Imaging Referral – Gynaecology UHL Imaging Guideline	University Hospitals of Leicester NHS NHS Trust Trust Reference No: C57/2015

1. Introduction and Who Guideline applies to

This guideline is aimed at clinicians in primary and secondary care referring patients with suspected gynaecological problems. The contributing roles of Ultrasound (US), either transabdominal (TA) or transvaginal (TV), computed tomography (CT), magnetic resonance imaging (MR) and positron emission tomography CT (PET-CT) will be discussed. The guidelines are evidence based and will be provided in paper and electronic format. Detailed management of pregnancy related problems and infertility are not discussed within this document.

Related UHL documents:

- Early pregnancy management
- Gynaecology: Diagnosis and management of ovarian and/or adnexal mass
- Gynaecology: Guidelines on postmenopausal bleeding
- Gynaecology: Guidelines on outpatient hysteroscopy
- Gynaecology: Imaging reporting guidelines in gynaecology for ultrasound practitioners

2. Guideline Standards and Procedures

In these guidelines we will be addressing the following issues:

- Minimum information required on request forms for gynaecological ultrasound
- Indications for US requests in gynaecology
- Heavy Menstrual Bleeding
- Post-Menopausal Bleeding
- Chronic Pelvic Pain
- Acute Pelvic Pain
- Imaging the suspected Pelvic Mass

- Investigation of suspected Polycystic Ovarian Syndrome
- Lost Intrauterine Contraceptive Device

2.1 Minimum information required on request forms for gynaecological ultrasound

- Source of referral: GAU/EPAU/GOPD/GP
- Type of US requested TA/TV/both
- Status: Pregnant/Not pregnant/Post-Menopausal
- Last menstrual Period (LMP)
- Tamoxifen Y/N
- Hormone Replacement therapy (HRT) Y/N
- Contraception Y/N Type oral contraceptive pill (OCP)/Coil/Barrier
- Symptoms:
    - Bleeding: Minimal/Moderate/Heavy/Duration
    - Pain: None/Constant/cyclical/Intermittent Site of pain: left/right/central
- Clinical question to be answered

2.1 Indications for US requests in gynaecology.

- Heavy/ abnormal/ post-menopausal menstrual bleeding
- Infertility
- Recurrent miscarriages
- Uterine fibroids
- Endometrial polyps
- Cervical polyps
- Pelvic Inflammatory Disease
- Endometrial cancer
- PCOS
- Intrauterine Device

2.2 Heavy menstrual bleeding.

For clinical purposes, heavy menstrual bleeding should be defined as excessive menstrual blood loss which interferes with the woman's physical, emotional, social and material quality of life, and which can occur alone or in combination with other symptoms.

More common causes include:

- Hormonal imbalance in adolescences or at menopause
- Uterine fibroids
- Endometrial polyps
- Cervical polyps
- Endometriosis/Adenomyosis
- Pelvic inflammatory disease
- Endometrial cancer
- Cervical cancer
- Intrauterine device
- Bleeding or platelet disorders eg Von Willebrand disease, liver/kidney/thyroid disease.

2.3 Women with possible larger fibroids.

Offer pelvic ultrasound to women with heavy menstrual bleeding if any of the following apply:

- The uterus is palpable abdominally
- Vaginal examination reveals a pelvic mass of uncertain origin
- Examination is inconclusive or difficult, for example in women who are obese

2.4 Women with suspected submucosal fibroids, polyps or endometrial pathology

- If women have abnormal vaginal bleeding (heavy and prolonged or intermenstrual bleeding or post-coital bleeding), ultrasound is the first-line test to check endometrial thickness.

2.5 Women with suspected adenomyosis

- Offer ultrasound (both TA and TV in preference to MRI) to women with heavy menstrual bleeding who have significant dysmenorrhoea (period pain) or a bulky, tender uterus on examination that suggests adenomyosis. (1)

- If a woman declines transvaginal ultrasound or it is not suitable for her, consider transabdominal ultrasound explaining the limitation of this technique or consider doing MRI pelvis. (1)

- Be aware that pain associated with heavy menstrual bleeding may be caused by endometriosis rather than adenomyosis. (1)

2.6 Uterine artery embolisation (UAE)

NICE (2) recommends UAE for symptomatic fibroids in women who desire treatment. UAE in the presence of adenomyosis is less effective. A recent Cochrane (3) review states that overall patient satisfaction rate is similar to hysterectomyand myomectomy and benefits from shorter hospital stay and quicker return to routine activities. However, UAE is associated with a higher rate of minor complications and increased risk of requiring surgical intervention within 2 - 5 years. There is very low level evidence suggesting myomectomy to have better fertility outcomes. If patients are considering pregnancy, there is a theoretical risk of placental insufficiency leading to small-for-gestational-age babies, increased Caesarean section and prematurity.

Ensuring no suspicious features suggestive of malignant sarcomatous degeneration on imaging is essential prior to UAE. Suspicious features include rapid increase in size of a fibroid following menopause, indistinct borders, invasion into adjacent structures, evidence of nodal/metastatic disease.

Women should be informed during consenting that symptom relief may not be achieved for some women and that symptoms may return. Compared with UAE, hysterectomy is associated with better improvement in pelvic pain. However, UAE is a good alternative to hysterectomy.

2.7 Post-menopausal bleeding (PMB).

Post menopausal bleeding is defined as spontaneous vaginal bleeding that occurs more than one year after the date of the last menstrual period.

TV ultrasound is an appropriate first-line investigation to identify which women with PMB are at higher risk of endometrial cancer. A TA scan in addition to a TV scan will also help exclude any large adnexal (ovarian) masses that may not be seen on TV scan alone. Where TV ultrasound is not possible a TA ultrasound should be performed explaining the limitations of this technique.

A definitive diagnosis in postmenopausal bleeding is made by direct inspection at hysteroscopy and endometrial sampling when endometrial thickness is increased above the threshold for further investigation (≥4mm (4) or evidence of lesion/fluid within the endometrial cavity) or when there are recurrent episodes of PMB.

Once diagnosis of endometrial cancer is made - the preoperative imaging evaluation should include (5)

- Contrast enhanced computed tomography (CT) of the chest, abdomen and pelvis to assess for extrapelvic/nodal disease (for > stage 1A, grade 1 and grade 2).
- Dynamic contrast-enhanced magnetic resonance imaging (MRI) is the best tool to assess the cervical involvement and depth of myometrial invasion.
- Consider 18F fluorodeoxyglucose-positron emission tomography (FDG-PET)/CT for more accurate detection of nodal and distant metastases when CT/MRI equivocal.

Please also see separate guideline on postmenopausal bleeding.

2.8 Chronic pelvis pain

Chronic pelvic pain is defined as intermittent or constant pain in the lower abdomen or pelvis of a woman of at least 6 months in duration, not occurring exclusively with

menstruation or intercourse and not associated with pregnancy. It is a symptom not a diagnosis.

Chronic pelvic pain presents in primary care at a rate of 38 per 1,000 women per year, comparable to that of asthma (37 per 1,000) and back pain (41 per 1,000) (6). No organic cause for the pain is found at laparoscopy in at least 33% of cases.

Causes of chronic pelvic pain include:
Endometriosis: can be associated with pelvic pain which varies markedly over the menstrual cycle- Suspect endometriosis in women (including young women aged 17 and under) presenting with 1 or more of the following symptoms or signs (6):

- Chronic pelvic pain.
- Period-related pain (dysmenorrhoea) affecting daily activities and quality of life.
- Deep pain during or after sexual intercourse.
- Period-related or cyclical gastrointestinal symptoms, in particular, painful bowel movements.
- Period-related or cyclical urinary symptoms, in particular, blood in the urine or pain passing urine.
- Infertility in association with 1 or more of the above.

Consider transvaginal ultrasound (7):

- To investigate suspected endometriosis even if the pelvic and/or abdominal examination is normal.
- To identify endometriomas and deep endometriosis involving the bowel, bladder or ureter.
- If a transvaginal scan is not appropriate, consider a transabdominal ultrasound scan of the pelvis.

MRI:

Do not use pelvic MRI as the primary investigation to diagnose endometriosis in women with symptoms or signs suggestive of endometriosis.

Consider pelvic MRI to assess the extent of deep endometriosis involving the bowel, bladder or ureter.

2.9 Acute pelvic pain

Some of the more common causes include:

- Pregnancy-related: miscarriage, ectopic pregnancy, rupture of corpus luteum cyst, preterm labour, placental abruption, uterine rupture and red degeneration of fibroids.

- Gynaecological: ovarian cyst, ovulation pain (midcycle - mittelschmirtz), dysmenorrhoea, PID, ovarian cyst accident (rupture, haemorrhage or torsion of ovarian cyst), degenerative fibroid, pelvic tumour or pelvic vein thrombosis or congestive pelvic syndrome.

- Non gynaecological causes: appendicitis, urinary tract infection, adhesions, strangulated hernia etc

Although there is no consensus guideline on appropriate imaging, ultrasound (TA +/- TV) is a useful first line test in acute pelvic pain for the following reasons (8)

- Pelvic inflammatory disease may be suspected with findings on ultrasound such as thickening of the tubal wall, incomplete septa within the dilated tube, demonstration of hyper echoic mural nodules, free fluid in the "cul-de-sac" etc. Colour Doppler ultrasound can contribute to more accurate diagnosis since it enables differentiation between acute and chronic stages based on analysis of the vascular resistance.

- Ultrasound scanning is of limited value for uncomplicated PID but is helpful if an abscess or hydrosalpinx is suspected. Doppler ultrasound can detect increased blood flow associated with pelvic infection and may be useful, but it cannot differentiate between PID and other causes of increased vascularity, such as endometriosis
- Haemorrhagic ovarian cysts may be identified by a variety of ultrasound findings since intracystic echoes depend upon the quality and quantity of the blood clots. Colour Doppler investigation demonstrates moderate to low vascular resistance typical of luteal flow.

- Fibroids undergoing degenerative changes can cause pelvic pain. Colour flow detects regularly separated vessels at the periphery of the leiomyoma, which exhibit moderate vascular resistance.

- Pelvic congestion syndrome can cause an attack of acute pelvic pain. It is usually a consequence of dilatation of venous plexuses, arteries or both systems. By the use of colour Doppler, pelvic congestion syndrome can be differentiated from multilocular cysts, pelvic inflammatory disease or adenomyosis. Ovarian vein thrombosis is a potentially fatal disorder occurring most often in the early postpartum period. Hypercoagulability, infection and stasis are the main aetiological factors, and transvaginal colour Doppler ultrasound is an excellent diagnostic tool to diagnose it.

- Ultrasound scan is a useful tool for diagnosis of intrauterine pregnancy, miscarriages, assessing viability of pregnancy,identification of tubal and non- tubal ectopic pregnancy and other complications that may occur in patients with positive pregnancy test. Please see separate gynaecological guidelines on early pregnancy management.

- Corpus luteal cysts and degeneration of fibroids can also cause pelvic pain during pregnancy, which can be diagnosed by ultrasound.

- In pregnant women, detection of uterine dehiscence and rupture in patients with history of prior surgical intervention on uterine wall relies exclusively on a clinical diagnosis. Where either is suspected immediate senior review is indicated. Any delay in order to perform any imaging could result in the death of the fetus and or the mother. In patients with small placental abruption ultrasound may show a hypoechoic complex representing either retroplacental hematoma, subchorionic hematoma or subamniotic haemorrhage. This is not however a sensitive tool for the diagnosis of small abruption. The Kleihauer blood test to detect fetomaternal haemorrhage should be considered to exclude small placental abruption when there is no compromise in the mother or foetus.

National Institute for Health and Care Excellence (NICE) guidance (9) states that: Consider:

CT for diagnosing non obstetric/gynaecological cause of acute pelvic pain (evidence level B). Radiation dose should be considered especially in younger women and in repeated CTs.

MRI may be useful in defining problem where US is indeterminate..

MRI or CT scanning of the pelvis may be helpful in differentiating PID from alternative diagnoses, but they are not indicated routinely.

2.10 Imaging of suspected pelvic mass

Gynaecological causes for a suspected pelvic mass would include those of

- Uterine origin : Endometrial cancer, sarcoma, fibroids

- Adnexal origin: Tuboovarian abscess, ovarian cyst - simple/complex.

The RCR in iRefer guidelines state that transabdominal US should be used to confirm a lesion's presence and organ of origin and transvaginal US to define the anatomy further. MRI is a specialised investigation which can be used to further characterise the pelvic mass seen on US.

Please refer to separate guidelines: - Gynaecology: Diagnosis and management of ovarian and /or adnexal masses.

2.11 Investigation of suspected polycystic ovarian syndrome (PCOS)

Request US scan to look for classic picture of polycystic ovaries

The diagnosis of PCOS in adults is made if two of three of the following criteria are present, provided other causes of menstrual disturbance and hyperandrogenism are excluded (10)

- Infrequent or no ovulation (usually manifested as infrequent or no menstruation).
- Clinical and/or biochemical signs of hyperandrogenism (such as hirsutism, acne, or elevated levels of total or free testosterone).
- Polycystic ovaries on ultrasound scan.

Be aware that polycystic ovaries on US do not have to be present to make the diagnosis of PCOS, and the finding of polycystic ovaries on US does not alone establish the diagnosis.

The International evidence-based guideline for the assessment and management of polycystic ovary syndrome 2018 [International PCOS Network, 2018] similarly states that:

- In women with irregular menstrual cycles and hyperandrogenism, an ultrasound scan is not necessary for PCOS diagnosis, although it can be used to identify the complete PCOS phenotype.
- Ultrasound scan should not be used for the diagnosis of PCOS in those with a gynaecological age of less than 8 years (less than 8 years after menarche) due to the high incidence of multi-follicular ovaries in this life stage.

Excluding differential diagnoses.

Expert opinion in the *International evidence-based guideline for the assessment and management of polycystic ovary syndrome 2018* is that exclusion of thyroid disease, hyperprolactinemia, and non-classic congenital adrenal hyperplasia is recommended with further evaluation recommended in those with amenorrhea and more severe clinical features, including consideration of hypogonadotropic hypogonadism, Cushing's disease, or androgen-producing tumours [International PCOS Network, 2018].

PCOS and risk of endometrial hyperplasia and carcinoma.

In women with PCOS, intervals between menstruation of more than 3 months (equivalent to fewer than four periods each year) may predispose to endometrial hyperplasia and later carcinoma. Routine ultrasound screening is not recommended. However health professionals should have a low threshold for

investigation of endometrial cancer in women with PCOS. The RCOG 2014 states that transvaginal ultrasound scan in PCOS should be considered in the absence of withdrawal bleeds with progesterone challenge or if there is prolonged heavy or frequent bleeding and/ or intermenstrual bleeding and/or post-coital bleeding to check for hyperplasia. Referral should be made for women with these symptoms to have a hysteroscopy if endometrial thickness >10mm by referral on the Abnormal Vaginal Bleeding Pathway .

9.12 Lost intrauterine contraceptive device (IUCD).

There are several types of levonorgestrel intrauterine system (LNG-IUS) currently available in the UK including Mirena, Levosert, Jaydess and Kyleena.

Management of lost IUCD.

Most IUCDs are echogenic and can be identified on transabdominal US. Their correct placement is best ascertained with TV ultrasound. Mirena IUS (levonorgesterel device) is plastic and less echogenic and TV ultrasound may be required for assessment in this situation (11).

If the device is extrauterine, or if partial perforation or embedment into the uterine wall is suspected, refer for gynaecology review for further management.

If ultrasonography cannot locate the device, and pregnancy has been excluded, arrange for an abdominal (AXR) and pelvic X-ray.

AXR is indicated only when IUCD is not seen in the uterus on ultrasound.

If the device is not located on either TV ultrasound or AXR, this confirms expulsion.

If the IUS/CuIUCD is not correctly positioned in the uterine cavity – the woman should be advised to use additional contraceptive precautions.

Consider replacement of a non fundally placed IUD/IUS if:-

- Unscheduled bleeding/pelvic pain
- >2cm below the internal aspect of the fundus
- Lower end of IUS/IUD lies in cervical canal

This section may include or comprise a flow chart but in any event should be set out in a logical order.

3. Education and Training

Are there any new skills required to implement the guideline? Is a training programme being provided to support implementation or is it more a case of 'awareness raising'

If there are no education or training requirements please state 'None'.

4. Monitoring Compliance

What will be measured to monitor compliance	How will compliance be monitored	Monitoring Lead	Frequency	Reporting arrangements

5. Supporting References (maximum of 3)

1 Heavy menstrual bleeding; National Institute for Health and Care Excellence; quality standards [NG88] Published date: March 2018. Last updated: November 2018

2. National Institute for Health and Clinical Excellence. Uterine artery embolisation for fibroids. Interventional Procedure Guidance 367. London NICE 2010.

3. Gupta JK, Sinha A, Lumsden MA et al. Cochrane database of systematic reviews. Uterine artery embolisation for symptomatic uterine fibroids 2012.

4. Timmermans A, Opmeer B, Khan K et al. Endometrial thickness measurement for detecting endometrial cancer in women with postmenopausal bleeding: A systematic review and meta-analysis. Obstretriccs and gynaecology: July 2010; 116(1);160 – 167

*5. N. Colombo1, E. Preti1, F. Landoni1 et al. Endometrial cancer: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. On behalf of the ESMO Guidelines Working Group*Annals of Oncology 22 (Supplement 6): vi35–vi39, 2011.*

6. Latthe P, Mignini L, Gray R, et al; Factors predisposing women to chronic pelvic pain: systematic review. BMJ. 2006 Apr 1; 332(7544):749- 55.

7. Endometriosis: Diagnosis and management; NICE guideline [NG73] Published date: September 2017

8. Kupesić S, Aksamija A, Vucić N et al. Ultrasonography in acute pelvic pain Acta Med Croatica. 2002; 56 (4-5):171-80

9. Pelvic inflammatory disease; National Institute for Health and Care Excellence; Last revised January 2019.

10. Revised 2003 consensus on diagnostic criteria and long-term health risks related to polycystic ovary syndrome published by the Rotterdam European Society of

Human Reproduction and Embryology (ESHRE)/American Society for Reproductive Medicine (ASRM)-Sponsored Polycystic Ovary Syndrome (PCOS) Consensus Workshop Group [Rotterdam ESHRE/ASRM-Sponsored PCOS Consensus Workshop Group, 2004

11. Contraception – IUS/IUD National Institute for Health and Care Excellence (NICE) guidance; Last revised Jan 2019.If None say NONE

6. Key Words

Ultrasound

Imaging

Womens and childrens

Gynaecology

CONTACT AND REVIEW DETAILS	
Guideline Lead (Name and Title)	**Executive Lead**
Details of Changes made during review:	