments (e.g. diabetes, atrial fibrillation), and found that they increased participants' knowledge, accuracy of risk perceptions, and congruency between informed values and care choices.(8) In this study, decision aids were also found to reduce the number of people choosing major elective surgery in favour of less invasive options.

## Limitations

Evidence on this topic is likely context-specific and dependent on various factors, including surgery or treatment type, patient population (including type and severity of condition), care settings, and the nature and frequency of the intervention.

The literature search for question 1 was limited to systematic reviews published in English from 2015 to present. Thus, the studies included in this review do not comprise an exhaustive list of surgical procedures and their alternatives.

While the PubMed search string used to capture 'shared decision-making' literature was comprehensive and adapted from an existing Cochrane review, certain shared decision-making interventions may still have been unintentionally excluded.(12)

## Background

It has been reported that 25% of elective surgery may be unnecessary or inappropriate, and that in surgical specialties such as orthopaedic surgery, a large proportion of procedures may not be based on high-quality evidence.(13, 14)

Decisions on elective surgery often involves careful evaluation of risks and benefits, which can vary widely between individuals. Actively engaging patients in this decision-making process can lead to better health outcomes and patient satisfaction after elective surgery.(15)

Patient and surgeon attitudes support shared decision-making.(16) Barriers to shared decision-making in elective surgery include knowledge deficits, including not knowing the procedures performed and the existence of alternatives to elective surgery.(17)

## Methods (Appendix 1)

A PubMed search was conducted on 3 and 12-13 August 2020, and Google and Google Scholar searches were conducted on 10 and 21 August 2020. A search of systematic reviews was conducted on 17 September 2020 to support question 1.

Question 1 inclusion: systematic reviews on comparisons of elective surgical procedures and one or more non-surgical alternative.

Question 2 inclusion: evaluations of shared decision-making intervention evaluated shared decision-making interventions leading to a decision on treatment options.

Similar criteria were applied to grey literature search. Google was searched for 'non-surgical alternatives to elective surgery' and similar search terms (Appendix 1). Documents which provided relevant resources for patient decision making for surgical treatments were also searched for and included.

## Results

**Table 1: Examples of surgical procedures with non-surgical alternatives in literature**

<b>Adrenalectomy (in Cushing’s syndrome) (18, 19)</b>	
<b>Appendectomy (20-25)</b>	
<b>Brain, spinal cord</b>	
<ul style="list-style-type: none"> <li>Invasive arteriovenous malformation (AVM) therapy in epilepsy (26)</li> <li>Revascularisation procedures to treat Moyamoya Syndrome (27)</li> <li>Repeated cerebrospinal fluid (CSF) removal for intraventricular haemorrhage (28)</li> </ul>	
<b>Cancers, masses</b>	<ul style="list-style-type: none"> <li>Oesophageal cancer and esophagectomy (35)</li> <li>Oral, face cancer and elective neck dissection or irradiation (36-38)</li> <li>Pancreatic neoplasms and surgical management (39)</li> <li>Prostate cancer and radical prostatectomy and other primary treatments (40-46)</li> <li>Schwannoma and microsurgery (47-49)</li> </ul>
<ul style="list-style-type: none"> <li>Histologically dysplastic naevi and surgical re-excision (29)</li> <li>Kidney masses and surgery, including nephron-saving procedures (30, 31)</li> <li>Liver cancer and resection (32)</li> <li>Melanoma and lymph node dissection (33, 34)</li> </ul>	
<b>Cardiovascular conditions</b>	<b>Abdominal arterial diseases</b>
<b>Coronary conditions</b>	<ul style="list-style-type: none"> <li>Isolated abdominal aortic/mesenteric artery dissection (60-62)</li> <li>Surgery for small asymptomatic abdominal aortic aneurysms (63)</li> <li>Treatment for Endoleak after endovascular abdominal aneurysm repair (64, 65)</li> <li>Pre-emptive correction of arteriovenous access stenosis (66)</li> </ul>
<ul style="list-style-type: none"> <li>Iatrogenic left atrial dissection (50)</li> <li>Spontaneous coronary artery dissection with revascularisation (51)</li> <li>Invasive strategy for non-ST elevation acute coronary syndrome (52, 53)</li> <li>Catheter ablation in atrial fibrillation (54)</li> <li>MitraClip for mitral regurgitation (55, 56)</li> <li>Management of aortic stent-graft infection (57)</li> <li>Revascularisation for spontaneous coronary artery dissection (58)</li> <li>Endovascular management for acute stroke (59)</li> </ul>	<b>Endovascular therapies in limbs</b>
	<ul style="list-style-type: none"> <li>Endovascular revascularisation for intermittent claudication (67)</li> <li>Surgical repair for short saphenous varicose veins (68)</li> <li>Superficial venous surgery for venous leg ulcers (69)</li> </ul>

**Cholecystectomy (70-72)****Foot (non-injury)**

- Surgery to treat plantar fibromatosis (73)
- Surgery to treat hallux valgus deformity (74)

**Gastrointestinal (non-cancer)**

- Band ligation for prevention of upper gastrointestinal bleeding (75)
- Surgical intervention for rectal ulcer syndrome (76)
- Endoscopic gastroplasty for obesity treatment (77)
- Surgical management of abdominal injury (78)

**Gynaecological conditions**

- Invasive treatment of vesicovaginal fistulas (79)
- Surgical treatment of paediatric and adolescent hydrosalpinges (80)

**Head and face (non-cancer)**

- Haematoma evacuation in cerebellar intracerebral haemorrhage (81)
- Surgical intervention for intermittent exotropia (82)
- Laser surgery for osteonecrosis of the jaws (83)
- Surgery for unilateral mandibular condyle fracture (84)
- Surgery for paediatric acute mastoiditis (85)
- Inferior turbinate hypertrophy in rhinoplasty (86)

**Hernia (inguinal) repair (87, 88)****Laryngoplasty (89)**

**Orthopaedic injuries and degenerative conditions**

Clavicles

- Surgical interventions for treating clavicular fractures or displacement (90-93)

Elbow

- Surgical management of elbow medial ulnar collateral ligament injury (94)
- Surgical interventions for elbow flexion contractures (95)
- Surgical management of the paediatric pulseless supracondylar humeral fracture (96)
- Treatment for ulnar neuropathy at the elbow (97)

Foot and ankle

- Operative management of Weber C ankle fractures (98)
- Surgical management of unstable ankle fractures (99, 100)
- Surgical therapy of injury of lateral ankle ligament (101)
- Surgery for isolated medial malleolar fracture (102)
- Surgical treatment for acute Achilles tendon rupture (103)
- Surgical management of acute isolated syndesmotom injuries (104)
- Surgery for posterior malleolar fracture (105)
- Operative intervention for Jones fracture of the fifth metatarsal (106)

Hand, wrist

- Surgery for closed mallet thumb injury (107)
- Surgical treatment for carpal tunnel syndrome (108)
- Surgical treatment of distal radius fracture (109)

Hip, pelvis

- Operative treatment of apophyseal avulsion fractures of the pelvis (110)
- Treatments for undisplaced femoral neck fracture (111)
- Iliopsoas tenotomy and revision arthroplasty for iliopsoas impingement after hip replacement (112)

Knee

- Surgical repair of medial meniscus posterior root tear (113)
- Arthroscopic partial meniscectomy for degenerative tears in knees (114-116)
- Invasive radiofrequency treatment for knee pain (117)
- Surgical treatment of primary acute patellar dislocation (118, 119)
- Surgical reconstruction in isolated posterior cruciate ligament (PCL) injuries (120)
- Surgical intervention for anterior cruciate ligament (ACL) injuries (121)

Leg

- Surgery for isolated anterior tibial tendon rupture (122)
- Surgery for distal tibial metaphyseal fractures (123)

Ribs

- Fixation of flail chest or multiple rib fractures (124-126)

Shoulder

- Surgical management of floating shoulder injuries (127, 128)
- Surgical repair of rotator cuff tears (129-131)
- Arthroscopic Bankart repair for acute anterior shoulder dislocation (132)
- Surgical treatment for shoulder stiffness (133)
- Surgery for proximal humerus fractures in children and adolescents (134)
- Operative treatment of first-time patellar dislocations (135)
- Surgery to treat multidirectional instability of the shoulder (136)
- Surgical treatment for shoulder impingement (137)

Various, Total joint arthroplasty (138)

Vertebrae

- Treatments for lumbar disc herniation or degenerative disease (139-142)
- Surgical treatment for spondylolysis or spondylolisthesis (143, 144)
- Vertebral fractures and surgical treatment (145-150)
- Degenerative spine stenosis and surgery (151-153)
- Interspinous dynamic stabilisation and surgery (154)

**Pain**

- Treatment of longstanding groin pain (155)
- Exercise-induced leg pain in athletes (156)

**Pancreatitis**

- Open surgical debridement in acute pancreatitis (157)
- Early endoscopic retrograde cholangiopancreatography in acute biliary pancreatitis (158)
- Surgical intervention for painful obstructive chronic pancreatitis (159)

**Parathyroidectomy (160)****Pulmonary conditions**

- Intra-pleural fibrinolytic therapy in parapneumonic effusions and empyema (161)
- Surgical management of congenital pulmonary airway malformation in children (162)

**Splenectomy (163)****Thoracic duct and prophylactic ligation in esophagectomy patients (164)****Thymectomy (165)****Tonsillectomy (166-168)**



**Table 2: Shared decision-making interventions influencing surgical treatment decision**

Source	Summary
<b>Peer reviewed sources</b>	
<p><a href="#">Shared decision-making and choice for elective surgical care: A systematic review</a> Boss, et al. 2016 (10)</p>	<ul style="list-style-type: none"> <li>• This systematic review synthesised findings of 24 studies evaluating use and outcomes of shared decision-making in elective surgery.</li> <li>• The most common area studied was spine (7/24) followed by joint (5/24) and gynaecological surgery (4/24).</li> <li>• Twenty studies used decision aids and support tools, including modalities that were multimedia or video (13/20), written (3/20), or personal coaching (4/20).</li> <li>• <b>Effect of shared decision-making on preference for surgery were mixed across studies, showing a decrease in surgery (9/24), no difference (8/24), or increase (1/24).</b></li> <li>• Shared decision-making tended to improve decision quality (3/3) as well as knowledge and preparation (4/6), while decreasing decision conflict (4/6).</li> <li>• While net findings show that shared decision-making may influence patients to choose surgery less often, the impact of shared decision-making on surgical utilisation cannot be clearly ascertained.</li> </ul>
<p><a href="#">Utilization of a shared decision-making tool in a female infant with congenital adrenal hyperplasia and genital ambiguity</a> Chawla, et al. 2019 (1)</p>	<ul style="list-style-type: none"> <li>• This case study of a 2.5-year-old female with congenital adrenal hyperplasia and genital atypia describes the application of a newly developed shared decision-making tool for parents and female patients with congenital adrenal hyperplasia and associated genital atypia. Elective genital surgery in congenital adrenal hyperplasia is considered controversial.</li> <li>• The intervention was a formal, shared decision-making tool (<a href="#">Figure 1</a>), a checklist which allowed providers of the team to explain goals of care and to create an individualised treatment plan.</li> <li>• Initially, the patient’s parents had intended to proceed with surgery; however, <b>after utilising the shared decision-making checklist, they made an informed decision to defer urogenital sinus surgery for their daughter.</b></li> </ul>



Source	Summary
<p><a href="#">A prospective cohort study of treatment decision-making for prostate cancer following participation in a multidisciplinary clinic</a></p> <p>Hurwitz, et al. 2016 (2)</p>	<ul style="list-style-type: none"> <li>• This prospective cohort study examined treatment decision-making in a racially diverse, equal-access, contemporary cohort of patients with prostate cancer (n=925) counselled on treatment options at a multidisciplinary clinic.</li> <li>• Newly diagnosed patients with prostate cancer were enrolled in a multidisciplinary clinic to discuss their treatment options. At this clinic, patients met individually with a urologic oncologist, radiation oncologist, andrologist, psychologist, and nurse educator. Patients completed preclinic and postclinic surveys to assess treatment preferences, reasons for treatment choice, and decisional regret.</li> <li>• Surgery (54%), external radiation (20%), and active surveillance (12%) were the most common primary treatments for patients with low- and intermediate-risk prostate cancer, whereas patients with high-risk prostate cancer chose surgery (34%) or external radiation with neoadjuvant hormones (57%).</li> <li>• <b>Patients' thoughts on each treatment changed over the course of the clinic, with fewer patients reporting uncertainty and more leaning toward or against each treatment postclinic.</b> 62% of patients reported a preference for a particular treatment before clinic, and 64% of patients had decided on a treatment by the end of the clinic.</li> <li>• Patients preferred to play an active role in the decision-making process and cited doctors at the clinic as the most helpful source of treatment-related information. Almost all patients reported satisfaction with their decision.</li> </ul>
<p><a href="#">Reduced Elective Operation Rates and High Patient Satisfaction After the Implementation of Decision Aids in Patients with Gallstones or an Inguinal Hernia</a></p> <p>Latenstein, et al. 2019 (7)</p>	<ul style="list-style-type: none"> <li>• A single-centred retrospective study of non-acute patients with gallstones (n=1,625) and inguinal hernia (n=1,798) in a surgical outpatient clinic in the Netherlands.</li> <li>• The aim was to evaluate operation rates before and after implementation of decision aids, and to assess patient compliance with the use of decision aids.</li> <li>• Decision aids were provided to 512 patients with gallstones of whom 80.7% (413/512) used the decision aid and to 528 patients with an inguinal hernia, which was used by 80.7% (426/528).</li> <li>• Before implementation, the operation rate in patients with gallstones was 72.0% (586/814) and after implementation 56.7% (460/811) (– 15.3%, p &lt; 0.001).</li> <li>• The operation rate in patients with an inguinal hernia decreased from 77.8% (700/900) to 64.6% (580/898) (– 13.2%, p &lt; 0.001).</li> <li>• Patient satisfaction with final treatment was high (9/10).</li> </ul>

Source	Summary
	<ul style="list-style-type: none"> <li>• <b>Implementation of decision aids in the surgical outpatient clinic for patients with gallstones or an inguinal hernia is associated with reduced elective operation rates and is associated with high decision aids compliance.</b></li> </ul>
<p><a href="#">Active patient decision making regarding nerve sparing during radical prostatectomy: a novel approach</a></p> <p>Lavery, et al. 2011 (3)</p>	<ul style="list-style-type: none"> <li>• Nerve sparing during radical prostatectomy has been demonstrated to improve erectile and urinary outcomes, but also has the potential to compromise oncologic outcomes in the setting of locally advanced tumours.</li> <li>• A total of 150 patients treated with prostatectomy participated in a standardised preoperative discussion regarding the concept of nerve sparing, extracapsular extension and the potential need for adjuvant radiation in the event of local recurrence.</li> <li>• Each patient was given his nomogram predicted risk of extracapsular extension and then elected nerve sparing or non-nerve sparing. Overall, 109 chose nerve sparing (73%) and 41 chose non-nerve sparing (27%).</li> <li>• In patients with a nomogram predicted risk of extracapsular extension less than 20%, nerve sparing was elected by 88%. In risk of 20% to 50%, 41% opted for nerve sparing; and in those with risk greater than 50%, 25% chose nerve sparing.</li> <li>• <b>With proper counselling, informed patients made reasonable decisions and appeared to be conservative, prioritising cancer control in the majority of scenarios where extracapsular extension risk was high and erectile function when risk was low.</b></li> </ul>
<p><a href="#">Strategies for implementing shared decision making in elective surgery by health care practitioners: A systematic review</a></p> <p>Pham, et al. 2020 (4)</p>	<ul style="list-style-type: none"> <li>• This systematic review included 20 studies on strategies aimed at facilitating or improving healthcare practitioners' adoption of shared decision-making in elective surgery.</li> <li>• Published evidence on shared decision-making interventions in elective surgery is most prevalent in the breast cancer and endocrine. and urology specialties, with most studies targeting their shared decision-making interventions at the patient population.</li> <li>• All interventions included an educational component regarding the medical condition of interest and available treatment options and a supportive component to encourage patients to ask questions and involve themselves in the decision making.</li> <li>• Interventions include:             <ul style="list-style-type: none"> <li>○ interactive multimedia interventions pre-consultation</li> <li>○ providing written and verbal communication prior to the surgical consultation</li> <li>○ individualised multimedia and decision aid (before and during consultation)</li> </ul> </li> </ul>

Source	Summary
	<ul style="list-style-type: none"> <li>○ interventions targeted at health professionals (performance feedback and opinion leader, interactive training workshop).</li> <li>● In those receiving interactive multimedia interventions prior to the surgical consultation:                             <ul style="list-style-type: none"> <li>○ the use of multiple media components including interactive video appeared to improve patient satisfaction with the shared decision-making process</li> <li>○ a lower proportion of urology and orthopaedic and neurology patients opted to proceed with surgery, compared to those receiving written educational materials only</li> <li>○ a greater proportion of patients chose breast conservation over breast removal, compared to those receiving written materials only.</li> </ul> </li> <li>● <b>Findings suggest that patients who participated in shared decision-making were less likely to opt for surgery. This is also reliant on the type of shared decision-making intervention.</b></li> </ul>
<p><a href="#">Decision aids for people facing health treatment or screening decisions</a>                      Stacey, et al. 2017 (8)</p>	<ul style="list-style-type: none"> <li>● This Cochrane review assessed 105 randomised controlled trials to evaluate the effects of decision aids in people facing treatment or screening decisions. The randomised controlled trials compared decision aids to usual care and/or alternative interventions.</li> <li>● <b>Decision aids were found to reduce the number of people choosing major elective surgery in favour of less invasive options (RR 0.86; 95% CI: 0.75-1.00; 18 studies; N = 3844)</b>, but this reduction reached statistical significance only after removing the study on prophylactic mastectomy for breast cancer gene carriers (RR 0.84; 95% CI: 0.73-0.97; 17 studies; N = 3108).</li> <li>● Compared to usual care, decision aids reduced the number of people choosing prostate-specific antigen screening (RR 0.88; 95% CI: 0.80-0.98; 10 studies; N = 3996) and increased those choosing to start new medications for diabetes (RR 1.65; 95% CI: 1.06-2.56; 4 studies; N = 447). For other testing and screening choices, mostly there were no difference between decision aids and usual care.</li> <li>● Compared to usual care, decision aids were found to increase participants' knowledge; accuracy of risk perceptions; and congruency between informed values and care choices.</li> <li>● They were found to decrease decisional conflict related to feeling uninformed; indecision about personal values; the proportion of people who were passive in decision-making; and the proportion of undecided participants.</li> </ul>

Source	Summary
	<ul style="list-style-type: none"> <li>Decision aids also appeared to have a positive effect on patient-clinician communication, and led to patients feeling equally or more satisfied with their decision, the decision-making process, and/or the preparation for decision-making compared to usual care.</li> </ul>
<p><a href="#">Understanding Preferences for Treatment After Hypothetical First-Time Anterior Shoulder Dislocation: Surveying an Online Panel Utilizing a Novel Shared Decision-Making Tool</a> Streufert, et al. 2017 (5)</p>	<ul style="list-style-type: none"> <li>This cross-sectional study tested a novel shared decision-making tool after sustained first-time anterior shoulder dislocation. 374 individuals participated, of which most were young, active males; one-third reported prior dislocation.</li> <li>A survey was created and included an adaptive conjoint analysis exercise to find out each person’s relative preference for several scenario, which varied based on a fixed set of attributes. Attributes were features of treatment alternatives that are important to patients or stakeholders.</li> <li>The adaptive conjoint analysis exercise was constructed by first presenting detailed attribute descriptions and then by gathering individuals’ preliminary importance ratings on each attribute. Next, combinations of different levels of attributes were created and placed side-by-side as hypothetical situations, asking the individual to rate their preference for one relative to the other (<a href="#">Figure 1</a>). These pairs were customised for each individual to efficiently gather relative preferences for each attribute. Respondents were asked to rate their preferences for 10 pairs of alternatives. The tool, via software algorithm, then estimated the relative importance of each attribute based on that respondent’s preference ratings for the 10 pair tasks.</li> <li>A total of 125 (55%) males and 33 (23%) females chose surgery after a first-time anterior shoulder dislocation, as did 37% of previous dislocators, compared with 45% of nondislocators.</li> <li><b>When given thorough information about the risks and benefits, respondents had strong preferences for operative treatment after a first-time anterior shoulder dislocation.</b> Respondents agreed with the survey results and wanted to share the information with providers. Recurrent dislocation and cost of treatment were the attributes that played the most important role in decisions about treatment.</li> </ul>
<p><a href="#">The cost-effectiveness of patient decision aids: A systematic review</a> Trenaman, et al. 2014 (9)</p>	<ul style="list-style-type: none"> <li>This systematic review assessed 29 studies reviewing the economic evidence from patient decision aid trials.</li> </ul>

Source	Summary
	<ul style="list-style-type: none"> <li>• The authors found that there are upfront costs associated with administering and delivering patient decision aids, but there was unclear evidence on whether these costs provided good value for money.</li> <li>• The vast majority of evidence relating patient decision aids to short-term costs has focused on situations where patients appear to be choosing less expensive options, primarily in the area of elective surgery. In these cases, patient decision aid may be reducing the use of unwanted services and so may be cost-effective. However, the evidence is sparse and it is unclear whether implementing patient decision aids in contexts where beneficial services are known to be under-utilised will be cost-effective.</li> <li>• The authors note that policy makers need to consider both the short and long-term implications of using a patient decision aid. For example, while some patients may choose medication over surgery, this may simply delay surgery until a later point. This delay may lead to short-term cost savings, but it may also possibly lead to a more complicated or expensive surgery at a later date, increasing the total lifetime costs.</li> <li>• <b>Based on current evidence, the authors believe it is inappropriate to promote patient decision aids as a means of realising cost savings. The appropriate evaluation of patient decision aids requires careful consideration of both costs and benefits.</b></li> </ul>
<p><a href="#">A randomized study of telephonic care support in populations at risk for musculoskeletal preference-sensitive surgeries</a></p> <p>Veroff, et al. 2013 (6)</p>	<ul style="list-style-type: none"> <li>• In an effort to assess more effective approaches to spurring use of shared decision-making, the authors tested a natural voice interactive voice recognition application with the capability to transfer participants from the application to a health coach (known as <a href="#">AutoDialog®</a>).</li> <li>• The aim of this comparative study was to consider the relative impact of targeting by an interactive voice recognition call versus a standard mailer or no materials on health coach interaction rates, as well as healthcare costs and utilisation for individuals at risk for musculoskeletal preference-sensitive surgeries.</li> <li>• <b>The preference-sensitive surgery rate per 1,000 members was 34.3 in the intervention group and 38.9 in the control group. However, this was not a statistically significant difference after adjustment for appropriate potential covariates.</b></li> <li>• The lack of statistically significant impact on surgery rates raises several important issues. Firstly, given the relatively low rate of surgery in the control group, significant impact on</li> </ul>

Source	Summary
	<p>surgery rates was difficult to detect. Secondly, while there was a strong association between the increased level of health coaching and statistically significant reductions in actionable medical costs, this is not explainable simply by the measured changes in surgery rates. This cost reduction may have resulted from improvements in general self-care and navigation skills or may have resulted from knowledge and decision-making that impacted much more than the decisions about surgeries.</p>
<p><b>Grey literature and shared decision-making resources for surgery</b></p>	
<p><a href="#">Shared decision making</a>                      Australian Commission on Safety and Quality in Healthcare (ACSQHC) 2020 (169)</p>	<ul style="list-style-type: none"> <li>• The Australian Commission on Safety and Quality in Healthcare developed tools and resources to support shared decision-making, including freely available short videos to challenge common myths about shared decision-making and explain the role of patient decision aids and an eLearning module to support health professionals to enhance their shared decision-making knowledge and skills.</li> <li>• Includes a collection of decision support tools on antibiotics use and navigating different treatment options for <a href="#">osteoarthritis of the knee</a>.</li> </ul>
<p><a href="#">Making shared decision-making a reality</a>                      Coulter, et al. 2011 (170)</p>	<ul style="list-style-type: none"> <li>• The authors of this King’s Fund report provide evidence from literature that <b>patients are often more risk-averse than the clinicians who advise them, so when they are given full information about the benefits and harms of treatment, they tend to opt for the least invasive therapy or for self-management support.</b></li> <li>• They cite three examples                         <ul style="list-style-type: none"> <li>○ Women referred to hospitals in south-west England facing the choice of whether or not to undergo hysterectomy to treat excessive menstrual bleeding were much less likely to opt for the procedure after being given a decision aid plus a chance to talk it through with a nurse (Kennedy, et al. 2002). Other trials involving elective surgery have found similar results (O’Connor, et al. 2009)</li> <li>○ A meta-analysis of eight trials involving patients facing possible surgical procedures found that rates of surgery were 24% lower among patients who used decision aids (O’Connor and Stacey, 2005)</li> <li>○ A US trial of telephone health coaching showed that it could reduce the rate of hospital admissions and healthcare costs among a large group of people with</li> </ul> </li> </ul>



Source	Summary
	<p>chronic conditions or conditions that might require elective surgery (Wennberg, et al. 2010).</p>
<p><a href="#">National Strategies for Implementing Shared Decision Making</a> Coulter, 2018 (171)</p>	<ul style="list-style-type: none"> <li>• This report examined the state of shared decision-making implementation in nine leading countries (Australia, Canada, Denmark, Germany, the Netherlands, Norway, Taiwan, UK and USA) with a view to identifying best practice and developing proposals for a system-wide strategy to promote wider use of shared decision-making, including implications for elective surgery.</li> <li>• The author reiterates findings from the literature (e.g. Stacey, et al. 2017) that suggest <b>patients who use tools such as decision aids are clearer about the decisions they need to make, more willing and able to participate, and they tend to be less likely to choose elective surgery over other alternatives.</b></li> <li>• A framework for a system-wide shared decision-making implementation strategy is proposed, involving policy, professional and patient leadership and development of basic infrastructure. It includes training, tools and public campaigns, with practical support and learning from demonstration projects, standardised measurement and feedback, together with practical support and coordination of implementation efforts.</li> </ul>
<p><a href="#">Patient Decision Aids</a> The Ottawa Hospital Research Institute, 2020 (172)</p>	<ul style="list-style-type: none"> <li>• The Ottawa Hospital Research Institute in Canada leads and updates the Cochrane review on decision aids and maintains the A–Z international inventory on decision aids.</li> <li>• Patient decision aids present evidence-based information about options, the benefits and harms of each and can be used to guide patients through the decision-making process.</li> <li>• Examples of available decisions aids for surgery                         <ul style="list-style-type: none"> <li>○ Arthritis: should I have hip replacement surgery?</li> <li>○ Is knee replacement surgery right for me? a decision for people with osteoarthritis</li> <li>○ Should I have gallbladder surgery?</li> <li>○ Enlarged prostate: should I have surgery?</li> <li>○ ACL injury: should I have knee surgery?</li> <li>○ Rotator cuff problems: should I have surgery?</li> </ul> </li> </ul>



## Appendix 1

### PubMed search terms

#### Evidence Check Question 1:

##### Search 1

(Elective Surgical Procedures[MeSH Terms] AND ("wait"[Title/Abstract] OR "avoid"[Title/Abstract] OR "divert"[Title/Abstract] OR "diversion"[Title/Abstract] OR "diverting"[Title/Abstract] OR "defer"[Title/Abstract]) AND (2011:2020[pdat])) NOT ((COVID-19[Title/Abstract]) OR (COVID19[Title/Abstract])) AND (english[Filter])

424 hits (12 August 2020)

##### Search 2

((("treatment"[Title/Abstract] OR "management"[Title/Abstract] OR "care"[Title/Abstract]) AND ("nonoperative"[Title/Abstract] OR "non-operative"[Title/Abstract] OR "outpatient"[Title/Abstract] OR "alternative"[Title/Abstract] OR "conservative"[Title/Abstract])) AND (primary health care[MeSH Terms] OR Primary Care Nursing[MeSH Terms] OR Physicians, Primary Care[MeSH Terms] OR General Practice[MeSH Terms] OR General Practitioners[MeSH Terms] OR Allied Health Occupations[MeSH Terms] OR Allied Health Personnel[MeSH Terms] OR Telemedicine[MeSH Terms] OR Delivery of Health Care, Integrated[MeSH Terms] OR "self-management"[MeSH Terms] OR "risk reduction behavior"[MeSH Terms] OR "exercise"[MeSH Terms] OR "diet therapy"[MeSH Terms])) AND (((("unnecessary"[Title/Abstract] OR "non-essential"[Title/Abstract] OR "nonessential"[Title/Abstract] OR "unessential"[Title/Abstract] OR "low-value"[Title/Abstract] OR "optional"[Title/Abstract] OR "elective"[Title/Abstract]) AND ("General Surgery"[MeSH Terms] OR "surgical procedures, operative"[MeSH Terms] OR "Surgeons"[MeSH Terms] OR "surgery"[Title/Abstract] OR "surgical"[Title/Abstract] OR "operation"[Title])) OR Elective Surgical Procedures[MeSH Terms])) NOT ((COVID-19[Title/Abstract]) OR (COVID19[Title/Abstract]) OR (SARS-COV-2[Title/Abstract])) AND ((english[Filter]) AND (2011:2020[pdat]))

79 hits (13 August 2020)

##### Search 3

((("elective"[Title/Abstract] OR "non-essential"[Title/Abstract] OR "low-value"[Title/Abstract]) AND ("surger"[Title/Abstract] OR "surgical procedure"[Title/Abstract])) OR ("surgical procedures, operative"[MeSH Terms] OR "elective surgical procedures"[MeSH Terms])) AND ("conservative treatment"[MeSH Terms] OR "watchful waiting"[MeSH Terms] OR "conservative treatment"[Title/Abstract] OR "conservative management"[Title/Abstract] OR "conservative option"[Title/Abstract] OR "watchful waiting"[Title/Abstract] OR "wait-and-watch"[Title/Abstract] OR "active surveillance"[Title/Abstract]) AND ("systematic review"[Publication Type] OR "systematic review"[Title])) NOT (("severe acute respiratory syndrome coronavirus 2"[Supplementary Concept] OR "severe acute respiratory syndrome coronavirus 2"[All Fields] OR "ncov"[All Fields] OR "2019 ncov"[All Fields] OR "covid 19"[All Fields] OR "sars cov 2"[All Fields] OR ("coronavirus"[All Fields] OR "cov"[All Fields])) AND 2019/11/01:3000/12/31[Date - Publication])) OR (protocol[Title]))

397 hits (17 September 2020)

## For Evidence Check Question 2:

(#1 AND #2 AND #3), filtered by English and 2011-2020

### #1. String relating to avoidance

"avoid\*"[Title/Abstract] OR "divert\*"[Title/Abstract] OR "diversion\*"[Title/Abstract] OR "alternat\*"[Title/Abstract] OR "conservative"[Title/Abstract] OR "defer\*"[Title/Abstract] OR "option\*"[Title/Abstract]

### #2. String relating to elective or low-value surgery (adapted from de [Mik et al. 2018](#))

(((((("unnecessary"[Title/Abstract] OR "non-essential"[Title/Abstract]) OR "nonessential"[Title/Abstract]) OR "unessential"[Title/Abstract]) OR "low-value"[Title/Abstract]) OR "low-value"[Title/Abstract]) OR "optional"[Title/Abstract]) OR "high-risk"[Title/Abstract]) OR "high-risk"[Title/Abstract]) OR "elective"[Title/Abstract] AND (((("General Surgery"[MeSH Terms] OR "surgical procedures, operative"[MeSH Terms]) OR "Surgeons"[MeSH Terms]) OR "surgery"[Title/Abstract]) OR "surgical"[Title/Abstract]) OR "operat\*"[Title])

### #3. String relating to shared decision-making (from [Légaré et al. 2018 Cochrane Review](#))

((("professional-patient relations"[MeSH Terms] OR (((((((((((("nurses"[MeSH Terms] OR "physicians"[MeSH Terms]) OR "nurse\*"[Title] OR "physician\*"[Title] OR "clinician\*"[Title] OR "doctor\*"[Title] OR "general practitioner\*"[Title] OR "gps"[Title] OR "health care professional\*"[Title] OR "healthcare professional\*"[Title] OR "health care provider\*"[Title] OR "healthcare provider\*"[Title] OR "resident\*"[Title]) AND (((("patients"[MeSH Terms] OR "patient\*"[Title] OR "consumer\*"[Title] OR "people\*"[Title]))) AND (((("patient participation"[MeSH Terms] OR "patient participation\*"[Title/Abstract]) OR "consumer participation\*"[Title/Abstract]) OR "patient involvement\*"[Title/Abstract]) OR "consumer involvement\*"[Title/Abstract]) OR (("patient\*"[Title] OR "consumer\*"[Title] AND (((("involvement\*"[Title] OR "involving\*"[Title] OR "participation\*"[Title] OR "participating\*"[Title]))) OR ((("professional-patient relations"[MeSH Terms] OR (((((((((((("nurses"[MeSH Terms] OR "physicians"[MeSH Terms]) OR "nurse\*"[Title] OR "physician\*"[Title] OR "clinician\*"[Title] OR "doctor\*"[Title] OR "general practitioner\*"[Title] OR "gps"[Title] OR "health care professional\*"[Title] OR "healthcare professional\*"[Title] OR "health care provider\*"[Title] OR "healthcare provider\*"[Title] OR "resident\*"[Title]) AND (((("patients"[MeSH Terms] OR "patient\*"[Title] OR "consumer\*"[Title] OR "people\*"[Title]))) AND (((((((("decision making"[MeSH Terms:noexp] OR "decision support techniques"[MeSH Terms:noexp] OR "decision support systems, clinical"[MeSH Terms]) OR "choice behavior"[MeSH Terms:noexp] OR "decision making\*"[Title/Abstract] OR "decision support\*"[Title/Abstract] OR "choice behaviour\*"[Title/Abstract]) OR ((("decision\*"[Title] OR "choice\*"[Title] AND ((("making\*"[Title] OR "support\*"[Title] OR "behaviour\*"[Title]))) OR (((("patient participation"[MeSH Terms] OR "patient participation\*"[Title/Abstract]) OR "consumer participation\*"[Title/Abstract]) OR "patient involvement\*"[Title/Abstract]) OR "consumer involvement\*"[Title/Abstract]) OR ((("patient\*"[Title] OR "consumer\*"[Title] AND (((("involvement\*"[Title] OR "involving\*"[Title] OR "participation\*"[Title] OR "participating\*"[Title]))) AND (((((((("decision making"[MeSH Terms:noexp] OR "decision support techniques"[MeSH Terms:noexp] OR "decision support systems, clinical"[MeSH Terms]) OR "choice behavior"[MeSH Terms:noexp] OR "decision making\*"[Title/Abstract] OR "decision support\*"[Title/Abstract] OR "choice behaviour\*"[Title/Abstract]) OR ((("decision\*"[Title] OR

"choice"[Title]) AND (("making"[Title] OR "support"[Title]) OR "behaviour"[Title])))) OR (((("shared decision"[Title/Abstract] OR "sharing decision"[Title/Abstract]) OR "informed decision"[Title/Abstract]) OR "informed choice"[Title/Abstract]) OR "decision aid"[Title/Abstract]) OR (("share"[Title] OR "sharing"[Title]) OR "informed"[Title]) AND (("decision"[Title] OR "deciding"[Title]) OR "choice"[Title]))))

154 hits (3 August 2020)

## Google and Google Scholar

- Conservative option elective surgery
- Alternative elective surgery
- Effectiveness of conservative approaches to elective surgery
- Effectiveness of alternative approaches to elective surgery
- Safety of conservative approaches to elective surgery
- Safety of alternative approaches to elective surgery
- Shared decision making elective surgery avoid

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