NHS BLOOD AND TRANSPLANT
CARDIOTHORACIC ADVISORY GROUP – LUNG 1 APRIL 2020

NHSBT CLINICAL RESEARCH FELLOW IN CARDIOHORACIC TRANSPLANTATION PROJECT PROPOSAL

INTRODUCTION

The current NHSBT Clinical Research Fellow in Cardiothoracic Transplantation and Clinical audit fellow, based at the Freeman Hospital, Newcastle, commenced in August 2019. Working under the supervision of Professor Andrew Fisher, Professor John Dark and Miss Karen Booth, the proposed project title is ***Developing strategies to increase donor lung utilisation in UK Cardiothoracic Transplantation***. It is intended that this work will be submitted for the award of PhD at Newcastle University in 2022.

This document has been written to introduce and outline the planned work from the Cardiothoracic Clinical Audit Fellow and highlight areas where additional support and/or action points may be required from the Cardiothoracic Advisory Groups (CTAG) and Cardiothoracic Clinical Audit Group.

BACKGROUND

Meeting the growing demand for organs in lung transplantation requires an increase in utilisation. Decision making in organ utilisation is complex and influenced by multiple factors, including those of the donor and recipient, surgeon behaviour and interaction with systems, logistics and the working environment.

Process mapping, along with review of the *lung summit action points,* Cardiothoracic Advisory Group work plan 2018/19 and NHSBT strategies have been used to identify project areas for study and development to address organ utilisation in UK lung transplantation.

A greater understanding of lung utilisation behaviours, better tools for evidence-based decision making and improved donor management practice are required to increase lung utilisation from the current donor population.

PROJECT SUMMARY

The three primary projects that have been identified for study are:

1. Development of the UK Lung Risk Index
2. Evaluation and quality improvement of UK Donor Care Management
3. Cardiothoracic organ offers and utilisation behaviour

PROJECT OUTLINE

1. <u>Development of the UK Lung Risk Index</u>

Current decision making is guided by historic criteria with varying degrees of subjectivity. Evidence suggests that many potential donor lungs are ruled out on the presence of individual factors that are perceived to be unacceptable in terms of risk to the recipient.

Scoring systems can be used to capture elements of complex clinical scenarios and aid decision making. Although Lung risk scores have been developed they remain limited in their applicability. Standardised donor scoring systems have been successfully applied in UK transplant practice with a UK donor risk index defined

for Kidney and liver transplantation. Applying a numerical value of overall lung quality increases the level of objectivity in assessment for utilisation decision making.

Ultimately, a Donor Lung- Recipient Risk Score provides the foundation for named organ offering within the UK lung organ allocation system. We hypothesise that named organ offering will increase lung utilisation rates. Where a lung offer is declined, identification and analysis of the reason for decline will be facilitated by the Lung Risk Index.

Methods

Development of the Lung Risk Index will employ the following statistical methods

i. Donor and recipient factors influencing outcome will be investigated using Cox proportional hazards regression.
ii. The coefficients of the significant donor and recipient variables will be used to construct the risk index - Multivariable stepwise logistic regression model building

The donor and recipient candidate variables, and the patient outcomes we wish be predicted by the risk index, will be defined by the research group and assessed for credibility, objectivity, reliability and prevalence. These will then be brought to the CTAG lung group for final review and agreement. Candidate variables will be reviewed and agreed by CTAG lung group

The total dataset will be divided into a *modelling* cohort and a *validation* cohort. The relatively small UK lung transplant population may limit model development. It is proposed that international collaboration and sharing of data may be included in this research

CTAG action points

a. Candidate variables for analysis for model development within the scoring system will be reviewed and agreed by CTAG lung group.

b. The outcome measures to be used for the end points of the scoring system will be will be reviewed and agreed by CTAG lung group.

2. Evaluation and quality improvement of UK Donor Care Management

Background

There is evidence that standardised, protocol-led, goal-directed donor management increases both the quality and quantity of organs successfully donated.

We hypothesise that donor care management using the defined NHSBT *Donor Optimisation Extended Care Bundle* is variable throughout UK intensive care and organ donation practice. The reasons for this variation, including barriers to standard donor management practice have not been formally explored.

The project aim is the improve donor care management throughout the UK, improving donor organ quality and increasing organ utilisation.

Methods summary

1. *NHSBT DBD Donor Optimisation Extended Care Bundle* questionnaire study
2. Regional audit of current donor management practice and impact on organ utilisation
3. SNOD and CLOD semi-structured interview study
4. Delphi consensus re-design of UK donor management strategy

Progress to date

The donor management questionnaire has been written and approved for use by NHSBT and the Clinical Lead for Organ donation. Distribution of the questionnaire is currently on hold.

Advisory group action points (NODC)

a. Results from the questionnaire study will be used to guide the semi-structured interviews to develop our understanding of the barriers to utilisation of the current NHSBT *DBD Donor Optimisation Extended Care Bundle*.

b. The outcomes of these studies will be used with the National Organ Donation Committee in a Delphi consensus process to develop and redesign the UK DBD donor management strategy.

3. <u>Cardiothoracic organ offers and utilisation behaviour</u>

Methods

1. Prospective audit of all offer discussions and detailed reasons for offer declines conducted by Cardiothoracic Transplant Co-ordinators
2. Retrospective review of offers using a Human Factors Framework to identify patterns in utilisation behaviour
3. The National 'ideal lung' audit

Progress to date

The format for the audit, including data collection tool has been defined and will be submitted to the NHSBT audit department. Currently, the Freeman Hospital, Newcastle has agreed to participate in the prospective audit. We hope to recruit at least 1 other centre to participate in the audit.

CTAG/Clinical Audit group action points

a. The potential for the prospective audit to be conducted by all UK Cardiothoracic Transplant Centres, with support from the Cardiothoracic Clinical Audit Group has been discussed and will be explored further.

b. The National 'ideal lung' audit has previously been conducted. The potential to re-institute this will be explored with CTAG.