Project Title: Activation of Coagulation and Inflammation in Trauma (ACIT)

Background

ACIT is designed to identify the clinically significant mechanisms by which the body's inflammation and coagulation pathways are activated immediately following major trauma. It also allows the monitoring of any change in functional blood coagulation, during the course of treatment with blood components and procoagulant agents. The study is revealing how trauma leads to coagulopathy and a perturbed inflammatory response, which leads to increased transfusion requirements and adverse outcome in terms of organ failure and death.

Project leads

Dr Ross Davenport, Senior Lecturer - Centre for Trauma Sciences, Blizard Institute
Dr Claire Rourke, Clinical Trials Manager - Centre for Trauma Sciences, Blizard Institute

Undergraduate Researchers

A 1st year, MBBS
A 3rd year, MBBS
A 3rd year, MBBS
A 4th year, MBBS

Undergraduate researchers' roles

Students will assist with this ongoing research study, which serves as a platform for the enrolment of adult trauma patients in the Emergency Department setting and the standardised collection of clinical data and patient blood. These study materials support multiple analyses to describe the body's response to injury and blood transfusion therapy.

Students' roles within the department would be as research assistants, and they would join the study support rota assisting the clinical research fellows to recruit eligible trauma patients into our portfolio of trials covering shifts between 8 am to 10 pm 5 days a week. They would attend all trauma admissions in the emergency department and experience how trauma resuscitation is saving lives at a major trauma centre. They will then observe the trauma patient pathway through attending regular ward rounds and assisting with any follow-up questionnaires/reviews.

Selection process

The assessment centre was useful for Claire as she went into it looking for the best candidate (e.g. a 4th year, stood out). Thinking of the aims of the pilot, a 1st year student improved the most and got the most out of the pilot project. He was really involved and went above and beyond what was required. Consequently, Claire learned from the process and would change her view of

students and what she is looking for. In contrast, the students who approach them are inevitably self-selecting.

Student researchers' views (collected through focus groups)

The students learned about:

- Teamwork, even though it was a short project
- Resilience, the team supported each other; they had to deal with death; learning about keeping calm under pressure.
- Support, this was integrated into the learning itself. They had hot debriefs – within a day of a serious event – and cold debriefs later I which they talked about what they'd seen informally.

The question of authenticity came out in the discussion with the students in the focus group. This is a unique opportunity for medical students to join a research team working in a complex environment. For the student researchers, having to do a presentation based on a section of clinical data forced them to think critically, and because they were presenting real world-data, they learned more, unlike an essay on their course which they said was not a real thing. For them, it was about making sense of and questioning the data and thinking about what they were learning. Students commented that the presentations helped them to develop a rationale for understanding trends, and their opinions about these. Staff were pushing into their understanding. The students commented that it was a 100% improvement on normal study, way more useful and more hands on.

Students talked about how much insight they gained into the relationship between research and medicine, and how this comes about. It made them care about the work and practice their ability to understand. In contrast, they felt that the work they do as part of SSCs don't give them such great opportunities as this project, it's just another assessment.

We discussed their integration into the research team. Each student was allocated a mentor and felt that they had lots of one on one time, and said they were very well supported and integrated into the team. They spoke very highly of the team and how much they appreciated being treated as part of the team and not as students. They valued being given responsibility and talked about the team as a 'great family'. Their work patterns were flexible and they were able to fit them around their studies, even during the exam period, during which time they were left to get on with their revision.

They made comparisons with the MBBS in which they felt research was not taught well. They felt strongly that all medical students should have this kind of opportunity. In sum, all participants were very enthusiastic about the value of the project and how much they were learning about medicine and research.

Research leads' views

In contrast to the MBBS style of learning (in years 1 and 2), the students enjoyed being pushed and forced to use their brains a lot more. Their exposure to medicine and multiple trauma calls, following patients through to *Resusc* and *Intensive Care* the benefit of having clinical researchers, means that the Research Fellows are able to talk about clinical aspects with the students, which in turn reinforces why the research they're doing is so important. It marks a big contrast with (wet) lab-based research.

The benefit for the ACIT team is that students are an integral part of the research team and although they have clinical researchers, the students enable them to have Mon-Fri coverage until 10 pm, help fellows to collect data and contribute to the academic output, as they're given projects and questions to look at. This enables the ACIT team to explore more diversity of questions. They use the Slack app which means that questions can be submitted at any time, and everyone has access to the team and its resources on their channels.

Students are also beneficial to Research Fellows as they learn about mentoring, supervision and marking. The fellows find it useful as it helps them improve their teaching and understanding.

Assessment

For staff: Ross and Claire spent a lot of time thinking about what could be assessed (not something they'd considered) and it was quite a struggle. The assessments were a benefit to team work but they didn't fully get to grips with assessing them individually. There was a bit of confusion on the objective setting and reflective commentary (Component 1) because of their lack of familiarity with these assessment types. Students were also a bit confused about some of their assessments and when it got into their exam period made it tricky.

None had had to manipulate data sets and had to learn from scratch. Also given a massive amount of data mentors came into their own. There is so much they can do in this area as it's a key function of Junior doctors.

Possibly there was a little too much assessment with the amount of time spent on data manipulation. It's worth rebalancing and taking out an assessment. The data work really pushed them. It's a unique opportunity as they are carefully mentored throughout the process.

For students: The four participants didn't grasp the aims of the project until a month in and didn't fully understand the purpose of the objectives setting of component 1. Instructions for this task need revising. The critical appraisal became part of their assessment and they were given feedback on their performances. Component 2 and 3 were either ongoing or hadn't been completed at the time of the focus group.

Communicating research to the publics was something they are used to as medical students. Keeping a log was also familiar practice as was the reflective commentary, something most of them are used to doing a lot.