



NACSA Research Group Meeting

5th October 2012 11:00 – 13:00

Minutes

Present:

| | | | |
|----------------------------|----|-----------------------------------|----------------------|
| Ben Bridgewater (Chair) | BB | Consultant Cardiothoracic Surgeon | Uni. Hosp S. Manc |
| Rebecca Cosgriff (Minutes) | RC | NACSA Project Manager | NICOR |
| Joel Dunning | JD | Consultant Cardiothoracic Surgeon | James Cook Uni. Hosp |
| Mike Fisher | MF | Patient Representative | SCTS |
| Graeme Hickey | GH | Biostatistician | NIBHI |
| Simon Kendall (via Skype) | SK | Consultant Cardiothoracic Surgeon | James Cook Uni. Hosp |
| Lynne Walker | LW | Programme Manager | NICOR |

1. Welcome and Introductions

RC welcomed everyone to the first meeting of the National Adult Cardiac Surgery Audit (NACSA) project board and all attendees introduced themselves to the group.

2. Apologies

Apologies were received from Zoë Fearnley, Stuart Grant, Emmanuel Lazaridis and Sue Manuel.

3. Data Application Process/Charges

LW explained that the NICOR Research Group have provisionally proposed a 5k charge for access to National Audit data for research and 10k for commercial companies, with a 1k fee for any annual updates. These charges are yet to be ratified.

BB stated that SCTS members should be able to gain access to NACSA data free of charge if they are already configured to carry out the research. If a member wanted NACSA data to form part of a funding proposal, then the NICOR 5k fee should form part of that proposal.

After discussion amongst the group, it was agreed that applications from non-members, including commercial companies, should be costed on a case by case basis. This is feasible as the number of data applications for SCTS is currently low, and the ad hoc policy can be revised if this changes.

It was agreed that any non-surgeon making a data application needs to partner with a surgeon before data can be released, as it is complex and requires in depth clinical understanding. That surgeon may or may not be a member of this board.

RC stated that currently information about data sharing on the SCTS website doesn't reflect the NICOR data sharing policy. The group agreed that this should be changed.

Action

Action: RC to contact Isabelle Ferner at SCTS to arrange for their data sharing information to be altered. All applications are to come via RC using the NICOR data sharing application form.

RC

LW stated that the MINAP model is for a paper to be approved by the Research group prior to publication and that researchers are advised to have a statistician on board.

BB pointed out that mistakes have been made with NACSA data previously, even when surgeons and/or statisticians have been involved. This is easily done by anyone who doesn't have a comprehensive understanding of the NACSA dataset and its foibles. For this reason any research project involving NACSA data will need to send an analytic plan, data cleaning process and list of active variables. GH will also need to oversee and approve all analysis. Proposals will only be given the go-ahead if sufficient support can be provided by the research group to ensure robust analysis and reporting of the data. BB will act as data guarantor.

SK suggested that research proposals can be approved by the group remotely so that they do not have to wait up to three months for a research meeting to convene.

GH stated that whether we provide a group with cleaned or un-cleaned data will depend upon the complexity of the fields they require. Where cleaned data is provided the researchers should sign a document stating that they have read, understood and accept the cleaning codes used by GH.

Action: LW volunteered to send GH Spiros Denaxas' 'Data Cleaning Dictionary' for reference.

LW

Action: RC to amend the SCTS data sharing appendix for approval of the group before upload onto the NICOR website.

RC

LW reported that NICOR has sent a proposal to HQIP for a meeting to be held every 2 months to review all applications for NICOR audit data, rather than every application going through HQIP prior to approval.

JD stated that the group should actively encourage projects involving collaboration with overseas projects.

LW queried whether SCTS members know they have access to data. BB responded that they do and that research papers generated by the University of Manchester should organically encourage research applications from outside groups.

4. **Current research and recent publications**

An accurate record of all past and current research activity is required for the NICOR website and to keep all group members up to date.

BB summarised NACSA research activity as follows:

| Title | Group/PI | Status |
|--|------------------------|--|
| Aortic valve surgery: Marked increases in volume and significant decreases in mechanical valve use | Joel Dunning | Published J. Thorac. Cardiovasc. Surg., October 2011; 142: 776 – 783.e3. |
| How does EuroSCORE II perform in UK cardiac surgery? | UHSM (BB, GH, SG) | Heart 21/08/2012 |
| Dynamic Trends in cardiac surgery; why the logistic EuroSCORE is no longer suitable for contemporary cardiac surgery and implications for future risk models | UHSM (BB, GH, SG) | Journal of Cardio-thoracic surgery, eScholarID: 172922 |
| Predictability of EuroSCORE for Emergency and Salvage cases | UHSM (BB, GH, SG) | Under review at circulation cardiovascular quality and outcomes |
| Dynamic modelling | UHSM (BB, GH, SG) | Nearly ready to submit |
| Why have outcomes improved over time? | UHSM (BB, GH, SG) | Draft |
| Bilateral and Singular Mammaries | UHSM (BB, GH, SG) | Draft |
| Off pump surgery | Birmingham (D. Pagano) | On Hold |
| Mitral valve outcomes | UHSM (BB, GH, SG) | Draft |
| Volume outcomes analysis | UHSM (BB, GH, SG) | Analysis in preparation |
| Mitral Valves in octogenarians | Octogenarians | Analysis in preparation |

BB confirmed that no data has been shared with external bodies since HQIP began funding NACSA and any historic data has been electronically shredded. Input from the group on what should be prioritised will be welcomed. In future all proposed projects from the University of Manchester will be circulated to the group for approval.

A generic data sharing agreement is required between University of Manchester and NICOR, or honorary contracts that would circumvent this requirement (see minutes of Project Board 5th October 2012, item 7).

Action: RC to discuss data-sharing agreement/honorary contracts with ZF

RC

MF queried whether the SCTS is aware of all NACSA research activity. BB confirmed that he relays it in the quarterly database report.

LW requested the system level security policy for the University of Manchester.

Action: GH to send.

GH

BB stated that he has received an application from Alistair Graham from Belfast comparing outcomes for complete and incomplete revascularisation.

Action: BB to circulate paper to the group for comment/approval.

BB

5. NICOR attribution

LW reported that the NICOR research group have suggested that the name of NACSA should be included in the title of any publications, and possibly NICOR also. ZF is currently formulating a NICOR-wide policy on this, which will be reported in the next NICOR research group meeting.

JD stated that this may cause problems as titles have a restricted word counts and journals do not like the use of acronyms/abbreviations.

Action: BB/LW to report back on this decision to the group

LW/BB

BB stated that for the EuroSCORE II project, NICOR was recognised for providing the data in the 'acknowledgements' section. If honorary contracts are granted then NICOR could be attributed in the authorship.

The group are supportive of promoting NICOR as a brand provided the measures are reasonable and practicable.

6. HES data research project

BB explained that there has been a historic misconception that HES data should be considered the 'gold standard', whereas in reality HES and National Audit data are different ways of collecting similar information, with neither being overtly superior to the other. Work is currently on-going in partnership with Domenico Pagano's team in Birmingham to compare HES data to NACSA audit data in order to understand variance. The project has been held up by lack of analytical capacity in Birmingham but things are moving forward now.

LW queried how good coding is for surgery and BB reported that it is comprehensive and accurate but complex. JD stated that cardiac surgery doesn't have the problems with coding inaccuracies that other disciplines do, although there probably are issues

with consultant attribution.

BB reported that the numbers reported in HES and NACSA are comparable and support the assertion that case ascertainment for the audit is high, but that work on this is on-going.

7. Application: Machine learning models for risk prediction and handling missing data in cardiothoracic surgery records

The research group reviewed an application for access to NACSA data from Nevena Lazic at Microsoft Research Ltd.

The project seeks to improve risk prediction in cardiothoracic surgery using a more sophisticated probabilistic model than the current logistic regression model. This includes developing a principled approach for handling missing values that are not missing at random. I.e. do sicker patients have less data recorded about them?

GH stated that some values are forced missing during the cleaning process if clinically improbable, which may present a problem for this project. Providing RAW data would increase the work involved in their project exponentially, but their utilisation of cleaned data would mean their project were an artefact of the way that the data has been interpreted at Uni. Manchester.

There may also be an issue as far as the SCTS is concerned with an external organisation identifying outliers if they are requesting surgeon specific data.

JD suggested that this proposal is a way of Microsoft obtaining a dataset to test out their new model.

GH clarified that he has met with the researchers and that they already have a dataset for asthma. Microsoft have a very close working relationship with the respiratory department at University Hospital of South Manchester (UHSM). We may not be able to provide the same level of support to a cardiovascular project. It is interesting research but missingness could be down to data cleaning and, without extensive guidance, the project team could misinterpret fields that are meant to be blank (i.e. because they are not applicable for certain procedure).

MF queried the purpose of defining risk accurately, as patients who need an operation may not have their decision making process affected by a 2% risk being converted to 3%.

SK explained that risk adjustment is required for governance arrangements, to properly manage unsafe surgeons. BB stated that this project is a result of Microsoft's desire to increase their capacity to make inferences from datasets that would benefit patients.

BB voiced his support of the project, on the proviso that the group can have input. They would require provision of RAW data with the support of PhD student Kate McAllister.

GH expressed concern that he would be unable to give the project as much time as the asthma project statistician, and that Nerina leaves Microsoft in March so will need to complete the project quickly.

JD pointed out that one element of their project, risk prediction, requires cleaned data, whilst the other, missingness, requires RAW data. As a commercial organisation should they be charged 10K? The publicity on the Microsoft website would be beneficial to NACSA.

SK conveyed his support for the project.

BB suggested that we support the project but proceed with caution. John Deanfield's approval should be sought and the researcher would receive assistance from GH and Kate McAllister.

Action: LW to discuss with John Deanfield and liaise with BB

LW

LW stated that we require a list of data items required and whether or not they need surgeon identifiers. Is the project of commercial value to Microsoft?

GH reported that infer.net is currently open source, but could be sold once its power has been evidenced. The project could be high impact for NACSA, but the SCTS would need to invest to support it comprehensively; perhaps with a dedicated member of staff in Cambridge. The group was in support of this suggestion.

Action: This proposal is to be an agenda item for the next meeting for further discussion

RC

8. **Application: Genetic variants, Leukocyte telomere length and cardiovascular morbidity/mortality in people with diabetes**

The research group reviewed an application for access to data from NACSA and other NICOR audits from Prof. Steve Humphries at the UCL Institute for Cardiovascular Sciences.

The project aims to explore the association between a number of genetic markers including measures of LTL, inflammation and oxidative stress with 10 years cardiovascular disease morbidity and mortality in individuals with type 1 and type 2 diabetes. This will involve the linking of MINAP, Heart Failure, Adult Coronary Interventions, and NACSA data.

This proposal was pre-approved by chair's action and the group voiced no objections.

Proposal approved

9. **Any Other Business**

Research programme web presence

BB asked the group to voice opinions on the web presence of the NACSA research programme.

RC stated that currently information is spread across the SCTS, NIBHI and NICOR websites, and that it would be better to keep all information on the project in one place, with the other websites redirecting to that place. As the NICOR web pages are the easiest for RC to maintain, it would make sense for them to be the main repository for NACSA research information.

The group were in agreement. SCTS information currently stored on GH's NIBHI personal pages will be transferred to the NICOR website to avoid repetition.

Action: RC to update the NICOR webpages with research information

RC

SK stated that SCTS branding would need to be present on NACSA research pages on the NICOR web pages. RC stated that this will be the case.

New research project ideas

BB queried whether a research 'away day' is required to stimulate new research ideas/themes. For example, GH and BB would like to create an E-based widget for clinical use to give likely long term outcomes for procedures, roughly risk adjusted for age, social deprivation etc.

JD stated that the current programme of research is great, and suggested that the SCTS conference could be used to discuss research ideas, but BB felt that this meeting is already too busy. A potential research question is "What is the risk if I do not have my operation?"

SK suggested conference calls could begin these discussions as they are cheap, easy and informal. These could be followed up with an 'away day' if deemed necessary.

BB said that Andy Owens, Mike Poulis, and Domenico Pagano should be invited to participate, along with other motivated researchers who are not directly affiliated with NACSA.

GH stated that he has capacity to oversee analysis for 3-4 more research projects over the next six months.

Action: Discussion of new research ideas to be an agenda item for the next meeting

RC

Date of the next meeting

RC is to send out a doodle poll ASAP for suggested meeting dates in January 2013, to be held on the same day as the Project Board.

RC