



## Examination of Sexual Cases

### 1 Purpose

The purpose of this procedure is to describe those procedures required for the examination of sexual assault cases by Evidence Recovery scientists and technicians in Forensic DNA Analysis, in addition to those described in QIS document 17142 (Examination of Items).

### 2 Scope

This procedure applies to all Forensic DNA Analysis staff that examine or interpret examinations of evidentiary items. This standard operating procedure is in conjunction with individual methods for particular screening tests. Interpretations and limitations of reporting are to be found in each method.

### 3 Definitions

- Refer to QIS document 23849 (Common DNA Analysis Terms and Acronyms) for a comprehensive list of abbreviations.
- All references to microscopy, refer to QIS document 17189 (Examination For & Of Spermatozoa)
- All references to Acid Phosphatase (AP), refer to QIS document 17186 (The Acid Phosphatase Screening Test for Seminal Stains)
- All references to Phadebas, refer to QIS document 17193 (Phadebas Test For Saliva)
- All references to Tetramethylbenzidine, refer to QIS document 17190 (Tetramethylbenzidine Screening Test for Blood)
- All references to p-30, refer to QIS document 17185 (Detection of Azoospermic Semen in Casework Samples)
- A semen negative item is an item which has either tested negative for spermatozoa microscopically and tested negative for acid phosphatase; or tested negative for spermatozoa microscopically, tested positive for acid phosphatase and tested negative for P30.

### 4 General Principles

Refer to the general principles contained in QIS document 17142 (Examination of Items).

#### 4.1 Examination Strategies

An examination strategy must be prepared for all SAIKs which are examined. This strategy must include:

- For each item to be examined, what biological fluid is to be screened for
- Items which require no further action
- Items which may only require examination pending presumptive/screening results
- Sample submission strategies (i.e. extraction type, pooling, retain supernatant for Phadebas testing etc).

The examination strategy must be reviewed by a scientist competent to perform the examinations contained in the strategy.

The following are general principles which are used to develop examination strategies for SAIKs, however these principles must be considered within the context of the case history:

- Female SAIKs which are semen negative, any external intimate swabs are submitted for cells (i.e. vulval and perianal)
- Where the complainant is a minor or has an intellectual impairment which may mean that the provided case history is unreliable, all possible offence scenarios are considered.
- Where the complainant is an adult who has lost consciousness, has impaired memory or has consumed alcohol or drugs prior to or during the offence which may impact on memory, all possible offence scenarios are considered.
- Consider previous intercourse with same or different partner, prior to the offence. For digital only female complainant cases with prior intercourse, submit external swabs for DLYS with no testing. For male SAIK swabs, consider submitting penile swabs for DLYS where previous intercourse with another partner has occurred.
- Consider the number of offenders – for male SAIKs consider submitting penile swabs for DLYS (with no testing) to separate epithelial and spermatozoa.
- For child complainants, treat all vaginal swabs as external swabs for semen or cells.
- Samples taken from areas of biting, licking or kissing (or other oral contact) are submitted for CSUP. This does not include swabs taken from the mouth (internal or external), anal and vaginal areas which may give false positive results.

## 5 Examination

The general examination procedures documented in QIS document 17142 (Examination of Items) apply to the examination of sexual cases.

## 6 Specific Examination Strategies

Refer to Section 6.2 of QIS document 17189 (Examination for and of Spermatozoa) for procedures relating to making a suspension and preparing, staining and reading microscope slides.

### 6.1 Sexual Assault Investigation Kits

Appendix 1 describes the workflow for presumptive/screening testing of SAIKs. Before commencing the examination of a SAIK an examination strategy must be devised and reviewed in accordance with Section 4.1 of this document.

If there are issues related to the collection or documentation of a SAIK this must be fed back to the relevant FMO or FNE using the SAIK issues log. Examples of issues may include:

- Serum coated, charcoal swabs or other unsuitable swabs/media are submitted (these should be tested regardless of the swab type or media and a specimen note must be added to Auslab)
- Insufficient case history
- Labelling issues/inconsistencies
- Smears have been prepared by the FMO/FNE

If a smear has not been received, one will need to be made and tested, refer to QIS document 17189 (Examination for & of Spermatozoa - Section 6).

The following principles should be applied to the submission of SAIK samples:

- Where an amount of spermatozoa which is considered likely to give a DNA profile (i.e. 2+ or more) are seen on multiple swabs from the same internal location (e.g. vagina), and there is no history of sexual contact with another person within the previous seven days, or multiple offenders, then only one of these swabs should be submitted for full analysis. When selecting which swab to submit for testing, preference should be given to the highest internal swab (i.e. submit a high vaginal swab over a low vaginal swab). Other swabs which would otherwise be submitted for full testing based on their presumptive/screening test results must be submitted but with a 'POLD' test code rather than 9plex/Xplex. These samples are then stored in the black box labelled 'SAIK swabs on hold'. This enables the Case Manager to view the results of the first swab, before assessing whether additional samples require processing.
- Submission of swabs for cells (where presumptive and screening tests are negative for semen and spermatozoa) should be considered based on the case history. If more than several days have passed since the offence, it may be unlikely that foreign DNA will be located, particularly if the subject person has bathed. Consult with the Senior Scientist for direction in these matters, however the following scenarios would justify the submission of samples for cells:
  - Child complainant
  - Complainant with mental impairment, or other impairment which may influence reliability of provided offence history
  - Complainant with loss of consciousness or drug/alcohol use which has impaired their recollection of events
  - Other circumstances as deemed appropriate by the QPS or Senior Scientist.

## 6.2 Acid Phosphatase (AP) Positive Fabrics

Appendix 2 describes the workflow to be used for presumptive/screening testing of AP positive fabrics.

AP positive fabrics are submitted by QPS. The AP positive area should be clearly marked on the fabric. If the fabric is not marked then the entire sample should be tested, including both sides of fabric.

AP positive fabrics should be submitted with sufficient additional area surrounding the circled AP positive area to enable the examining scientist to safely hold the fabric if/when taking a scraping. Where insufficient additional area has been provided a FERRO should be created so that it may be fed back to the QPS.

Where a large piece of AP positive fabric is to be tested, divide the item into sections and test each section separately. If spermatozoa are located microscopically on one section, but are not located on other sections, P30 testing is not required to be performed on all negative sections. All sections are submitted for analysis as DLYS.

If semen is not detected there is no further action and the item is returned.

Generally fabrics are scraped or excised (**extreme care to be taken to stop needle stick injuries**).

## 6.3 Semen in-tubes

Appendices 2 and 3 describes the workflow for presumptive/screening testing of semen in tubes based on whether the QPS have conducted AP testing. If semen in tubes are stored

in an in tube registration box, they must be transferred to an items box so that they can be examined by a scientist.

#### 6.4 Condoms

Appendix 3 describes the workflow for presumptive/screening testing of Condoms.

When a condom is received it should be described in terms of "O/S surface as received" and "I/S surface as received". Describe any fluid that may be present on or within the condom. Describe length and diameter, colour, patterning and translucency of condom.

Take one wet and one dry swab from the O/S and I/S surfaces of the condom. Sample and combine I/S wet and dry swabs into one tube and O/S wet and dry swabs into another tube. N.B. When sampling the swabs, to ensure that there is not excess substrate submitted, sample the entire of the wet swab, but only the outer layer of the dry swab.

#### 6.5 Sanitary Pads and Tampons

Appendix 4 describes the workflow to be used for presumptive/screening testing of sanitary pads and tampons.

Sanitary pads are AP tested on the side worn in contact with the skin.

Tampons are cut through the middle and splayed out. The outer sides of the tampon are then AP tested.

#### 6.6 Post Mortem Samples

Appendix 5 describes the workflow for presumptive/screening testing of Post Mortem samples.

The examining scientist assigns an EXH barcode to the PM samples as a whole, which is passed onto QPS DNA results management (DRMU). All other samples submitted will be subsamples of the PM samples EXH (as per SAIK submissions).

The receipt under which the samples are submitted usually has an associated Coronial case number. Before any subsamples are registered this Coronial case number needs to be changed to the associated QP number by an AUSLAB Corrections Officer. If subsamples are registered under a Coronial case number the EXH lines will not be transmitted to QPS

PM samples may include sexual assault swabs and/or slides (high vaginal, low vaginal, vulval etc), pubic hair, head hair, fingernail clippings or scrapings.

Intimate sexual assault swabs which are semen positive are submitted for DLYS. Intimate sexual assault swabs which are semen negative are submitted for cells.

Sometimes the fingernail clippings include a portion of tissue or part of the finger. In this case a moistened swab can be used to sample potential foreign DNA from the underside of the nail, taking care not to sample the deceased person's tissue (i.e. targeting the distal end of the nail).

**When PM samples are complete, send an E-mail to the Senior Scientist with the EXH barcode so that that information can be passed onto DRMU to facilitate electronic transfer of results from Auslab to the Forensic Register.**

## 6.7 Clothing and Bedsheets

For large items, an examination strategy should be formulated based on the case history and if necessary consultation with the QPS. This must be recorded in the UR notes for the case.

If the case history suggests that the item has been washed then it may be necessary to perform microscopy only considering the water soluble nature of Acid Phosphatase and P30. Use the case history and if necessary communicate with the investigating officer to establish an area to target.

## 6.8 Wet and Dry swabs – QPS submitted

When wet and dry swabs are received from the same site (e.g. in a SAIK, or from one item) submit each of the swabs separately.

## 6.9 Multiple Presumptive/Screening Tests

Consideration should be given to the order in which screening tests are conducted based on the type of tests to be performed and the conservation of sample on the item. Where both AP and Phadebas screening tests are required, Phadebas the exhibit first (using commercial paper). Once the Phadebas test is complete the Phadebas paper can be sprayed with AP reagent.

## 6.10 Analytical Slides

If reading of differential slides is requested by a case scientist, retrieve slides from storage box and put a borrowed comment in AUSLAB. Stain slides and perform microscopy.

Read slides and fill out QIS document 17037 (Microscopy of Smears)

N.B. Old slides- DLYS step 10 slide may have both sperm and epithelial cells, whereas step 22 slides may have sperm only. Currently only one slide is made- should have sperm only.

Return slides and add a returned comment in AUSLAB.

## 6.11 Penile Swabs

The presence of spermatozoa on penile swabs is not unexpected. These swabs are generally submitted for Cells, however where the case history indicates multiple offenders, or previous sexual contact, they should be submitted for DLYS. Appendix 1 describes the workflow to be used for presumptive/screening testing of SAIK swabs.

## 6.12 Lubricant Testing

If an item is required for lubricant testing consult with Forensic Chemistry before any examinations are conducted

## 7 Associated Documentation

QIS: 16004	AUSLAB Users Manual – DNA Analysis
QIS: 17033	General Examination Record (Unruled)
QIS: 17034	General Examination Record (Ruled)
QIS: 17117	Procedure for Case Management
QIS: 17119	Procedure for Release of Results
QIS: 17135	Handling and Sampling of Syringes and Needles

QIS: 17140	Procedure for the Identification and Examination of Hairs
QIS: 17185	Detection of Azoospermic Semen in Casework Samples
QIS: 17186	The Acid Phosphatase Screening Test for Seminal Stains
QIS: 17189	Examination For & Of Spermatozoa
QIS: 17190	Tetramethylbenzidine Screening Test for Blood
QIS: 17193	Phadebas Test for Saliva
QIS: 20080	Digital imaging in DNA Analysis
QIS: 22846	General Swab Exam Record
QIS: 22857	Anti Contamination Procedure
QIS: 22870	Forensic DNA Analysis Outer Packaging Record
QIS: 23008	Explanations of EXR/EXHs
QIS: 23014	Cigarette Butt General Examination Record
QIS: 23055	General Examination Record
QIS: 23849	Common Forensic DNA Analysis terms and Acronyms
QIS: 23898	SAIK Details Record
QIS: 26071	Examination of in-tube samples
QIS: 31286	SAIK form no semen testing

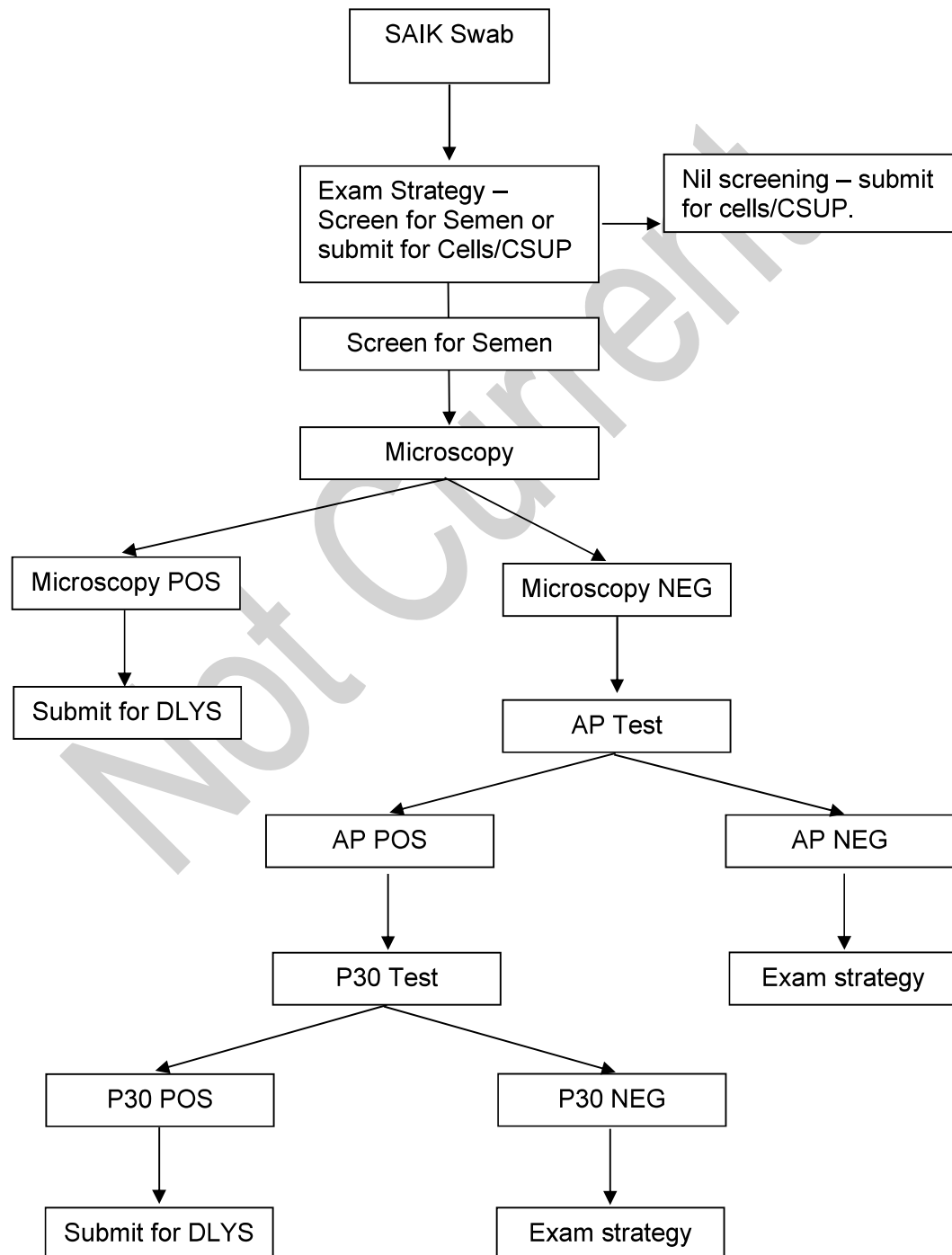
## 8 Amendment History

Version	Date	Author/s	Amendments
1	23/10/2013	L Ryan A Houlding J Seymour-Murray	Document created (content split from Examination of Items)
2	05/12/13	A Houlding	Update for XPlex
3	03/11/2014	A Houlding	New template, 6.2 title changed, header changed, added POLD test code for SAIK samples on hold, also apply the SAIK on hold procedure to samples with a micro result of 2+ (changed from 1+), fixed hyperlinks Changed wet and dry swabs to be submitted separately. Formatted flowcharts. Added lubricant testing section

## 9 Appendices

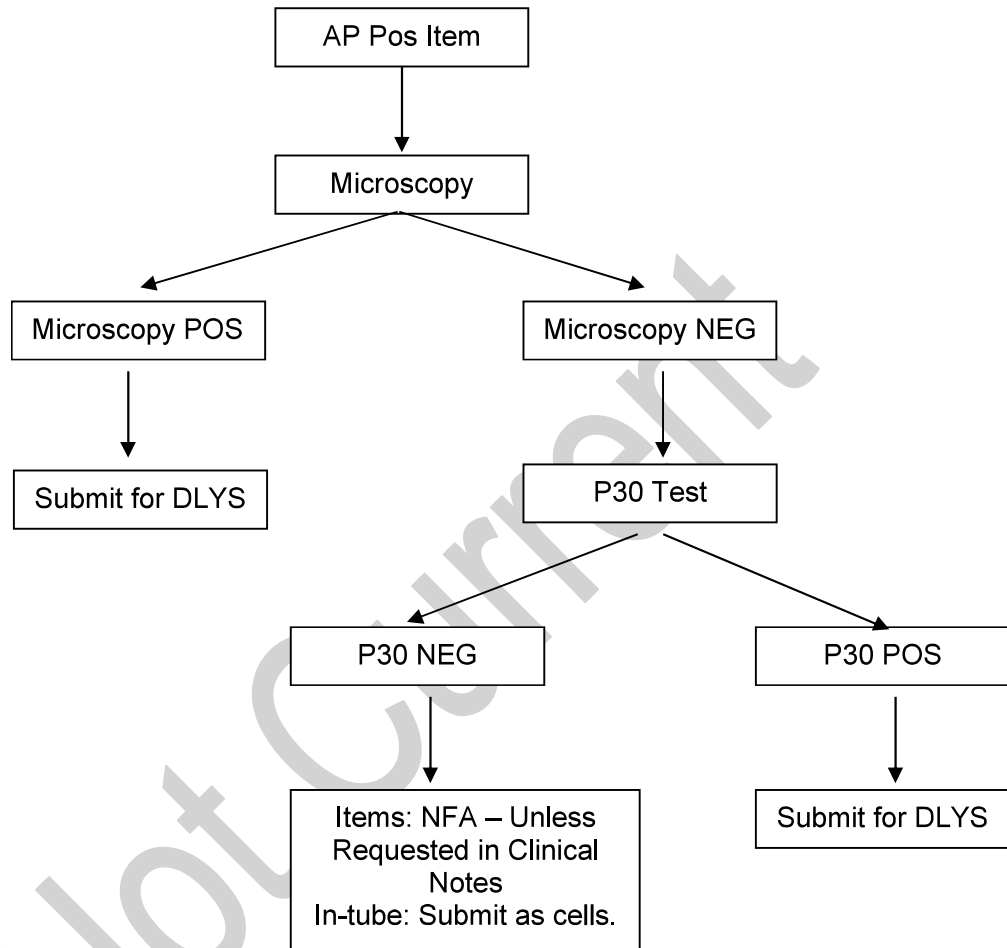
### 9.1 Appendix 1: SAIK Examination Workflow

This workflow is intended to demonstrate the testing of one sample from a SAIK. The submission of samples should be considered within the context of the Examination Strategy, taking into consideration the case history as well as the presumptive and screening results of other SAIK swabs, particularly those from the same location.



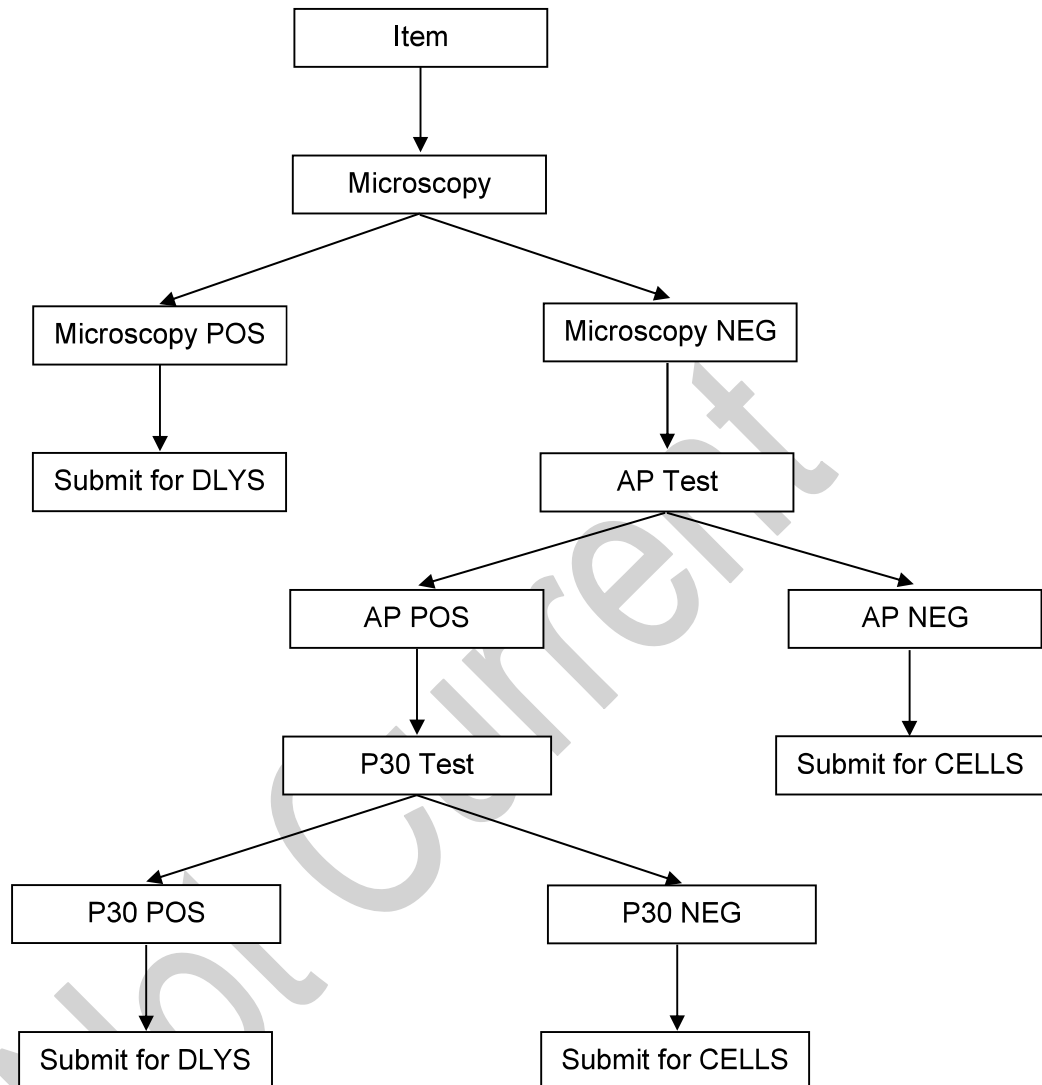
## 9.2 Appendix 2: QPS AP Tested Items (including Semen in-tubes) Workflow

This workflow is to be used for all items which have previously tested positive using the AP test by the QPS.

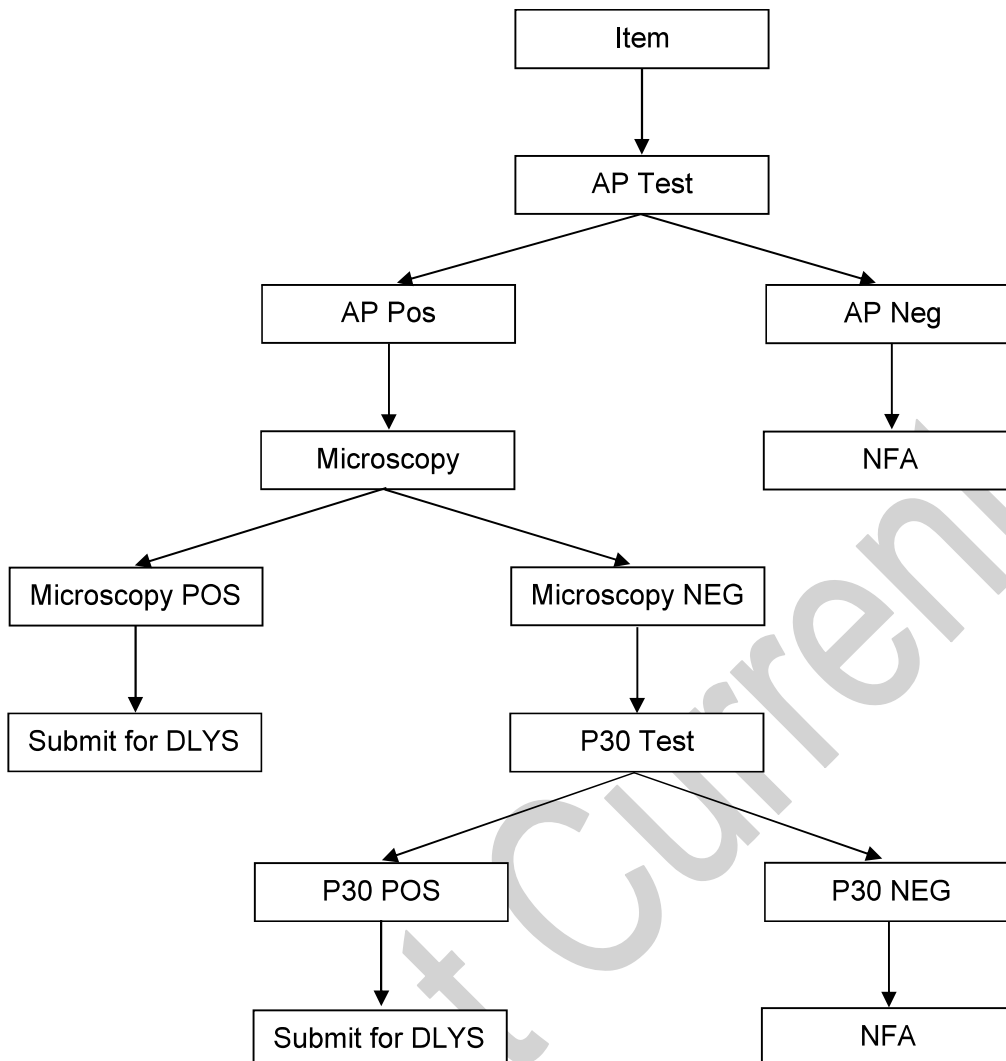




## 9.3 Appendix 3: Condoms and Semen in Tubes (not AP tested by QPS) Workflow



## 9.4 Appendix 4: Sanitary Pads and Tampons Workflow



## 9.5 Appendix 5: PM SAIK Samples Workflow

