

Fertility problems: assessment and treatment

[V] Treatments for ejaculatory failure

NICE guideline NG257

*Evidence reviews underpinning recommendation 1.53.4 in the
NICE guideline*

March 2026

Disclaimer

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Treatments for ejaculatory failure

Review question

What is the clinical and cost effectiveness of treatments for ejaculatory failure?

Introduction

Fertility problems associated with ejaculatory failure are quite common, however the evidence from randomised controlled trials on the most effective treatments is very limited. Therefore, the aim of this review is to determine the clinical and cost effectiveness of treatments for ejaculatory failure in people with fertility problems.

Summary of the protocol

See Table 1 for a summary of the Population, Intervention, Comparison and Outcome (PICO) characteristics of this review.

Table 1: Summary of the protocol (PICO table)

Population	<p>Inclusion:</p> <ul style="list-style-type: none">• People with fertility problems associated with ejaculatory failure (including retrograde ejaculation, other functional loss of ejaculation, and reduced volume of ejaculation due to obstruction) <p>Exclusion:</p> <ul style="list-style-type: none">• People with premature or delayed ejaculation, or people with male orgasmic disorder
Intervention	<p>Treatments for fertility problems associated with ejaculatory failure, as appropriate for the type of ejaculatory failure, for example:</p> <ul style="list-style-type: none">• Medical treatment:<ul style="list-style-type: none">○ alpha-agonistic drugs (such as imipramine, ephedrine, pseudoephedrine, physostigmine or neostigmine)○ parasympathetic drugs (including muscarinic receptor agonists and acetylcholinesterase inhibitors)○ anticholinergic and antihistamine drugs (such as imipramine, milodrin, chlorpheniramine, phenylpropanalamine or brompheniramine)• Interventions that optimise urine pH and/or osmolarity (for example, oral sodium bicarbonate)• Vibro-ejaculation• Electro-ejaculation• Trans-urethral resection of the ejaculatory ducts (TURED)
Comparison	<ul style="list-style-type: none">• Placebo• No treatment• Head-to-head comparisons between the above intervention categories• Head-to-head comparisons between different interventions within each category (e.g. comparisons between different types of alpha-agonistic drugs)• Surgical sperm retrieval

Outcome	Critical <ul style="list-style-type: none">• Presence of sperm in the ejaculate• Semen parameters:<ul style="list-style-type: none">○ motile sperm count/concentration○ total sperm count• Live birth (as defined by study, risk of bias assessments will reflect where this is not defined as a live birth to include a gestational age of ≥ 20 weeks)• Clinical pregnancy (as defined by study, risk of bias assessments will reflect where this is not defined as viable intrauterine pregnancy confirmed by ultrasound accounting for singleton pregnancy, twin pregnancy, and higher multiple pregnancy) Important <ul style="list-style-type: none">• Miscarriage (loss of a baby before 24 weeks gestational age)• Any adverse events
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For further details see the review protocol in appendix A.

Methods and process

This evidence review was developed using the methods and process described in [Developing NICE guidelines: the manual](#). Methods specific to this review question are described in the review protocol in appendix A and the methods document (supplementary document 1).

Declarations of interest were recorded according to [NICE's conflicts of interest policy](#).

Effectiveness evidence

Included study

A systematic review of the literature was conducted but no studies were identified which were applicable to this review question.

See the literature search strategy in appendix B and study selection flow chart in appendix C.

Excluded studies

Studies not included in this review are listed, and reasons for their exclusion are provided in appendix J.

Summary of included studies

No studies were identified which were applicable to this review question (and so there are no evidence tables in Appendix D). No meta-analysis was conducted for this review (and so there are no forest plots in Appendix E).

Summary of the evidence

No studies were identified which were applicable to this review question (and so there are no GRADE tables in Appendix F).

Economic evidence

A total of 329 studies were identified in the health economic literature search for this review question. After duplicates were removed, 301 studies were screened on title and abstract of which all were excluded at this stage.

Included studies

No health economic studies were included for this review question.

Also see the literature search strategy in appendix B and economic study selection flow chart in appendix G.

Excluded studies

Economic studies not included in this review are listed, and reasons for their exclusion are provided in appendix J.

Economic model

This area was not prioritised for new cost-effectiveness analysis as the population covered by any recommendations is likely to be relatively small and it was thought that recommendations are unlikely to substantively change current practice.

The committee's discussion and interpretation of the evidence

The outcomes that matter most

The committee agreed that presence of sperm in the ejaculate and semen parameters were critical as they provide an indication of male fertility. Motile sperm count/concentration was considered as the most reliable and informative measure, but total sperm count was also included as it was anticipated that this may be more frequently reported particularly in older studies.

The committee agreed that live birth and clinical pregnancy were critical outcomes because they are good indicators for the success of fertility treatment and were specified in the core outcome set for fertility research (Duffy 2020).

Miscarriage and any adverse events were identified as important outcomes by the committee. Miscarriage was prioritised as an important outcome as it provides meaningful information about the success of a pregnancy, and it can be devastating for people trying to have a baby. Adverse events were chosen as an important outcome as it is important when discussing and deciding on treatment options that risks are considered and weighed up against potential benefits.

The quality of the evidence

No studies were identified which were applicable to this review question.

Benefits and harms

The committee discussed the absence of evidence identified and noted that in clinical practice the accepted standard procedure for ejaculatory failure management is using the least invasive method to retrieve sperm. They acknowledged that there may be various causes for ejaculatory failure and agreed that the most important step in managing this condition was to identify the cause as the treatment is cause dependent. The committee agreed that the cause of the ejaculatory failure is usually ascertained during the standard

male fertility assessment. Based on their clinical knowledge and experience, the committee recommended that the cause of the ejaculatory failure should be identified, and the most appropriate treatment namely the least invasive method should be used to manage the condition.

Due to multifaceted causes and a broad range of dysfunctions associated with ejaculatory failure, the committee agreed not to make a research recommendation.

Cost-effectiveness

No clinical or health economic evidence was identified for this review question. The committee therefore made recommendations based on their expertise, and in line with best clinical practice.

The committee recommended that the cause of the ejaculatory failure should be identified prior to treatment – noting that the cause is typically established when people initially present for a male infertility assessment. The committee concluded the most appropriate treatment for ejaculatory failure is the least invasive method of treatment, aligning to the underlying cause of the ejaculatory failure.

The committee acknowledged that the recommendation made is largely in line with current clinical practice. The committee discussed that the recommendations are highly likely to be the most cost-effective treatment strategy for ejaculatory failure. It was noted that more invasive procedures require more staff time, and are more resource intensive, with greater recovery times for the person undergoing the procedure. In addition to the fact that ejaculatory failure can be caused by numerous factors and therefore the effectiveness of intervention is dependent on the underlying cause.

As the recommendation made for this review question is largely in line with current practice there is not expected to be a significant resource impact associated with this review question. However, the committee did note that there are not currently any local protocols for a treatment pathway for ejaculatory failure due to the number of root causes associated with condition. The committee therefore concluded that negligible cost savings or cost increases may be associated with this recommendation.

Recommendations supported by this evidence review

This evidence review supports recommendation 1.53.4.

References – included studies

Effectiveness

No studies were included in this review.

Other

Duffy 2020

Duffy JM, AlAhwany H, Bhattacharya S, Collura B, Curtis C, Evers JL, Farquharson RG, Franik S, Giudice LC, Khalaf Y, Knijnenburg JM. (2020) Developing a core outcome set for future infertility research: an international consensus development study. *Human Reproduction* 35(12): 2725-34

Appendices

Appendix A Review protocols

Review protocol for review question: What is the clinical and cost effectiveness of treatments for ejaculatory failure?

Table 2: Review protocol

ID	Field	Content
0.	PROSPERO registration number	CRD42023431347
1.	Review title	Clinical and cost effectiveness of treatments for ejaculatory failure
2.	Review question	What is the clinical and cost effectiveness of treatments for ejaculatory failure?
3.	Objective	To determine the clinical and cost effectiveness of treatments for ejaculatory failure
4.	Searches	<p>The following databases will be searched:</p> <p>Clinical searches</p> <ul style="list-style-type: none"> • Cochrane Central Register of Controlled Trials (CENTRAL) • Cochrane Database of Systematic Reviews (CDSR) • Embase • MEDLINE ALL • Epistemonikos <p>Searches will be restricted by:</p> <ul style="list-style-type: none"> • English language • Human studies <p>The full search strategies for MEDLINE database will be published in the final review</p>
5.	Condition or domain being studied	Treatments for fertility problems associated with ejaculatory failure

6.	Population	<p>Inclusion:</p> <ul style="list-style-type: none"> • People with fertility problems associated with ejaculatory failure (including retrograde ejaculation, other functional loss of ejaculation, and reduced volume of ejaculation due to obstruction) <p>Exclusion:</p> <ul style="list-style-type: none"> • People with premature or delayed ejaculation, or people with male orgasmic disorder
7.	Intervention	<p>Treatments for fertility problems associated with ejaculatory failure, as appropriate for the type of ejaculatory failure, for example:</p> <ul style="list-style-type: none"> • Medical treatment: <ul style="list-style-type: none"> ○ alpha-agonistic drugs (such as imipramine, ephedrine, pseudoephedrine, physostigmine or neostigmine) ○ parasympathetic drugs (including muscarinic receptor agonists and acetylcholinesterase inhibitors) ○ anticholinergic and antihistamine drugs (such as imipramine, milodrin, chlorpheniramine, phenylpropanalamine or brompheniramine) • Interventions that optimise urine pH and/or osmolarity (for example, oral sodium bicarbonate) • Vibro-ejaculation • Electro-ejaculation • Trans-urethral resection of the ejaculatory ducts (TURED)
8.	Comparator	<ul style="list-style-type: none"> • Placebo • No treatment • Head-to-head comparisons between the above intervention categories • Head-to-head comparisons between different interventions within each category (e.g. comparisons between different types of alpha-agonistic drugs) • Surgical sperm retrieval
9.	Types of study to be included	<p>Include published full-text papers:</p> <ul style="list-style-type: none"> • Systematic reviews of RCTs • Parallel RCTs (individual or cluster) • If no RCT evidence: <ul style="list-style-type: none"> ○ quasi-randomised controlled trials (experimental studies using a non-randomly assigned control group design with matched comparison or another method of controlling for confounding variables)

10.	Other exclusion criteria	<p>Other exclusion criteria:</p> <ul style="list-style-type: none"> • Language limitations: studies published not in English-language • Conference abstracts will not be included because these do not typically have sufficient information to allow full critical appraisal
11.	Context	This guidance will fully update the following NICE guideline: Fertility problems: assessment and treatment (last updated 2017; CG156)
12.	Primary outcomes (critical outcomes)	<ul style="list-style-type: none"> • Presence of sperm in the ejaculate • Semen parameters: <ul style="list-style-type: none"> ○ motile sperm count/concentration ○ total sperm count • Live birth (as defined by study, risk of bias assessments will reflect where this is not defined as a live birth to include a gestational age of ≥ 20 weeks) • Clinical pregnancy (as defined by study, risk of bias assessments will reflect where this is not defined as viable intrauterine pregnancy confirmed by ultrasound accounting for singleton pregnancy, twin pregnancy, and higher multiple pregnancy)
13.	Secondary outcomes (important outcomes)	<ul style="list-style-type: none"> • Miscarriage (loss of a baby before 24 weeks gestational age) • Any adverse events
14.	Data extraction (selection and coding)	<p>All references identified by the searches and from other sources will be uploaded into EPPI and de-duplicated. Titles and abstracts of the retrieved citations will be screened to identify studies that potentially meet the inclusion criteria outlined in the review protocol.</p> <p>Dual sifting will be performed on at least 10% of records; 90% agreement is required. Disagreements will be resolved via discussion between the two reviewers, and consultation with senior staff if necessary.</p> <p>Full versions of the selected studies will be obtained for assessment. Studies that fail to meet the inclusion criteria once the full version has been checked will be excluded at this stage. Each study excluded after checking the full version will be listed, along with the reason for its exclusion. A standardised form will be used to extract data from studies. The following data will be extracted: study details (reference, country where study was carried out, type and dates), participant characteristics, inclusion and exclusion criteria, details of the interventions if relevant, setting and follow-up, relevant outcome data and source of funding. One reviewer will extract relevant data into a standardised form, and this will be quality assessed by a senior reviewer.</p>
15.	Risk of bias (quality)	Quality assessment of individual studies will be performed using the following checklists:

	assessment	<ul style="list-style-type: none"> • ROBIS tool for systematic reviews • Cochrane RoB tool v.2 <p>The quality assessment will be performed by one reviewer, and this will be quality assessed by a senior reviewer.</p>
16.	Strategy for data synthesis	<p>Depending on the availability of the evidence, the findings will be summarised narratively or quantitatively. Where possible, meta-analyses will be conducted using Cochrane Review Manager software. Data will be presented as risk ratios or odds ratios for dichotomous outcomes, and mean differences or standardised mean differences for continuous outcomes. It is considered likely that a random-effects model will be used for meta-analyses (based on assumptions about methodological diversity of studies). Funnel plot asymmetry (relationship between the magnitude of the effect estimate and study size) will be considered, and where asymmetry is indicated a fixed-effects model will be conducted (and both random-effects and fixed-effects analyses will be presented) or sensitivity analyses excluding small studies will be considered.</p> <p>Heterogeneity in the effect estimates of the individual studies will be assessed using the I^2 statistic. Alongside visual inspection of the point estimates and confidence intervals, I^2 values of greater than 50% and 80% will be considered as significant and very significant heterogeneity, respectively. Heterogeneity will be explored as appropriate using sensitivity analyses and pre-specified subgroup analyses.</p> <p>The confidence in the findings across all available evidence will be evaluated for each outcome using an adaptation of the 'Grading of Recommendations Assessment, Development and Evaluation (GRADE) toolbox' developed by the international GRADE working group: http://www.gradeworkinggroup.org/ Importance and imprecision of findings will be assessed against minimally important differences (MIDs). The following MIDs will be used:</p> <ul style="list-style-type: none"> ○ Live birth: statistical significance ○ Continuous outcomes: +/- 0.5x pooled control group SD for mean difference and SMD -0.5/0.5 for standardised mean difference <p>Dichotomous outcomes (other than live birth): 0.8 and 1.25 for relative dichotomous outcomes</p>
17.	Analysis of sub-groups	<p>Evidence will be stratified by the following:</p> <p>Type of ejaculatory failure:</p> <ul style="list-style-type: none"> • retrograde ejaculation

		<ul style="list-style-type: none"> • other functional loss of ejaculation • reduced volume of ejaculation due to obstruction <p>Evidence will be sub-grouped by the following:</p> <ul style="list-style-type: none"> • Female partners age (based on the mean age reported in the study): <ul style="list-style-type: none"> ○ ≤35 years ○ >35 years <p>Evidence will be sub-grouped by the following only if there is significant heterogeneity in outcomes:</p> <ul style="list-style-type: none"> • Age (based on the mean age reported in the study): <ul style="list-style-type: none"> ○ <45 years ○ ≥45 years <p>Where evidence is stratified or subgrouped the committee will consider on a case-by-case basis if separate recommendations should be made for distinct groups. Separate recommendations may be made where there is evidence of a differential effect of interventions in distinct groups. If there is a lack of evidence in one group, the committee will consider, based on their experience, whether it is reasonable to extrapolate and assume the interventions will have similar effects in that group compared with others.</p>														
18.	Type and method of review	<table border="1"> <tr> <td><input checked="" type="checkbox"/></td> <td>Intervention</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Diagnostic</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Prognostic</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Qualitative</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Epidemiologic</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Service Delivery</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Other (please specify)</td> </tr> </table>	<input checked="" type="checkbox"/>	Intervention	<input type="checkbox"/>	Diagnostic	<input type="checkbox"/>	Prognostic	<input type="checkbox"/>	Qualitative	<input type="checkbox"/>	Epidemiologic	<input type="checkbox"/>	Service Delivery	<input type="checkbox"/>	Other (please specify)
<input checked="" type="checkbox"/>	Intervention															
<input type="checkbox"/>	Diagnostic															
<input type="checkbox"/>	Prognostic															
<input type="checkbox"/>	Qualitative															
<input type="checkbox"/>	Epidemiologic															
<input type="checkbox"/>	Service Delivery															
<input type="checkbox"/>	Other (please specify)															

19.	Language	English		
20.	Country	England		
21.	Anticipated or actual start date	February 2023		
22.	Anticipated completion date	November 2024		
23.	Stage of review at time of this submission	Review stage	Started	Completed
		Preliminary searches	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		Piloting of the study selection process	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		Formal screening of search results against eligibility criteria	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		Data extraction	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		Risk of bias (quality) assessment	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		Data analysis	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
24.	Named contact	5a. Named contact Guideline Development Team A 5b Named contact e-mail FertilityProblems@nice.org.uk 5e Organisational affiliation of the review Guideline Development Team A, Centre for Guidelines, National Institute for Health and Care Excellence (NICE)		
25.	Review team members	<ul style="list-style-type: none"> Senior Technical Analyst Technical Analyst 		
26.	Funding sources/sponsor	This systematic review is being completed by NICE		

27.	Conflicts of interest	All guideline committee members and anyone who has direct input into NICE guidelines (including the evidence review team and expert witnesses) must declare any potential conflicts of interest in line with NICE's code of practice for declaring and dealing with conflicts of interest. Any relevant interests, or changes to interests, will also be declared publicly at the start of each guideline committee meeting. Before each meeting, any potential conflicts of interest will be considered by the guideline committee Chair and a senior member of the development team. Any decisions to exclude a person from all or part of a meeting will be documented. Any changes to a member's declaration of interests will be recorded in the minutes of the meeting. Declarations of interests will be published with the final guideline.	
28.	Collaborators	Development of this systematic review will be overseen by an advisory committee who will use the review to inform the development of evidence-based recommendations in line with section 3 of Developing NICE guidelines: the manual . Members of the guideline committee are available on the NICE website: https://www.nice.org.uk/guidance/indevelopment/gid-ng10263	
29.	Other registration details	None	
30.	Reference/URL for published protocol	crd.york.ac.uk/PROSPERO/display_record.php?RecordID=431347	
31.	Dissemination plans	<p>NICE may use a range of different methods to raise awareness of the guideline. These include standard approaches such as:</p> <ul style="list-style-type: none"> • notifying registered stakeholders of publication • publicising the guideline through NICE's newsletter and alerts • issuing a press release or briefing as appropriate, posting news articles on the NICE website, using social media channels, and publicising the guideline within NICE. 	
32.	Keywords	Male factor fertility problems, infertility, ejaculatory failure	
33.	Details of existing review of same topic by same authors	None	
34.	Current review status	<input checked="" type="checkbox"/>	Ongoing
		<input checked="" type="checkbox"/>	Completed but not published
		<input type="checkbox"/>	Completed and published
		<input type="checkbox"/>	Completed, published and being updated

FINAL

Treatments for ejaculatory failure

		<input type="checkbox"/>	Discontinued
35..	Additional information	None	
36.	Details of final publication	www.nice.org.uk	

NICE: National Institute for Health and Care Excellence; RCT: randomised controlled trial; RoB: risk of bias

Appendix B Literature search strategies

Literature search strategies for review question: What is the clinical and cost effectiveness of treatments for ejaculatory failure?

Database: Ovid MEDLINE(R) ALL <1946 to May 30, 2024>

Date of last search: 03/06/2024

#	Searches
1	exp infertility, male/
2	(male/ or men/ or exp "Sexual and Gender Minorities"/) and (Infertility/ or fertility/)
3	((male? or men or man or transgender* or trans gender* or transwom?n or transfemale* or transfeminine or transperson* or transpeople or transsex* or intersex* or inter sex* or nonbinary or non binary or TGNB or genderqueer* or two spirit or sex reassign* or "assigned male at birth" or AMAB or agender) adj4 (infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*).tw.
4	((trans or transgender*) adj1 (wom?n or female* or feminin* or person* or people or sex* or patient* or identit* or nonbinary or "non binary") adj4 (infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*).tw.
5	(gender adj1 (expansive* or queer* or nonconform* or "non conform*" or dysphori* or fluid* or divers* or neutral or reassign* or affirm* or variance* or incongruent or minorit* or transition*) adj4 (infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*).tw.
6	(aspermia or azoosperm* or ogliospermi* or hypospermi* or oglio-astheno-teratozoospermi* or oligoastheno-teratozoospermi*).tw.
7	or/1-6
8	Ejaculation/ or Ejaculatory Ducts/ab
9	Ejaculatory Dysfunction/ or Retrograde Ejaculation/
10	anejaculat*.tw.
11	(ejaculat* adj4 (fail* or disorder* or dysfunction* or disturb* or abnormal* or unable or inability* or low* or reduc* or loss or absen* or dry or weak* or retrograd* or backward* or back or problem*).tw.
12	((sperm* or semen* or seminal) adj2 (release* or discharge* or expulsion* or expel* or emission* or emit* or eject*) adj4 (fail* or disorder* or dysfunction* or disturb* or abnormal* or unable or inability* or low* or reduc* or loss or absen* or dry or weak* or retrograd* or backward* or back or problem*).tw.
13	(((((seminal or mullerian or reproduct* or genital*) adj2 (duct* or vesicle* or tract*)) or vas* deferen* or duct* deferen* or vasal* or epididym* or sperm* or ejaculat*) adj4 (block* or cyst* or obstruct* or atresia or atroph* or disorder* or dysfunction* or disturb* or problem*).tw.
14	or/8-13
15	Adrenergic Agents/ or adrenergic agonists/ or adrenergic alpha-agonists/ or adrenergic alpha-1 receptor agonists/ or adrenergic alpha-2 receptor agonists/
16	((adrenergic or adrenoceptor or adrenogenic or adrenomimetic or aminergic or noradrenergic or noradrenalin or alpha*) adj4 (agonist* or agent* or stimula*).tw.
17	Sympathomimetics/
18	(sympathomimetic* or sympathicomimetic* or sympathetic* or sympathotropic*).tw.
19	Imipramine/
20	(imipramin* or imipramide* or imidobenzyle* or imizin* or janimine* or melipramin* or norchlorimipramine* or pryleugan* or tofranil* or antidepress* or anti-depress* or apo-imipramine* or berkomin* or chrytemin* or daypress* or deprinol* or depzol* or depsonil* or ethipramine* or fronil* or "ia pram*" or trofanil*).tw.
21	Ephedrine/ or Pseudoephedrine/
22	(ephedrin* or ef?drin* or pseudoephedrine* or isoephedrine* or sudafed* or sal-phedrine* or galpseud*).tw.
23	Physostigmine/
24	(physostigmin* or physiosstigmin* or eserin*).tw.
25	Neostigmine/
26	(neostigmin* or prostigmin* or polstigmin* or proserin* or prozerin* or synstigmin* or syntostigmin*).tw.
27	Midodrine/
28	(midodrin* or midon* or proamatine* or amatine* or gutron* or bramox*).tw.
29	Phenylephrine/
30	(phenylephrine* or metaoxedrin* or metasympatol* or mezon* or "neo synephrine*").tw.
31	exp acetylcholine release inhibitors/ or exp muscarinic agonists/
32	Parasympathomimetics/ or muscarine/
33	exp Cholinergic Antagonists/ or exp Cholinesterase Inhibitors/

#	Searches
34	(muscarin* or parasympath* or ((cholinesterase* or acetylcholine* or choline or cholinergic) adj2 (block* or inhibit* or antagonist* or drug* or agent*)) or anti-cholinergic* or anticholinergic* or anticholesterinase* or anti-cholesterinase* or anticholinesterase* or anti-cholinesterase* or cholinolytic* or botox* or (botulinum adj1 (toxin* or neurotoxin*)) or mediotoxin* or bethanechol* or bocouture* or letybo* or xeomin* or azzalure* or dysport*).tw.
35	histamine antagonists/ or histamine h1 antagonists/ or histamine h2 antagonists/ or histamine h3 antagonists/
36	((anti-histamin* or antihistamin* or (histamin* or h1* or h2* or h3*)) adj4 (antagonist* or blocker* or blockader*).tw.
37	exp pheniramine/ or Phenylpropanolamine/
38	(milodrin* or gutron* or pheniramine* or daneral* or histapyridamine* or propheniramine* or prophenpyridamine* or bimalenate* or phenylpropanolami* or phenylpropylolamine* or dexatrim* or norephedrine* or prolamine* or propages* or triaminic* or chlorpheniramine* or chlorphenamine* or chlorpro* or teldrin* or phenylpropanolami* or phenylpropylolamine* or ornade* or brompheniramine* or dimeta*).tw.
39	exp bicarbonates/
40	Osmolar Concentration/ or Hydrogen-Ion Concentration/
41	((sodium adj1 carbonate) or bicarb* or esscarb* or baking soda* or baros* or carbex* or colevac* or dicarbonate* or hydrocarbonate* or hydrogen carbonate* or meylon*).tw.
42	(urin* adj4 (PH or prepar* or alkalin* or neutral* or hyperosmolar* or osmol* or isotonic*).tw.
43	Physical Stimulation/
44	Electric Stimulation/ or Electric Stimulation Therapy/
45	Vibration/
46	((assist* or vibr* or electr*) adj2 (ejaculat* or stimulat*)) or electroejaculat* or vibroejaculat* or EEJ or PVS).tw.
47	(ejaculat* adj2 stimulat*).tw.
48	Ejaculatory Ducts/su
49	(TURED or ((Transurethral or trans-urethral) and ejaculatory duct*).tw.
50	or/15-49
51	7 or 14
52	50 and 51
53	letter/
54	editorial/
55	news/
56	exp historical article/
57	Anecdotes as topic/
58	comment/
59	case reports/
60	(letter or comment*).ti.
61	or/53-60
62	randomized controlled trial/ or random*.ti,ab.
63	61 not 62
64	animals/ not humans/
65	exp Animals, Laboratory/
66	exp Animal Experimentation/
67	exp Models, Animal/
68	exp Rodentia/
69	(rat or rats or rodent* or mouse or mice).ti.
70	or/63-69
71	52 not 70
72	limit 71 to english language
73	meta-analysis/
74	meta-analysis as topic/
75	(meta analy* or metanaly* or metaanaly*).ti,ab.
76	((systematic* or evidence*) adj2 (review* or overview*).ti,ab.
77	(reference list* or bibliograph* or hand search* or manual search* or relevant journals).ab.
78	(search strategy or search criteria or systematic search or study selection or data extraction).ab.
79	(search* adj4 literature).ab.
80	(medline or pubmed or cochrane or embase or psychlit or psyclit or psychinfo or psycinfo or cinahl or science citation index or bids or cancerlit).ab.
81	cochrane.jw.

#	Searches
82	or/73-81
83	randomized controlled trial.pt.
84	controlled clinical trial.pt.
85	pragmatic clinical trial.pt.
86	randomi#ed.ab.
87	placebo.ab.
88	drug therapy.fs.
89	randomly.ab.
90	trial.ab.
91	groups.ab.
92	or/83-91
93	Clinical Trials as topic.sh.
94	trial.ti.
95	or/83-87,89,93-94
96	72 and (82 or 95)
97	Observational Studies as Topic/
98	Observational Study/
99	Epidemiologic Studies/
100	exp Case-Control Studies/
101	exp Cohort Studies/
102	Cross-Sectional Studies/
103	Controlled Before-After Studies/
104	Historically Controlled Study/
105	Interrupted Time Series Analysis/
106	Comparative Study.pt.
107	case control\$.tw.
108	case series.tw.
109	(cohort adj (study or studies)).tw.
110	cohort analy\$.tw.
111	(follow up adj (study or studies)).tw.
112	(observational adj (study or studies)).tw.
113	longitudinal.tw.
114	prospective.tw.
115	retrospective.tw.
116	cross sectional.tw.
117	or/97-116
118	72 and 117
119	118 not 96

Database: Embase <1974 to 2024 May 31>

Date of last search: 03/06/2024

#	Searches
1	exp male infertility/
2	(male/ or "sexual and gender minority"/ or "transgender and gender nonbinary"/) and (infertility/ or subfertility/)
3	((male? or men or man or transgender* or trans gender* or transwom?n or transfemale* or transfeminine or transperson* or transpeople or transsex* or intersex* or inter sex* or nonbinary or non binary or TGNB or genderqueer* or two spirit or sex reassign* or "assigned male at birth" or AMAB or agender) adj4 (infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*).tw.
4	((trans or transgender*) adj1 (wom?n or female* or feminin* or person* or people or sex* or patient* or identit* or nonbinary or "non binary") adj4 (infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*).tw.
5	(gender adj1 (expansive* or queer* or nonconform* or "non conform*" or dysphori* or fluid* or divers* or neutral or reassign* or affirm* or variance* or Incongruent or minorit* or transition*) adj4 (infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*).tw.

#	Searches
6	(aspermia or azoosperm* or ogliospermi* or hypospermi* or oglio-astheno-teratozoospermi* or oligoasthenoteratozoospermi*).tw.
7	or/1-6
8	ejaculation/
9	ejaculation disorder/
10	ejaculatory duct/ and obstruction/
11	anejaculat*.tw.
12	(ejaculat* adj4 (fail* or disorder* or dysfunction* or disturb* or abnormal* or unable or inability* or low* or reduc* or loss or absen* or dry or weak* or retrograd* or backward* or back or problem*)).tw.
13	((sperm* or semen* or seminal) adj2 (release* or discharge* or expulsion* or expel* or emission* or emit* or eject*) adj4 (fail* or disorder* or dysfunction* or disturb* or abnormal* or unable or inability* or low* or reduc* or loss or absen* or dry or weak* or retrograd* or backward* or back or problem*)).tw.
14	(((((seminal or mullerian or reproduct* or genital*) adj2 (duct* or vesicle* or tract*)) or vas* deferen* or duct* deferen* or vasal* or epididym* or sperm* or ejaculat*) adj4 (block* or cyst* or obstruct* or atresia or atroph* or disorder* or dysfunction* or disturb* or problem*)).tw.
15	or/8-14
16	adrenergic receptor stimulating agent/ or alpha adrenergic receptor stimulating agent/ or alpha 1 adrenergic receptor stimulating agent/ or alpha 2 adrenergic receptor stimulating agent/
17	((adrenergic or adrenoceptor or adrenogenic or adrenomimetic or aminergic or noradrenergic or noradrenalin or alpha*) adj4 (agonist* or agent* or stimula*)).tw.
18	(sympathomimetic* or sympathicomimetic* or sympathetic* or sympathotropic*).tw.
19	imipramine/
20	(imipramin* or imipramide* or imidobenzyle* or imizin* or janimine* or melipramin* or norchlorimipramine* or prylegan* or tofranil* or antidepress* or anti-depress* or apo-imipramine* or berkomin* or chrytemin* or daypress* or deprinol* or depso* or depsonil* or ethipramine* or fronil* or "ia pram*" or trofanil*).tw.
21	Ephedrine/ or ephedrine derivative/
22	(ephedrin* or ef?drin* or pseudoephedrine* or isoephedrine* or sudafed* or sal-phedrine* or galpseud*).tw.
23	physostigmine/
24	(physostigmin* or physiosstigmin* or eserin*).tw.
25	neostigmine/
26	(neostigmin* or prostigmin* or polstigmin* or proserin* or prozerin* or synstigmin* or syntostigmin*).tw.
27	midodrine/
28	(midodrin* or midon* or proamatine* or amatine* or gutron* or bramox*).tw.
29	phenylephrine/
30	(phenylephrine* or metaoxedrin* or metasympatol* or mezzaton* or "neo synephrine*").tw.
31	exp acetylcholine release inhibitor/ or exp muscarinic agent/
32	cholinergic receptor stimulating agent/
33	exp cholinergic receptor blocking agent/ or exp cholinesterase inhibitor/
34	(muscarin* or parasympath* or ((cholinesterase* or acetylcholine* or choline or cholinergic) adj2 (block* or inhibit* or antagonist* or drug* or agent*)) or anti-cholinergic* or anticholinergic* or anticholesterinase* or anti-cholesterinase* or anticholinesterase* or anti-cholinesterase* or cholinolytic* or botox* or (botulinum adj1 (toxin* or neurotoxin*)) or meditoxin* or bethanechol* or bocouture* or letybo* or xeomin* or azzalure* or dysport*).tw.
35	antihistaminic agent/ or histamine h1 receptor antagonist/ or histamine h2 receptor antagonist/ or histamine h3 receptor antagonist/
36	((anti-histamin* or antihistamin* or (histamin* or h1* or h2* or h3*)) adj4 (antagonist* or blocker* or blockader*).tw.
37	pheniramine/ or phenylpropanolamine/ or brompheniramine/ or chlorpheniramine/
38	(milodrin* or gutron* or pheniramine* or daneral* or histapyridamine* or propheniramine* or prophenpyridamine* or bimalate* or phenylpropanolami* or phenylpropylolamine* or dexatrim* or norephedrine* or prolamine* or propages* or triaminic* or chlorpheniramine* or chlorphenamine* or chlorpro* or teldrin* or phenylpropanolami* or phenylpropylolamine* or ornade* or brompheniramine* or dimeta*).tw.
39	bicarbonate/
40	osmolarity/ or urine osmolarity/ or urine pH/ or pH/
41	((sodium adj1 carbonate) or bicarb* or esscarb* or baking soda* or baros or carbex or colevac or dicarbonate or hydrocarbonate or "hydrogen carbonate" or meylon).tw.
42	(urin* adj4 (PH or prepar* or alkalin* or neutral* or hyperosmolar* or osmol* or isotonic*)).tw.
43	physical stimulation/
44	electrostimulation/ or electrotherapy/
45	vibration/ or vibration therapy/
46	((assist* or vibr* or electr*) adj2 (ejaculat* or stimulat*)) or electroejaculat* or vibroejaculat* or EEJ or PVS).tw.

#	Searches
47	(ejaculat* adj2 stimulat*).tw.
48	transurethral resection/ and ejaculatory duct/
49	ejaculatory duct/su
50	(TURED or ((Transurethral or trans-urethral) and ejaculatory duct*)).tw.
51	or/16-50
52	7 or 15
53	51 and 52
54	letter.pt. or letter/
55	note.pt.
56	editorial.pt.
57	case report/ or case study/
58	(letter or comment*).ti.
59	or/54-58
60	randomized controlled trial/ or random*.ti,ab.
61	59 not 60
62	animal/ not human/
63	nonhuman/
64	exp Animal Experiment/
65	exp Experimental Animal/
66	animal model/
67	exp Rodent/
68	(rat or rats or rodent* or mouse or mice).ti.
69	or/61-68
70	53 not 69
71	limit 70 to english language
72	(conference abstract* or conference review or conference paper or conference proceeding).db,pt,su.
73	71 not 72
74	systematic review/
75	meta-analysis/
76	(meta analy* or metanaly* or metaanaly*).ti,ab.
77	((systematic or evidence) adj2 (review* or overview*)).ti,ab.
78	(reference list* or bibliograph* or hand search* or manual search* or relevant journals).ab.
79	(search strategy or search criteria or systematic search or study selection or data extraction).ab.
80	(search* adj4 literature).ab.
81	(medline or pubmed or cochrane or embase or psychlit or psyclit or psychinfo or psycinfo or cinahl or science citation index or bids or cancerlit).ab.
82	((pool* or combined) adj2 (data or trials or studies or results)).ab.
83	cochrane.jw.
84	or/74-83
85	random*.ti,ab.
86	factorial*.ti,ab.
87	(crossover* or cross over*).ti,ab.
88	((doubl* or singl*) adj blind*).ti,ab.
89	(assign* or allocat* or volunteer* or placebo*).ti,ab.
90	crossover procedure/
91	single blind procedure/
92	randomized controlled trial/
93	double blind procedure/
94	or/85-93
95	73 and (84 or 94)
96	Clinical study/
97	Case control study/
98	Family study/
99	Longitudinal study/

#	Searches
100	Retrospective study/
101	comparative study/
102	Prospective study/
103	Randomized controlled trials/
104	102 not 103
105	Cohort analysis/
106	cohort analy\$.tw.
107	(Cohort adj (study or studies)).tw.
108	(Case control\$ adj (study or studies)).tw.
109	(follow up adj (study or studies)).tw.
110	(observational adj (study or studies)).tw.
111	(epidemiologic\$ adj (study or studies)).tw.
112	(cross sectional adj (study or studies)).tw.
113	case series.tw.
114	prospective.tw.
115	retrospective.tw.
116	or/96-101,104-115
117	73 and 116
118	117 not 95

Database: Cochrane Database of Systematic Reviews, Issue 6 of 12, June 2024

Date of last search: 03/06/2024

#	Searches
1	MeSH descriptor: [Male] explode all trees
2	MeSH descriptor: [Men] this term only
3	MeSH descriptor: [Sexual and Gender Minorities] explode all trees
4	{or #1-#3}
5	MeSH descriptor: [Infertility] this term only
6	MeSH descriptor: [Fertility] this term only
7	{or #5-#6}
8	#4 and #7
9	MeSH descriptor: [Infertility, Male] explode all trees
10	((male* or men or man or transgender* or trans next gender* or transwomen or transwoman or transfemale* or transfeminine or transperson* or transpeople or transsex* or intersex* or inter next sex* or nonbinary or "non binary" or TGNB or genderqueer* or "two spirit" or sex next reassign* or "assigned male at birth" or AMAB or agender) near/4 (infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*)):ti,ab
11	((trans or transgender*) near/1 (woman or women or female* or feminin* or person* or people or sex* or patient* or identit* or nonbinary or "non binary") near/4 (infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*)):ti,ab
12	(gender near/1 (expansive* or queer* or nonconform* or non next conform* or dysphori* or fluid* or divers* or neutral or reassign* or affirm* or variance* or incongruent or minorit* or transition*) near/4 (infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*)):ti,ab
13	(aspermia or azoosperm* or ogliospermi* or hyospermi* or "oglio-astheno-teratozoospermia" or oligoastheno-teratozoospermi*):ti,ab
14	{or #8-#13}
15	MeSH descriptor: [Ejaculation] this term only
16	MeSH descriptor: [Ejaculatory Ducts] this term only and with qualifier(s): [abnormalities - AB]
17	MeSH descriptor: [Ejaculatory Dysfunction] this term only
18	MeSH descriptor: [Retrograde Ejaculation] this term only
19	anejaculat*:ti,ab
20	(ejaculat* near/4 (fail* or disorder* or dysfunction* or disturb* or abnormal* or unable or inabilit* or low* or reduc* or loss or absen* or dry or weak* or retrograd* or backward* or back or problem*)):ti,ab
21	((sperm* or semen* or seminal) near/2 (release* or discharge* or expulsion* or expel* or emission* or emit* or eject*) near/4 (fail* or disorder* or dysfunction* or disturb* or abnormal* or unable or inabilit* or low* or reduc* or loss or absen* or dry or weak* or retrograd* or backward* or back or problem*)):ti,ab

#	Searches
22	(((seminal or mullerian or reproduct* or genital*) near/2 (duct* or vesicle* or tract*)) or (vas* next deferen*) or (duct* next deferen*) or vasal* or epididym* or sperm* or ejaculat*) near/4 (block* or cyst* or obstruct* or atresia or atroph* or disorder* or dysfunction* or disturb* or problem*)):ti,ab
23	{or #15-#22}
24	MeSH descriptor: [Adrenergic Agents] this term only
25	MeSH descriptor: [Adrenergic Agonists] this term only
26	MeSH descriptor: [Adrenergic alpha-Agonists] this term only
27	MeSH descriptor: [Adrenergic alpha-1 Receptor Agonists] this term only
28	MeSH descriptor: [Adrenergic alpha-2 Receptor Agonists] this term only
29	((adrenergic or adrenoceptor or adrenogenic or adrenomimetic or aminergic or noradrenergic or noradrenalin or alpha*) near/4 (agonist* or agent* or stimula*)):ti,ab
30	MeSH descriptor: [Sympathomimetics] this term only
31	(sympathomimetic* or sympathicomimetic* or sympathetic* or sympathotropic*):ti,ab
32	MeSH descriptor: [Imipramine] this term only
33	(imipramin* or imipramide* or imidobenzyle* or imizin* or janimine* or melipramin* or norchlorimipramine* or pryleugan* or tofranil* or antidepress* or (anti next depress*) or (apo next imipramine*) or berkomin* or chrytemin* or daypress* or deprinol* or depsol* or depsonil* or ethipramine* or fronil* or (ia next pram*) or trofanil*):ti,ab
34	MeSH descriptor: [Ephedrine] this term only
35	MeSH descriptor: [Pseudoephedrine] this term only
36	(ephedrin* or efedrin* or efidrin* or pseudoephedrine* or isoephedrine* or sudafed* or (sal next phedrine*) or galpseud*):ti,ab
37	MeSH descriptor: [Physostigmine] this term only
38	(physostigmin* or physiosstigmin* or eserin*):ti,ab
39	MeSH descriptor: [Neostigmine] this term only
40	(neostigmin* or prostigmin* or polstigmin* or proserin* or prozerin* or synstigmin* or syntostigmin*):ti,ab
41	MeSH descriptor: [Midodrine] this term only
42	(midodrin* or midon* or proamatine* or amatine* or gutron* or bramox*):ti,ab
43	MeSH descriptor: [Phenylephrine] this term only
44	(phenylephrine* or metaoxedrin* or metasympatol* or mezon* or (neo next synephrine*)):ti,ab
45	MeSH descriptor: [Acetylcholine Release Inhibitors] explode all trees
46	MeSH descriptor: [Muscarinic Agonists] explode all trees
47	MeSH descriptor: [Parasympathomimetics] this term only
48	MeSH descriptor: [Muscarine] this term only
49	MeSH descriptor: [Cholinergic Antagonists] explode all trees
50	MeSH descriptor: [Cholinesterase Inhibitors] explode all trees
51	(muscarin* or parasympath* or ((cholinesterase* or acetylcholine* or choline or cholinergic) near/2 (block* or inhibit* or antagonist* or drug* or agent*)) or (anti next cholinergic*) or anticholinergic* or anticholesterinase* or (anti next cholesterinase*) or anticholinesterase* or (anti next cholinesterase*) or cholinolytic* or botox* or (botulinum near/1 (toxin* or neurotoxin*)) or meditoxin* or bethanechol* or bocouture* or letybo* or xeomin* or azzalure* or dysport*):ti,ab
52	MeSH descriptor: [Histamine Antagonists] this term only
53	MeSH descriptor: [Histamine H1 Antagonists] this term only
54	MeSH descriptor: [Histamine H2 Antagonists] this term only
55	MeSH descriptor: [Histamine H3 Antagonists] this term only
56	(((anti next histamin*) or antihistamin* or (histamin* or h1* or h2* or h3*)) near/4 (antagonist* or blocker* or blockader*)):ti,ab
57	MeSH descriptor: [Pheniramine] explode all trees
58	MeSH descriptor: [Phenylpropanolamine] this term only
59	(milodrin* or gutron* or pheniramine* or daneral* or histapyridamine* or propheniramine* or prophenpyridamine* or bimalate* or phenylpropanolami* or phenylpropylolamine* or dexatrim* or norephedrine* or prolamine* or propagest* or triaminic* or chlorpheniramine* or chlorphenamine* or chlorpro* or teldrin* or phenylpropanolami* or phenylpropylolamine* or ornade* or brompheniramine* or dimeta*):ti,ab
60	MeSH descriptor: [Bicarbonates] explode all trees
61	MeSH descriptor: [Osmolar Concentration] this term only
62	MeSH descriptor: [Hydrogen-Ion Concentration] this term only
63	((sodium near/1 carbonate) or bicarb* or esscarb* or (baking next soda*) or baros* or carbex* or colevac* or dicarbonate* or hydrocarbonate* or (hydrogen next carbonate*) or meylon*):ti,ab
64	(urin* near/4 (PH or prepar* or alkalin* or neutral* or hyperosmolar* or osmol* or isotonic*)):ti,ab

#	Searches
65	MeSH descriptor: [Physical Stimulation] this term only
66	MeSH descriptor: [Electric Stimulation] this term only
67	MeSH descriptor: [Electric Stimulation Therapy] this term only
68	MeSH descriptor: [Vibration] this term only
69	((assist* or vibr* or electr*) near/2 (ejaculat* or stimulat*)) or electroejaculat* or vibroejaculat* or EEJ or PVS):ti,ab
70	(ejaculat* near/2 stimulat*):ti,ab
71	MeSH descriptor: [Ejaculatory Ducts] this term only and with qualifier(s): [surgery - SU]
72	(TURED or ((Transurethral or "trans urethral" or "trans-urethral") and (ejaculatory next duct*))) :ti,ab
73	{or #24-#72}
74	#14 or #23
75	#74 and #73
76	((clinicaltrials or trialsearch* or trial-registry or trials-registry or clinicalstudies or trialsregister* or trialregister* or trial-number* or studyregister* or study-register* or controlled-trials-com or current-controlled-trial or AMCTR or ANZCTR or ChiCTR* or CRIS or CTIS or CTRL* or DRKS* or EU-CTR* or EUCTR* or EUDRACT* or ICTRP or IRCT* or JAPIC* or JMCTR* or JRCT or ISRCTN* or LBCTR* or NTR* or ReBec* or REPEC* or RPCEC* or SLCTR or TCTR* or UMIN*):so or (ctgov or ictrp)):an
77	#75 not #76
78	"conference":pt
79	#77 not #78 in Cochrane Reviews

Database: Cochrane Central Register of Controlled Trials, Issue 5 of 12, May 2024

Date of last search: 03/06/2024

#	Searches
1	MeSH descriptor: [Male] explode all trees
2	MeSH descriptor: [Men] this term only
3	MeSH descriptor: [Sexual and Gender Minorities] explode all trees
4	{or #1-#3}
5	MeSH descriptor: [Infertility] this term only
6	MeSH descriptor: [Fertility] this term only
7	{or #5-#6}
8	#4 and #7
9	MeSH descriptor: [Infertility, Male] explode all trees
10	((male* or men or man or transgender* or trans next gender* or transwomen or transwoman or transfemale* or transfeminine or transperson* or transpeople or transsex* or intersex* or inter next sex* or nonbinary or "non binary" or TGNB or genderqueer* or "two spirit" or sex next reassign* or "assigned male at birth" or AMAB or agender) near/4 (infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*)):ti,ab
11	((trans or transgender*) near/1 (woman or women or female* or feminin* or person* or people or sex* or patient* or identit* or nonbinary or "non binary") near/4 (infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*)):ti,ab
12	(gender near/1 (expansive* or queer* or nonconform* or non next conform* or dysphori* or fluid* or divers* or neutral or reassign* or affirm* or variance* or Incongruent or minorit* or transition*) near/4 (infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*)):ti,ab
13	(aspermia or azoosperm* or ogliospermi* or hypospermi* or "oglio-astheno-teratozoospermia" or oligoasthenoteratozoospermi*):ti,ab
14	{or #8-#13}
15	MeSH descriptor: [Ejaculation] this term only
16	MeSH descriptor: [Ejaculatory Ducts] this term only and with qualifier(s): [abnormalities - AB]
17	MeSH descriptor: [Ejaculatory Dysfunction] this term only
18	MeSH descriptor: [Retrograde Ejaculation] this term only
19	anejaculat*:ti,ab
20	(ejaculat* near/4 (fail* or disorder* or dysfunction* or disturb* or abnormal* or unable or inabilit* or low* or reduc* or loss or absen* or dry or weak* or retrograd* or backward* or back or problem*)):ti,ab
21	((sperm* or semen* or seminal) near/2 (release* or discharge* or expulsion* or expel* or emission* or emit* or eject*) near/4 (fail* or disorder* or dysfunction* or disturb* or abnormal* or unable or inabilit* or low* or reduc* or loss or absen* or dry or weak* or retrograd* or backward* or back or problem*)):ti,ab
22	(((((seminal or mullerian or reproduct* or genital*) near/2 (duct* or vesicle* or tract*)) or (vas* next deferen*) or (duct* next deferen*) or vasal* or epididym* or sperm* or ejaculat*) near/4 (block* or cyst* or obstruct* or atresia or atroph*

#	Searches
	or disorder* or dysfunction* or disturb* or problem*)):ti,ab
23	{or #15-#22}
24	MeSH descriptor: [Adrenergic Agents] this term only
25	MeSH descriptor: [Adrenergic Agonists] this term only
26	MeSH descriptor: [Adrenergic alpha-Agonists] this term only
27	MeSH descriptor: [Adrenergic alpha-1 Receptor Agonists] this term only
28	MeSH descriptor: [Adrenergic alpha-2 Receptor Agonists] this term only
29	((adrenergic or adrenoceptor or adrenergic or adrenomimetic or aminergic or noradrenergic or noradrenalin or alpha*) near/4 (agonist* or agent* or stimula*)):ti,ab
30	MeSH descriptor: [Sympathomimetics] this term only
31	(sympathomimetic* or sympathicomimetic* or sympathetic* or sympathotropic*):ti,ab
32	MeSH descriptor: [Imipramine] this term only
33	(imipramin* or imipramide* or imidobenzyle* or imizin* or janimine* or melipramin* or norchlorimipramine* or pryleugan* or tofranil* or antidepress* or (anti next depress*) or (apo next imipramine*) or berkomin* or chrytemin* or daypress* or deprinol* or deposal* or depsonil* or ethipramine* or fronil* or (ia next pram*) or trofanil*):ti,ab
34	MeSH descriptor: [Ephedrine] this term only
35	MeSH descriptor: [Pseudoephedrine] this term only
36	(ephedrin* or efedrin* or efidrin* or pseudoephedrine* or isoephedrine* or sudafed* or (sal next phedrine*) or galpseud*):ti,ab
37	MeSH descriptor: [Physostigmine] this term only
38	(physostigmin* or physostigmin* or eserin*):ti,ab
39	MeSH descriptor: [Neostigmine] this term only
40	(neostigmin* or prostigmin* or polstigmin* or proserin* or prozerin* or synstigmin* or syntostigmin*):ti,ab
41	MeSH descriptor: [Midodrine] this term only
42	(midodrin* or midon* or proamatine* or amatine* or gutron* or bramox*):ti,ab
43	MeSH descriptor: [Phenylephrine] this term only
44	(phenylephrine* or metaoxedrin* or metasymptol* or mezatone* or (neo next synephrine*)):ti,ab
45	MeSH descriptor: [Acetylcholine Release Inhibitors] explode all trees
46	MeSH descriptor: [Muscarinic Agonists] explode all trees
47	MeSH descriptor: [Parasympathomimetics] this term only
48	MeSH descriptor: [Muscarine] this term only
49	MeSH descriptor: [Cholinergic Antagonists] explode all trees
50	MeSH descriptor: [Cholinesterase Inhibitors] explode all trees
51	(muscarin* or parasympath* or ((cholinesterase* or acetylcholine* or choline or cholinergic) near/2 (block* or inhibit* or antagonist* or drug* or agent*)) or (anti next cholinergic*) or anticholinergic* or anticholinesterase* or (anti next cholinesterase*) or anticholinesterase* or (anti next cholinesterase*) or cholinolytic* or botox* or (botulinum near/1 (toxin* or neurotoxin*)) or meditoxin* or bethanechol* or bocouture* or letybo* or xeomin* or azzalure* or dysport*):ti,ab
52	MeSH descriptor: [Histamine Antagonists] this term only
53	MeSH descriptor: [Histamine H1 Antagonists] this term only
54	MeSH descriptor: [Histamine H2 Antagonists] this term only
55	MeSH descriptor: [Histamine H3 Antagonists] this term only
56	((anti next histamin*) or antihistamin* or (histamin* or h1* or h2* or h3*)) near/4 (antagonist* or blocker* or blockader*)):ti,ab
57	MeSH descriptor: [Pheniramine] explode all trees
58	MeSH descriptor: [Phenylpropanolamine] this term only
59	(milodrin* or gutron* or pheniramine* or daneral* or histapyridamine* or propheniramine* or prophenpyridamine* or bimalate* or phenylpropanolami* or phenylpropylolamine* or dexatrim* or norephedrine* or prolamine* or propages* or triaminic* or chlorpheniramine* or chlorphenamine* or chlorpro* or teldrin* or phenylpropanolami* or phenylpropylolamine* or ornade* or brompheniramine* or dimeta*):ti,ab
60	MeSH descriptor: [Bicarbonates] explode all trees
61	MeSH descriptor: [Osmolar Concentration] this term only
62	MeSH descriptor: [Hydrogen-Ion Concentration] this term only
63	((sodium near/1 carbonate) or bicarb* or esscarb* or (baking next soda*) or baros* or carbex* or colevac* or dicarbonate* or hydrocarbonate* or (hydrogen next carbonate*) or meylon*):ti,ab
64	(urin* near/4 (PH or prepar* or alkaline* or neutral* or hyperosmolar* or osmol* or isotonic*)):ti,ab
65	MeSH descriptor: [Physical Stimulation] this term only
66	MeSH descriptor: [Electric Stimulation] this term only

#	Searches
67	MeSH descriptor: [Electric Stimulation Therapy] this term only
68	MeSH descriptor: [Vibration] this term only
69	((assist* or vibr* or electr*) near/2 (ejaculat* or stimulat*)) or electroejaculat* or vibroejaculat* or EEJ or PVS):ti,ab
70	(ejaculat* near/2 stimulat*):ti,ab
71	MeSH descriptor: [Ejaculatory Ducts] this term only and with qualifier(s): [surgery - SU]
72	(TURED or ((Transurethral or "trans urethral" or "trans-urethral") and (ejaculatory next duct*)):ti,ab
73	{or #24-#72}
74	#14 or #23
75	#74 and #73
76	((clinicaltrials or trialsearch* or trial-registry or trials-registry or clinicalstudies or trialsregister* or trialregister* or trial-number* or studyregister* or study-register* or controlled-trials-com or current-controlled-trial or AMCTR or ANZCTR or ChiCTR* or CRIS or CTIS or CTRL* or DRKS* or EU-CTR* or EUCTR* or EUDRACT* or ICTRP or IRCT* or JAPIC* or JMCTR* or JRCT or ISRCTN* or LBCTR* or NTR* or ReBec* or REPEC* or RPCEC* or SLCTR or TCTR* or UMIN*):so or (ctgov or ictrp)):an
77	#75 not #76
78	"conference":pt
79	#77 not #78 in Trials

Database: Epistemonikos (search 1)

Date of last search: 03/06/2024

#	Searches
1	(infertil* OR subfertil* OR fertil* OR hypofertil* OR subfecund* OR fecund* OR infecund* OR steril* OR aspermia OR azoosperm* OR ogliospermi* OR hypospermi* OR "oglio-astheno-teratozoospermia" OR oligoasthenoteratozoospermi* OR anejaculat* OR ((ejaculat* OR sperm* OR semen* OR seminal) AND (fail* OR disorder* OR dysfunction* OR disturb* OR abnormal* OR unable OR inability* OR low* OR reduc* OR loss OR absent* OR dry OR weak* OR retrograd* OR backward* OR back OR problem*)) OR ((seminal OR mullerian OR reproduct* OR genital* OR "vas deferens" OR "vasal deferens" OR "duct deferens" OR "ductal deferens" OR vasal* OR epididym* OR sperm* OR ejaculat*) AND (block* OR cyst* OR obstruct* OR atresia OR atroph* OR disorder* OR dysfunction* OR disturb* OR problem*))
2	((adrenergic OR adrenoceptor OR adrenergic OR adrenomimetic OR aminergic OR noradrenergic OR noradrenalin OR alpha*) AND (agonist* OR agent* OR stimula*)) OR sympathomimetic* OR sympathicomimetic* OR sympathetic* OR sympathotropic* OR imipramin* OR imipramide* OR imidobenzyle* OR imizin* OR janimine* OR melipramin* OR norchlorimipramine* OR pryleugan* OR tofranil* OR antidepress* OR (anti AND depress*) OR (apo AND imipramine*) OR berkomin* OR chrytemin* OR daypress* OR deprinol* OR depso* OR depsonil* OR ethipramine* OR fronil* OR (ia AND pram*) OR trofanil* OR ephedrin* OR efedrin* OR efidrin* OR pseudoephedrine* OR isoephedrine* OR sudafed* OR (sal AND phedrine*) OR galpseud* OR physostigmin* OR physostigmin* OR eserin* OR neostigmin* OR prostigmin* OR polstigmin* OR proserin* OR prozerin* OR synstigmin* OR syntostigmin* OR midodrin* OR midon* OR proamatine* OR amatine* OR gutron* OR bramox* OR phenylephrine* OR metaoxedrin* OR metasympatol* OR mezaton* OR (neo AND synephrine*))
3	1 AND 2
4	Limit to Systematic Reviews

Database: Epistemonikos (search 2)

Date of last search: 03/06/2024

#	Searches
1	(infertil* OR subfertil* OR fertil* OR hypofertil* OR subfecund* OR fecund* OR infecund* OR steril* OR aspermia OR azoosperm* OR ogliospermi* OR hypospermi* OR "oglio-astheno-teratozoospermia" OR oligoasthenoteratozoospermi* OR anejaculat* OR ((ejaculat* OR sperm* OR semen* OR seminal) AND (fail* OR disorder* OR dysfunction* OR disturb* OR abnormal* OR unable OR inability* OR low* OR reduc* OR loss OR absent* OR dry OR weak* OR retrograd* OR backward* OR back OR problem*)) OR ((seminal OR mullerian OR reproduct* OR genital* OR "vas deferens" OR "vasal deferens" OR "duct deferens" OR "ductal deferens" OR vasal* OR epididym* OR sperm* OR ejaculat*) AND (block* OR cyst* OR obstruct* OR atresia OR atroph* OR disorder* OR dysfunction* OR disturb* OR problem*))
2	(muscarin* OR parasympath*((cholinesterase* OR acetylcholine* OR choline OR cholinergic) AND (block* OR inhibit* OR antagonist* OR drug* OR agent*)) OR (anti AND cholinergic*) OR anticholinergic* OR anticholesterinase* OR (anti AND cholesterinase*) OR anticholinesterase* OR (anti AND cholinesterase*) OR cholinolytic* OR botox* OR botulinum OR meditoxin* OR bethanechol* OR bocouture* OR letybo* OR xeomin* OR

#	Searches
	azzalure* OR dysport* OR (anti AND histamin*) OR antihistamin* OR ((histamin* OR h1* OR h2* OR h3*) AND (antagonist* OR blocker* OR blockader*)) OR milodrin* OR gutron* OR pheniramine* OR daneral* OR histapyridamine* OR propheniramine* OR prophenpyridamine* OR bimalate* OR phenylpropanolami* OR phenylpropylolamine* OR dexatrim* OR norephedrine* OR prolamine* OR propagest* OR triaminic* OR chlorpheniramine* OR chlorphenamine* OR chlorpro* OR teldrin* OR phenylpropanolami* OR phenylpropylolamine* OR ornade* OR brompheniramine* OR dimeta*)
3	1 AND 2
4	Limit to Systematic Reviews

Database: Epistemonikos (search 3)

Date of last search: 03/06/2024

#	Searches
1	(infertil* OR subfertil* OR fertil* OR hypofertil* OR subfecund* OR fecund* OR infecund* OR steril* OR aspermia OR azoosperm* OR ogliospermi* OR hypospermi* OR "oglio-astheno-teratozoospermia" OR oligoasthenoteratozoospermi* OR anejaculat* OR ((ejaculat* OR sperm* OR semen* OR seminal) AND (fail* OR disorder* OR dysfunction* OR disturb* OR abnormal* OR unable OR inabilit* OR low* OR reduc* OR loss OR absen* OR dry OR weak* OR retrograd* OR backward* OR back OR problem*)) OR ((seminal OR mullerian OR reproduct* OR genital* OR "vas deferens" OR "vasal deferens" OR "duct deferens" OR "ductal deferens" OR vasal* OR epididym* OR sperm* OR ejaculat*) AND (block* OR cyst* OR obstruct* OR atresia OR atroph* OR disorder* OR dysfunction* OR disturb* OR problem*))
2	((sodium AND carbonate) OR bicarb* OR esscarb* OR "baking soda" OR baros* OR carbex* OR colevac* OR dicarbonate* OR hydrocarbonate* OR "hydrogen carbonate" OR meylon* OR (urin* AND (PH OR prepar* OR alkalin* OR neutral* OR hyperosmolar* OR osmol* OR isotonic*)) OR ((assist* OR vibr* OR electr*) AND (ejaculat* OR stimulat*)) OR electroejaculat* OR vibroejaculat* OR EEJ OR PVS OR (ejaculat* AND stimulat*) OR TURED OR ((Transurethral OR "trans urethral" OR "trans-urethral") AND (ejaculatory AND duct*))))
3	1 AND 2
4	Limit to Systematic Reviews

Health economic literature searches

Database: Ovid MEDLINE(R) ALL <1946 to June 04, 2024>

Date of last search: 05/06/2024

#	Searches
1	exp infertility, male/
2	(male/ or men/ or exp "Sexual and Gender Minorities"/) and (Infertility/ or fertility/)
3	((male? or men or man or transgender* or trans gender* or transwom?n or transfemale* or transfeminine or transperson* or transpeople or transsex* or intersex* or inter sex* or nonbinary or non binary or TGNB or genderqueer* or two spirit or sex reassign* or "assigned male at birth" or AMAB or agender) adj4 (infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*).tw.
4	((trans or transgender*) adj1 (wom?n or female* or feminin* or person* or people or sex* or patient* or identit* or nonbinary or "non binary") adj4 (infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*).tw.
5	(gender adj1 (expansive* or queer* or nonconform* or "non conform*" or dysphori* or fluid* or divers* or neutral or reassign* or affirm* or variance* or Incongruent or minorit* or transition*) adj4 (infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*).tw.
6	(aspermia or azoosperm* or ogliospermi* or hypospermi* or oglio-astheno-teratozoospermi* or oligoasthenoteratozoospermi*).tw.
7	or/1-6
8	Ejaculation/ or Ejaculatory Ducts/ab
9	Ejaculatory Dysfunction/ or Retrograde Ejaculation/
10	anejaculat*.tw.
11	(ejaculat* adj4 (fail* or disorder* or dysfunction* or disturb* or abnormal* or unable or inabilit* or low* or reduc* or loss or absen* or dry or weak* or retrograd* or backward* or back or problem*).tw.
12	((sperm* or semen* or seminal) adj2 (release* or discharge* or expulsion* or expel* or emission* or emit* or eject*) adj4 (fail* or disorder* or dysfunction* or disturb* or abnormal* or unable or inabilit* or low* or reduc* or loss or

#	Searches
	absen* or dry or weak* or retrograd* or backward* or back or problem*).tw.
13	(((((seminal or mullerian or reproduct* or genital*) adj2 (duct* or vesicle* or tract*))) or vas* deferen* or duct* deferen* or vasal* or epididym* or sperm* or ejaculat*) adj4 (block* or cyst* or obstruct* or atresia or atroph* or disorder* or dysfunction* or disturb* or problem*).tw.
14	or/8-13
15	Adrenergic Agents/ or adrenergic agonists/ or adrenergic alpha-agonists/ or adrenergic alpha-1 receptor agonists/ or adrenergic alpha-2 receptor agonists/
16	((adrenergic or adrenoceptor or adrenogenic or adrenomimetic or aminergic or noradrenergic or noradrenalin or alpha*) adj4 (agonist* or agent* or stimula*).tw.
17	Sympathomimetics/
18	(sympathomimetic* or sympathicomimetic* or sympathetic* or sympathotropic*).tw.
19	Imipramine/
20	(imipramin* or imipramide* or imidobenzyle* or imizin* or janimine* or melipramin* or norchlorimipramine* or pryleugan* or tofranil* or antidepress* or anti-depress* or apo-imipramine* or berkomin* or chrytemin* or daypress* or deprinol* or depzol* or depsonil* or ethipramine* or fronil* or "ia pram*" or trofanil*).tw.
21	Ephedrine/ or Pseudoephedrine/
22	(ephedrin* or ef?drin* or pseudoephedrine* or isoephedrine* or sudafed* or sal-phedrine* or galpseud*).tw.
23	Physostigmine/
24	(physostigmin* or physiosstigmin* or eserin*).tw.
25	Neostigmine/
26	(neostigmin* or prostigmin* or polstigmin* or proserin* or prozerin* or synstigmin* or syntostigmin*).tw.
27	Midodrine/
28	(midodrin* or midon* or proamatine* or amatine* or gutron* or bramox*).tw.
29	Phenylephrine/
30	(phenylephrine* or metaoxedrin* or metasympatol* or mezaton* or "neo synephrine*").tw.
31	exp acetylcholine release inhibitors/ or exp muscarinic agonists/
32	Parasympathomimetics/ or muscarine/
33	exp Cholinergic Antagonists/ or exp Cholinesterase Inhibitors/
34	(muscarin* or parasympath* or ((cholinesterase* or acetylcholine* or choline or cholinergic) adj2 (block* or inhibit* or antagonist* or drug* or agent*)) or anti-cholinergic* or anticholinergic* or anticholesterinase* or anti-cholesterinase* or anticholinesterase* or anti-cholinesterase* or cholinolytic* or botox* or (botulinum adj1 (toxin* or neurotoxin*)) or mediotxin* or bethanechol* or bocouture* or letybo* or xeomin* or azzalure* or dysport*).tw.
35	histamine antagonists/ or histamine h1 antagonists/ or histamine h2 antagonists/ or histamine h3 antagonists/
36	((anti-histamin* or antihistamin* or (histamin* or h1* or h2* or h3*)) adj4 (antagonist* or blocker* or blockader*).tw.
37	exp pheniramine/ or Phenylpropanolamine/
38	(milodrin* or gutron* or pheniramine* or daneral* or histapyridamine* or propheniramine* or prophenpyridamine* or bimateate* or phenylpropanolami* or phenylpropylolamine* or dexatrim* or norephedrine* or prolamine* or propagest* or triaminic* or chlorpheniramine* or chlorphenamine* or chlorpro* or teldrin* or phenylpropanolami* or phenylpropylolamine* or ornade* or brompheniramine* or dimeta*).tw.
39	exp bicarbonates/
40	Osmolar Concentration/ or Hydrogen-Ion Concentration/
41	((sodium adj1 carbonate) or bicarb* or esscarb* or baking soda* or baros* or carbex* or colevac* or dicarbonate* or hydrocarbonate* or hydrogen carbonate* or meylon*).tw.
42	(urin* adj4 (PH or prepar* or alkanin* or neutral* or hyperosmolar* or osmol* or isotonic*).tw.
43	Physical Stimulation/
44	Electric Stimulation/ or Electric Stimulation Therapy/
45	Vibration/
46	((assist* or vibr* or electr*) adj2 (ejaculat* or stimulat*)) or electroejaculat* or vibroejaculat* or EEJ or PVS).tw.
47	(ejaculat* adj2 stimulat*).tw.
48	Ejaculatory Ducts/su
49	(TURED or ((Transurethral or trans-urethral) and ejaculatory duct*).tw.
50	or/15-49
51	7 or 14
52	50 and 51
53	letter/
54	editorial/
55	news/
56	exp historical article/

#	Searches
57	Anecdotes as topic/
58	comment/
59	case reports/
60	(letter or comment*).ti.
61	or/53-60
62	randomized controlled trial/ or random*.ti,ab.
63	61 not 62
64	animals/ not humans/
65	exp Animals, Laboratory/
66	exp Animal Experimentation/
67	exp Models, Animal/
68	exp Rodentia/
69	(rat or rats or rodent* or mouse or mice).ti.
70	or/63-69
71	52 not 70
72	limit 71 to english language
73	Economics/
74	Value of life/
75	exp "Costs and Cost Analysis"/
76	exp Economics, Hospital/
77	exp Economics, Medical/
78	exp Resource Allocation/
79	Economics, Nursing/
80	Economics, Pharmaceutical/
81	exp "Fees and Charges"/
82	exp Budgets/
83	budget*.ti,ab.
84	cost*.ti,ab.
85	(economic* or pharmaco?economic*).ti,ab.
86	(price* or pricing*).ti,ab.
87	(financ* or fee or fees or expenditure* or saving*).ti,ab.
88	(value adj2 (money or monetary)).ti,ab.
89	resourc* allocat*.ti,ab.
90	(fund or funds or funding* or funded).ti,ab.
91	(ration or rations or rationing* or rationed).ti,ab.
92	ec.fs.
93	or/73-92
94	quality-adjusted life years/
95	sickness impact profile/
96	(quality adj2 (wellbeing or well being)).ti,ab.
97	sickness impact profile.ti,ab.
98	disability adjusted life.ti,ab.
99	(qal* or qtime* or qwb* or daly*).ti,ab.
100	(euroqol* or eq5d* or eq 5*).ti,ab.
101	(qol* or hqol* or hqol* or h qol* or hrqol* or hr qol*).ti,ab.
102	(health utility* or utility score* or disutilit* or utility value*).ti,ab.
103	(hui or hui1 or hui2 or hui3).ti,ab.
104	(health* year* equivalent* or hye or hyes).ti,ab.
105	discrete choice*.ti,ab.
106	rosser.ti,ab.
107	(willingness to pay or time tradeoff or time trade off or tto or standard gamble*).ti,ab.
108	(sf36* or sf 36* or short form 36* or shortform 36* or shortform36*).ti,ab.
109	(sf20 or sf 20 or short form 20 or shortform 20 or shortform20).ti,ab.
110	(sf12* or sf 12* or short form 12* or shortform 12* or shortform12*).ti,ab.

#	Searches
111	(sf8* or sf 8* or short form 8* or shortform 8* or shortform8*).ti,ab.
112	(sf6* or sf 6* or short form 6* or shortform 6* or shortform6*).ti,ab.
113	or/94-112
114	72 and (93 or 113)

Database: Embase <1974 to 2024 June 04>

Date of last search: 05/06/2024

#	Searches
1	exp male infertility/
2	(male/ or "sexual and gender minority"/ or "transgender and gender nonbinary"/) and (infertility/ or subfertility/)
3	((male? or men or man or transgender* or trans gender* or transwom?n or transfemale* or transfeminine or transperson* or transpeople or transsex* or intersex* or inter sex* or nonbinary or non binary or TGNB or genderqueer* or two spirit or sex reassign* or "assigned male at birth" or AMAB or agender) adj4 (infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*).tw.
4	((trans or transgender*) adj1 (wom?n or female* or feminin* or person* or people or sex* or patient* or identit* or nonbinary or "non binary") adj4 (infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*).tw.
5	(gender adj1 (expansive* or queer* or nonconform* or "non conform*" or dysphori* or fluid* or divers* or neutral or reassign* or affirm* or variance* or Incongruent or minorit* or transition*) adj4 (infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*).tw.
6	(aspermia or azoosperm* or ogliospermi* or hypospermi* or oglio-astheno-teratozoospermi* or oligoastheno-teratozoospermi*).tw.
7	or/1-6
8	ejaculation/
9	ejaculation disorder/
10	ejaculatory duct/ and obstruction/
11	anejaculat*.tw.
12	(ejaculat* adj4 (fail* or disorder* or dysfunction* or disturb* or abnormal* or unable or inabilit* or low* or reduc* or loss or absen* or dry or weak* or retrograd* or backward* or back or problem*).tw.
13	((sperm* or semen* or seminal) adj2 (release* or discharge* or expulsion* or expel* or emission* or emit* or eject*) adj4 (fail* or disorder* or dysfunction* or disturb* or abnormal* or unable or inabilit* or low* or reduc* or loss or absen* or dry or weak* or retrograd* or backward* or back or problem*).tw.
14	(((((seminal or mullerian or reproduct* or genital*) adj2 (duct* or vesicle* or tract*)) or vas* deferen* or duct* deferen* or vasal* or epididym* or sperm* or ejaculat*) adj4 (block* or cyst* or obstruct* or atresia or atroph* or disorder* or dysfunction* or disturb* or problem*).tw.
15	or/8-14
16	adrenergic receptor stimulating agent/ or alpha adrenergic receptor stimulating agent/ or alpha 1 adrenergic receptor stimulating agent/ or alpha 2 adrenergic receptor stimulating agent/
17	((adrenergic or adrenoceptor or adrenogenic or adrenomimetic or aminergic or noradrenergic or noradrenalin or alpha*) adj4 (agonist* or agent* or stimula*).tw.
18	(sympathomimetic* or sympathicomimetic* or sympathetic* or sympathotropic*).tw.
19	imipramine/
20	(imipramin* or imipramide* or imidobenzyle* or imizin* or janimine* or melipramin* or norchlorimipramine* or pryleun* or tofranil* or antidepress* or anti-depress* or apo-imipramine* or berkomin* or chrytemin* or daypress* or deprinol* or depsol* or depsonil* or ethipramine* or fronil* or "ia pram*" or trofanil*).tw.
21	Ephedrine/ or ephedrine derivative/
22	(ephedrin* or ef?drin* or pseudoephedrine* or isoephedrine* or sudafed* or sal-phedrine* or galpseud*).tw.
23	physostigmine/
24	(physostigmin* or physiosstigmin* or eserin*).tw.
25	neostigmine/
26	(neostigmin* or prostigmin* or polstigmin* or proserin* or prozerin* or synstigmin* or syntostigmin*).tw.
27	midodrine/
28	(midodrin* or midon* or proamatine* or amatine* or gutron* or bramox*).tw.
29	phenylephrine/
30	(phenylephrine* or metaoxedrin* or metasympatol* or mezaton* or "neo synephrine*").tw.
31	exp acetylcholine release inhibitor/ or exp muscarinic agent/

#	Searches
32	cholinergic receptor stimulating agent/
33	exp cholinergic receptor blocking agent/ or exp cholinesterase inhibitor/
34	(muscarin* or parasympath* or ((cholinesterase* or acetylcholine* or choline or cholinergic) adj2 (block* or inhibit* or antagonist* or drug* or agent*)) or anti-cholinergic* or anticholinergic* or anticholesterinase* or anti-cholesterinase* or anticholinesterase* or anti-cholinesterase* or cholinolytic* or botox* or (botulinum adj1 (toxin* or neurotoxin*)) or mediotxin* or bethanechol* or bocouture* or letybo* or xeomin* or azzalure* or dysport*).tw.
35	antihistaminic agent/ or histamine h1 receptor antagonist/ or histamine h2 receptor antagonist/ or histamine h3 receptor antagonist/
36	((anti-histamin* or antihistamin* or (histamin* or h1* or h2* or h3*)) adj4 (antagonist* or blocker* or blockader*).tw.
37	pheniramine/ or phenylpropanolamine/ or brompheniramine/ or chlorpheniramine/
38	(milodrin* or gutron* or pheniramine* or daneral* or histapyridamine* or propheniramine* or prophenpyridamine* or bimaleate* or phenylpropanolami* or phenylpropylolamine* or dexatrim* or norephedrine* or prolamine* or propagest* or triaminic* or chlorpheniramine* or chlorphenamine* or chlorpro* or teldrin* or phenylpropanolami* or phenylpropylolamine* or ornade* or brompheniramine* or dimeta*).tw.
39	bicarbonate/
40	osmolarity/ or urine osmolarity/ or urine pH/ or pH/
41	((sodium adj1 carbonate) or bicarb* or esscarb* or baking soda* or baros or carbex or colevac or dicarbonate or hydrocarbonate or "hydrogen carbonate" or meylon).tw.
42	(urin* adj4 (PH or prepar* or alkanin* or neutral* or hyperosmolar* or osmol* or isotonic*).tw.
43	physical stimulation/
44	electrostimulation/ or electrotherapy/
45	vibration/ or vibration therapy/
46	((assist* or vibr* or electr*) adj2 (ejaculat* or stimulat*)) or electroejaculat* or vibroejaculat* or EEJ or PVS).tw.
47	(ejaculat* adj2 stimulat*).tw.
48	transurethral resection/ and ejaculatory duct/
49	ejaculatory duct/su
50	(TURED or ((Transurethral or trans-urethral) and ejaculatory duct*).tw.
51	or/16-50
52	7 or 15
53	51 and 52
54	letter.pt. or letter/
55	note.pt.
56	editorial.pt.
57	case report/ or case study/
58	(letter or comment*).ti.
59	or/54-58
60	randomized controlled trial/ or random*.ti,ab.
61	59 not 60
62	animal/ not human/
63	nonhuman/
64	exp Animal Experiment/
65	exp Experimental Animal/
66	animal model/
67	exp Rodent/
68	(rat or rats or rodent* or mouse or mice).ti.
69	or/61-68
70	53 not 69
71	limit 70 to english language
72	(conference abstract* or conference review or conference paper or conference proceeding).db,pt,su.
73	71 not 72
74	health economics/
75	exp economic evaluation/
76	exp health care cost/
77	exp fee/
78	budget/
79	funding/

#	Searches
80	resource allocation/
81	budget*.ti,ab.
82	cost*.ti,ab.
83	(economic* or pharmaco?economic*).ti,ab.
84	(price* or pricing*).ti,ab.
85	(financ* or fee or fees or expenditure* or saving*).ti,ab.
86	(value adj2 (money or monetary)).ti,ab.
87	resourc* allocat*.ti,ab.
88	(fund or funds or funding* or funded).ti,ab.
89	(ration or rations or rationing* or rationed).ti,ab.
90	or/74-89
91	quality adjusted life year/
92	"quality of life index"/
93	short form 12/ or short form 20/ or short form 36/ or short form 8/
94	sickness impact profile/
95	(quality adj2 (wellbeing or well being)).ti,ab.
96	sickness impact profile.ti,ab.
97	disability adjusted life.ti,ab.
98	(qal* or qtime* or qwb* or daly*).ti,ab.
99	(euroqol* or eq5d* or eq 5*).ti,ab.
100	(qol* or hql* or hqol* or h qol* or hrqol* or hr qol*).ti,ab.
101	(health utility* or utility score* or disutilit* or utility value*).ti,ab.
102	(hui or hui1 or hui2 or hui3).ti,ab.
103	(health* year* equivalent* or hye or hyes).ti,ab.
104	discrete choice*.ti,ab.
105	rosser.ti,ab.
106	(willingness to pay or time tradeoff or time trade off or tto or standard gamble*).ti,ab.
107	(sf36* or sf 36* or short form 36* or shortform 36* or shortform36*).ti,ab.
108	(sf20 or sf 20 or short form 20 or shortform 20 or shortform20).ti,ab.
109	(sf12* or sf 12* or short form 12* or shortform 12* or shortform12*).ti,ab.
110	(sf8* or sf 8* or short form 8* or shortform 8* or shortform8*).ti,ab.
111	(sf6* or sf 6* or short form 6* or shortform 6* or shortform6*).ti,ab.
112	or/91-111
113	73 and (90 or 112)

Database: INAHTA

Date of last search: 05/06/2024

#	Searches
1	"male"[mh]
2	"men"[mh]
3	"Sexual and Gender Minorities"[mhe]
4	#3 OR #2 OR #1
5	"Infertility"[mh]
6	"Fertility"[mh]
7	#6 OR #5
8	#7 AND #4
9	"Infertility, Male"[mhe]
10	((male* or men or man or transgender* or "trans gender" or "trans genders" or "trans gendered" or transwoman or transwomen or transfemale* or transfeminine or transperson* or transpeople or transex* or intersex* or "inter sex" or "inter sexual" or nonbinary or "non binary" or TGNB or genderqueer* or "two spirit" or "sex reassign" or "sex reassigned" or "sex reassignment" or "sex reassignments" or "assigned male at birth" or AMAB or agender) and (infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*))

#	Searches
11	((trans or transgender*) and (woman or women or female* or feminin* or person* or people or sex* or patient* or identit* or nonbinary or "non binary") and (infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*))
12	(gender and (expansive* or queer* or nonconform* or "non conform" or "non conforming" or "non conformity" or dysphori* or fluid* or divers* or neutral or reassign* or affirm* or variance* or Incongruent or minorit* or transition*) and (infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*))
13	(aspermia or azoosperm* or ogliospermi* or hyospermi* or "oglio-astheno-teratozoospermia" or oligoasthenoteratozoospermi*)
14	"Ejaculation"[mh]
15	"Ejaculatory Ducts"[mh]
16	"Ejaculatory Dysfunction"[mh]
17	"Retrograde Ejaculation"[mh]
18	anejaculat*
19	(ejaculat* and (fail* or disorder* or dysfunction* or disturb* or abnormal* or unable or inabilit* or low* or reduc* or loss or absen* or dry or weak* or retrograd* or backward* or back or problem*))
20	(((((seminal or mullerian or reproduct* or genital*) and (duct* or vesicle* or tract*)) or vas* deferen* or duct* deferen* or vasal* or epididym* or sperm* or ejaculat*) and (block* or cyst* or obstruct* or atresia or atroph* or disorder* or dysfunction* or disturb* or problem*))
21	#20 OR #19 OR #18 OR #17 OR #16 OR #15 OR #14 OR #13 OR #12 OR #11 OR #10 OR #9 OR #8
22	Limit English language

Database: HTA via CRD

Date of last search: 05/06/2024

#	Searches
1	MESH DESCRIPTOR Male EXPLODE ALL TREES
2	MESH DESCRIPTOR Men
3	MESH DESCRIPTOR Sexual and Gender Minorities EXPLODE ALL TREES
4	#1 OR #2 OR #3
5	MESH DESCRIPTOR Infertility
6	MESH DESCRIPTOR Fertility
7	#5 OR #6
8	#4 and #7
9	MESH DESCRIPTOR Infertility, Male EXPLODE ALL TREES
10	((male* or men or man or transgender* or trans next gender* or transwomen or transwoman or transfemale* or transfeminine or transperson* or transpeople or transsex* or intersex* or inter next sex* or nonbinary or "non binary" or TGNB or genderqueer* or "two spirit" or sex next reassign* or "assigned male at birth" or AMAB or agender) near4 (infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*))
11	((trans or transgender*) near1 (woman or women or female* or feminin* or person* or people or sex* or patient* or identit* or nonbinary or "non binary") near4 (infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*))
12	(gender near1 (expansive* or queer* or nonconform* or non next conform* or dysphori* or fluid* or divers* or neutral or reassign* or affirm* or variance* or Incongruent or minorit* or transition*) near4 (infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*))
13	(aspermia or azoosperm* or ogliospermi* or hyospermi* or "oglio-astheno-teratozoospermia" or oligoasthenoteratozoospermi*)
14	#8 or #9 or #10 or #11 or #12 or #13
15	MESH DESCRIPTOR Ejaculation
16	MESH DESCRIPTOR Ejaculatory Ducts and with qualifier(s)
17	MESH DESCRIPTOR Ejaculatory Dysfunction
18	MESH DESCRIPTOR Retrograde Ejaculation
19	anejaculat*
20	(ejaculat* near4 (fail* or disorder* or dysfunction* or disturb* or abnormal* or unable or inabilit* or low* or reduc* or loss or absen* or dry or weak* or retrograd* or backward* or back or problem*))
21	((sperm* or semen* or seminal) near2 (release* or discharge* or expulsion* or expel* or emission* or emit* or eject*) near4 (fail* or disorder* or dysfunction* or disturb* or abnormal* or unable or inabilit* or low* or reduc* or loss or absen* or dry or weak* or retrograd* or backward* or back or problem*))
22	(((((seminal or mullerian or reproduct* or genital*) near2 (duct* or vesicle* or tract*)) or (vas* next deferen*) or (duct*

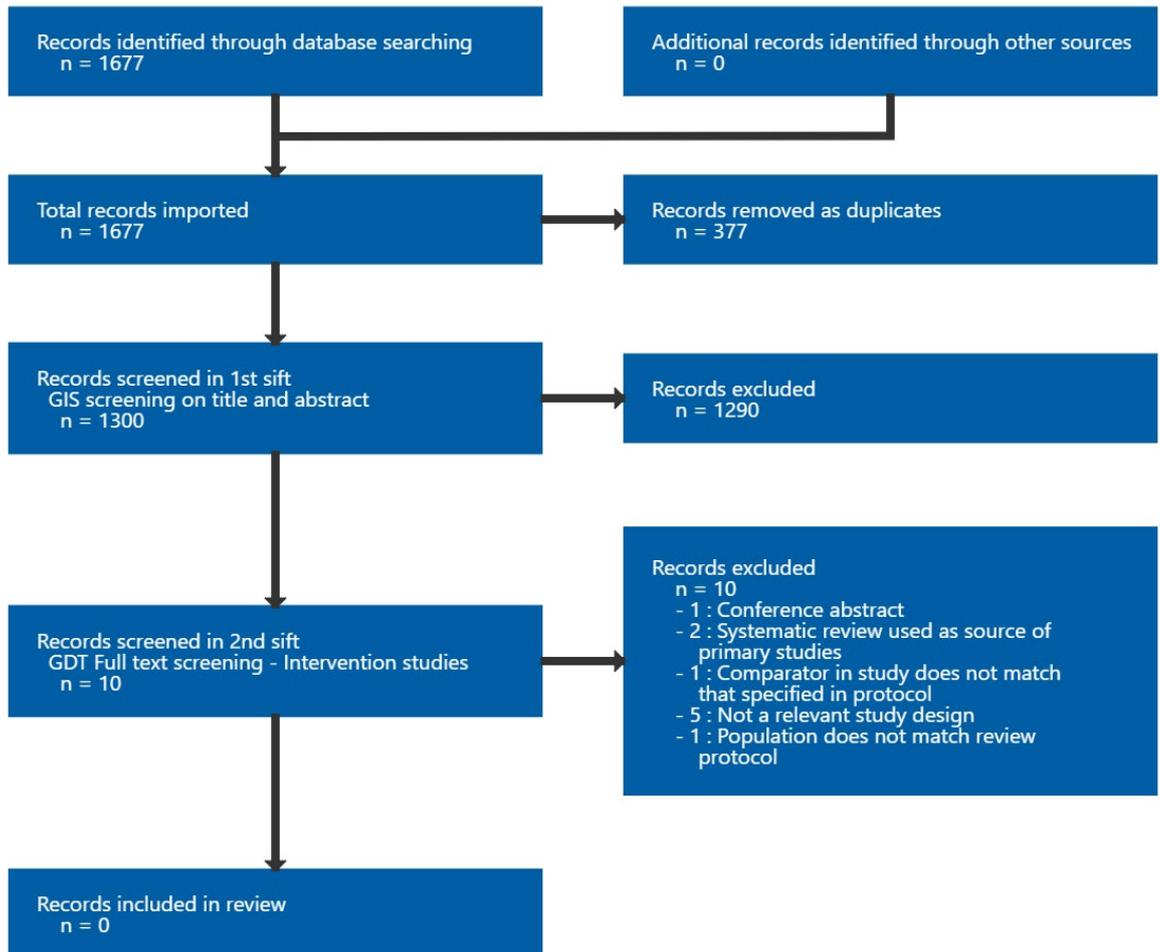
#	Searches
	next deferen*) or vasal* or epididym* or sperm* or ejaculat*) near4 (block* or cyst* or obstruct* or atresia or atroph* or disorder* or dysfunction* or disturb* or problem*))
23	#15 or #16 or #17 or #18 or #19 or #20 or #21 or #22
24	MESH DESCRIPTOR Adrenergic Agents
25	MESH DESCRIPTOR Adrenergic Agonists
26	MESH DESCRIPTOR Adrenergic alpha-Agonists
27	MESH DESCRIPTOR Adrenergic alpha-1 Receptor Agonists
28	MESH DESCRIPTOR Adrenergic alpha-2 Receptor Agonists
29	((adrenergic or adrenoceptor or adrenergic or adrenomimetic or aminergic or noradrenergic or noradrenalin or alpha*) near4 (agonist* or agent* or stimula*))
30	MESH DESCRIPTOR Sympathomimetics
31	(sympathomimetic* or sympathicomimetic* or sympathetic* or sympathotropic*)
32	MESH DESCRIPTOR Imipramine
33	(imipramin* or imipramide* or imidobenzyle* or imizin* or janimine* or melipramin* or norchlorimipramine* or prylegan* or tofranil* or antidepress* or (anti next depress*) or (apo next imipramine*) or berkomin* or chrytemin* or daypress* or deprinol* or depsol* or depsonil* or ethipramine* or fronil* or (ia next pram*) or trofanil*)
34	MESH DESCRIPTOR Ephedrine
35	MESH DESCRIPTOR Pseudoephedrine
36	(ephedrin* or efedrin* or efidrin* or pseudoephedrine* or isoephedrine* or sudafed* or (sal next phedrine*) or galpseud*)
37	MESH DESCRIPTOR Physostigmine
38	(physostigmin* or physostigmin* or eserin*)
39	MESH DESCRIPTOR Neostigmine
40	(neostigmin* or prostigmin* or polstigmin* or proserin* or prozerin* or synstigmin* or syntostigmin*)
41	MESH DESCRIPTOR Midodrine
42	(midodrin* or midon* or proamatine* or amatine* or gutron* or bramox*)
43	MESH DESCRIPTOR Phenylephrine
44	(phenylephrine* or metaoxedrin* or metasympatol* or mezaton* or (neo next synephrine*))
45	MESH DESCRIPTOR Acetylcholine Release Inhibitors EXPLODE ALL TREES
46	MESH DESCRIPTOR Muscarinic Agonists EXPLODE ALL TREES
47	MESH DESCRIPTOR Parasympathomimetics
48	MESH DESCRIPTOR Muscarine
49	MESH DESCRIPTOR Cholinergic Antagonists EXPLODE ALL TREES
50	MESH DESCRIPTOR Cholinesterase Inhibitors EXPLODE ALL TREES
51	(muscarin* or parasympath* or ((cholinesterase* or acetylcholine* or choline or cholinergic) near2 (block* or inhibit* or antagonist* or drug* or agent*)) or (anti next cholinergic*) or anticholinergic* or anticholesterinase* or (anti next cholesterinase*) or anticholinesterase* or (anti next cholinesterase*) or cholinolytic* or botox* or (botulinum near1 (toxin* or neurotoxin*)) or meditoxin* or bethanechol* or bocouture* or letybo* or xeomin* or azzalure* or dysport*)
52	MESH DESCRIPTOR Histamine Antagonists
53	MESH DESCRIPTOR Histamine H1 Antagonists
54	MESH DESCRIPTOR Histamine H2 Antagonists
55	MESH DESCRIPTOR Histamine H3 Antagonists
56	((anti next histamin*) or antihistamin* or (histamin* or h1* or h2* or h3*)) near4 (antagonist* or blocker* or blockader*))
57	MESH DESCRIPTOR Pheniramine EXPLODE ALL TREES
58	MESH DESCRIPTOR Phenylpropanolamine
59	(milodrin* or gutron* or pheniramine* or daneral* or histapyridamine* or propheniramine* or prophenpyridamine* or bimalate* or phenylpropanolami* or phenylpropylolamine* or dexatrim* or norephedrine* or prolamine* or propages* or triaminic* or chlorpheniramine* or chlorphenamine* or chlorpro* or teldrin* or phenylpropanolami* or phenylpropylolamine* or ornade* or brompheniramine* or dimeta*)
60	MESH DESCRIPTOR Bicarbonates EXPLODE ALL TREES
61	MESH DESCRIPTOR Osmolar Concentration
62	MESH DESCRIPTOR Hydrogen-Ion Concentration
63	((sodium near1 carbonate) or bicarb* or esscarb* or (baking next soda*) or baros* or carbex* or colevac* or dicarbonate* or hydrocarbonate* or (hydrogen next carbonate*) or meylon*)
64	(urin* near4 (PH or prepar* or alkalin* or neutral* or hyperosmolar* or osmol* or isotonic*))
65	MESH DESCRIPTOR Physical Stimulation
66	MESH DESCRIPTOR Electric Stimulation

#	Searches
67	MESH DESCRIPTOR Electric Stimulation Therapy
68	MESH DESCRIPTOR Vibration
69	(((assist* or vibr* or electr*) near2 (ejaculat* or stimulat*)) or electroejaculat* or vibroejaculat* or EEJ or PVS)
70	(ejaculat* near2 stimulat*)
71	MESH DESCRIPTOR Ejaculatory Ducts and with qualifier(s)
72	(TURED or ((Transurethral or "trans urethral" or "trans-urethral") and (ejaculatory next duct*)))
73	#24 or #25 or #26 or #27 or #28 or #29 or #30 or #31 or #32 or #33 or #34 or #35 or #36 or #37 or #38 or #39 or #40 or #41 or #42 or #43 or #44 or #45 or #46 or #47 or #48 or #49 or #50 or #51 or #52 or #53 or #54 or #55 or #56 or #57 or #58 or #59 or #60 or #61 or #62 or #63 or #64 or #65 or #66 or #67 or #68 or #69 or #70 or #71 or #72
74	#14 or #23
75	#74 and #73
76	(#74 and #73) IN HTA

Appendix C Effectiveness evidence study selection

Study selection for review question: What is the clinical and cost effectiveness of treatments for ejaculatory failure?

Figure 1: Study selection flow chart



Appendix D Evidence tables

Evidence tables for review question: What is the clinical and cost effectiveness of treatments for ejaculatory failure?

No evidence was identified which was applicable to this review question.

Appendix E Forest plots

Forest plots for review question: What is the clinical and cost effectiveness of treatments for ejaculatory failure?

No evidence was identified which was applicable to this review question.

Appendix F GRADE tables

GRADE tables for review question: What is the clinical and cost effectiveness of treatments for ejaculatory failure?

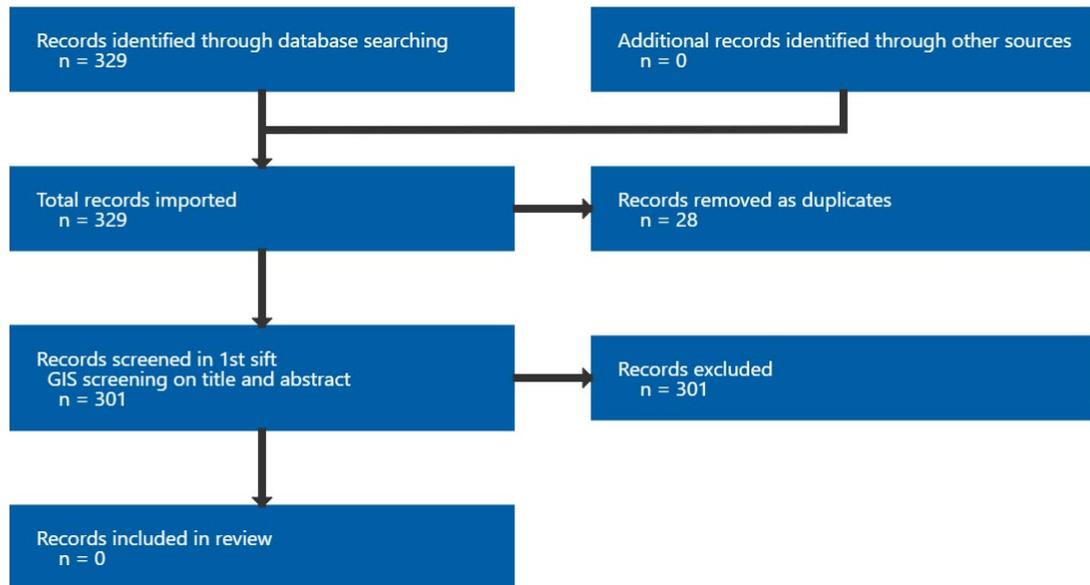
No evidence was identified which was applicable to this review question.

Appendix G Economic evidence study selection

Study selection for review question: What is the clinical and cost effectiveness of treatments for ejaculatory failure?

No health economic evidence was identified for this review question.

Figure 2: Study selection flow chart



Appendix H Economic evidence tables

Economic evidence tables for review question: What is the clinical and cost effectiveness of treatments for ejaculatory failure?

No evidence was identified which was applicable to this review question.

Appendix I Economic model

Economic model for review question: What is the clinical and cost effectiveness of treatments for ejaculatory failure?

No health economic modelling was undertaken for this review question.

Appendix J - Excluded studies

Excluded studies for review question: What is the clinical and cost effectiveness of treatments for ejaculatory failure?

Excluded effectiveness studies

Table 3: Excluded studies and reasons for their exclusion

Study	Code [Reason]
Apaydin, E, Killi, R M, Turna, B et al. (2004) Transrectal ultrasonography-guided echo-enhanced seminal vesiculography in combination with transurethral resection of the ejaculatory ducts. BJU international 93(7): 1110-2	- Not a relevant study design <i>Case series</i>
Brackett, N L; Padron, O F; Lynne, C M (1997) Semen quality of spinal cord injured men is better when obtained by vibratory stimulation versus electroejaculation. The Journal of urology 157(1): 151-7	- Comparator in study does not match that specified in protocol
Dahlberg A; Ruutu M; Hovatta O (1995) Pregnancy results from a vibrator application, electroejaculation, and a vas aspiration programme in spinal-cord injured men. Human reproduction (Oxford, England) 10(9): 2305-2307	- Not a relevant study design <i>Case series</i>
DeForge, D, Blackmer, J, Garritty, C et al. (2005) Fertility following spinal cord injury: a systematic review. Spinal cord 43(12): 693-703	- Systematic review used as source of primary studies
Gilja I, Parazajder J, Radej M et al. (1994) Retrograde ejaculation and loss of emission: possibilities of conservative treatment. European urology 25(3): 226-228	- Not a relevant study design <i>Retrospective cohort study</i>
Jefferys, Amanda; Siassakos, Dimitrios; Wardle, Peter (2012) The management of retrograde ejaculation: a systematic review and update. Fertility and sterility 97(2): 306-12	- Systematic review used as source of primary studies
Leduc, Bernard E, Fournier, Christine, Jacquemin, Geraldine et al. (2015) Midodrine in patients with spinal cord injury and anejaculation: A double-blind randomized placebo-controlled pilot study. The journal of spinal cord medicine 38(1): 57-62	- Not relevant study population <i>This was not a group that were seeking fertility treatment, and no relevant primary outcomes were reported</i>
Niederberger, Craig (2005) Transurethral resection of the ejaculatory ducts for treating ejaculatory symptoms. The Journal of urology 174(3): 1049	- Conference abstract
Qiu, Yi, Wang, Lei-Guang, Zhang, Li-Hong et al. (2012) Quality of sperm obtained by penile vibratory stimulation and percutaneous vasal sperm aspiration in men with spinal cord injury. Journal of andrology 33(5): 1036-46	- Not a relevant study design <i>Retrospective cohort study</i>
Rawicki HB and Hill S (1991) Semen retrieval in spinal cord injured men. Paraplegia 29(7): 443-446	- Not a relevant study design <i>Retrospective cohort study</i>

Excluded economic studies

No economic evidence was identified for this review.

Appendix K Research recommendations – full details

Research recommendations for review question: What is the clinical and cost effectiveness of treatments for ejaculatory failure?

No research recommendations were made for this review question.