APPENDIX 5

Clinical Implementation of the findings from the projects

This appendix details clinical implementation of the findings of the funded research projects:

- The data has been used to help derive an MRI activity score, which is widely used in research publications and clinical practice.
- MR Enterography (MRE) has subsequently been regarded as having at least a complementary role to capsule endoscopy in surveying Peutz-Jeghers patients, and the UK guidelines now recommend MRE as part of the surveillance protocol.
- Capsule endoscopy has clinically significant limitations, and that cross sectional imaging techniques such as MR, may provide additional information which is more clinically relevant, particularly due to accuracy of measurement of lesions.
- Trialling a workstation based decision support system for paediatric brain tumour analysis and also for the radiological diagnosis of autism using multi-parametric data.
- Work on advanced imaging including Arterial Spin Labelling now means such perfusion techniques have been translated into routine NHS clinical practice.
- Acquired extensive obstetric scanning experience during the project and since becoming a consultant, have been providing expertise in foetal MRI scanning and reporting within the NHS for problem solving of difficult obstetric cases.
- Perform 3T routinely for potential labral injury especially younger patients, to avoid Magnetic resonance arthrography (MRA) and injection.
- The MRI sequence for intravoxel incoherent motion (IVIM) was implemented for MRI machines at the host institution. However, it is not in current clinical use due to poor reproducibility.
- Rejected the 3T sequence, which some were keen to adopt.
- The paper has been quoted by other papers subsequently.
- A predictive validation study was performed after completion of this project, although the simulator was not shown to have predictive validation.
- The simulator has however been used in preliminary training for Specialist Registrars (SpRs) and radiographers performing ultrasound guided procedures.
- This study has shown that diffusion weighted imaging (DWI) cannot be used to identify sinusoidal obstructive syndrome.
- The host institution has adopted DWI for head and neck cancers as routine practice following this project.
- Modest amounts of knowledge gained will have been applied by other research groups (via Siemens) towards measuring 4D flow in other anatomical areas.
- It is anticipated that multi-modal MRI will become part of the standard imaging protocol for glioblastoma (GBM) patients undergoing chemoradiotherapy in the near future.
- Radiologically evident airway and lung disease is present in a significant proportion of morbidly obese individuals, which may be clinically apparent, or at a subclinical stage. These findings showing that these changes may reverse following bariatric surgery are significant since this has the potential to diversify patient selection for surgery in the future.
- The multidisciplinary bariatric surgery team were very receptive and enthusiastic to the clinical implications of research in terms of potential patient selection as well as adequate preoperative work up of potential airways and lung dysfunction in these patients.
- It informed part of a continuous clinical and radiation dose quality improvement programme which continues actively to this day and in future.
- Underpinned one of the recommendations of the joint ESGAR-ESGE guidelines for the use of CT colonography.
It is anticipated that following on from these studies, motility assessment as part of clinical practice may become a valuable option for evaluating gastrointestinal disease.

This grant enabled the initiation of Cardiac CT imaging at our institution, which has led to development of a flourishing Clinical Cardiac CT service in the region. The Investigator has spoken on cardiac CT at several local and national educational meetings.

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- Analysed the two year data from the trial, which supported the use of this technology in routine clinical practice. In addition, the results will be included in an international meta-analysis of radiogenomics studies of radiotherapy toxicity.
- Established the role of PET CT in Radiation therapy planning of oropharyngeal cancers. Also provided valuable preclinical data prior to dose escalation study.