

SIGNIFIED

Whole-body Magnetic Resonance Imaging screening in Li Fraumeni syndrome (LFS) for early cancer diagnosis

- Lydia Taylor, research nurse
- Dr Angela George, Clinical Director of Genomics and Consultant Medical Oncologist in Gynaecology – chief investigator
- Dr Elena Cojocaru, Clinical research fellow



Study design



Partner Academic Studies e.g. Biomarker studies (opportunity outwith proposal)

EQ-5D-5L questionnaire

EQ-5D-5L questionnaire



Methods

- Each scan reviewed by 2 radiologists
- Monthly radiology meeting – to review and discuss all scans and decided on further actions (i.e. repeat scan, specialist MDT/oncology referral)



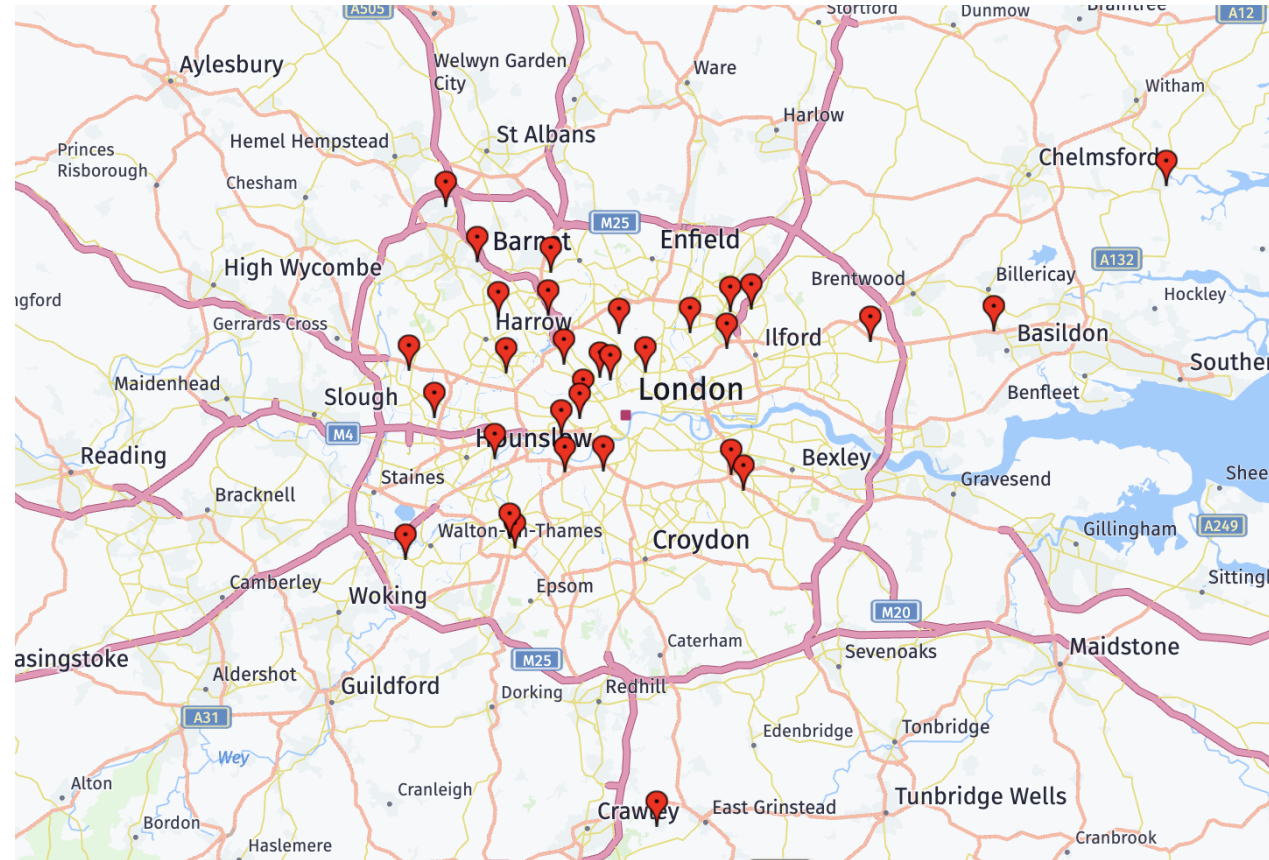
Recruitment

- Between June 2022 – June 2023
 - 55 participants recruited from 39 families
 - **54 patients** included in the final analysis as one patient had both scans done externally

RECRUITMENT SOURCES:

- RMH patients
- Contact with London genetic centers
- George Pantziarka TP53 Trust website
- Dissemination at the Winter Cancer Genetic Group (CGG) meeting 2021/2022

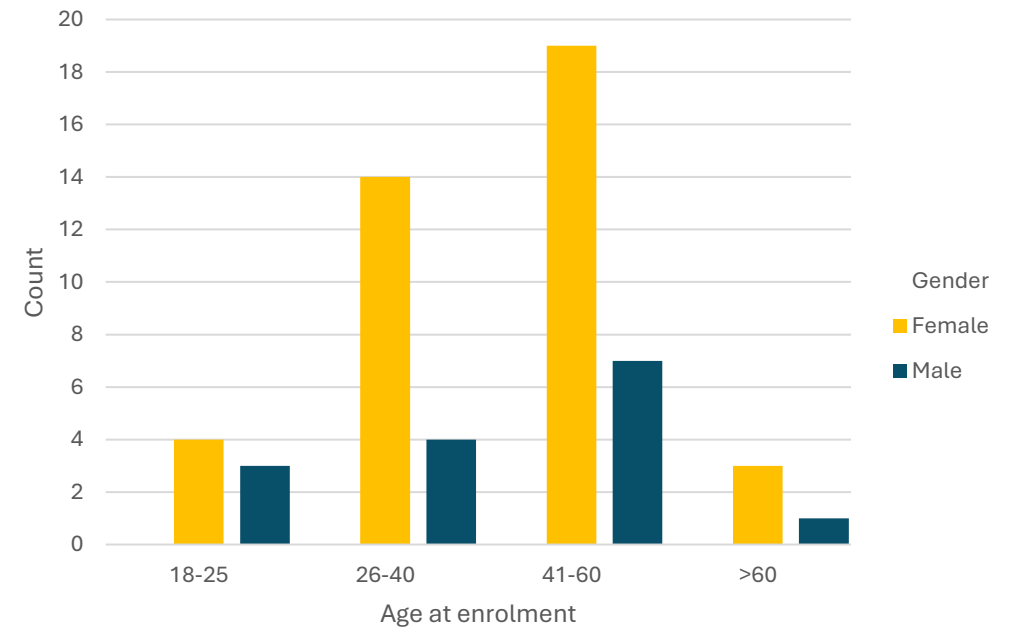
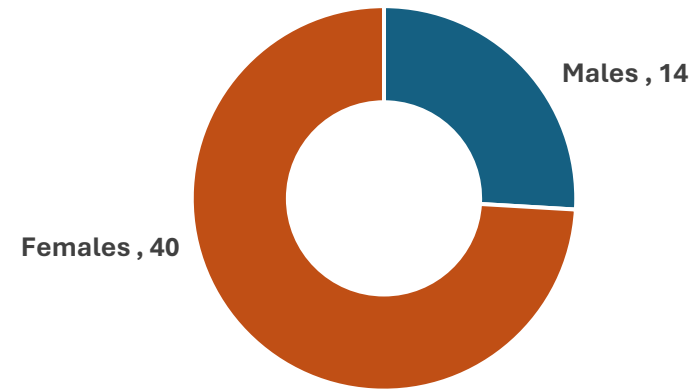
Recruitment



Results

- Males 14
- Females: 40 (including 1 gender re-assignment patient, female at birth)
- Median age at recruitment : 42 years old
- Previous history of cancer
 - Females
 - 47.5% (total of 29 cancers in 19 women; breast cancer in 13 women)
 - Males
 - 28.5% (N=4)

Gender distribution



Results

Scan 1 n=54
(July 2022-August 2023)

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graph TD; A[Scan 1 n=54  
(July 2022-August 2023)] --> B[No Follow up interventions n=35 (65%)]; A --> C[Follow up Intervention n=19 (35%)  
• Biopsy n=9, Cancers confirmed n=4  
• Focused imaging n=9  
• Genetic test n=1];
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No Follow up interventions n=35 (65%)

Follow up Intervention n=19 (35%)

- Biopsy n=9, Cancers confirmed n=4
- Focused imaging n=9
- Genetic test n=1

Interval cancers

Cancers diagnosed between the 1st and 2nd scan:

- 3 invasive
- 2 superficial cancers.

Histology

Superficial skin leiomyosarcoma

Superficial arm leiomyosarcoma

Colorectal adenocarcinoma

Telangiectatic osteosarcoma

Breast cancer

TNM Stage

1

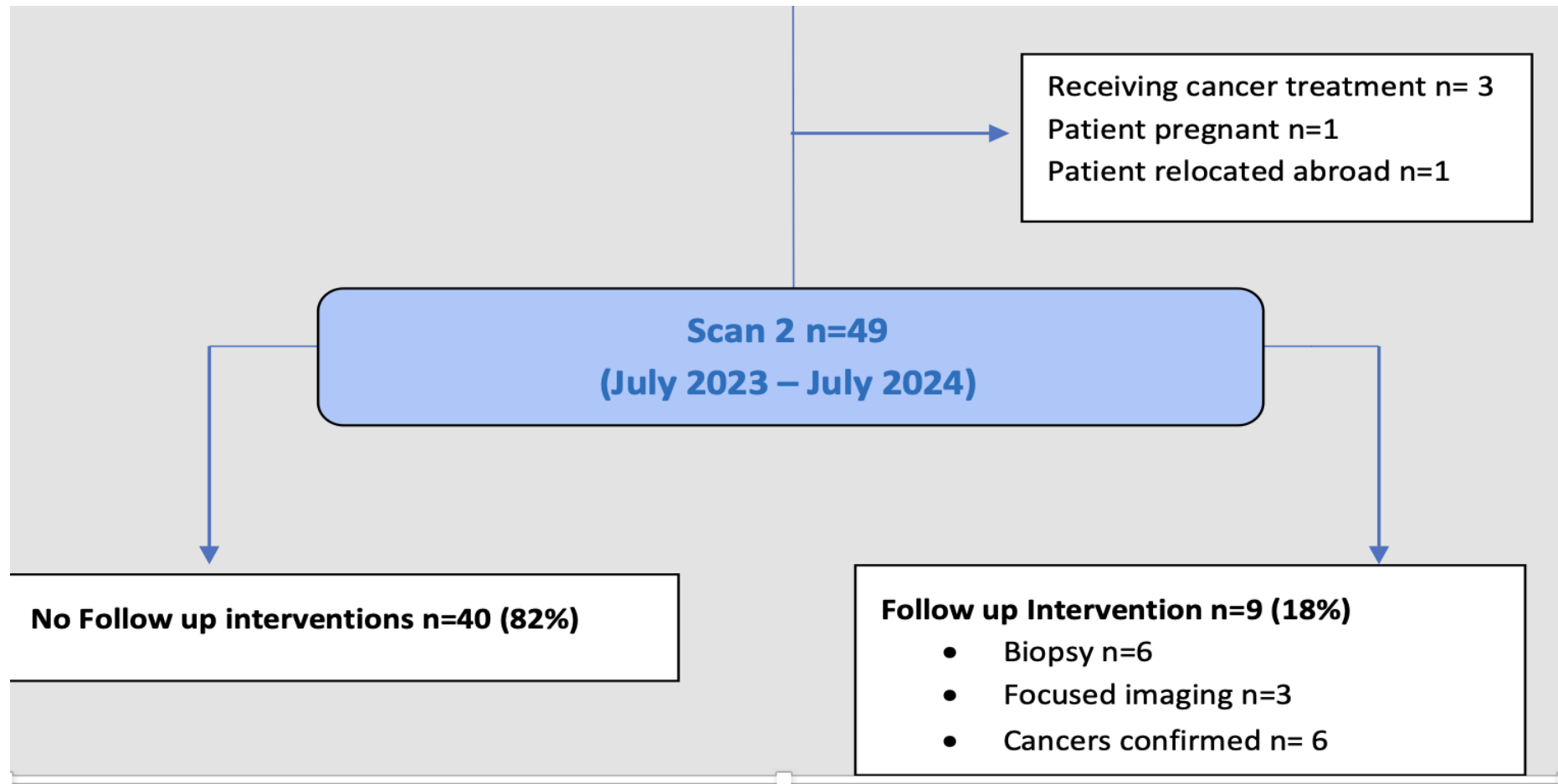
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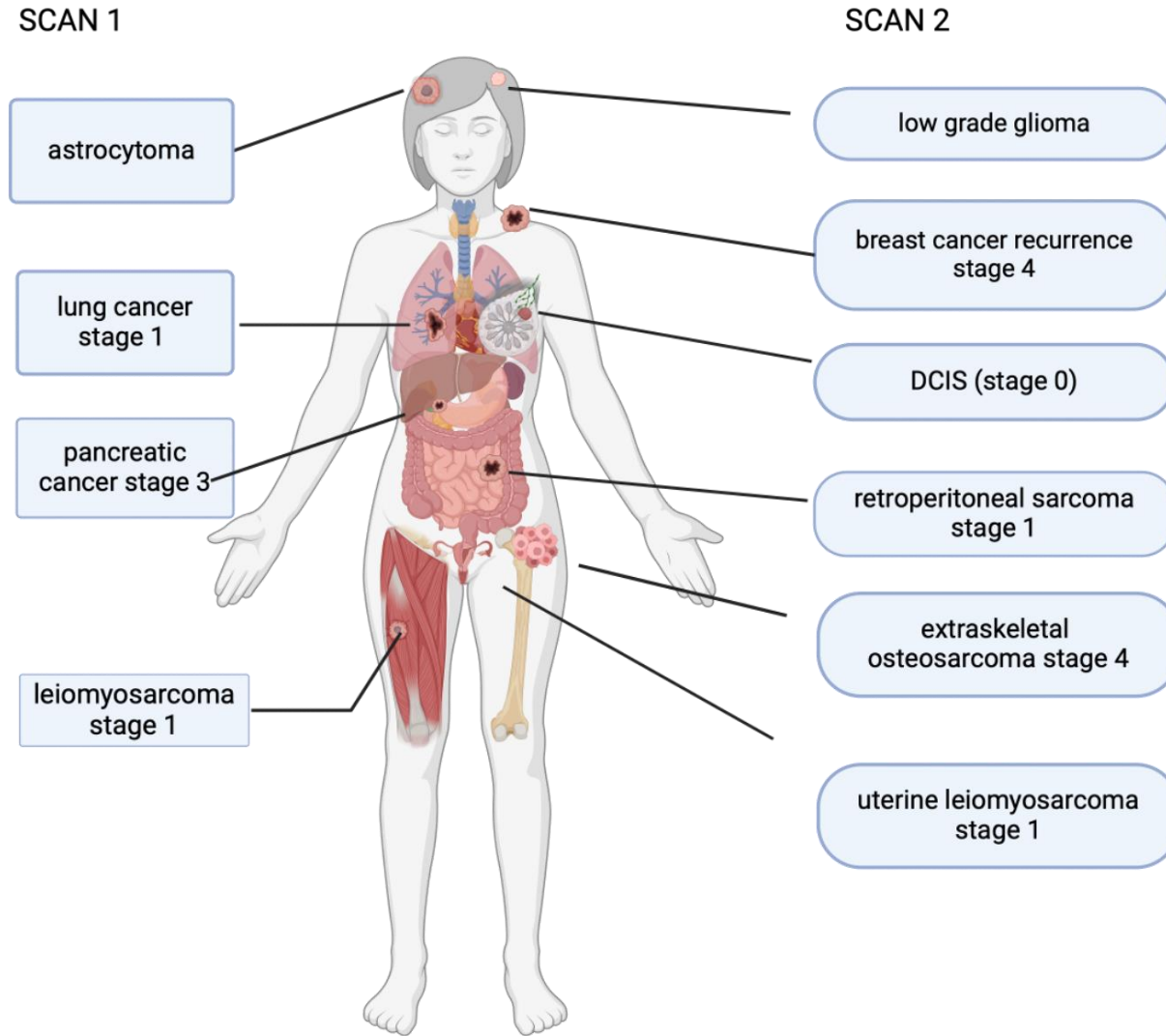
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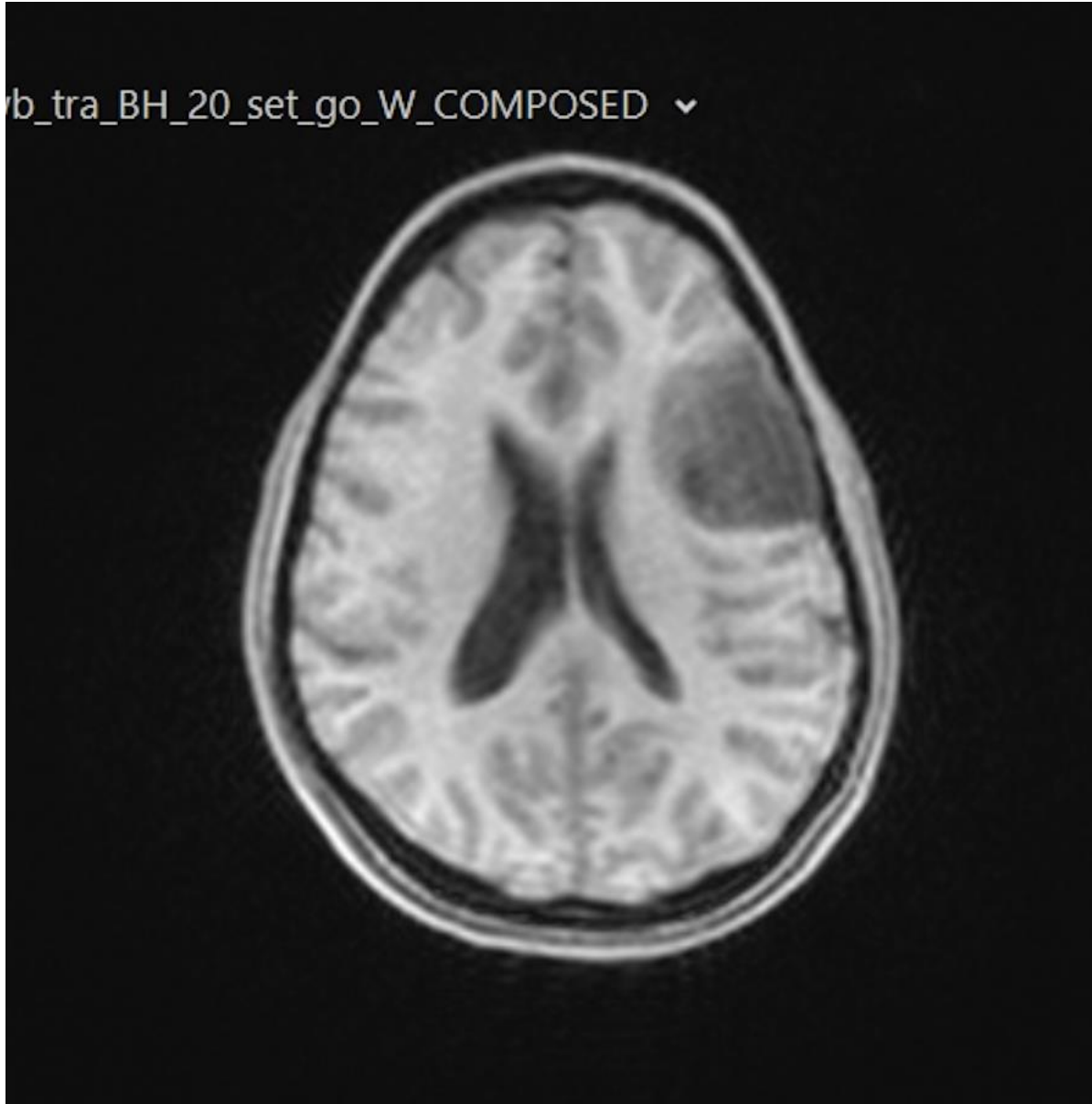
Results



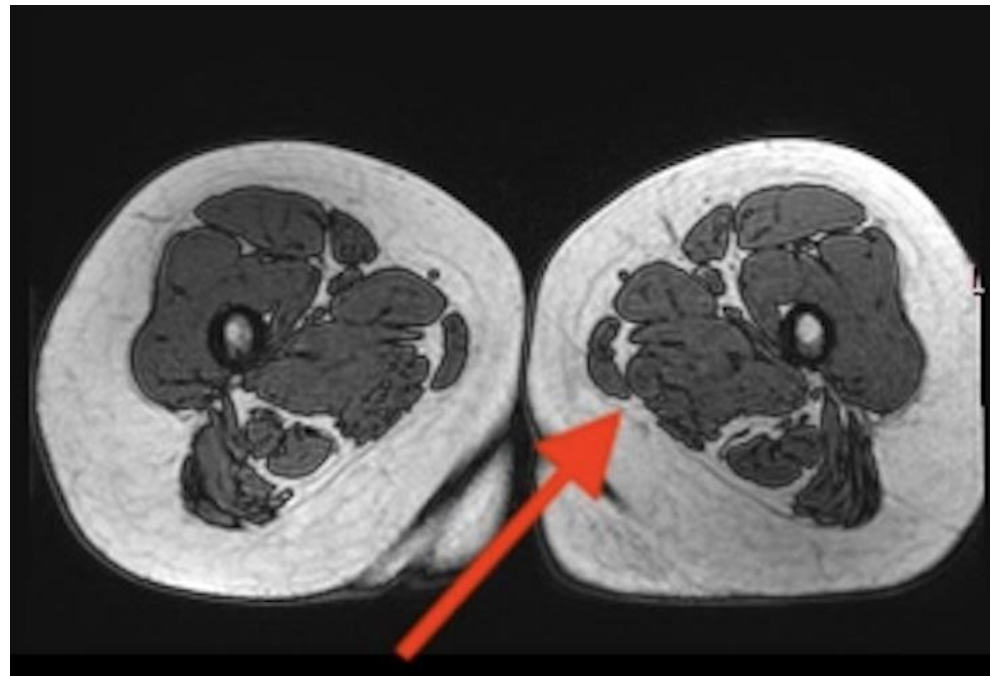
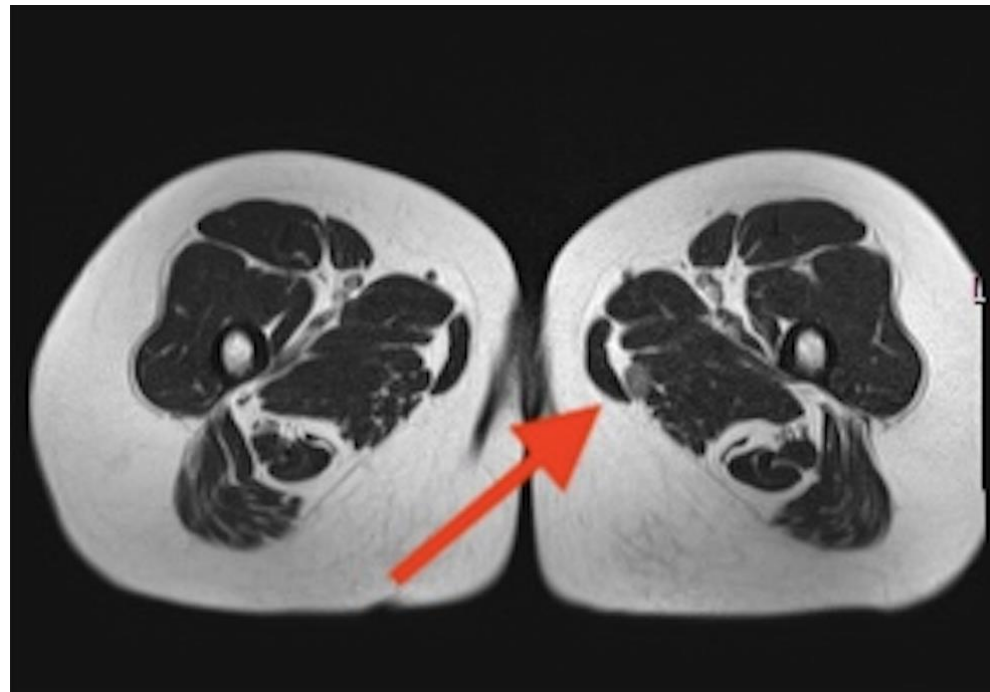
Confirmed asymptomatic cancers following screening with whole-body MRI



Astrocytoma



Limb leiomyosarcoma



- Assessment of EQ-5D-5L questionnaires
 - Mean calculated utility scores will be reported with the number of questionnaires returned and the proportions of missing data.
 - Compare utility scores with historical data from SIGNIFY study

Under each heading, please tick the ONE box that best describes your health TODAY.

MOBILITY

- I have no problems in walking about
- I have slight problems in walking about
- I have moderate problems in walking about
- I have severe problems in walking about
- I am unable to walk about

SELF-CARE

- I have no problems washing or dressing myself
- I have slight problems washing or dressing myself
- I have moderate problems washing or dressing myself
- I have severe problems washing or dressing myself
- I am unable to wash or dress myself

USUAL ACTIVITIES (e.g. work, study, housework, family or leisure activities)

- I have no problems doing my usual activities
- I have slight problems doing my usual activities
- I have moderate problems doing my usual activities
- I have severe problems doing my usual activities
- I am unable to do my usual activities

PAIN / DISCOMFORT

- I have no pain or discomfort
- I have slight pain or discomfort
- I have moderate pain or discomfort
- I have severe pain or discomfort
- I have extreme pain or discomfort

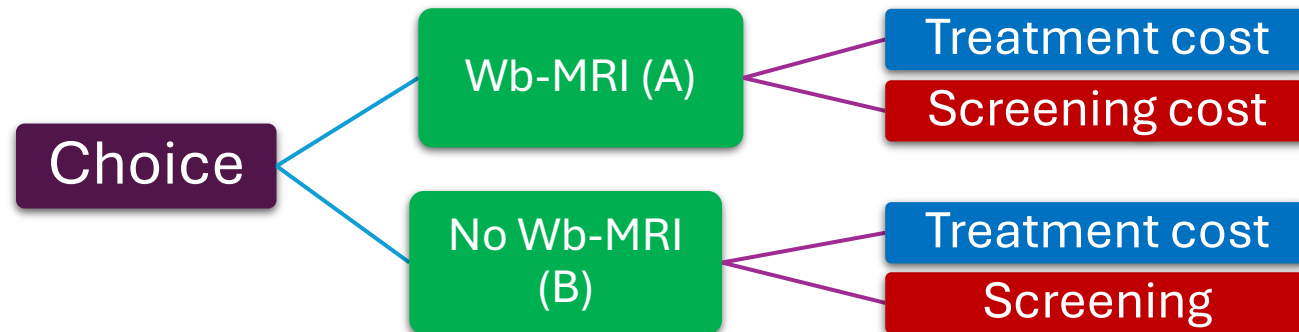
ANXIETY / DEPRESSION

- I am not anxious or depressed
- I am slightly anxious or depressed
- I am moderately anxious or depressed
- I am severely anxious or depressed
- I am extremely anxious or depressed

Health economics analysis

Aims:

determine the cost-effectiveness of screening with WB-MRI and treating early cancers compared to management of symptomatic cancers, using historical controls and a decision analytic model



- Implementation of whole-body MRI as standard of care in the NHS for adults Li Fraumeni patients

Study limitations and learning points

WB-MRI limitations

- Not designed for breast screening
 - Peripheral limbs might not be included
 - Interval cancer diagnosis – sense of reassurance after MRI and may ignore certain red flags
 - Limited machine capacity (90min) and limited radiology expertise in the UK
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- **Other learning points**
 - Limited LFS knowledge/expertise in the community



Conclusions

- Rate of cancer diagnosis in LFS population is very high
- WB-MRI is a valuable and useful radiological tool for the detection of early cancers in LFS and should be implemented as a regular screening test for this population.

Clinical research and operational team

- Dr Angela George, CI
- Dr Richard Lee
- Prof Ros Eeles
- Dr Elena Cojocaru

- Dr Aslam Sohaib, radiologist
- Dr Sam Whitey, radiologist

- Dr Caroline Clarke, HE (UCL)
- Dr Jessica Wang, HE (UCL)
- Sofia Sardo, statistician
- Catey Bunce, statistician

- Lydia Taylor, research nurse
- Dr Michelle Chen, RMP
- Shafa Ullah, ED&D

The ROYAL MARSDEN
NHS Foundation Trust

ICR The Institute of
Cancer Research

RM Partners
West London Cancer Alliance

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