

EARLY EVIDENCE KITS (EEKS)

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WHAT ARE EEKS?

EEKs are specialised forensic specimen kits that contain everything needed to collect forensic specimens for specific purposes

When would EEKs be useful

To prevent the loss of potential forensic evidence which would then allow a person to:

- Pass urine
- Open bowels
- Brush teeth
- Change clothes and
- Have a shower

MAIN ADVANTAGES OF EEKS

Effective and acceptable to patients

PATIENT COMFORT (physical and mental)

Buys time

- In busy hospital Emergency Departments
- Allows police to take initial statement or wait for detectives
- When distance is an important factor (mine sites, music festivals)
- When patient unable to consent to full forensic examination
 - Intoxicated by drug or alcohol use
 - Unconscious for any reason

Easy to use for non-forensically trained staff including police

May capture evidence lost if patient had to wait for full forensic examination

Used in Western Australia for 20+ years

EEKS – WHAT IS COLLECTED?



Oral rinse

Urine – 1st part (biology and toxicology)

Vulval/penile/perianal gauze
wipes

Blood for toxicology

Wet and dry skin swabs





WHY USE KITS?

Kits ensure that everything needed is in one place including equipment, labels and sealable forensic envelope

Kits can include a simple, easy-to-follow instruction leaflet with a phone number to call for extra advice

Anything unused can go back into general circulation

Kits meet National Forensic Standards for minimising DNA contamination and so are admissible as evidence in court

DNA contamination and chain of evidence are being challenged more in court so anything that reduces risk of this is good

Also quite affordable and can be stored for when needed

WHAT'S IN AN EEK KIT



Specimen list

Consent form

Tamper-evident bag

Specimen labels

Forward to CC WA sticker

Sterile gloves x 2

Sterile water x 3

2 Packets of gauze swabs

Grey blood tubes x 2

Yellow-topped containers:

- Vulval/penis gauze
- Peri-anal gauze

Oral rinse

Urine

2 x swabs.



WHEN TO COLLECT EEKS?



The sooner the better – as soon as a sexual assault has been disclosed or reasonably suspected

Oral DNA: Up to 24 hours worth a try

Vaginal DNA: 1st 24 hours ideal

Anal DNA: 1st 24 hours ideal

Toxicology: Up to 24 hours worth a try

One grey tube is for blood and the other is for urine

Urine tube preserves alcohol

Skin: 24 hrs for penile-oral, saliva and a bit longer for ejaculate.





WHAT IF A PATIENT CANNOT LEGALLY CONSENT?

But patients may be intoxicated or unconscious and so incapable of consenting to forensic procedures, so what then?

If an allegation or strong suspicion and the patient is able to agree, collect first, then obtain formal consent before giving specimens to police (“just in case”)

If patient refuses consent later, destroy specimens

Never hand over forensic specimens without:

- patient consent or
- court order (if the patient is unconscious)

Need guardian consent also if patient is < 18 years in Western Australia



Early Evidence Kit Form (consent & specimen list)

Med Rec. No:
 Surname:
 Forename:
 Sex: D.O.B.
 Police IR No:

AFFIX LABEL HERE

Date: _____

Time: _____

I, the patient (and I, the parent/guardian), understand that the purpose of Early Evidence Kit (EEK) specimen collection is to prevent the loss of potential evidence and give my consent.

- **Please note - Your DNA profile may be obtained from these specimens and will be available to the police and toxicology specimens may show illicit drug use.**

Patient name/signature: _____

Parent/Guardian name/signature: _____

Doctor/Nurse name/signature: _____

Specimens (tick as collected)

- | | | |
|---|--|-------------|
| <input type="checkbox"/> Oral rinse | <input type="checkbox"/> Blood for toxicology | Time: _____ |
| <input type="checkbox"/> Urine for forensic biology | <input type="checkbox"/> Urine for toxicology | Time: _____ |
| <input type="checkbox"/> Vulval/Penile gauze wipe | <input type="checkbox"/> Urine for toxicology (in grey blood tube) | |
| <input type="checkbox"/> Peri-anal gauze wipe | <input type="checkbox"/> Patient weight _____ kg | |
| <input type="checkbox"/> Skin swabs x 2 | | |
| <input type="checkbox"/> Clothing | | |

If urine is for **both** biology & toxicology
 Tick here

Write tamper evident bag barcode below

Tamper Evident Bag Barcode:	S	C									
-----------------------------	---	---	--	--	--	--	--	--	--	--	--

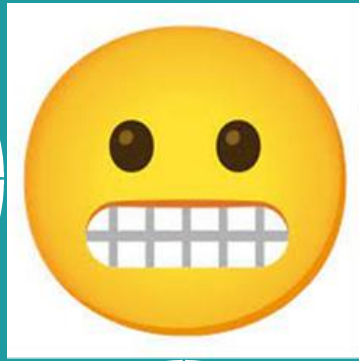
Then do the following:-

- Fill in front of tamper evident bag (with patients details)
- Put labelled specimens in bag
- **PHOTOCOPY THIS FORM TWICE**
- Put photocopy of signed form in bag
- **SEAL** bag
- Give photocopy of this form to patient
- Document if bag given to patient or police (write on front of bag and in hospital notes)
- Place original in patient's hospital notes.

Any questions?

- Call SARC 64581828 (24/7) for Duty Doctor or
- KEMH Switchboard 6458 2222 (after hours) for duty doctor.





WHAT SPECIMENS ARE COLLECTED AND WHY

ORAL RINSE



Allegation:

- Oral penetration by a penis and/or
- Biting the alleged perpetrator

Allows the patient to eat, drink (and smoke)

Oral cavity amylase and bacteria degrade DNA present from exfoliated cells and spermatozoa

Eating and drinking reduces available DNA by stimulating amylase production as well as direct action of swallowing

Very time sensitive so no time to lose

Easy and acceptable to patient

ORAL RINSE



Reason	Equipment	Procedure
<p>Mouth penetration: penis Even if no ejaculation Biting the assailant</p>	<p>10 mls sterile water Container “oral rinse” Pair of gloves</p>	<p>Patient wears gloves Opens water Water in mouth & swirls around ++, gargle Spits into container Closes container</p> <p><small>Image by Pixabay.com</small></p>

FIRST VOID URINE AND VULVAL/PENILE GAUZE WIPE

Known as the “wee and wipe”

Urine (wee)

After penile-vaginal penetration with ejaculation:

- the lower third of the female urethra contains spermatozoa
- Spermatozoa will be present on the vulva through postural drainage

So first void urine (first part of urine stream) is collected

Urine is centrifuged and the pellet is examined for spermatozoa or Y-STR

Vulval/penile gauze wipe

Also viable for penile penetration without ejaculation and finger-vaginal penetration

Contact of the penis with a mouth or body cavity (vagina or anus)

Urine for toxicology

Some urine is put into a fluoro-oxalate tube to negate bacterial action

Supernatant fluid can also be used for toxicological analysis



“WEE AND WIPE” FEMALE AND MALE



Reason	Equipment	Procedure
<p>Female: “wee and wipe” Vaginal penetration: actual or attempted Penis, finger, object (even if no ejaculation) Even if previously voided</p> <p>Urine for toxicology</p>	<p>Containers x 2:</p> <ul style="list-style-type: none"> • “urine “first part” • “vulval/penis wipe:” <p>Sterile gauze Pair of gloves</p> <p>Bright yellow sticker Grey top blood tube</p> <div data-bbox="1352 568 1488 733" style="border: 1px solid black; padding: 5px; text-align: center; width: fit-content; margin: 10px auto;"> PLEASE FORWARD TO C.C. WA </div>	<p>Patients takes items to toilet and puts on gloves 1st part urine in urine pot Close urine container Open gauze and gently wipe vulva and put into container and close Nurse to attach label to urine sample</p>
<p>Male: “wee and wipe” Penis contact with a mouth or body cavity</p> <p>Urine for toxicology</p>	<p>As above + 10mls sterile water</p>	<p>Urine: as above Moisten gauze with water, wipe shaft and tip (glans) of penis, put gauze into container and close</p>
<p>Urine for toxicology: Suspected drug-facilitated sexual assault or severe intoxication</p>	<div data-bbox="1123 1179 1233 1296" style="text-align: center;"> </div>	<p>Nurse or doctor to fill one of the grey fluoro-oxalate blood tubes with urine. Record exact time and patient weight on label</p>



PERI-ANAL GAUZE WIPE



Allegation: finger or penile penetration of the anus (even if no ejaculation)

Time is important as persistence is rare beyond 48 hours so early collection is vital

Bowel bacteria degrade spermatozoa faster than vaginal bacteria

Anal penetration may result in the sensation of a need to open bowels

Heavy alcohol consumption may also cause increased bowel frequency



PERI-ANAL WIPE

Reason	Equipment	Procedure
<p>Anal penetration: actual or attempted Penis, finger or object (even if no ejaculation)</p>	<p>Container “peri-anal wipe” Sterile gauze 10mls sterile water Pair of gloves</p>	<p>Patient takes items to toilet and puts on gloves Open gauze and moisten one gauze with water Wipe gently around anus Put gauze in container and close</p>



BLOOD FOR TOXICOLOGY

Reason	Equipment	Procedure
Suspected drug facilitated sexual assault Severe intoxication (if blood being drawn for medical reasons)	Fluoro-oxalate (grey-topped) blood tube Sterile water	Clean skin with sterile water Collect blood Record exact time and patient weight on label



SKIN SWABS

Looking for contact DNA from:

- Saliva - biting, kissing, sucking, licking
- Ejaculate on skin – getting more common
- Contact – grabbing or non-fatal strangulation

Not self-collected but patient directs as to which area

Need healthcare worker to collect these

Not suitable for police or other personnel

Time sensitive plus removed by wear and tear from clothes

May change in the future to alternative methods!



SKIN SWABS X 2

Reason	Equipment	Procedure
<p>ANY Skin: patient bitten, licked or sucked by assailant, ejaculation on skin</p> <p>Around mouth skin: penile-oral penetration</p>	<p>1 pair of gloves</p> <p>10mls sterile water</p> <p>2 plain swabs</p> <p>labelled:</p> <ul style="list-style-type: none">• Skin swab wet• Skin swab dry	<p>Healthcare worker wears gloves</p> <p>Opens water & swab labelled “wet”</p> <p>Puts a few drops of water swab and gently rolls “wet” swab over skin area to be sampled, and puts swab back into sheath</p> <p>Next healthcare worker opens swab labelled “dry” and gently rolls over SAME area and puts swab back into sheath.</p> <p>Write on swab label area that was sampled: eg left side of neck</p>

FORENSIC SPECIMENS

SC00011111

CONTENTS TYPE

Early Evidence Kit (EEK) specimens

Forensic BIOLOGY Specimens

Forensic TOXICOLOGY Specimens

Forensic OTHER Specimens
(grass, fibres, lubricant, vegetable matter, soil)

New tamper evident bag

New white box for EEK specimens

Also guide to seal on back



SUPPORTING EVIDENCE |

*Early evidence kits in sexual assault:
an observational study of spermatozoa
detection in urine and other forensic
specimens*

**Debbie A. Smith, Laurance G. Webb,
Angelika I. Fennell, Elizabeth A. Nathan,
Christine A. Bassindale & Maureen
A. Phillips**

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EVIDENCE THAT EEKS WORK

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STUDY METHODOLOGY

Looking to compare 100 EEK kits with their corresponding full forensic kits

For all types of penetration:

- Penile-vaginal
- Penile-oral
- Penile-anal

Ejaculation status was reported by patient (may have been incorrect)

Looked for the presence of spermatozoa only

No funding for DNA analysis

EVIDENCE THAT EEKS WORK



Penile-vaginal penetration

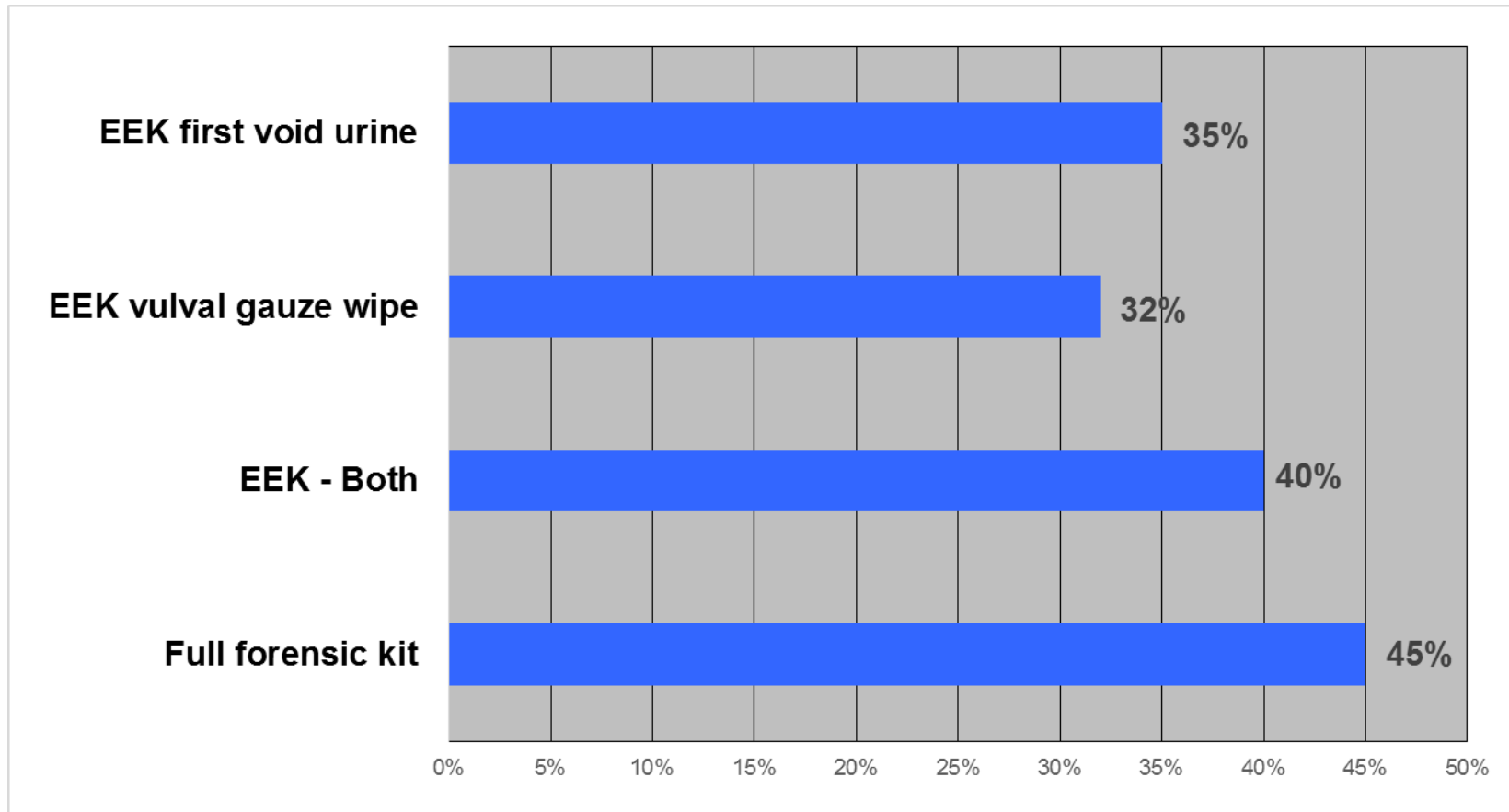
- Urine: sperm in 22 / 63 (35%)
- Vulval gauze wipe: sperm in 18 / 57 (32%)
- Urine + vulval gauze wipe: sperm in 21 / 53 (40%)
- Full forensic kit: sperm in 31 / 69 (45%)

Alleged penile-anal penetration, sperm also found on first void urine and vulval gauze wipe

Sperm only found on 1 / 18 of alleged penile-oral penetration

Ref: Smith, Webb et al. Early evidence kits in sexual assault: an observational study of spermatozoa detection in urine and other forensic specimens. Forensic Sci Med Pathol. DOI 10.1007/s12024-014-9562-7

RESULTS: SPERMATOZOA DETECTION IN ALLEGED PENILE-VAGINAL PENETRATION



SUPPORTING STUDY FROM FINLAND

Direct comparison: (different populations & method)

- Spermatozoa seen in 37/44 (84.1%) 1st void urine
- Within 24 hours, spermatozoa found in 59.5%
 - Few (26.1%), moderate (13.5%), many (19.8%)

Y-DNA found in 96.5%, 1st post-coital urine specimens

Median time to collection: 5 hours

After 24 hours, Y-DNA measurable in 9/22 (41%) specimens

One specimen still had sufficient Y-DNA at 52.5 hours for identification.



Ref: Joki-Erkki, Tuomisto S, Seppala S et al Urine specimen collection following consensual intercourse – a forensic evidence collection method for Y-DNA and spermatozoa. J Forensic Legal Med (2015), doi:10.1016/j.jflm.2015.10.008

WHERE ELSE ARE/CAN EEKS BE USED

Now standard practice around most of Australia

New EEK kits for Western Australian police (called preliminary forensic kits) with accompanying instructional video

Remote mine sites introducing SEEKs (Site EEKs)

Australian Defence Force has started using EEKs

Large music festivals have expressed an interest

THANK YOU & QUESTIONS?

