2013-10A

York NeuroImaging Centre
THE UNIVERSITY of York

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# Workflow 4: Information for Investigators Scanning

# Scanning

## Preparing a participant for scanning

It is important that your participants have received some level of preparation before they enter the scan suite. The Participant Preparation: RGC Requirements are the procedures that the RGC requires you to adhere to when scanning participants at YNiC. The Participant Preparation: YNiC Advice is a set of advised procedures which have proved over time to improve scan efficiency.

### Participant Preparation Checklist: RGC Requirements

**You should provide all relevant information to your participants prior to the scan.** This is done by forwarding documentation to them *at least 24 hours* before the scan (YNiC Full Consent forms, MEG/MRI participant leaflets etc). An example email to send to participants is available here; https://www.ynic.york.ac.uk/forms/DraftParticipantEmail.doc. If your participant has not taken part in a neuroimaging experiment at YNiC before you should attach to this email the Full Consent Forms, the Participant Registration form, and the MRI and MEG Participant Leaflets. The Participant Registration form needs to be returned to YNiC at least 48 Hours before the scan (please remember that completed participant forms must not be sent via email). The Consent Forms should be filled in by the participant in advance, if they are a new participant, and brought with them on the day of the scan. If the participant has already taken part in an imaging study at YNiC their consent forms are kept in a locked filing cabinet in the Administration office. Ask a member of YNiC staff for access to filed consent forms. The MEG/MRI Participant Leaflets are simply for informational purposes.

**You need to review the study-specific consent form with your participant.** In addition to the YNiC consent forms, the RGC requires that you have a study-specific consent form. It is advised that your participant completes all forms at least 24 hours prior to the scan. On the day of the scan you should discuss all forms with your participant in the Interview Room before they enter the scan suite.

**You need to review the YNiC Health and Safety and Consent forms with your participant.** The YNiC Full Consent Forms, and are available here; https://www.ynic.york.ac.uk/forms/FullConsentForms.pdf. Forms must be reviewed for all participants even if they have participated regularly. This review should be completed with the participant in the Interview Room, before the participant gets changed. It is imperative that these are not completed in Reception or Open Plan; the Consent Forms contain sensitive information that must be discussed in a private environment. Although

completion of the consent forms is ultimately the responsibility of the scanner operator, it is highly desirable that the experimenter has reviewed the forms before the participant enters the scan suite. By reviewing the forms in advance, should there be any questions about the scan, or reasons why the scan cannot commence, then these issues can be dealt without losing precious time in the scan-suite. This makes the best use of everyone's time.

**You should explain to participants the importance of de-metalling.** For both MRI and MEG scanning, participants must remove all ferromagnetic items. Should participants fail to do this there will be scan artefacts that may render the data useless. Moreover the participant could potentially be in danger. Typical items that need to be removed are highlighted in the Consent Form. To ensure participants have fully de-metalled, they are routinely asked to change into medical gowns. Note, some make-up contains ferromagnetic items, therefore you may wish to inform participants in advance that make-up also needs to be removed before scanning.

**You should know the procedures for getting participants changed.** Participants must get changed into medical gowns in the changing rooms, and must be in suitably attired when in reception. Even if a participant is willing to change in the scan-suite, or anywhere else, they should be instructed to change in the changing rooms. There are dressing gowns that participants may wear in between the changing room and the scan-suite. Similarly, female participants should be informed that they may wear a cotton t-shirt, or equivalent, underneath the medical gowns.

**You are responsible for your participant's behaviour in YNiC.** When you bring a participant, or anyone else, into YNiC you are responsible for their behaviour. YNiC is a clinical, as well as a research, facility. As such, your participant or guest must act in a manner appropriate for a clinical facility. In particular, please respect the fact the reception is a public space.

## Participant Preparation Checklist: YNiC Advice

**You should know how to book the interview room.** The Interview Room may be booked by filling in your name and project number on the door.

**You should prepare your participant for the experimental paradigm if necessary.** Prior to the experimental scan, you can use the Interview Room to prepare the participant for your experimental paradigm. It is strongly advised that you do this in the Interview Room, rather the scan suite, so that you maximise your time and productivity in the scanner. Preparation may be in the form of either an information sheet, or prac-

tice trials on the Interview Room stimulus PC. The Interview Room may be booked by filling in the timetable on the Interview Room door.

**You should know how much time in advance of the scan participants should arrive at YNiC (this is a minimum of 10 minutes).** During the pilot scan it will be agreed how much in advance of the scan your subject needs to arrive. This will be different for each study depending on how much training participants need for the specific paradigm. The minimum time to complete the Consent forms and allow time for the participants to change is 10 minutes.

## In the Scan Room

When recording neuroimaging data, it is important to put your participant at ease. For the participants to feel at ease during their imaging experience it is essential that they enter the scan suite feeling comfortable and informed. You have an inherent responsibility when running a neuroimaging study to ensure that your participants are suitably briefed and prepared; particularly if it is the participant's first scan. Some participants find the imaging suites an intimidating environment. However, as the Investigator, it is also very much in your interest to ensure that the participant is at ease.

When recording neuroimaging data, you are recording all the activity in your participants' brain i.e. not just the selective responses to your stimuli. If the participant enters the scan suite feeling apprehensive and nervous, and spends the whole of their scan worrying, it is likely that your results will contain a good representation of the response to apprehension, which may swamp the responses to your paradigm. Also, if your experiment has a behavioral or attentional component, then apprehension may impair the participant's performance, resulting in a weaker response. The combined effect of a poorly prepared participant may be that they have both more noise in their neural responses and also less signal. So, it goes without saying that this will do the signal-to-noise ratio of your results no favours at all!

Lastly, investigators should be reminded that the YNiC Consent forms inform participants that they may leave the scan suite at any point, without having to give the investigator or operator a reason. Therefore, once again, it is also in your interests to ensure the participant is fully prepared for their scan.

### Participant Scanning Checklist: RGC Requirements

**Re-familiarise yourself with the data confidentiality issues related to acquiring MRI / MEG data.** There are important confidentiality issues when acquiring MRI /

MEG data. These are especially pertinent when you know your participant. In the RGC approval for your study, you will have been given information regarding the confidentiality issues of scaning. If you have done little scanning, or it is a while since you scanned, it is advisable to re-acquaint yourselves with this advice.

**Data Protection.** It is required that you familiarise yourself with the YNiC Data Protection policy and the rules contained within for handling data and especially for taking it offsite. The Data Protection Policy is referenced within the YNiC Rules of Computer Use and you will be required to sign up to these when you are given your IT account. The Data Protection Policy is available at https://www.ynic.york.ac.uk/guides. Should you have any questions, please contact the YNiC Data Controller at <data@ynic.york.ac.uk>

**Participants should be introduced to the MEG/MRI operator, rather than just directed towards the scan suites.** Once your participant is prepared for the scan, it is best practice to accompany them to the scan suite. As you will be present for the scan anyway, this should not present any difficulties. If the scan is a structural scan, it is not necessary for you to be present at the scan, however, it is advised that you should still accompany the participant to the scan suite.

**At the end of scan, investigators should accompany participants back to changing rooms.** Once they are changed, make sure that the participant has no further questions.

**Finally, please place the completed YNiC Consent Forms in the Return Post-Box in the YNiC Reception area.** The forms will then be filed away for future use.

## Participant Scanning Checklist: YNiC Advice

The following is a point of practice in the scan suite that is a recommendation to help the scan process go smoothly for your participants, for you and for the operator. The best data is generally recorded when everything runs smoothly, and as the investigator, you are typically the person who dictates how smoothly the scan proceeds.

**You are advised to discuss your experimental setup with the operator before you start to scan. In doing this, you will be able to establish your respective roles during the scan.** As the investigator, you are responsible for the running of your stimuli in the scan suite. During your pilot scan, you will have agreed a modus operandi for your study. This will have been recorded on the respective Experimental Set Up form for your study (https://www.ynic.york.ac.uk/forms/MRIsetup.doc or https://www.ynic.york.ac.uk/forms/MEGsetup.doc). As a result of this, when you enter the

scan suite, the operator will have set up the stimulus presentation hardware settings that you require for your study. As the Investigator, you should be familiar with these, and check with the operator that the set up is correct. During the recording phase, the operator will also start and stop the MEG or MRI data acquisition. However, the running of stimuli is up to you. Therefore, for a smooth acquisition, there needs to be good communication between the investigator and the operator to dove-tail stimulus presentation and data acquisition. A little coordination between the investigator and the operator before acquisition can make a big difference to the recording process! So, be pro-active, familiar with your experimental set up, and work out the best way to work together with your operator.

## Post Scan Checklist

If your scan protocol involves a behavioral component, and these responses are recorded on the stimulus computer (i.e. there are button presses etc. which are saved into a logfile), ensure that you remove them from the stimulus PC at the end of the acquisition. We suggest you put them onto a USB device and transfer them to your Project Group directory. If you do not take this behavioral data with you after the scan, then it may not be on the stimulus PC when you return for your next scan. This is particularly important for fMRI studies when button presses and reaction times are nearly always recorded on to the stimulus PC. In MEG, it is more common to save response in the data than on the stim PC, so in MEG this is less of an issue.

In MEG, you also need to record in your logbook the distances moved by each participant in each run. This is important information, because if a participant makes any big movements during acquisition, you may have to reject that dataset.