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Early removal of Fallopian tubes and delayed removal of ovaries in women at high risk of ovarian cancer

Submission date
04/06/2018

Recruitment status
Suspended

Registration date
14/06/2018

Overall study status
Ongoing

Last Edited
14/10/2025

Condition category
Cancer

[X] Prospectively registered
[X] Protocol
[ ] Statistical analysis plan
[ ] Results
[ ] Individual participant data
[X] Record updated in last year

Plain English summary of protocol

https://www.cancerresearchuk.org/about-cancer/find-a-clinical-trial/a-study-to-prevent-ovarian-cancer-by-removing-the-fallopian-tubes-and-then-the-ovaries-protector (added 10/03/2021)

Background and study aims
Some women have an inheritable fault in their genetic code which increases their risk of developing ovarian cancer. Genes in which a fault may lie are BRCA1/ BRCA2/ RAD51C/ RAD51D/ BRIP1. Some women with a strong family history of ovarian cancer or breast and ovarian cancer may also be at increased risk. There is currently no screening programme for ovarian cancer available on the NHS. Therefore current practice is to offer women at increased risk, once they have completed their family, an operation to remove their fallopian tubes and ovaries. This procedure is called risk-reducing salpingo-oophorectomy. This is the best known way to prevent ovarian cancer in women at increased risk. However, in women who are premenopausal it leads to early menopause. Early menopause has serious health implications. It results in menopausal type symptoms (e.g. hot flushes, changes in mood, reduced sex drive), increased risk of osteoporosis (brittle bones), heart disease, stroke, dementia and sexual problems. Research suggests many ovarian cancers start in the fallopian tube. This has led to the proposal of an alternative strategy to prevent ovarian cancer. This involves having the operation in two stages. The first operation involves removing the fallopian tubes alone. This is called 'early salpingectomy'. The second operation removes the ovaries after natural menopause (average age 51 in the UK). This is called 'delayed oophorectomy'. The advantage of this two-stage alternative is that it offers some protection against ovarian cancer in young women whilst avoiding negative health consequences of early menopause.

The PROTECTOR study aims to find out how many ovarian cancers happen after removing the tubes. This will help us assess how effective having just the tubes removed is for reducing the risk of ovarian cancer (i.e. what the precise level of ovarian cancer risk reduction is). This would help policy makers to decide whether this two-step procedure (RRESDO) should be recommended in routine clinical practice. The study will also carry out an economic evaluation to see whether this is affordable for the NHS.
The PROTECTOR study will also assess people's views and the impact of this two-step procedure

on sexual function, hormone levels, quality of life and overall satisfaction. We will compare RRESDO to the traditional approach of removing both the tubes and ovaries in the same operation (RRSO). We will also compare this to the well-being of individuals who choose not to have an operation.

Who can participate?
Women at increased risk of developing ovarian cancer, who are aged 30 years and over and have not gone through the menopause.

What does the study involve?
Participants will be given the choice of which arm of the study they wish to be part of:
1. RRESDO (risk-reducing early salpingectomy and delayed oophorectomy): the new, two-stage operation (initial removal of tubes alone, followed by later removal of ovaries at a second operation after natural menopause or sooner if requested).
2. RRSO (risk-reducing salpingo-oophorectomy): removal of both tubes and ovaries at the same time. This is the current standard operation offered on the NHS to prevent ovarian cancer.
3. Controls: no operation involved.
Everyone will be required to complete questionnaires at the start of the study and annually. These ask about medical history, family history, quality of life, sexual function, cancer worry, psychological well-being and how satisfied individuals are with their decision.
All participants will also have a blood test at the start of the study and during follow up for a hormone called FSH. This will provide information on how the ovaries are functioning. Women who decide to have an operation to prevent ovarian cancer (either RRSO or RRESDO) will have a baseline ultrasound scan to look at the ovaries and a blood test for an ovarian cancer marker called CA125.
A small number of women from each study arm will be approached to take part in an optional interview. Interviews will explore views on acceptability, interest, factors influencing decision-making and willingness to undergo the new two-stage operation. Those who go on to have an operation (RRESDO/RRSO), will be contacted 1 year after their operation for a follow-up interview to discuss their satisfaction with the process and their general health and wellbeing.

What are the possible benefits and risks of participating?
Benefits include:
1. The opportunity of having a two staged operation (RRESDO) to prevent ovarian cancer. This is not currently routinely available outside the study. It involves removal of the tubes in the first step followed by removal of ovaries at a later date.
2. Removal of the tubes alone will provide some protection against developing ovarian cancer and also preserve ovarian function which will delay or avoid early menopause. This can prevent the adverse health consequences of early menopause.
3. Participants will be given the choice of deciding which arm of the study they wish to be a part of: RRESDO (new procedure), RRSO (current standard practice), or controls (no surgery).
4. Participants will be contributing to research into preventing ovarian cancer in women at increased risk. Results of this study will help us better understand the impact of the new two stage procedure. This will help develop future clinical care guidelines and plan future care pathways for women at increased risk of ovarian cancer.
Risks:
1. Although there is evidence to suggest removal of tubes alone provides some protection against developing ovarian cancer, the precise extent of this protection is unclear. There is the possibility of getting ovarian cancer despite removal of tubes.
2. It is unclear if a possible benefit of reduced breast cancer risk is lost by not removing ovaries before menopause.
3. The two-stage option (RRESDO) involves two operations instead of one (RRSO: removal of

both tubes and ovaries). Each operation has potential complications. As there are two operations this may lead to more complications overall.
4. There is concern that not everyone having their tubes removed initially will go on to have their ovaries removed at a later date. This would mean that these women who don't do so could still remain at an increased risk of developing ovarian cancer.

Where is the study run from?
Queen Mary University of London (UK)

When is the study starting and how long is it expected to run for?
July 2018 to July 2030

Who is funding the study?
Barts and the London Charity
Rosetrees Trust

Who is the main contact?
1. Prof Ranjit Manchanda
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2. PROTECTOR central coordinating team
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Contact information

Type(s)
Scientific

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Type(s)
Public

Contact name
Dr . PROTECTOR Study Team

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Additional identifiers

Integrated Research Application System (IRAS)
237992

Protocol serial number
IRAS project ID: 237992

Study information

Scientific Title
Preventing Ovarian Cancer through early Excision of Tubes and late Ovarian Removal

Acronym
PROTECTOR

Study objectives
Current study objectives as of 14/10/2025:

1. To evaluate the impact on sexual function with 'Early-Salpingectomy' and 'Delayed-Oophorectomy', as a two-step ovarian cancer prevention strategy in premenopausal women at high-risk of ovarian cancer.
2. To evaluate the level of ovarian cancer risk reduction of risk-reducing early-salpingectomy (RRES) for ovarian cancer prevention in high-risk women.

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Previous study objectives:

1. Early salpingectomy is non-inferior for sexual function compared to no surgery.
2. Early salpingectomy is superior for sexual function and non-inferior in terms of quality of life compared to the standard risk-reducing salpingo-oophorectomy.

Ethics approval required
Ethics approval required

Ethics approval(s)
approved 10/09/2025, Bloomsbury REC (2 Redman Place, Stratford, London, E20 1JQ, United Kingdom; +44 207104 8256; bloomsbury.rec@hra.nhs.uk), ref: 18/LO/0555

London - Bloomsbury Research Ethics Committee, 18/04/2018, ref: 18/LO/0555

Study design
Multicentre prospective three-armed cohort study

Primary study design
Interventional

Study type(s)
Prevention

Health condition(s) or problem(s) studied
Prevention of ovarian cancer

Interventions
Current interventions as of 14/10/2025:

Participants who meet the eligibility criteria and who have been identified through various NHS outpatient clinics, GP-surgeries or who have self-referred to the study team, self-select which of the three study arms they wish to participate in: risk-reducing early salpingectomy and delayed oophorectomy (RRESDO); risk-reducing salpingo-oophorectomy (RRSO); controls (no surgery).

Baseline investigations
Participants enrolled into the two surgical arms (RRESDO/RRSO) have a CA125 and transvaginal ultrasound of the pelvis. Participants in all three arms have a baseline FSH as a measure of ovarian function and are required to complete interventional questionnaires that collect data on medical and reproductive history, socio-demographics, family history of cancers, endocrine symptoms, quality of life, satisfaction, psychological health and cancer risk perception and worry.

RRSO arm
Participants who have completed their family undergo risk reducing salpingo-oophorectomy and peritoneal washings. A strict histopathological SEE-FIM based protocol is followed and pathology samples are sent for central pathology review.

RRESDO arm
Participants undergo surgery in two stages. The first stage involves salpingectomy and peritoneal washings. The second stage involves oophorectomy and peritoneal washings once natural menopause has been reached (or sooner if requested). A strict histopathological SEE-FIM based protocol is followed and pathology samples are sent for central pathology review.

Control arm
Participants do not undergo surgery but undergo a blood test measuring FSH levels and are required to complete the interventional questionnaires.

Qualitative in-depth interviews
A small number of women from each of the three study arms are invited to one-to-one semi-structured in depth interviews to explore acceptability, interest, factors influencing decision making and willingness to undergo RRESDO. Women who elected to have surgery are followed up with another interview one year post salpingectomy/RRSO to explore satisfaction with the counselling process and the effects of surgery on health and wellbeing.

Follow up
All participants are followed up with annual questionnaires for 8 years. Serum FSH levels will be

taken annually for 3 years after salpingectomy/control arm; and 3 months after RRSO/delayed oophorectomy.

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Follow up
All participants are followed up with annual questionnaires and FSH levels (annually after salpingectomy/control arm; 3 months after RRSO/delayed oophorectomy).

Intervention Type
Procedure/Surgery

Primary outcome(s)
Current primary outcome measure as of 14/10/2025:

1. Sexual function measured using the Sexual Activity Questionnaire and Sexual Quality of Life 3D (SQOL-3D) questionnaire completed at baseline, 3 months post surgery and annually.
2. Incidence of ovarian cancer after (not at) RRES, and before or at delayed oophorectomy (DO), in women with normal histology at surgery.

Previous primary outcome measure:

Sexual function measured using the Sexual Activity Questionnaire and Sexual Quality of Life 3D (SQOL-3D) questionnaire completed at baseline, 3 months post surgery and annually.

Key secondary outcome(s))
Current secondary outcome measures as of 14/10/2025:

1. Endocrine function and menopause is measured using the FACT-ES questionnaire completed at baseline, 3 months post surgery, annually and FSH levels measured 3 months after surgery and annually (early salpingectomy/control arm)
2. Quality of life measured using the EQ5D-5L questionnaire completed at baseline, 3 months post surgery and annually
3. Satisfaction/regret is measured using the 5-item Decision Regret Scale (O'Connor, Ottawa 1996) and 1-item ('I am satisfied with the decision I have made' on a 5-point Likert scale from Madalinska et al, 2005) completed at baseline, 3 months post surgery and annually
4. Surgical morbidity measured by recording complications experienced by the participant 4 weeks after surgery during the post-surgical clinic review
5. Psychological health measured using the Hospital Anxiety and Depression Scale (HADS), assessing cancer worry using the 4-item scale from Lerman et al and measuring intrusive thoughts using the Impact of Events Scale (7 intrusive items, Horowitz et al, 1997) completed at baseline, 3 months post surgery and annually
6. Number of serous-tubal-intraepithelial-carcinoma (STIC)/invasive (tubal/ovarian/peritoneal /non-ovarian) cancers will be recorded following histopathology review by a central pathology review committee using the SEE-FIM protocol
7. Utility scores for early salpingectomy will be derived using the Sexual Quality of Life 3D (SQOL-3D) questionnaire
8. Cost-effectiveness (incremental cost effectiveness ratio per quality adjusted life years (ICER /QALY)) of early salpingectomy/delayed oophorectomy will be established via a cost utility analysis performed using a Markov model
9. A national register of women undergoing early salpingectomy will be created by collating the details of all participants who have undergone early salpingectomy as part of the trial

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Completion date
31/07/2030

Eligibility

Key inclusion criteria
Current inclusion criteria as of 14/10/2025:

1. Women at increased risk of ovarian cancer: BRCA1/BRCA2 mutation carriers; BRIP1/PALB2 /RAD51C/RAD51D mutation carriers; strong family history of breast and ovarian cancer or ovarian cancer alone.
2. Premenopausal
3. Aged ≥30 years.
4. Completed family (for surgical arms)

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1. Women at increased risk of ovarian cancer: BRCA1/BRCA2 mutation carriers; RAD51C/RAD51D /BRIP1 mutation carriers; strong family history of breast and ovarian cancer or ovarian cancer alone.
2. Premenopausal
3. Aged ≥30 years.
4. Completed family (for surgical arms)

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
30 years

Sex
Female

Key exclusion criteria
Current exclusion criteria as of 14/10/2025:

1. Previous bilateral-salpingectomy or bilateral-oophorectomy.
2. Postmenopausal (amenorrhoea ≥1year (uterus in situ) / FSH >40).
3. Previous tubal/ovarian/peritoneal malignancy
4. <3 months post cancer treatment
5. Pregnancy
6. Clinical suspicion of tubal/ovarian cancer at baseline
7. Inability to provide informed consent

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Previous exclusion criteria as of 14/10/2025:

1. Previous bilateral-salpingectomy or bilateral-oophorectomy.
2. Postmenopausal (amenorrhoea ≥1year (uterus in situ) / FSH >40).
3. Previous tubal/ovarian/peritoneal malignancy
4. <12 months post cancer treatment
5. Pregnancy
6. Clinical suspicion of tubal/ovarian cancer at baseline
7. Inability to provide informed consent

Date of first enrolment
01/07/2018

Date of final enrolment
31/07/2030

Locations

Countries of recruitment
United Kingdom

England

Northern Ireland

Scotland

Wales

Study participating centre

Barts Health NHS Trust
Royal London Hospital
London
United Kingdom
E1 1FR

Study participating centre
University College London Hospital Foundation Trust
235 Euston Rd, Fitzrovia
London
United Kingdom
NW1 2BU

Study participating centre
Belfast Health & Social Care Trust
Belfast
United Kingdom
BT9 7AB

Study participating centre
Cambridge University Hospitals NHS Foundation Trust
Addenbrooke's Hospital
Hills Rd
Cambridge
United Kingdom
CB2 0QQ

Study participating centre
Manchester University NHS Foundation Trust
Southmoor Rd, Wythenshawe
Manchester
United Kingdom
M23 9LT

Study participating centre
Sandwell and West Birmingham Hospitals NHS Trust
Midland Metropolitan University Hos
Grove Lane
Smethwick
United Kingdom
B66 2QT

Study participating centre
Guy's and St Thomas' NHS Foundation Trust
Great Maze Pond
London
United Kingdom
SE1 9RT

Study participating centre
Imperial College Healthcare NHS Trust
The Bays
S Wharf Rd
Paddington
London
United Kingdom
W2 1NY

Study participating centre
Aberdeen Royal Infirmary, NHS Grampian
Foresterhill
Aberdeen
United Kingdom
AB25 2ZN

Study participating centre
Maidstone and Tunbridge Wells NHS Trust
Tonbridge Rd
Tunbridge Wells
United Kingdom
TN2 4QJ

Study participating centre
Norfolk and Norwich University Hospitals
Colney Ln
Norwich
United Kingdom
NR4 7UY

Study participating centre

Gateshead Health NHS Foundation Trust
Queen Elizabeth Ave
Gateshead
United Kingdom
NE9 6SX

Study participating centre
University Hospitals Bristol NHS Foundation Trust
Upper Maudlin St
Bristol
United Kingdom
BS2 8HW

Study participating centre
Brighton and Sussex University Hospitals NHS Trust
Eastern Rd
Brighton
United Kingdom
BN2 5BE

Study participating centre
Oxford University Hospitals
Headley Way, Headington
Oxford
United Kingdom
OX3 9DU

Study participating centre
Cardiff and Vale NHS Trust
Cardiff
United Kingdom
CF14 4XW

Study participating centre
Northwick Park and St Mark's Hospitals
Watford Rd, Harrow
London
United Kingdom
HA1 3UJ

Study participating centre
University Hospitals of Leicester NHS Trust
Infirmary Square
Leicester
United Kingdom
LE1 5WW

Study participating centre
Portsmouth Hospitals NHS Trust
Southwick Hill Rd, Cosham
Portsmouth
United Kingdom
PO6 3LY

Study participating centre
East Kent Hospitals University NHS Foundation Trust
Ethelbert Rd
Canterbury
United Kingdom
CT1 3NG

Study participating centre
Ninewells Hospital, NHS Tayside
James Arrott Dr
Dundee
United Kingdom
DD2 1SY

Study participating centre
University Hospital Southampton NHS Foundation Trust
Tremona Rd
Southampton
United Kingdom
SO16 6YD

Study participating centre
St George's University Hospitals NHS Foundation Trust
Blackshaw Road Tooting

London
United Kingdom
SW17 0QT

Study participating centre
Worcestershire Acute Hospitals NHS Trust
Worcestershire Royal Hospital
Charles Hastings Way
Worcester
United Kingdom
WR5 1DD

Study participating centre
Royal Devon and Exeter Hospital
Gladstone Road
Exeter
United Kingdom
EX1 2ED

Study participating centre
North Tees and Hartlepool NHS Foundation Trust
University Hospital of Hartlepool
Holdforth Road
Hartlepool
United Kingdom
TS24 9AH

Study participating centre
Liverpool Women's NHS Foundation Trust
Liverpool Womens Hospital
Crown Street
Liverpool
United Kingdom
L8 7SS

Study participating centre
County Durham and Darlington NHS Foundation Trust
Darlington Memorial Hospital
Hollyhurst Road

Darlington
United Kingdom
DL3 6HX

Study participating centre
Nottingham University Hospitals NHS Trust - Queen's Medical Centre Campus
Nottingham University Hospital
Derby Road
Nottingham
United Kingdom
NG7 2UH

Study participating centre
Royal Surrey County Hospital
Egerton Road
Guildford
United Kingdom
GU2 7XX

Study participating centre
Royal Infirmary of Edinburgh at Little France
51 Little France Crescent
Old Dalkeith Road
Edinburgh
Lothian
United Kingdom
EH16 4SA

Study participating centre
Royal Victoria Infirmary
Queen Victoria Road
Newcastle upon Tyne
United Kingdom
NE1 4LP

Study participating centre
Royal Derby Hospital
Uttoxeter Road
Derby
United Kingdom
DE22 3NE

Study participating centre
East Lancashire Hospitals NHS Trust
Royal Blackburn Hospital
Haslingden Road
Blackburn
United Kingdom
BB2 3HH

Study participating centre
South Tees Hospitals NHS Foundation Trust
James Cook University Hospital
Marton Road
Middlesbrough
United Kingdom
TS4 3BW

Study participating centre
NHS Greater Glasgow and Clyde
J B Russell House
Gartnavel Royal Hospital
1055 Great Western Road Glasgow
Glasgow
United Kingdom
G12 0XH

Study participating centre
Northampton General Hospital NHS Trust
Cliftonville
Northampton
United Kingdom
NN1 5BD

Study participating centre
Royal Cornwall Hospitals NHS Trust
Royal Cornwall Hospital
Treliske
Truro
United Kingdom
TR1 3LJ

Study participating centre
Leeds Teaching Hospitals NHS Trust
St. James's University Hospital
Beckett Street
Leeds
United Kingdom
LS9 7TF

Study participating centre
Ysbyty Gwynedd Hospital (yg NHS Trust)
Ysbyty Gwynedd
Penrhosgarnedd
Bangor
United Kingdom
LL57 2PW

Study participating centre
Royal United Hospitals Bath NHS Foundation Trust
Combe Park
Bath
United Kingdom
BA1 3NG

Sponsor information

Organisation
Queen Mary University of London

ROR
https://ror.org/026zzn846

Funder(s)

Funder type
Charity

Funder Name
Barts and the London Charity

Results and Publications

Individual participant data (IPD) sharing plan

The data sharing plans for the current study are unknown and will be made available at a later date.

IPD sharing plan summary

Other

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Protocol article	protocol	01/02/2021	11/09/2020	Yes	No
HRA research summary			28/06/2023	No	No
Participant information sheet	version v4	16/04/2018	02/04/2019	No	Yes
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes
Study website	Study website	11/11/2025	11/11/2025	No	Yes