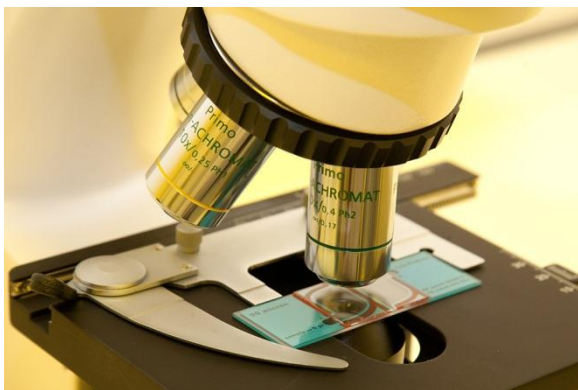


## Cambridge IVF – Andrology Service User Guide



# A User Guide to Andrology Services at Cambridge IVF



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### INTRODUCTION

The Andrology Laboratory at Cambridge IVF is a specialist laboratory providing an important accessory service both in the diagnosis and treatment of the infertile couple. The laboratory's main function is to provide diagnostic semen analysis, serving both the needs of Cambridge IVF and our patients and to General Practitioners in Cambridge and the wider surrounding region. Cambridge IVF has also established a gamete cryo-storage facility (sperm bank) which provides a vital service to our patients and to oncology practitioners as well as storing and providing donor sperm for use in assisted conception procedures. This information serves to give users the information they need to advise and refer patients into the system in a way that will allow us to offer the most efficient service possible to our patients and service users.

If after reading this manual you still have further questions (no matter how trivial you might imagine them to be), please feel free to contact us using the telephone number on the back page of this information leaflet or e-mail us at [cambridgeivf@addenbrookes.nhs.uk](mailto:cambridgeivf@addenbrookes.nhs.uk).

### Normal Opening Hours

Appointments are available to semen analysis patients Monday, Wednesday and Fridays between the hours of 09:00 and 15:00. On Tuesdays and Thursdays we have an extended day whereby appointments are available between 08:00 and 18:30. Semen analysis appointments are not available on bank holidays. Out of hours cover is only provided for urgent sperm banking referrals.

Cambridge IVF does **not** operate a sample 'Drop in Service' as semen analysis is a time critical test; specimens must be produced on site or at the pre-arranged time.

### SERVICES PROVIDED;

#### 1. Diagnostic Semen Analysis

Almost 1 in every 6 couples will have difficulty conceiving naturally and be referred for fertility investigations. The single most common diagnosis is 'sperm dysfunction' or 'male factor' infertility which is apparent in one form or another in approximately 30% of all men referred. A comprehensive and high quality semen analysis is essential to the diagnosis and treatment of male factor infertility and of treatment of the infertile couple as a whole.



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The laboratory team at Cambridge IVF have a wealth of experience in performing the range of tests which in combination provide a complete and accurate appraisal of semen samples and sperm function. The laboratory tests utilised are performed in accordance with the guidance set out by the World Health Organisation, the British Andrology Society (BAS) and the Association of Biomedical Andrologists (ABA). The laboratory subscribes to the National External Quality Assurance Scheme (UKNEQAS) for reproductive medicine, which includes semen analysis.

### Requesting a Semen Analysis for Infertility Screen or Post Vasectomy

The Patient should be provided with the following;

- **A completed sample request form (C.IVF/LabForm/Andro/13)**  
Please ensure that the patients name, NHS number, address and date of birth are completed along with details of his partner if possible. Remember to complete the practice information or use the practice stamp in the relevant section and indicate the type of test you are requesting. Include any other relevant details including previous semen analyses, history of testicular trauma or injury, genetic disease, previous radio or chemotherapy, chronic illness, recent febrile illness and any on-going medication. Although we adopt a universal precautions approach to our work, **please clearly indicate any patient who you know to be an infection risk.**
- **Patient information leaflet**  
You are welcome to print this document and provide copies to your colleagues. Copies of all andrology information and forms will also be available via our website, [www.cambridgeivf.org.uk](http://www.cambridgeivf.org.uk). If you have any comments on the information, please e-mail us at [cambridgeivf@addenbrookes.nhs.uk](mailto:cambridgeivf@addenbrookes.nhs.uk).

**Please do not use standard pathology request forms for semen analysis requests as this may result in delay and the patient being referred to the wrong laboratory or the sample being discarded if the test type requested is not clear.**

### Booking a Semen Analysis Appointment

Once they have been provided with a completed referral form from their referring doctor, patients must telephone 01223 349017 to make an appointment. This service is available between the hours of 9am and 12pm Monday to Friday. Messages can be left on the answer machine and we will endeavour to get back to





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the patients within 48 hours. Alternatively patients can email enquiries@cambridgeivf.org.uk and we will reply with 48 hours.

### Producing the Semen Sample

Samples can be produced at home for patients living within 30 minutes of Cambridge IVF. For other patients, all samples should be produced on site here at Cambridge IVF in our private sample production rooms. We will provide each patient with a sterile, non-toxic, batch tested sample container to produce the sample into. These can be collected from Cambridge IVF prior to the appointment date for patients producing at home or will be provided for patients producing samples on site when they arrive. We discourage patients from taking a partner with them into the room as the sample is more likely to be contaminated or incomplete. Patients are requested to:

- Abstain from intercourse for 2-5 days before producing the sample (but no more than 7 days). Longer periods of abstinence are not usually recommended as this can negatively affect the quality of the sample.
- Hands and genitals should be washed and dried prior to sample production
- Samples should be produced by masturbation (the withdrawal method is not recommended) and the sample collected into the sterile sample container provided.
- No other alternate container should be used and samples which are not produced into an appropriate container will be rejected.
- Ordinary condoms should never be used as they contain spermicide which will kill the sperm.
- Ensure that the container is correctly labelled with the patient's full name and date of birth, and that the referral form is also completed including the date and time of sample production. Samples which are not labelled correctly will be rejected.

### The Semen Analysis Test

We will examine a number of important factors (detailed below) according to the WHO (2010) guidelines and the Association of Biomedical Andrologists Guidelines for Good Practice (ABA-GGP, 2012). You must consider that the 'normal' values we report against are to be considered as guidelines only and should not be viewed as clear cut threshold values against which treatment is solely directed.



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- **Sperm Concentration (sperm count)**  
Reported as millions per millilitre of semen. Normal samples are those reported with a concentration of 15M/ml or more and a total count in the ejaculate of greater than 39 million sperm.
- **Sperm Motility**  
Sperm are graded on their ability to swim in a progressive manner. Those sperm which are progressively motile (grades 'a' and 'b' motility are combined together to report as 'Progressively Motile' and should account for more than 32% of the total sperm population. Non-progressive sperm (those which exhibit tail motion but are not moving forwards, grade 'c') and those which are immotile (grade 'd') are also reported. Although the WHO guidelines suggest combining a and b grade motility together, the ABA-GGP (2012) state the importance of maintaining 4 grades of motility in semen analysis reporting and this practice has been adopted by Cambridge IVF.
- **Sperm Volume**  
The sample volume should be greater than 1.5 millilitres.
- **Sperm Morphology**  
The shape and size of the sperm are assessed using a stained smear. A sample with less than 4% normal forms reported should be considered as sub-fertile.
- **Seminal pH**  
The pH of the sample should be greater than 7.2
- **Antisperm Antibodies (where test is requested)**  
Antisperm antibodies cause agglutination of sperm (sperm sticking together). They are seen in approximately 5% of cases and may be indicated by trauma to the testes (such as sports injuries) or vasectomy reversal even where the other sperm parameters have returned to the normal range.

### Reporting of Results

A written report will be dispatched to the referring practitioner within 9 working days of the semen analysis being performed. Approved diagnostic terminology (as described below) is used to report the results along with an overall comment. All reports are checked and signed off by a HCPC State Registered Clinical Scientist. Results will not be communicated directly to patients over the telephone. Patients are requested to allow 2 weeks for the results to be available, and that they should contact their referring surgery or clinic to get them. Patients are advised to factor in the time for reporting of results when booking their appointment, particularly if they have a follow up appointment with the referrer scheduled. A repeat analysis may also be needed so patients are encouraged to book their appointments straight after referral to avoid delays.



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### Interpretation of Results

There are strict and defined guidelines for the measurement and quality control of semen variables. It is important to realise that these values are not absolute in predicting an individual patients' fertility and no one parameter should ever be considered in isolation unless the result is absolute (for example the sperm count is reported as zero).

Laboratory testing is standardised to minimise procedural variation but this cannot be excluded completely as certain parts of the process of delivery are outside the control of Cambridge IVF. For example a man may miss some of the sample and choose not to declare this.

The following terminology is used to report IVF semen analysis findings;

**Table 1:** Terminology used in the reporting of semen analysis findings.

Terminology	Description	WHO Reference Limit (2010)
Normozoospermia	Normal Semen Profile	N/A
Oligozoospermia	Reduced Sperm Concentration	<15M/ml
Asthenozoospermia	Reduced Sperm Motility	<32% Progressive
Teratozoospermia	Reduced Sperm Morphology	<4% Normal Forms
Azoospermia	No sperm in ejaculate	N/A
Aspermia	No ejaculate	N/A
Globozoospermia	No acrosome present	N/A
Leucocytospermia	Elevated Leucocyte population	>1M/ml
Necrospermia	No viable sperm	N/A



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Oligoasthenoteratozoospermia (OATS)	Terminology to describe reduced concentration, morphology and motility	N/A
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An appraisal of the overall balance of the sample is much more indicative of fertility potential and should be considered alongside any investigations of the female partner concurrently when forming a diagnosis. The term 'low sperm count' should be considered ambiguous and is often anxiously misinterpreted by a patient despite the count being towards the lower end of the scale being balanced to some extent against a higher than average motility score.

Any enquiries regarding interpretation of a semen analysis result should be directed to the Andrology team at Cambridge IVF (contact details on the back cover of this document).

### Uncertainty of Results

Uncertainty exists in any measurement of biological processes especially those calculated by subjective means with potential inter-operator variability. Such variability can be reduced by robustly standardising test methodology and equipment and by ensuring all staff participate in a program of regular quality assurance monitoring and evaluation. To minimise uncertainty in semen analyses and reduce the effect of sampling error we perform multiple replicate counts, comparing the results to ensure any difference falls into a non-significant tolerance limit of <5% as described by the WHO (2010) guidelines. Semen assessments will include no less than 200 sperm where practicable and tests are repeated to ensure a minimum of 400 sperm are routinely assessed. This practice serves to reduce the probability of random events or sampling errors confounding the reported results. If there are insufficient sperm in the sample to allow assessment of 200 sperm, this will be highlighted on the report to draw the attention to the requester that the uncertainty of this result may be elevated and certainly will deviate from our standard calculated uncertainty for the specific test.

### Repeating of Tests

If one or more of the factors listed in table 1 above is found to be borderline or outside the normal range, we recommend the referral of the patient for a repeat analysis. It should be noted that if a patient has been unwell, stressed or is on certain medication this can affect the quality of the semen sample and a second test is required to confirm the diagnosis. As semen quality can vary significantly with time we do not recommend that a diagnosis be formed on the basis of a single semen analysis in any instance whether the result reported is normal or abnormal.



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### Referral for Assisted Conception Treatment

If you wish to send a patient and his partner for further investigation and subsequent fertility treatment either for NHS funded or self-funded treatment, they can be referred to Cambridge IVF or one of the other providers in the region. Referrals to Cambridge IVF should be directed to 'The Lead Clinician' at our address on the back page of this information brochure.

### 2. Post Vasectomy Semen Analysis (PVSA)

Semen testing to confirm azoospermia following vasectomy is absolutely essential. PVSA is a simplified semen analysis procedure which still adheres to the same stringent guidelines for sample production. The rules for sample production are exactly the same as for fertility testing with regard to hygiene, abstinence, appropriateness of sample container and sample production by masturbation.

It is essential that the patient collects his entire sample for a PVSA sample. If this is not the case the test will not be performed and an appointment will be made for the man to repeat the test.

To confirm azoospermia the entire sample is centrifuged and the resultant cellular pellet is observed using phase contrast microscopy to confirm the presence or absence of sperm in the ejaculate.

### PVSA Appointments

Appointments for PVSA are available by request in exactly the same way as those for diagnostic semen analysis for patients who are **16 weeks or more** post vasectomy procedure and **have ejaculated more than 20 times following their vasectomy procedure**. The referring clinician should provide the patient with the following;

- 2 x completed sample request form
- Patient information leaflet

The referring clinician should clearly state who is requesting the PVSA and when the vasectomy was performed on the two sample request forms. The patient should book 2 appointments **at least 1 month but no more than 2 months apart** to produce their 2 semen samples. Without the two analyses we are unable to offer clearance.





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### Clearance post vasectomy

Reference ranges have been agreed locally for clearance post vasectomy and are defined as follows;

- 2 azoospermic semen samples
- 1 specimen with <10,000 immotile sperm followed by 1 azoospermic semen sample

### 'Special' Clearance

Persistent immotile sperm can exist in men due to either a failure to ejaculate regularly or anatomical anomalies which lead to retention in the genital tract. Special clearance can be granted in such cases where a concentration of less than 10,000 immotile sperm remains 28 weeks following vasectomy.

Clearance is not normally granted unless a prior arrangement exists with the surgical providers and is usually issued in writing by the individual surgeon or GP.

Cambridge IVF cannot be held accountable where clearance has been granted in such circumstances and a patient then goes on to achieve an unplanned pregnancy.

### **3. Sperm Cryopreservation and Storage**

The Cryostore at Cambridge IVF contains gametes and embryos stored from our infertility patients and also gametes from patients who are referred for fertility preservation prior to chemo or radio therapy, urological surgery or gender reassignment.

Referrals arrive from oncology, haematology and urology units across the region and are processed as high priority; where possible, an out of hours referral service is offered to urgent patients whose treatment cannot be deferred to ensure everyone is offered the opportunity to bank their sperm prior to their treatment.

### **What is Sperm Cryopreservation?**

The sperm sample is analysed and then mixed with a solution designed to help it survive the freezing process called a 'cryoprotectant'. The mixture is then loaded into special straws, 0.5ml of the mixture in each and is frozen and stored in liquid nitrogen (at temperatures less than -160°C). Each straw is clearly labelled with the patient name, date of birth, hospital number and the date of freeze.



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### Requesting Sperm Storage

All patients who require sperm storage should receive the relevant patient information (C.IVF/LabFORM/Inform/7). A referral for freezing form (C.IVF/LabForm/Andro/9) should be completed before the referral is made and must include the following additional information;

- Reason for storage
- Chemotherapy Plan (if appropriate)
- The date treatment is to commence or surgery is booked (if appropriate)
- Results of HIV 1+2, Hepatitis B (core antibody and surface antigen) & Hepatitis C screening (a copy of the blood results is required)
- Any assisted conception plan in place
- Whether the patient has had/planning on having a scan which involves a radioactive dye (dates and times are required).
- Contact name and contact details of the referring healthcare professional.

Upon completion of the referral form, telephone Cambridge IVF to book the appointment in the presence of the patient where possible to ensure an appointment date is arranged as soon as possible. Non-urgent completed referral forms can be faxed or posted; patients will be given the next available appointment by post or over the telephone.

### Payment of Freezing and Storage Fees

Referrals for patients for storage prior to an oncology-related procedure which is likely to affect their fertility will usually, but not in all cases, have their gamete storage funded by the NHS. Patients who require storage prior to assisted conception treatment, vasectomy or gender reassignment surgery normally fund the storage themselves. The fee for freezing sperm includes storage for the first year; an annual storage fee is then applied for every year that the samples remain in storage thereafter.

### Surgical Sperm Retrieval (SSR)

In some cases patients are unable to produce a semen sample by ejaculation and in such situations it is possible to retrieve sperm surgically. This procedure can be arranged prior to the commencement of treatment where possible but is usually regarded as a last resort. Should SSR be required, the patient will need to attend Cambridge IVF to be consented and receive the relevant paperwork prior to the procedure being performed.

### Family Planning

The drugs which are used in chemotherapy can cause damage to sperm DNA which could affect any subsequent pregnancy resulting in the birth of a baby with an



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abnormality or birth defect. For this reason it is advisable for patients to use contraception during their treatment and for 12 months following on from its cessation. Some treatments will cause permanent and irreversible infertility or sterility, others will not. It is impossible for us to predict the effect a specific treatment will have on an individual or give an indication of when normal fertility will return. It is therefore very important that patients return to the fertility unit for review and semen analysis post treatment.

### Review and repeat sperm testing

Fertility can and will return in some patients, sometimes within months of the cessation of treatment, sometimes years later. We advise all patients who have banked sperm to return to the clinic for a review and semen analysis 12 months after they finish their treatment and again at 24 months post treatment. This is the only way we can provide accurate information on an individual's fertility to allow them to best plan contraception or trying for a baby. The 12 month review can be arranged by the patient direct with Cambridge IVF at no cost to those patients referred on an NHS funded care pathway.

### Notes for referring clinicians

As there is no central funding for sperm storage a referral letter will be deemed to be an official order unless the patient has agreed to fund his own storage. It remains the responsibility of the referring centre to obtain a signed undertaking to pay in such circumstances prior to referral.

The Andrology Service must be notified of any requests for storage by;

- Faxing a referral form to 01223 726373 and telephoning 01223 349017 in the event that the referral is urgent and an appointment is needed immediately. For **critical referrals** out of hours, the laboratory on-call scientist can be contacted on 07702 959451.
- Faxing a referral and awaiting contact from Cambridge IVF to arrange an appointment in less urgent situations.
- Arrangements can be made to have samples collected from or sent to the department for patients who are too ill to attend Cambridge IVF. In such circumstances consent will need to be taken at the referring centre by a member of the Cambridge IVF team by prior arrangement.

The referring centre should arrange for HIV 1&2 and Hepatitis B (core antibody and surface antigen) & C screening prior to the patients attendance for storage to ensure that the processing and storage of samples can proceed without unnecessary delay.

The patient should be provided with a copy of our sperm storage information and asked to consider the following key points prior to attending to store sperm;

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- Distance to travel to produce the sample
- The likelihood of becoming infertile as a result of the treatment
- The fate of their stored sperm in the event of their death or mental incapacity
- The cost associated with storing sperm (if self-funding)
- That the quality of the stored sperm will have a bearing on the availability and chances of success of any subsequent assisted conception treatment

Storage of sperm must be encouraged, yet at the choice of the patient. This is particularly important in adolescent individuals who must make the decision free from coercion by either the referring centre or family members and friends. In such cases the referring centre will need to assess the maturity and competence of the individual (Gillick Competence) prior to making the referral.

In the event of the death of a patient who has banked sperm the referring centre should write to Cambridge IVF to inform us as soon as possible after the event that the patient has died to allow us to comply with the patient's wishes and legislator requirements of the Human Fertilisation and Embryology Act (2008).

Any referral for sperm banking implies acceptance of the terms and conditions as stated above.

### Queries or Complaints

If you have any questions regarding any part of the Andrology Service provided by Cambridge IVF please do not hesitate to contact us using the contact details on the back of this information at any time between the hours of 8:00 and 17:00. If you are unhappy with any part of the service or wish to speak to someone about an issue relating to your care please contact or lead clinical scientist or if you prefer the Patient Liaison Service (PALS) at Addenbrooke's Hospital who you can reach by e-mailing [pals@addenbrookes.nhs.uk](mailto:pals@addenbrookes.nhs.uk) or telephoning extension 2756 at Addenbrooke's Hospital.

### Key Service Personnel

- Karen McPhee (Andrology Service Administrator)  
☎ 01223 349017 e: [karen.mcphee@addenbrookes.nhs.uk](mailto:karen.mcphee@addenbrookes.nhs.uk)
- Stephen Harbottle (Consultant Clinical Scientist and Person Responsible)  
☎ 01223 349014 e: [stephen.harbottle@addenbrookes.nhs.uk](mailto:stephen.harbottle@addenbrookes.nhs.uk)
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