National Institute for Health and Care Excellence

Final

Fertility problems: assessment and treatment

[R] Fertility preservation

NICE guideline NG257

Evidence reviews underpinning recommendations 1.53.1, 1.53.5, 1.53.6, 1.53.7, 1.53.8 and the research recommendation in the NICE guideline

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Fertility preservation

Review question

What is the success rate, and which factors affect the outcome, of fertility preservation for children and adults undergoing treatment for cancer and other conditions or situations which are likely to impair their fertility?

Introduction

Fertility preservation is an essential aspect of reproductive healthcare, particularly for individuals facing medical treatments or conditions that could compromise reproductive function. The most common indication for preservation is a cancer diagnosis, where treatments such as chemotherapy, radiation, or surgery may adversely impact fertility. However, fertility preservation is also increasingly considered in the management of other conditions, including severe and recurrent endometriosis, or situations, including as part of a gender transition process requiring medical interventions that affect reproductive health. Emerging indications, such as metabolic, genetic, and chromosomal conditions—like Turner Syndrome— further highlight the expanding scope of fertility preservation in safeguarding future reproductive potential for a diverse range of patients.

The aim of this review is to determine the success rate, and factors affecting outcome, of fertility preservation for children and adults undergoing treatment for cancer and other conditions or situations which are likely to impair their fertility.

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	Inclusion: • Children and adults who have a medical indication for fertility preservation (including conditions that require chemotherapy, radiotherapy, and/or bone marrow transplantation, and conditions or situations that require hormone treatment and/or surgical intervention with the potential to harm fertility) Exclusion: • People with non-medical indications for fertility preservation (such as to manage age-related decline in fertility)
Intervention	Fertility preservation, including cryopreservation of: • sperm • testicular tissue • eggs (oocytes) • embryos • ovarian tissue
Comparison	N/A
Outcome	**Critical** For preservation of ovarian or testicular tissue only*: • Proportion of participants from whom material suitable for preservation is obtained For preservation of all material: • Proportion of participants who return to use stored material

	• Live birth rate using stored material • Clinical pregnancy rate using stored material Only studies that report at least one of the primary outcomes will be included. *In studies which report on the preservation of sperm, eggs (oocytes), or embryos, the outcome proportion of participants from whom material suitable for preservation is obtained will not be treated as a primary outcome **Important** For preservation of sperm, eggs (oocytes), or embryos only: • Proportion of participants from whom material suitable for preservation is obtained For preservation of all material: • Pregnancy loss (accounting for ectopic pregnancy, miscarriage, stillbirth, and termination of pregnancy) • Serious surgery-related adverse events (Clavien Dindo grades ≥2) from gamete or tissue retrieval procedures • Ovarian Hyperstimulation Syndrome (OHSS) Studies that report secondary outcomes will only be included if they also report a primary outcome. Secondary outcomes will therefore be extracted in addition to primary outcomes, only in cases where a primary outcome is also reported.

N/A: not applicable

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).

Due to the absence of minimally important differences for this review, which are not appropriate for non-comparative data, imprecision was judged based on optimal information size criteria. Evidence was considered seriously imprecise if there were less than 300 events, based on the rule-of-thumb specified in version 3.2 of the GRADE handbook (Schünemann 2009), and very seriously imprecise if there were less than 150 events. The threshold for very serious imprecision was a pragmatic decision, in the absence of a rule-of-thumb being available, based on the fact that this is half the number required for serious imprecision, which would be consistent with the approach suggested for continuous outcomes.

Declarations of interest were recorded according to NICE's conflicts of interest policy.

Case series evidence

Included studies

A total of 118 studies were included for this review:

- 4 prospective case series (Huser 2012, Nurudeen 2016, Saito 2023, Vriens 2020)
- 114 retrospective case series (Adam 2021, Agarwal 2004, Akel 2020, Alvarez 2018, Andersen 2008, Barral 2023, Barcroft 2013, Berton 2020, Bizet 2012, Blackhall 2002, Botchan 2013, Cardozo 2015, Chang 2006, Chien 2017, Choi 2022, Chung 2004,

Chung 2013, Cobo 2018, Cobo 2020, Colmorn 2022, Colmorn 2023, Courbiere 2013, Crha 2009, de Nie 2020, Dearing 2014, Depalo 2016, Diaz-Garcia 2018, Dittrich 2015, Dolmans 2015, Druckenmiller 2016, Dueholm Hjorth 2020, Duffin 2023, Duraes 2022, Fabri 2022, Ferrari 2021, Ferro 2023, Fitoussi 2000, Freour 2012, Fu 2019, Garcia 2015, Garcia-Velasco 2013, Grellet-Grun 2023, Greve 2012, Hallak 1998, Hashimoto 2017, Hoekman 2020, Hulsbosch 2018, Imbert 2014, Ishikawa 2007, Jadoul 2017, Jenninga 2008, Johnson 2013a, Johnson 2013b, Jones 2016, Kato 2021, Keene 2012, Kelleher 2001, Kim 2023, Kobayashi 2017, Kristensen 2021, Lambertini 2018, Lass 1998, Liu 2021, Machen 2018, Magelssen 2005, Marklund 2020, Martinez 2014, Mattelin 2022, Mayeur 2021, Meirow 2016, Melli 2023, Meseguer 2006, Michaan 2010, Molnar 2014, Moravek 2018, Moravek 2021, Muller 2016, Muteshi 2018, Neal 2007, Negoro 2018, Noetzli 2019, Nordan 2020, Oktay 2010, Oktay 2015, Okutsu-Horage 2022, Pening 2022, Ping 2010, Poirot 2019a, Poirot 2019b, Porcu 2022, Ragni 2003, Revel 2005, Robertson 2011, Sanchez 2008, Schmidt 2005, Selk 2009, Shapira 2020, Sheth 2012, Silber 2018, Song 2019, Sönmezer 2023, Specchia 2019, Stigliani 2021, Takae 2022, Takahashi 2018, Tanbo 2015, Tournaye 1991, Tsonis 2023, van Casteren 2008, Van der Ven 2016, Wang 2023, Wikander 2021, Wyns 2011, Xi 2020).

Tissue preservation was as follows:

- sperm was preserved in 49 studies (Adam 2021, Agarwal 2004, Bizet 2012, Blackhall 2002, Botchan 2013, Chang 2006, Chung 2004, Chung 2013, Crha 2009, de Nie 2020, Dearing 2014, Depalo 2016, Ferrari 2021, Fitoussi 2000, Freour 2012, Fu 2019, Garcia 2015, Hallak 1998, Ishikawa 2007, Johnson 2013a, Jones 2016, Keene 2012, Kelleher 2001, Kobayashi 2017, Lass 1998, Liu 2021, Machen 2018, Magelssen 2005, Melli 2023, Meseguer 2006, Molnar 2014, Muller 2016, Neal 2007, Negoro 2018, Noetzli 2019, Pening 2022, Ping 2010, Ragni 2003, Revel 2005, Selk 2009, Sheth 2012, Song 2019, Stigliani 2021, Tournaye 1991, van Casteren 2008, Wang 2023, Xi 2020)
- testicular tissue was preserved in 1 study (Wyns 2011)
- oocytes and/or embryos were preserved in 43 studies (Akel 2020, Alvarez 2018, Barcroft 2013, Berton 2020, Cardozo 2015, Chien 2017, Cobo 2018, Cobo 2020, Courbiere 2013, Dolmans 2015, Druckenmiller 2016, Duraes 2022, Garcia-Velasco 2013, Hashimoto 2017, Johnson 2013b, Kato 2021, Kim 2023, Martinez 2014, Mayeur 2021, Michaan 2010, Moravek 2018, Moravek 2021, Muteshi 2018, Nordan 2020, Nurudeen 2016, Oktay 2015, Okutsu-Horage 2022, Porcu 2022, Robertson 2011, Saito 2023, Specchia 2019, Takahashi 2018, Tsonis 2023, Vriens 2020, Wikander 2021)
- ovarian tissue was preserved in 34 studies (Andersen 2008, Choi 2022, Colmorn 2022, Colmorn 2023, Dittrich 2015, Dueholm Hjorth 2020, Duffin 2023, Fabri 2022, Grellet-Grun 2023, Greve 2012, Hoekman 2020, Hulsbosch 2018, Imbert 2014, Jadoul 2017, Kristensen 2021, Meirow 2016, Oktay 2010, Poirot 2019a, Poirot 2019b, Sanchez 2008, Schmidt 2005, Shapira 2020, Silber 2018, Sönmezer 2023, Takae 2022, Tanbo 2015, Van der Ven 2016).

Multiple different materials were preserved in 8 studies: oocytes and/or embryos and ovarian tissue were preserved in 6 studies (Diaz-Garcia 2018, Ferro 2023, Huser 2012, Jenninga 2008, Lambertini 2018, Marklund 2020), sperm and oocytes were preserved in 1 study (Mattelin 2022), and sperm, oocytes and ovarian tissue were preserved in 1 study (Barral 2023).

Studies were conducted in the following populations:

- 108 in people with cancer (Adam 2021, Agarwal 2004, Akel 2020, Alvarez 2018, Andersen 2008, Barral 2023, Barcroft 2013, Berton 2020, Bizet 2012, Blackhall 2002, Botchan 2013, Cardozo 2015, Chang 2006, Chien 2017, Choi 2022, Chung 2004, Chung 2013, Cobo 2018, Colmorn 2022, Courbiere 2013, Crha 2009, Dearing 2014, Depalo 2016, Diaz-Garcia 2018, Dittrich 2015, Dolmans 2015, Druckenmiller 2016, Dueholm Hjorth 2020, Duffin 2023, Duraes 2022, Fabri 2022, Ferrari 2021, Ferro 2023, Fitoussi 2000, Freour 2012, Fu 2019, Garcia 2015, Garcia-Velasco 2013, Grellet-Grun 2023, Greve 2012, Hallak 1998, Hashimoto 2017, Hoekman 2020, Hulsbosch 2018, Huser 2012, Imbert 2014, Ishikawa 2007, Jadoul 2017, Jenninga 2008, Johnson 2013a, Johnson 2013b, Kato 2021, Keene 2012, Kelleher 2001, Kim 2023, Kobayashi 2017, Kristensen 2021, Lambertini 2018, Lass 1998, Liu 2021, Machen 2018, Magelssen 2005, Marklund 2020, Martinez 2014, Mayeur 2021, Meirow 2016, Melli 2023, Meseguer 2006, Michaan 2010, Molnar 2014, Moravek 2018, Moravek 2021, Muller 2016, Muteshi 2018, Neal 2007, Negoro 2018, Noetzli 2019, Nordan 2020, Nurudeen 2016, Oktay 2010, Oktay 2015, Okutsu-Horage 2022, Pening 2022, Ping 2010, Poirot 2019b, Porcu 2022, Ragni 2003, Revel 2005, Saito 2023, Sanchez 2008, Schmidt 2005, Selk 2009, Shapira 2020, Sheth 2012, Song 2019, Sönmezer 2023, Specchia 2019, Stigliani 2021, Takahashi 2018, Tanbo 2015, Tournaye 1991, Tsonis 2023, van Casteren 2008, Van der Ven 2016, Vriens 2020, Wang 2023, Wyns 2011, Xi 2020)
- 11 in people with other relevant medical indications:
    - 3 in people undergoing gender reassignment (de Nie 2020, Jones 2016, Mattelin 2022)
    - 1 in people with severe and recurrent endometriosis (Cobo 2020)
    - 1 in people with non-oncological systemic diseases requiring chemotherapy, radiotherapy, and/or bone marrow transplantation (Colmorn 2023)
- 5 in mixed populations of people with and without cancer (Poirot 2019a, Robertson 2011, Silber 2018, Takae 2022, Wikander 2021).

The included studies are summarised in Table 2.

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

Summaries of the studies that were included in this review are presented in Table 2.

Table 2: Summary of included studies

Study	Population	Intervention	Outcomes	Comments
Adam 2021 Retrospective case series Switzerland	Medical indication: cancer (mixed) N attempting preservation: 133 N where material	Cryopreservation of sperm	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who	Follow-up in months, mean (SD): NR

Study	Population	Intervention	Outcomes	Comments
	obtained: 98 Age at preservation in years, mean (SD): NR [median 17.9] Time between preservation and return in months, mean (SD): NR [median 78]		return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material	
Agarwal 2004 Retrospective case series US	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: NR Age at preservation in years, mean (SD): NR [median 30] Time between preservation and return in months, mean (SD): NR	Cryopreservation of sperm	• Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR
Akel 2020 Retrospective case series US	Medical indication: cancer (mixed) N attempting preservation: 32 N where material obtained: NR Age at preservation in years, mean (SD): NR [median 33] Time between preservation and return in months, mean (SD): NR [median 16]	Cryopreservation of oocytes and/or embryos	• Proportion of participants who return to use stored material • Live birth rate using stored material	Follow-up in months, mean (SD): NR [median 54]
Alvarez 2018 Retrospective case series UK	Medical indication: cancer (mixed) N attempting preservation: 306 N where material obtained: NR Age at preservation in years, mean (SD): 31	Cryopreservation of oocytes and/or embryos	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): NR

Study	Population	Intervention	Outcomes	Comments
	(NR) Time between preservation and return in months, mean (SD): 31 (NR)		• Pregnancy loss • OHSS	
Andersen 2008 Retrospective case series Denmark	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: NR Age at preservation in years, mean (SD): 29 (NR) Time between preservation and return in months, mean (SD): 25 (31)	Cryopreservation of ovarian tissue	• Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR
Barral 2023 Retrospective case series Spain	Medical indication: cancer (mixed) N attempting preservation: 576 N where material obtained: 535 Age at preservation in years, mean (SD): 28.9 (NR) Time between preservation and return in months, mean (SD): NR	Cryopreservation of sperm	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material	Follow-up in months, mean (SD): NR
Barral 2023 Retrospective case series Spain	Medical indication: cancer (mixed) N attempting preservation: 304 N where material obtained: NR Age at preservation in years, mean (SD): 31.8 (NR) Time between preservation and return	Cryopreservation of oocytes	• Proportion of participants who return to use stored material • Clinical pregnancy rate using stored material • OHSS	Follow-up in months, mean (SD): NR

Study	Population	Intervention	Outcomes	Comments
	in months, mean (SD): 40.4			
Barral 2023 Retrospective case series Spain	Medical indication: cancer (mixed) N attempting preservation: 115 N where material obtained: NR Age at preservation in years, mean (SD): 31.8 (NR) Time between preservation and return in months, mean (SD): 74.1	Cryopreservation of ovarian tissue	• Proportion of participants who return to use stored material • Clinical pregnancy rate using stored material • Pregnancy loss • Serious surgery-related adverse events (Clavien Dindo grades ≥2) from gamete or tissue retrieval procedures	Follow-up in months, mean (SD): NR
Barcroft 2013 Retrospective case series UK	Medical indication: cancer (mixed) N attempting preservation: 42 N where material obtained: 39 Age at preservation in years, mean (SD): 31.9 (3.9) Time between preservation and return in months, mean (SD): NR [median 50.4]	Cryopreservation of embryos	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR [median 73]
Berton 2020 Retrospective case series Brazil	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 246 Age at preservation in years, mean (SD): 31 (5.6) Time between preservation and return in months, mean (SD): NR	Cryopreservation of oocytes	• Proportion of participants who return to use stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): NR
Bizet 2012	Medical indication:	Cryopreservation	• Proportion of	Follow-up in

Study	Population	Intervention	Outcomes	Comments
Retrospective case series France	cancer (mixed) N attempting preservation: 1007 N where material obtained: 911 Age at preservation in years, mean (SD): 29.3 (8.8) Time between preservation and return in months, mean (SD): 34.8	of sperm	participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material • Live birth rate using stored material	months, mean (SD): 84 (49.2)
Blackhall 2002 Retrospective case series UK	Medical indication: haematological cancer N attempting preservation: 122 N where material obtained: 115 Age at preservation in years, mean (SD): NR [median 24] Time between preservation and return in months, mean (SD): NR	Cryopreservation of sperm	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): NR [median 121]
Botchan 2023 Retrospective case series Israel	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: NR Age at preservation in years, mean (SD): NR Time between preservation and return in months, mean (SD): 48 (NR)	Cryopreservation of sperm	• Live birth rate using stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): NR
Cardozo 2015 Retrospective case series	Medical indication: cancer (mixed) N attempting preservation: 63	Cryopreservation of oocytes and/or embryos	• Proportion of participants from whom material suitable for preservation is obtained	Follow-up in months, mean (SD): NR

Study	Population	Intervention	Outcomes	Comments
US	N where material obtained: 55 Age at preservation in years, mean (SD): 33.7 (4.1) Time between preservation and return in months, mean (SD): NR		• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss • OHSS	
Chang 2006 Retrospective case series Taiwan	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 75 Age at preservation in years, mean (SD): 25.7 (7.4) Time between preservation and return in months, mean (SD): NR	Cryopreservation of sperm	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): NR
Chien 2017 Retrospective case series US	Medical indication: breast cancer N attempting preservation: NR N where material obtained: 34 Age at preservation in years, mean (SD): 35 (NR) Time between preservation and return in months, mean (SD): 32.8 (NR)	Cryopreservation of oocytes and/or embryos	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR
Choi 2022 Retrospective case series South Korea	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 26	Cryopreservation of ovarian tissue	• Proportion of participants who return to use stored material	Follow-up in months, mean (SD): 60 (34)

Study	Population	Intervention	Outcomes	Comments
	Age at preservation in years, mean (SD): NR Time between preservation and return in months, mean (SD): NR			
Chung 2004 Retrospective case series US	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 164 Age at preservation in years, mean (SD): 29.5 (7.1) Time between preservation and return in months, mean (SD): NR	Cryopreservation of sperm	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): NR
Chung 2013 Retrospective case series China	Medical indication: cancer (mixed) N attempting preservation: 125 N where material obtained: 110 Age at preservation in years, mean (SD): NR [median 27] Time between preservation and return in months, mean (SD): 60 (NR)	Cryopreservation of sperm	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR
Cobo 2018 Retrospective case series Spain	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 1073 Age at preservation in years, mean (SD): 32.3 (3.5)	Cryopreservation of oocytes	• Proportion of participants who return to use stored material • Live birth rate using stored material	Follow-up in months, mean (SD): NR

Study	Population	Intervention	Outcomes	Comments
	Time between preservation and return in months, mean (SD): 49 (11)			
Cobo 2020 Retrospective case series Spain	Medical indication: severe and recurrent endometriosis N attempting preservation: NR N where material obtained: NR Age at preservation in years, mean (SD): 35.7 (3.7) Time between preservation and return in months, mean (SD): 20.4 (4.8)	Cryopreservation of oocytes	• Live birth rate using stored material	Follow-up in months, mean (SD): NR
Colmorn 2022 Retrospective case series Denmark	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: NR Age at preservation in years, mean (SD): 28.9 (5.5) Time between preservation and return in months, mean (SD): 50 (35)	Cryopreservation of ovarian tissue	• Live birth rate using stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): 73 (56)
Colmorn 2023 Retrospective case series Denmark	Medical indication: non-oncological systemic diseases requiring chemotherapy, radiotherapy, and/or bone marrow transplantation N attempting preservation: NR N where material obtained: NR	Cryopreservation of ovarian tissue	•Live birth rate using stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): NR

Study	Population	Intervention	Outcomes	Comments
	Age at preservation in years, mean (SD): 31 (5.1) Time between preservation and return in months, mean (SD): NR			
Courbiere 2013 Retrospective case series France	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 52 Age at preservation in years, mean (SD): 28.9 (4.3) Time between preservation and return in months, mean (SD): NR	Cryopreservation of cleavage stage embryos	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss • OHSS	Follow-up in months, mean (SD): 40 (30)
Crha 2009 Retrospective case series Czech Republic	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 619 Age at preservation in years, mean (SD): 26.2 (6.8) Time between preservation and return in months, mean (SD): 22.2 (14.7)	Cryopreservation of sperm	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR
de Nie 2020 Retrospective case series The Netherlands	Medical indication: gender reassignment N attempting preservation: 260 N where material obtained: 242 Age at preservation in years, mean (SD): NR [median 24]	Cryopreservation of sperm	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material • Clinical pregnancy rate using stored	Follow-up in months, mean (SD): NR

Study	Population	Intervention	Outcomes	Comments
	Time between preservation and return in months, mean (SD): NR [median 72]		material	
Dearing 2014 Retrospective case series UK	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 3062 Age at preservation in years, mean (SD): NR Time between preservation and return in months, mean (SD): NR	Cryopreservation of sperm	• Proportion of participants who return to use stored material • Live birth rate using stored material	Follow-up in months, mean (SD): NR
Depalo 2016 Retrospective case series Italy	Medical indication: cancer (mixed) N attempting preservation: 778 N where material obtained: 721 Age at preservation in years, mean (SD): 29.2 (8) Time between preservation and return in months, mean (SD): 42 (46.8)	Cryopreservation of sperm	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR
Diaz-Garcia 2018 Retrospective case series Spain	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 1024 Age at preservation in years, mean (SD): 31.7 (6.4) Time between preservation and return in months, mean (SD): 46.8 (NR)	Cryopreservation of oocytes	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR [median 59]

Study	Population	Intervention	Outcomes	Comments
Diaz-Garcia 2018 Retrospective case series Spain	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 800 Age at preservation in years, mean (SD): 28.2 (7.3) Time between preservation and return in months, mean (SD): 66 (NR)	Cryopreservation of ovarian tissue	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR [median 59]
Dittrich 2015 Retrospective case series Germany	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: NR Age at preservation in years, mean (SD): 30.5 (NR) Time between preservation and return in months, mean (SD): 44 (NR)	Cryopreservation of ovarian tissue	• Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss • Serious surgery-related adverse events (Clavien Dindo grades ≥2) from gamete or tissue retrieval procedures	Follow-up in months, mean (SD): NR
Dolmans 2015 Retrospective case series Belgium	Medical indication: cancer (mixed) N attempting preservation: 54 N where material obtained: 52 Age at preservation in years, mean (SD): 30 (4.6) Time between preservation and return in months, mean (SD): NR	Cryopreservation of cleavage stage embryos	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR
Druckenmiller 2016	Medical indication: cancer (mixed)	Cryopreservation of oocytes	• Proportion of participants who return to use	Follow-up in months, mean (SD): NR

Study	Population	Intervention	Outcomes	Comments
Retrospective case series US	N attempting preservation: NR N where material obtained: 176 Age at preservation in years, mean (SD): NR [median 31] Time between preservation and return in months, mean (SD): NR [median 27.6]		stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material	
Dueholm Hjorth 2020 Retrospective case series Denmark	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: NR Age at preservation in years, mean (SD): 29.8 (5.2) Time between preservation and return in months, mean (SD): 50 (NR)	Cryopreservation of ovarian tissue	• Live birth rate using stored material • Clinical pregnancy rate using stored material • Serious surgery-related adverse events (Clavien Dindo grades ≥2) from gamete or tissue retrieval procedures	Follow-up in months, mean (SD): NR
Duffin 2023 Retrospective case series UK	Medical indication: cancer (mixed) N attempting preservation: 26 N where material obtained: 25 Age at preservation in years, mean (SD): NR [median 11.7] Time between preservation and return in months, mean (SD): N/A	Cryopreservation of ovarian tissue	• Proportion of participants from whom material suitable for preservation is obtained • Serious surgery-related adverse events (Clavien Dindo grades ≥2) from gamete or tissue retrieval procedures	Follow-up in months, mean (SD): NR [median 97]
Duraes 2022 Retrospective case series France	Medical indication: breast cancer N attempting preservation: NR N where material	Cryopreservation of oocytes	• Proportion of participants who return to use stored material • Live birth rate using stored material	Follow-up in months, mean (SD): 62 (NR)

Study	Population	Intervention	Outcomes	Comments
	obtained: 1243 Age at preservation in years, mean (SD): NR Time between preservation and return in months, mean (SD): 46 (20)			
Fabbri 2022 Retrospective case series Italy	Medical indication: cancer (mixed) N attempting preservation: 1026 N where material obtained: 812 Age at preservation in years, mean (SD): 24.5 (5.3) Time between preservation and return in months, mean (SD): 94 (NR)	Cryopreservation of ovarian tissue	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss • Serious surgery-related adverse events (Clavien Dindo grades ≥2) from gamete or tissue retrieval procedures	Follow-up in months, mean (SD): NR
Ferrari 2021 Retrospective case series Italy	Medical indication: cancer (mixed) N attempting preservation: 1682 N where material obtained: 1524 Age at preservation in years, mean (SD): NR [median29] Time between preservation and return in months, mean (SD): NR	Cryopreservation of sperm	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR [median 144]
Ferro 2022 Retrospective	Medical indication: haematological cancer N attempting	Cryopreservation of oocytes and/or embryos	• Proportion of participants who return to use stored material	Follow-up in months, mean (SD): 24 (NR)

Study	Population	Intervention	Outcomes	Comments
case series Portugal	preservation: NR N where material obtained: 21 Age at preservation in years, mean (SD): NR Time between preservation and return in months, mean (SD): NR		• Clinical pregnancy rate using stored material	
Ferro 2022 Retrospective case series Portugal	Medical indication: haematological cancer N attempting preservation: NR N where material obtained: 14 Age at preservation in years, mean (SD): NR Time between preservation and return in months, mean (SD): NR	Cryopreservation of ovarian tissue	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): 24 (NR)
Fitoussi 2000 Retrospective case series France	Medical indication: haematological cancer N attempting preservation: 94 N where material obtained: 94 Age at preservation in years, mean (SD): 27.5 (NR) Time between preservation and return in months, mean (SD): 51.5 (24.4)	Cryopreservation of sperm	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): 107 (NR)
Freour 2012 Retrospective case series France	Medical indication: cancer (mixed) N attempting preservation: 1042 N where material obtained: 1009	Cryopreservation of sperm	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use	Follow-up in months, mean (SD): NR

Study	Population	Intervention	Outcomes	Comments
	Age at preservation in years, mean (SD): 28.6 (6.5) Time between preservation and return in months, mean (SD): NR		stored material	
Fu 2019 Retrospective case series China	Medical indication: cancer (mixed) N attempting preservation: 158 N where material obtained: 145 Age at preservation in years, mean (SD): 29.3 (6.9) Time between preservation and return in months, mean (SD): 31 (NR)	Cryopreservation of sperm	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material • Live birth rate using stored material	Follow-up in months, mean (SD): NR
Garcia 2015 Retrospective case series Canada	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 272 Age at preservation in years, mean (SD): NR Time between preservation and return in months, mean (SD): NR	Cryopreservation of sperm	• Proportion of participants who return to use stored material	Follow-up in months, mean (SD): NR
Garcia-Velasco 2013 Retrospective case series Spain	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 340 Age at preservation in years, mean (SD): 31.9 (5.1) Time between	Cryopreservation of oocytes	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR

Study	Population	Intervention	Outcomes	Comments
	preservation and return in months, mean (SD): NR			
Grellet-Grun 2023 Retrospective case series France	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 72 Age at preservation in years, mean (SD): 9.3 (NR) Time between preservation and return in months, mean (SD): 168 (NR)	Cryopreservation of ovarian tissue	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): NR [median 92]
Greve 2012 Retrospective case series Denmark	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: NR Age at preservation in years, mean (SD): 28 (6.6) Time between preservation and return in months, mean (SD): NR	Cryopreservation of ovarian tissue	• Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR
Hallak 1998 Retrospective case series US	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 10 Age at preservation in years, mean (SD): 32 (NR) Time between preservation and return in months, mean (SD): 50.4 (49.8)	Cryopreservation of sperm	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR
Hashimoto	Medical indication:	Cryopreservation	• Proportion of	Follow-up in

Study	Population	Intervention	Outcomes	Comments
2017 Retrospective case series Japan	breast cancer N attempting preservation: 21 N where material obtained: 19 Age at preservation in years, mean (SD): 35.2 (3.1) Time between preservation and return in months, mean (SD): NR	of oocytes and/or embryos	participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material • Clinical pregnancy rate using stored material • Pregnancy loss	months, mean (SD): NR
Hoekman 2020 Retrospective case series The Netherlands	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 69 Age at preservation in years, mean (SD): 24 (NR) Time between preservation and return in months, mean (SD): NR	Cryopreservation of ovarian tissue	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Serious surgery-related adverse events (Clavien Dindo grades ≥2) from gamete or tissue retrieval procedures	Follow-up in months, mean (SD): 77.4 (NR)
Hulsbosch 2018 Retrospective case series Belgium	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 66 Age at preservation in years, mean (SD): 23.2 (NR) Time between preservation and return in months, mean (SD): NR	Cryopreservation of ovarian tissue	• Proportion of participants who return to use stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): 61.5 (NR)
Huser 2012 Prospective case series	Medical indication: cancer (mixed) N attempting	Cryopreservation of oocytes and/or embryos	• Proportion of participants who return to use stored material	Follow-up in months, mean (SD): NR

Study	Population	Intervention	Outcomes	Comments
Czech Republic	preservation: NR N where material obtained: 7 Age at preservation in years, mean (SD): 29.4 (6.3) Time between preservation and return in months, mean (SD): NR		• Live birth rate using stored material • Clinical pregnancy rate using stored material	
Huser 2012 Prospective case series Czech Republic	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 16 Age at preservation in years, mean (SD): 26 (6.2) Time between preservation and return in months, mean (SD): N/A	Cryopreservation of ovarian tissue	• Proportion of participants who return to use stored material • Serious surgery-related adverse events (Clavien Dindo grades ≥2) from gamete or tissue retrieval procedures	Follow-up in months, mean (SD): NR
Imbert 2014 Retrospective case series Belgium	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 225 Age at preservation in years, mean (SD): NR Time between preservation and return in months, mean (SD): NR	Cryopreservation of ovarian tissue	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Serious surgery-related adverse events (Clavien Dindo grades ≥2) from gamete or tissue retrieval procedures	Follow-up in months, mean (SD): NR
Ishikawa 2007 Retrospective case series Japan	Medical indication: cancer (mixed) N attempting preservation: 130 N where material	Cryopreservation of sperm	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who	Follow-up in months, mean (SD): NR

Study	Population	Intervention	Outcomes	Comments
	obtained: 118 Age at preservation in years, mean (SD): 30.1 (17.7) Time between preservation and return in months, mean (SD): NR		return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	
Jadoul 2017 Retrospective case series Belgium	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 545 Age at preservation in years, mean (SD): 22.3 (8.8) Time between preservation and return in months, mean (SD): NR	Cryopreservation of ovarian tissue	• Proportion of participants who return to use stored material • Clinical pregnancy rate using stored material •	Follow-up in months, mean (SD): 91.2 (42)
Jenninga 2008 Retrospective case series The Netherlands	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 10 Age at preservation in years, mean (SD): 28.2 (NR) Time between preservation and return in months, mean (SD): 30 (NR)	Cryopreservation of embryos	• Proportion of participants who return to use stored material • Clinical pregnancy rate	Follow-up in months, mean (SD): 17.3 (NR)
Jenninga 2008 Retrospective case series The Netherlands	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 27 Age at preservation in years, mean (SD): 28.2	Cryopreservation of ovarian tissue	• Proportion of participants who return to use stored material • Clinical pregnancy rate • Serious surgery-related adverse events (Clavien Dindo grades ≥2) from gamete or	Follow-up in months, mean (SD): 17.3 (NR)

Study	Population	Intervention	Outcomes	Comments
	(NR) Time between preservation and return in months, mean (SD): 22 (NR)		tissue retrieval procedures	
Johnson 2013a Retrospective case series US	Medical indication: cancer (mixed) N attempting preservation: 423 N where material obtained: 378 Age at preservation in years, mean (SD): 29.7 (10.5) Time between preservation and return in months, mean (SD): NR	Cryopreservation of sperm	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material •	Follow-up in months, mean (SD): NR [median 31.9]
Johnson 2013b Retrospective case series US	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 50 Age at preservation in years, mean (SD): 31.2 (NR) Time between preservation and return in months, mean (SD): NR	Cryopreservation of oocyte and/or embryos	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR
Jones 2016 Retrospective case series Canada	Medical indication: gender reassignment N attempting preservation: NR N where material obtained: 9 Age at preservation in years, mean (SD): 26.4 (NR) Time between preservation and return	Cryopreservation of sperm	• Proportion of participants who return to use stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): NR

Study	Population	Intervention	Outcomes	Comments
	in months, mean (SD): NR			
Kato 2021 Retrospective case series Japan	Medical indication: haematological cancer N attempting preservation: 162 N where material obtained: 155 Age at preservation in years, mean (SD): 26.2 (0.4) Time between preservation and return in months, mean (SD): 65.5 (5)	Cryopreservation of oocytes	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR
Keene 2012 Retrospective case series UK	Medical indication: cancer (mixed) N attempting preservation: 180 N where material obtained: 119 Age at preservation in years, mean (SD): 16.1 (NR) Time between preservation and return in months, mean (SD): NR	Cryopreservation of sperm	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): NR
Kelleher 2001 Retrospective case series Australia	Medical indication: cancer (mixed) N attempting preservation: 930 N where material obtained: 833 Age at preservation in years, mean (SD): 28 (NR) Time between preservation and return in months, mean (SD): NR [median 36]	Cryopreservation of sperm	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material	Follow-up in months, mean (SD): NR
Kim 2023	Medical indication:	Cryopreservation	• Proportion of	Follow-up in

Study	Population	Intervention	Outcomes	Comments
Retrospective case series South Korea	cancer (mixed) N attempting preservation: NR N where material obtained: 174 Age at preservation in years, mean (SD): NR [median 33] Time between preservation and return in months, mean (SD): NR	of oocytes and/or embryos	participants who return to use stored material • Clinical pregnancy rate using stored material	months, mean (SD): NR
Kobayashi 2017 Retrospective case series Japan	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 122 Age at preservation in years, mean (SD): 33.6 (NR) Time between preservation and return in months, mean (SD): NR	Cryopreservation of sperm	• Proportion of participants who return to use stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): NR
Kristensen 2021 Retrospective case series Denmark	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 1186 Age at preservation in years, mean (SD): 25.1 (9) Time between preservation and return in months, mean (SD): 52 (NR)	Cryopreservation of ovarian tissue	• Proportion of participants who return to use stored material	Follow-up in months, mean (SD): 96 (NR)
Lambertini 2018 Retrospective case series	Medical indication: breast cancer N attempting preservation: NR	Cryopreservation of oocytes	• Proportion of participants who return to use stored material	Follow-up in months, mean (SD): NR

Study	Population	Intervention	Outcomes	Comments
Belgium	N where material obtained: 29 Age at preservation in years, mean (SD): 31 (NR) Time between preservation and return in months, mean (SD): NR			
Lambertini 2018 Retrospective case series Belgium	Medical indication: breast cancer N attempting preservation: NR N where material obtained: 72 Age at preservation in years, mean (SD): 31 (NR) Time between preservation and return in months, mean (SD): NR	Cryopreservation of ovarian tissue	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR
Lass 1998 Retrospective case series UK	Medical indication: cancer (mixed) N attempting preservation: 231 N where material obtained: 191 Age at preservation in years, mean (SD): 28 (NR) Time between preservation and return in months, mean (SD): 35 (18)	Cryopreservation of sperm	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR
Liu 2021 Retrospective case series China	Medical indication: cancer (mixed) N attempting preservation: 339 N where material obtained: 313	Cryopreservation of sperm	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who	Follow-up in months, mean (SD): NR

Study	Population	Intervention	Outcomes	Comments
	Age at preservation in years, mean (SD): 26.7 (6.8) Time between preservation and return in months, mean (SD): NR		return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	
Machen 2018 Retrospective case series US	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 271 Age at preservation in years, mean (SD): NR Time between preservation and return in months, mean (SD): NR	Cryopreservation of sperm	• Proportion of participants who return to use stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): NR
Magelssen 2005 Retrospective case series Norway	Medical indication: testicular cancer N attempting preservation: NR N where material obtained: 422 Age at preservation in years, mean (SD): NR [median 27.6] Time between preservation and return in months, mean (SD): NR [median 62]	Cryopreservation of sperm	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR [median 70.8]
Marklund 2020 Retrospective case series Sweden	Medical indication: breast cancer N attempting preservation: NR N where material obtained: 394 Age at preservation in years, mean (SD): NR	Cryopreservation of oocytes and/or embryos	• Proportion of participants who return to use stored material • Live birth rate using stored material	Follow-up in months, mean (SD): 76 (NR)

Study	Population	Intervention	Outcomes	Comments
	Time between preservation and return in months, mean (SD): NR			
Marklund 2020 Retrospective case series Sweden	Medical indication: breast cancer N attempting preservation: NR N where material obtained: 67 Age at preservation in years, mean (SD): NR Time between preservation and return in months, mean (SD): NR	Cryopreservation of ovarian tissue	• Proportion of participants who return to use stored material • Live birth rate using stored material	Follow-up in months, mean (SD): 76 (NR)
Martinez 2014 Retrospective case series Spain	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 357 Age at preservation in years, mean (SD): NR Time between preservation and return in months, mean (SD): 30 (NR)	Cryopreservation of oocytes	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR
Mattelin 2022 Retrospective case series Sweden	Medical indication: gender reassignment N attempting preservation: NR N where material obtained: 43 Age at preservation in years, mean (SD): 19.9 (4.3) Time between preservation and return in months, mean (SD): NR	Cryopreservation of oocytes	• Proportion of participants who return to use stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): NR

Study	Population	Intervention	Outcomes	Comments
Mattelin 2022 Retrospective case series Sweden	Medical indication: gender reassignment N attempting preservation: 59 N where material obtained: 53 Age at preservation in years, mean (SD): 24.5 (6.1) Time between preservation and return in months, mean (SD): NR	Cryopreservation of sperm	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material	Follow-up in months, mean (SD): NR
Mayeur 2021 Retrospective case series France	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: NR Age at preservation in years, mean (SD): NR [median 36] Time between preservation and return in months, mean (SD): NR [median 36]	Cryopreservation of oocytes and/or embryos	• Live birth rate using stored material	Follow-up in months, mean (SD): NR
Meirow 2016 Retrospective case series Israel	Medical indication: cancer mixed N attempting preservation: NR N where material obtained: NR Age at preservation in years, mean (SD): 28.8 (NR) Time between preservation and return in months, mean (SD): 67 (NR)	Cryopreservation of ovarian tissue	• Live birth rate using stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): NR
Melli 2023 Retrospective	Medical indication: cancer mixed	Cryopreservation of sperm	• Proportion of participants from whom material suitable for	Follow-up in months, mean (SD): NR

Study	Population	Intervention	Outcomes	Comments
case series Italy	N attempting preservation: 329 N where material obtained: 311 Age at preservation in years, mean (SD): 32.7 (8.6) Time between preservation and return in months, mean (SD): 28.8 (26.4)		preservation is obtained • Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material	
Meseguer 2006 Retrospective case series Spain	Medical indication: cancer (mixed) N attempting preservation: 186 N where material obtained: 184 Age at preservation in years, mean (SD): 27.1 (6.4) Time between preservation and return in months, mean (SD): NR	Cryopreservation of sperm	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): NR
Michaan 2010 Retrospective case series Israel	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 22 Age at preservation in years, mean (SD): 32.8 (5.7) Time between preservation and return in months, mean (SD): NR	Cryopreservation of embryos	• Proportion of participants who return to use stored material • Live birth rate using stored material	Follow-up in months, mean (SD): NR
Molnar 2014 Retrospective case series Hungary	Medical indication: testicular cancer N attempting preservation: NR N where material	Cryopreservation of sperm	• Proportion of participants who return to use stored material • Live birth rate using stored material	Follow-up in months, mean (SD): 132 (NR)

Study	Population	Intervention	Outcomes	Comments
	obtained: 59 Age at preservation in years, mean (SD): 27 (NR) Time between preservation and return in months, mean (SD): 49.2 (NR)		• Clinical pregnancy rate using stored material • Pregnancy loss	
Moravek 2018 Retrospective case series US	Medical indication: cancer (mixed) N attempting preservation: 204 N where material obtained: 195 Age at preservation in years, mean (SD): NR [median 31] Time between preservation and return in months, mean (SD): NR [median 26]	Cryopreservation of oocytes and/or embryos	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR [median 45]
Moravek 2021 Retrospective case series US	Medical indication: breast cancer N attempting preservation: 157 N where material obtained: 149 Age at preservation in years, mean (SD): NR [median 33.1] Time between preservation and return in months, mean (SD): NR [median 27.3]	Cryopreservation of oocytes and/or embryos	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material • Live birth rate using stored material	Follow-up in months, mean (SD): NR [median 48]
Muller 2016 Retrospective case series The Netherlands	Medical indication: cancer (mixed) N attempting preservation: 942 N where material obtained: 898 Age at preservation in	Cryopreservation of sperm	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material	Follow-up in months, mean (SD): NR

Study	Population	Intervention	Outcomes	Comments
	years, mean (SD): 29 (NR) Time between preservation and return in months, mean (SD): 58 (NR)		• Live birth rate using stored material	
Muteshi 2018 Retrospective case series UK	Medical indication: cancer (mixed) N attempting preservation: 127 N where material obtained: 124 Age at preservation in years, mean (SD): 32 (NR) Time between preservation and return in months, mean (SD): NR	Cryopreservation of oocytes and/or embryos	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material	Follow-up in months, mean (SD): NR
Neal 2007 Retrospective case series Canada	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 146 Age at preservation in years, mean (SD): NR Time between preservation and return in months, mean (SD):	Cryopreservation of sperm	• Proportion of participants who return to use stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): NR
Negoro 2018 Retrospective case series Japan	Medical indication: cancer mixed N attempting preservation: NR N where material obtained: 224 Age at preservation in years, mean (SD): 27.7 (NR) Time between preservation and return in months, mean (SD):	Cryopreservation of sperm	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): 54 (NR)

Study	Population	Intervention	Outcomes	Comments
	52.7 (NR)			
Noetzli 2019 Retrospective case series Switzerland	Medical indication: haematological cancer N attempting preservation: 33 N where material obtained: 28 Age at preservation in years, mean (SD): NR Time between preservation and return in months, mean (SD): NR	Cryopreservation of sperm	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR
Nordan 2020 Retrospective case series US	Medical indication: other cancers (gliomas) N attempting preservation: NR N where material obtained: 10 Age at preservation in years, mean (SD): 30.4 (4.5) Time between preservation and return in months, mean (SD): NR	Cryopreservation of oocytes and/or embryos	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): NR
Nurudeen 2016 Prospective case series US	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 49 Age at preservation in years, mean (SD): 33.6 (4.8) Time between preservation and return in months, mean (SD): NR	Cryopreservation of oocytes and/or embryos	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • OHSS	Follow-up in months, mean (SD): NR

Study	Population	Intervention	Outcomes	Comments
Oktay 2010 Retrospective case series US	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 59 Age at preservation in years, mean (SD): 26.7 (9.2) Time between preservation and return in months, mean (SD): 34 (34.1)	Cryopreservation of ovarian tissue	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss • Serious surgery-related adverse events (Clavien Dindo grades ≥2) from gamete or tissue retrieval procedures	Follow-up in months, mean (SD): NR [median 37]
Oktay 2015 Retrospective case series US	Medical indication: breast cancer N attempting preservation: NR N where material obtained: 131 Age at preservation in years, mean (SD): 35.8 (4.1) Time between preservation and return in months, mean (SD): NR [median 63]	Cryopreservation of embryos	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): NR
Okutsu-Horage 2022 Retrospective case series Japan	Medical indication: breast cancer N attempting preservation: NR N where material obtained: 126 Age at preservation in years, mean (SD): 36.1 (3.7) Time between preservation and return in months, mean (SD): NR [median 36]	Cryopreservation of embryos	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR
Pening 2022	Medical indication: cancer (mixed)	Cryopreservation of sperm	• Proportion of participants who	Follow-up in months, mean

Study	Population	Intervention	Outcomes	Comments
Retrospective case series Belgium	N attempting preservation: NR N where material obtained: 300 Age at preservation in years, mean (SD): NR [median 29] Time between preservation and return in months, mean (SD): NR [median 51]		return to use stored material • Live birth rate using stored material	(SD): NR
Ping 2010 Retrospective case series China	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 30 Age at preservation in years, mean (SD): NR Time between preservation and return in months, mean (SD): NR	Cryopreservation of sperm	• Proportion of participants who return to use stored material • Live birth rate using stored material	Follow-up in months, mean (SD): NR
Poirot 2019a Retrospective case series France	Medical indication: mixed (52% solid malignant tumours; 23% malignant haematological diseases; 25% non-malignant diseases) N attempting preservation: NR N where material obtained: 418 Age at preservation in years, mean (SD): NR [median 6.9] Time between preservation and return in months, mean (SD): NR	Cryopreservation of ovarian tissue	• Proportion of participants who return to use stored material	Follow-up in months, mean (SD): NR
Poirot 2019b	Medical indication: cancer (mixed)	Cryopreservation of ovarian tissue	• Live birth rate using stored	Follow-up in months, mean

Study	Population	Intervention	Outcomes	Comments
Retrospective case series France	N attempting preservation: NR N where material obtained: NR Age at preservation in years, mean (SD): NR [median 27] Time between preservation and return in months, mean (SD): BR [median 132]		material	(SD): NR [median 26]
Porcu 2022 Retrospective case series Italy	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 508 Age at preservation in years, mean (SD): 29.4 (4) Time between preservation and return in months, mean (SD): 60 (45.6)	Cryopreservation of oocytes	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss • OHSS	Follow-up in months, mean (SD): 111.7 (81.7)
Ragni 2003 Retrospective case series Italy	Medical indication: cancer (mixed) N attempting preservation: 776 N where material obtained: 686 Age at preservation in years, mean (SD): NR [median 28] Time between preservation and return in months, mean (SD):	Cryopreservation of sperm	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): NR [median 48]
Revel 2005 Retrospective case series Israel	Medical indication: cancer (mixed) N attempting preservation: NR	Cryopreservation of sperm	• Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): NR

Study	Population	Intervention	Outcomes	Comments
	N where material obtained: NR Age at preservation in years, mean (SD): NR Time between preservation and return in months, mean (SD): NR			
Robertson 2011 Retrospective case series US	Medical indication: mixed (42% breast cancer; 8% colorectal cancer; 8% leukaemia; 8% multiple sclerosis; 8% ovarian epithelial carcinoma; 5% non-Hodgkin's lymphoma; 3% cervical cancer; 3% endometrial cancer; 3% Hodgkin's lymphoma; 3% malignant brain tumour; 3% mesenchymal chondrosarcoma; 3% myelodysplastic syndrome; 3% systemic sclerosis; 3% systemic lupus erythematosus) N attempting preservation: NR N where material obtained: 38 Age at preservation in years, mean (SD): 34 (5) Time between preservation and return in months, mean (SD): NR	Cryopreservation of embryos	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR
Saito 2023 Prospective case series Japan	Medical indication: cancer (mixed) N attempting preservation: 44 N where material obtained: 43 Age at preservation in	Cryopreservation of oocytes and/or embryos	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material	Follow-up in months, mean (SD): NR

Study	Population	Intervention	Outcomes	Comments
	years, mean (SD): NR [median 32] Time between preservation and return in months, mean (SD): NR		• Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	
Sánchez 2008 Retrospective case series Spain	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 200 Age at preservation in years, mean (SD): 25.3 (NR) Time between preservation and return in months, mean (SD): 28.3 (1.7)	Cryopreservation of ovarian tissue	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Serious surgery-related adverse events (Clavien Dindo grades ≥2) from gamete or tissue retrieval procedures	Follow-up in months, mean (SD): NR
Schmidt 2005 Retrospective case series Denmark	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 22 Age at preservation in years, mean (SD): NR [median 26] Time between preservation and return in months, mean (SD): NR	Cryopreservation of ovarian tissue	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): NR [median 26]
Selk 2009 Retrospective case series Canada	Medical indication: cancer (mixed) N attempting preservation: 388 N where material obtained: 367 Age at preservation in years, mean (SD): 26.8 (NR)	Cryopreservation of sperm	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material	This sample used banked semen samples between 2002 and 2005 Follow-up in months, mean (SD): NR

Study	Population	Intervention	Outcomes	Comments
	Time between preservation and return in months, mean (SD): NR			
Selk 2009 Retrospective case series Canada	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: NR Age at preservation in years, mean (SD): NR Time between preservation and return in months, mean (SD): NR [median 52]	Cryopreservation of sperm	• Clinical pregnancy rate using stored material	This sample used banked semen samples between 2002 and 2005, and also banked samples anytime from 1984 to 2005 Follow-up in months, mean (SD): NR
Shapira 2020 Retrospective case series Belgium, Israel & US	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 1314 Age at preservation in years, mean (SD): 26.3 (6.3) Time between preservation and return in months, mean (SD): Nr [median 84]	Cryopreservation of ovarian tissue	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): NR [median 64]
Sheth 2012 Retrospective case series US	Medical indication: cancer (mixed) N attempting preservation: 266 N where material obtained: 249 Age at preservation in years, mean (SD): NR Time between preservation and return in months, mean (SD): 25.8 (NR)	Cryopreservation of sperm	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material	Follow-up in months, mean (SD): NR

Study	Population	Intervention	Outcomes	Comments
Silber 2018 Retrospective case series US	Medical indication: mixed (72% cancer (22% Hodgkin's disease; 14% breast cancer; 8% leukaemia; 5% non-Hodgkin's lymphoma; 23% other cancer); 5% threatened premature ovarian failure; 10% social reasons; 13% other conditions (including Turner's syndrome, multiple sclerosis, endometriosis, aplastic anaemia)) N attempting preservation: 108 N where material obtained: 92 Age at preservation in years, mean (SD): NR Time between preservation and return in months, mean (SD): NR	Cryopreservation of ovarian tissue	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): NR
Song 2019 Retrospective case series South Korea	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 721 Age at preservation in years, mean (SD): 27 (7.9) Time between preservation and return in months, mean (SD): NR [median 51]	Cryopreservation of sperm	• Proportion of participants who return to use stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): NR [median 75]
Sönmezer 2023 Retrospective case series Turkey	Medical indication: haematological cancer N attempting preservation: NR N where material obtained: NR	Cryopreservation of ovarian tissue	• Live birth rate using stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): 49 (17.6)

Study	Population	Intervention	Outcomes	Comments
	Age at preservation in years, mean (SD): 21 (5) Time between preservation and return in months, mean (SD): NR [median 74.5]			
Specchia 2019 Retrospective case series Italy	Medical indication: N attempting preservation: NR N where material obtained: 244 Age at preservation in years, mean (SD): 31.3 (6.4) Time between preservation and return in months, mean (SD): 40.8 (NR)	Cryopreservation of oocytes	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR
Stigliani 2021 Retrospective case series Italy	Medical indication: cancer (mixed) N attempting preservation: 682 N where material obtained: 632 Age at preservation in years, mean (SD): 31.6 (9.8) Time between preservation and return in months, mean (SD): 39.6 (NR)	Cryopreservation of sperm	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR
Takae 2022 Retrospective case series Japan	Medical indication: mixed (68% haematological and 32% non-haematological diseases) N attempting preservation: 74 N where material obtained: 31	Cryopreservation of ovarian tissue	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material • Serious surgery-related adverse events (Clavien	Follow-up in months, mean (SD): NR [median 28]

Study	Population	Intervention	Outcomes	Comments
	Age at preservation in years, mean (SD): NR [median 13] Time between preservation and return in months, mean (SD): N/A		Dindo grades ≥2) from gamete or tissue retrieval procedures	
Takashi 2018 Retrospective case series Japan	Medical indication: breast cancer N attempting preservation: 17 N where material obtained: 17 Age at preservation in years, mean (SD): NR Time between preservation and return in months, mean (SD): NR	Cryopreservation of oocytes and/or embryos	• Proportion of participants from whom material suitable for preservation is obtained • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): NR
Tanbo 2015 Retrospective case series Norway	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 164 Age at preservation in years, mean (SD): NR Time between preservation and return in months, mean (SD): NR	Cryopreservation of ovarian tissue	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR
Tournaye 1991 Retrospective case series Belgium	Medical indication: haematological cancer N attempting preservation: NR N where material obtained: 13 Age at preservation in years, mean (SD): 23 (4.6) Time between preservation and return	Cryopreservation of sperm	• Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): NR

Study	Population	Intervention	Outcomes	Comments
	in months, mean (SD): 61.5 (42.9)			
Tsonis 2023 Retrospective case series UK	Medical indication: cancer (mixed) N attempting preservation: 68 N where material obtained: 65 Age at preservation in years, mean (SD): 30.1 (5.3) Time between preservation and return in months, mean (SD): NR	Cryopreservation of oocytes and/or embryos	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss • OHSS	Follow-up in months, mean (SD): NR
van Casteren 2008 Retrospective case series The Netherlands	Medical indication: cancer (mixed) N attempting preservation: 629 N where material obtained: 557 Age at preservation in years, mean (SD): NR [median 27] Time between preservation and return in months, mean (SD): 57 (NR)	Cryopreservation of sperm	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR [median 84]
van der Ven 2016 Retrospective case series Austria, Germany & Switzerland	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: NR Age at preservation in years, mean (SD): 31 (5.9) Time between preservation and return in months, mean (SD):	Cryopreservation of ovarian tissue	• Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR

Study	Population	Intervention	Outcomes	Comments
	NR			
Vriens 2020 Prospective case series The Netherlands	Medical indication: breast cancer N attempting preservation: 34 N where material obtained: 33 Age at preservation in years, mean (SD): 31 (NR) Time between preservation and return in months, mean (SD): NR	Cryopreservation of oocytes and/or embryos	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material • Pregnancy loss	Follow-up in months, mean (SD): NR
Wang 2023 Retrospective case series China	Medical indication: cancer (mixed) N attempting preservation: 1194 N where material obtained: 1034 Age at preservation in years, mean (SD): NR Time between preservation and return in months, mean (SD): 24.8 (15.8)	Cryopreservation of sperm	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material • Clinical pregnancy rate using stored material	Follow-up in months, mean (SD): NR
Wikander 2021 Retrospective case series Sweden	Medical indication: mixed (67% malignant; 33% benign diseases) N attempting preservation: 9 N where material obtained: 9 Age at preservation in years, mean (SD): NR Time between preservation and return in months, mean (SD): N/A	Cryopreservation of oocytes	• Proportion of participants from whom material suitable for preservation is obtained • Proportion of participants who return to use stored material	Follow-up in months, mean (SD): NR [median 204]
Wyns 2011 Retrospective	Medical indication: cancer (mixed)	Cryopreservation of testicular tissue	• Proportion of participants from whom material	Follow-up in months, mean (SD): NR

Study	Population	Intervention	Outcomes	Comments
case series Belgium	N attempting preservation: 62 N where material obtained: 58 Age at preservation in years, mean (SD): 7.6 (4.1) Time between preservation and return in months, mean (SD): N/A		suitable for preservation is obtained • Serious surgery-related adverse events (Clavien Dindo grades ≥2) from gamete or tissue retrieval procedures	
Xi 2020 Retrospective case series China	Medical indication: cancer (mixed) N attempting preservation: NR N where material obtained: 54 Age at preservation in years, mean (SD): NR Time between preservation and return in months, mean (SD): NR	Cryopreservation of sperm	• Proportion of participants who return to use stored material	Follow-up in months, mean (SD): NR

OHSS: Ovarian Hyperstimulation Syndrome; N: number; N/A: not applicable; NR: not reported; SD: standard deviation

See the full evidence tables in appendix D and the forest plots in appendix E.

Summary of the evidence

Stratified analyses were performed by material preserved, by cancer and non-cancer indications for fertility preservation, and age.

In the event of serious or very serious heterogeneity, planned subgroup analyses were: treatment (gonadotoxic chemotherapy, radiotherapy, bone marrow transplantation, hormone treatment, surgical intervention); age when undergoing fertility preservation (<16 years, 16-35 years, >35 years); pubertal status (pre-pubertal, pubertal, post-pubertal); method of cryopreservation (slow rate freezing, rapid freezing/vitrification); and for eggs and embryo strata (oocytes, cleavage stage embryos, blastocyst stage embryos).

Sperm cryopreservation

Very low quality evidence from 45 case series studies showed that 7% (95% confidence interval [CI] 6% to 8%) of those who cryopreserved sperm for fertility preservation returned to use the stored material. However, there was very serious heterogeneity in the proportion of participants that returned to use their preserved sperm, with rates ranging from 1% to 38%. Stratified analyses showed a return rate of 7% (95% CI 6% to 8%) for those with a cancer indication for fertility preservation, and 3% (95% CI 2% to 6%) for those with a non-cancer indication (trans people), but heterogeneity remained serious in the cancer analysis (42

studies) and imprecision was very serious due to a small number of events in the non-cancer analysis (3 studies). Data were not available for other planned subgroup analyses.

Very low quality evidence from 30 case series studies showed a live birth rate using stored sperm of 45% (95% CI 37% to 53%) of those who returned. However, there was serious heterogeneity in live birth rates using cryopreserved sperm. Stratified analysis by indication for fertility preservation was not possible, as all studies included participants with cancer. The data also did not allow for the other planned subgroup analyses.

Low quality evidence from 35 case series studies showed a clinical pregnancy rate using stored sperm of 51% (95% CI 45% to 56%) of those who returned. Stratified analyses showed a clinical pregnancy rate of 50% (95% CI 44% to 56%) for those with a cancer indication (33 studies) and 86% (95% CI 42% to 98%) for those with a non-cancer indication (2 studies). However, imprecision was very serious in the non-cancer (trans people) analysis due to small numbers in these studies.

Very low quality evidence from 28 case series studies showed that 92% (95% CI 89% to 93%) of those attempting sperm cryopreservation were able to provide a sample suitable for preservation. However, there was very serious heterogeneity in these estimates with rates ranging from 66% to 100% of participants providing material for preservation. Stratified analyses showed similar proportions of participants with material obtained in those with a cancer indication for fertility preservation (92%; 95% CI 89% to 94%), and those with a non-cancer indication for fertility preservation (trans people, 92%; 95% CI 89% to 95%), but heterogeneity remained very serious in the cancer analysis (26 studies). Data were not available for other planned subgroup analyses.

Very low quality evidence from 16 case series studies showed a pregnancy loss rate of 17% (95% CI 11% to 25%) of participants who had achieved clinical pregnancy with cryopreserved sperm. Stratified analysis by indication for fertility preservation was not possible, as all studies included participants with cancer.

Testicular tissue cryopreservation

Very low quality evidence from 1 case series study showed that 94% of the prepubertal/peripubertal participants who were attempting cryopreservation of testicular tissue for a cancer indication provided a sample suitable for preservation. However, this estimate is very imprecise due to the small number of events.

Very low quality evidence from the same study showed no serious surgery-related adverse events during or after the testicular tissue retrieval.

Oocyte and/or embryo cryopreservation

Very low quality evidence from 40 case series studies showed that 10% (95% CI 7% to 12%) of those who cryopreserved oocytes or embryos for fertility preservation returned to use the stored material. However, there was very serious heterogeneity in the proportion of participants that returned to use their preserved oocytes or embryos, with rates ranging from 0% to 38%. Stratified analysis by indication for fertility preservation was not possible, as only 1 study was restricted to a non-cancer (trans) population. Analysis by age at which oocytes and/or embryos were preserved suggests a higher return rate for those aged over 35 years at preservation (24%, 95% CI 19% to 29%) than those aged 16-35 years (9%, 95% CI 7% to 12%). However, heterogeneity remained very serious in the 16-35 year analysis (37 studies) and imprecision was very serious because of a small number of events in the >35 years analysis (3 studies). The data did not allow for any of the other planned subgroup analyses.

Low quality evidence from 32 case series studies showed a live birth rate using stored oocytes or embryos of 38% (95% CI 33% to 44%) of those who returned. Stratified analysis

by indication for fertility preservation was not possible, as only 1 study was restricted to a non-cancer (endometriosis) population.

Very low quality evidence from 32 case series studies showed a clinical pregnancy rate using stored oocytes or embryos of 49% (95% CI 43% to 55%) of those who returned. Stratified analysis by indication for fertility preservation was not possible, as only 1 study was restricted to a non-cancer (trans) population.

There was low quality evidence from 13 case series studies for the proportion of participants from whom oocytes or embryos suitable for preservation could be obtained. However, it was not possible to produce a meta-analysed estimate as the statistical analysis does not allow for nearly all of the studies to be at or close to a ratio of 1. A crude estimate of the proportion from these studies is that for 95% of those who attempted to cryopreserve oocytes or embryos, a sample suitable for preservation was obtained.

Very low quality evidence from 20 case series studies showed a pregnancy loss rate of 25% (95% CI 18% to 34%) of participants who had achieved clinical pregnancy with cryopreserved oocytes or embryos. Stratified analysis by indication for fertility preservation was not possible, as all studies included participants with cancer.

Very low quality evidence from 8 case series studies showed a rate of ovarian hyperstimulation syndrome (OHSS) of 1% (95% CI 0% to 1%) of those attempting to cryopreserve oocytes or embryos. Stratified analysis by indication for fertility preservation was not possible, as all studies included participants with cancer.

Ovarian tissue cryopreservation

Very low quality evidence from 4 case series studies showed that of the participants attempting ovarian tissue cryopreservation, a sample suitable for preservation was obtained for 80% (95% CI 55% to 93%). However, there was very serious heterogeneity in the proportion of participants for which a suitable sample of ovarian tissue was obtained, with rates ranging from 42% to 96%. Stratified analysis by indication for fertility preservation was not possible, as all studies included participants with cancer. The data also did not allow for the other planned subgroup analyses.

Very low quality evidence from 24 case series studies showed that 4% (95% CI 3% to 6%) of those who cryopreserved ovarian tissue for fertility preservation returned to use the stored material. However, there was serious heterogeneity in the proportion of participants that returned to use their preserved ovarian tissue. Stratified analysis by indication for fertility preservation was not possible, as only 1 study was restricted to a non-cancer (people with non-oncological systemic diseases) population. Analysis by age at which ovarian tissue was preserved suggests a higher return rate for those aged 16-35 years at preservation (5%, 95% CI 4% to 7%) than those aged under 16 years (1%, 95% CI 0% to 2%). However, heterogeneity remained serious in the 16-35 year analysis (16 studies) and imprecision was very serious because of a small number of events in the <16 years analysis (3 studies). The data did not allow for any of the other planned subgroup analyses.

Very low quality evidence from 24 case series studies showed a live birth rate using stored ovarian tissue of 27% (95% CI 21% to 34%) of those who returned. Stratified analysis by indication for fertility preservation was not possible, as only 1 study was restricted to a non-cancer (people with non-oncological systemic diseases) population.

Very low quality evidence from 26 case series studies showed a clinical pregnancy rate using stored ovarian tissue of 36% (95% CI 30% to 43%) of those who returned. Stratified analysis by indication for fertility preservation was not possible, as only 1 study was restricted to a non-cancer (people with non-oncological systemic diseases) population.

Very low quality evidence from 10 case series studies showed a pregnancy loss rate of 27% (95% CI 17% to 40%) of those who achieved clinical pregnancy with cryopreserved ovarian tissue. Stratified analysis by indication for fertility preservation was not possible, as all studies included participants with cancer.

Very low quality evidence from 12 case series studies showed a rate of serious surgery-related adverse events during or after ovarian tissue retrieval of 0% (95% CI 0% to 2%). Stratified analysis by indication for fertility preservation was not possible, as all studies included participants with cancer.

Economic evidence

A total of 1,383 studies were identified in the health economic literature search for this review question. After duplicates were removed, 943 studies were screened on title and abstract. Of these 943 studies, 16 were included for full text review and 13 of these studies were excluded at this stage. Of the 3 studies included for check listing, all were excluded.

Included studies

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

Also see the literature search strategy in appendix B and the 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

No economic modelling was undertaken for this review because the committee agreed that other topics were higher priorities for economic evaluation.

Unit costs

Table 3: Unit costs

Resource	Unit costs	Source
Oocyte recovery	£2,417	NHS reference costs 2022/23, currency code MC12Z – day case
Oocyte storage	£125 - £350 per year	Human Fertilisation & Embryology Authority (HFEA)
Embryo retrieval for a frozen embryo IVF cycle	£5,000	Guy's and St Thomas specialist care. Note, this a private sector cost
Embryo retrieval for a frozen embryo ICSI cycle	£6,000	Guy's and St Thomas specialist care. Note, this a private sector cost
Freezing of surplus embryos	£840	Guy's and St Thomas specialist care. Note, this a private sector cost
Embryo storage	£350 per year	Guy's and St Thomas specialist care. Note, this a private sector cost
Surgical extraction of sperm	£3,130	NHS reference costs 2022/23, currency code MC20Z – day case
Collection of sperm	£256	NHS reference costs 2022/23, currency code MC21Z – outpatient procedures

Resource	Unit costs	Source
Sperm storage	£300 - £350	Based on private costs obtained from, Complete Fertility, Cambridge IVF and Concept Fertility – NHS costs will likely be lower
Testicular tissue cryopreservation	£3,375	Cleveland Fertility and Gynaecology Clinic. Note, this a private sector cost
Testicular tissue cryopreservation storage	£100	Cleveland Fertility and Gynaecology Clinic. Note, this a private sector cost

The committee's discussion and interpretation of the evidence

The outcomes that matter most

The committee agreed that the proportion of participants from whom material is obtained was a critical outcome when considering the preservation of testicular and ovarian tissue as retrieval requires more complicated procedures, and that this was an important outcome when considering the preservation of sperm, oocytes and embryos. The proportion of participants who return to use stored material was considered a critical outcome as it reflects the utilisation of stored reproductive material. The committee highlighted that it was important to make live birth rate and clinical pregnancy rate using stored material critical outcomes as they reflect the effectiveness of cryopreservation.

The committee agreed a number of other outcomes were important. Pregnancy loss was agreed to be an important outcome because it can be devastating for people trying to have a baby and can indicate when an intervention is effective for achieving pregnancy but does not lead to a live birth. Serious surgery-related adverse events from gamete or tissue retrieval were also agreed to be an important outcome by the committee because it is important when discussing and deciding on treatment options that risks are considered and weighed up against potential benefits. The committee also emphasised that ovarian hyperstimulation syndrome (OHSS) was an important outcome as it is a potential complication of fertility treatment and can be a serious condition.

The quality of the evidence

The quality of evidence was assessed using modified GRADE methodology. The evidence was low to very low quality and tended to be downgraded due to risk of bias (e.g. arising from issues with the selection of participants into the studies, outcome measurement, and reporting of results and setting), inconsistency (heterogeneity unexplained by subgroup analysis), and imprecision due to small number of events.

Benefits and harms

The committee noted that although this review was extended to cover all medical indications for fertility preservation, most of the evidence was for cancer indications. However, although the evidence was sparse and non-comparative, there was some evidence showing that fertility preservation could be successful in non-cancer indications as well. The committee agreed, based on their clinical experience, that fertility preservation is usually offered to anyone with a medical indication likely to impair their reproductive potential (for example, due to medical conditions or future medical treatment), that recommendations should reflect current practice and fertility preservation should be discussed as an option for anyone with a medical indication for it. They acknowledged that there may be people who will not be offered fertility preservation early enough (for example, before urgent gonadotoxic treatment) and might therefore slip through the net, and in some instances, there may be a chance to offer them fertility preservation after the treatment depending on the situation and that they remain at high risk of infertility (for example, due to disease recurrence or relapse). However, the

committee thought that it is not appropriate to make a recommendation on fertility cryopreservation after gonadotoxic treatment has already been given because of potential impact of the treatment on the material.

The committee recognised that sometimes cancer diagnosis requires urgent treatment, where decisions about treatment may be made within hours of diagnosis. The committee stressed that discussion about fertility preservation should take place at the earliest opportunity for those who require urgent treatment.

The committee agreed that health professionals should consider the impact of certain medical conditions and medical or surgical interventions on fertility. Rather than provide an exhaustive list of all possible medical indications that necessitate fertility assessment, the committee agreed preservation when undergoing treatments should be based on clinical judgement and in discussion with the local funding body. They discussed the following examples of such medical indications: endometriosis (when associated with endometriomas and the need for repeated ovarian surgery); genetic conditions associated with premature ovarian insufficiency (Turner Syndrome; Fragile X; Galactosaemia; Blepharophimosis, Ptosis, and Epicanthus inversus syndrome (BPES)); haematological and autoimmune conditions requiring gonadotoxic therapy or haematopoietic stem cell transplantation (Systemic Lupus Erythematosus (SLE) or sickle cell anaemia); people undergoing gender affirming treatment that impacts their fertility. They also noted existing professional guidelines covering various other aspects of fertility preservation which are outside the scope of this guideline update.

The committee considered the evidence for the cryopreservation of sperm and agreed that this is established practice, and should be offered to men, adolescent boys, and trans and non-binary people with male reproductive organs with a medical indication likely to make them infertile.

The committee noted that only 1 relevant study was identified for testicular tissue cryopreservation and this study only provided evidence on the proportion who obtained a suitable sample for cryopreservation and surgery-related adverse events during or after the testicular tissue retrieval. They discussed that cryopreservation of testicular tissue was still experimental and that there was very limited evidence available. They agreed that this was particularly relevant for boys before and during puberty. However, given the experimental nature of this procedure and the lack of evidence on the primary outcomes of live birth and clinical pregnancy, the committee agreed they could not comment on the use of testicular tissue cryopreservation as a fertility preservation option. The committee made a research recommendation in the hope of generating further research on the success and safety of this fertility preservation technique. See appendix K for more information.

The committee considered the evidence for oocyte and embryo cryopreservation and for ovarian tissue cryopreservation. Given the larger evidence base, higher live birth and clinical pregnancy rates, and more established retrieval procedures, the committee agreed that oocyte or embryo cryopreservation should be offered to women, girls, and trans and non-binary people with female reproductive organs who are of reproductive age with a medical indication likely to impair their fertility. The committee were aware of an external guideline by the European Society of Human Reproduction and Embryology (ESHRE) on ovarian stimulation for IVF/ICSI which was updated in 2025, and agreed that it provided relevant and applicable recommendations on how to initiate ovarian stimulation for people undergoing fertility preservation. The ESHRE guideline was critically appraised using an internationally validated tool (Appraisal of Guidelines for Research and Evaluation (AGREE II)) and assessed as sufficient quality for use. Therefore, they agreed to refer to the recommendations in the sections on Fertility preservation for patients facing gonadotoxic treatment and Elective oocyte cryopreservation. More information on the assessment of the methodological rigour and transparency of the ESHRE 2025 guideline can be found in the supplementary document 3.

The committee noted that the evidence showed ovarian tissue retrieval and cryopreservation is feasible and effective, and would be particularly relevant for girls before puberty, when oocyte and embryo retrieval would not be possible. They also noted that NHS England have commenced a tender process for centres to provide ovarian tissue cryopreservation as a clinical service. Therefore, the committee agreed that ovarian tissue cryopreservation should be considered as a fertility preservation option when oocyte or embryo cryopreservation is not feasible.

The committee considered the evidence showing low proportions of participants who return to use stored material but discussed that it was difficult to accurately predict the number of people who use stored material because of a lack of evidence with longer-term follow-up particularly for non-cancer indications. The committee agreed that although it is difficult to quantify the utility of fertility preservation, not being provided with the option to preserve material could be devastating for people who later wish to conceive and have had their fertility impaired.

The committee were aware that by law, consent to store cryopreserved material must be renewed every 10 years with the person for NHS-funded storage to lawfully continue and agreed that this period was too long. The committee emphasised the importance of more robust follow-up procedures to discuss the need for continued storage and recommended that follow-ups should be organised with people who have had their material preserved for consideration of the need for continued NHS-funded storage. The committee considered the time interval for the follow-ups and agreed this could depend on various aspects such as the age of the person. Although a wide range of follow-up times was reported in the evidence, the committee agreed that a follow-up at minimum every 5 years is reasonable but often more frequent follow-ups could be warranted. However, they did not want to be too prescriptive as they agreed that the follow-up time depended on factors such as minimising the time to store the material unnecessary by reminding people that (and where) their material was still being preserved, resources required to organise follow-ups and risking of losing touch with people. The committee recognised the challenges in reaching people who have had their material preserved years prior and discussed that having more frequent follow-ups could help with this. They agreed that the recommendation on regular follow-ups could have some resource implications but it also could be potentially cost-saving to the NHS given the low return rates shown in the evidence review and that continued NHS-funded storage could be unnecessary for those whose fertility has not been impaired by treatment.

Cost effectiveness and resource use

No health economic evidence was included for this review question. Three studies were checklisted after full text screening but subsequently excluded due to applicability and methodological concerns.

Due to a lack of health economic evidence, the committee qualitatively assessed the cost effectiveness of fertility preservation and noted that, even though the population for this review has been expanded since the previous NICE guideline, the new recommendations that were made largely reflect current practice – and are therefore not expected to result in a significant resource impact. Similarly, although the ESHRE guideline did not conduct any health economic evaluation or formal cost-effectiveness analysis of the evidence, the committee made a qualitative assessment based on their expertise and experience that implementing the relevant ESHRE recommendations would be cost-effective for the NHS and would not result in significant resource implications, as they align with current practice.

A recommendation to consider ovarian tissue cryopreservation was made for when oocyte or embryo cryopreservation is not feasible. Although ovarian tissue cryopreservation was not recommended in the previous NICE guideline, the committee noted that the recommendation to consider this intervention is reflective of current practice. NHS, or private sector, costs for ovarian tissue cryopreservation were not presented to the committee, but the committee

noted this form of fertility preservation is more expensive compared to oocyte or embryo cryopreservation. The committee therefore recommended that ovarian tissue cryopreservation should only be considered when oocyte or embryo cryopreservation is not feasible. For example, in girls or people with female reproductive organs before puberty.

The committee also noted that possible cost savings may be observed if regular follow-up for people with preserved material is implemented more consistently. The committee agreed that consistent and regular follow-up would allow for earlier identification of people who no longer require their preserved material – because they have either been able to conceive naturally or no longer wish to have children. Time-efficient identification of these people may result in the potential for the NHS to save money on long-term NHS-funded storage for preserved material that is no longer required.

Recommendations supported by this evidence review

This evidence review supports recommendations 1.53.1, 1.53.5, 1.53.6, 1.53.7, 1.53.8 and the research recommendation on testicular tissue cryopreservation.

References – included studies

Case series

Adam 2021

Adam, Cecile, Deffert, Christine, Leyvraz, Celine et al. (2021) Use and Effectiveness of Sperm Cryopreservation for Adolescents and Young Adults: A 37-Year Bicentric Experience. Journal of adolescent and young adult oncology 10(1): 78-84

Agarwal 2004

Agarwal, Ashok, Ranganathan, Pavithra, Kattal, Namita et al. (2004) Fertility after cancer: a prospective review of assisted reproductive outcome with banked semen specimens. Fertility and sterility 81(2): 342-8

Akel 2020

Akel, Ruba A, Guo, Xiaoyue M, Moravek, Molly B et al. (2020) Ovarian Stimulation Is Safe and Effective for Patients with Gynecologic Cancer. Journal of adolescent and young adult oncology 9(3): 367-374

Alvarez 2018

Alvarez, R M and Ramanathan, P (2018) Fertility preservation in female oncology patients: the influence of the type of cancer on ovarian stimulation response. Human reproduction (Oxford, England) 33(11): 2051-2059

Andersen 2008

Andersen, CY, Rosendahl, M, Byskov, AG et al. (2008) Two successful pregnancies following autotransplantation of frozen/thawed ovarian tissue. Human reproduction (Oxford, England) 23(10): 2266-72

Barral 2023

Barral, Yasmina, Borras, Aina, Carrillo, Pilar et al. (2023) Current status of fertility preservation in a Spanish tertiary public hospital: multidisciplinary approach and experience in over 1500 patients. Clinical & translational oncology: official publication of the Federation of Spanish Oncology Societies and of the National Cancer Institute of Mexico

Barcroft 2013

Barcroft, J; Dayoub, N; Thong, K J (2013) Fifteen-year follow-up of embryos cryopreserved in cancer patients for fertility preservation. Journal of assisted reproduction and genetics 30(11): 1407-13

Berton 2020

Berton, Caroline Z, Brogliato, Caroline, Yoshida, Ivan H et al. (2020) Cancer fertility preservation: a report from a Brazilian social program. JBRA assisted reproduction 24(3): 302-304

Bizet 2012

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Blackhall 2002

Blackhall, F H, Atkinson, A D, Maaya, M B et al. (2002) Semen cryopreservation, utilisation and reproductive outcome in men treated for Hodgkin's disease. British journal of cancer 87(4): 381-4

Botchan 2013

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Appendices

Appendix A Review protocols

Review protocol for review question: What is the success rate, and which factors affect the outcome, of fertility preservation for children and adults undergoing treatment for cancer and other conditions or situations which are likely to impair their fertility?

Table 4: Review protocol

ID	Field	Content
0.	PROSPERO registration number	CRD42023478564
1.	Review title	Success rate and factors affecting the outcome of fertility preservation for children and adults undergoing treatment for cancer and other conditions or situations which are likely to impair their fertility
2.	Review question	What is the success rate, and which factors affect the outcome, of fertility preservation for children and adults undergoing treatment for cancer and other conditions or situations which are likely to impair their fertility?
3.	Objective	To determine the success rate, and factors affecting outcome, of fertility preservation for children and adults undergoing treatment for cancer and other conditions or situations which are likely to impair their fertility
4.	Searches	The following databases will be searched (from 1990 to the date the search is conducted): Clinical searches • Cochrane Central Register of Controlled Trials (CENTRAL) • Cochrane Database of Systematic Reviews (CDSR) • Embase • MEDLINE ALL • Epistemonikos Searches will be restricted by:

ID	Field	Content
		• English language • Human studies The full search strategies for MEDLINE database will be published in the final review.
5.	Condition or domain being studied	Fertility preservation for children and adults undergoing treatment for cancer and other conditions or situations which are likely to impair their fertility
6.	Population	Inclusion: • Children and adults who have a medical indication for fertility preservation (including conditions that require chemotherapy, radiotherapy, and/or bone marrow transplantation, and conditions or situations that require hormone treatment and/or surgical intervention with the potential to harm fertility) Exclusion: • People with non-medical indications for fertility preservation (such as to manage age-related decline in fertility) will be excluded from this review If some, but not all, of a study's participants are eligible for the review, then a study will be included if at least 80% of its participants are eligible for this review.
7.	Intervention	Fertility preservation, including cryopreservation of: • sperm • testicular tissue • eggs (oocytes) • embryos • ovarian tissue
8.	Comparator	N/A
9.	Types of study to be included	Include published full-text papers: • Systematic reviews of including case series • Case series or arms from comparative studies

ID	Field	Content
		Exclusion: • Individual case studies will not be included
10.	Other exclusion criteria	Other exclusion criteria: • Date cut-off: 1990 • Language limitations: non-English language papers will be excluded (unless data can be obtained, and risk of bias assessed, from an existing systematic review) • Conference abstracts, dissertations and unpublished data will not be included unless the data can be extracted (and risk of bias assessed) from elsewhere (for instance, from an existing systematic review)
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)	For preservation of ovarian or testicular tissue only*: • Proportion of participants from whom material suitable for preservation is obtained For preservation of all material: • Proportion of participants who return to use stored material • Live birth rate using stored material • Clinical pregnancy rate using stored material Only studies that report at least one of the primary outcomes will be included. *In studies which report on the preservation of sperm, eggs (oocytes), or embryos, the outcome proportion of participants from whom material suitable for preservation is obtained will not be reated as a primary outcome
13.	Secondary outcomes (important outcomes)	For preservation of sperm, eggs (oocytes), or embryos only: • Proportion of participants from whom material suitable for preservation is obtained For preservation of all material:

ID	Field	Content
		• Pregnancy loss (accounting for ectopic pregnancy, miscarriage, stillbirth, and termination of pregnancy) • Serious surgery-related adverse events (Clavien Dindo grades ≥2) from gamete or tissue retrieval procedures • Ovarian Hyperstimulation Syndrome (OHSS) Studies that report secondary outcomes will only be included if they also report a primary outcome. Secondary outcomes will therefore be extracted in addition to primary outcomes, only in cases where a primary outcome is also reported.
14.	Data extraction (selection and coding)	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. Dual sifting will be performed on at least 10% of records; 90% agreement is required. Disagreements will be resolved via discussion between reviewers, and consultation with senior staff if necessary. 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 included after full-text review. The following data will be extracted: study details (reference, country where study was carried out, type and dates), participant characteristics (data will be extracted on all key characteristics in line with planned subgroup analyses outlined below), inclusion and exclusion criteria, details of the fertility preservation method, 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.
15.	Risk of bias (quality) assessment	Quality assessment of individual studies will be performed using the following checklists: • ROBIS tool for systematic reviews • JBI checklist The quality assessment will be performed by one reviewer and this will be quality assessed by a senior reviewer.
16.	Strategy for data synthesis	Depending on the availability of the evidence, the findings will be summarised narratively or quantitatively. Where possible, meta-analyses of proportions will be conducted using the metaprop function in the R software package. Data analysis will be conducted using the generalized linear mixed model (GLMM) (Lin and Chu, 2020). The outcomes will be reported as proportions with corresponding 95% confidence intervals,

ID	Field	Content
		as well as statistical heterogeneity data (I2, τ2). Heterogeneity will be explored using planned subgroup analyses (outlined below). The overall confidence in the findings will be evaluated 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/ and guidance on the use of GRADE for baseline risk or overall prognosis (Iorio et al. 2015). Due to the absence of minimally important differences for this review, imprecision will be judged based on optimal information size (number of events) and importance of outcomes will be assessed qualitatively during committee discussions and documented in the committee's discussion and interpretation of the evidence.

17.	Analysis of sub-groups	Evidence will be stratified by:
		• Material preserved:
		  ○ sperm
		  ○ testicular tissue
		  ○ eggs (oocytes) and embryos
		  ○ ovarian tissue
		
		Evidence will be subgrouped by:
		• Medical indication for fertility preservation:
		  ○ cancer
		  ○ non-cancer
		
		Evidence will be sub-grouped by the following only if there is significant heterogeneity in outcomes:
		• Treatment:
		  ○ gonadotoxic chemotherapy
		  ○ radiotherapy
		  ○ bone marrow transplantation
		  ○ hormone treatment
		  ○ surgical intervention

ID	Field	Content	

		• Age when undergoing fertility preservation (based on mean age in the study):
		  ○ <16 years
		  ○ 16-35 years
		  ○ >35 years
		
		• Pubertal status:
		  ○ Pre-pubertal
		  ○ Pubertal
		  ○ Post-pubertal
		
		• Method of cryopreservation:
		  ○ slow rate freezing
		  ○ rapid freezing/vitrification
		
		• Material preserved (for eggs and embryo strata):
		  ○ eggs (oocytes)
		  ○ cleavage stage embryos
		  ○ blastocyst stage embryos
		
		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 success rate 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 similar success rates in that group compared with others.	

18.	Type and method of review	☐	Intervention
		☐	Diagnostic

ID	Field	Content			
		☐	Prognostic		
		☐	Qualitative		
		☐	Epidemiologic		
		☐	Service Delivery		
		☒	Other (please specify) Proportional meta-analysis of success rata data		
19.	Language	English			
20.	Country	England			
21.	Anticipated or actual start date	September 2023			
22.	Anticipated completion date	November 2024			
23.	Stage of review at time of this submission	Review stage		Started	Completed
		Preliminary searches		☐	☐
		Piloting of the study selection process		☐	☐
		Formal screening of search results against eligibility criteria		☐	☐
		Data extraction		☐	☐
		Risk of bias (quality) assessment		☐	☐
		Data analysis		☐	☐
24.	Named contact	5a. Named contact Guideline Development Team A 5b. Named contact e-mail FertilityProblems@nice.org.uk 5c. Organisational affiliation of the review Guideline Development Team A, Centre for Guidelines, National Institute for Health and Care Excellence			

ID	Field	Content	
		(NICE)	
25.	Review team members	• 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 commit tee 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.	URL for published protocol	crd.york.ac.uk/PROSPERO/display_record.php?RecordID=478564	
31.	Dissemination plans	NICE may use a range of different methods to raise awareness of the guideline. These include standard approaches such as: • 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	Fertility problems, infertility, fertility preservation	
33.	Details of existing review of same topic by same authors	None	
34.	Current review status	☒	Ongoing

ID	Field	Content	
		☐	Completed but not published
		☐	Completed and published
		☐	Completed, published and being updated
		☐	Discontinued
35.	Additional information	None	
36.	Details of final publication	www.nice.org.uk	

JBI: The Joanna Briggs Institute Checklist; MEDLINE: Medical Literature Analysis and Retrieval System Online; N/A: not applicable; NICE: National Institute for Health and Care Excellence; ROBIS: risk of bias in systematic reviews

Appendix B Literature search strategies

Literature search strategies for review question: What is the success rate, and which factors affect the outcome, of fertility preservation for children and adults undergoing treatment for cancer and other conditions or situations which are likely to impair their fertility?

Database: Ovid Medline

Date of last search: 22/11/2023

#	Searches
1	exp Infertility/
2	exp Fertility/
3	Reproductive Techniques, Assisted/
4	(infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*).tw.
5	(((artificial* or assist*) adj2 (conception* or reproduct*)) or ART).tw.
6	or/1-5
7	Fertility Preservation/
8	Semen Preservation/
9	7 or 8
10	Freezing/ or Preservation, Biological/ or exp Tissue Preservation/ or Vitrification/
11	(bank* or biobank* or cryo* or conserv* or CRF or freez* or frozen or lyophili?at* or preserv* or storing or storage or vitrif*).tw,kf.
12	or/10-11
13	Blastocyst/ or Embryo, Mammalian/
14	Germ Cells/
15	Oocytes/ or Ovum/ or Zygote/
16	Semen/ or exp Spermatozoa/
17	exp Gonads/ and exp Tissues/
18	(blastocyst* or egg* or embryo* or oocyt* or ov?cyt* or ova or ovum or zygote*).tw.
19	(semen or sperm*).tw.
20	((gonad*1 or gonadal or ovar* or test?s or testicular) adj3 tissue*).tw.
21	or/13-20
22	12 and 21
23	9 or 22
24	6 and 23
25	letter/
26	editorial/
27	news/
28	exp historical article/

#	Searches
29	Anecdotes as topic/
30	comment/
31	case reports/
32	(letter or comment*).ti.
33	animals/ not humans/
34	exp Animals, Laboratory/
35	exp Animal Experimentation/
36	exp Models, Animal/
37	exp Rodentia/
38	(rat or rats or rodent* or mouse or mice).ti.
39	or/25-38
40	24 not 39
41	limit 40 to english language
42	Observational Studies as Topic/
43	Observational Study/
44	Epidemiologic Studies/
45	exp Case-Control Studies/
46	exp Cohort Studies/
47	Cross-Sectional Studies/
48	Controlled Before-After Studies/
49	Historically Controlled Study/
50	Interrupted Time Series Analysis/
51	Comparative Study.pt.
52	case control$.tw.
53	case series.tw.
54	(cohort adj (study or studies)).tw.
55	cohort analy$.tw.
56	(follow up adj (study or studies)).tw.
57	(observational adj (study or studies)).tw.
58	longitudinal.tw.
59	prospective.tw.
60	retrospective.tw.
61	cross sectional.tw.
62	or/42-61
63	meta-analysis/
64	meta-analysis as topic/

#	Searches
65	(meta analy* or metanaly* or metaanaly*).ti,ab.
66	((systematic* or evidence*) adj2 (review* or overview*)).ti,ab.
67	(reference list* or bibliograph* or hand search* or manual search* or relevant journals).ab.
68	(search strategy or search criteria or systematic search or study selection or data extraction).ab.
69	(search* adj4 literature).ab.
70	(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.
71	cochrane.jw.
72	or/63-71
73	41 and 62
74	41 and 72
75	73 or 74
76	limit 75 to yr="1990 -Current"

Database: Ovid Embase

Date of last search: 22/11/2023

#	Searches
1	exp infertility/
2	exp fertility/
3	infertility therapy/
4	(infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*).tw.
5	(((artificial* or assist*) adj2 (conception* or reproduct*)) or ART).tw.
6	or/1-5
7	fertility preservation/
8	oocyte cryopreservation/ or oocyte vitrification/
9	exp sperm preservation/
10	or/7-9
11	cryopreservation/ or freezing/ or preservation/ or "preservation and storage"/ or storage/ or tissue preservation/ or vitrification/
12	(bank* or biobank* or cryo* or conserv* or CRF or freez* or frozen or lyophili?at* or preserv* or storing or storage or vitrif*).tw,kf.
13	or/11-12
14	blastocyst/ or human embryo/
15	germ cell/
16	oocyte/ or ovum/ or zygote/
17	exp sperm/
18	ovary tissue/ or testis tissue/
19	(blastocyst* or egg* or embryo* or oocyt* or ov?cyt* or ova or ovum or zygote*).tw.

#	Searches
20	(semen or sperm*).tw.
21	((gonad*1 or gonadal or ovar* or test?s or testicular) adj3 tissue*).tw.
22	or/14-21
23	13 and 22
24	10 or 23
25	6 and 24
26	letter.pt. or letter/
27	note.pt.
28	editorial.pt.
29	case report/ or case study/
30	(letter or comment*).ti.
31	animal/ not human/
32	nonhuman/
33	exp Animal Experiment/
34	exp Experimental Animal/
35	animal model/
36	exp Rodent/
37	(rat or rats or rodent* or mouse or mice).ti.
38	or/26-37
39	25 not 38
40	limit 39 to english language
41	Clinical study/
42	Case control study/
43	Family study/
44	Longitudinal study/
45	Retrospective study/
46	comparative study/
47	Prospective study/
48	Randomized controlled trials/
49	47 not 48
50	Cohort analysis/
51	cohort analy$.tw.
52	(Cohort adj (study or studies)).tw.
53	(Case control$ adj (study or studies)).tw.
54	(follow up adj (study or studies)).tw.
55	(observational adj (study or studies)).tw.

#	Searches
56	(epidemiologic$ adj (study or studies)).tw.
57	(cross sectional adj (study or studies)).tw.
58	case series.tw.
59	prospective.tw.
60	retrospective.tw.
61	or/41-46,49-60
62	systematic review/
63	meta-analysis/
64	(meta analy* or metanaly* or metaanaly*).ti,ab.
65	((systematic or evidence) adj2 (review* or overview*)).ti,ab.
66	(reference list* or bibliograph* or hand search* or manual search* or relevant journals).ab.
67	(search strategy or search criteria or systematic search or study selection or data extraction).ab.
68	(search* adj4 literature).ab.
69	(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.
70	((pool* or combined) adj2 (data or trials or studies or results)).ab.
71	cochrane.jw.
72	or/62-71
73	40 and 61
74	40 and 72
75	73 or 74
76	(conference abstract* or conference review or conference paper or conference proceeding).db,pt,su.
77	75 not 76
78	limit 77 to yr="1990 -Current"

Database: Wiley - Cochrane Database of Systematic Reviews (CDSR)

Date of last search: 22/11/2023

ID	Search
#1	MeSH descriptor: [Infertility] explode all trees
#2	MeSH descriptor: [Fertility] explode all trees
#3	MeSH descriptor: [Reproductive Techniques, Assisted] this term only
#4	(infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*):ti,ab
#5	(((artificial* or assist*) near/2 (conception* or reproduct*)) or ART):ti,ab
#6	{or #1-#5}
#7	MeSH descriptor: [Fertility Preservation] this term only
#8	MeSH descriptor: [Semen Preservation] this term only

ID	Search
#9	#7 or #8
#10	MeSH descriptor: [Freezing] this term only
#11	MeSH descriptor: [Preservation, Biological] this term only
#12	MeSH descriptor: [Tissue Preservation] explode all trees
#13	MeSH descriptor: [Vitrification] this term only
#14	(bank* or biobank* or cryo* or conserv* or CRF or freez* or frozen or lyophilisat* or lyophilizat* or preserv* or storing or storage or vitrif*):ti,ab,kw
#15	{or #10-#14}
#16	MeSH descriptor: [undefined] explode all trees
#17	MeSH descriptor: [Embryo, Mammalian] this term only
#18	MeSH descriptor: [Germ Cells] this term only
#19	MeSH descriptor: [Oocytes] this term only
#20	MeSH descriptor: [Ovum] this term only
#21	MeSH descriptor: [Zygote] this term only
#22	MeSH descriptor: [Semen] this term only
#23	MeSH descriptor: [Spermatozoa] this term only
#24	MeSH descriptor: [Gonads] explode all trees
#25	MeSH descriptor: [Tissues] explode all trees
#26	(blastocyst* or egg* or embryo* or oocyt* or ovacyt* or ovocyt* or ova or ovum or zygote*):ti,ab
#27	(semen or sperm*):ti,ab
#28	((gonad or gonads or gonadal or ovar* or testes or testis or testicular) near/3 tissue*):ti,ab
#29	{or #16-#28}
#30	#15 and #29
#31	#9 or #30
#32	#6 and #31 with Cochrane Library publication date Between Jan 1990 and Nov 2023, in Cochrane Reviews, Cochrane Protocols

Database: Epistemonikos

Date of last search: 22/11/2023

#	Searches
1	(infertil* OR subfertil* OR fertil* OR subfecund* OR "sub fecundity" OR infecund* OR steril* OR ((artificial* or assist*) AND (conception* or reproduct*)) OR ART)
2	(bank* OR biobank* OR cryo* OR conserv* OR CRF OR freez* OR frozen OR lyophilisat* OR lyophilizat* OR preserv* OR storing OR storage OR vitrif*)
3	(blastocyst* OR egg* OR embryo* OR oocyt* OR ovacyt* OR ovocyt* OR ova OR ovum OR zygote* OR semen OR sperm* OR ((gonad OR gonads OR gonadal OR ovar* OR testes OR testis OR testicular) AND tissue*))
4	1 AND 2 AND 3

Health economic literature search strategies

Database: Ovid Medline

Date of last search: 22/11/2023

#	Searches
1	exp Infertility/
2	exp Fertility/
3	Reproductive Techniques, Assisted/
4	(infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*).tw.
5	(((artificial* or assist*) adj2 (conception* or reproduct*)) or ART).tw.
6	or/1-5
7	Fertility Preservation/
8	Semen Preservation/
9	7 or 8
10	Freezing/ or Preservation, Biological/ or exp Tissue Preservation/ or Vitrification/
11	(bank* or biobank* or cryo* or conserv* or CRF or freez* or frozen or lyophili?at* or preserv* or storing or storage or vitrif*).tw,kf.
12	or/10-11
13	Blastocyst/ or Embryo, Mammalian/
14	Germ Cells/
15	Oocytes/ or Ovum/ or Zygote/
16	Semen/ or exp Spermatozoa/
17	exp Gonads/ and exp Tissues/
18	(blastocyst* or egg* or embryo* or oocyt* or ov?cyt* or ova or ovum or zygote*).tw.
19	(semen or sperm*).tw.
20	((gonad*1 or gonadal or ovar* or test?s or testicular) adj3 tissue*).tw.
21	or/13-20
22	12 and 21
23	9 or 22
24	6 and 23
25	letter/
26	editorial/
27	news/
28	exp historical article/
29	Anecdotes as topic/
30	comment/
31	case reports/
32	(letter or comment*).ti.
33	animals/ not humans/
34	exp Animals, Laboratory/
35	exp Animal Experimentation/

#	Searches
36	exp Models, Animal/
37	exp Rodentia/
38	(rat or rats or rodent* or mouse or mice).ti.
39	or/25-38
40	24 not 39
41	limit 40 to english language
42	Economics/
43	Value of life/
44	exp "Costs and Cost Analysis"/
45	exp Economics, Hospital/
46	exp Economics, Medical/
47	Economics, Nursing/
48	Economics, Pharmaceutical/
49	exp "Fees and Charges"/
50	exp Budgets/
51	budget*.ti,ab.
52	cost*.ti.
53	(economic* or pharmaco?economic*).ti.
54	(price* or pricing*).ti,ab.
55	(cost* adj2 (effective* or utilit* or benefit* or minimi* or unit* or estimat* or variable*)).ab.
56	(financ* or fee or fees).ti,ab.
57	(value adj2 (money or monetary)).ti,ab.
58	or/42-57
59	41 and 58
60	limit 59 to yr="1990 -Current"

Database: Ovid Embase

Date of last search: 22/11/2023

#	Searches
1	exp infertility/
2	exp fertility/
3	infertility therapy/
4	(infertil* or subfertil* or fertil* or hypofertil* or subfecund* or fecund* or infecund* or steril*).tw.
5	(((artificial* or assist*) adj2 (conception* or reproduct*)) or ART).tw.
6	or/1-5
7	fertility preservation/
8	oocyte cryopreservation/ or oocyte vitrification/

#	Searches
9	exp sperm preservation/
10	or/7-9
11	cryopreservation/ or freezing/ or preservation/ or "preservation and storage"/ or storage/ or tissue preservation/ or vitrification/
12	(bank* or biobank* or cryo* or conserv* or CRF or freez* or frozen or lyophili?at* or preserv* or storing or storage or vitrif*).tw,kf.
13	or/11-12
14	blastocyst/ or human embryo/
15	germ cell/
16	oocyte/ or ovum/ or zygote/
17	exp sperm/
18	ovary tissue/ or testis tissue/
19	(blastocyst* or egg* or embryo* or oocyt* or ov?cyt* or ova or ovum or zygote*).tw.
20	(semen or sperm*).tw.
21	((gonad*1 or gonadal or ovar* or test?s or testicular) adj3 tissue*).tw.
22	or/14-21
23	13 and 22
24	10 or 23
25	6 and 24
26	letter.pt. or letter/
27	note.pt.
28	editorial.pt.
29	case report/ or case study/
30	(letter or comment*).ti.
31	animal/ not human/
32	nonhuman/
33	exp Animal Experiment/
34	exp Experimental Animal/
35	animal model/
36	exp Rodent/
37	(rat or rats or rodent* or mouse or mice).ti.
38	or/26-37
39	25 not 38
40	limit 39 to english language
41	health economics/
42	exp economic evaluation/
43	exp health care cost/

#	Searches
44	exp fee/
45	budget/
46	funding/
47	budget*.ti,ab.
48	cost*.ti.
49	(economic* or pharmaco?economic*).ti.
50	(price* or pricing*).ti,ab.
51	(cost* adj2 (effective* or utilit* or benefit* or minimi* or unit* or estimat* or variable*)).ab.
52	(financ* or fee or fees).ti,ab.
53	(value adj2 (money or monetary)).ti,ab.
54	or/41-53
55	40 and 54
56	(conference abstract* or conference review or conference paper or conference proceeding).db,pt,su.
57	55 not 56
58	limit 57 to yr="1990 -Current"

Database: CRD Health Technology Assessments (HTA)

Date of last search: 22/11/2023

#	Searches
1	(MeSH DESCRIPTOR Infertility EXPLODE ALL TREES) OR (MeSH DESCRIPTOR Fertility EXPLODE ALL TREES OR MeSH Descriptor Reproductive Techniques, Assisted) OR ((infertil* OR subfertil* OR fertil* OR subfecund* OR |sub fecundity| OR infecund* OR steril* OR ((artificial* or assist*) AND (conception* or reproduct*)) OR ART))
2	(MeSH DESCRIPTOR Fertility Preservation OR MeSH DESCRIPTOR Semen Preservation OR MeSH DESCRIPTOR Freezing OR MeSH DESCRIPTOR Preservation, Biological OR MeSH DESCRIPTOR Tissue Preservation EXPLODE ALL TREES OR MeSH DESCRIPTOR Vitrification OR (bank* OR biobank* OR cryo* OR conserv* OR CRF OR freez* OR frozen OR lyophilisat* OR lyophilizat* OR preserv* OR storing OR storage OR vitrif*))
3	* IN HTA FROM 1990 TO 2023
5	1 AND 2 AND 3

Database: INAHTA International HTA Database

Date of last search: 22/11/2023

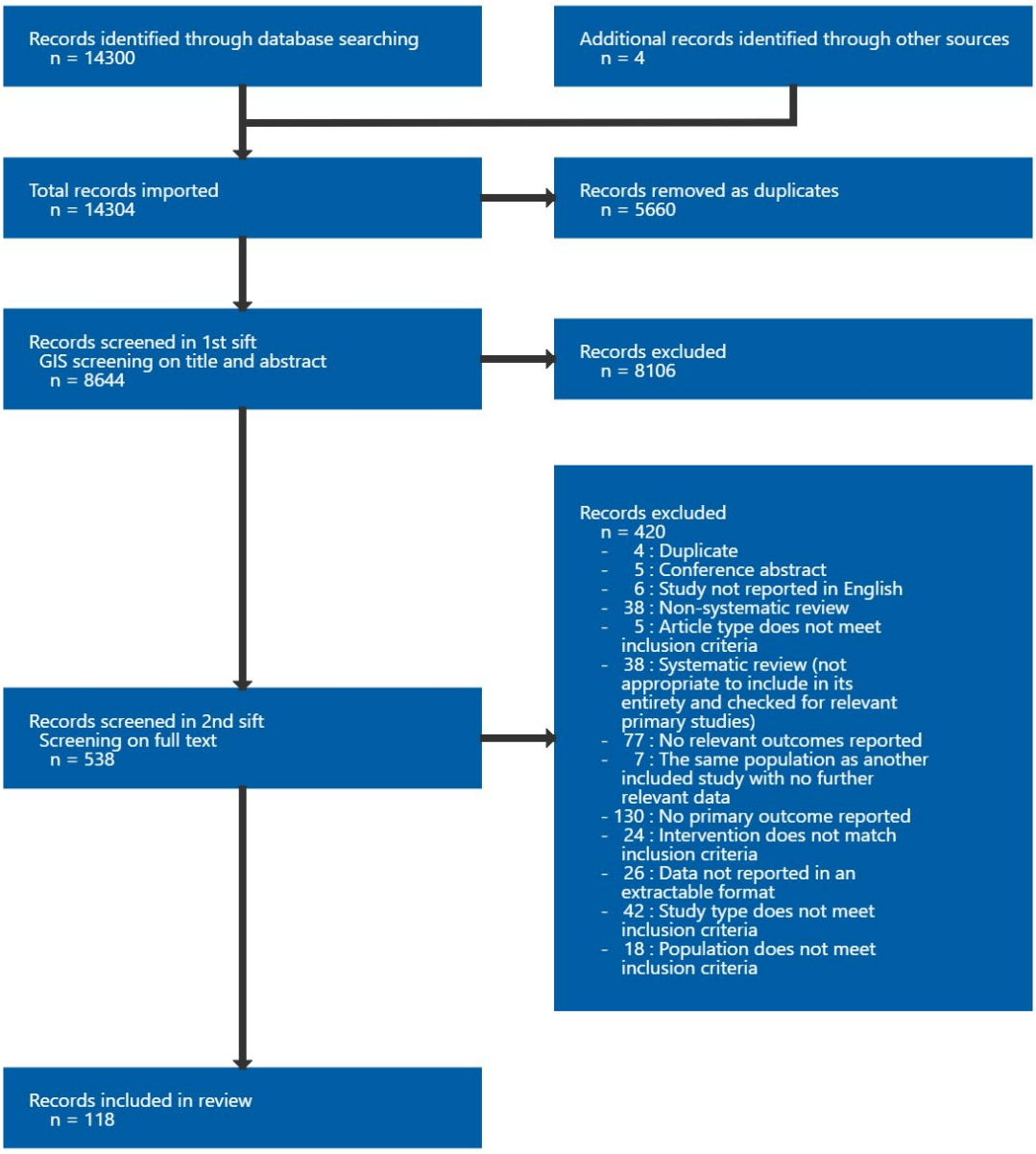
#	Searches
1	(("Infertility"[mhe] OR "Fertility"[mhe] OR "Reproductive Techniques, Assisted"[mh] OR infertil* OR subfertil* OR fertil* OR subfecund* OR "sub fecundity" OR infecund* OR steril* OR ((artificial* or assist*) AND (conception* or reproduct*)) OR ART))
2	((“Fertility Preservation”[mh] OR “Semen Preservation”[mh] OR “Freezing”[mh] OR “Preservation, Biological”[mh] OR “Tissue Preservation”[mhe] OR “Vitrification”[mh] OR (bank* OR biobank* OR cryo* OR conserv* OR CRF OR freez* OR frozen OR lyophilisat* OR lyophilizat* OR preserv* OR storing OR storage OR vitrif*))
3	(((“Blastocyst”[mh] OR “Embryo, Mammalian”[mh] OR “Germ Cells”[mh] OR “Oocytes”[mh] OR “Ovum”[mh] OR “Zygote”[mh] OR “Semen”[mh] OR “Spermatozoa”[mhe] OR (“Gonads”[mhe] AND “Tissues”[mhe]) OR (blastocyst* OR egg* OR embryo* OR oocyt* OR ovacyt* OR ovocyt* OR ova OR ovum OR zygote* OR semen OR sperm* OR ((gonad OR gonads OR gonadal OR ovar* OR testes OR testis OR testicular) AND tissue*)))
4	1 AND 2 AND 3 FROM 1990 TO 2023 AND (English)[Language]

Appendix C Case series evidence study selection

Study selection for review question: What is the success rate, and which factors affect the outcome, of fertility preservation for children and adults undergoing treatment for cancer and other conditions or situations which are likely to impair their fertility?

Clinical search

Figure 1: Study selection flow chart



Appendix D Evidence tables

Evidence tables for review question: What is the success rate, and which factors affect the outcome, of fertility preservation for children and adults undergoing treatment for cancer and other conditions or situations which are likely to impair their fertility?

Please refer to Supplement R Evidence tables for fertility preservation

Appendix E Forest plots

Forest plots for review question: What is the success rate, and which factors affect the outcome, of fertility preservation for children and adults undergoing treatment for cancer and other conditions or situations which are likely to impair their fertility?

Figure 2: Sperm cryopreservation: Proportion of participants who return to use stored material

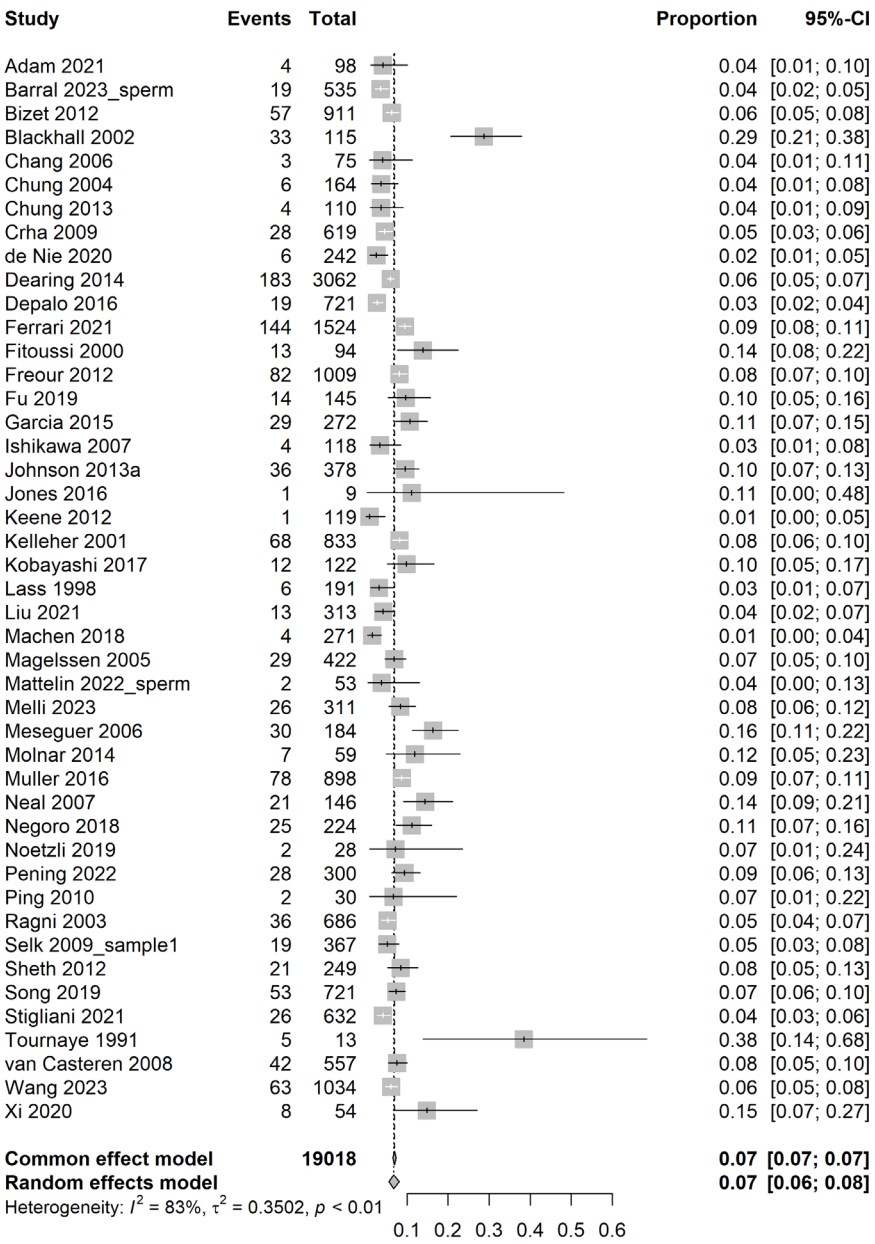


Figure 3: Sperm cryopreservation: Proportion of participants who return to use stored material; cancer subgroup

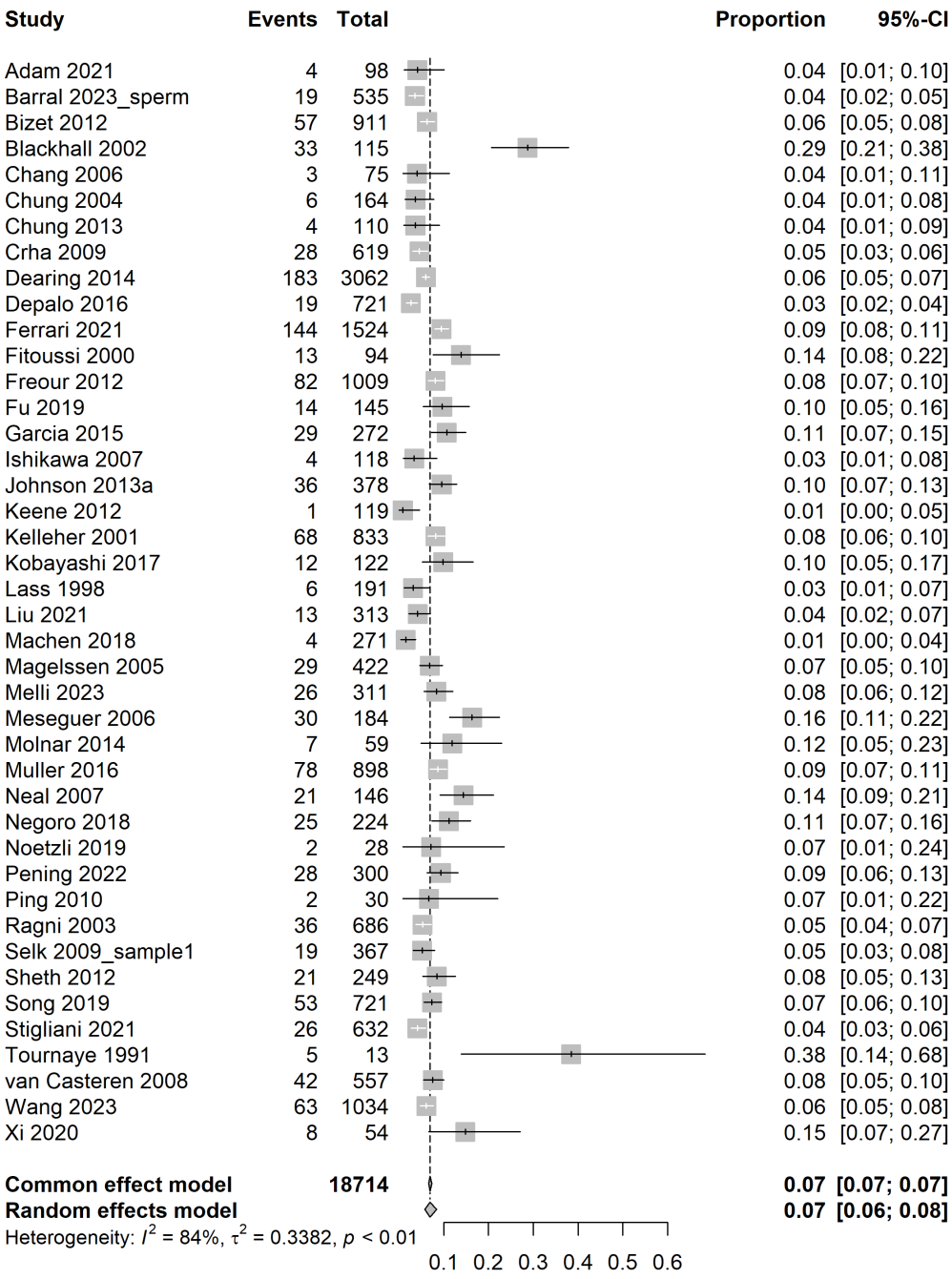


Figure 4: Sperm cryopreservation: Proportion of participants who return to use stored material; non-cancer subgroup

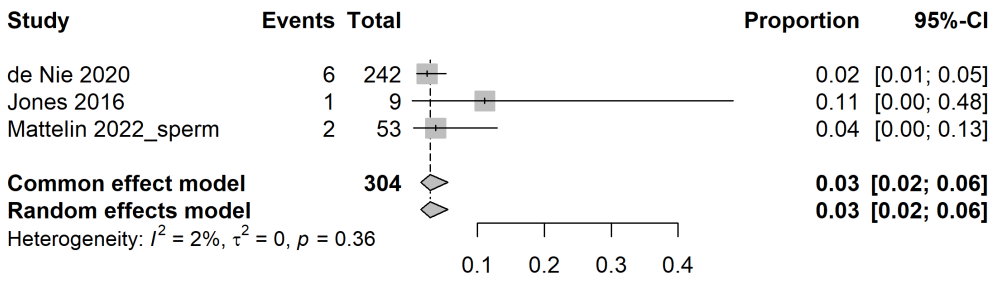


Figure 5: Sperm cryopreservation: Live birth rate using stored material

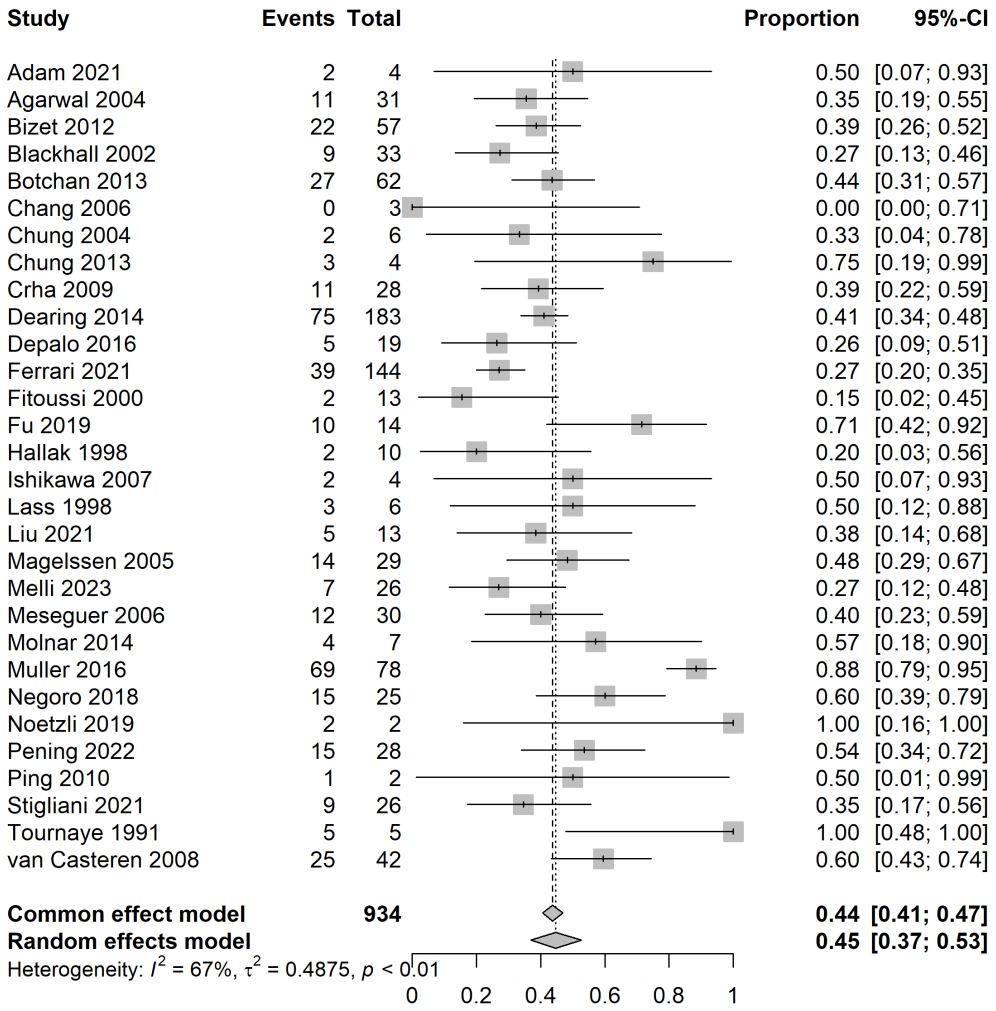


Figure 6: Sperm cryopreservation: Clinical pregnancy rate using stored material

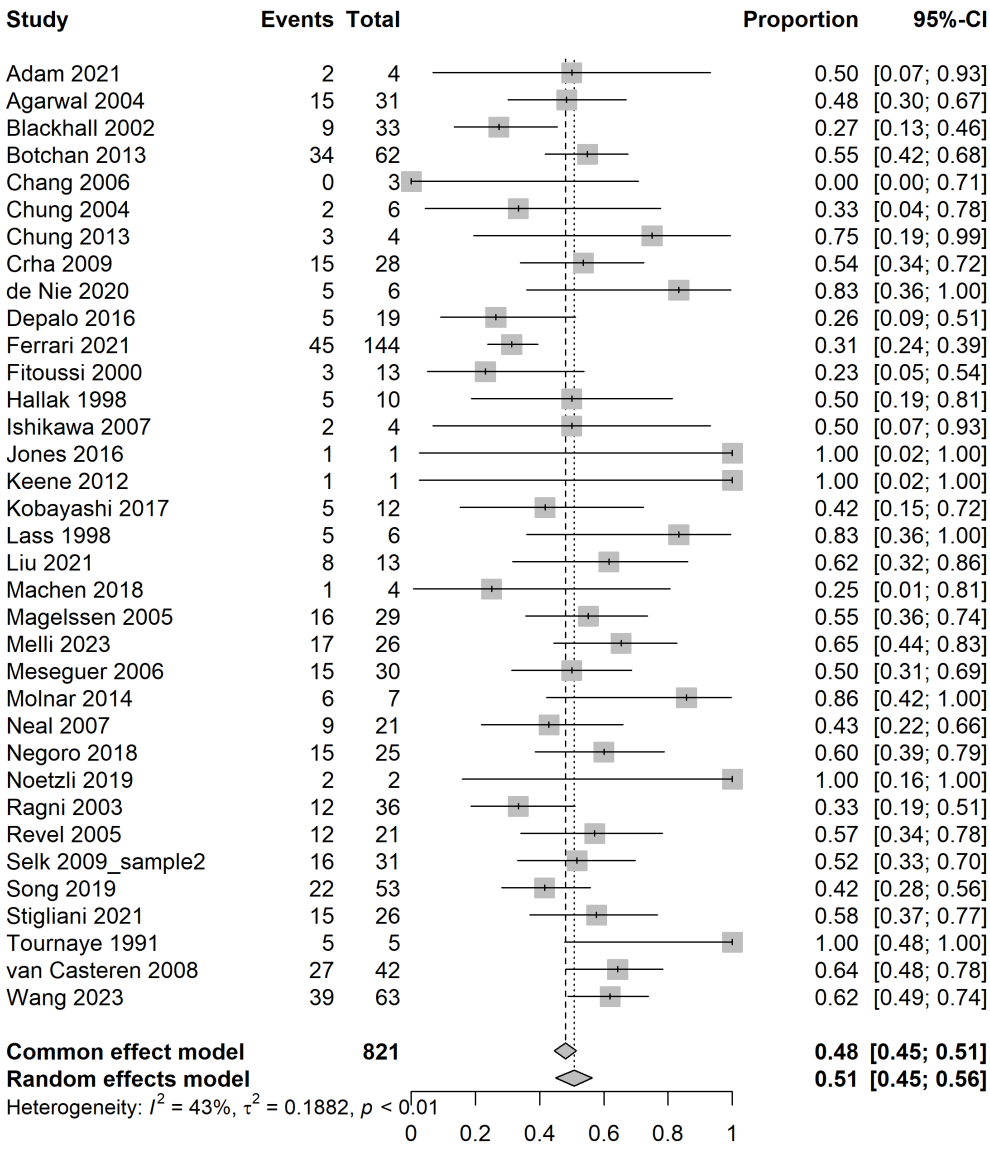


Figure 7: Sperm cryopreservation: Clinical pregnancy rate using stored material; cancer subgroup

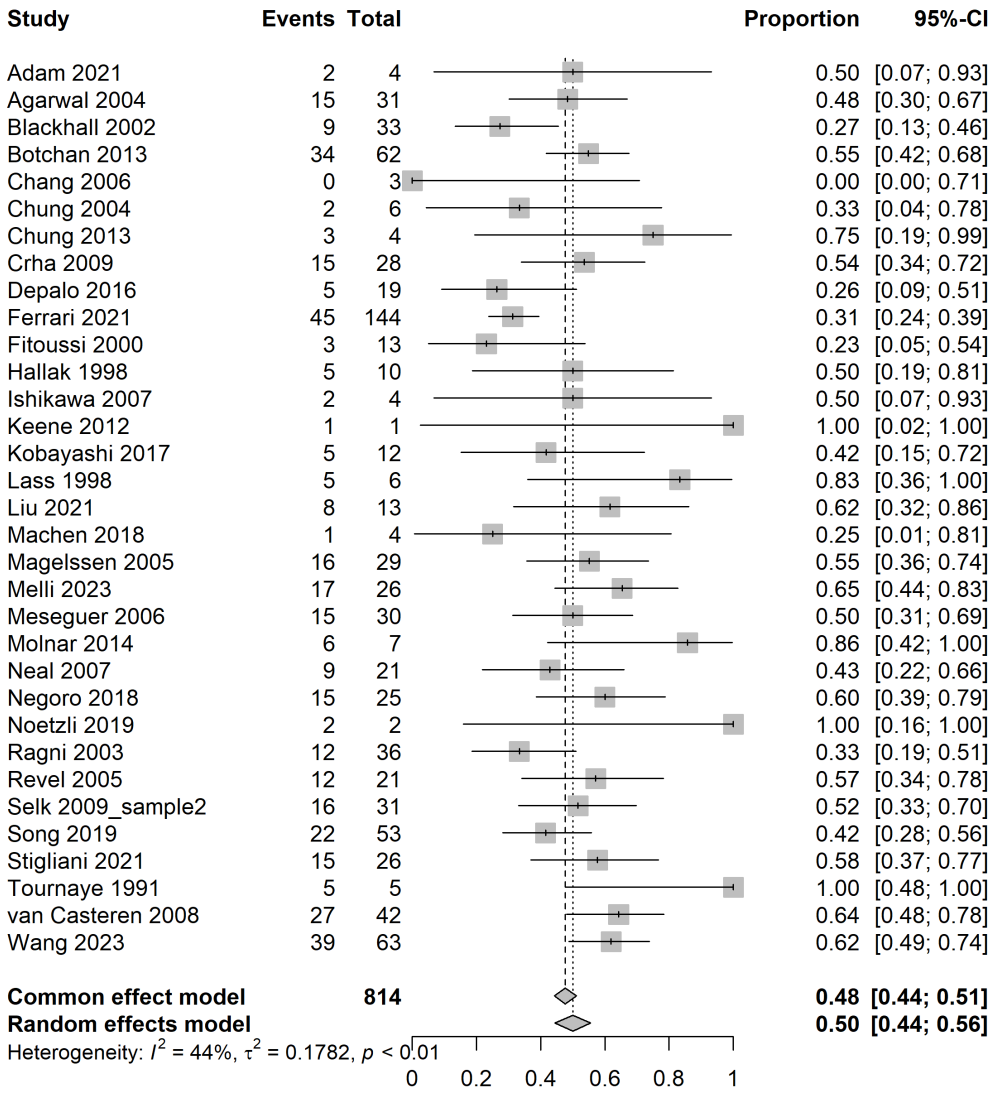


Figure 8: Sperm cryopreservation: Clinical pregnancy rate using stored material; non-cancer subgroup

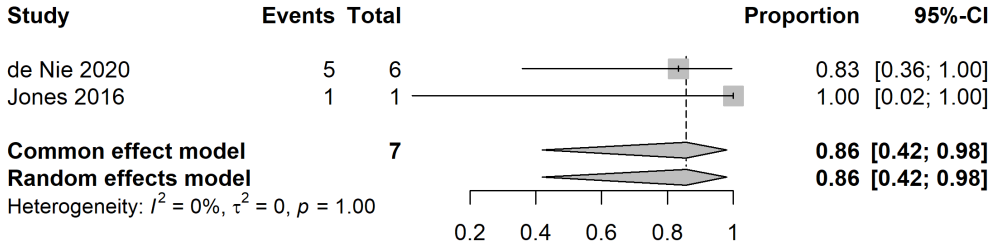


Figure 9: Sperm cryopreservation: Proportion of participants from whom material suitable for preservation is obtained

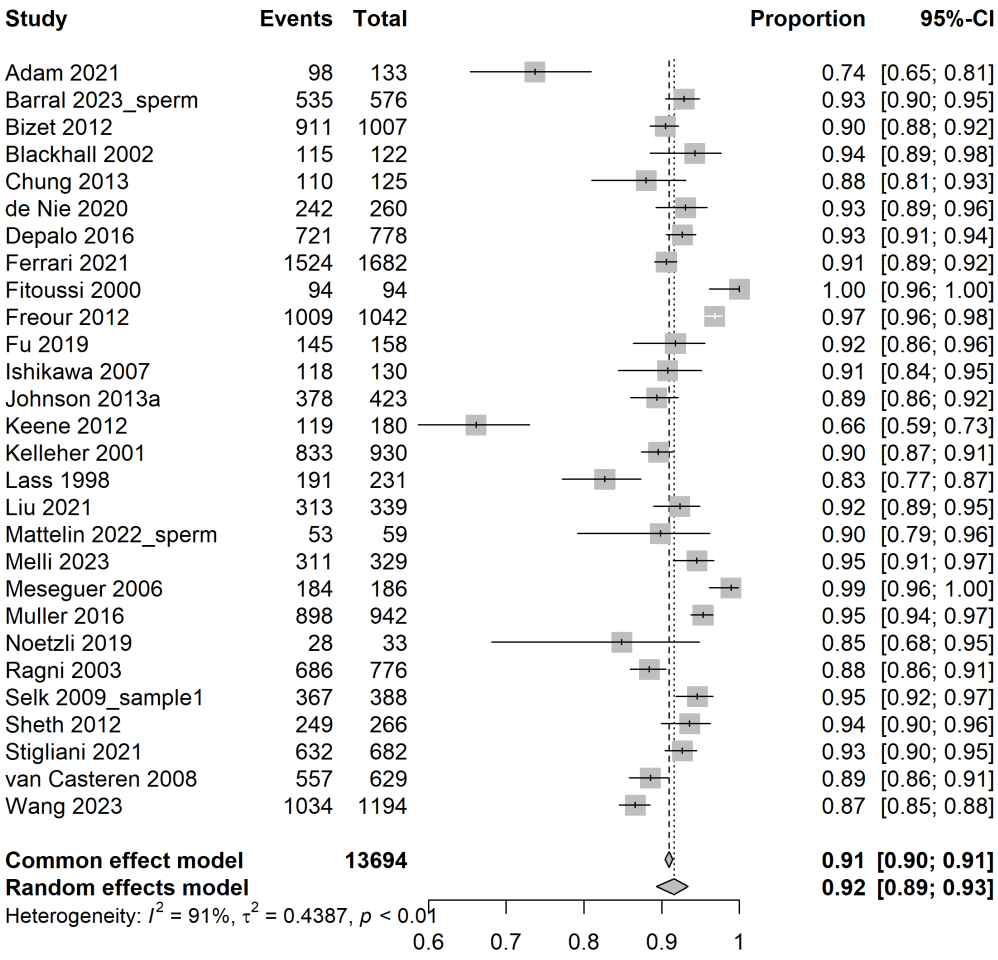


Figure 10: Sperm cryopreservation: Proportion of participants from whom material suitable for preservation is obtained; cancer subgroup

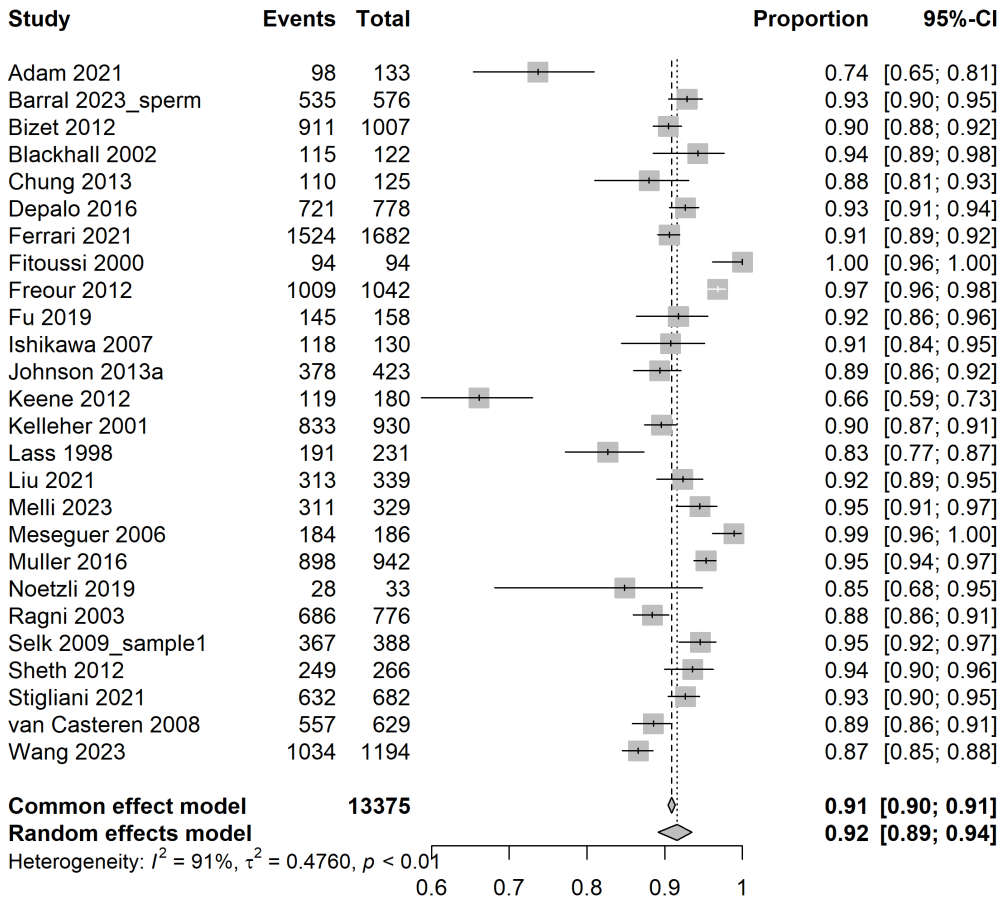


Figure 11: Sperm cryopreservation: Proportion of participants from whom material suitable for preservation is obtained; non-cancer subgroup

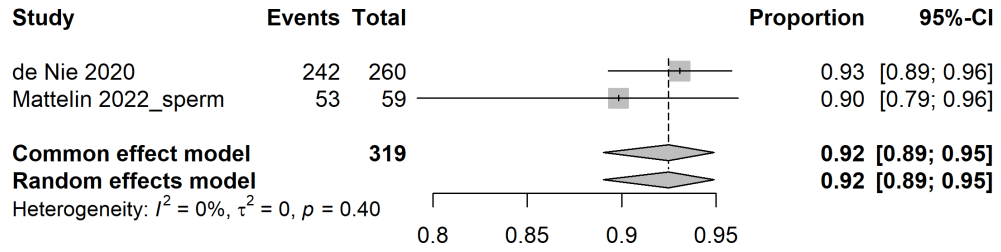


Figure 12: Sperm cryopreservation: Pregnancy loss as proportion of those who achieved clinical pregnancy with stored material

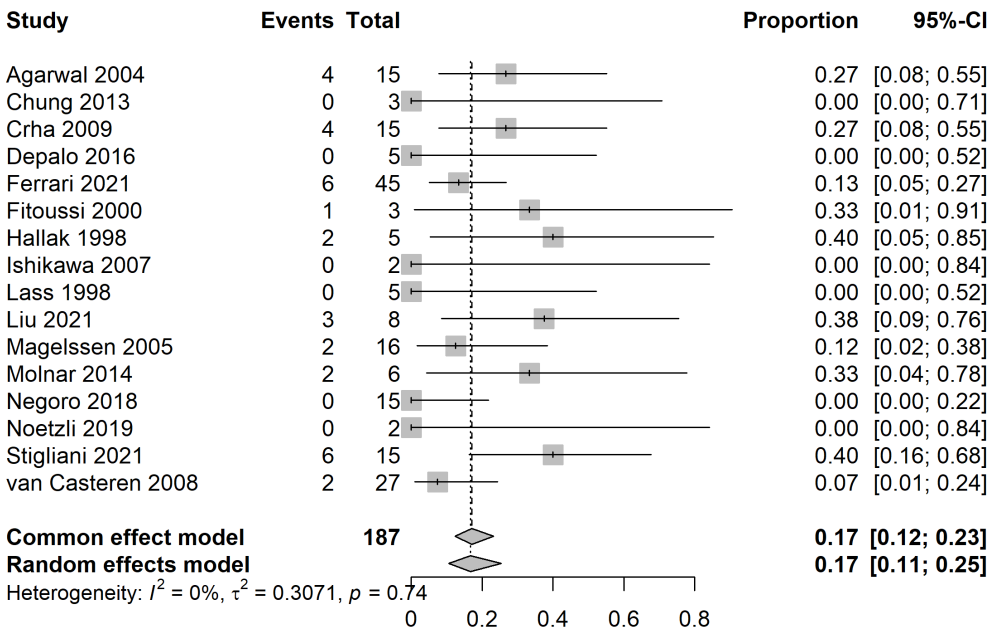


Figure 13: Oocyte and/or embryo cryopreservation: Proportion of participants who return to use stored material

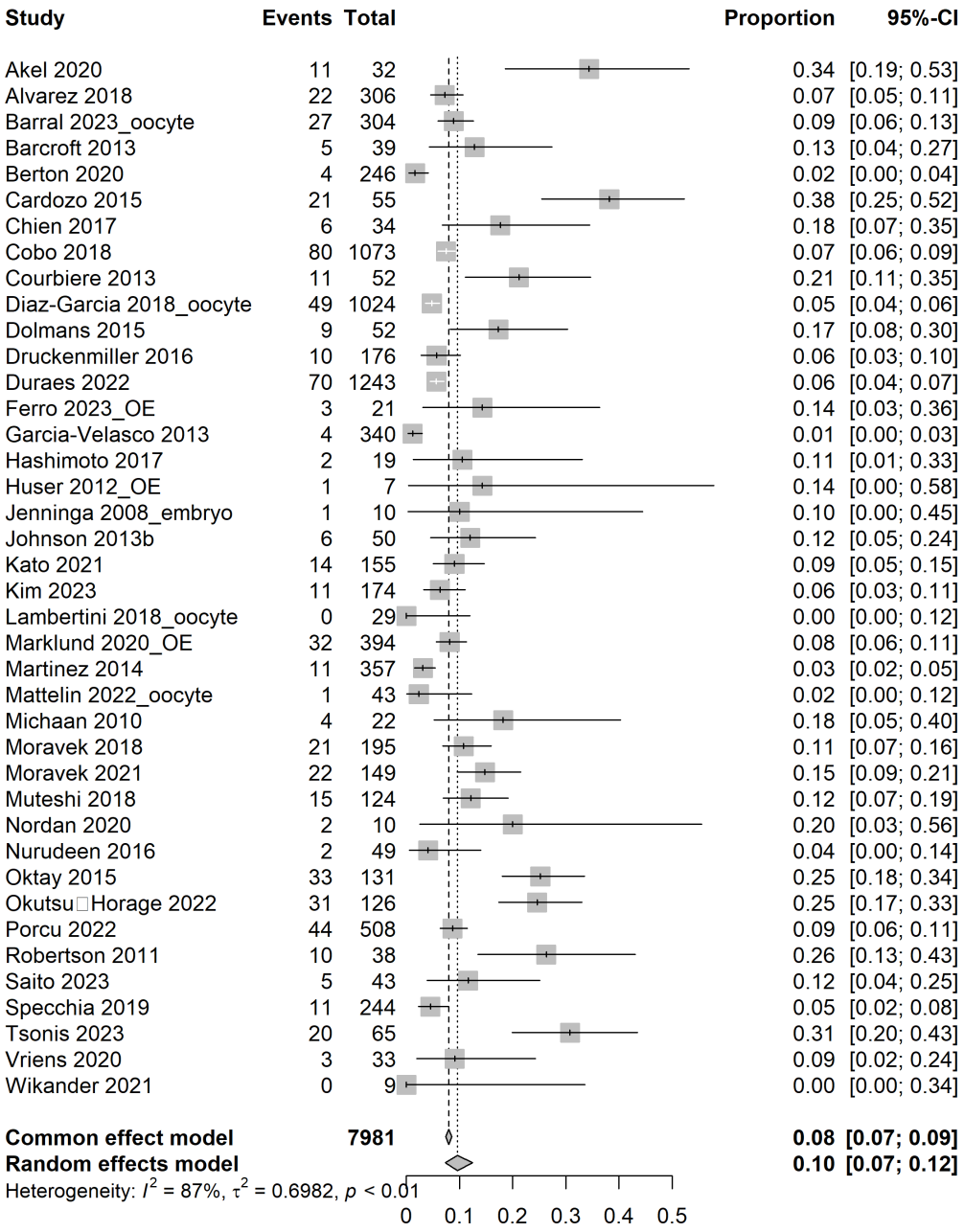


Figure 14: Oocyte and/or embryo cryopreservation: Proportion of participants who return to use stored material; 16-35 years subgroup

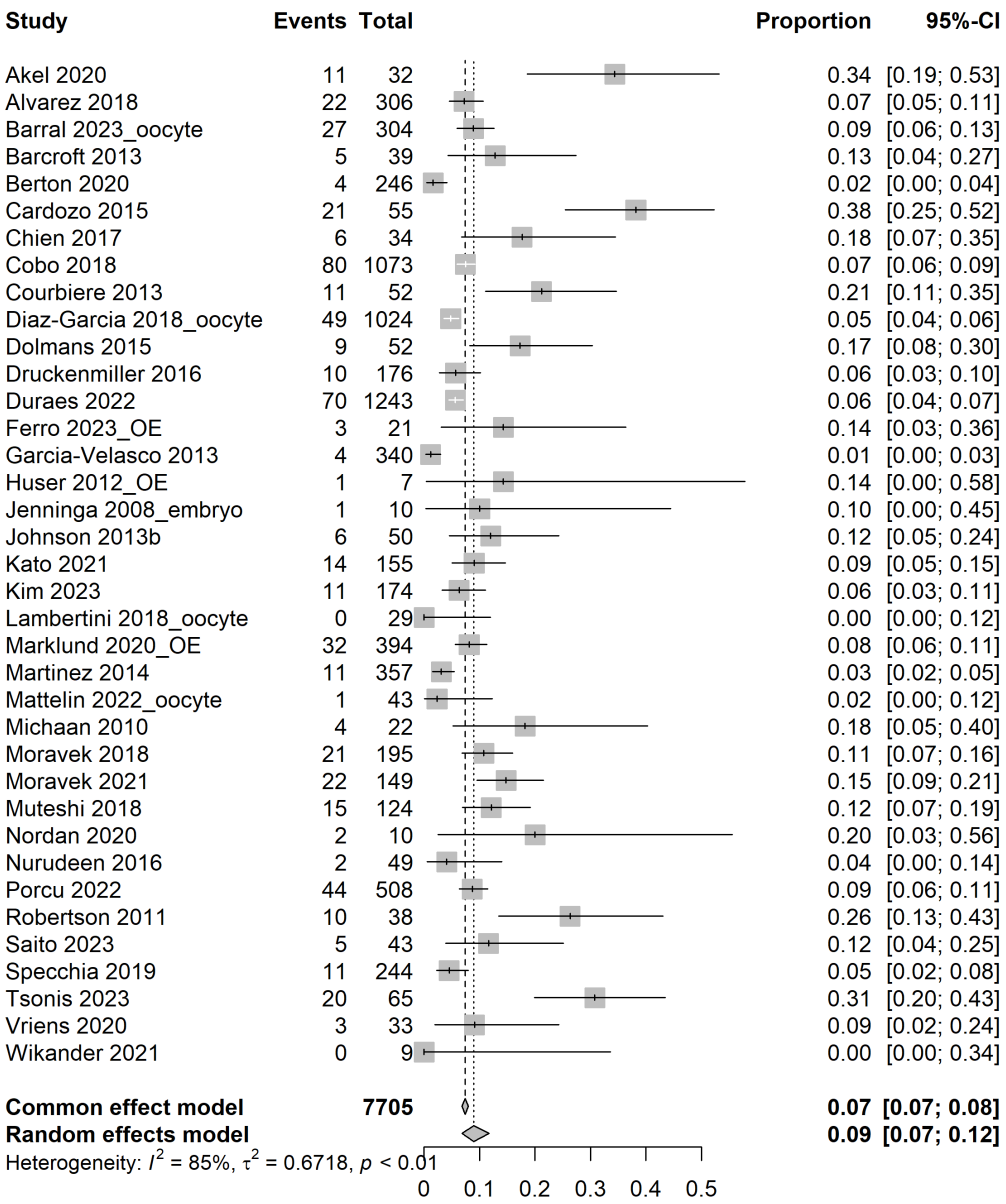


Figure 15: Oocyte and/or embryo cryopreservation: Proportion of participants who return to use stored material; >35 years subgroup

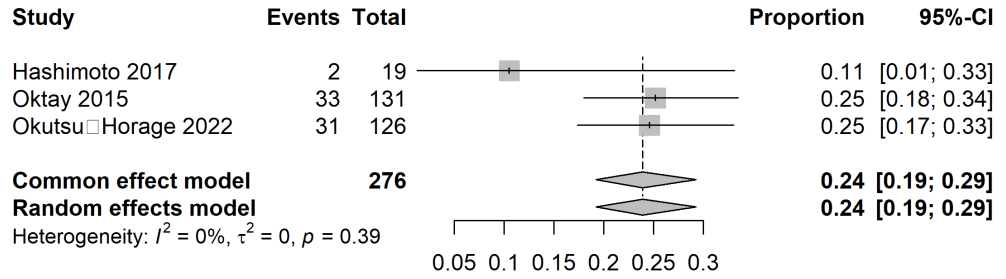


Figure 16: Oocyte and/or embryo cryopreservation: Live birth rate using stored material

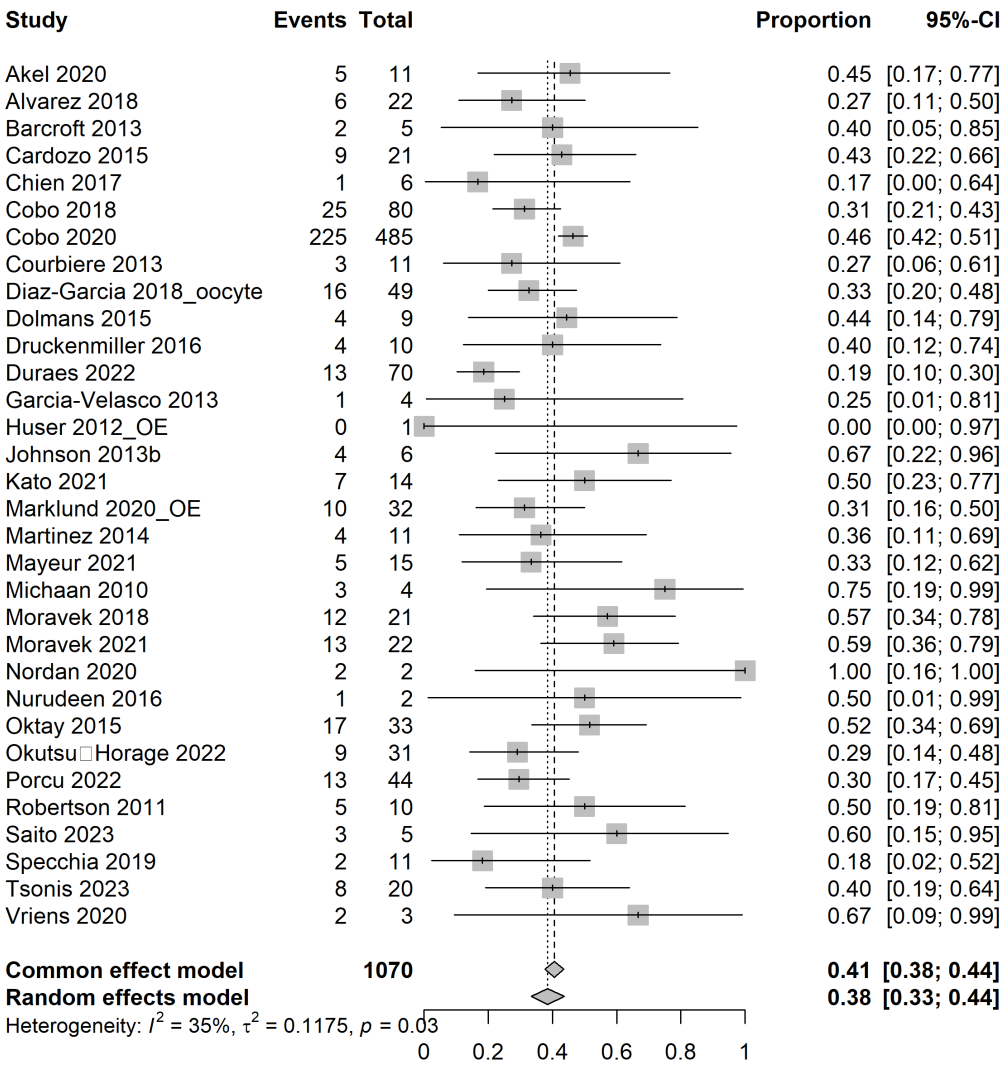


Figure 17: Oocyte and/or embryo cryopreservation: Clinical pregnancy rate using stored material

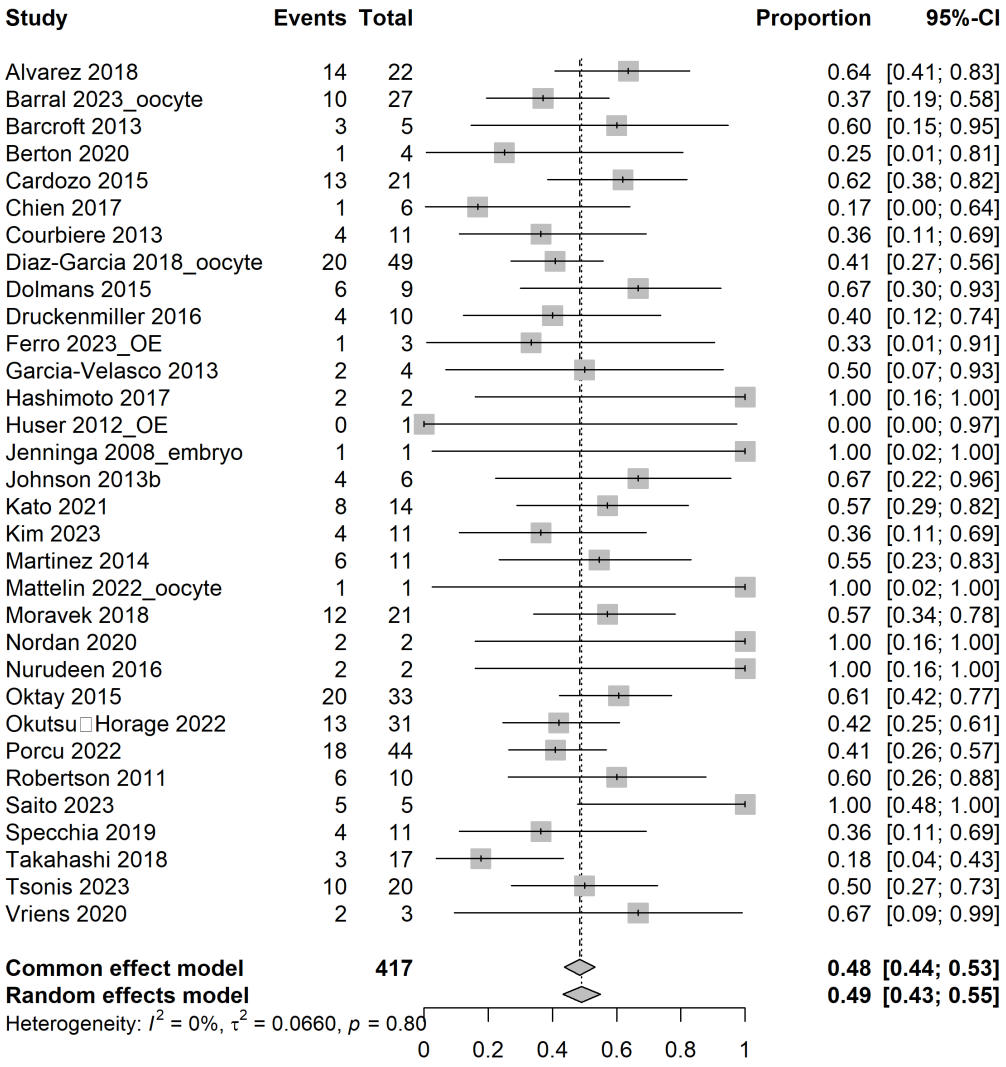


Figure 18: Oocyte and/or embryo cryopreservation: Pregnancy loss as proportion of those who achieved clinical pregnancy with stored material

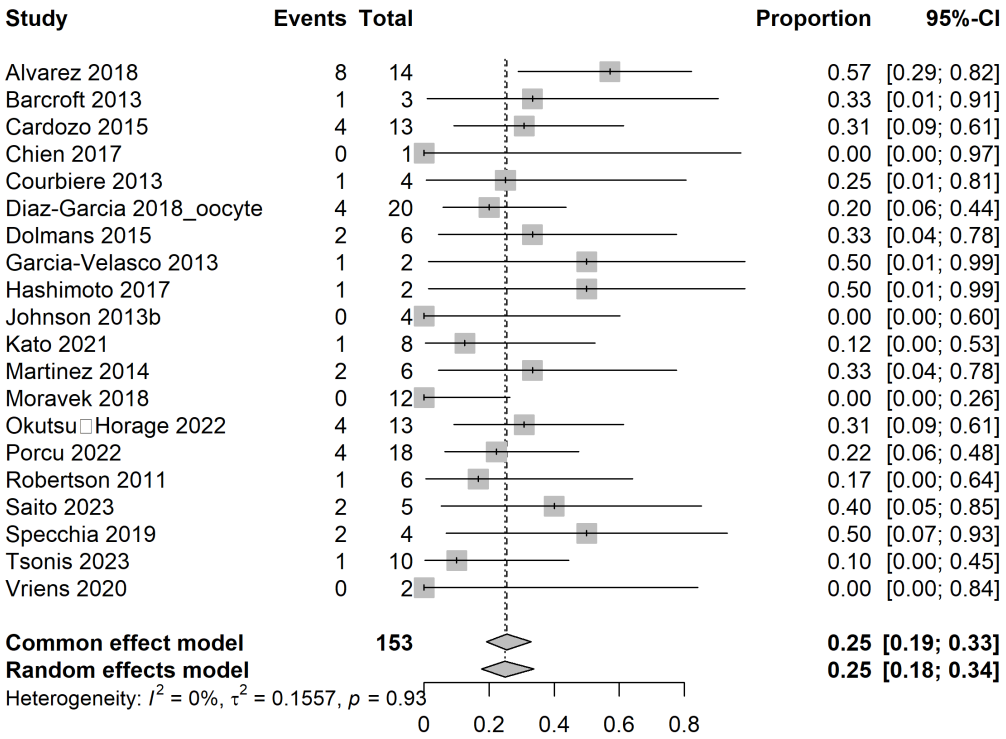


Figure 19: Oocyte and/or embryo cryopreservation: Ovarian hyperstimulation syndrome (OHSS)

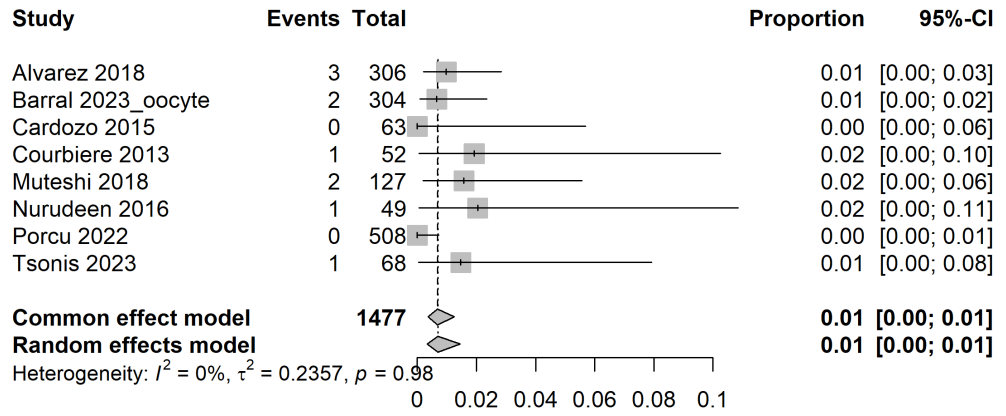


Figure 20: Ovarian tissue cryopreservation: Proportion of participants from whom material suitable for preservation is obtained

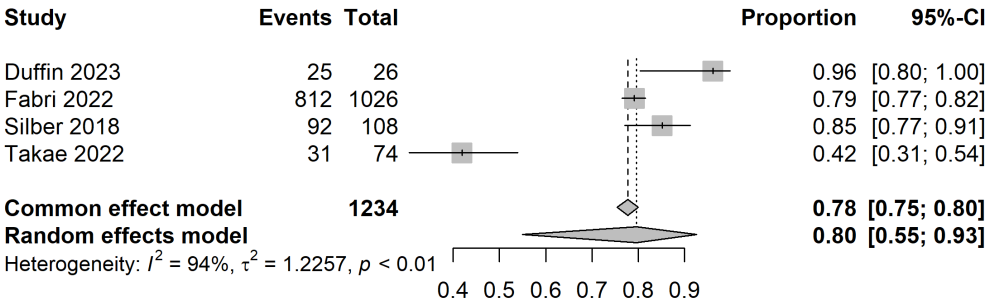


Figure 21: Ovarian tissue cryopreservation: Proportion of participants who return to use stored material

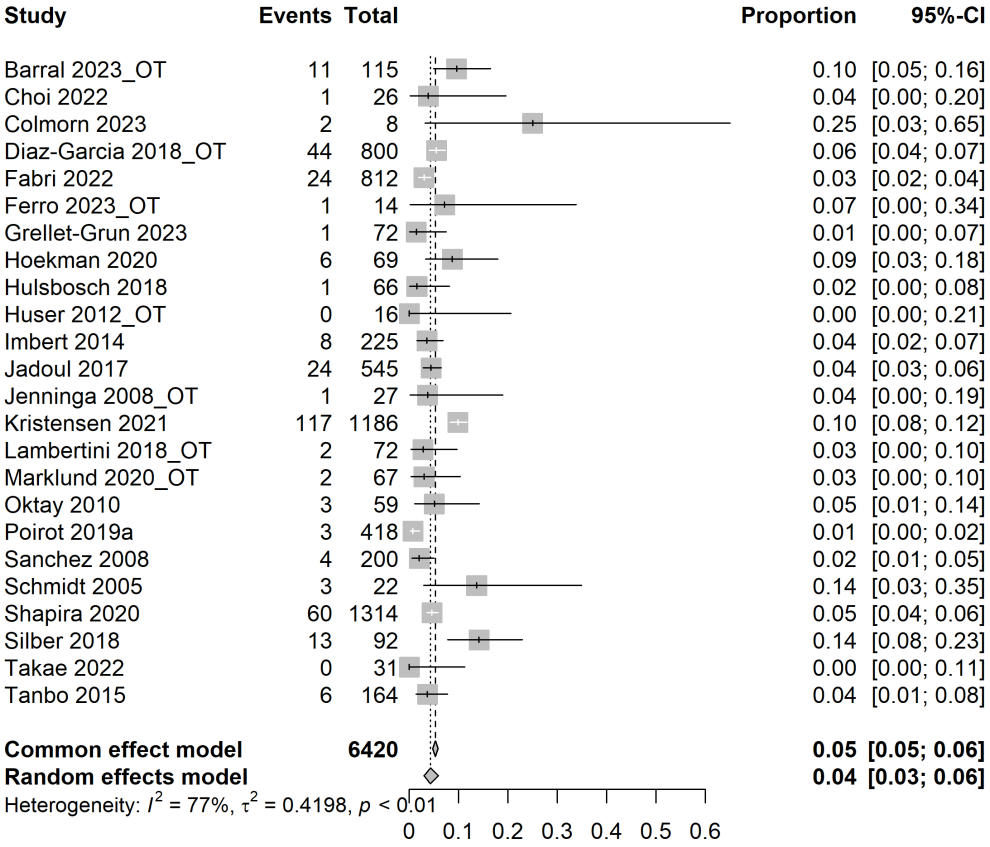


Figure 22: Ovarian tissue cryopreservation: Proportion of participants who return to use stored material; <16 years subgroup

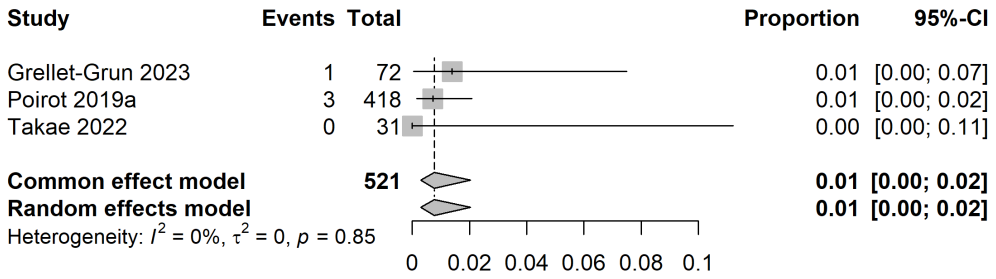


Figure 23: Ovarian tissue cryopreservation: Proportion of participants who return to use stored material; 16-35 years subgroup

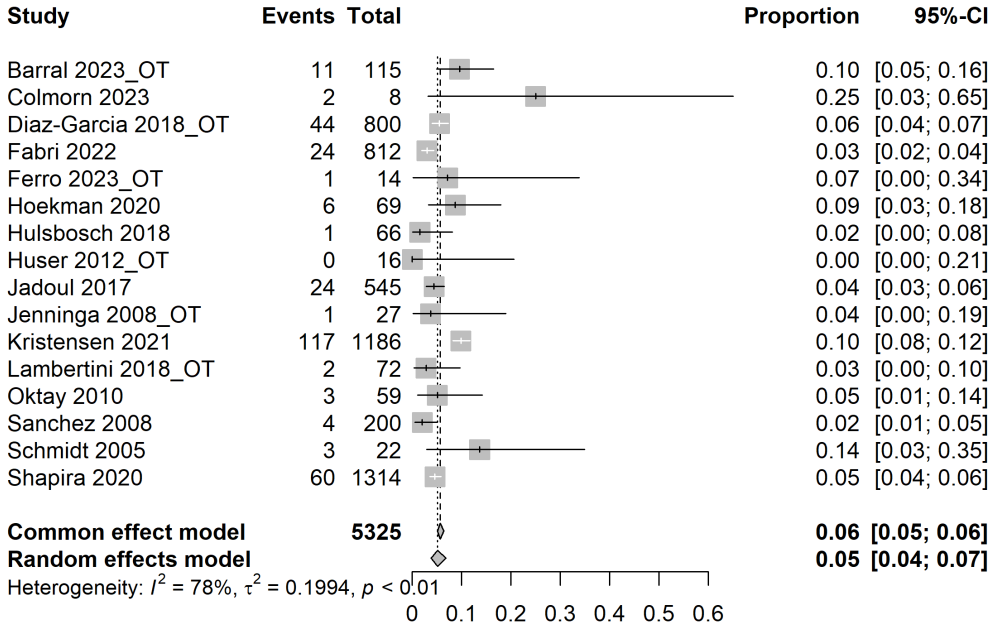


Figure 24: Ovarian tissue cryopreservation: Live birth rate using stored material

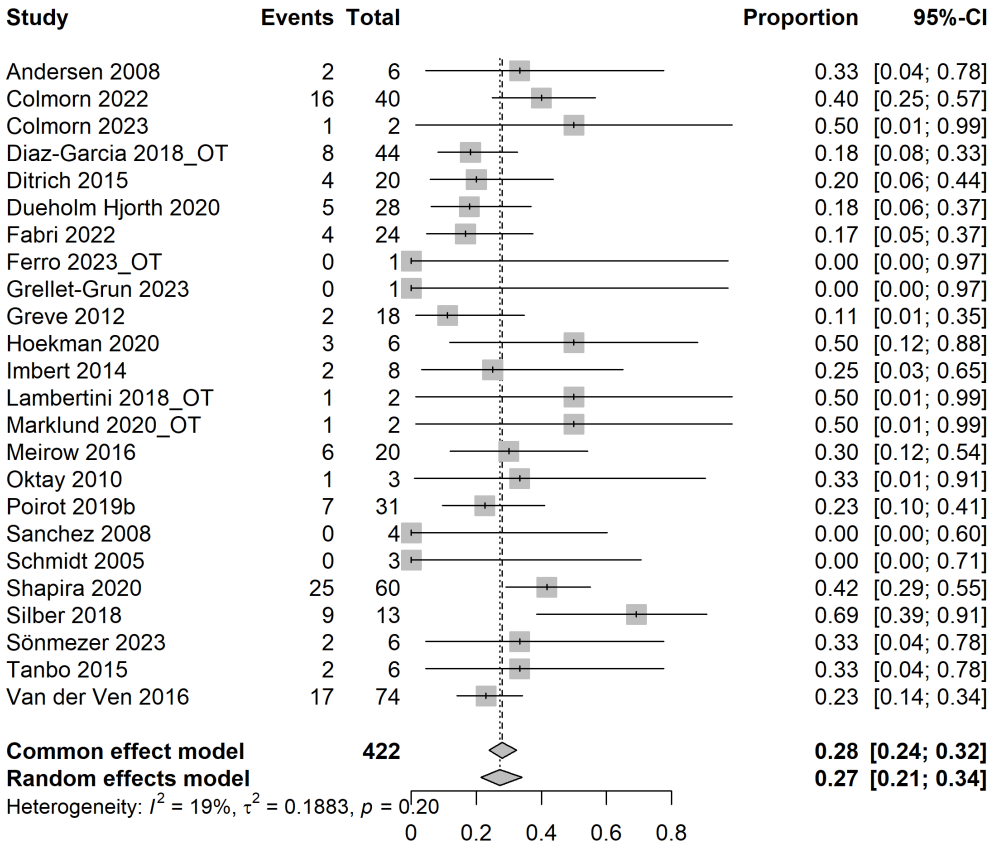


Figure 25: Ovarian tissue cryopreservation: Clinical pregnancy rate using stored material

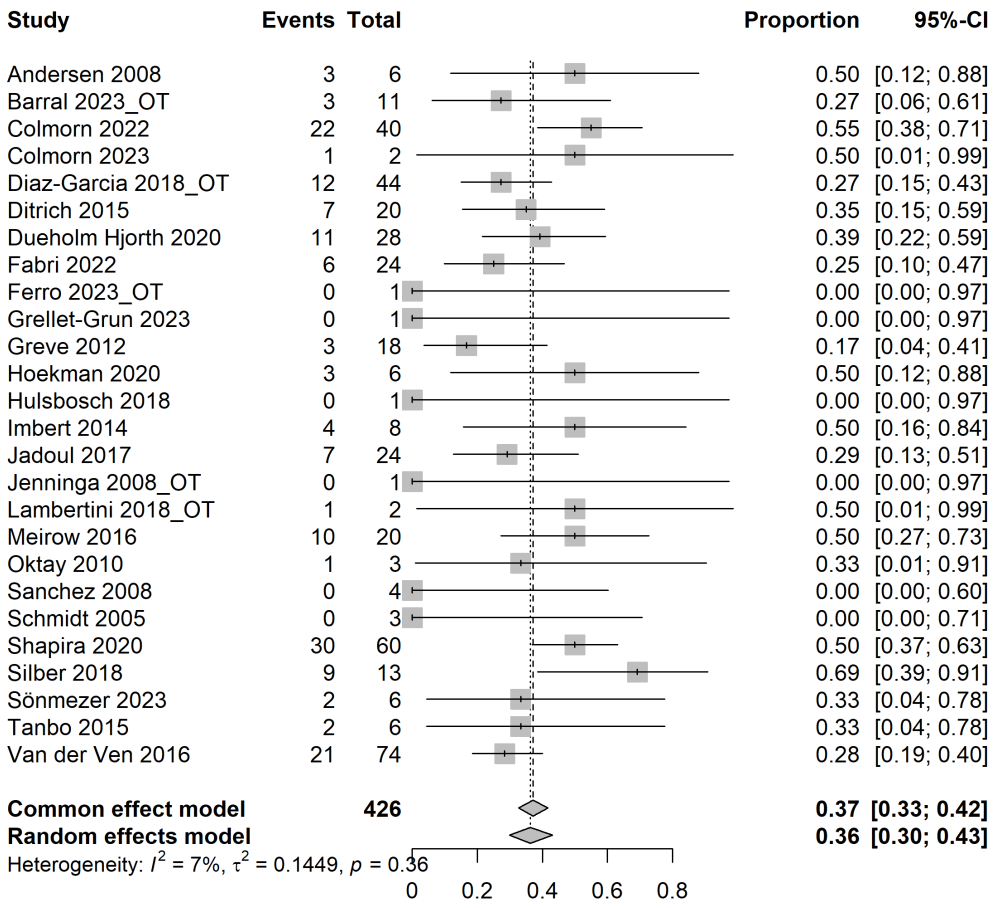


Figure 26: Ovarian tissue cryopreservation: Pregnancy loss as proportion of those who achieved clinical pregnancy with stored material

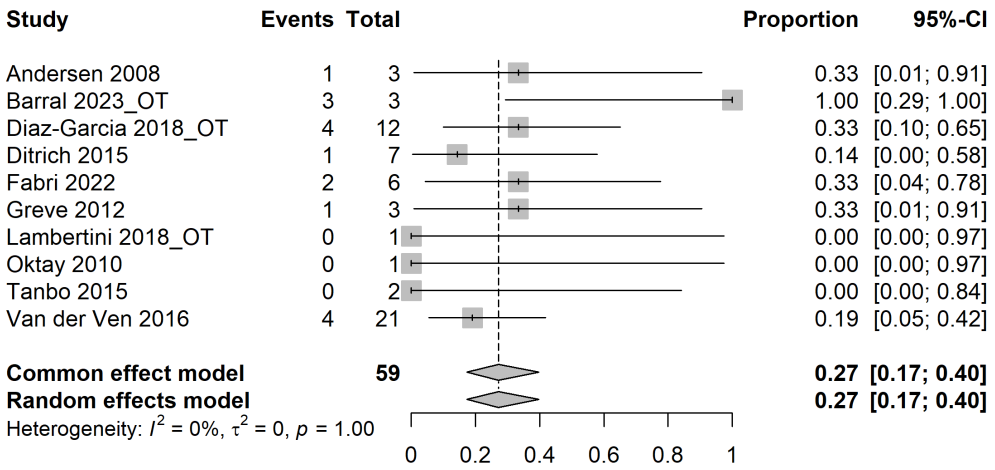
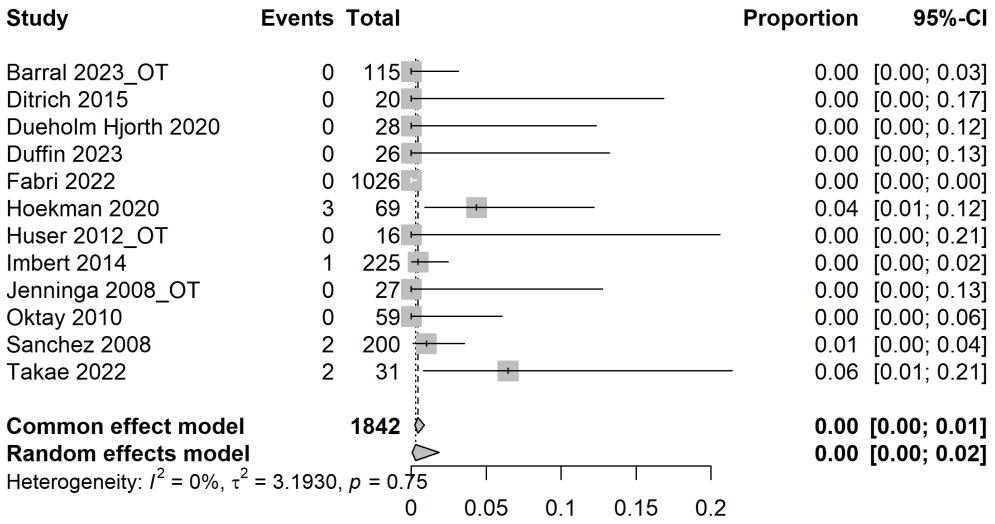


Figure 27: Ovarian tissue cryopreservation: Serious surgery-related adverse events



Appendix F GRADE tables

GRADE tables for review question: What is the success rate, and which factors affect the outcome, of fertility preservation for children and adults undergoing treatment for cancer and other conditions or situations which are likely to impair their fertility?

Table 5: Evidence profile for sperm cryopreservation

Quality assessment							No of participants	Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (REM; 95% CI)	Absolute		
Proportion of participants who return to use stored material											
45[1]	case series	very serious[2]	very serious[3]	no serious indirectness	no serious imprecision	none	1312/19018 (6.9%)	0.07 (0.06 to 0.08)	70 per 1000 (from 60 to 80 per 1000)	VERY LOW	CRITICAL
Proportion of participants who return to use stored material; cancer subgroup											
42[4]	case series	very serious[2]	very serious[3]	no serious indirectness	no serious imprecision	none	1303/18714 (7.0%)	0.07 (0.06 to 0.08)	70 per 1000 (from 60 to 80 per 1000)	VERY LOW	CRITICAL
Proportion of participants who return to use stored material; non-cancer subgroup											
3[5]	case series	serious[6]	no serious inconsistency	no serious indirectness	very serious[7]	none	9/304 (3.0%)	0.03 (0.02 to 0.06)	30 per 1000 (from 20 to 60 per 1000)	VERY LOW	CRITICAL
Live birth rate using stored material											
30[8]	case series	very serious[2]	serious[9]	no serious indirectness	no serious imprecision	none	408/934 (43.7%)	0.45 (0.37 to 0.53)	450 per 1000 (from 370 to 530 per 1000)	VERY LOW	CRITICAL

Clinical pregnancy rate using stored material											
35[10]	case series	very serious[2]	no serious inconsistency	no serious indirectness	no serious imprecision	none	394/821 (48.0%)	0.51 (0.45 to 0.56)	510 per 1000 (from 450 to 560 per 1000)	LOW	CRITICAL
Clinical pregnancy rate using stored material; cancer subgroup											
33[11]	case series	very serious[2]	no serious inconsistency	no serious indirectness	no serious imprecision	none	388/814 (47.7%)	0.50 (0.44 to 0.56)	500 per 1000 (from 440 to 560 per 1000)	LOW	CRITICAL
Clinical pregnancy rate using stored material; non-cancer subgroup											
2[12]	case series	Serious[6]	no serious inconsistency	no serious indirectness	very serious[7]	none	6/7 (85.7%)	0.86 (0.42 to 0.98)	860 per 1000 (from 420 to 980 per 1000)	VERY LOW	CRITICAL
Proportion of participants from whom material suitable for preservation is obtained											
28[13]	case series	very serious[2]	very serious[3]	no serious indirectness	no serious imprecision	none	12455/13694 (91.0%)	0.92 (0.89 to 0.93)	920 per 1000 (from 890 to 930 per 1000)	VERY LOW	IMPORTANT
Proportion of participants from whom material suitable for preservation is obtained; cancer subgroup											
26[14]	case series	very serious[2]	very serious[3]	no serious indirectness	no serious imprecision	none	12160/13375 (90.9%)	0.92 (0.89 to 0.94)	920 per 1000 (from 890 to 940 per 1000)	VERY LOW	IMPORTANT
Proportion of participants from whom material suitable for preservation is obtained; non-cancer subgroup											
2[15]	case series	Serious[6]	no serious inconsistency	no serious indirectness	serious[16]	none	295/319 (92.5%)	0.92 (0.89 to 0.95)	920 per 1000 (from 890 to 950 per 1000)	LOW	IMPORTANT
Pregnancy loss as proportion of those who achieved clinical pregnancy with stored material											
16[17]	case series	very serious[2]	no serious inconsistency	no serious indirectness	very serious[7]	none	32/187 (17.1%)	0.17 (0.11 to 0.25)	170 per 1000 (from 110 to 250 per 1000)	VERY LOW	IMPORTANT

CI: confidence interval; JBI: The Joanna Briggs Institute Checklist; RE: random effects model

[1] Adam 2021, Barral 2023, Bizet 2012, Blackhall 2002, Chang 2006, Chung 2004, Chung 2013, Crha 2009, de Nie 2020, Dearing 2014, Depalo 2016, Ferrari 2021, Fitoussi 2000, Freour 2012, Fu 2019, Garcia 2015, Ishikawa 2007, Johnson 2013a, Jones 2016, Keene 2012, Kelleher 2001, Kobayashi 2007, Lass 1998, Liu 2021, Machen 2018, Magelssen

2005, Mattelin 2022, Melli 2023, Meseguer 2006, Molnar 2014, Muller 2016, Neal 2007, Negoro 2018, Noetzli 2019, Pening 2022, Ping 2010, Ragni 2003, Selk 2009, Sheth 2012, Song 2019, Stigliani 2021, Tournaye 1991, van Casteren 2008, Wang 2023, Xi 2020

[2] Very serious risk of bias in the evidence contributing to the outcome as per JBI

[3] Very serious heterogeneity (I^2≥80%)

[4] Adam 2021, Barral 2023, Bizet 2012, Blackhall 2002, Chang 2006, Chung 2004, Chung 2013, Crha 2009, Dearing 2014, Depalo 2016, Ferrari 2021, Fitoussi 2000, Freour 2012, Fu 2019, Garcia 2015, Ishikawa 2007, Johnson 2013a, Keene 2012, Kelleher 2001, Kobayashi 2007, Lass 1998, Liu 2021, Machen 2018, Magelssen 2005, Melli 2023, Meseguer 2006, Molnar 2014, Muller 2016, Neal 2007, Negoro 2018, Noetzli 2019, Pening 2022, Ping 2010, Ragni 2003, Selk 2009, Sheth 2012, Song 2019, Stigliani 2021, Tournaye 1991, van Casteren 2008, Wang 2023, Xi 2020

[5] de Nie 2020, Jones 2016, Mattelin 2022

[6] Serious risk of bias in the evidence contributing to the outcome as per JBI

[7] <150 events

[8] Adam 2021, Agarwal 2004, Bizet 2012, Blackhall 2002, Botchan 2013, Chang 2006, Chung 2004, Chung 2013, Crha 2009, Dearing 2014, Depalo 2016, Ferrari 2021, Fitoussi 2000, Fu 2019, Hallak 1998, Ishikawa 2007, Lass 1998, Liu 2021, Magelssen 2005, Melli 2023, Meseguer 2006, Molnar 2014, Muller 2016, Negoro 2018, Noetzli 2019, Pening 2022, Ping 2010, Stigliani 2021, Tournaye 1991, van Casteren 2008

[9] Serious heterogeneity (I^2=50-79%)

[10] Adam 2021, Agarwal 2004, Blackhall 2002, Botchan 2013, Chang 2006, Chung 2004, Chung 2013, Crha 2009, de Nie 2020, Depalo 2016, Ferrari 2021, Fitoussi 2000, Fu 2019, Hallak 1998, Ishikawa 2007, Jones 2016, Keene 2012, Kobayashi 2017, Lass 1998, Liu 2021, Magelssen 2005, Melli 2023, Meseguer 2006, Molnar 2014, Neal 2007, Negoro 2018, Noetzli 2019, Ragni 2003, Revel 2005, Selk 2009, Song 2019, Stigliani 2021, Tournaye 1991, van Casteren 2008, Wang 2023

[11] Adam 2021, Agarwal 2004, Blackhall 2002, Botchan 2013, Chang 2006, Chung 2004, Chung 2013, Crha 2009, Depalo 2016, Ferrari 2021, Fitoussi 2000, Hallak 1998, Ishikawa 2007, Keene 2012, Kobayashi 2017, Lass 1998, Liu 2021, Machen 2018, Magelssen 2005, Melli 2023, Meseguer 2006, Molnar 2014, Neal 2007, Negoro 2018, Noetzli 2019, Ragni 2003, Revel 2005, Selk 2009, Song 2019, Stigliani 2021, Tournaye 1991, van Casteren 2008, Wang 2023

[12] de Nie 2020, Jones 2016

[13] Adam 2021, Barral 2023, Bizet 2012, Blackhall 2002, Chung 2013, de Nie 2020, Depalo 2016, Ferrari 2021, Fitoussi 2000, Freour 2012, Fu 2019, Ishikawa 2007, Johnson 2013a, Keene 2012, Kelleher 2001, Lass 1998, Liu 2021, Mattelin 2022, Melli 2023, Meseguer 2006, Muller 2016, Noetzli 2019, Ragni 2003, Selk 2009, Sheth 2012, Stigliani 2021, van Casteren 2008, Wang 2023

[14] Adam 2021, Barral 2023, Bizet 2012, Blackhall 2002, Chung 2013, Depalo 2016, Ferrari 2021, Fitoussi 2000, Freour 2012, Fu 2019, Ishikawa 2007, Johnson 2013a, Keene 2012, Kelleher 2001, Lass 1998, Liu 2021, Melli 2023, Meseguer 2006, Muller 2016, Noetzli 2019, Ragni 2003, Selk 2009, Sheth 2012, Stigliani 2021, van Casteren 2008, Wang 2023

[15] de Nie 2020, Mattelin 2022

[16] <300-≥150 events

[17] Agarwal 2004, Chung 2013, Crha 2009, Depalo 2016, Ferrari 2021, Fitoussi 2000, Hallak 1998, Ishikawa 2007, Lass 1998, Liu 2021, Magelssen 2005, Molnar 2014, Negoro 2018, Noetzli 2019, Stigliani 2021, van Casteren 2008

Table 6: Evidence profile for testicular tissue cryopreservation

Quality assessment							No of participants	Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (REM; 95% CI)	Absolute		
Proportion of participants from whom material suitable for preservation is obtained											

1 (Wyns 2011)	case series	very serious[1]	no serious inconsistency	no serious indirectness	very serious[2]	none	58/62 (93.5%)	Not estimable	Not estimable	VERY LOW	CRITICAL
Serious surgery-related adverse events											
1 (Wyns 2011)	case series	very serious[1]	no serious inconsistency	no serious indirectness	very serious[2]	none	0/62 (0%)	Not estimable	Not estimable	VERY LOW	IMPORTANT

CI: confidence interval; JBI: The Joanna Briggs Institute Checklist; RE: random effects model
[1] Very serious risk of bias in the evidence contributing to the outcome as per JBI
[2] <150 events

Table 7: Evidence profile for oocyte and/or embryo cryopreservation

Quality assessment							No of participants	Effect		Quality	Importance
No of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**		**Relative (REM; 95% CI)**	**Absolute**		
Proportion of participants who return to use stored material											
40[1]	case series	very serious[2]	very serious[3]	no serious indirectness	no serious imprecision	none	634/7981 (7.9%)	0.10 (0.07 to 0.12)	100 per 1000 (from 70 to 120 per 1000)	VERY LOW	CRITICAL
Proportion of participants who return to use stored material; 16-35 years subgroup											
37[4]	case series	very serious[2]	very serious[3]	no serious indirectness	no serious imprecision	none	568/7705 (7.4%)	0.09 (0.07 to 0.12)	90 per 1000 (from 70 to 120 per 1000)	VERY LOW	CRITICAL
Proportion of participants who return to use stored material; >35 years subgroup											
3[5]	case series	very serious[2]	no serious inconsistency	no serious indirectness	very serious[6]	none	66/276 (23.9%)	0.24 (0.19 to 0.29)	240 per 1000 (from 190 to 290 per 1000)	VERY LOW	CRITICAL

Live birth rate using stored material											
32[7]	case series	very serious[2]	no serious inconsistency	no serious indirectness	no serious imprecision	none	434/1070 (40.6%)	0.38 (0.33 to 0.44)	380 per 1000 (from 330 to 440 per 1000)	LOW	CRITICAL
Clinical pregnancy rate using stored material											
32[8]	case series	very serious[2]	no serious inconsistency	no serious indirectness	serious[9]	none	202/417 (48.4%)	0.49 (0.43 to 0.55)	490 per 1000 (from 430 to 550 per 1000)	VERY LOW	CRITICAL
Proportion of participants from whom material suitable for preservation is obtained											
13[10]	case series	very serious[2]	no serious inconsistency	no serious indirectness	no serious imprecision	none	955/1002 (95.3%)	Not estimable[11]	Not estimable[11]	LOW	IMPORTANT
Pregnancy loss as proportion of those who achieved clinical pregnancy with stored material											
20[12]	case series	very serious[2]	no serious inconsistency	no serious indirectness	very serious[6]	none	39/153 (25.5%)	0.25 (0.18 to 0.34)	250 per 1000 (from 180 to 340 per 1000)	VERY LOW	IMPORTANT
Ovarian hyperstimulation syndrome (OHSS)											
8[13]	case series	very serious[2]	no serious inconsistency	no serious indirectness	very serious[6]	none	10/1477 (0.7%)	0.01 (0.00 to 0.01)	10 per 1000 (from 0 to 10 per 1000)	VERY LOW	IMPORTANT

CI: confidence interval; JBI: The Joanna Briggs Institute Checklist; RE: random effects model

[1] Akel 2020, Alvarez 2018, Barral 2023, Barcroft 2013, Berton 2020, Cardozo 2015, Chien 2017, Cobo 2018, Courbiere 2013, Diaz-Garcia 2018, Dolmans 2015, Druckenmiller 2016, Duraes 2022, Ferro 2023, Garcia-Velasco 2013, Hashimoto 2017, Huser 2012, Jenninga 2008, Johnson 2013b, Kato 2021, Kim 2023, Lambertini 2018, Marklund 2020, Martinez 2014, Mattelin 2022, Michaan 2010, Moravek 2018, Moravek 2021, Muteshi 2018, Nordan 2020, Nurudeen 2016, Oktay 2015, Okutsu-Horage 2022, Porcu 2022, Robertson 2011, Saito 2023, Specchia 2019, Tsonis 2023, Vriens 2020, Wikander 2021
[2] Very serious risk of bias in the evidence contributing to the outcome as per JBI
[3] Very serious heterogeneity ($I^2 \geq 80\%$)
[4] Akel 2020, Alvarez 2018, Barral 2023, Barcroft 2013, Berton 2020, Cardozo 2015, Chien 2017, Cobo 2018, Courbiere 2013, Diaz-Garcia 2018, Dolmans 2015, Druckenmiller 2016, Duraes 2022, Ferro 2023, Garcia-Velasco 2013, Huser 2012, Jenninga 2008, Johnson 2013b, Kato 2021, Kim 2023, Lambertini 2018, Marklund 2020, Martinez 2014, Mattelin 2022, Michaan 2010, Moravek 2018, Moravek 2021, Muteshi 2018, Nordan 2020, Nurudeen 2016, Porcu 2022, Robertson 2011, Saito 2023, Specchia 2019, Tsonis 2023, Vriens 2020, Wikander 2021
[5] Hashimoto 2017, Oktay 2015, Okutsu-Horage 2022
[6] <150 events

[7] *Akel 2020, Alvarez 2018, Barcroft 2013, Cardozo 2015, Chien 2017, Cobo 2018, Cobo 2020, Courbiere 2013, Diaz-Garcia 2018, Dolmans 2015, Druckenmiller 2016, Duraes 2022, Garcia-Velasco 2013, Huser 2012, Johnson 2013b, Kato 2021, Marklund 2020, Martinez 2014, Mayeur 2021, Michaan 2010, Moravek 2018, Moravek 2021, Nordan 2020, Nurudeen 2016, Oktay 2015, Okutsu-Horage 2022, Porcu 2022, Robertson 2011, Saito 2023, Specchia 2019, Tsonis 2023, Vriens 2020*
[8] *Alvarez 2018, Barral 2023, Barcroft 2013, Berton 2020, Cardozo 2015, Chien 2017, Courbiere 2013, Diaz-Garcia 2018, Dolmans 2015, Druckenmiller 2016, Ferro 2023, Garcia-Velasco 2013, Hashimoto 2017, Huser 2012, Johnson 2013b, Kato 2021, Kim 2023, Martinez 2014, Mattelin 2022, Moravek 2018, Nordan 2020, Nurudeen 2016, Oktay 2015, Okutsu-Horage 2022, Porcu 2022, Robertson 2011, Saito 2023, Specchia 2019, Takahashi 2018, Tsonis 2023, Vriens 2020*
[9] *<300-≥150 events*
[10] *Barcroft 2013; Cardozo 2015; Dolmans 2015; Hashimoto 2017; Kato 2021; Moravek 2018; Moravek 2021; Muteshi 2018; Saito 2023; Takahashi 2018; Tsonis 2023; Vriens 2020; Wikander 2021*
[11] *Estimate could not be calculated as statistical analysis does not allow for nearly all of the studies to be estimating 1*
[12] *Alvarez 2018, Barcroft 2013, Cardozo 2015, Chien 2017, Courbiere 2013, Diaz-Garcia 2018, Dolmans 2015, Garcia-Velasco 2013, Hashimoto 2017, Johnson 2013b, Kato 2021, Martinez 2014, Moravek 2018, Okutsu-Horage 2022, Porcu 2022, Robertson 2011, Saito 2023, Specchia 2019, Tsonis 2023, Vriens 2020*
[13] *Alvarez 2018, Barral 2023, Cardozo 2015, Courbiere 2013, Muteshi 2018, Nurudeen 2016, Porcu 2022, Tsonis 2023*

Table 8: Evidence profile for ovarian tissue cryopreservation

Quality assessment							No of participants	Effect		Quality	Importance
No of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**		**Relative (REM; 95% CI)**	**Absolute**		
Proportion of participants from whom material suitable for preservation is obtained											
4[1]	case series	very serious[2]	very serious[3]	no serious indirectness	no serious imprecision	none	960/1234 (77.8%)	0.80 (0.55 to 0.93)	800 per 1000 (from 550 to 930 per 1000)	VERY LOW	CRITICAL
Proportion of participants who return to use stored material											
24[4]	case series	very serious[2]	serious[5]	no serious indirectness	no serious imprecision	none	337/6420 (5.2%)	0.04 (0.03 to 0.06)	40 per 1000 (from 30 to 60 per 1000)	VERY LOW	CRITICAL
Proportion of participants who return to use stored material; <16 years subgroup											
3[6]	case series	very serious[2]	no serious inconsistency	no serious indirectness	very serious[7]	none	4/521 (0.8%)	0.01 (0.00 to 0.02)	10 per 1000 (from 0 to 20 per 1000)	VERY LOW	CRITICAL
Proportion of participants who return to use stored material; 16-35 subgroup											

16[8]	case series	very serious[2]	serious[5]	no serious indirectness	no serious imprecision	none	303/5325 (5.7%)	0.05 (0.04 to 0.07)	50 per 1000 (from 40 to 70 per 1000)	VERY LOW	CRITICAL
Live birth rate using stored material											
24[9]	case series	very serious[2]	no serious inconsistency	no serious indirectness	very serious[7]	none	118/422 (28.0%)	0.27 (0.21 to 0.34)	270 per 1000 (from 210 to 340 per 1000)	VERY LOW	CRITICAL
Clinical pregnancy rate using stored material											
26[10]	case series	very serious[2]	no serious inconsistency	no serious indirectness	serious[11]	none	158/426 (37.1%)	0.36 (0.30 to 0.43)	360 per 1000 (from 300 to 430 per 1000)	VERY LOW	CRITICAL
Pregnancy loss as a proportion of those who achieved clinical pregnancy with stored material											
10[12]	case series	very serious[2]	no serious inconsistency	no serious indirectness	very serious[7]	none	16/59 (27.1%)	0.27 (0.17 to 0.40)	270 per 1000 (from 170 to 400 per 1000)	VERY LOW	IMPORTANT
Serious surgery-related adverse events											
12[13]	case series	very serious[2]	no serious inconsistency	no serious indirectness	very serious[7]	none	8/1842 (0.4%)	0.00 (0.00 to 0.02)	0 per 1000 (from 0 to 20 per 1000)	VERY LOW	IMPORTANT

CI: confidence interval; JBI: The Joanna Briggs Institute Checklist; RE: random effects model

[1] Duffin 2023, Fabri 2022, Silber 2018, Takae 2022
[2] Very serious risk of bias in the evidence contributing to the outcome as per JBI
[3] Very serious heterogeneity (I^2≥80%)
[4] Barral 2023, Choi 2022, Colmorn 2023, Diaz-Garcia 2018, Fabri 2022, Ferro 2023, Grellet-Grun 2023, Hoekman 2020, Hulsbosch 2018, Huser 2012, Imbert 2014, Jadoul 2017, Jenninga 2008, Kristensen 2021, Lambertini 2018, Marklund 2020, Oktay 2010, Poirot 2019a, Sanchez 2008, Schmidt 2005, Shapira 2020, Silber 2018, Takae 2022, Tanbo 2015
[5] Serious heterogeneity (I^2=50-79%)
[6] Grellet-Grun 2023, Poirot 2019a, Takae 2022
[7] <150 events
[8] Barral 2023, Colmorn 2023, Diaz-Garcia 2018, Fabri 2022, Ferro 2023, Hoekman 2020, Hulsbosch 2018, Huser 2012, Jadoul 2017, Jenninga 2008, Kristensen 2021, Lambertini 2018, Oktay 2010, Sanchez 2008, Schmidt 2005, Shapira 2020
[9] Andersen 2008, Colmorn 2022, Colmorn 2023, Diaz-Garcia 2018, Dittrich 2015, Dueholm Hjorth 2020, Fabri 2022, Ferro 2023, Grellet-Grun 2023, Hoekman 2020, Imbert 2014, Lambertini 2018, Marklund 2020, Oktay 2010, Poirot 2019b, Sanchez 2008, Schmidt 2005, Shapira 2020, Silber 2018, Sönmezer 2023, Tanbo 2015, Van der Ven 2016

[10] *Andersen 2008, Barral 2023, Colmorn 2022, Colmorn 2023, Diaz-Garcia 2018, Dittrich 2015, Dueholm Hjorth 2020, Fabri 2022, Ferro 2023, Grellet-Grun 2023, Greve 2012, Hoekman 2020, Imbert 2014, Jadoul 2017, Jenninga 2008, Lambertini 2018, Meirow 2016, Oktay 2010, Sanchez 2008, Schmidt 2005, Shapira 2020, Silber 2018, Sönmezer 2023, Tanbo 2015, Van der Ven 2016*

[11] *<300-≥150 events*

[12] *Andersen 2008, Barral 2023, Diaz-Garcia 2018, Dittrich 2015, Fabri 2022, Greve 2012, Lambertini 2018, Oktay 2010, Tanbo 2015, Van der Ven 2016*

[13] *Barral 2023, Dittrich 2015, Dueholm Hjorth 2020, Duffin 2023, Fabri 2022, Hoekman 2020, Huser 2012, Imbert 2014, Jenninga 2008, Oktay 2010, Sanchez 2008, Takae 2022*

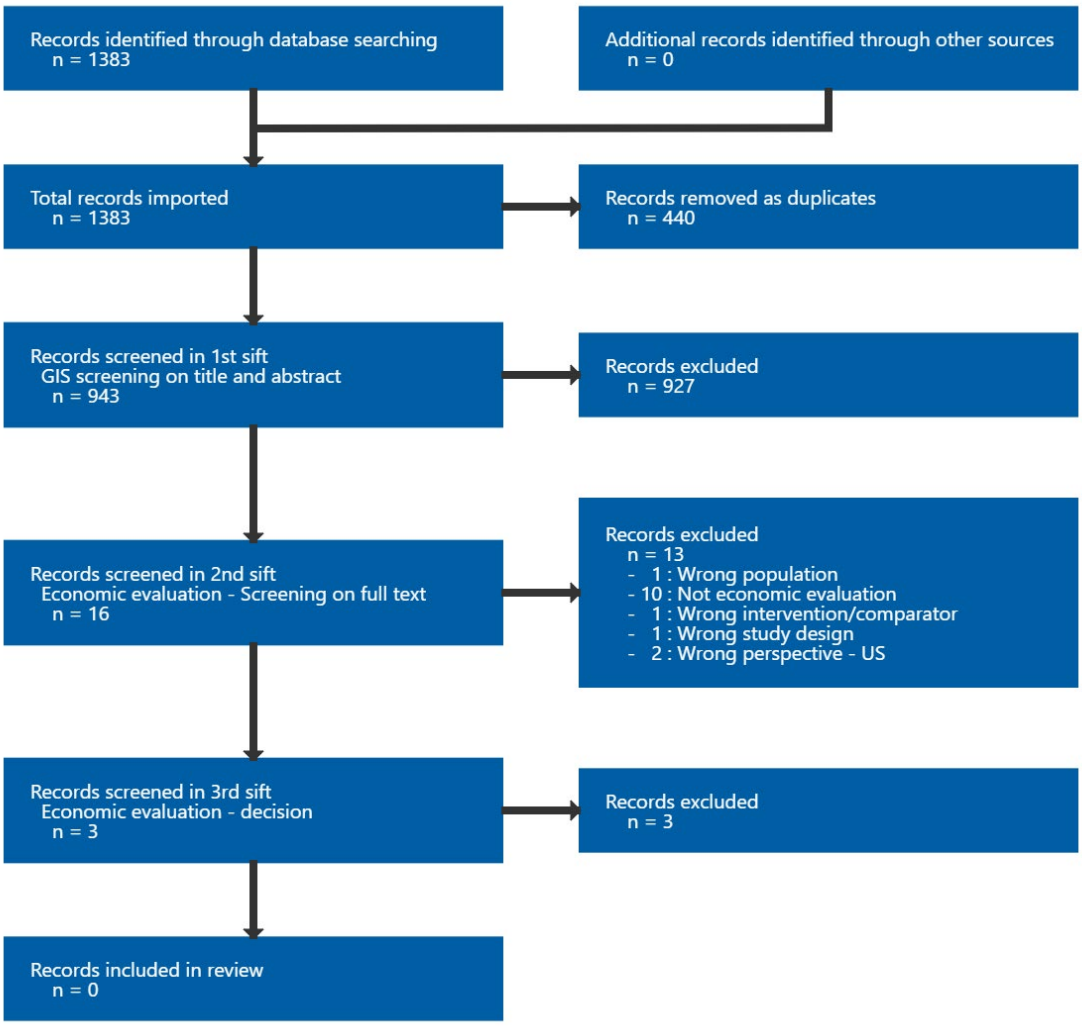
Appendix G Economic evidence study selection

Study selection for: What is the success rate, and which factors affect the outcome, of fertility preservation for children and adults undergoing treatment for cancer and other conditions or situations which are likely to impair their fertility?

No health economic evidence was included for this review question.

Three studies were included after full text screening, and underwent checklisting, but were excluded due to applicability and methodological concerns. Reasons for exclusion are outlined in appendix J.

Figure 28: Study selection flow chart



Appendix H Economic evidence tables

Economic evidence tables for review question: What is the success rate, and which factors affect the outcome, of fertility preservation for children and adults undergoing treatment for cancer and other conditions or situations which are likely to impair their fertility?

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

Appendix I Economic model

Economic model for review question: What is the success rate, and which factors affect the outcome, of fertility preservation for children and adults undergoing treatment for cancer and other conditions or situations which are likely to impair their fertility?

No economic analysis was conducted for this review question.

Appendix J Excluded studies

Excluded studies for review question: What is the success rate, and which factors affect the outcome, of fertility preservation for children and adults undergoing treatment for cancer and other conditions or situations which are likely to impair their fertility?

Excluded prevalence studies

Table 9: Excluded studies and reasons for their exclusion

Study	Code [Reason]
Abdel-Razeq, N., Ammar, K., Mahadeen, A. et al. (2020) Fertility counseling and sperm banking among adolescents and adults treated for cancer with curative intent in a developing country. Supportive Care in Cancer 28(8): 3915-3919	- No primary outcome reported
Abir, R, Ben-Aharon, I, Garor, R et al. (2016) Cryopreservation of in vitro matured oocytes in addition to ovarian tissue freezing for fertility preservation in paediatric female cancer patients before and after cancer therapy. Human reproduction (Oxford, England) 31(4): 750-62	- Intervention does not match inclusion criteria *Immature oocytes collected from ovarian tissue and cryopreserved after in vitro maturation (IVM)*
Abtahi, NS, Ebrahimi, B, Fathi, R et al. (2016) An Introduction to The Royan Human Ovarian Tissue Bank. International journal of fertility & sterility 10(2): 261-3	- Study type does not meet inclusion criteria *Short communication with data only reported in the abstract (analogous to a conference abstract)*
Abusanad, Atlal, Mokhtar, Aseel Mohamed A, Aljehani, Saad Adel A et al. (2022) Oncofertility care and influencing factors among cancer patients of reproductive age from Saudi Arabia. Frontiers in reproductive health 4: 1014868	- No primary outcome reported
Adank, Maria C, van Dorp, Wendy, Smit, Marij et al. (2014) Electroejaculation as a method of fertility preservation in boys diagnosed with cancer: a single-center experience and review of the literature. Fertility and sterility 102(1): 199-205e1	- No primary outcome reported
Adeleye, Amanda J, Cedars, Marcelle I, Smith, James et al. (2019) Ovarian stimulation for fertility preservation or family building in a cohort of transgender men. Journal of assisted reproduction and genetics 36(10): 2155-2161	- No primary outcome reported
Adeleye, Amanda J, Reid, Garrett, Kao, Chia-	- No primary outcome reported

Study	Code [Reason]
Ning et al. (2019) Semen Parameters Among Transgender Women With a History of Hormonal Treatment. Urology 124: 136-141	
Ahmad, Mohd Faizal, Sugishita, Yodo, Suzuki-Takahashi, Yuki et al. (2020) Oncofertility Treatment Among Breast Cancer Women: A Paradigm Shift of Practice After a Decade of Service. Journal of adolescent and young adult oncology 9(4): 496-501	- No relevant outcomes reported
Ainsworth AJ; Allyse M; Khan Z (2020) Fertility Preservation for Transgender Individuals: A Review. Mayo Clinic proceedings 95(4): 784-792	- Non-systematic review
Albar, Mohammad, Koziarz, Alex, McMahon, Eileen et al. (2023) Timing of testosterone discontinuation and assisted reproductive technology outcomes in transgender patients: a cohort study. F&S reports 4(1): 55-60	- No primary outcome reported
Alpern, Sharon, Yaish, Iris, Wagner-Kolasko, Gal et al. (2022) Why fertility preservation rates of transgender men are much lower than those of transgender women. Reproductive biomedicine online 44(5): 943-950	- No primary outcome reported
Amir, Hadar, Oren, Asaf, Klochendler Frishman, Emilie et al. (2020) Oocyte retrieval outcomes among adolescent transgender males. Journal of assisted reproduction and genetics 37(7): 1737-1744	- No primary outcome reported
Amir, Hadar, Perl, Liat, Barda, Shimi et al. (2022) Adolescent Transgender Females Present Impaired Semen Quality That Is Suitable for Intracytoplasmic Sperm Injection Even Before Initiating Gender-Affirming Hormone Treatment. Reproductive sciences (Thousand Oaks, Calif.) 29(1): 260-269	- No primary outcome reported
Amir, Hadar, Yaish, Iris, Oren, Asaf et al. (2020) Fertility preservation rates among transgender women compared with transgender men receiving comprehensive fertility counselling. Reproductive biomedicine online 41(3): 546-554	- No relevant outcomes reported
Amir, Hadar, Yaish, Iris, Samara, Nivin et al. (2020) Ovarian stimulation outcomes among transgender men compared with fertile cisgender women. Journal of assisted reproduction and genetics 37(10): 2463-2472	- No primary outcome reported

Study	Code [Reason]
Andersen, CY, Kristensen, SG, Greve, T et al. (2012) Cryopreservation of ovarian tissue for fertility preservation in young female oncological patients. Future oncology (London, England) 8(5): 595-608	- Non-systematic review
Andersen, CY, Silber, SJ, Bergholdt, SH et al. (2012) Long-term duration of function of ovarian tissue transplants: case reports. Reproductive biomedicine online 25(2): 128-32	- Population does not meet inclusion criteria *Out of 3 cases reported, only one had her own cryopreserved ovarian tissue transplanted*
Andersen, Signe Taasti, Pors, Susanne Elisabeth, Poulsen, Liv la Cour et al. (2019) Ovarian stimulation and assisted reproductive technology outcomes in women transplanted with cryopreserved ovarian tissue: a systematic review. Fertility and sterility 112(5): 908-921	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Anderson, Chelsea, Fitz, Victoria, Deal, Allison et al. (2023) Pregnancy attempts among adolescent and young adult cancer survivors. Fertility and sterility 119(3): 475-483	- Study type does not meet inclusion criteria *Survey*
Anderson, RA; Wallace, WH; Baird, DT (2008) Ovarian cryopreservation for fertility preservation: indications and outcomes. Reproduction (Cambridge, England) 136(6): 681-9	- Non-systematic review
Anderson, Richard A; Wallace, W Hamish B; Telfer, Evelyn E (2017) Ovarian tissue cryopreservation for fertility preservation: clinical and research perspectives. Human reproduction open 2017(1): hox001	- Non-systematic review
Aserlind, Alexandra, Martini, Anne, Dong, Jiawen et al. (2020) Fertility preservation before hematopoetic stem cell transplantation: a case series of women with GATA binding protein 2 deficiency, dedicator of cytokinesis 8 deficiency, and sickle cell disease. F&S reports 1(3): 287-293	- No relevant outcomes reported
Auer, Matthias K, Fuss, Johannes, Nieder, Timo O et al. (2018) Desire to Have Children Among Transgender People in Germany: A Cross-Sectional Multi-Center Study. The journal of sexual medicine 15(5): 757-767	- No relevant outcomes reported
Azem, Foad, Hasson, Joseph, Ben-Yosef, Dalit et al. (2010) Histologic evaluation of fresh human ovarian tissue before cryopreservation. International journal of gynecological pathology:	- Conference abstract

Study	Code [Reason]
official journal of the International Society of Gynecological Pathologists 29(1): 19-23	
Azim, Amr and Oktay, Kutluk (2007) Letrozole for ovulation induction and fertility preservation by embryo cryopreservation in young women with endometrial carcinoma. Fertility and sterility 88(3): 657-64	- No relevant outcomes reported
Babayev, Samir N, Arslan, Erol, Kogan, Stanley et al. (2013) Evaluation of ovarian and testicular tissue cryopreservation in children undergoing gonadotoxic therapies. Journal of assisted reproduction and genetics 30(1): 3-9	- No primary outcome reported
Babb, A, Farah, N, Lyons, C et al. (2012) Uptake and outcome of assisted reproductive techniques in long-term survivors of SCT. Bone marrow transplantation 47(4): 568-73	- Study type does not meet inclusion criteria *Survey*
Bahadur, G, Ling, K L E, Hart, R et al. (2002) Semen production in adolescent cancer patients. Human reproduction (Oxford, England) 17(10): 2654-6	- No primary outcome reported
Bahadur, G, Ling, KL, Hart, R et al. (2002) Semen quality and cryopreservation in adolescent cancer patients. Human reproduction (Oxford, England) 17(12): 3157-61	- No primary outcome reported
Balcerek, Magdalena, Schilling, Ralph, Byrne, Julianne et al. (2020) Determinants of utilization of cryopreservation of germ cells in adolescent cancer patients in four European countries. European journal of pediatrics 179(1): 51-60	- No relevant outcomes reported
Bann, CM, Treiman, K, Squiers, L et al. (2015) Cancer Survivors' Use of Fertility Preservation. Journal of women's health (2002) 24(12): 1030-7	- No relevant outcomes reported
Barnard, Emily P, Dhar, Cherie Priya, Rothenberg, Stephanie S et al. (2019) Fertility Preservation Outcomes in Adolescent and Young Adult Feminizing Transgender Patients. Pediatrics 144(3)	- No primary outcome reported
Barrett, Francesca, Shaw, Jacquelyn, Blakemore, Jennifer K et al. (2022) Fertility Preservation for Adolescent and Young Adult Transmen: A Case Series and Insights on Oocyte Cryopreservation. Frontiers in endocrinology 13: 873508	- No primary outcome reported

Study	Code [Reason]
Bashore, L (2007) Semen preservation in male adolescents and young adults with cancer: one institution's experience. Clinical journal of oncology nursing 11(3): 381-6	- No primary outcome reported
Beckmann, M W, Dittrich, R, Findeklee, S et al. (2016) Surgical Aspects of Ovarian Tissue Removal and Ovarian Tissue Transplantation for Fertility Preservation. Geburtshilfe und Frauenheilkunde 76(10): 1057-1064	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Beckmann, M.W., Dittrich, R., Lotz, L. et al. (2018) Fertility protection: complications of surgery and results of removal and transplantation of ovarian tissue. Reproductive BioMedicine Online 36(2): 188-196	- Data not reported in an extractable format
Ben-Aharon, I., Abir, R., Perl, G. et al. (2016) Optimizing the process of fertility preservation in pediatric female cancer patients - a multidisciplinary program. BMC Cancer 16(1): 620	- No relevant outcomes reported
Berookhim, Boback M and Mulhall, John P (2014) Outcomes of operative sperm retrieval strategies for fertility preservation among males scheduled to undergo cancer treatment. Fertility and sterility 101(3): 805-11	- No primary outcome reported
Biasin, E, Salvagno, F, Berger, M et al. (2015) Ovarian tissue cryopreservation in girls undergoing haematopoietic stem cell transplant: experience of a single centre. Bone marrow transplantation 50(9): 1206-11	- No primary outcome reported *Live birth reported for 1 participant who received ovarian tissue transplant but unclear if this was the only participant who returned*
Bishop, Lauren A, Gunn, Justin, Jahandideh, Samad et al. (2021) Endometriosis does not impact live-birth rates in frozen embryo transfers of euploid blastocysts. Fertility and sterility 115(2): 416-422	- Intervention does not match inclusion criteria
Bitan, R., Magnezi, R., Kedem, A. et al. (2023) Autologous sperm usage after cryopreservation-the crucial impact of patients' characteristics. Andrology	- Population does not meet inclusion criteria *Less than 80% of participants had relevant medical indications such as cancer or non-cancer systemic diseases*
Blakemore, Jennifer K, Grifo, James A, DeVore, Shannon M et al. (2021) Planned oocyte cryopreservation-10-15-year follow-up: return rates and cycle outcomes. Fertility and sterility 115(6): 1511-1520	- Population does not meet inclusion criteria *Indication for oocyte cryopreservation is unclear*

Study	Code [Reason]
Blondeaux, E., Massarotti, C., Fontana, V. et al. (2021) The PREgnancy and FERtility (PREFER) Study Investigating the Need for Ovarian Function and/or Fertility Preservation Strategies in Premenopausal Women With Early Breast Cancer. Frontiers in Oncology 11: 690320	- No relevant outcomes reported
Blumenfeld, Zeev; Zur, Hilli; Dann, Eldad J (2015) Gonadotropin-Releasing Hormone Agonist Cotreatment During Chemotherapy May Increase Pregnancy Rate in Survivors. The oncologist 20(11): 1283-9	- Intervention does not match inclusion criteria *Study examines ovarian stimulation as a fertility-sparing intervention, rather than focusing on fertility preservation outcomes*
Borgstrom, Birgit, Fridstrom, Margareta, Gustafsson, Britt et al. (2020) A prospective study on the long-term outcome of prepubertal and pubertal boys undergoing testicular biopsy for fertility preservation prior to hematologic stem cell transplantation. Pediatric blood & cancer 67(9): e28507	- No primary outcome reported
Braye, A; Tournaye, H; Goossens, E (2019) Setting Up a Cryopreservation Programme for Immature Testicular Tissue: Lessons Learned After More Than 15 Years of Experience. Clinical medicine insights. Reproductive health 13: 1179558119886342	- No primary outcome reported
Brik, Tessa, Vrouenraets, Lieke J J J, Schagen, Sebastian E E et al. (2019) Use of Fertility Preservation Among a Cohort of Transgirls in the Netherlands. The Journal of adolescent health: official publication of the Society for Adolescent Medicine 64(5): 589-593	- No primary outcome reported
Brouillet, S, Ranisavljevic, N, Sonigo, C et al. (2023) Should we perform oocyte accumulation to preserve fertility in women with Turner syndrome? A multicenter study and systematic review of the literature. Human reproduction (Oxford, England) 38(9): 1733-1745	- Data not reported in an extractable format
Brydoy, Marianne, Fossa, Sophie D, Klepp, Olbjorn et al. (2005) Paternity following treatment for testicular cancer. Journal of the National Cancer Institute 97(21): 1580-8	- Study type does not meet inclusion criteria *Survey*
Bystrova, Olga, Lapina, Elena, Kalugina, Alla et al. (2019) Heterotopic transplantation of cryopreserved ovarian tissue in cancer patients: a case series. Gynecological endocrinology: the official journal of the International Society of	- No primary outcome reported

Study	Code [Reason]
Gynecological Endocrinology 35(12): 1043-1049	
Calagna, Gloria, Della Corte, Luigi, Giampaolino, Pierluigi et al. (2020) Endometriosis and strategies of fertility preservation: a systematic review of the literature. European journal of obstetrics, gynecology, and reproductive biology 254: 218-225	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Chambon, Fanny, Brugnon, Florence, Greze, Victoria et al. (2016) Cryopreservation of ovarian tissue in pediatric patients undergoing sterilizing chemotherapy. Human fertility (Cambridge, England) 19(1): 23-31	- No primary outcome reported
Chang, Yanan, Shen, Minghong, Wang, Sha et al. (2022) Association of embryo transfer type with infertility in endometriosis: a systematic review and meta-analysis. Journal of assisted reproduction and genetics 39(5): 1033-1043	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Chatterton, Fiona and Kay, Vanessa (2018) An audit of Ninewells Hospital fertility preservation service. Journal of obstetrics and gynaecology: the journal of the Institute of Obstetrics and Gynaecology 38(5): 732	- Article type does not meet inclusion criteria *Abstract*
Chen, Diane, Bernardi, Lia A, Pavone, Mary Ellen et al. (2018) Oocyte cryopreservation among transmasculine youth: a case series. Journal of assisted reproduction and genetics 35(11): 2057-2061	- No primary outcome reported
Chen, Diane, Simons, Lisa, Johnson, Emilie K et al. (2017) Fertility Preservation for Transgender Adolescents. The Journal of adolescent health: official publication of the Society for Adolescent Medicine 61(1): 120-123	- No primary outcome reported
Cho, SW, Lee, SH, Chung, MK et al. (2004) Successful spouse pregnancy of male patients with severe aplastic anemia and chronic myelogenous leukemia using spermatozoa banked prior to bone marrow transplantation and using the ICSI procedure: case reports. Journal of assisted reproduction and genetics 21(2): 59-61	- Study type does not meet inclusion criteria *Essentially 2 case studies*
Ciccarone, Mariavita, Hohaus, Stefan, Pulsoni, Alessandro et al. (2020) Preliminary results of a counselling programme for fertility preservation in female cancer patients: The experience of the GEMME DORMIENTI network. European journal	- No primary outcome reported

Study	Code [Reason]
of cancer care 29(1): e13174	
Cobo, Ana, Coello, Aila, de Los Santos, Maria Jose et al. (2021) Number needed to freeze: cumulative live birth rate after fertility preservation in women with endometriosis. Reproductive biomedicine online 42(4): 725-732	- Data not reported in an extractable format
Cooley, Lauren Folgosa, Wren, James, Keeter, Mary Kate et al. (2020) Anti-TNF agents and potential effects on male fertility: are men being counseled? BMC urology 20(1): 111	- No primary outcome reported
Cooper, Holly C; Long, Jin; Aye, Tandy (2022) Fertility preservation in transgender and non-binary adolescents and young adults. PloS one 17(3): e0265043	- No primary outcome reported
Corkum, Kristine S, Rhee, Daniel S, Wafford, Q Eileen et al. (2019) Fertility and hormone preservation and restoration for female children and adolescents receiving gonadotoxic cancer treatments: A systematic review. Journal of pediatric surgery 54(11): 2200-2209	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Creux, Helene, Monnier, Patricia, Son, Weon-Young et al. (2018) Thirteen years' experience in fertility preservation for cancer patients after in vitro fertilization and in vitro maturation treatments. Journal of assisted reproduction and genetics 35(4): 583-592	- Data not reported in an extractable format *Disaggregated return rate and fertility outcomes not extractable per participant for the relevant group, the IVM (immature oocyte) group is not of interest to this review*
Cruz, Marcelo R S, Prestes, Julio C, Gimenes, Daniel L et al. (2010) Fertility preservation in women with breast cancer undergoing adjuvant chemotherapy: a systematic review. Fertility and sterility 94(1): 138-43	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Dahhan, T, Dancet, E A F, Miedema, D V et al. (2014) Reproductive choices and outcomes after freezing oocytes for medical reasons: a follow-up study. Human reproduction (Oxford, England) 29(9): 1925-30	- Study type does not meet inclusion criteria *Survey*
Daudin, Myriam, Rives, Nathalie, Walschaerts, Marie et al. (2015) Sperm cryopreservation in adolescents and young adults with cancer: results of the French national sperm banking network (CECOS). Fertility and sterility 103(2): 478-86e1	- No primary outcome reported
De Nie, I., Mulder, C.L., Meissner, A. et al. (2022)	- No primary outcome reported

Study	Code [Reason]
Histological study on the influence of puberty suppression and hormonal treatment on developing germ cells in transgender women. Human Reproduction 37(2): 297-308	
de Nie, Iris, Asseler, Joyce, Meisner, Andreas et al. (2022) A cohort study on factors impairing semen quality in transgender women. American journal of obstetrics and gynecology 226(3): 390e1-390e10	- No relevant outcomes reported
De Roo, Chloe, Lierman, Sylvie, Tilleman, Kelly et al. (2017) Ovarian tissue cryopreservation in female-to-male transgender people: insights into ovarian histology and physiology after prolonged androgen treatment. Reproductive biomedicine online 34(6): 557-566	- No relevant outcomes reported
Defreyne, Justine, Van Schuylenbergh, Judith, Motmans, Joz et al. (2020) Parental desire and fertility preservation in assigned female at birth transgender people living in Belgium. Fertility and sterility 113(1): 149-157e2	- No relevant outcomes reported
Delattre, S, Segers, I, Van Moer, E et al. (2020) Combining fertility preservation procedures to spread the eggs across different baskets: a feasibility study. Human reproduction (Oxford, England) 35(11): 2524-2536	- Intervention does not match inclusion criteria *Any relevant fertility preservation technique, e.g. ovarian tissue cryopreservation, combined with an irrelevant technique (e.g. in vitro maturation)*
Delgouffe, E, Braye, A, Vloeberghs, V et al. (2023) Spermatogenesis after gonadotoxic childhood treatment: follow-up of 12 patients. Human reproduction open 2023(3): hoad029	- No primary outcome reported
Demeestere, I, Simon, P, Englert, Y et al. (2003) Preliminary experience of ovarian tissue cryopreservation procedure: alternatives, perspectives and feasibility. Reproductive biomedicine online 7(5): 572-9	- Non-systematic review
Desvignes, F, Pouly, JL, Janny, L et al. (2014) [Cryoconservation of ovarian tissue: indications and outcome of the patients]. Gynecologie, obstetrique & fertilite 42(5): 334-42	- Study not reported in English
Diaz, Ashley A, Kubo, Hana, Handa, Nicole et al. (2022) A Systematic Review of Ovarian Tissue Transplantation Outcomes by Ovarian Tissue Processing Size for Cryopreservation. Frontiers in endocrinology 13: 918899	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)

Study	Code [Reason]
Dieci, Maria Vittoria, Ghiotto, Cristina, Barbieri, Caterina et al. (2019) Patterns of Fertility Preservation and Pregnancy Outcome After Breast Cancer at a Large Comprehensive Cancer Center. Journal of women's health (2002) 28(4): 544-550	- No primary outcome reported
Dietrich, Jens Erik, Jauckus, Julia, Hoffmann, Sabrina et al. (2020) In vitro maturation of immature oocytes from ovarian tissue prior to shipment to a cryobank. Archives of gynecology and obstetrics 302(4): 1019-1024	- Intervention does not match inclusion criteria
DiNofia, Amanda M, Wang, Xingmei, Yannekis, Gia et al. (2017) Analysis of semen parameters in a young cohort of cancer patients. Pediatric blood & cancer 64(2): 381-386	- No primary outcome reported
Dolmans MM and Donnez J (2021) Fertility preservation in women for medical and social reasons: Oocytes vs ovarian tissue. Best practice & research. Clinical obstetrics & gynaecology 70: 63-80	- Non-systematic review
Dolmans MM, Donnez J, Camboni A et al. (2009) IVF outcome in patients with orthotopically transplanted ovarian tissue. Human reproduction (Oxford, England) 24(11): 2778-2787	- No relevant outcomes reported
Dolmans, Marie-Madeleine, Demylle, Dominique, Martinez-Madrid, Belen et al. (2005) Efficacy of in vitro fertilization after chemotherapy. Fertility and sterility 83(4): 897-901	- No primary outcome reported
Dolmans, Marie-Madeleine, Jadoul, Pascale, Gilliaux, Sebastien et al. (2013) A review of 15 years of ovarian tissue bank activities. Journal of assisted reproduction and genetics 30(3): 305-14	- The same population as another included study with no further relevant data *Population overlaps with Jadoul 2017 which is included*
Dolmans, Marie-Madeleine, Marotta, Maria-Laura, Pirard, Celine et al. (2014) Ovarian tissue cryopreservation followed by controlled ovarian stimulation and pick-up of mature oocytes does not impair the number or quality of retrieved oocytes. Journal of ovarian research 7: 80	- No relevant outcomes reported
Dolmans, Marie-Madeleine, von Wolff, Michael, Poirot, Catherine et al. (2021) Transplantation of cryopreserved ovarian tissue in a series of 285 women: a review of five leading European centers. Fertility and sterility 115(5): 1102-1115	- Non-systematic review

Study	Code [Reason]
Donnez J and Dolmans MM (2018) Fertility Preservation in Women. The New England journal of medicine 378(4): 400-401	- Non-systematic review
Donnez, J and Dolmans, MM (2015) Ovarian cortex transplantation: 60 reported live births brings the success and worldwide expansion of the technique towards routine clinical practice. Journal of assisted reproduction and genetics 32(8): 1167-70	- Non-systematic review
Donnez, J and Dolmans, MM (2011) Preservation of fertility in females with haematological malignancy. British journal of haematology 154(2): 175-84	- The same population as another included study with no further relevant data *Article reports results from Donnez 2011 as well as other single case reports excluded from this review*
Donnez, J, Dolmans, MM, Pellicer, A et al. (2013) Restoration of ovarian activity and pregnancy after transplantation of cryopreserved ovarian tissue: a review of 60 cases of reimplantation. Fertility and sterility 99(6): 1503-13	- Non-systematic review
Donnez, J, Silber, S, Andersen, CY et al. (2011) Children born after autotransplantation of cryopreserved ovarian tissue. a review of 13 live births. Annals of medicine 43(6): 437-50	- Study type does not meet inclusion criteria *Essentially a number of case studies and only report on participants who had a live birth after cryopreservation of material*
Donnez, J, Squifflet, J, Van Eyck, AS et al. (2008) Restoration of ovarian function in orthotopically transplanted cryopreserved ovarian tissue: a pilot experience. Reproductive biomedicine online 16(5): 694-704	- The same population as another included study with no further relevant data *Population overlaps with Jadoul 2017*
du Boulet, B., Bringer-Deutsch, S., Anahory, T. et al. (2021) Oncofertility and breast cancer at Montpellier University Hospital: Retrospective analysis of patients management since 2011. Gynecologie Obstetrique Fertilite et Senologie 49(2): 112-121	- Study not reported in English
Du, Yanbo, Yan, Lei, Sun, Mei et al. (2020) Effect of Human Chorionic Gonadotropin Injection Before Frozen Embryo Transfer on Pregnancy Outcomes in Endometriosis-Associated Infertility. Frontiers in medicine 7: 592921	- Intervention does not match inclusion criteria
Dwiggins, M., Shim, J., Galloway, L.A. et al. (2023) Effects of Ovarian Tissue Cryopreservation on Primary Ovarian	- No relevant outcomes reported

Study	Code [Reason]
Insufficiency in Girls Undergoing Bone Marrow Transplantation. Journal of Pediatric and Adolescent Gynecology 36(2): 128-133	
Edge, B; Holmes, D; Makin, G (2006) Sperm banking in adolescent cancer patients. Archives of disease in childhood 91(2): 149-52	- No primary outcome reported
El Hachem, Hady, Sonigo, Charlotte, Benard, Julie et al. (2018) Comparison of GnRH agonist and hCG for priming in vitro maturation cycles in cancer patients undergoing urgent fertility preservation. PloS one 13(12): e0208576	- No relevant outcomes reported
Elias, D, Duchalais, E, David, A et al. (2013) Comprehensive study of ovarian metastases in young women with peritoneal pseudomyxoma: is a preservation of fertility possible?. European journal of surgical oncology : the journal of the European Society of Surgical Oncology and the British Association of Surgical Oncology 39(7): 748-53	- Intervention does not match inclusion criteria *Fertility-sparing surgery*
Elizur, S E, Chian, R C, Pineau, C A et al. (2008) Fertility preservation treatment for young women with autoimmune diseases facing treatment with gonadotoxic agents. Rheumatology (Oxford, England) 47(10): 1506-9	- No primary outcome reported
Elizur, Shai E, Aizer, Adva, Yonish, Michal et al. (2023) Fertility preservation for women with ovarian endometriosis: results from a retrospective cohort study. Reproductive biomedicine online 46(2): 332-337	- No primary outcome reported
Eustache F, Drouineaud V, Mendes N et al. (2021) Fertility preservation and sperm donation in transgender individuals: The current situation within the French CECOS network. Andrology 9(6): 1790-1798	- No primary outcome reported
Fabbri R, Pasquinelli G, Magnani V et al. (2014) Autotransplantation of cryopreserved ovarian tissue in oncological patients: recovery of ovarian function. Future oncology (London, England) 10(4): 549-561	- No primary outcome reported
Fabbri, R, Vicenti, R, Macciocca, M et al. (2012) Cryopreservation of ovarian tissue in pediatric patients. Obstetrics and gynecology international 2012: 910698	- No primary outcome reported

Study	Code [Reason]
Fain-Kahn, V, Poirot, C, Uzan, C et al. (2009) Feasibility of ovarian cryopreservation in borderline ovarian tumours. Human reproduction (Oxford, England) 24(4): 850-5	- Intervention does not match inclusion criteria *Ovarian tissue cryopreservation planned to be performed at the same time as surgical treatment of borderline ovarian tumour (BOT). Only extractable outcome is proportion where material obtained but this is impacted by the simultaneous timing of the fertility preservation (FP), e.g. in some participants alternative management strategies were pursued for the treatment of the BOT and this impacted on FP*
Feigin, E, Abir, R, Fisch, B et al. (2007) Laparoscopic ovarian tissue preservation in young patients at risk for ovarian failure as a result of chemotherapy/irradiation for primary malignancy. Journal of pediatric surgery 42(5): 862-4	- No relevant outcomes reported
Feil, Katharina, Reiser, Elisabeth, Braun, Anne-Sophie et al. (2023) Fertility, Contraception, and Fertility Preservation in Trans Individuals. Deutsches Arzteblatt international 120(14): 243-250	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Feldschuh, J, Brassel, J, Durso, N et al. (2005) Successful sperm storage for 28 years. Fertility and sterility 84(4): 1017	- Study type does not meet inclusion criteria *Case report*
Fernandez-Gonzalez, Marta J, Radauer-Plank, Anne-Catherine, Stelzer, Cornelia et al. (2023) Sperm and testicular tissue cryopreservation and assisted reproductive technology outcomes in male cancer patients: a 15-year experience. Journal of cancer research and clinical oncology 149(8): 5321-5330	- Data not reported in an extractable format
Ferrante, AC, Gerhardt, CA, Yeager, ND et al. (2019) Interest in Learning About Fertility Status Among Male Adolescent and Young Adult Survivors of Childhood Cancer. Journal of adolescent and young adult oncology 8(1): 61-66	- Study type does not meet inclusion criteria *Survey*
Ferrari, Stefania, Paffoni, Alessio, Filippi, Francesca et al. (2016) Sperm cryopreservation and reproductive outcome in male cancer patients: a systematic review. Reproductive biomedicine online 33(1): 29-38	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Filippi, F., Kusamura, S., Martinelli, F. et al. (2021) Fertility preservation in women with peritoneal surface malignancies: A case series.	- No primary outcome reported

Study	Code [Reason]
European Journal of Surgical Oncology 47(11): 2948-2951	
Filippi, Francesca, Meazza, Cristina, Somigliana, Edgardo et al. (2021) Fertility preservation in childhood and adolescent female tumor survivors. Fertility and sterility 116(4): 1087-1095	- Intervention does not match inclusion criteria *Post-cancer oocyte preservation*
Findeklee, Sebastian, Radosa, Julia C, Takacs, Zoltan et al. (2019) Fertility preservation in female cancer patients: current knowledge and future perspectives. Minerva ginecologica 71(4): 298-305	- Non-systematic review
Fleury, Audrey, Pirrello, Olivier, Maugard, Christine et al. (2018) Breast cancer and ovarian tissue cryopreservation: Review of the literature. Journal of gynecology obstetrics and human reproduction 47(8): 351-357	- Non-systematic review
Flink, Dina M; Sheeder, Jeanelle; Kondapalli, Laxmi A (2017) Do Patient Characteristics Decide if Young Adult Cancer Patients Undergo Fertility Preservation?. Journal of adolescent and young adult oncology 6(2): 223-228	- No primary outcome reported
Forgeard, N., Jestin, M., Vexiau, D. et al. (2021) Sexuality- and Fertility-Related Issues in Women after Allogeneic Hematopoietic Stem Cell Transplantation. Transplantation and Cellular Therapy 27(5): 432e1-432e6	- Study type does not meet inclusion criteria *Survey*
Fouks, Y., Sheiman, V., Goaz, S. et al. (2021) Fertility preservation and PGT-M in women with familial adenomatous polyposis-associated desmoid tumours. Reproductive BioMedicine Online 43(4): 637-644	- No primary outcome reported
Fraison, E, Huberlant, S, Labrune, E et al. (2023) Live birth rate after female fertility preservation for cancer or haematopoietic stem cell transplantation: a systematic review and meta-analysis of the three main techniques; embryo, oocyte and ovarian tissue cryopreservation. Human reproduction (Oxford, England) 38(3): 489-502	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Francisco Fàbregues*, Josep M. Calafell, Dolors Manau, Aina Borràs, Joana Peñarrubia, Gemma Casals, Sara Peralta, Montserrat Creus, Janisse Ferreri RSAFC (2017) Pregnancy After Orthotopic Ovarian Tissue Transplantation Using N-Hexyl-2-	- Intervention does not match inclusion criteria

Study	Code [Reason]
Cyanoacrylate as A Tissue Adhesive. Trends in Transplantation 5: 1-6	
Fu, L., Zhang, K., An, Q. et al. (2018) Low utilization of fertility preservation among chinese male cancer patients. International Journal of Clinical and Experimental Medicine 11(9): 9911-9915	- Non-systematic review
Gang, Sujin; Yang, Hee-Beom; Kim, Hyun-Young (2022) A 17-year experience on bilaterality of ovarian germ cell tumors in pediatric population and its clinical implications: A single-center study. Journal of pediatric surgery 57(7): 1221-1227	- No relevant outcomes reported
Gat, Itai, Toren, Amos, Hourvitz, Ariel et al. (2014) Sperm preservation by electroejaculation in adolescent cancer patients. Pediatric blood & cancer 61(2): 286-90	- Conference abstract
Gellert, S E, Pors, S E, Kristensen, S G et al. (2018) Transplantation of frozen-thawed ovarian tissue: an update on worldwide activity published in peer-reviewed papers and on the Danish cohort. Journal of assisted reproduction and genetics 35(4): 561-570	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Geoffron, S, Lier, A, de Kermadec, E et al. (2021) Fertility preservation in women with malignant and borderline ovarian tumors: Experience of the French ESGO-certified center and pregnancy-associated cancer network (CALG). Gynecologic oncology 161(3): 817-824	- No primary outcome reported
Gilbert, Kirven, Nangia, Ajay K, Dupree, James M et al. (2018) Fertility preservation for men with testicular cancer: Is sperm cryopreservation cost effective in the era of assisted reproductive technology?. Urologic oncology 36(3): 92e1-92e9	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Ginsberg, J P, Carlson, C A, Lin, K et al. (2010) An experimental protocol for fertility preservation in prepubertal boys recently diagnosed with cancer: a report of acceptability and safety. Human reproduction (Oxford, England) 25(1): 37-41	- No primary outcome reported
Ginsberg, Jill P, Li, Yimei, Carlson, Claire A et al. (2014) Testicular tissue cryopreservation in prepubertal male children: an analysis of parental decision-making. Pediatric blood & cancer 61(9): 1673-8	- No relevant outcomes reported

Study	Code [Reason]
Ginsberg, Jill P, Ogle, Susan K, Tuchman, Lisa K et al. (2008) Sperm banking for adolescent and young adult cancer patients: sperm quality, patient, and parent perspectives. Pediatric blood & cancer 50(3): 594-8	- No primary outcome reported
Girasole, CR, Cookson, MS, Smith, JA et al. (2007) Sperm banking: use and outcomes in patients treated for testicular cancer. BJU international 99(1): 33-6	- Conference abstract
Gjeterud, Julie; Kristensen, Stine Gry; Fedder, Jens (2021) Indications for cryopreservation and autotransplantation of ovarian tissue. Tidsskrift for den Norske laegeforening: tidsskrift for praktisk medicin, ny raekke 141(202115)	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Goeckenjan, M, Freis, A, Glaß, K et al. (2020) Motherhood after cancer: fertility and utilisation of fertility-preservation methods. Archives of gynecology and obstetrics 301(6): 1579-1588	- Study type does not meet inclusion criteria *Survey*
Gook, D., Hale, L., Polyakov, A. et al. (2021) Experience with transplantation of human cryopreserved ovarian tissue to a sub-peritoneal abdominal site. Human Reproduction 36(9): 2473-2483	- Data not reported in an extractable format
Goossens, E, Jahnukainen, K, Mitchell, R T et al. (2020) Fertility preservation in boys: recent developments and new insights . Human reproduction open 2020(3): hoaa016	- Non-systematic review
Gracia, CR, Chang, J, Kondapalli, L et al. (2012) Ovarian tissue cryopreservation for fertility preservation in cancer patients: successful establishment and feasibility of a multidisciplinary collaboration. Journal of assisted reproduction and genetics 29(6): 495-502	- No primary outcome reported
Greaves, P, Sarker, SJ, Chowdhury, K et al. (2014) Fertility and sexual function in long-term survivors of haematological malignancy: using patient-reported outcome measures to assess a neglected area of need in the late effects clinic. British journal of haematology 164(4): 526-35	- No primary outcome reported
Gremeau, A S, Antunes, S, Valdeyron, C et al. (2022) Assessment of female fertility preservation in Auvergne 3 years after implementation of the PREFERA platform (PREservation FERtilite	- Data not reported in an extractable format *Outcomes not reported separately according to material preserved*

Study	Code [Reason]
Auvergne). Journal of gynecology obstetrics and human reproduction 51(4): 102342	
Greve, T, Ernst, E, Markholt, S et al. (2010) Legal termination of a pregnancy resulting from transplanted cryopreserved ovarian tissue. Acta obstetricia et gynecologica Scandinavica 89(12): 1589-91	- Article type does not meet inclusion criteria *Case report*
Greze, V., Mechdoud, S., Vorilhon, S. et al. (2020) Access to fertility preservation for adolescents and young adults aged 15 to 24 years with cancers in Auvergne, France. Bulletin du Cancer 107(78): 773-778	- Study not reported in English
Grifo, JA and Noyes, N (2010) Delivery rate using cryopreserved oocytes is comparable to conventional in vitro fertilization using fresh oocytes: potential fertility preservation for female cancer patients. Fertility and sterility 93(2): 391-6	- Population does not meet inclusion criteria *Indication unclear (the study uses the results to inform counselling of participants with cancer, but the participants do not appear to have cancer)*
Grover, NS, Deal, AM, Wood, WA et al. (2016) Young Men With Cancer Experience Low Referral Rates for Fertility Counseling and Sperm Banking. Journal of oncology practice 12(5): 465-71	- No primary outcome reported
Guo, Haiyan, Wang, Yun, Chen, Qiuju et al. (2016) Effect of Natural Cycle Endometrial Preparation for Frozen-Thawed Embryo Transfer in Patients with Advanced Endometriosis. Medical science monitor: international medical journal of experimental and clinical research 22: 4596-4603	- Population does not meet inclusion criteria *Not fertility preservation study*
Gurtin, Zeynep B, Morgan, Lucy, O'Rourke, David et al. (2019) For whom the egg thaws: insights from an analysis of 10 years of frozen egg thaw data from two UK clinics, 2008-2017. Journal of assisted reproduction and genetics 36(6): 1069-1080	- Population does not meet inclusion criteria *Participants are those who had frozen their eggs for social reasons and for a variety of clinical, incidental, and ethical reasons*
Hagenas, Isabella, Jorgensen, Niels, Rechnitzer, Catherine et al. (2010) Clinical and biochemical correlates of successful semen collection for cryopreservation from 12-18-year-old patients: a single-center study of 86 adolescents. Human reproduction (Oxford, England) 25(8): 2031-8	- No primary outcome reported
Hamada, A., Kingsberg, S., Wierckx, K. et al. (2015) Semen characteristics of transwomen referred for sperm banking before sex transition: A case series. Andrologia 47(7): 832-838	- No primary outcome reported

Study	Code [Reason]
Hamano, Itsuto; Hatakeyama, Shingo; Ohyama, Chikara (2017) Fertility preservation of patients with testicular cancer. Reproductive medicine and biology 16(3): 240-251	- Non-systematic review
Hammarberg, K, Kirkman, M, Stern, C et al. (2017) Survey of Reproductive Experiences and Outcomes of Cancer Survivors Who Stored Reproductive Material Before Treatment. Human reproduction (Oxford, England) 32(12): 2423-2430	- Study type does not meet inclusion criteria *Survey*
Harjee, Rahana, Chen, Jing, Caudle, Jeff et al. (2022) Oocyte Cryopreservation: A 9-Year Single-Centre Experience. Journal of obstetrics and gynaecology Canada: JOGC = Journal d'obstetrique et gynecologie du Canada : JOGC 44(12): 1271-1278	- Population does not meet inclusion criteria *The majority of participants (86%) received elective preservation of fertility and not necessarily because of medical indication*
Harris, Courtney J, Corkum, Kristine S, Finlayson, Courtney et al. (2020) Establishing an Institutional Gonadal Tissue Cryopreservation Protocol for Patients with Differences of Sex Development. The Journal of urology 204(5): 1054-1061	- No relevant outcomes reported
Hawkins Bressler, Leah, Mersereau, Jennifer E, Anderson, Chelsea et al. (2019) Fertility-related experiences after breast cancer diagnosis in the Sister and Two Sister Studies. Cancer 125(15): 2675-2683	- Study type does not meet inclusion criteria *Survey*
He, Yijiao, Wang, Yiqin, Zhou, Rong et al. (2020) Oncologic and obstetrical outcomes after fertility-preserving retreatment in patients with recurrent atypical endometrial hyperplasia and endometrial cancer. International journal of gynecological cancer: official journal of the International Gynecological Cancer Society 30(12): 1902-1907	- Population does not meet inclusion criteria *Subgroup analysis of those who had fertility preservation and experienced a cancer relapse*
Henes, M, Henes, J C, Neunhoeffer, E et al. (2012) Fertility preservation methods in young women with systemic lupus erythematosus prior to cytotoxic therapy: experiences from the FertiPROTEKT network. Lupus 21(9): 953-8	- Data not reported in an extractable format *Relevant primary outcomes for participants who underwent preservation of ovarian tissue not reported separately from those who underwent preservation of other material*
Henes, Melanie, Neis, Felix, Kramer, Bernhard et al. (2014) Possibilities of fertility preservation in young patients with ovarian cancer. Anticancer research 34(7): 3851-4	- Data not reported in an extractable format *Relevant primary outcomes for participants who underwent preservation of ovarian tissue not reported separately from those who underwent preservation of other material*

Study	Code [Reason]
Heritage, Sophie R, Feast, Alice, Mourad, Mariam et al. (2022) Documentation of Oncofertility Communication in Adolescents and Young Adults with Cancer: A Retrospective Analysis. Journal of adolescent and young adult oncology 11(3): 275-283	- No relevant outcomes reported
Higgins, A., Khan, Z., Coddington, C.C. et al. (2019) Utilization and Outcomes of Fertility Preservation Techniques in Women Undergoing Allogeneic Hematopoietic Cell Transplant. Biology of Blood and Marrow Transplantation 25(6): 1232-1239	- No primary outcome reported
Hill, KA, Nadler, T, Mandel, R et al. (2012) Experience of young women diagnosed with breast cancer who undergo fertility preservation consultation. Clinical breast cancer 12(2): 127-32	- No relevant outcomes reported
Hipp, Heather S, Shandley, Lisa M, Schirmer, D Austin et al. (2019) Oocyte Cryopreservation in Adolescent Women. Journal of pediatric and adolescent gynecology 32(4): 377-382	- No relevant outcomes reported
Horan, M, Hartigan, L, Groarke, H et al. (2020) Fertility Preservation in Adolescent Males. Irish medical journal 113(9): 180	- No primary outcome reported
Horne, G, Atkinson, A, Brison, DR et al. (2001) Achieving pregnancy against the odds: successful implantation of frozen-thawed embryos generated by ICSI using spermatozoa banked prior to chemo/radiotherapy for Hodgkin's disease and acute leukaemia. Human reproduction (Oxford, England) 16(1): 107-109	- Study type does not meet inclusion criteria *Essentially 2 case reports*
Hoshi, M., Oebisu, N., Takada, J. et al. (2014) Pre-chemotherapy preservation of fertility in male patients with high-grade malignant bone and soft tissue tumors. Molecular and Clinical Oncology 2(6): 1111-1114	- No primary outcome reported
Hourvitz, A, Yerushalmi, G M, Maman, E et al. (2015) Combination of ovarian tissue harvesting and immature oocyte collection for fertility preservation increases preservation yield. Reproductive biomedicine online 31(4): 497-505	- No primary outcome reported
Hourvitz, Ariel, Goldschlag, Dan E, Davis, Owen K et al. (2008) Intracytoplasmic sperm injection (ICSI) using cryopreserved sperm from men with	- Data not reported in an extractable format *Data only reported per cycle and not per participant*

Study	Code [Reason]
malignant neoplasm yields high pregnancy rates. Fertility and sterility 90(3): 557-63	
Huober-Zeeb, Cosima, Lawrenz, Barbara, Popovici, Roxana M et al. (2011) Improving fertility preservation in cancer: ovarian tissue cryobanking followed by ovarian stimulation can be efficiently combined. Fertility and sterility 95(1): 342-4	- Intervention does not match inclusion criteria *Combination of partial removal of ovarian tissue for cryopreservation followed by cryopreservation of oocytes*
Hussein, Reda S; Khan, Zaraq; Zhao, Yulian (2020) Fertility Preservation in Women: Indications and Options for Therapy. Mayo Clinic proceedings 95(4): 770-783	- Non-systematic review
Husseinzadeh, Nader and Husseinzadeh, Holleh D (2013) Preservation of Fertility in Female Cancer Patients Desiring Future Child Bearing; What is Available and What can be Offered. World journal of oncology 4(1): 1-7	- Non-systematic review
Immediata, Valentina, Cirillo, Federico, Baggiani, Annamaria et al. (2022) Why are they not coming back? A single-center follow-up study on oncological women oocyte's storing for fertility preservation. Frontiers in endocrinology 13: 1054123	- Study type does not meet inclusion criteria *Paper focused on those who did not return to use cryopreserved oocytes and outcomes not reported for those who did return*
Ingold, Caroline, Navarro, Paula Andrea, de Oliveira, Renato et al. (2023) Risk of ovarian hyperstimulation syndrome in women with malignancies undergoing treatment with long-acting gonadotropin-releasing hormone agonist after controlled ovarian hyperstimulation for fertility preservation: a systematic review. Therapeutic advances in reproductive health 17: 26334941231196545	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Insogna, Iris G; Ginsburg, Elizabeth; Srouji, Serene (2020) Fertility Preservation for Adolescent Transgender Male Patients: A Case Series. The Journal of adolescent health: official publication of the Society for Adolescent Medicine 66(6): 750-753	- No primary outcome reported
Iordache, I, Odukoya, C, Carp-Veliscu, A et al. (2021) Experience of the "Prof. Dr. Panait Sarbu" Hospital in Oncofertility among Breast Cancer Patients. Chirurgia (Bucharest, Romania: 1990) 116(2suppl): 105-109	- No primary outcome reported
Isachenko, V, Morgenstern, B, Todorov, P et al.	- Data not reported in an extractable format

Study	Code [Reason]
(2020) Long-term (24h) cooling of ovarian fragments in the presence of permeable cryoprotectants prior to freezing: Two unsuccessful IVF-cycles and spontaneous pregnancy with baby born after re-transplantation. Cryobiology 93: 115-120	*Outcomes only reported for one participant*
Islam, Rumana, Lane, Sheila, Williams, Suzannah A et al. (2019) Establishing reproductive potential and advances in fertility preservation techniques for XY individuals with differences in sex development. Clinical endocrinology 91(2): 237-244	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Israeli, Tal, Preisler, Livia, Kalma, Yael et al. (2022) Similar fertilization rates and preimplantation embryo development among testosterone-treated transgender men and cisgender women. Reproductive biomedicine online 45(3): 448-456	- No relevant outcomes reported
Ito, Y, Shiraishi, E, Kato, A et al. (2017) The Utility of Decision Trees in Oncofertility Care in Japan. Journal of adolescent and young adult oncology 6(1): 186-189	- No relevant outcomes reported
Jadoul, P.; Dolmans, M.; Donnez, J. (2010) Fertility preservation in girls during childhood: Is it feasible, efficient and safe and to whom should it be proposed?. Human Reproduction Update 16(6): 617-630	- Non-systematic review
Jadoul, Pascale and Kim, S Samuel (2012) Fertility considerations in young women with hematological malignancies. Journal of assisted reproduction and genetics 29(6): 479-87	- Non-systematic review
Jahnukainen, Kirsi and Stukenborg, Jan-Bernd (2012) Clinical review: Present and future prospects of male fertility preservation for children and adolescents. The Journal of clinical endocrinology and metabolism 97(12): 4341-51	- Non-systematic review
Janse, Femi, Donnez, Jacques, Anckaert, Ellen et al. (2011) Limited value of ovarian function markers following orthotopic transplantation of ovarian tissue after gonadotoxic treatment. The Journal of clinical endocrinology and metabolism 96(4): 1136-44	- No primary outcome reported
Jayasena, Channa N, Luo, Rong, Dimakopoulou, Anastasia et al. (2018) Prevalence of abnormal	- No relevant outcomes reported

Study	Code [Reason]
semen analysis and levels of adherence with fertility preservation in men undergoing therapy for newly diagnosed cancer: A retrospective study in 2906 patients. Clinical endocrinology 89(6): 798-804	
Jenninga, Esther, Louwe, Leoni A, Peters, Alexander A W et al. (2012) Timing of fertility preservation procedures in a cohort of female patients with cancer. European journal of obstetrics, gynecology, and reproductive biology 160(2): 170-3	- No primary outcome reported
Jensen, A K, Kristensen, S G, Macklon, K T et al. (2015) Outcomes of transplantations of cryopreserved ovarian tissue to 41 women in Denmark. Human reproduction (Oxford, England) 30(12): 2838-45	- The same population as another included study with no further relevant data *Population overlaps with Colmorn 2022*
Jensen, A K, Rechnitzer, C, Macklon, K T et al. (2017) Cryopreservation of ovarian tissue for fertility preservation in a large cohort of young girls: focus on pubertal development. Human reproduction (Oxford, England) 32(1): 154-164	- No relevant outcomes reported *Study explores the incidence of premature ovarian insufficiency in people who had ovarian tissue cryopreservation*
Jensen, Annette Kluver, Macklon, Kirsten Tryde, Fedder, Jens et al. (2017) 86 successful births and 9 ongoing pregnancies worldwide in women transplanted with frozen-thawed ovarian tissue: focus on birth and perinatal outcome in 40 of these children. Journal of assisted reproduction and genetics 34(3): 325-336	- Non-systematic review
Jensen, J.R.; Morbeck, D.E.; Coddington III, C.C. (2011) Fertility preservation. Mayo Clinic Proceedings 86(1): 45-49	- Non-systematic review
Johnson, Emilie K, Finlayson, Courtney, Rowell, Erin E et al. (2017) Fertility Preservation for Pediatric Patients: Current State and Future Possibilities. The Journal of urology 198(1): 186-194	- Non-systematic review
Kanbar, M, de Michele, F, Giudice, M G et al. (2021) Long-term follow-up of boys who have undergone a testicular biopsy for fertility preservation. Human reproduction (Oxford, England) 36(1): 26-39	- No primary outcome reported
Kapadia, Akash, Shoureshi, Poone S, Bash, Jasper et al. (2020) An institutional assessment of sperm cryospreservation and fertility counselling	- No primary outcome reported

Study	Code [Reason]
in pubertal male cancer survivors. Journal of pediatric urology 16(4): 474e1-474e4	
Kappy, Michelle, Lieman, Harry J, Pollack, Staci et al. (2021) Fertility preservation for cancer patients: treatment gaps and considerations in patients' choices. Archives of gynecology and obstetrics 303(6): 1617-1623	- No primary outcome reported
Karavani G, Rottenstreich A, Schachter-Safrai N et al. (2021) Chemotherapy-based gonadotoxicity risk evaluation as a predictor of reproductive outcomes in post-pubertal patients following ovarian tissue cryopreservation. BMC women's health 21(1): 201	- Study type does not meet inclusion criteria *Survey*
Karavani, Gilad, Schachter-Safrai, Natali, Chill, Henry H et al. (2018) Single-Incision Laparoscopic Surgery for Ovarian Tissue Cryopreservation. Journal of minimally invasive gynecology 25(3): 474-479	- No primary outcome reported
Kawwass, Jennifer F, Shandley, Lisa M, Boulet, Sheree L et al. (2020) Oncologic oocyte cryopreservation: national comparison of fertility preservation between women with and without cancer. Journal of assisted reproduction and genetics 37(4): 883-890	- No primary outcome reported
Kedem, Alon, Yerushalmi, Gil M, Brengauz, Masha et al. (2018) Outcome of immature oocytes collection of 119 cancer patients during ovarian tissue harvesting for fertility preservation. Journal of assisted reproduction and genetics 35(5): 851-856	- Intervention does not match inclusion criteria *Cryopreservation of immature oocytes*
Khattak, Hajra, Malhas, Rosamund, Craciunas, Laurentiu et al. (2022) Fresh and cryopreserved ovarian tissue transplantation for preserving reproductive and endocrine function: a systematic review and individual patient data meta-analysis. Human reproduction update 28(3): 400-416	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Khiat, S, Provansal, M, Bottin, P et al. (2020) Fertility preservation after fertility-sparing surgery in women with borderline ovarian tumours. European journal of obstetrics, gynecology, and reproductive biology 253: 65-70	- Population does not meet inclusion criteria *Population restricted to those who had ovarian surgery prior to fertility preservation*
Kim, S Samuel, Lee, Woo S, Chung, Mi K et al. (2009) Long-term ovarian function and fertility after heterotopic autotransplantation of	- No primary outcome reported

Study	Code [Reason]
cryobanked human ovarian tissue: 8-year experience in cancer patients. Fertility and sterility 91(6): 2349-54	
Kimelman, Dana, Torrens, Andrea, Bonelli, Carla et al. (2023) Fertility preservation in male cancer patients. Counseling and reproductive outcomes. Frontiers in cell and developmental biology 11: 1240152	- Study type does not meet inclusion criteria *Survey*
Kitano, A., Shimizu, C., Yamauchi, H. et al. (2019) Factors associated with treatment delay in women with primary breast cancer who were referred to reproductive specialists. ESMO Open 4(2): e000459	- Data not reported in an extractable format *Pregnancy and live birth reported but unclear how many returned to use cryopreserved material so cannot extract fertility outcomes as proportion of those who returned to use stored material*
Klock, Susan C; Zhang, John X; Kazer, Ralph R (2010) Fertility preservation for female cancer patients: early clinical experience. Fertility and sterility 94(1): 149-55	- Data not reported in an extractable format
Klosky, James L, Flynn, Jessica S, Lehmann, Vicky et al. (2017) Parental influences on sperm banking attempts among adolescent males newly diagnosed with cancer. Fertility and sterility 108(6): 1043-1049	- No relevant outcomes reported
Klosky, James L, Lehmann, Vicky, Flynn, Jessica S et al. (2018) Patient factors associated with sperm cryopreservation among at-risk adolescents newly diagnosed with cancer. Cancer 124(17): 3567-3575	- No primary outcome reported
Klosky, James L, Wang, Fang, Russell, Kathryn M et al. (2017) Prevalence and Predictors of Sperm Banking in Adolescents Newly Diagnosed With Cancer: Examination of Adolescent, Parent, and Provider Factors Influencing Fertility Preservation Outcomes. Journal of clinical oncology: official journal of the American Society of Clinical Oncology 35(34): 3830-3836	- No relevant outcomes reported
Klosky, JL, Randolph, ME, Navid, F et al. (2009) Sperm cryopreservation practices among adolescent cancer patients at risk for infertility. Pediatric hematology and oncology 26(4): 252-60	- No primary outcome reported
Knoester, Peter A, Leonard, Marcia, Wood, David P et al. (2007) Fertility issues for men with newly diagnosed prostate cancer. Urology 69(1): 123-5	- No relevant outcomes reported

Study	Code [Reason]
Komorowski, Allison S, Fisher, Andrew R, Jungheim, Emily S et al. (2021) Fertility preservation discussions, referral and follow-up in male-to-female and female-to-male adolescent transgender patients. Human fertility (Cambridge, England): 1-5	- No primary outcome reported
Krouwel, Esmee M, Jansen, Thijs G, Nicolai, Melianthe P J et al. (2021) Identifying the Need to Discuss Infertility Concerns Affecting Testicular Cancer Patients: An Evaluation (INDICATE Study). Cancers 13(3)	- Study type does not meet inclusion criteria *Survey*
Kufel-Grabowska, J., Jedrzejczak, P., Bartoszkiewicz, M. et al. (2021) Strategies and results of oncofertility counseling in young breast cancer patients. Nowotwory 71(5): 263-266	- No primary outcome reported
Kutteh, WH, Klosky, JL, Green, DM et al. (2018) Ovulation induction and oocyte retrieval for fertility preservation in young adolescents newly diagnosed with medulloblastoma: a case series. Journal of obstetrics and gynaecology: the journal of the Institute of Obstetrics and Gynaecology 38(6): 878-879	- No primary outcome reported
La Marca, Antonio and Mastellari, Elisa (2021) Fertility preservation for genetic diseases leading to premature ovarian insufficiency (POI). Journal of assisted reproduction and genetics 38(4): 759-777	- Non-systematic review
Lackamp, Nadine, Wilkemeyer, Ina, Jelas, Ivan et al. (2021) Survey of Long-Term Experiences of Sperm Cryopreservation in Oncological and Non-Oncological Patients: Usage and Reproductive Outcomes of a Large Monocentric Cohort. Frontiers in oncology 11: 772809	- Study type does not meet inclusion criteria *Survey*
Lambertini, Matteo, Fontana, Valeria, Massarotti, Claudia et al. (2018) Prospective study to optimize care and improve knowledge on ovarian function and/or fertility preservation in young breast cancer patients: Results of the pilot phase of the PREgnancy and FERtility (PREFER) study. Breast (Edinburgh, Scotland) 41: 51-56	- No relevant outcomes reported
Lantsberg, D, Farhi, A, Zaslavsky-Paltiel, I et al. (2019) Deliveries following fertility preservation by ovarian tissue cryopreservation without autotransplantation-what should be expected?. Journal of assisted reproduction and genetics	- No relevant outcomes reported *Reports fertility outcomes for those who did not undergo OT transplantation*

Study	Code [Reason]
36(2): 335-340	
Lantsberg, Daniel, Fernando, Shavi, Cohen, Yoni et al. (2020) The Role of Fertility Preservation in Women with Endometriosis: A Systematic Review. Journal of minimally invasive gynecology 27(2): 362-372	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Lass A; Akagbosu F; Brinsden P (2001) Sperm banking and assisted reproduction treatment for couples following cancer treatment of the male partner. Human reproduction update 7(4): 370-377	- Non-systematic review
Latif, N and Ali, N (2019) Patient and Physician Perspective on Sperm Banking to Overcome Post-Treatment Infertility in Young Cancer Patients in Pakistan. Journal of adolescent and young adult oncology 8(1): 54-60	- Study type does not meet inclusion criteria *Qualitative study with no relevant quantitative data*
Lavery, S.A., Islam, R., Hunt, J. et al. (2016) The medical and ethical challenges of fertility preservation in teenage girls: A case series of sickle cellanaemia patients prior to bonemarrow transplant. Human Reproduction 31(7): 1501-1507	- No primary outcome reported
Lawrenz, B., Fehm, T., Neunhoeffer, E. et al. (2011) Fertility preservation in young female lymphoma patients: Review of available options and initial experiences with their implementation in clinical routine. Onkologie 34(3): 88-93	- No primary outcome reported
Lawrenz, B, Jauckus, J, Kupka, MS et al. (2011) Fertility preservation in >1,000 patients: patient's characteristics, spectrum, efficacy and risks of applied preservation techniques. Archives of gynecology and obstetrics 283(3): 651-6	- No primary outcome reported
Lawrenz, B, Neunhoeffer, E, Henes, M et al. (2010) Management of fertility preservation in young breast cancer patients in a large breast cancer centre. Archives of gynecology and obstetrics 282(5): 547-51	- Data not reported in an extractable format
Le Bihan-Benjamin, Christine, Hoog-Labouret, Natalie, Lefeuvre, Delphine et al. (2018) Fertility preservation and cancer: How many persons are concerned?. European journal of obstetrics, gynecology, and reproductive biology 225: 232-235	- No relevant outcomes reported

Study	Code [Reason]
Lee, Sanghoon and Oktay, Kutluk (2012) Does higher starting dose of FSH stimulation with letrozole improve fertility preservation outcomes in women with breast cancer?. Fertility and sterility 98(4): 961-4e1	- Population does not meet inclusion criteria *Population restricted to those receiving letrozole for ovarian stimulation for oocyte cryopreservation, and comparison of interest for the study is high- versus low- dose letrozole but not of interest to this review*
Lee, Sanghoon, Ozkavukcu, Sinan, Heytens, Elke et al. (2010) Value of early referral to fertility preservation in young women with breast cancer. Journal of clinical oncology : official journal of the American Society of Clinical Oncology 28(31): 4683-6	- No relevant outcomes reported
Lee, Stephanie J, Schover, Leslie R, Partridge, Ann H et al. (2006) American Society of Clinical Oncology recommendations on fertility preservation in cancer patients. Journal of clinical oncology: official journal of the American Society of Clinical Oncology 24(18): 2917-31	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Lehmann, Vicky, Kutteh, William H, Sparrow, Charlene K et al. (2020) Fertility-related services in pediatric oncology across the cancer continuum: a clinic overview. Supportive care in cancer: official journal of the Multinational Association of Supportive Care in Cancer 28(8): 3955-3964	- No primary outcome reported
Letourneau, Joseph M, Ebbel, Erin E, Katz, Patricia P et al. (2012) Pretreatment fertility counseling and fertility preservation improve quality of life in reproductive age women with cancer. Cancer 118(6): 1710-7	- No primary outcome reported
Letourneau, Joseph M, Smith, James F, Ebbel, Erin E et al. (2012) Racial, socioeconomic, and demographic disparities in access to fertility preservation in young women diagnosed with cancer. Cancer 118(18): 4579-88	- No relevant outcomes reported
Leung, Angela, Sakkas, Denny, Pang, Samuel et al. (2019) Assisted reproductive technology outcomes in female-to-male transgender patients compared with cisgender patients: a new frontier in reproductive medicine. Fertility and sterility 112(5): 858-865	- No primary outcome reported *The only subgroup for which a relevant primary outcome was reported was for the 'IVF with transfer' group but these participants did not cryopreserve material for fertility preservation but went ahead with immediate IVF*
Lewis, Jaime D, Silva, Celso, Quinn, Gwendolyn P. et al. (2012) Uptake and experiences of breast	- Conference abstract

Study	Code [Reason]
cancer patients referred for fertility preservation. Journal of Clinical Oncology 30(27suppl): 86-86	
Li, Yinfeng, Zhang, Jian, Zhang, Hanfeng et al. (2020) Importance and safety of autologous sperm cryopreservation for fertility preservation in young male patients with cancer. Medicine 99(15): e19589	- No relevant outcomes reported
Liebenthron, J., Montag, M., Reinsberg, J. et al. (2019) Overnight ovarian tissue transportation for centralized cryobanking: a feasible option. Reproductive BioMedicine Online 38(5): 740-749	- Population does not meet inclusion criteria *Study restricted to those who had overnight transportation of ovarian tissue prior to cryopreservation*
Lima, M, Gargano, T, Fabbri, R et al. (2014) Ovarian tissue collection for cryopreservation in pediatric age: laparoscopic technical tips. Journal of pediatric and adolescent gynecology 27(2): 95-7	- No primary outcome reported
Ljungman, L., Eriksson, L.E., Flynn, K.E. et al. (2019) Sexual Dysfunction and Reproductive Concerns in Young Men Diagnosed With Testicular Cancer: An Observational Study. Journal of Sexual Medicine 16(7): 1049-1059	- No primary outcome reported
Long, Christopher J; Ginsberg, Jill P; Kolon, Thomas F (2016) Fertility Preservation in Children and Adolescents With Cancer. Urology 91: 190-6	- Non-systematic review
Lopategui, D.M., Ibrahim, E., Aballa, T.C. et al. (2018) Effect of a formal oncofertility program on fertility preservation rates-first year experience. Translational Andrology and Urology 7(supplement3): 271-s275	- No primary outcome reported
Loren, Alison W, Mangu, Pamela B, Beck, Lindsay Nohr et al. (2013) Fertility preservation for patients with cancer: American Society of Clinical Oncology clinical practice guideline update. Journal of clinical oncology: official journal of the American Society of Clinical Oncology 31(19): 2500-10	- Article type does not meet inclusion criteria *Clinical practice guideline update*
Lotz, L, Maktabi, A, Hoffmann, I et al. (2016) Ovarian tissue cryopreservation and retransplantation--what do patients think about it? Reproductive biomedicine online 32(4): 394-400	- Study type does not meet inclusion criteria *Survey*
Lotz, Laura, Barbosa, Patricia Reis, Knorr, Christian et al. (2020) The safety and satisfaction	- Study type does not meet inclusion criteria

Study	Code [Reason]
of ovarian tissue cryopreservation in prepubertal and adolescent girls. Reproductive biomedicine online 40(4): 547-554	*Survey*
Lotz, Laura, Dietl, Anna, Hoffmann, Inge et al. (2022) Endometriosis in women undergoing ovarian tissue transplantation due to premature menopause after gonadotoxic treatment or spontaneous premature ovarian failure. Acta obstetricia et gynecologica Scandinavica 101(7): 771-778	- Population does not meet inclusion criteria
Lotz, Laura, Dittrich, Ralf, Hoffmann, Inge et al. (2019) Ovarian Tissue Transplantation: Experience From Germany and Worldwide Efficacy. Clinical medicine insights. Reproductive health 13: 1179558119867357	- Non-systematic review
Luke, Barbara, Brown, Morton B, Spector, Logan G et al. (2016) Embryo banking among women diagnosed with cancer: a pilot population-based study in New York, Texas, and Illinois. Journal of assisted reproduction and genetics 33(5): 667-674	- No primary outcome reported
Macklon, KT, Jensen, AK, Loft, A et al. (2014) Treatment history and outcome of 24 deliveries worldwide after autotransplantation of cryopreserved ovarian tissue, including two new Danish deliveries years after autotransplantation. Journal of assisted reproduction and genetics 31(11): 1557-64	- Study type does not meet inclusion criteria *Essentially 2 case studies*
Maman, Ettie, Meirow, Dror, Brengauz, Masha et al. (2011) Luteal phase oocyte retrieval and in vitro maturation is an optional procedure for urgent fertility preservation. Fertility and sterility 95(1): 64-7	- No relevant outcomes reported
Mamsen, Linn Salto, Kelsey, Thomas W, Ernst, Erik et al. (2018) Cryopreservation of ovarian tissue may be considered in young girls with galactosemia. Journal of assisted reproduction and genetics 35(7): 1209-1217	- No primary outcome reported
Mangiardi-Veltin, Manon, Sebbag, Clara, Rousset-Jablonski, Christine et al. (2022) Pregnancy, fertility concerns and fertility preservation procedures in a national study of French breast cancer survivors. Reproductive biomedicine online 44(6): 1031-1044	- Study type does not meet inclusion criteria *Survey*

Study	Code [Reason]
Mangili, Giorgia, Papaleo, Enrico, Sigismondi, Cristina et al. (2017) Timing should no longer be an obstacle to oocyte cryopreservation in patients with cancer. Tumori 103(2): 182-186	- No primary outcome reported
Manuel, Sharron L, Moravek, Molly B, Confino, Rafael et al. (2020) Ovarian stimulation is a safe and effective fertility preservation option in the adolescent and young adult population. Journal of assisted reproduction and genetics 37(3): 699-708	- No relevant outcomes reported
Marsh, Courtney, McCracken, Megan, Gray, Meredith et al. (2019) Low total motile sperm in transgender women seeking hormone therapy. Journal of assisted reproduction and genetics 36(8): 1639-1648	- No relevant outcomes reported
Massarotti, Claudia, Scaruffi, Paola, Lambertini, Matteo et al. (2019) Beyond fertility preservation: role of the oncofertility unit in the reproductive and gynecological follow-up of young cancer patients. Human reproduction (Oxford, England) 34(8): 1462-1469	- No primary outcome reported
Maxwell S, Noyes N, Keefe D et al. (2017) Pregnancy Outcomes After Fertility Preservation in Transgender Men. Obstetrics and gynecology 129(6): 1031-1034	- Study type does not meet inclusion criteria *Essentially 3 case studies*
Mayerhofer, Klaus, Ott, Johannes, Nouri, Kazem et al. (2010) Laparoscopic ovarian tissue harvesting for cryopreservation: an effective and safe procedure for fertility preservation. European journal of obstetrics, gynecology, and reproductive biology 152(1): 68-72	- No relevant outcomes reported
McCann, Colleen, Kamiyama, Natalie, Burgess, Debra et al. (2023) Documentation of Infertility Risk Discussion in Cancer Patients Receiving Cancer-Directed Therapy: The UC Davis Cancer Center Experience. Journal of adolescent and young adult oncology	- No relevant outcomes reported
McCarter, Kelly, Stewart, Joshua, Gordhandas, Sushmita et al. (2022) The use of fertility preservation services for cancer patients: a single institution experience. F&S reports 3(4): 349-354	- No primary outcome reported
McCray, Devina K S, Simpson, Ashley B, Flyckt, Rebecca et al. (2016) Fertility in Women of	- Data not reported in an extractable format *Outcomes not reported separately for participants*

Study	Code [Reason]
Reproductive Age After Breast Cancer Treatment: Practice Patterns and Outcomes. Annals of surgical oncology 23(10): 3175-81	*who chose to undergo fertility treatment and those who chose not to*
Meernik, C, Engel, SM, Wardell, A et al. (2022) Disparities in fertility preservation use among adolescent and young adult women with cancer. Journal of cancer survivorship: research and practice	- No relevant outcomes reported
Meirow, D, Baum, M, Yaron, R et al. (2007) Ovarian tissue cryopreservation in hematologic malignancy: ten years' experience. Leukemia & lymphoma 48(8): 1569-76	- No relevant outcomes reported
Menon, S, Rives, N, Mousset-Simeon, N et al. (2009) Fertility preservation in adolescent males: experience over 22 years at Rouen University Hospital. Human reproduction (Oxford, England) 24(1): 37-44	- Study type does not meet inclusion criteria *Fertility outcomes assessed with survey*
Merkison, J.; Malcom, C.; Decherney, A. (2022) Use of gonadotropin-releasing hormone (GnRH) agonist trigger in fertility preservation for patients with inherited genetic disorders. Frontiers in Endocrinology 13: 826419	- Non-systematic review
Mgboji, Glory E, Cordeiro Mitchell, Christina N, Bedrick, Bronwyn S et al. (2021) Predictive factors for fertility preservation in pediatric and adolescent girls with planned gonadotoxic treatment. Journal of assisted reproduction and genetics 38(10): 2713-2721	- No primary outcome reported
Micol, Lionel A, Adenubi, Funmi, Williamson, Elizabeth et al. (2022) The importance of the urologist in male oncology fertility preservation. BJU international 130(5): 637-645	- No primary outcome reported
Ming, Jessica M, Chua, Michael E, Lopes, Roberto Iglesias et al. (2018) Cryopreservation of testicular tissue in pre-pubertal and adolescent boys at risk for infertility: A low risk procedure. Journal of pediatric urology 14(3): 274e1-274e5	- No relevant outcomes reported
Miquel, Laura, Liotta, Julie, Hours, Alice et al. (2023) Feasibility and efficiency of delayed ovarian stimulation and metaphase II oocyte banking for fertility preservation and childbearing desire after fertility-impairing treatment. Scientific reports 13(1): 15661	- Data not reported in an extractable format *Disaggregated data not available for those who cryopreserved oocytes (combined with those who received ovarian stimulation for fresh embryo transfers)*

Study	Code [Reason]
Mobley, Erin M, Ryan, Ginny L, Sparks, Amy E et al. (2020) Factors Impacting Fertility Preservation in Adolescents and Young Adults with Cancer: A Retrospective Study. Journal of adolescent and young adult oncology 9(2): 208-221	- No primary outcome reported
Mohd Faizal, Ahmad, Sugishita, Yodo, Suzuki-Takahashi, Yuki et al. (2022) Twenty-first century oocyte cryopreservation-in vitro maturation of immature oocytes from ovarian tissue cryopreservation in cancer patients: A systematic review. Women's health (London, England) 18: 17455057221114269	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Moody, Jemma A, Ahmed, Kamran, Yap, Tet et al. (2019) Fertility managment in testicular cancer: the need to establish a standardized and evidence-based patient-centric pathway. BJU international 123(1): 160-172	- Non-systematic review
Moragon, Santiago, Di Liello, Raimondo, Bermejo, Begona et al. (2021) Fertility and breast cancer: A literature review of counseling, preservation options and outcomes. Critical reviews in oncology/hematology 166: 103461	- Non-systematic review
Moussaoui, D., Surbone, A., Adam, C. et al. (2022) Testicular tissue cryopreservation for fertility preservation in prepubertal and adolescent boys: A 6 year experience from a Swiss multi-center network. Frontiers in Pediatrics 10: 909000	- No primary outcome reported
Murray, R.S. (2005) Fertility sparing options for breast cancer patients. Breast Disease 23: 73-80	- Article type does not meet inclusion criteria *Commentary*
Mydlo, Jack H and Lebed, Brett (2004) Does brachytherapy of the prostate affect sperm quality and/or fertility in younger men?. Scandinavian journal of urology and nephrology 38(3): 221-4	- Non-systematic review
Nadesapillai, Sapthami, Mol, Femke, Broer, Simone L et al. (2023) Reproductive Outcomes of Women with Turner Syndrome Undergoing Oocyte Vitrification: A Retrospective Multicenter Cohort Study. Journal of clinical medicine 12(20)	- No primary outcome reported
Nadesapillai, Sapthami, van der Velden, Janielle, van der Coelen, Sanne et al. (2023) TurnerFertility trial: fertility preservation in young girls with Turner syndrome by freezing ovarian cortex tissue-a prospective intervention study.	- No primary outcome reported

Study	Code [Reason]
Fertility and sterility 120(5): 1048-1060	
Nagashima, Takahiro, Muroi, Kazuo, Kawano-Yamamoto, Chizuru et al. (2005) Autologous gamete cryopreservation before hemopoietic stem cell transplantation. Medical science monitor: international medical journal of experimental and clinical research 11(3): cr91-4	- No primary outcome reported
Nahata, L., Cohen, L.E., Lehmann, L.E. et al. (2013) Semen analysis in adolescent cancer patients prior to bone marrow transplantation: When is it too late for fertility preservation?. Pediatric Blood and Cancer 60(1): 129-132	- No primary outcome reported
Nahata, Leena, Dattilo, Taylor M, Olsavsky, Anna L et al. (2021) Impact of a novel family-centered values clarification tool on adolescent sperm banking attempts at the time of a new cancer diagnosis. Journal of assisted reproduction and genetics 38(6): 1561-1569	- No primary outcome reported
Nahata, Leena; Sivaraman, Vidya; Quinn, Gwendolyn P (2016) Fertility counseling and preservation practices in youth with lupus and vasculitis undergoing gonadotoxic therapy. Fertility and sterility 106(6): 1470-1474	- No relevant outcomes reported
Nahata, Leena, Tishelman, Amy C, Caltabellotta, Nicole M et al. (2017) Low Fertility Preservation Utilization Among Transgender Youth. The Journal of adolescent health: official publication of the Society for Adolescent Medicine 61(1): 40-44	- No primary outcome reported
Nalesnik, Jeffrey G, Sabanegh, Edmund S Jr, Eng, Tony Y et al. (2004) Fertility in men after treatment for stage 1 and 2A seminoma. American journal of clinical oncology 27(6): 584-8	- No relevant outcomes reported
Narigapalli, Bindhu P, Gundabattula, Sirisha R, Pochiraju, Manjula et al. (2017) Obstetric outcomes following fertility-preserving management of gynecologic malignancies. International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics 138(3): 357-360	- No relevant outcomes reported
Navarro Medina, P, Barroso Deyne, E, Castillo Suárez, M et al. (2010) [An analysis of our experience in cryopreservation of semen from cancer patients]. Actas urologicas espanolas	- Study not reported in English

Study	Code [Reason]
34(1): 101-5	
Naysmith, T E, Blake, D A, Harvey, V J et al. (1998) Do men undergoing sterilizing cancer treatments have a fertile future?. Human reproduction (Oxford, England) 13(11): 3250-5	- No relevant outcomes reported
Ni Dhonnabhain, Brid, Elfaki, Nagla, Fraser, Kyra et al. (2022) A comparison of fertility preservation outcomes in patients who froze oocytes, embryos, or ovarian tissue for medically indicated circumstances: a systematic review and meta-analysis. Fertility and sterility 117(6): 1266-1276	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Nies, Marloes, Arts, Eus G J M, van Velsen, Evert F S et al. (2021) Long-term male fertility after treatment with radioactive iodine for differentiated thyroid carcinoma. European journal of endocrinology 185(6): 775-782	- Study type does not meet inclusion criteria *Survey*
Nogueira, Daniela, Fajau-Prevot, Carole, Clouet, Muriel et al. (2023) Outcomes of Different In Vitro Maturation Procedures for Oocyte Cryopreservation for Fertility Preservation and yet Another Live Birth in a Cancer Patient. Life (Basel, Switzerland) 13(6)	- Intervention does not match inclusion criteria *In vitro maturation (immature oocytes)*
Noll, Florencia, Palacios Torres, Ana Tatiana, Pecci, Pablo et al. (2021) Neoadjuvant chemotherapy in early-stage cervical cancer (<2 cm) before conization for fertility preservation: is there any advantage over upfront conization?. International journal of gynecological cancer: official journal of the International Gynecological Cancer Society 31(3): 379-386	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
O'Donovan, M and Harrison, RF (2005) Preservation of fertility in women affected by cancer. An audit of the cryopreservation services provided for women at Human Assisted Reproduction Ireland. Irish medical journal 98(9): 265-7	- No relevant outcomes reported
O'Neill, Mary Teresa; Ni Dhonnchu, Tara; Brannigan, Ann E (2011) Topic update: effects of colorectal cancer treatments on female fertility and potential methods for fertility preservation. Diseases of the colon and rectum 54(3): 363-9	- Non-systematic review
Ogouma, Ludmilla, Berthaut, Isabelle, Levy, Rachel et al. (2022) Testicular sperm extraction (TESE) outcomes in the context of malignant	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)

Study	Code [Reason]
disease: a systematic review. Asian journal of andrology 24(6): 584-590	
Oktay, K. and Bedoschi, G. (2014) Oocyte Cryopreservation for Fertility Preservation in Postpubertal Female Children at Risk for Premature Ovarian Failure Due to Accelerated Follicle Loss in Turner Syndrome or Cancer Treatments. Journal of Pediatric and Adolescent Gynecology 27(6): 342-346	- No primary outcome reported
Oktay, K, Bedoschi, G, Pacheco, F et al. (2016) First pregnancies, live birth, and in vitro fertilization outcomes after transplantation of frozen-banked ovarian tissue with a human extracellular matrix scaffold using robot-assisted minimally invasive surgery. American journal of obstetrics and gynecology 214(1): 94.e1-9	- Study type does not meet inclusion criteria *Case study of 2 individuals*
Oktay, Kutluk and Oktem, Ozgur (2009) Fertility preservation medicine: a new field in the care of young cancer survivors. Pediatric blood & cancer 53(2): 267-73	- No relevant outcomes reported
Olatunbosun, OA and Zhu, L (2012) The role of sperm banking in fertility preservation. Clinical and experimental obstetrics & gynecology 39(3): 283-7	- Study type does not meet inclusion criteria *Survey*
Oliveira, Renato de, Maya, Barbara Gomes, Nogueira, Mariana Bittencourt Silva et al. (2021) Fertility preservation in breast cancer with oral progestin: is it an option? A pilot study. Einstein (Sao Paulo, Brazil) 19: eao5859	- Population does not meet inclusion criteria *Study restricted to those undergoing fertility preservation either with oral progestins or injectable gonadotropin-releasing hormone antagonist medication, and this is not a relevant comparison for this review*
Ordoqui, Rosina, Barrera, Natalibeth, Montes, Jose Maria et al. (2018) A retrospective study on sperm banking: a Uruguayan experience. JBRA assisted reproduction 22(2): 82-88	- No relevant outcomes reported
Ott, Johannes, Nouri, Kazem, Stogbauer, Lucija et al. (2010) Ovarian tissue cryopreservation for non-malignant indications. Archives of gynecology and obstetrics 281(4): 735-9	- Population does not meet inclusion criteria *Subgroup analysis of those who underwent fertility preservation for a non-malignant indication*
Ozcan, Meghan Ch; Snegovskikh, Victoria; Adamson, G David (2022) Oocyte and embryo cryopreservation before gonadotoxic treatments: Principles of safe ovarian stimulation, a systematic review. Women's health (London,	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)

Study	Code [Reason]
England) 18: 17455065221074886	
Pacey, A A, Merrick, H, Arden-Close, E et al. (2012) Monitoring fertility (semen analysis) by cancer survivors who banked sperm prior to cancer treatment. Human reproduction (Oxford, England) 27(11): 3132-9	- Study type does not meet inclusion criteria *Survey*
Pacheco, Fernanda and Oktay, Kutluk (2017) Current Success and Efficiency of Autologous Ovarian Transplantation: A Meta-Analysis. Reproductive sciences (Thousand Oaks, Calif.) 24(8): 1111-1120	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Pallotti, Francesco, Pelloni, Marianna, Faja, Fabiana et al. (2021) Semen quality in non-Hodgkin lymphoma survivors: a monocentric retrospective study. Human reproduction (Oxford, England) 36(1): 16-25	- Study type does not meet inclusion criteria *Fertility outcomes collected via survey*
Pang, Kenneth C, Peri, Angus J S, Chung, Hsu En et al. (2020) Rates of Fertility Preservation Use Among Transgender Adolescents. JAMA pediatrics 174(9): 890-891	- No primary outcome reported
Park, Chan Woo, Lee, Sun Hee, Yang, Kwang Moon et al. (2016) Cryopreservation of in vitro matured oocytes after ex vivo oocyte retrieval from gynecologic cancer patients undergoing radical surgery. Clinical and experimental reproductive medicine 43(2): 119-25	- No primary outcome reported
Patel, Vanisha, Jones, Pamela, Judd, Alexis et al. (2020) Recollection of Fertility Discussion in Adolescent and Young Adult Oncology Patients: A Single-Institution Study. Journal of adolescent and young adult oncology 9(1): 72-77	- No relevant outcomes reported
Pecker, LH, Maher, JY, Law, JY et al. (2018) Risks associated with fertility preservation for women with sickle cell anemia. Fertility and sterility 110(4): 720-731	- No primary outcome reported
Pelzman, Daniel, Dederer, Gregory, Joolharzadeh, Pouya et al. (2023) Effect of Distance From Fertility Center on Utilization of Fertility Preservation Referral in Men. JCO oncology practice 19(6): e935-e941	- No relevant outcomes reported
Perez, S, Lambert, SD, Lee, V et al. (2018) A fertility needs assessment survey of male cancer	- No relevant outcomes reported

Study	Code [Reason]
patients. Psycho-oncology 27(12): 2747-2753	
Peri, Angus, Ahler, Astrid, Gook, Debra et al. (2021) Predicting successful sperm retrieval in transfeminine adolescents after testicular biopsy. Journal of assisted reproduction and genetics 38(10): 2735-2743	- No primary outcome reported
Picton HM, Wyns C, Anderson RA et al. (2015) A European perspective on testicular tissue cryopreservation for fertility preservation in prepubertal and adolescent boys. Human reproduction (Oxford, England) 30(11): 2463-2475	- Non-systematic review
Ping, Ping, Gu, Ben-Hong, Li, Peng et al. (2014) Fertility outcome of patients with testicular tumor: before and after treatment. Asian journal of andrology 16(1): 107-11	- Study type does not meet inclusion criteria *Survey*
Poirot C, Fortin A, Dhédin N et al. (2019) Post-transplant outcome of ovarian tissue cryopreserved after chemotherapy in hematologic malignancies. Haematologica 104(8): e360-e363	- Duplicate
Poirot C, Fortin A, Dhédin N et al. (2019) Post-transplant outcome of ovarian tissue cryopreserved after chemotherapy in hematologic malignancies. Haematologica 104(8): e360-e363	- Population does not meet inclusion criteria *Subgroup analysis restricted to those who received cryopreservation after cancer treatment*
Poirot, C, Vacher-Lavenu, MC, Helardot, P et al. (2002) Human ovarian tissue cryopreservation: indications and feasibility. Human reproduction (Oxford, England) 17(6): 1447-52	- No relevant outcomes reported
Poirot, CJ, Martelli, H, Genestie, C et al. (2007) Feasibility of ovarian tissue cryopreservation for prepubertal females with cancer. Pediatric blood & cancer 49(1): 74-8	- No relevant outcomes reported
Policiano, Catarina, Subira, Jessica, Aguilar, Alejandra et al. (2020) Impact of ABVD chemotherapy on ovarian reserve after fertility preservation in reproductive-aged women with Hodgkin lymphoma. Journal of assisted reproduction and genetics 37(7): 1755-1761	- No relevant outcomes reported
Porcu, Eleonora, Cipriani, Linda, Dirodi, Maria et al. (2022) Successful Pregnancies, Births, and Children Development Following Oocyte Cryostorage in Female Cancer Patients During 25	- Duplicate

Study	Code [Reason]
Years of Fertility Preservation. Cancers 14(6)	
Postovsky, S, Lightman, A, Aminpour, D et al. (2003) Sperm cryopreservation in adolescents with newly diagnosed cancer. Medical and pediatric oncology 40(6): 355-9	- No relevant outcomes reported
Potdar, N.; Gelbaya, T.A.; Nardo, L.G. (2013) Oocyte cryopreservation in the 21st century and post warming fertility outcomes: A systematic review and meta-analysis. Human Reproduction: i112-i113	- Conference abstract
Pretalli, Jean-Baptiste, Frontczak Franck, Sophie, Pazart, Lionel et al. (2019) Development of Ovarian Tissue Autograft to Restore Ovarian Function: Protocol for a French Multicenter Cohort Study. JMIR research protocols 8(9): e12944	- Study type does not meet inclusion criteria *Interim results*
Puthur, Sarah J, Tracey, Susan, Gould, Della et al. (2023) DuoStim protocol- a novel fertility preservation strategy for female oncology patients. Human fertility (Cambridge, England): 1-7	- No primary outcome reported
Puy, V., Dupeux, M., Mayeur, A. et al. (2023) Ovarian tissue cryopreservation can be combined simultaneously with oocyte retrieval after controlled ovarian hyperstimulation. Human Reproduction 38(5): 860-871	- Intervention does not match inclusion criteria *Ovarian tissue cryopreservation combined simultaneously with oocyte retrieval*
Radauer-Plank, Anne-Catherine, Diesch-Furlanetto, Tamara, Schneider, Monika et al. (2023) Desire for biological parenthood and patient counseling on the risk of infertility among adolescents and adults with hemoglobinopathies. Pediatric blood & cancer 70(7): e30359	- Study type does not meet inclusion criteria *Survey*
Reddy, Jhansi, Turan, Volkan, Bedoschi, Giuliano et al. (2014) Triggering final oocyte maturation with gonadotropin-releasing hormone agonist (GnRHa) versus human chorionic gonadotropin (hCG) in breast cancer patients undergoing fertility preservation: an extended experience. Journal of assisted reproduction and genetics 31(7): 927-32	- No primary outcome reported
Revel, Ariel, Revel-Vilk, Shoshana, Aizenman, Einat et al. (2009) At what age can human oocytes be obtained?. Fertility and sterility 92(2): 458-63	- No primary outcome reported

Study	Code [Reason]
Riggs DW and Bartholomaeus C (2018) Fertility preservation decision making amongst Australian transgender and non-binary adults. Reproductive health 15(1): 181	- No primary outcome reported
Robson, Danielle, Phua, Cheryl, Howard, Robyn et al. (2020) Fertility preservation in oncology patients: A literature review examining current fertility preservation techniques and access to oncofertility services in Australia. The Australian & New Zealand journal of obstetrics & gynaecology 60(1): 18-26	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Rodriguez-Wallberg KA, Tanbo T, Tinkanen H et al. (2016) Ovarian tissue cryopreservation and transplantation among alternatives for fertility preservation in the Nordic countries - compilation of 20 years of multicenter experience. Acta obstetricia et gynecologica Scandinavica 95(9): 1015-1026	- Duplicate
Rodriguez-Wallberg, KA, Tanbo, T, Tinkanen, H et al. (2016) Ovarian tissue cryopreservation and transplantation among alternatives for fertility preservation in the Nordic countries - compilation of 20 years of multicenter experience. Acta obstetricia et gynecologica Scandinavica 95(9): 1015-26	- Data not reported in an extractable format
Rodriguez-Wallberg, Kenny A, Eloranta, Sandra, Krawiec, Kamilla et al. (2018) Safety of fertility preservation in breast cancer patients in a register-based matched cohort study. Breast cancer research and treatment 167(3): 761-769	- No primary outcome reported
Rodriguez-Wallberg, Kenny A, Haljestig, Jakob, Arver, Stefan et al. (2021) Sperm quality in transgender women before or after gender affirming hormone therapy-A prospective cohort study. Andrology 9(6): 1773-1780	- No primary outcome reported
Rodriguez-Wallberg, Kenny A, Marklund, Anna, Lundberg, Frida et al. (2019) A prospective study of women and girls undergoing fertility preservation due to oncologic and non-oncologic indications in Sweden-Trends in patients' choices and benefit of the chosen methods after long-term follow up. Acta obstetricia et gynecologica Scandinavica 98(5): 604-615	- Data not reported in an extractable format
Rodriguez-Wallberg, Kenny A, Sergouniotis, Fotios, Nilsson, Hanna P et al. (2023) Trends and	- Data not reported in an extractable format

Study	Code [Reason]
outcomes of fertility preservation for girls, adolescents and young adults with Turner syndrome: A prospective cohort study. Frontiers in endocrinology 14: 1135249	
Rosendahl, M, Schmidt, KT, Ernst, E et al. (2011) Cryopreservation of ovarian tissue for a decade in Denmark: a view of the technique. Reproductive biomedicine online 22(2): 162-71	- Study type does not meet inclusion criteria
Rosendahl, Mikkel, Andersen, Claus Yding, Ernst, Erik et al. (2008) Ovarian function after removal of an entire ovary for cryopreservation of pieces of cortex prior to gonadotoxic treatment: a follow-up study. Human reproduction (Oxford, England) 23(11): 2475-83	- Study type does not meet inclusion criteria *Survey*
Rotker, Katherine, Vigneswaran, Hari, Omil-Lima, Danly et al. (2017) Efficacy of Standardized Nursing Fertility Counseling on Sperm Banking Rates in Cancer Patients. Urology 104: 90-96	- No primary outcome reported
Rozen, G., Avagliano, S., Agresta, F. et al. (2021) Ovarian tissue grafting: Lessons learnt from our experience with 55 grafts. Reproductive Medicine and Biology 20(3): 277-288	- Data not reported in an extractable format
Ruan, X, Cheng, J, Korell, M et al. (2020) Ovarian tissue cryopreservation and transplantation prevents iatrogenic premature ovarian insufficiency: first 10 cases in China. Climacteric: the journal of the International Menopause Society 23(6): 574-580	- No primary outcome reported
Ruddy, Kathryn J, Gelber, Shari I, Tamimi, Rulla M et al. (2014) Prospective study of fertility concerns and preservation strategies in young women with breast cancer. Journal of clinical oncology : official journal of the American Society of Clinical Oncology 32(11): 1151-6	- No primary outcome reported
Sabatini, Mary E, Wolkovich, Ann M, Macklin, Eric A et al. (2011) Pronuclear embryo cryopreservation experience: outcomes for reducing the risk of ovarian hyperstimulation syndrome and for fertility preservation in cancer patients. Journal of assisted reproduction and genetics 28(3): 279-84	- Data not reported in an extractable format *Unclear if pregnancy rate and live birth rate reported by transfer or by participant and only reported as a percentage*
Safsaf, A, Sibert, L, Cleret, JM et al. (2011) Concomitant unilateral and synchronous bilateral testis cancer in azoospermic dizygotic twins:	- No primary outcome reported

Study	Code [Reason]
differential management of fertility preservation. Fertility and sterility 95(7): 2434.e11-3	
Salama, Mahmoud, Isachenko, Vladimir, Isachenko, Evgenia et al. (2016) Updates in preserving reproductive potential of prepubertal girls with cancer: Systematic review. Critical reviews in oncology/hematology 103: 10-21	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Salama, Mahmoud and Mallmann, Peter (2015) Emergency fertility preservation for female patients with cancer: clinical perspectives. Anticancer research 35(6): 3117-27	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Salama, Mahmoud and Woodruff, Teresa K (2015) New advances in ovarian autotransplantation to restore fertility in cancer patients. Cancer metastasis reviews 34(4): 807-822	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Salih, Sana M, Albayrak, Samet, Seo, Songwon et al. (2015) Diminished Utilization of in Vitro Fertilization Following Ovarian Transposition in Cervical Cancer Patients. The Journal of reproductive medicine 60(78): 345-53	- Intervention does not match inclusion criteria *Ovarian transposition*
Sanada, Y, Harada, M, Kunitomi, C et al. (2019) A Japanese nationwide survey on the cryopreservation of embryos, oocytes and ovarian tissue for cancer patients. The journal of obstetrics and gynaecology research 45(10): 2021-2028	- No relevant outcomes reported *Only number of institutions with pregnancy outcome reported and not number of people*
Sanger, WG; Olson, JH; Sherman, JK (1992) Semen cryobanking for men with cancer--criteria change. Fertility and sterility 58(5): 1024-7	- Non-systematic review
Schallmoser, Andreas, Einenkel, Rebekka, Farber, Cara et al. (2023) Cryostorage of human ovarian tissue: evaluating the storage and disposal pattern over a 22-year period in 2475 patients. Reproductive biomedicine online 47(3): 103239	- Study type does not meet inclusion criteria *Survey*
Schleedoorn, M J, van der Velden, A A E M, Braat, D D M et al. (2019) To Freeze or Not to Freeze? An Update on Fertility Preservation In Females with Turner Syndrome. Pediatric endocrinology reviews: PER 16(3): 369-382	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Schmidt, Kirsten L Tryde, Larsen, Elisabeth,	- Data not reported in an extractable format

Study	Code [Reason]
Bangsboll, Susanne et al. (2004) Assisted reproduction in male cancer survivors: fertility treatment and outcome in 67 couples. Human reproduction (Oxford, England) 19(12): 2806-10	
Schmidt, Kirsten Tryde, Rosendahl, Mikkel, Ernst, Erik et al. (2011) Autotransplantation of cryopreserved ovarian tissue in 12 women with chemotherapy-induced premature ovarian failure: the Danish experience. Fertility and sterility 95(2): 695-701	- The same population as another included study with no further relevant data *Population overlaps with Greve 2012*
Schover, LR, Brey, K, Lichtin, A et al. (2002) Knowledge and experience regarding cancer, infertility, and sperm banking in younger male survivors. Journal of clinical oncology: official journal of the American Society of Clinical Oncology 20(7): 1880-9	- Study type does not meet inclusion criteria *Survey*
Scott, Charles, Omar, Kawa, Alnajjar, Hussain M et al. (2021) A patient-centric pathway for testicular cancer - A multicentre study investigating the uptake of semen cryopreservation and impact on treatment. Andrology 9(3): 823-828	- No primary outcome reported
Segers, Ingrid, Bardhi, Erlisa, Mateizel, Ileana et al. (2020) Live births following fertility preservation using in-vitro maturation of ovarian tissue oocytes. Human reproduction (Oxford, England) 35(9): 2026-2036	- Intervention does not match inclusion criteria *Oocytes extracted from excised ovarian tissue and matured in vitro*
Segev-Becker, Anat, Israeli, Galit, Elkon-Tamir, Erella et al. (2020) CHILDREN AND ADOLESCENTS WITH GENDER DYSPHORIA IN ISRAEL: INCREASING REFERRAL AND FERTILITY PRESERVATION RATES. Endocrine practice: official journal of the American College of Endocrinology and the American Association of Clinical Endocrinologists 26(4): 423-428	- No relevant outcomes reported
Selk, Amanda, Belej-Rak, Timea, Shapiro, Heather et al. (2009) No title provided. Canadian Urological Association journal = Journal de l'Association des urologues du Canada 3(3): 219-222	- Duplicate
Selter, J., Huang, Y., Williams, S.Z. et al. (2021) Use of fertility preservation services in male reproductive-aged cancer patients. Gynecologic Oncology Reports 36: 100716	- No relevant outcomes reported

Study	Code [Reason]
Senapati, Suneeta, Morse, Christopher B, Sammel, Mary D et al. (2014) Fertility preservation in patients with haematological disorders: a retrospective cohort study. Reproductive biomedicine online 28(1): 92-8	- No primary outcome reported
Sermondade, Nathalie, Benaloun, Emmanuelle, Berthaut, Isabelle et al. (2021) Reproductive functions and fertility preservation in transgender women: a French case series. Reproductive biomedicine online 43(2): 339-345	- No primary outcome reported
Shalom-Paz, Einat, Almog, Benny, Shehata, Fady et al. (2010) Fertility preservation for breast-cancer patients using IVM followed by oocyte or embryo vitrification. Reproductive biomedicine online 21(4): 566-71	- Intervention does not match inclusion criteria *In vitro maturation (immature oocytes)*
Shandley, Lisa M and McKenzie, Laurie J (2019) Recent Advances in Fertility Preservation and Counseling for Reproductive-Aged Women with Colorectal Cancer: A Systematic Review. Diseases of the colon and rectum 62(6): 762-771	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Shankara-Narayana, Nandini, Di Pierro, Irene, Fennell, Carolyn et al. (2019) Sperm cryopreservation prior to gonadotoxic treatment: experience of a single academic centre over 4 decades. Human reproduction (Oxford, England) 34(5): 795-803	- No primary outcome reported
Shapira, M; Raanani, H; Meirow, D (2015) IVF for fertility preservation in breast cancer patients--efficacy and safety issues. Journal of assisted reproduction and genetics 32(8): 1171-8	- Non-systematic review
Shnorhavorian, M, Kroon, L, Jeffries, H et al. (2012) Creating a standardized process to offer the standard of care: continuous process improvement methodology is associated with increased rates of sperm cryopreservation among adolescent and young adult males with cancer. Journal of pediatric hematology/oncology 34(8): e315-9	- No relevant outcomes reported
Sibert, L, Rives, N, Rey, D et al. (1999) Semen cryopreservation after orchidectomy in men with testicular cancer. BJU international 84(9): 1038-42	- No relevant outcomes reported
Sigismondi, C., Papaleo, E., Vigano, P. et al.	- No primary outcome reported

Study	Code [Reason]
(2015) Fertility preservation in female cancer patients: A single center experience. Chinese Journal of Cancer 34(1): 56-60	
Silber S, Pineda J, Lenahan K et al. (2015) Fresh and cryopreserved ovary transplantation and resting follicle recruitment. Reproductive biomedicine online 30(6): 643-650	- The same population as another included study with no further relevant data *Sample overlaps with Silber 2018*
Silber, Sherman, Kagawa, Nori, Kuwayama, Masashige et al. (2010) Duration of fertility after fresh and frozen ovary transplantation. Fertility and sterility 94(6): 2191-6	- No relevant outcomes reported
Skaczkowski, G, White, V, Thompson, K et al. (2018) Factors influencing the documentation of fertility-related discussions for adolescents and young adults with cancer. European journal of oncology nursing: the official journal of European Oncology Nursing Society 34: 42-48	- No primary outcome reported
Slonim, Marnie, Peate, Michelle, Merigan, Kira et al. (2023) Ovarian stimulation and oocyte cryopreservation in females and transgender males aged 18 years or less: a systematic review. Frontiers in endocrinology 14: 1146476	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Sobocan, M., Gaspar, D., Arko, D. et al. (2022) Short and long-term outcomes of endometrial cancer and atypical endometrial hyperplasia management in young women. European Journal of Gynaecological Oncology 43(3): 91-96	- Intervention does not match inclusion criteria *Study investigates fertility sparing treatment but not the preservation of material*
Soda, T, Okubo, K, Ichioka, K et al. (2009) [Sperm cryopreservation for cancer patients: 5-year experience in a private hospital in Japan]. Hinyokika kiyo. Acta urologica Japonica 55(1): 9-13	- Study not reported in English
Song, Xue-Ling, Lu, Cui-Ling, Zheng, Xiao-Ying et al. (2020) Enhancing the scope of in vitro maturation for fertility preservation: transvaginal retrieval of immature oocytes during endoscopic gynaecological procedures. Human reproduction (Oxford, England) 35(4): 837-846	- Intervention does not match inclusion criteria *In vitro maturation (immature oocytes)*
Sonnenburg, D W, Brames, M J, Case-Eads, S et al. (2015) Utilization of sperm banking and barriers to its use in testicular cancer patients. Supportive care in cancer: official journal of the Multinational Association of Supportive Care in Cancer 23(9): 2763-8	- No primary outcome reported

Study	Code [Reason]
Spanos, Constantine P, Mamopoulos, Apostolos, Tsapas, Apostolos et al. (2008) Female fertility and colorectal cancer. International journal of colorectal disease 23(8): 735-43	- Non-systematic review
Spermon, JR, Kiemeney, LA, Meuleman, EJ et al. (2003) Fertility in men with testicular germ cell tumors. Fertility and sterility 79suppl3: 1543-9	- Study type does not meet inclusion criteria *Survey*
Stal, Julia, Yi, Serena Y, Cohen-Cutler, Sally et al. (2022) Fertility Preservation Discussions Between Young Adult Rectal Cancer Survivors and Their Providers: Sex-Specific Prevalence and Correlates. The oncologist 27(7): 579-586	- No primary outcome reported
Stark BA and Mok-Lin E (2022) Fertility preservation in transgender men without discontinuation of testosterone. F&S reports 3(2): 153-156	- No primary outcome reported
Steinsvik, EA, Fosså, SD, Lilleby, W et al. (2008) Fertility issues in patients with prostate cancer. BJU international 102(7): 793-5	- Study type does not meet inclusion criteria *2 case reports; only 1 participant underwent preservation of fertility*
Sterling, Joshua and Garcia, Maurice M (2020) Fertility preservation options for transgender individuals. Translational andrology and urology 9(suppl2): 215-s226	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Stolk, T H R, Asseler, J D, Huirne, J A F et al. (2023) Desire for children and fertility preservation in transgender and gender-diverse people: A systematic review. Best practice & research. Clinical obstetrics & gynaecology 87: 102312	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Stone, Jacqueline B; Kelvin, Joanne F; DeAngelis, Lisa M (2017) Fertility preservation in primary brain tumor patients. Neuro-oncology practice 4(1): 40-45	- Data not reported in an extractable format
Takae, S, Kato, K, Watanabe, C et al. (2022) A practical survey of fertility-preservation treatments in the startup phase in Japan. The journal of obstetrics and gynaecology research	- No relevant outcomes reported
Takae, Seido, Furuta, Shigeyuki, Keino, Dai et al. (2021) Surgical management of unilateral oophorectomy for ovarian tissue cryopreservation in high-risk children and adolescents with varied	- No primary outcome reported

Study	Code [Reason]
backgrounds. Pediatric surgery international 37(8): 1021-1029	
Takahashi, N., Harada, M., Tanabe, R. et al. (2018) Factors associated with successful pregnancy in women of late reproductive age with uterine fibroids who undergo embryo cryopreservation before surgery. Journal of Obstetrics and Gynaecology Research 44(10): 1956-1962	- Intervention does not match inclusion criteria *Short-term cryopreservation as part of embryo transfer procedure*
Talaulikar, Vikram Sinai, Conway, Gerard S, Pimblett, Antoinette et al. (2019) Outcome of ovarian stimulation for oocyte cryopreservation in women with Turner syndrome. Fertility and sterility 111(3): 505-509	- No primary outcome reported
Tan, Justin, Cerrillo, Maria, Cruz, Maria et al. (2021) Early Pregnancy Outcomes in Fresh Versus Deferred Embryo Transfer Cycles for Endometriosis-Associated Infertility: A Retrospective Cohort Study. Journal of clinical medicine 10(2)	- Population does not meet inclusion criteria *Not a fertility preservation study*
Tang, Wenhao, Deng, Chenyao, Gao, Jiangman et al. (2022) An evaluation of the population characteristics, semen quality, and utilization status of autologous sperm cryopreservation and fertility preservation in for 662 patients: a 6-year monocentric retrospective study. Basic and clinical andrology 32(1): 18	- Population does not meet inclusion criteria *53% participants had medical indication and disaggregated data not available for this group*
Terenziani, M, Meazza, C, Massimino, M et al. (2016) Female fertility preserving practices at a pediatric unit: a challenge of multiprofessional and multidisciplinary cooperation. Tumori 102(2): 174-7	- No relevant outcomes reported
Tomlinson, M, Meadows, J, Kohut, T et al. (2015) Review and follow-up of patients using a regional sperm cryopreservation service: ensuring that resources are targeted to those patients most in need. Andrology 3(4): 709-16	- Data not reported in an extractable format *Not all participants had a medical indication for sperm cryopreservation and although proportion of those who return to use stored material is reported it is not disaggregated by indication*
Topuz, Bahadir, Sarikaya, Selcuk, Korkmaz, Cem et al. (2021) Examination of clinical data and semen analysis results of patients undergoing orchiectomy for testicular tumor. Revista da Associacao Medica Brasileira (1992) 67(4): 577-584	- No primary outcome reported

Study	Code [Reason]
Tsampras, N; Gould, D; Fitzgerald, CT (2017) Double ovarian stimulation (DuoStim) protocol for fertility preservation in female oncology patients. Human fertility (Cambridge, England) 20(4): 248-253	- No relevant outcomes reported
Tsampras, Nikolaos, Roberts, Stephen A, Gould, Della et al. (2018) Ovarian response to controlled ovarian stimulation for fertility preservation before oncology treatment: A retrospective cohort of 157 patients. European journal of cancer care 27(2): e12797	- No primary outcome reported
Turan, Volkan, Gayete-Lafuente, Sonia, Bang, Heejung et al. (2023) Outcomes of random-start letrozole protocol with PGT-A in women with breast cancer undergoing fertility preservation. Journal of assisted reproduction and genetics 40(10): 2401-2408	- Intervention does not match inclusion criteria
Turkgeldi, L, Cutner, A, Turkgeldi, E et al. (2019) Laparoscopic Ovarian Transposition and Ovariopexy for Fertility Preservation in Patients Treated with Pelvic Radiotherapy with or without Chemotherapy. Facts, views & vision in ObGyn 11(3): 235-242	- Intervention does not match inclusion criteria *Fertility-sparing surgery*
Ulrich, N.D., Raja, N., Ellman, E. et al. (2022) Outcomes of Fertility Preservation Consults for Women at Risk for Primary Ovarian Insufficiency Due to History of Cancer Treatment or Mosaic Turner Syndrome. Journal of Adolescent and Young Adult Oncology 11(4): 427-432	- No primary outcome reported
Valipour, Arash, Osowski, Sebastian, Rey, Julia et al. (2019) Semen cryopreservation in adolescent and adult men undergoing fertility compromising cancer treatment: A systematic review. Andrologia 51(11): e13392	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Valli-Pulaski, H, Peters, KA, Gassei, K et al. (2019) Testicular tissue cryopreservation: 8 years of experience from a coordinated network of academic centers. Human reproduction (Oxford, England) 34(6): 966-977	- No primary outcome reported
van Casteren, Niels J, Dohle, Gert R, Romijn, Johanens C et al. (2008) Semen cryopreservation in pubertal boys before gonadotoxic treatment and the role of endocrinologic evaluation in predicting sperm yield. Fertility and sterility 90(4): 1119-25	- No primary outcome reported

Study	Code [Reason]
van Casteren, NJ, Boellaard, WP, Romijn, JC et al. (2010) Gonadal dysfunction in male cancer patients before cytotoxic treatment. International journal of andrology 33(1): 73-9	- No primary outcome reported
van der Kaaij, M A E, van Echten-Arends, J, Heutte, N et al. (2014) Cryopreservation, semen use and the likelihood of fatherhood in male Hodgkin lymphoma survivors: an EORTC-GELA Lymphoma Group cohort study. Human reproduction (Oxford, England) 29(3): 525-33	- Study type does not meet inclusion criteria *Survey*
van der Perk, M E Madeleine, van der Kooi, Anne-Lotte L F, van de Wetering, Marianne D et al. (2021) Oncofertility care for newly diagnosed girls with cancer in a national pediatric oncology setting, the first full year experience from the Princess Maxima Center, the PEARL study. PloS one 16(3): e0246344	- No primary outcome reported
van der Plas, R C J, Bos, A M E, Jurgenliemk-Schulz, I M et al. (2021) Fertility-sparing surgery and fertility preservation in cervical cancer: The desire for parenthood, reproductive and obstetric outcomes. Gynecologic oncology 163(3): 538-544	- Data not reported in an extractable format *Disaggregated data not available for ovarian tissue and oocyte/embryo cryopreservation*
Van Velthoven, R., Aoun, F., Limani, K. et al. (2014) Primary zonal high intensity focused ultrasound for prostate cancer: Results of a prospective phase IIA feasibility study. Prostate Cancer 2014: 756189	- Intervention does not match inclusion criteria *The intervention is potentially fertility sparing (Primary Zonal High Intensity Focused Ultrasound) rather than the focus of the study being on fertility preservation as such*
Vatel, M, Torre, A, Paillusson, B et al. (2021) Efficacy of assisted reproductive technology after ovarian tissue transplantation in a cohort of 11 patients with or without associated infertility factors. Journal of assisted reproduction and genetics 38(2): 503-511	- Population does not meet inclusion criteria *Subsample of a larger study on ovarian tissue transplantation (OTT) but the sample in this study is restricted to those who have failed to conceive spontaneously after OTT, had undergone heterotopic ovarian transplantation, or had associated infertility factors*
Ventruba, Pavel, Žáková, Jana, Ješeta, Michal et al. (2021) Cryopreservation of sperm before gonadotoxic treatment at the University Hospital Brno in the years 1995-2020. Ceska gynekologie 86(3): 156-162	- Study not reported in English
Vergier, Julia, Bottin, Pauline, Saias, Jacqueline et al. (2019) Fertility preservation in Turner syndrome: Karyotype does not predict ovarian response to stimulation. Clinical endocrinology	- No primary outcome reported

Study	Code [Reason]
91(5): 646-651	
Villarreal-Garza, Cynthia, Mesa-Chavez, Fernanda, Plata de la Mora, Alejandra et al. (2021) Prospective Study of Fertility Preservation in Young Women With Breast Cancer in Mexico. Journal of the National Comprehensive Cancer Network: JNCCN: 1-8	- No relevant outcomes reported
Viviani, Simonetta, Caccavari, Valentina, Gerardi, Chiara et al. (2021) Male and Female Fertility: Prevention and Monitoring Hodgkin' Lymphoma and Diffuse Large B-Cell Lymphoma Adult Survivors. A Systematic Review by the Fondazione Italiana Linfomi. Cancers 13(12)	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
von Wolff, Michael, Capp, Edison, Jauckus, Julia et al. (2016) Timing of ovarian stimulation in patients prior to gonadotoxic therapy: an analysis of 684 stimulations. European journal of obstetrics, gynecology, and reproductive biology 199: 146-9	- No relevant outcomes reported
Walasik, Izabela, Falis, Maria, Plaza, Olga et al. (2023) Polish Female Cancer Survivors' Experiences Related to Fertility Preservation Procedures. Journal of adolescent and young adult oncology 12(5): 727-734	- No relevant outcomes reported
Wald, Kaitlyn, Wang, Ange, Abel, Mary Kathryn et al. (2022) Breast cancer grade and stage do not affect fertility preservation outcomes. Journal of assisted reproduction and genetics 39(5): 1155-1161	- No relevant outcomes reported
Walker Z; Lanes A; Ginsburg E (2022) Oocyte cryopreservation review: outcomes of medical oocyte cryopreservation and planned oocyte cryopreservation. Reproductive biology and endocrinology: RB&E 20(1): 10	- Non-systematic review
Wallace, W Hamish B, Smith, Alice Grove, Kelsey, Thomas W et al. (2014) Fertility preservation for girls and young women with cancer: population-based validation of criteria for ovarian tissue cryopreservation. The Lancet. Oncology 15(10): 1129-36	- The same population as another included study with no further relevant data *Population overlaps with Duffin 2023*
Wan, Q, Han, L, Liu, J et al. (2021) Fertility preservation among young breast cancer patients: A single-center experience in China. Taiwanese journal of obstetrics & gynecology	- No primary outcome reported

Study	Code [Reason]
60(5): 827-830	
Wang, S S Y, Loong, H, Chung, J P W et al. (2020) Preservation of fertility in premenopausal patients with breast cancer. Hong Kong medical journal = Xianggang yi xue za zhi 26(3): 216-226	- Non-systematic review
Wang, Yao, Yu, Mei, Yang, Jia-Xin et al. (2019) Prolonged conservative treatment in patients with recurrent endometrial cancer after primary fertility-sparing therapy: 15-year experience. International journal of clinical oncology 24(6): 712-720	- Intervention does not match inclusion criteria *Fertility-sparing treatment rather than cryopreservation of material*
Weterings, M.A.J., Glanville, E., van Eekelen, R. et al. (2017) Interventions for fertility preservation in women with cancer undergoing chemotherapy. Cochrane Database of Systematic Reviews 2017(12): cd012891	- Article type does not meet inclusion criteria *Study protocol*
White, Rhiannon, Wilson, Anna, Bechman, Natasha et al. (2023) Fertility preservation, its effectiveness and its impact on disease status in pre-menopausal women with breast cancer: A systematic review and meta-analysis. European journal of obstetrics, gynecology, and reproductive biology 287: 8-19	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Wide, Alexandra, Wettergren, Lena, Ahlgren, Johan et al. (2021) Fertility-related information received by young women and men with cancer - a population-based survey. Acta oncologica (Stockholm, Sweden) 60(8): 976-983	- No relevant outcomes reported
Xu, Zilin, Ibrahim, Sameh, Burdett, Sarah et al. (2023) Long term pregnancy outcomes of women with cancer following fertility preservation: A systematic review and meta-analysis. European journal of obstetrics, gynecology, and reproductive biology 281: 41-48	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)
Yamashita, Shinichi, Kakimoto, Kenichi, Uemura, Motohide et al. (2021) Fertility and reproductive technology use in testicular cancer survivors in Japan: A multi-institutional, cross-sectional study. International journal of urology: official journal of the Japanese Urological Association 28(10): 1047-1052	- Study type does not meet inclusion criteria *Survey*
Yan, Maria, Bustos, Samyd S, Kuruoglu, Doga et al. (2021) Systematic review of fertility preservation options in transgender patients: a	- Systematic review (not appropriate to include in its entirety and checked for relevant primary studies)

Study	Code [Reason]
guide for plastic surgeons. Annals of translational medicine 9(7): 613	
Yee, Samantha, Fuller-Thomson, Esme, Dwyer, Catherine et al. (2012) "Just what the doctor ordered": Factors associated with oncology patients' decision to bank sperm. Canadian Urological Association journal = Journal de l'Association des urologues du Canada 6(5): e174-8	- No relevant outcomes reported
Zhang, Hanfeng, Wang, Guorong, Cao, Maoqiu et al. (2020) Level of Knowledge and Needs on Fertility Preservation in Reproductive-Aged Male Patients with Cancer. Journal of cancer education: the official journal of the American Association for Cancer Education 35(2): 321-326	- No relevant outcomes reported
Zhang, R., Sun, Y.C., Zhang, G.Y. et al. (2012) Treatment of malignant ovarian germ cell tumors and preservation of fertility. European Journal of Gynaecological Oncology 33(5): 489-492	- No relevant outcomes reported
Zheng, Yunxi, Bao, Lingjie, Ning, Yan et al. (2015) Retrospective analysis of the clinicopathologic and prognostic characteristics of stage I placental site trophoblastic tumor in China. International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics 129(1): 67-70	- No relevant outcomes reported
Zwingerman, R, Melenchuk, K, McMahon, E et al. (2020) Expanding Urgent Oncofertility Services for Reproductive Age Women Remote from a Tertiary Level Fertility Centre by Use of Telemedicine and an On-site Nurse Navigator. Journal of cancer education: the official journal of the American Association for Cancer Education 35(3): 515-521	- No relevant outcomes reported
Záková, J, Lousová, E, Ventruba, P et al. (2014) Sperm cryopreservation before testicular cancer treatment and its subsequent utilization for the treatment of infertility. The Scientific World Journal 2014: 575978	- No primary outcome reported

Excluded economic studies

Table 10: Excluded studies and reasons for their exclusion

Study	Code
Lyttle Schumacher, B; Grover, N; Mesen, T; Steiner, A; Mersereau, J (2017) Modeling of live-birth rates and cost-effectiveness of oocyte cryopreservation for cancer patients prior to high- and low-risk gonadotoxic chemotherapy. Human reproduction (Oxford, England); vol. 32 (no. 10); 2049-2055	Excluded at cheklisting stage - US study - 5-year time horizon - Other methodological concerns
Gilbert, Kirven; Nangia, Ajay K; Dupree, James M; Smith, James F; Mehta, Akanksha (2018) Fertility preservation for men with testicular cancer: Is sperm cryopreservation cost effective in the era of assisted reproductive technology?; Urologic oncology; vol. 36 (no. 3); 92e1-92e9	Excluded at cheklisting stage - US study - Other methodological concerns
Raimondo, Diego; Giaquinto, Ilaria; Maletta, Manuela; Vicenti, Rossella; Iodice, Raffaella et al. (2022) Cost-effectiveness analysis of ovarian tissue cryopreservation and transplantation for preservation of fertility in post-pubertal oncological women submitted to high-risk gonadotoxic chemotherapy.; Gynaecology and Obstetrics; vol. 159 (no. 1); 116-121	Excluded at cheklisting stage - Limited information provided on the data inputs used in the model
Wolfman, W.; Thurston, J.; Yeung, G.; Glanc, P. (2020) Guideline No. 404: Initial Investigation and Management of Benign Ovarian Masses; Journal of Obstetrics and Gynaecology Canada; vol. 42 (no. 8); 1040-1050e1	- Not an economic evaluation
Santulli, P.; Blockeel, C.; Bourdon, M.; Coticchio, G.; Campbell, A.; De Vos, M.; Macklon, K.T.; Pinborg, A.; Garcia-Velasco, J.A (2023) Fertility preservation in women with benign gynaecological conditions; Human Reproduction Open; 2023; vol. (no. 2); hoad012	- Not an economic evaluation
Filippi, F.; Reschini, M.; Polledri, E.; Cecchele, A.; Guarneri, C.; Vigano, P.; Fustinoni, S.; Platteau, P.; Somigliana, E. (2023) Progestin-primed ovarian stimulation for fertility preservation in women with cancer: A comparative study; PLoS ONE; vol. 18 (no. 3march); e0280238	- Not an economic evaluation
Oktay, Kutluk; Hourvitz, Ariel; Sahin, Gulnaz; Oktem, Ozgur; Safro, Bradley; Cil, Aylin; Bang, Heejung (2006) Letrozole reduces estrogen and gonadotropin exposure in women with breast cancer undergoing ovarian stimulation before chemotherapy; The Journal of clinical	- Not an economic evaluation

Study	Code
endocrinology and metabolism; vol. 91 (no. 10); 3885-90	
Mathieu d'Argent, Emmanuelle; Ferrier, Clement; Zacharopoulou, Chrysoula; Ahdad-Yata, Naouel; Boudy, Anne-Sophie; Cantalloube, Adele; Levy, Rachel; Antoine, Jean-Marie; Darai, Emile; Bendifallah, Sofiane (2020) Outcomes of fertility preservation in women with endometriosis: comparison of progestin-primed ovarian stimulation versus antagonist protocols; Journal of ovarian research; vol. 13 (no. 1); 18	- Wrong study design
Chung, Esther H; Lim, Stephanie L; Myers, Evan; Moss, Haley A; Acharya, Kelly S (2021) Oocyte cryopreservation versus ovarian tissue cryopreservation for adult female oncofertility patients: a cost-effectiveness study; Journal of assisted reproduction and genetics; vol. 38 (no. 9); 2435-2443	- Wrong perspective – US
Song, Xue-Ling; Lu, Cui-Ling; Zheng, Xiao-Ying; Nisenblat, Victoria; Zhen, Xiu-Mei; Yang, Rui; Li, Ming; Li, Rong; Yuan, Yi-Feng; Ma, Cai-Hong; Liu, Ping; Feng, Huai-Liang; Yan, Jie; Qiao, Jie (2020) Enhancing the scope of in vitro maturation for fertility preservation: transvaginal retrieval of immature oocytes during endoscopic gynaecological procedures; Human reproduction (Oxford, England); vol. 35 (no. 4); 837-846	- Not an economic evaluation
Zhao, Weie; Sun, Peng; Li, Tingting; Li, Yongfang; Liang, Xiaoyan; Li, Jingjie (2023) Outcomes and cost-effectiveness comparisons of progestin-primed ovarian stimulation, GnRH antagonist protocol, and luteal phase stimulation for fertility preservation; Gynaecology and Obstetrics; vol. 163 (no. 2); 645-650	- Not an economic evaluation
Mohd Faizal, Ahmad; Sugishita, Yodo; Suzuki-Takahashi, Yuki; Iwahata, Hideyuki; Takae, Seido; Horage-Okutsu, Yuki; Suzuki, Nao (2022) Twenty-first century oocyte **cryopreservation**-in vitro maturation of immature oocytes from ovarian tissue **cryopreservation** in **cancer** patients: A systematic review; Women's health (London, England); vol. 18; 17455057221114269	- Not an economic evaluation
Meseguer, Marcos; Molina, Nancy; Garcia-Velasco, Juan A; Remohi, Jose; Pellicer, Antonio; Garrido, Nicolas (2006) Sperm cryopreservation in oncological patients: a 14-year follow-up study; Fertility and sterility; vol. 85 (no. 3); 640-5	- Not an economic evaluation

Study	Code
Meernik, Clare; Poole, Charles; Engel, Stephanie M; Rauh-Hain, J Alejandro; Luke, Barbara; Nichols, Hazel B (2023) Outcomes after assisted reproductive technology in women with cancer: a systematic review and meta-analysis; Human reproduction (Oxford, England); vol. 38 (no. 1); 30-45	- Not an economic evaluation
Luo, L; Chen, M; Wen, Y; Zhang, L; Zhou, C; Wang, Q (2021) Pregnancy outcome and cost-effectiveness comparisons of artificial cycle-prepared frozen embryo transfer with or without GnRH agonist pretreatment for polycystic ovary syndrome: a randomised controlled trial; BJOG : an international journal of obstetrics and gynaecology; vol. 128 (no. 4); 667-674	- Wrong population
Huang, Yaping; Huang, Xiaoting; Huang, Xiaojia; Lin, Shen; Luo, Shaohong; Gu, Dian; Weng, Xiuhua; Xu, Xiongwei (2023) Cost-effectiveness analysis of ovarian function preservation with GnRH agonist during chemotherapy in premenopausal women with early breast cancer; Human reproduction (Oxford, England); vol. 38 (no. 6); 1099-1110	- Wrong perspective – US

Appendix K Research recommendations – full details

Research recommendations for review question: What is the success rate, and which factors affect the outcome, of fertility preservation for children and adults undergoing treatment for cancer and other conditions or situations which are likely to impair their fertility?

1.1. Research recommendation

What is the safety and clinical and cost effectiveness of testicular tissue cryopreservation for fertility preservation for prepubertal and peripubertal males undergoing medical treatment, or have a medical condition, that is likely to impair their fertility?

1.2. Why this is important

There is evidence that sperm cryopreservation is a safe and effective fertility preservation option for many people who are preparing to undergo treatment that is likely to impair their fertility. However, this option is not always feasible, for example, in prepubertal males. Testicular tissue retrieval is a relatively new and experimental technique and there is very limited evidence, and none with longer-term follow-up, on the success rate of testicular tissue retrieval in terms of live birth and clinical pregnancy rates.

1.3. Rationale for research recommendation

Table 11: Research recommendation rationale

Importance to 'patients' or the population	Little is known about the safety and effectiveness of testicular tissue retrieval and cryopreservation. However, if this fertility preservation option was shown to be safe, effective and cost-effective, it could offer an option for fertility preservation for those who are unable to preserve sperm and otherwise may not be able to conceive after receiving treatment that impairs their fertility
Relevance to NICE guidance	The previous version of the NICE guideline makes no recommendations about testicular tissue cryopreservation. However, if testicular tissue cryopreservation was shown to be safe, effective and cost-effective, it would offer a fertility preservation option to those who are unable to cryopreserve sperm
Relevance to the NHS	The outcome would affect the fertility preservation options provided by the NHS
National priorities	NHS England service specification for fertility preservation services for service users with testicular tissue who are at high/very high risk of infertility and endocrine failure and cannot store sperm
Current evidence base	Very limited evidence on the safety of testicular tissue retrieval in the pre- and peripubertal population, and no evidence on live birth or clinical pregnancy rates using cryopreserved testicular tissue.
Equality considerations	If testicular tissue fertility preservation could be offered by the NHS it would be expected to have a positive impact on the equity of access to fertility preservation

1.4. Modified PICO table

Table 12: Research recommendation modified PICO table

Population	Prepubertal and peripubertal males with a medical indication for fertility preservation (including conditions that require chemotherapy, radiotherapy, and/or bone marrow transplantation, and conditions or situations that require hormone treatment and/or

	surgical intervention with the potential to harm fertility)
Intervention	Testicular tissue cryopreservation for fertility preservation
Comparator	N/A
Outcome	• Proportion of participants from whom testicular tissue suitable for preservation is obtained • Proportion of participants who return to use stored testicular tissue • Live birth rate using stored testicular tissue • Clinical pregnancy rate using stored testicular tissue • Pregnancy loss (accounting for ectopic pregnancy, miscarriage, stillbirth, and termination of pregnancy) • Serious surgery-related adverse events (Clavien Dindo grades ≥2) • Cost-effectiveness
Study design	Prospective case series with economic analysis
Timeframe	Long-term
Additional information	Multi-centre study