The Efficacy of Ultrasound Referral Review for Nonspecific Pelvic Symptoms in a Single NHS Trust

R. Stephenson[a-b], P. Parker[a], C. Hynes[b], S. Smith[a]

a) Department of Radiology, Hull University Teaching Hospitals NHS Trust
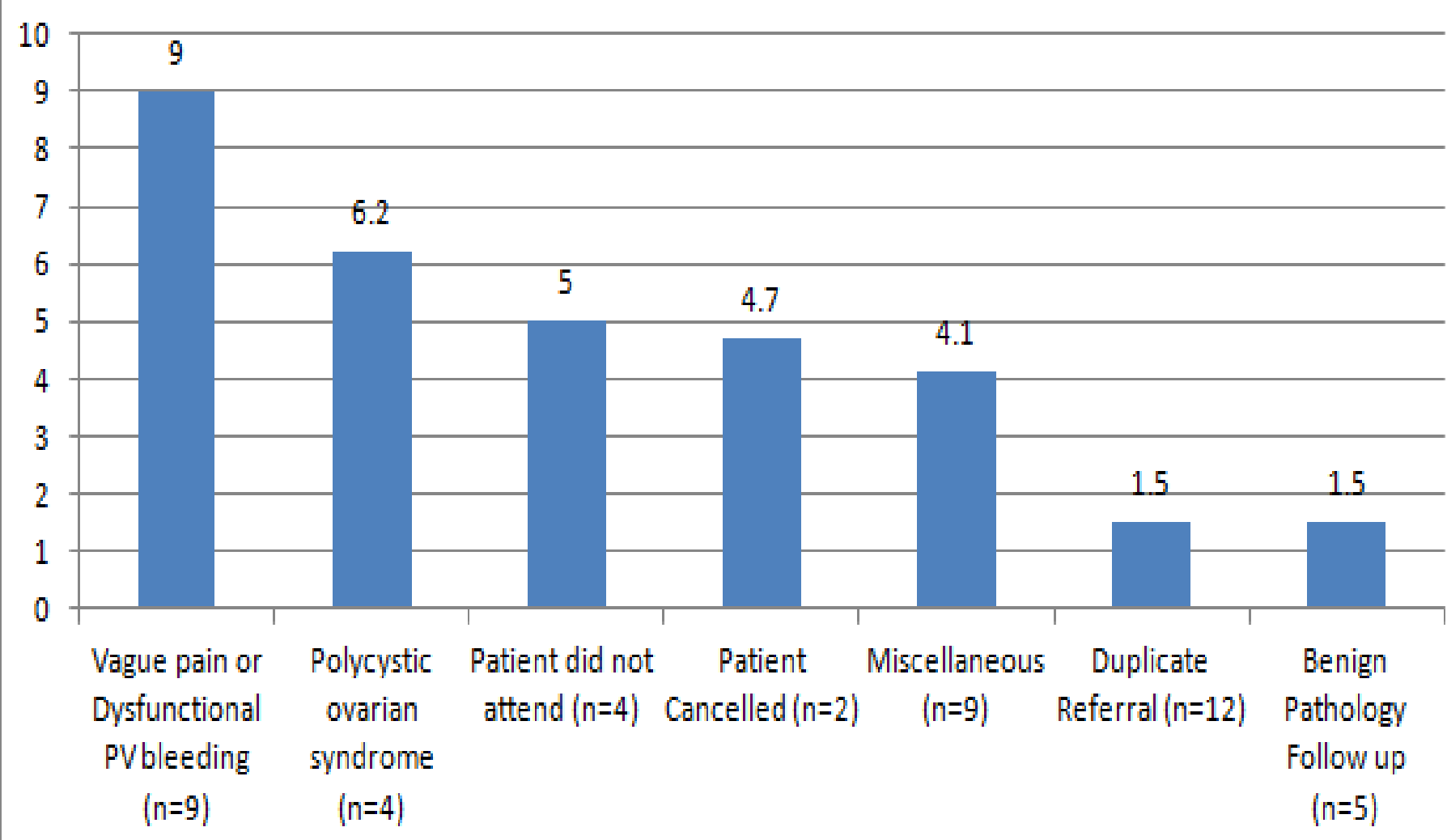b) College of Health, Wellbeing and Life Science, Sheffield Hallam University

Background

- Hull University Teaching Hospitals (HUTH) is a large teaching Hospital which receives on average 15,147 gynaecological ultrasound referrals annually.[2]
- The NHS Long Term Plan aims to increase the number of cancers diagnosed at stage 1 and 2 in 75% of people.[4]
- There is a projected surge in demand for rapid access to ultrasound scans of 25%.[6]
- HUTH ultrasound department are under pressure to manage and prioritise the increasing number of referrals.[2]
- HUTH[2] R-cancel system was implemented in 2015 and updated in 2021 against the BMUS good practise guidance[1] R-cancel reports are issued to primary referrers

Average Referral to Rescan Timescale US, CT and MRI (months)

Aim

- To see if HUTH[2] are safely and effectively managing pre-menopausal pelvic ultrasound primary care referrals for vague pelvic pain and dysfunctional per vaginal bleeding against the BMUS 2021 guidelines[1]
- Identify 500 R-Cancelled referrals which met the study criteria
- Establish referral to diagnosis timescales either on US, CT or MRI for R-cancels with subsequent imaging
- Calculate what percentage had a US detectable pathology.

Method

Analysis of R-cancel pelvic Data from 2021-2022 against the BMUS 2021 guidance[1]

Study Design

Retrospective audit

Results

A small sample size of 45 R-cancelled referrals were analysed for US detectable pathologies. Thirty four were re-referred with greater detail on the referral form and had an ultrasound scan, 9 had CT scans and 2 had an MRI

- 8 (17.8%) had a US detectable pathology of varying medical significance on subsequent imaging
- 0% were found to have a malignancy.
- The average referral to diagnosis timescale was 4.3 months for US, 4.7 months for CT and 1 month for MRI.
- The mean average referral to diagnosis timescale was 3.3 months for US, CT and MRI.
- 1% incurred a delay of 2 weeks referral to diagnosis timescale following R-cancel and re-referral to US and 99% had no significant delay.
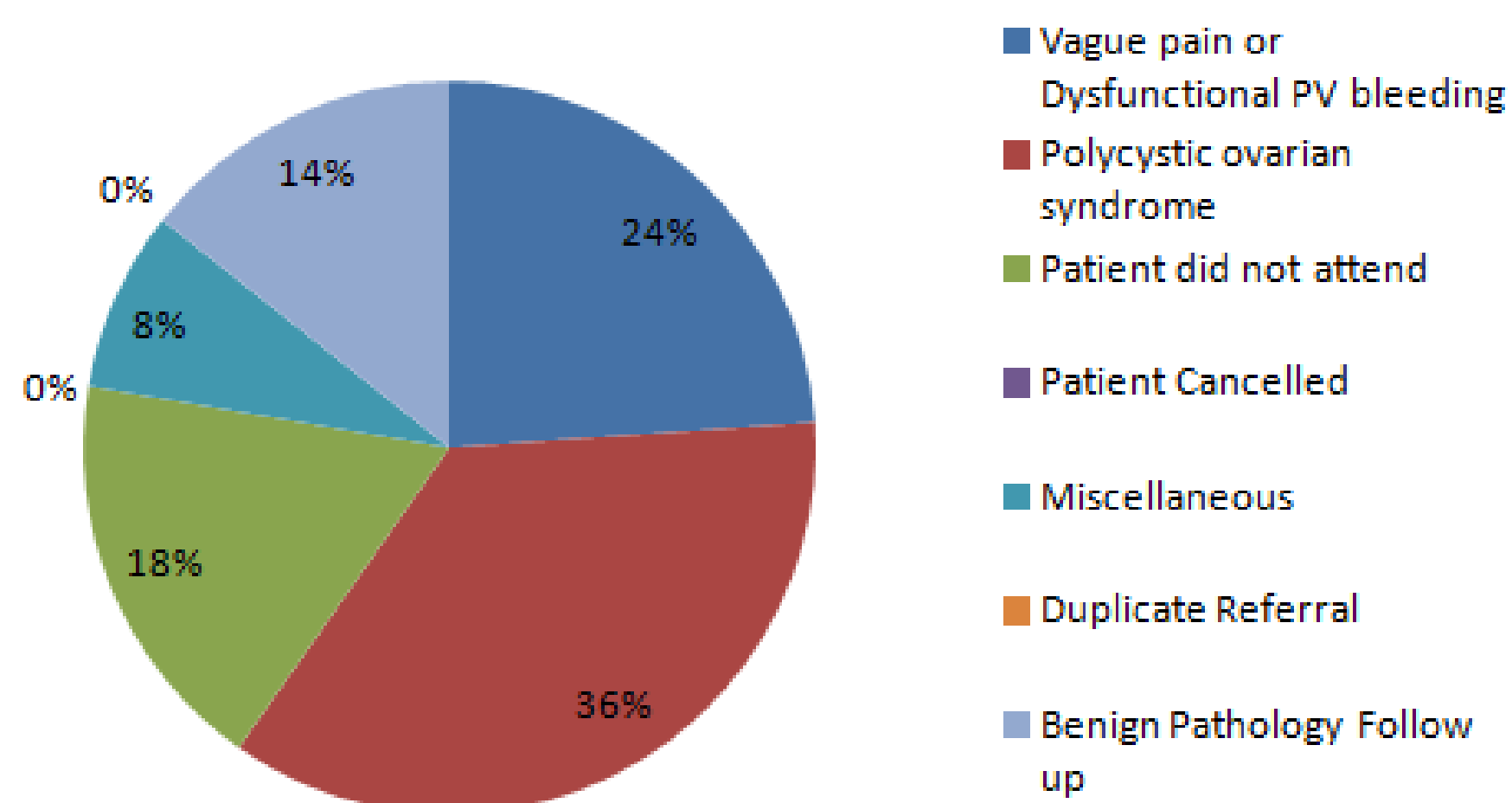
Study Criteria

- Pre-menopausal female pelvic US primary care referrals which were R-cancelled by HUTH US department with a detailed R-cancel report and then referred back to HUTH with additional clinical information in accordance with the updated BMUS 2021 guidance and had an ultrasound scan.[1]
- Pre-menopausal female pelvic US primary care referrals which were R-cancelled by HUTH US department and had subsequent imaging with CT or MRI.

R-cancelled Categories included for analysis:

- Vague pelvic pain
- Dysfunctional PV bleeding
- PCOS
- Patient did not attend
- Patient cancelled
- Miscellaneous
- Duplicate referrals
- Benign pathology follow-up

Conclusion

1. The study findings of normal or clinically insignificant rescan results are suggestive that HUTH[2] is adhering to the BMUS 2021 rejection of referral guidelines for non-specific pelvic symptoms in premenopausal women.[1]
2. The results suggest that HUTH is effectively managing local demand for pelvic USS.
3. The small sample size suggests that local primary care clinicians are familiar with HUTH's referral guidelines due to the R-cancel report guidance processes which are already in place, resulting in high quality referrals.[6]

All Categories Percentages for US detectable Pathology

Recommendations

Future audit –

To ensure that the small sample size is the result of high quality referrals, a larger audit of HUTH sonographer vetting performance, specific to premenopausal gynaecology referrals could be undertaken to see if there is a percentage of poor quality referrals being accepted, resulting in a low number of R-cancels.

Consideration of Nationalisation of the R-Cancel Process-

The local R-cancel system could be nationalised to promote consistency for primary care referrers with the long term aim of improving referral quality to improve referral to diagnosis timescales. This could benefit primary care referrers who rotate through different primary care centres and reduce clinical uncertainty when referring for pre-menopausal gynaecology imaging.

Gynaecology RDS service -

The introduction of a gynaecology RDS service may be considered at HUTH in keeping with the BMUS 2021 guidelines.[1]

Artificial Intelligence and Healthcare Referral Systems –

The new general medical RDS service at HUTH utilise a tick-box form for primary care referrers and this could be extended to other anatomical referral groups including gynaecology referrals for pre-menopausal women with the aim of simplifying the referral and vetting process.

AI could be considered for its potential to be developed and applied to NHS radiology referral vetting if human symptomatology can be quantified and applied to simplified electronic referral forms in primary care. If effective and accurate, this would potentially allow the vetting sonographers to scan more patients and meet the increasing demand for scans more efficiently whilst higher numbers of referrals are appropriately vetted.[3]

Remarkable people. Extraordinary place.

References:
1. British Medical Ultrasound Society (2021). BMUS Recommended Best Practice Guidelines; Justification of ultrasound request.
2. Hull University Teaching Hospitals NHS Trust. (2022) Ultrasound department; Local R-Cancel Gynaecology referral
3. Potočnik, J., Thomas, E., Killeen, R., Foley, S., Lawlor, A., & Stowe, J. (2022). Automated vetting of radiology referrals: exploring natural language processing and traditional machine learning approaches. Insights into Imaging, 13(1), 127–127.
4. Richards, M.,(2020). Diagnostics recovery and renewal. Report of the Independent Review of Diagnostic Services for NHS England.
5. SciencePro (2023) Adobe Stock; 3D rendered illustration –uterus
6. Smith, S. Parker, T., & Parker, P. (2022). The justification of non-obstetric ultrasound referrals: A safe and effective practice. Ultrasound (Leeds, England), 30(1), 52–61.
7. Yamaguchi,T. (2019). User-Centric Platform Printers for Unified AI Robot Applications; Open access technology news.