ISRCTN56164274 https://doi.org/10.1186/ISRCTN56164274

Urodynamics for prostate surgery trial: randomised evaluation of assessment methods

Submission date
04/04/2014

Recruitment status
No longer recruiting

Registration date
08/04/2014

Overall study status
Completed

Last Edited
07/07/2025

Condition category
Urological and Genital Diseases

[_] Prospectively registered
[X] Protocol
[X] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
The prostate gland sits around the exit of the bladder in men. As men get older, the prostate grows, and this can narrow the exit from the bladder, so that there is restriction of flow. As a result, some men develop difficulty passing urine (voiding) as they age. For these men, prostate surgery can be helpful by removing the part of the prostate causing the narrowing, so that flow improves. However, for some men, almost identical symptoms of difficulty passing urine are due to underactive bladder. In other words, the bladder contraction is too weak, and is not effective at expelling the urine. This is a smaller group, but important, as these men may have no improvement after prostate surgery, while being exposed to risk of complications of surgery. Medical assessment of men with voiding problems typically involves discussing the symptoms, doing a physical examination of the prostate and measuring the urine flow rate. In many NHS hospitals, these are the only tests done before deciding whether to proceed to prostate surgery. In effect, voiding symptoms are presumed to be a result of prostate enlargement for these men, since it is the more common problem compared with bladder underactivity. However, this approach cannot identify which men actually have bladder underactivity as the cause of their voiding symptoms. So, in some hospitals an extra test is used, called urodynamics. Urodynamics is done to measure how much pressure the bladder generates when passing urine, because a high pressure shows the problem is obstruction, and a low pressure shows it is bladder weakness. Urodynamics involves gently putting a small tube into the bladder via the penis to measure the bladder pressure, and to fill the bladder with a sterile fluid (saline). Another small tube is gently placed into the rectum, via the anus, to measure abdominal pressures. Measuring abdominal pressure is necessary because any change in abdominal pressure can affect bladder pressure, and if the test did not allow for this it could give a misleading result. Urodynamics is safe, but some men find it uncomfortable or undignified, and a few develop urine infection afterwards. No studies have been conducted so far to tell us which of these two approaches to assessing men with voiding urinary problems is better overall.

Who can participate?
UPSTREAM – Phase I: Men who are experiencing bothersome lower urinary tract symptoms (LUTS) and are seeking further treatment, which may include the possibility of having surgery for your symptoms.
UPSTREAM – Phase II: Existing participants of the UPSTREAM trial (UPSTREAM – Phase I)

What does the study involve?
The UPSTREAM project consists of two phases, UPSTREAM – Phase I and UPSTREAM – Phase II. If you take part in the UPSTREAM – Phase I study, you will be asked to complete a questionnaire and a bladder diary, you will do a flow rate test, and we will check your urine for infection during a hospital visit. You will be assigned at random to have the standard NHS tests either with or without urodynamics. If you are assigned to the urodynamics group, the test will be done at another hospital visit. You will then discuss the results with your urologist and you will decide whether to have surgery, based on the results of the test and the answers to any questions you have for your urologist. You will be asked to complete symptom questionnaires at 6, 12 and 18 months after joining the study. These will analyse your urinary symptoms, your quality of life, satisfaction with testing, sexual function and health outcomes. You will do a follow-up flow rate test (two flow rate tests if you have surgery). You may be asked to have an interview with a qualitative researcher to discuss your opinions in more detail. This study will compare the two methods of assessing symptoms by finding out whether the men had similar relief of their symptoms. We will also study whether the urodynamic tests changed the decision for surgery in some of the men (how many men had surgery in each of the two groups?). We will assess the cost-effectiveness of the two management pathways, and study any side effects of the tests and the treatments.
In the follow-up study (UPSTREAM – Phase II), we want to find out the longer-term (5-year) results of treatment for the men's LUTS, and see how many men went on to receive surgery after the initial 18-months (i.e. after the original study, "UPSTREAM - Phase I"). In taking part in UPSTREAM - Phase II, men do not need to return to hospital for any clinical assessments. Instead, we will ask them to complete one questionnaire booklet about their urinary symptoms, the effect on their everyday life, and their general state of health. To thank men for their time we will offer them a £20.00 gift voucher upon receipt of the completed questionnaire. We will also securely collect information relevant to this study from central NHS records (such as information about relevant inpatient stays and outpatient attendances).

What are the possible benefits and risks of participating?
UPSTREAM – Phase I: The information will be important for men trying to decide on management of their symptoms, for the doctors advising them, and for the NHS in ensuring the best use is made of resources for this common problem. Side effects of the treatment include urinary infection and urinary retention.
UPSTREAM – Phase II: By taking part, men will be providing evidence for future men with bothersome LUTS who may be faced with similar decisions they and their urologist have had about assessing and treating your condition. We do not anticipate any disadvantages in taking part, although men will need to spend time completing the questionnaire.

Where is the study run from?
For Phase I of the UPSTREAM project, Urology departments of at least 26 NHS hospitals in England were responsible for the recruitment, assessment and treatment of UPSTREAM.
For the purpose of UPSTREAM - Phase II, no clinical assessments are proposed, rather data collection is via PROMS (questionnaires) and data extraction via central NHS records (e.g. NHS Digital linked data). Thus, it is not necessary for men to return to their local hospital, nor will they (or the coordinating research team) require contact with their Urology clinical care team.
The central (coordinating) research team based at the Bristol Randomised Trials Collaboration (BRTC), as part of the Bristol Trials Centre (BTC), will be responsible for coordinating and delivering the study components. North Bristol NHS Trust will have oversight of data collection and responsibility for reporting through the NIHR.

When is the study starting and how long is it expected to run for?
October 2014 to December 2023

Who is funding the study?
National Institute for Health and Care Research (NIHR) (UK)

Who is the main contact?
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Contact information

Type(s)
Scientific

Contact name
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Additional identifiers

ClinicalTrials.gov (NCT)
NCT02193451

Integrated Research Application System (IRAS)
153330

Integrated Research Application System (IRAS)
264738

Protocol serial number
HTA 12/140/01

Study information

Scientific Title
Urodynamics for Prostate Surgery Trial; Randomised Evaluation of Assessment Methods (UPSTREAM) for diagnosis and management of bladder outlet obstruction (BOO) in men

Acronym
UPSTREAM

Study objectives
In men with bothersome lower urinary tract symptoms (LUTS), we hypothesise that diagnostic categorisation of bladder outlet obstruction using invasive urodynamics improves patient selection for obstruction-relieving prostate surgery compared to a pathway with no invasive urodynamic testing. Consequently, this will make it less likely that the subgroup of men with LUTS who do not have bladder outlet obstruction will elect to undergo surgery, thereby reducing risk of harm from surgery and potentially worse symptom outcomes.

More details can be found at: http://www.nets.nihr.ac.uk/projects/hta/1214001
Protocol can be found at: http://www.nets.nihr.ac.uk/__data/assets/pdf_file/0004/117886/PRO-12-140-01.pdf

Added 11/12/2019:
Objectives of UPSTREAM – Phase II:
To answer the following questions at five years post-randomisation:
A. What are the symptomatic outcomes for LUTS, measured by the IPSS?
B. What are the surgery rates in the two diagnostic pathways (the relative proportion of men having surgery)?
C. Was additional diagnostic testing (e.g. UDS) undertaken after the completion of UPSTREAM - Phase I? (where possible)
D. What are the differential effects on other outcomes, such as symptom: severity and bother; sexual function; quality of life (QoL); and general health?
E. What is the cost-effectiveness from an NHS secondary care perspective using the QALY as the economic outcome?
F. What is the differential use of NHS resources?

Ethics approval required
Old ethics approval format

Ethics approval(s)
Phase I: NRES Committee South Central - Oxford B, 10/07/2014, REC ref: 14/SC/0237
Phase II: South Central – Berkshire, 01/11/2019, REC ref: 19/SC/0578; HRA approval 04/11/2019

Primary study design
Interventional

Study design
Phase I: Randomised controlled parallel-group trial
Phase II: Further follow up (five years post-randomisation) of the UPSTREAM randomised controlled trial (RCT)

Study type(s)
Diagnostic

Health condition(s) or problem(s) studied
Lower urinary tract symptoms; Urodynamics

Interventions
A care pathway based on urodynamic tests with invasive multichannel cystometry ('invasive urodynamics' active intervention arm) and a care pathway based on non-invasive tests, i.e. without multichannel cystometry ('usual care' control arm).

Intervention Type
Other

Phase
Not Applicable

Primary outcome(s)
Difference in lower urinary tract symptom (LUTS) between the two arms at 18 months, measured with the International Prostate Symptom Score (IPSS)

Key secondary outcome(s)
Current secondary outcome measures as of 05/02/2019:
1. Surgery rate (the relative proportion of men in each group having surgery up to 18 months after randomisation).
2. Cost-effectiveness analyses from the perspectives of the NHS, Personal Social Services and patients. Subsequent need for surgery will be recorded.
3. Adverse events of testing and treatment (e.g. infection, urinary retention).
4. Measures from the International Consultation on Incontinence Questionnaires (ICIQ) (Abrams et al., 2006) will be used alongside the IPSS, giving sensitive and comprehensive assessment of LUTS severity/ bother, sexual function, quality of life and satisfaction with urodynamic testing. The following will be measured at 6, 12 and 18 months:
4.1. IPSS
4.2. ICIQ Male LUTS (ICIQ-MLUTS)
4.3. ICIQ sexual function in Male LUTS (ICIQ-MLUTS-sex)
4.4. ICIQ urodynamics satisfaction (ICIQ-UDS-S) will be administered at a single time point after urodynamic testing for relevant patients.
5. Maximum urinary flow rate (Qmax) at 18 months. In men undergoing surgery in both arms, an additional Qmax measure at 4 months after operation will be used as a quality measure for surgery.
6. The EQ-5D-5L will be used to provide the quality of life weights used to calculate Quality Adjusted Life Years (QALYs).
7. Qualitative interviewing will explore user acceptability and influences on decisions made by the participating men and the surgeons.

UPSTREAM – Phase II (added 11/12/2019):
1. LUTS measured with the IPSS PROM at 5 years post-randomisation (objective A)
2. Alongside the IPSS (including the QoL measure), measures from selected International Consultation on Incontinence Questionnaires (ICIQs) will be used, collectively giving sensitive and comprehensive assessment of QoL, LUTS severity/bother, sexual function, and general health (objective D). The following measures will be used:
2.1. IPSS – including QoL
2.2. ICIQ Male LUTS (ICIQ-MLUTS)
2.3. ICIQ sexual function in Male LUTS (ICIQ-MLUTS-sex)
3. The EQ-5D-5L will be used to provide the QoL weights used to calculate QALYs (objective E)
4. Data for objectives 'B' (surgery rates), 'C' (diagnostic testing), and 'F' (resource use) will be obtained via a one-off bespoke data extraction of Health Episode Statistics (HES) and HES-Office of National Statistics (ONS) linked data via NHS Digital.
5. PROMs (standardised questionnaires) will form the "5-year follow up" questionnaire booklet, which will be completed at each participant's 5 years post-randomisation timepoint, or thereabouts (objectives A, D and E). Participants will be able to complete the questionnaire booklet via post, online or telephone.

6. Data extraction via NHS Digital: to assess surgery rates, whether additional diagnostic testing was undertaken after the completion of UPSTREAM - Phase I (where possible), and resource use (objectives B, C and F) the researchers will utilise individual-level data obtained via a bespoke data extraction of HES and HES-ONS linked data, via NHS Digital. The data extraction will include individual-level data about participants' relevant: inpatient stays; outpatient attendances: including procedures; radiology and accident and emergency (A&E) episodes; and cause of death (where applicable).
The researchers envisage the extraction taking place in 2022 to (ideally) include the last participant's 5-year post-randomisation timepoint. The exact date of extraction, however, will be decided in collaboration with NHS Digital to maximise data collection. The researchers may conduct an earlier extraction to inform the data analysis; this will be decided as the trial progresses.

Previous secondary outcome measures:
1. Surgery rate (the relative proportion of men in each group having surgery up to 18 months after randomisation).
2. Cost-effectiveness analyses from the perspectives of the NHS, Personal Social Services and patients. Subsequent need for surgery will be recorded.
3. Adverse events of testing and treatment (e.g. infection, urinary retention).
4. Measures from the International Consultation on Incontinence Questionnaires (ICIQ) (Abrams et al., 2006) will be used alongside the IPSS, giving sensitive and comprehensive assessment of LUTS severity/ bother, sexual function, quality of life and satisfaction with urodynamic testing. The following will be measured at 6, 12 and 18 months:
4.1. IPSS
4.2. ICIQ Male LUTS (ICIQ-MLUTS)
4.3. ICIQ sexual function in Male LUTS (ICIQ-MLUTS-sex)
4.4. ICIQ quality of life (ICIQ-QoL)
4.5. ICIQ urodynamics satisfaction (ICIQ-UDS-S) will be administered at a single time point after urodynamic testing for relevant patients.
5. Maximum urinary flow rate (Qmax) at 18 months. In men undergoing surgery in both arms, an additional Qmax measure at 4 months after operation will be used as a quality measure for surgery.
6. The EQ-5D-5L will be used to provide the quality of life weights used to calculate Quality Adjusted Life Years (QALYs).
7. Qualitative interviewing will explore user acceptability and influences on decisions made by the participating men and the surgeons.

Completion date
31/12/2023

Eligibility

Key inclusion criteria
UPSTREAM – Phase I:

Current inclusion criteria as of 05/02/2019:
1. Men seeking further treatment for their bothersome lower urinary tract symptoms (LUTS) which may include surgery
2. Willing to be randomised

Previous inclusion criteria:
1. Men considering undergoing surgery as a treatment option for their bothersome LUTS
2. Willing to be randomised

UPSTREAM – Phase II (added 03/12/2019):

PROMS (questionnaire) study component:
Inclusion criteria: Men randomised (enrolled) to the UPSTREAM trial (Phase I) who were willing to be contacted for long term follow up, as indicated on their original (Phase I) consent form.

NHS Digital data extraction study component:
Inclusion criteria: Men randomised (enrolled) to the UPSTREAM trial (Phase I).

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Sex
Male

Total final enrolment
820

Key exclusion criteria
UPSTREAM – Phase I:

Patients who:
1. are unable to pass urine without a catheter (urinary retention)
2. have a relevant neurological disease
3. undergoing active treatment, or on active surveillance, for prostate or bladder cancer
4. have previously had prostate surgery
5. are not medically fit for surgery, or unable to complete outcome assessments
6. do not consent to be randomised

UPSTREAM – Phase II (added 03/12/2019):

PROMS (questionnaire) study component:
1. Patients who are not already randomised (enrolled) to the UPSTREAM trial (Phase I)
2. UPSTREAM (Phase I) participants who:
2.1. are not willing to be contacted about long term follow up
2.2. have withdrawn trial participation, or at least withdrawn permission to be contacted in the future for long term follow up, at the time of their 18-month timepoint
2.3. do not consent and/or are not willing or able to comply with essential study procedures of this further follow up (UPSTREAM - Phase II)

NHS Digital data extraction study component:
1. Patients who are not already randomised (enrolled) to the UPSTREAM trial (Phase I)
2. UPSTREAM (Phase I) participants who have withdrawn permission for the study to continue to access sections of their medical notes and NHS records, ONS and NHS Central registers information, at the time of their 18-month timepoint

Date of first enrolment
01/04/2014

Date of final enrolment
31/12/2016

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
Southmead Hospital
Bristol
United Kingdom
BS10 5NB

Study participating centre
Freeman Hospital
Newcastle upon Tyne
United Kingdom
NE7 7DN

Study participating centre
Royal Devon and Exeter Hospital
Exeter
United Kingdom
EX2 5DW

Study participating centre
Musgrove Park Hospital
Taunton
United Kingdom
TA1 5DA

Study participating centre
Southport and Formby District General Hospital
Southport
United Kingdom
PR8 6PN

Study participating centre
Kingston Hospital
Kingston upon Thames
United Kingdom
KT2 7QB

Study participating centre
Royal Hallamshire Hospital
Sheffield
United Kingdom
S10 2JF

Study participating centre
Epsom General Hospital
Epsom
United Kingdom
KT18 7EG

Study participating centre
Queen Elizabeth Hospital
Birmingham
United Kingdom
B15 2TH

Study participating centre
Kent and Canterbury Hospital
Canterbury
United Kingdom
CT1 3NG

Study participating centre
Salisbury District General Hospital
Salisbury
United Kingdom
SP2 8BJ

Study participating centre
Lister Hospital
Stevenage
United Kingdom
SW1W 8RH

Study participating centre
Churchill Hospital
Oxford
United Kingdom
OX3 7LE

Study participating centre
The James Cook University Hospital
Middlesbrough
United Kingdom
TS4 3BW

Study participating centre
The Queen Elizabeth Hospital
King's Lynn
United Kingdom
PE30 4ET

Study participating centre
Royal Free Hospital
London
United Kingdom
NW3 2QG

Study participating centre
Royal Liverpool and Broadgreen University Hospitals NHS Trust
Liverpool

United Kingdom
L7 8XP

Study participating centre
Torbay Hospital
Torbay
United Kingdom
TQ2 7AA

Study participating centre
Southampton General Hospital
Southampton
United Kingdom
SO16 6YD

Study participating centre
Kettering General Hospital
Kettering
United Kingdom
NN16 8UZ

Study participating centre
Charing Cross Hospital
London
United Kingdom
W6 8RF

Study participating centre
Royal Berkshire Hospital
Reading
United Kingdom
RG1 5AN

Study participating centre
Derriford Hospital
Plymouth
United Kingdom
PL6 8DH

Study participating centre
West Cumberland Hospital
Whitehaven
United Kingdom
CA28 8JG

Study participating centre
Sunderland Royal Hospitals
Sunderland
United Kingdom
SR4 7TP

Study participating centre
St George's Hospital
London
United Kingdom
SW17 0QT

Sponsor information

Organisation
Southmead Hospital (UK)

ROR
https://ror.org/05d576879

Funder(s)

Funder type
Government

Funder Name
Health Technology Assessment Programme

Alternative Name(s)
NIHR Health Technology Assessment Programme, Health Technology Assessment (HTA), HTA

Funding Body Type

Government organisation

Funding Body Subtype
National government

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan
Anonymous research data will be stored securely and kept for future analysis. Members of the PMG will develop a data sharing policy consistent with UoB policy. Data will be kept anonymous on secure access computers. Requests for access to data must be via a written confidentiality and data sharing agreements (DSA), which will be confirmed by the CI (or appointed nominee); DSA templates are, for example, available from the University of Bristol's research data services facility (RDSF) website.
The DSA should cover limitations of use, transfer to 3rd parties, data storage and acknowledgements. The person applying for use of the data will be scrutinised for appropriate eligibility by members of the research team. All requests will require their own separate REC approval prior to data being released.

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	qualitative interview results	01/01/2019		Yes	No
Results article	baseline results and diagnostic findings	01/05/2019	29/11/2019	Yes	No
Results article		01/09/2020	10/09/2020	Yes	No
Results article	long-term follow-up	01/07/2025	07/07/2025	Yes	No
Protocol article		10/12/2015		Yes	No
HRA research summary			28/06/2023	No	No
HRA research summary			28/06/2023	No	No
Other publications		01/05/2016	29/11/2019	Yes	No
Other publications		01/09/2015	29/11/2019	Yes	No
Other publications	establishing severity threshold scores for lower urinary tract symptoms patient reported outcomes measures	29/03/2020	23/05/2022	Yes	No
Other publications	evaluation and ICIQ-BD completion rates	01/01/2022	23/05/2022	Yes	No
Other	exploratory findings	15/12	23/05		

publications		/2021	/2022	Yes	No
Other publications	qualitative study of men's experiences and recommendations for patient-centred practice	14/10 /2020	23/05 /2022	Yes	No
Other publications	quality control of uroflowmetry and urodynamic data	18/03 /2020	23/05 /2022	Yes	No
Plain English results			04/01 /2024	No	Yes
Protocol file	version 1.0	21/10 /2019	04/08 /2023	No	No
Statistical Analysis Plan		03/10 /2017		No	No
Study website	Study website	11/11 /2025	11/11 /2025	No	Yes