

Deliverable 2.1

IDENTIFICATION OF GDPR, SECURITY NEEDS AND SHIPMENT BOTTLENECKS

of Remote NMR (R-NMR):

Moving NMR infrastructures to remote access capabilities



TECHNICAL REFERENCES

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CONTENTS

CONTENTS	4
1. Introduction	5
2. GDPR - Background	5
3. GDPR - Personal data versus sensitive personal data	6
4. GDPR - Survey Implementation	7
5. Summary of GDPR Procedures – Responses on personal data (Survey Questions 3-7) ...	7
6. Summary of GDPR Procedures – responses on handling sensitive personal data (Survey Questions 8-18)	8
7. GDPR - Final Comments and Next Steps	9
8. Sample Shipment – Background	10
9. Sample shipment – collection of information	10
10. Key findings from sample shipment survey	11
11. Key findings from NMR Users’ survey	12
12. Sample Shipment – Final Comments and Next Steps	12
Appendix 1 Participant Information Sheet and Survey	14
Appendix 2 Responses to Survey Questions 1-8 and 19	32
Appendix 3 Responses to Survey Questions 8-18	40
Appendix 4 Responses to Internal Sample Shipment Survey	45

1. Introduction

Deliverable D2.1 within Work Package 2 is entitled “Identification of GDPR, security needs and shipment bottlenecks”. This report is divided into two sections, one focussing on GDPR as it relates to NMR facilities and the other focussing on sample shipment to/from NMR Facilities. In both cases, information on current practices was collected from the NMR community; for GDPR this was done via an online survey distributed widely to European NMR facilities while for sample shipment this was done via an online questionnaire completed by Remote-NMR participating facilities and from responses to certain questions within the NMR User Survey conducted in early 2023 (Milestone 2.2). With respect to security needs, here the focus is on data security as required by the GDPR and security/safety of samples shipped to NMR facilities. More general consideration of data security needs will be addressed in WP3 and WP4 in the future. The information on GDPR and sample shipment presented in this report will be of use of informing the future work of other aspects of the Remote-NMR project (WP2 and WP3) and will also be of use in defining the table of criticalities for remote NMR access to be included in Deliverable D2.2 in December 2023.

2. GDPR - Background

This work has been carried out in the context of Task 2.3, “Review of GDPR (General Data Protection Requirement) aspects”.

GDPR is a regulation in EU law that governs data protection and privacy. It is essential that defining a common procedure for remote access to NMR spectrometers meets GDPR requirements with respect to the data that is collected and stored at each NMR facility, and how that data is shared with users. In order to assess this, NMR facilities were asked to complete a brief online questionnaire outlining their current GDPR procedures and any other data privacy requirements in place locally; the survey was conducted anonymously but information about the country in which the NMR facility is located was collected.

The survey provides insight into how well the GDPR is established at NMR facilities and will serve as a basis for discussions on the implementation of GDPR at different levels of the academic hierarchy (i.e. at University level, Departmental level and NMR Facility level).



3. GDPR - Personal data versus sensitive personal data

GDPR applies to the processing of personal data. Personal data is any information that refers to an identified or identifiable natural person. What is crucial is that the information on its own or in combination with other information can be linked to a living person. Typical personal data is:

- a personal identity number
- a name
- an address
- an email address

GDPR stipulates that a person can request to be informed about their registered data and to have their registered personal data deleted.

Certain personal data is by its nature particularly **sensitive** and therefore has stronger protection. This type of data is called sensitive personal data. Processing of sensitive personal data is as a rule prohibited but there are certain exceptions. Sensitive personal data is data concerning:

- ethnic origin
- political opinions
- religious or philosophical beliefs
- membership of a trade union
- health
- a person's sex life or sexual orientation
- genetic data
- biometric data that is being used to uniquely identify a person.

From an NMR perspective, analysis of human biomaterial (biofluids, tissue, extracts from tissue, *etc.*) can generate information, for example, on health or drug abuse, *i.e.* sensitive personal data, if that data can be traced to a person. A coded sample can still be traced through a pseudo-anonymized coding list. Truly anonymized samples cannot be traced to a person and as such are not subject to the GDPR.

4. GDPR - Survey Implementation

The survey was designed in consultation with WP2 partner UGOT. The survey was approved by the Oxford Central University Research Ethics Committee (CUREC Reference R77838/RE003) and implemented in the Jisc online survey software. A copy of the survey, including the Participant Information Sheet, is available in Appendix 1. Responses to the survey are included in Appendix 1 and Appendix 2.

The survey was sent out to all R-NMR participants, to facility managers and NMR PIs who responded to the initial R-NMR survey sent out in November 2022, and to some national NMR facility manager email lists. Invited participants were asked to coordinate to avoid multiple responses from a facility. All facilities are located in countries where the GDPR, or an implementation of GDPR, applies. The survey opened on June 19 and two reminder e-mails were sent out before the survey closed on June 27. The survey was divided into two parts. The first part introduced the concept of personal data and associated basic requirements. The second part introduced the concept of sensitive personal data and additional requirements associated with this class of data.

5. Summary of GDPR Procedures – Responses on personal data (Survey Questions 3-7)

The survey was completed by **79** NMR facility managers. They represent NMR facilities in **19** European Union countries and **3** other countries, Israel, Norway and the United Kingdom (Q3). The highest number of survey participants are based in Germany and the United Kingdom (**17** responses each). Four or more responses were obtained from Austria (**4**), Denmark (**4**), France (**6**) and Italy (**7**). The full responses to Questions 1 to 8, which were completed by all participants, are included in Appendix 2.

The general awareness of the GDPR is high (Q4). Only 5% of facility managers were unsure whether GDPR applied in the country where their facility was located.

A majority (67%) of the facilities kept a register of their users (Q5) and could provide all information about the user if requested to do so (Q6). A slightly higher fraction (71%) of facilities could delete personal data upon request (Q7).

On the other hand, a sizeable number of facilities did not keep a registry of their users (31%, Q5), could not provide registered personal data if requested to do so (20%, Q6), or did not know if they could (13%, Q6), and could not delete personal data if requested to do so (9%, Q7) or did not know if they could (20%, Q7).

6. Summary of GDPR Procedures – responses on handling sensitive personal data (Survey Questions 8-18)

The survey also asked whether facilities handled sensitive personal data (Q8). The vast majority of facilities (**70** facilities, 89%) responded “No” to this question, and the survey ended for these facility managers after they had the opportunity to enter any additional information in Q19. Seven facilities (9%) do handle sensitive personal data whereas two facility managers (2.5%) were not sure. These **9** facility managers were asked the remaining questions (Q9 – Q18). The responses to Q9 - Q18 from the **2** facilities who were not sure about whether they handle sensitive personal data where, for the most part, “Don’t know”; these responses are not analysed further. The responses to Q9 - Q18 for the **7** facilities that do handle sensitive personal data are analysed in more detail below and are included in Appendix 3.

From the responses of Q9 to Q13, it can be concluded that the procedures for handling sensitive personal data are relatively well established at the facilities that process sensitive personal data. Seven (**7**) facilities handled meta-data, **6** facilities acquired NMR data, **7** facilities stored data, **6** facilities analysed data and **5** facilities transferred stored data in a manner that complies with the GDPR.

The legal responsibility associated with the handling of sensitive personal data appears to be less well understood by facility managers (Q14 and Q15).

Of the facility managers who had indicated that their facility did handle sensitive personal data (Q8 yes), **3** responded that they had the role of personal data controller at their facility (Q14)



and that they were aware of the legal requirements associated with this role (Q14b), **1** knew they were not the personal data controller, but did not know who the responsible person was (Q14a), and **2** did not know if they held the role of personal data controller at their facility.

Three (**3**) facility managers are active in the role as personal data processor (Q15) and are aware of the legal requirements associated with the role (Q15b), **1** knew they were not the personal data processor and did know who the responsible person was (Q15a), and **3** facility managers did not know if they act as personal data processors.

Only two (**2**) facilities report the use of the Bruker IVDr concept (Q16). Neither has signed an agreement for data sub-processing (Q16a).

Five (**5**) facilities indicated that they delete sensitive personal data after a fixed period of time (Q18). No facility had permission to keep data for an extended period (Q18a).

7. GDPR - Final Comments and Next Steps

The general awareness of the GDPR is relatively well established among the 79 participating facilities. It seems unlikely, though, that 30% of the responding facilities do not keep track of their NMR users, and their contact details, in some form. The response to Q5 probably reflects an uncertainty about what personal data actually includes and how GDPR relates to this information.

For sensitive personal data, the more detailed written comments (see summary of Q19 at end of survey) also reflect an uncertainty about whether the handled data is truly anonymous, and thus outside the scope of the GDPR, or not (see *e.g.* comments 8, 9, 11, 15, 18). The focus here seemed to be whether data and person could be matched at the *facility* (it could not), not whether data and person could be matched *at all* (it could). This reasoning points to a confusion about proper guidelines and procedures. The uncertainty about legal responsibilities (Q14, Q15) and some of the more detailed comments (*e.g.* 1, 3, 9, 14, 17) again reflect an uncertainty in these matters.

This points to the overarching responsibility of the legal entities, usually universities and specifically university administrations, hosting the NMR facilities. This is the ultimate source from which proper guidelines and information on operating procedures under the GDPR must be obtained. This should not have to be re-invented at the NMR facility level.

Deliverable D2.2 (Remote-NMR landscape including a table of criticalities) is due at the end of Month 18 of the project (December 2023). A ‘Fact Sheet and Guidelines on GDPR as it relates to NMR Facilities’ will be produced and this will be available on the R-NMR website to all NMR Facilities and this can serve as a starting point for facilities to ensure that their procedures are complying with GDPR.

8. Sample Shipment – Background

This work has been carried out in the context of Task 2.4, “Transnational sample shipment” and represents a collaboration of the CIRMMP and UOXF teams.

Although NMR spectrometers can be accessed remotely, the samples need to be transported to the NMR facility and inserted into the NMR spectrometer. This can be an important factor in determining whether users are able/willing to use remote access. Users may be unwilling to send valuable samples via a courier because of concerns about sample damage. The requirements will be different for solution and solid-state NMR and will also depend on the type of material being studied. The importance to users of having samples returned to them after data collection must also be considered.

9. Sample shipment – collection of information

In order to collect data pertaining to sample shipment, an internal survey involving all R-NMR partners was carried out. The R-NMR consortium's NMR facilities were asked about how NMR samples were handled, how sample shipments were made, and the standard operating procedures that were followed (Appendix 4). Additional information, specifically about the NMR users’ attitudes to and experiences with sample shipment, was obtained from questions

included in the NMR Users' survey (Task 2.2) conducted earlier in 2023 (M2.2 User Survey Report <https://r-nmr.eu/category/outcome/>).

10. Key findings from sample shipment survey

The information provided in the internal survey has allowed us to confirm that the facilities who responded handle samples for all types of biological (BSL2) and chemical applications, and that they all receive shipped samples (of all kinds) in the range of tens per year, despite the fact that the most typical delivery mode is by the users themselves (i.e. in person).

The fact that most facilities lack defined procedures for sample shipment and do not provide users with written instructions on how to package samples for shipment is highlighted as a bottleneck. This is something that can be addressed in Months 13-18 of WP2; a standard set of guidelines for sample shipment can be included in the table of criticalities that will be part of Deliverable D2.2 in Month 18.

All NMR facilities ask visitors for instructions on how to handle and store samples that are shipped to them. This, it seems, requires that a technician in the facility takes care of the sample after receiving it and potentially represents additional work for NMR facility staff. However, it may also be the case that in some NMR centres, samples must be shipped in a specific format but this requirement is not properly documented at present.

With respect to sample quality control and the rejection of some samples arriving at facilities, it appears that currently facilities have not put in place consistent practices to assess samples after delivery.

R-NMR partners' facility managers were also asked to indicate their preferred courier for sample shipment. While the majority indicated DHL, a comparable number did not have a preferred courier. The avoidance of sample shipment, even when it is possible, is the result of a fear of delays due to variety of possible reasons, ranging from worry about loss of a package, to worry about sample deterioration during travel, to worry about delays at customs. In the latter case, guidelines for creating better documentation would be helpful to NMR users and facilities.



11. Key findings from NMR Users' survey

What emerged from this internal survey, as described above, is very consistent with the outcome of the NMR Users' survey (M2.2 User Survey Report <https://r-nmr.eu/category/outcome/>). In the latter, about half of the respondents specified that they did not use remote access. Within this group, 113 users (43%) considered sample shipment/delivery to an NMR facility to be a barrier to remote spectrometer access (Q11d User survey). In particular, for 67 users the main concern was sample degradation, while an additional 35 replies indicated worries about sample loss (Q11d.i User survey). A further related obstacle is that there are a variety of experimental setups where the samples need to be prepared immediately before the data collection (e.g. for kinetics investigation). Interestingly, among the users who did use remote access to an NMR facility during or after the pandemic, only 29% thought that sample shipment was a problem (Q18 User survey). However, in the large majority of cases (87%) remote users did not ship the samples but delivered them personally either to a facility staff member or at a drop-off location (Q16 User survey).

12. Sample Shipment – Final Comments and Next Steps

The internal survey of R-NMR participant NMR facilities and the larger survey of NMR Users has provided useful insights into current practices relating to sample shipment and also the NMR user community experiences and concerns relating to sample shipment.

There are several areas related to sample shipment with an apparent lack of standard operating procedures in place at NMR facilities and/or a lack of information readily available to NMR users. This includes a lack of defined procedures for sample shipment and handling of samples upon arrival at a facility, a lack of written instructions on how to package samples for shipment, a lack of standard procedures for sample quality control upon delivery to a facility. The lack of these standard procedures may be creating a bottleneck for sample shipment that holds some users or NMR facilities back from widening remote NMR access. A solution to some of these problems which involves the definition of best practice with respect to sample shipment/handling and the community-wide adoption of these guidelines would be a benefit to the NMR community. This is something that can be addressed in Months 13-18 of WP2; a



standard set of guidelines for sample shipment/handling can be included in the table of criticalities that will be part of Deliverable D2.2 in Month 18.



APPENDIX 1

Remote-NMR (R-NMR): Moving NMR infrastructures to remote access capabilities

GDPR SURVEY (19-26 June 2023)

Univ. of Oxford Central University Research Ethics Committee Approval Reference: [R77838/RE003]

PARTICIPANT INFORMATION SHEET AND SURVEY



Remote-NMR (R-NMR): Moving NMR infrastructures to remote access capabilities

PARTICIPANT INFORMATION SHEET

Central University Research Ethics Committee Approval Reference: [R77838/RE003]

1. *Introductory paragraph*

Prior to the Covid19 pandemic, the overwhelming majority of NMR data collection was conducted by scientists traveling to local, national and transnational NMR facilities and sitting directly in front of the NMR console to setup data collection. The experiments were often set up together with experienced staff to ensure sample integrity, best conduct of experiments, interactive planning and peer teaching, and initial analysis of acquired data to assess the correct outcome of the experiments. Due to the lockdown restrictions in many countries during 2020-2021, this scenario had to change dramatically. The experiences of several European NMR facilities during the Covid19 pandemic have shown that remote access is feasible within the field of NMR spectroscopy. It is the aim of the Remote-NMR project to develop and exploit this type of access in full.

You are being invited to take part in the R-NMR project because you are a manager of an NMR facility who may be able to provide information about GDPR (General Data Protection Requirement) procedures in your NMR facility. Before you decide to participate in the survey, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether you wish to take part.

2. *Why is this research being conducted?*

Remote access to NMR spectrometers has been implemented successfully at several NMR facilities around the EU/UK during the Covid19 pandemic. The R-NMR project is being conducted in order to collect information from NMR facility managers and users about their NMR facilities and about their experiences using remote access so that a common protocol for remote access can be developed and adopted by facilities across the EU/UK. In this survey, we are specifically interested in GDPR (General

Data Protection Requirement) procedures implemented at NMR facilities. This will allow the R-NMR project to ensure that the common procedure that we define for remote NMR access meets General Data Protection Requirements with respect to the data that is collected and stored at the NMR facilities and how that data is shared with users.

3. Why have I been invited to take part?

You have been invited to complete this survey because you have been identified as a manager of an NMR facility.

4. Do I have to take part?

No. It is up to you to decide whether or not to take part. You can withdraw yourself from the study, without giving a reason, by advising me of this decision. The deadline by which you can withdraw any information you have contributed to the research is 31 December 2023; any data that you have provided will be deleted.

5. What will happen to me if I take part in the research?

You will be invited to complete an online survey. The survey is aimed at managers of NMR facilities and will ask questions about GDPR implementation in NMR facilities. The survey will be completed without providing your name or contact email address but you will be asked to indicate in which country your NMR facility is located.

6. What are the possible disadvantages and risks in taking part?

There are no disadvantages or risks in taking part in this research except that you will need to spend some time completing the surveys (no more than 15-30 minutes).

7. Are there any benefits in taking part?

The benefits to you and to the wider NMR community by taking part in this project will be the improvement of remote NMR access across the EU/UK that will be the outcome of the R-NMR project.

8. What information will be collected and why is the collection of this information relevant for achieving the research objectives?

We will not collect any information that will directly identify you. Information that all participants provide about GDPR procedures in their NMR facility will be included in discussions with other R-NMR participants and included in reports, but this information is completely anonymous. Your IP address will not be collected.

All survey data will be stored in Oxford on a secure desktop computer (password protected and behind a firewall) during the duration of the R-NMR project (until 30 June 2025). A version of the survey will be created for longer-term storage on University servers. We intend to keep this version of the survey for 3 years beyond publication of the project.

9. Will the research be published? Could I be identified from any publications or other research outputs?

The findings from the NMR user survey being carried out online by Oxford researchers as part of the R-NMR research project will be used in a report about the current protocols in place for remote access to NMR spectrometers. This report will be circulated to other R-NMR grant participants, will be uploaded to the R-NMR website and will be used as the starting point for other work packages in R-NMR. Individuals will not be identified in the reports. It is very unlikely that the outcomes of the surveys being carried out online by Oxford researchers will be written up for publication.

10. Data Protection

The University of Oxford is the data controller with respect to your personal data, and as such will determine how your personal data is used in the study. The University will process your personal data for the purpose of the research outlined above. Research is a task that is performed in the public interest. Further information about your rights with respect to your personal data is available at <https://compliance.admin.ox.ac.uk/individual-rights>. No personal data will be collected in this survey.

11. Who is funding the research?

Remote-NMR is funded by a grant from the European Union's Horizon Europe Research and Innovation Programme under Grant Agreement No. 101058595. Participation by U.K. partners, including the University of Oxford, is funded via the Horizon Europe Guarantee scheme run by Innovate UK, part of UK Research and Innovation (UKRI).

12. Who has reviewed this study?

This study has received ethics approval from a subcommittee of the University of Oxford Central University Research Ethics Committee. (Ethics reference: R77838/RE003).

The surveys have also been approved by the Steering Board of the Remote-NMR project.

13. Who do I contact if I have a concern about the research or I wish to complain?

If you have a concern about any aspect of this study, please contact Professor Christina Redfield (see contact details in next section), and she will do her best to answer your query. I will acknowledge your concern within 10 working days and give you an indication of how it will be dealt with. If you remain unhappy or wish to make a formal complaint, please contact the Chair of the Research Ethics Committee at the University of Oxford who will seek to resolve the matter as soon as possible:

The Chair, Medical Sciences Interdivisional Research Ethics Committee;
Email: ethics@medsci.ox.ac.uk; Address: Research Services, University of Oxford, Boundary Brook House, Churchill Drive, Headington, Oxford OX3 7GB

14. Further Information and Contact Details

If you would like to discuss the research with someone beforehand (or if you have questions afterwards), please contact:

Professor Christina Redfield
Department of Biochemistry, University of Oxford
South Parks Road
Oxford OX1 3QU, U.K.
University tel: +44 1865 275330
University email: christina.redfield@bioch.ox.ac.uk



Remote-NMR: GDPR Survey

INTRODUCTION

Remote-NMR (R-NMR): Moving NMR infrastructures to remote access capabilities

- Prior to the Covid19 pandemic, the overwhelming majority of NMR data collection was carried out in-person at the NMR facility. Due to the lockdown restrictions in many countries during 2020-2021, this scenario had to change dramatically. Our experiences during Covid19 show that remote access is feasible within the field of NMR spectroscopy, and it is the aim of R-NMR to develop and exploit this type of access in full.
- The purpose of this survey is to collect information from NMR facility managers about the General Data Protection Requirement (GDPR) as it relates to NMR facilities and the provision of remote NMR access. The survey should take no more than 15-30 minutes to complete and you can select to 'Finish later' if you wish.
- Before you decide to participate in this survey, it is important for you to understand why the research is being done and what will be done with your responses to the survey. Please take time to read the information in the participant information sheet that can be accessed at [Click here](#). Ask us if there is anything that is not clear or if you would like more information.

PRIVACY NOTICE AND CONSENT TO PARTICIPATE IN THE SURVEY

You are invited to complete this online survey aimed at managers of NMR facilities. We will ask questions about the General Data Protection Requirement (GDPR) as it relates to NMR facilities and the provision of remote NMR access. The survey will be completed anonymously (you will not be asked for your name or your email address) but you will be asked to indicate, if you wish, in which country your NMR facility is located. Information that you provide will be included in discussions with other R-NMR project participants and in project reports. All survey data will be stored at the University of Oxford on a secure computer (password protected and behind a firewall) during the duration of the R-NMR project (until 30 June 2025). A version of the survey will also be created for longer-term storage; we intend to keep this version for 3 years beyond the end date of the project.

Please confirm that you have read this information and that you are willing to continue with the survey. * *Required*

Yes

No

INFORMATION ABOUT YOU AND YOUR NMR FACILITY

Please confirm that you are the manager of an NMR facility or the academic responsible for an NMR facility. (Please try to ensure that the survey is only completed by one person involved in the management of your NMR facility). * *Required*

 Yes No

INFORMATION ABOUT YOU AND YOUR NMR FACILITY

In which country is your NMR facility located? Select one: * *Required*

- | | | |
|-----------------------------------|-----------------------------------|---|
| <input type="radio"/> Austria | <input type="radio"/> Belgium | <input type="radio"/> Bulgaria |
| <input type="radio"/> Croatia | <input type="radio"/> Cyprus | <input type="radio"/> Czech Republic |
| <input type="radio"/> Denmark | <input type="radio"/> Estonia | <input type="radio"/> Finland |
| <input type="radio"/> France | <input type="radio"/> Germany | <input type="radio"/> Greece |
| <input type="radio"/> Hungary | <input type="radio"/> Iceland | <input type="radio"/> Ireland |
| <input type="radio"/> Israel | <input type="radio"/> Italy | <input type="radio"/> Latvia |
| <input type="radio"/> Lithuania | <input type="radio"/> Luxembourg | <input type="radio"/> Malta |
| <input type="radio"/> Netherlands | <input type="radio"/> Norway | <input type="radio"/> Poland |
| <input type="radio"/> Portugal | <input type="radio"/> Romania | <input type="radio"/> Serbia |
| <input type="radio"/> Slovakia | <input type="radio"/> Slovenia | <input type="radio"/> Spain |
| <input type="radio"/> Sweden | <input type="radio"/> Switzerland | <input type="radio"/> United Kingdom |
| <input type="radio"/> Ukraine | <input type="radio"/> Other | <input type="radio"/> I prefer not to say |

If you selected Other, please specify:

The General Data Protection Regulation (GDPR)

The General Data Protection Regulation (GDPR) is a Regulation in EU law on data protection and privacy in the EU and the European Economic Area. Some countries have implemented the GDPR using a different name; for example, the Data Protection Act 2018 is the implementation of GDPR in the UK. GDPR applies to the processing of personal data. Personal data are any information that refers to an identified natural person. What is crucial is that the information on its own or in combination with other information can be linked to a living person. Typical personal data includes:

- a personal identity number,
- a name,
- an address,
- an email address.

The GDPR stipulates that a person can request information about their registered data and to have their personal data deleted.

Is your NMR facility located in a country where GDPR (or an implementation of GDPR) applies? * *Required*

- Yes
- No
- Don't know

The General Data Protection Regulation (GDPR)

As a research facility providing access to NMR users, you are by definition handling personal data. We would like to understand how personal data are handled within NMR facilities.

Do you keep a register (such as LIMS/electronic notebook/Excel spreadsheet, email list etc) with personal data about your NMR facility users?

- Yes
- No
- Don't know

Can you provide all information about the registered personal data you keep for a person if requested to do so by that person?

- Yes
- No
- Don't know

Can the registered personal data you keep for an individual be deleted if requested to do so by that person?

- Yes
- No
- Don't know

The General Data Protection Regulation (GDPR)

Certain personal data are by their nature particularly sensitive and therefore have stronger protection in the GDPR. These types of data are called sensitive personal data. Processing of sensitive personal data is, as a rule, prohibited but there are certain exceptions. Before you process sensitive personal data you must fully understand what lawful grounds you have for the processing. Sensitive personal data are data concerning:

- ethnic origin,
- political opinions,
- religious or philosophical beliefs,
- membership of a trade union,
- health,
- a person's sex life or sexual orientation,
- genetic data,
- biometric data that is being used to uniquely identify a person.

From an NMR perspective, this would usually mean that you analyse human biomaterial (e.g. biofluids, tissue, extracts from tissue) that can contain information on health status, drug abuse, and that can be traced to a person. A coded sample can still be traced through a pseudoanonymized coding list. Truly anonymized samples cannot be traced to a person and, as such, are not subject to the GDPR.

Do you process (this includes any kind of handling) sensitive personal data?

Yes

No

Don't know

The General Data Protection Regulation (GDPR)

The GDPR imposes a number of requirements on how sensitive personal data are processed:

- Data and meta-data should be FAIR and minimal.
- The sending of meta-data should be secure (e.g. not via regular email).
- Acquired data should not be left on spectrometer hard drives for general access.
- Access to stored data should be secure (e.g. MFA: multi-factor authorization) and traceable.
- Analysis of data should be in a secure environment (e.g. using MFA, access events should be logged).
- Transfer of data should follow the same principles (e.g. using MFA, secure, logged, traceable).

If you process sensitive personal data, does your data processing comply with these GDPR requirements in the following aspects?

Does your handling of meta-data (e.g. during statistical analysis of metabolomics data) comply with these GDPR requirements?

- Yes
- No
- Don't know

Does your acquisition of NMR data comply with these GDPR requirements?

- Yes
- No
- Don't know

Does your storage of acquired NMR data comply with these GDPR requirements?

- Yes
- No
- Don't know

Does your analysis of stored NMR data comply with these GDPR requirements?

- Yes
- No
- Don't know

Does your transfer of stored NMR data (including meta-data, analysis results, etc) comply with these GDPR requirements?

- Yes
- No
- Don't know

Are you active in the role of personal data controller in your NMR facility?

- Yes
- No
- Don't know

If you are not the personal data controller in your facility, do you know who the responsible person is?

- Yes
- No

Are you aware of the legal requirements as personal data controller?

- Yes
- No

Are you active in the role of personal data processor in your NMR facility?

- Yes
- No
- Don't know

If you are not the personal data processor in your facility, do you know who the responsible person is?

- Yes
- No

Are you aware of the legal requirements as personal data processor?

- Yes
- No

Is your NMR facility using the Bruker IVDr concept?

- Yes
- No
- Don't know

Have you signed an agreement in which Bruker is defined as personal data sub-processor?

- Yes
- No
- Don't know

Do you process your data on one or more servers located outside of the European Union?

- Yes
- No
- Don't know

Do you routinely delete sensitive personal data after a fixed time period?

- Yes
- No
- Don't know

Do you have permission to keep data for an extended period of time (e.g. for model building or database purposes)?

- Yes
- No
- Don't know

FINAL QUESTION - The General Data Protection Regulation (GDPR)

Thanks for filling in the questions relating to the GDPR. If you have further information that you would like to provide about how the GDPR operates in your NMR facility, please enter this in the text box below. (If you indicated that GDPR does not apply in your country then leave the text box below blank and click 'Finish').

FINAL COMMENTS AND THANKS!

Thank you very much for taking the time to complete this survey. Your responses will be important in formulating common practices for future provision of remote access to NMR spectrometers.

If you would like further information about the R-NMR project then please visit the project webpage at <https://www.r-nmr.eu> or follow the project on Twitter @RemoteNMR_eu.

A summary of the results of the earlier Facility Manager and NMR User surveys is available on the R-NMR web site under the 'OUTCOME' tab.

A summary of the results of this GDPR survey will be available in early July on the R-NMR web site under the 'OUTCOME' tab.



APPENDIX 2

Remote-NMR (R-NMR): Moving NMR infrastructures to remote access capabilities

GDPR SURVEY (19-26 June 2023)

Univ. of Oxford Central University Research Ethics Committee Approval Reference: [R77838/RE003]

SUMMARY OF RESPONSES TO QUESTIONS 1-8 AND 19 FROM 79 SURVEY PARTICIPANTS

Remote-NMR: GDPR Survey

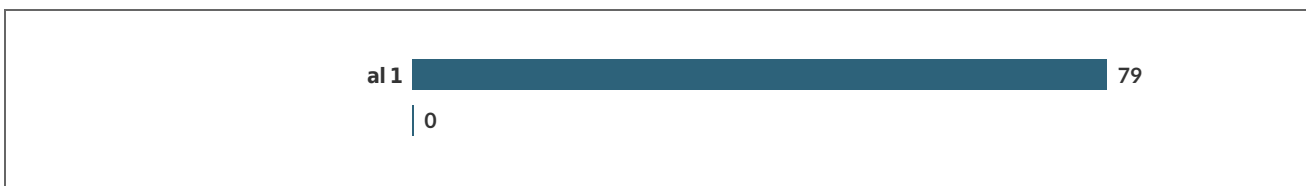
Showing 79 of 79 responses

Showing **all** responses

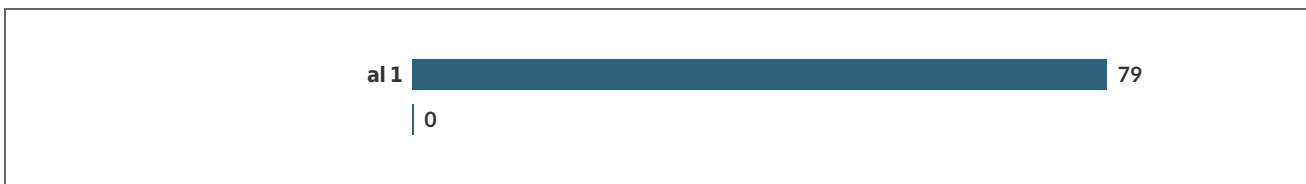
Hiding **11** questions

Response rate: 39%

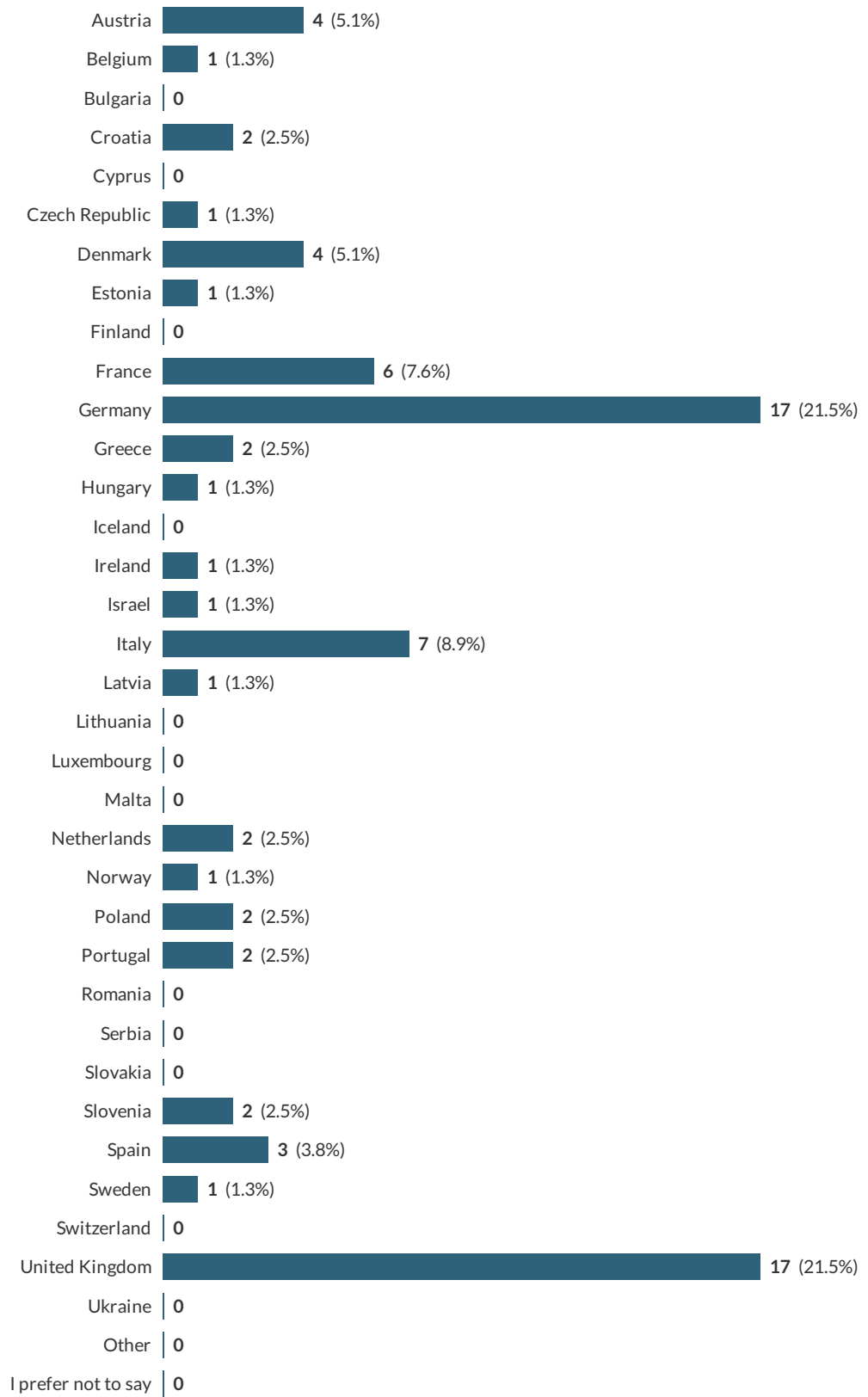
- 1** Please confirm that you have read this information and that you are willing to continue with the survey.



- 2** Please confirm that you are the manager of an NMR facility or the academic responsible for an NMR facility. (Please try to ensure that the survey is only completed by one person involved in the management of your NMR facility).



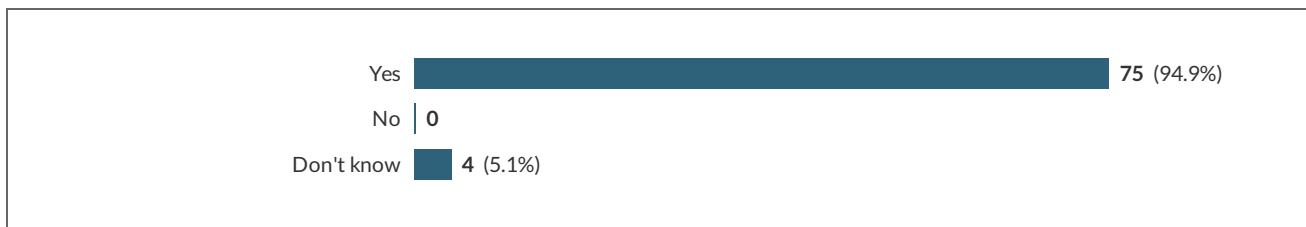
- 3** In which country is your NMR facility located? Select one:



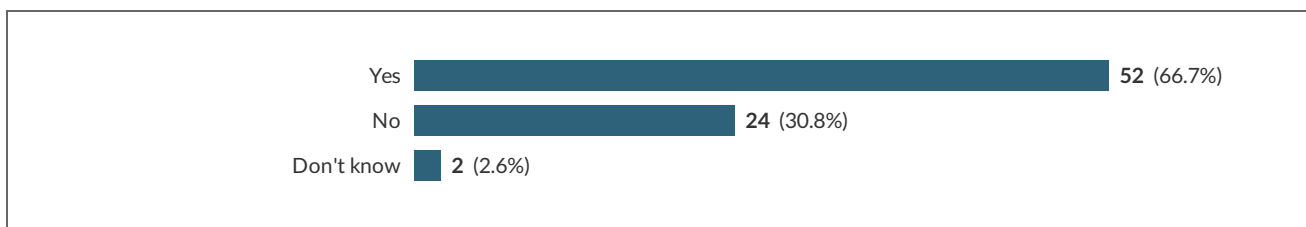
3.a If you selected Other, please specify:

No responses

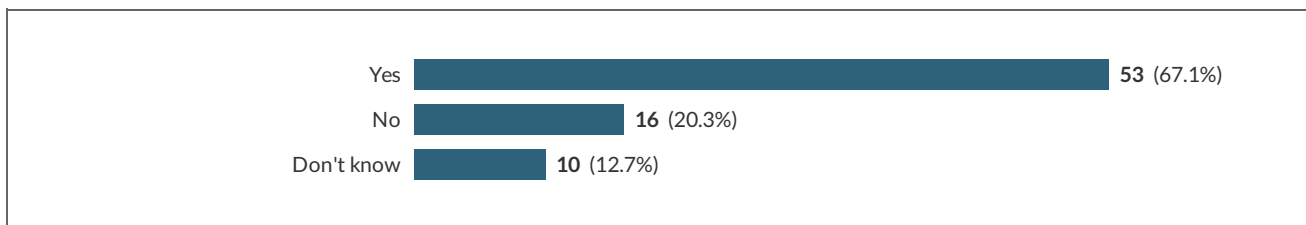
4 Is your NMR facility located in a country where GDPR (or an implementation of GDPR) applies?



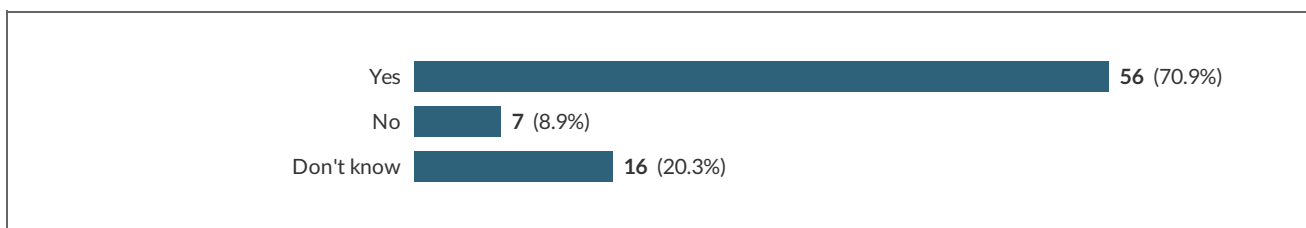
5 Do you keep a register (such as LIMS/electronic notebook/Excel spreadsheet, email list etc) with personal data about your NMR facility users?



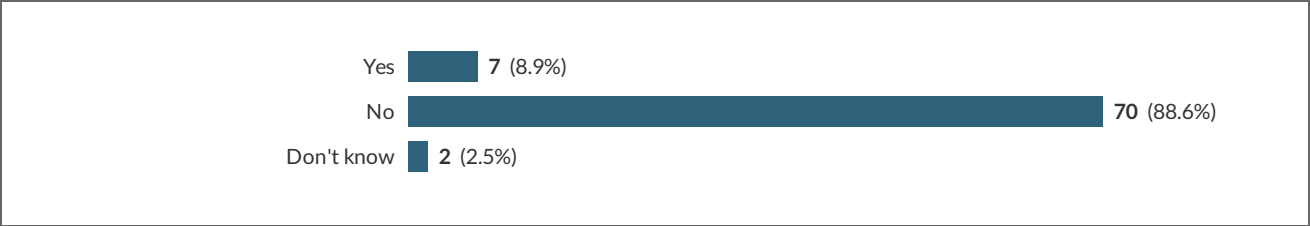
6 Can you provide all information about the registered personal data you keep for a person if requested to do so by that person?



7 Can the registered personal data you keep for an individual be deleted if requested to do so by that person?



8 Do you process (this includes any kind of handling) sensitive personal data?



Remote-NMR: GDPR Survey

Showing 79 of 79 responses

Showing **all** responses

Hiding **18** questions

Response rate: 39%

- 19** Thanks for filling in the questions relating to the GDPR. If you have further information that you would like to provide about how the GDPR operates in your NMR facility, please enter this in the text box below. (If you indicated that GDPR does not apply in your country then leave the text box below blank and click 'Finish').

Showing all 18 responses	
Most users of our NMR facility have to be registered with our department IT team so there would be a record of users held in the department as well as in the NMR facility. I believe that our IT personal follow GDPR.	1060991-1060973-112168566
Our machines are only used within our research group an I know all users personally. Therefore, we don't have a special NMR user list with personal data. We have an online booking system but people manage their data that's in there themselves.	1060991-1060973-112174286
We are in principle in a country where GDPR applies. But no one is in charge of implementing this at the University, so the institution has never required our NMR facility to take care of this.	1060991-1060973-112177080
In my opinion, our NMR facility meets requirements of GDPR.	1060991-1060973-112191516
Users of the NMR is only using work e-mail when submitting samples for NMR.	1060991-1060973-112197758
We require the name, email and phone number to verify the person is authorized to use the facility. If the user asked to delete these items of personal data, we would comply but he/she would no longer be able to use the facility services.	1060991-1060973-112188806
Users' personal data (names, e-mail addresses) fall within the scope of the GDPR and is therefore treated accordingly, i.e. users' personal data, to which only the facility staff have access, is stored on the web server and is not used for any other purpose than to identify their samples and NMR spectra. Furthermore, users' personal data is not shared with other users and is treated confidentially.	1060991-1060973-112204260
A final remark to the questionnaire and GDPR. One of our customers in the facility is a hospital research department. For them, I regularly measure samples which are handed to me with a code. The code can not be traced by me and for me, there is not information about the patient, treatment, gender, placebo etc etc. Data is stored as DATF CODE.	1060991-1060973-112237590

<p>we may measure NMR spectra for customers/collaborators which are of human origin (urine, blood) but we do not want to know anything about those samples. They are in that sense anonymous and we cannot trace anything from them. We expect that any GDPR 'issues' must reside with the people who collect the samples and store data about their origin. We are interested to know how NMR facilities can provide such services with minimal administrative burden. We expect also that ethical approval rest with the user.</p>	<p>1060991-1060973-112365130</p>
<p>No</p>	<p>1060991-1060973-112367617</p>
<p>We do very little human tissue work, and are only involved in data acquisition. All data analysis is carried out outside the facility.</p>	<p>1060991-1060973-112368552</p>
<p>As a contract lab, customer data is handled using LIMS system. Deletion of any data would be subject to change control and advice from our quality assurance team. Our users (analysts) personal data is handled by HR team, but also features in LIMS system as unique analyst identifiers.</p>	<p>1060991-1060973-112371245</p>
<p>The local university hospital (separate legal entity) in control of the biobank and the university (separate legal entity) hosting the NMR facility do not agree on how to interpret the GDPR.</p>	<p>1060991-1060973-112392466</p>
<p>To clarify the answers given in the previous section regarding personal sensitive data:</p> <p>where the response is 'yes', we believe we are GDPR compliant. Where 'don't know' is given, this refers to the fact that facility staff do not handle the processing/analysis of sensitive data themselves.</p> <p>Users who measure samples involving sensitive (meta-) data are responsible themselves (and/or with their collaborators e.g. clinicians) for the analysis and processing of NMR data beyond acquisition of the data on the spectrometers. This activity is performed outside the facility firewall.</p> <p>The facility ensures that any (temporary) data storage provided by the NMR facility is GDPR compliant, e.g. providing users with individual spectrometer and data server accounts (no shared accounts permitted) with users able to specify the extent of restricted access, as required, to their data. The responsibility lies with the user to be GDPR-compliant, including the removal of sensitive data from the server. Users are requested not to store data on the spectrometer (we provide a dedicated data server), but this is not actively/regularly policed by NMR staff.</p> <p>Data transfer by users to/from the facility employs ssh protocol, with no MFA. In our case, transfer activity might not be considered to be fully traceable.</p> <p>While data are being acquired during a booking slot, unless screen locks are religiously employed (which is not necessarily desirable as it</p>	<p>1060991-1060973-112381341</p>

could hamper urgent facility manager access should it be required) the possibility exists that sensitive data could be displayed/read/copied directly via the unlocked spectrometer PC screen locally (users often use the 'title' text for logging pseudo-anonymised sample codes).	
We only keep personal data of the actual users of the facility to contact them if necessary. We do not keep any information about patients whose samples are measured.	1060991-1060973-112537813
No question at this point.	1060991-1060973-112540959
It is important to bear in mind that the NMR Facility of CCITUB belongs to the University of Barcelona, which ultimately has the competences in terms of GDPR.	1060991-1060973-112533319
The biological fluids in our facility (that by their nature contain sensitive personal information) are handled through an anonymous code system. The personal data (name, sex, and nationality) that correspond to each sample are kept by the collaborating clinical doctors. Our facility keeps the persona data of the NMR users (internal, external from academia or private sector).	1060991-1060973-112551833



APPENDIX 3

Remote-NMR (R-NMR): Moving NMR infrastructures to remote access capabilities

GDPR SURVEY (19-26 June 2023)

Univ. of Oxford Central University Research Ethics Committee Approval Reference: [R77838/RE003]

**SUMMARY OF RESPONSES TO QUESTIONS 8-18 FROM 7 SURVEY PARTICIPANTS WHOSE
FACILITIES HANDLE SENSITIVE PERSONAL DATA**

Remote-NMR: GDPR Survey

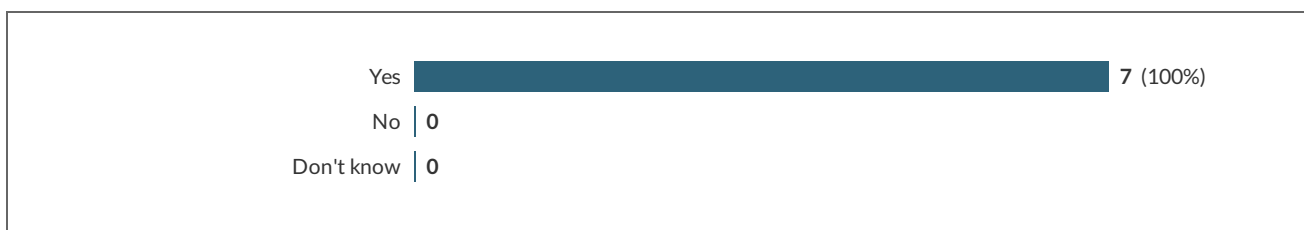
Showing 7 of 79 responses

Showing 0 responses

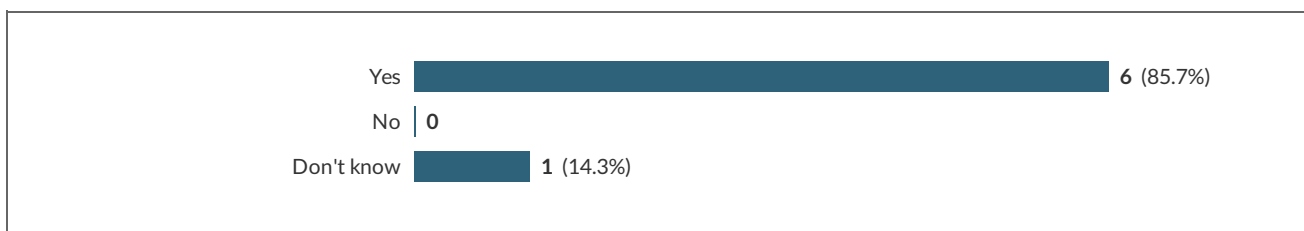
Hiding 0 questions

With filter [ont-NMR](#) applied

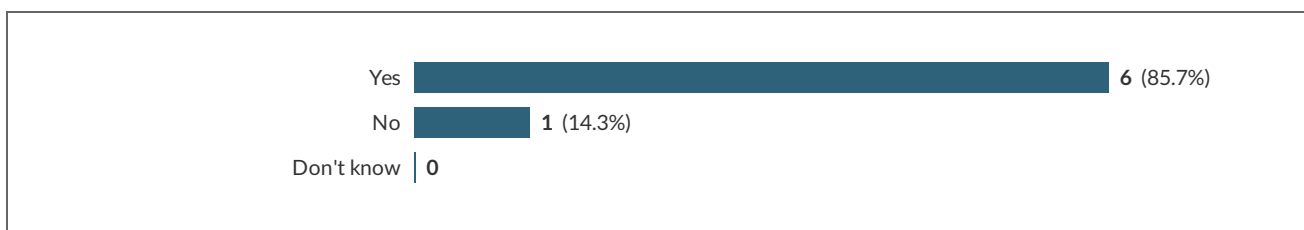
8 Do you process (this includes any kind of handling) sensitive personal data?



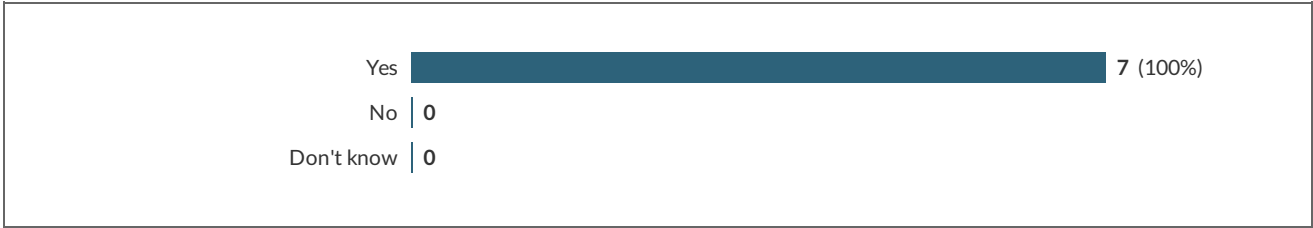
9 Does your handling of meta-data (e.g. during statistical analysis of metabolomics data) comply with these GDPR requirements?



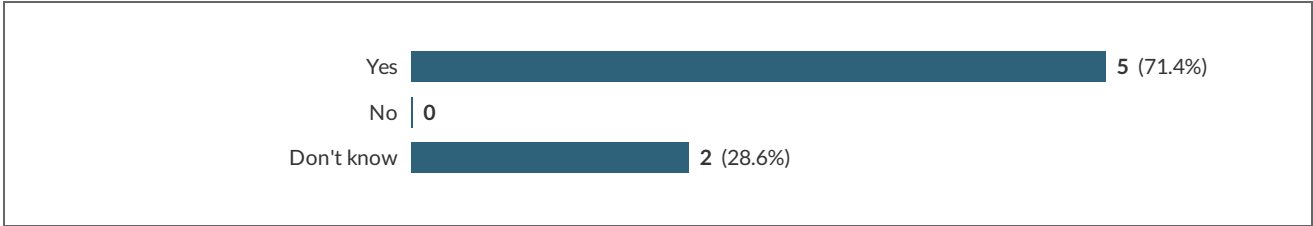
10 Does your acquisition of NMR data comply with these GDPR requirements?



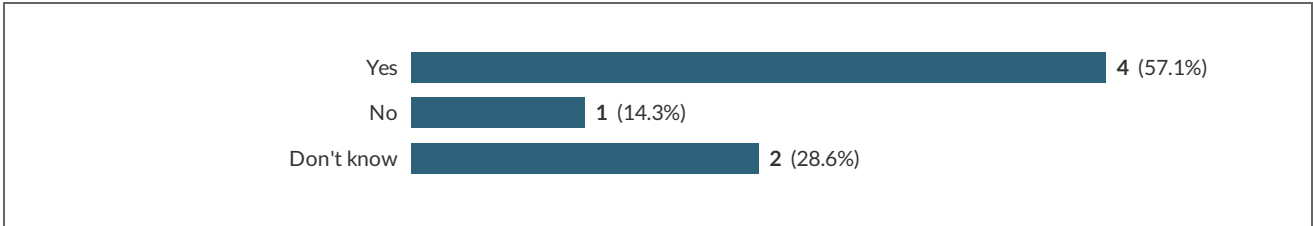
11 Does your storage of acquired NMR data comply with these GDPR requirements?



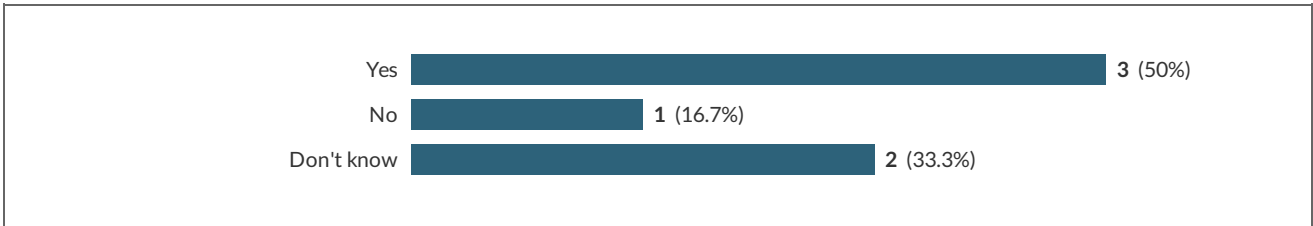
12 Does your analysis of stored NMR data comply with these GDPR requirements?



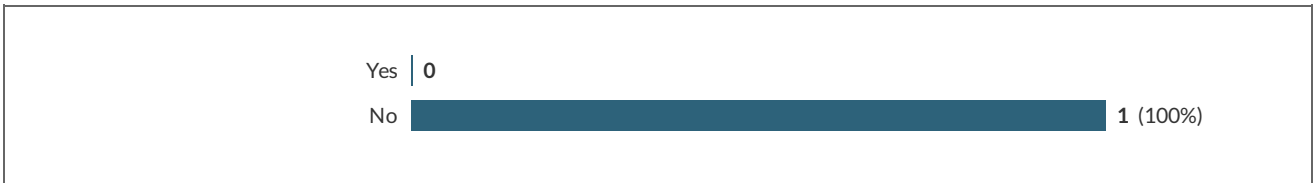
13 Does your transfer of stored NMR data (including meta-data, analysis results, etc) comply with these GDPR requirements?



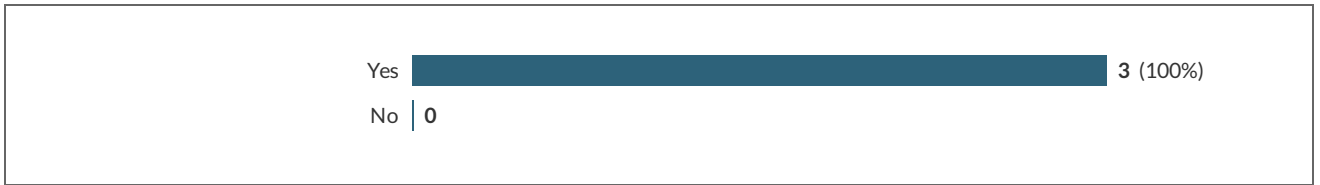
14 Are you active in the role of personal data controller in your NMR facility?



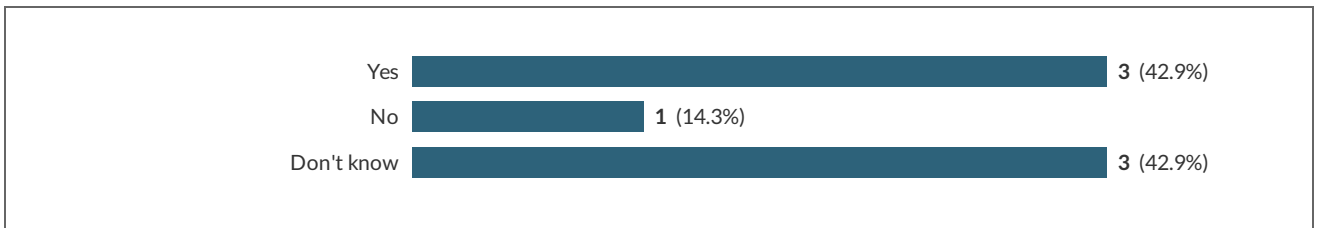
14.a If you are not the personal data controller in your facility, do you know who the responsible person is?



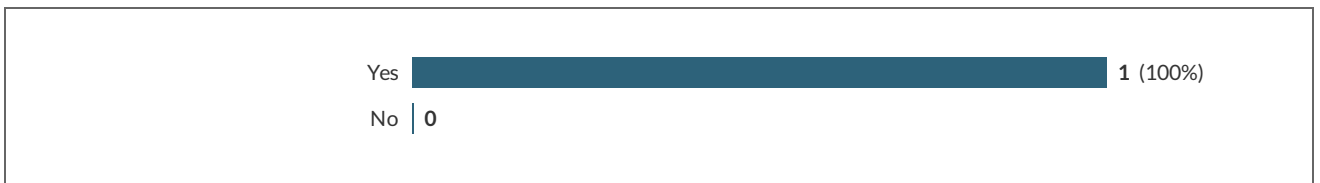
14.b Are you aware of the legal requirements as personal data controller?



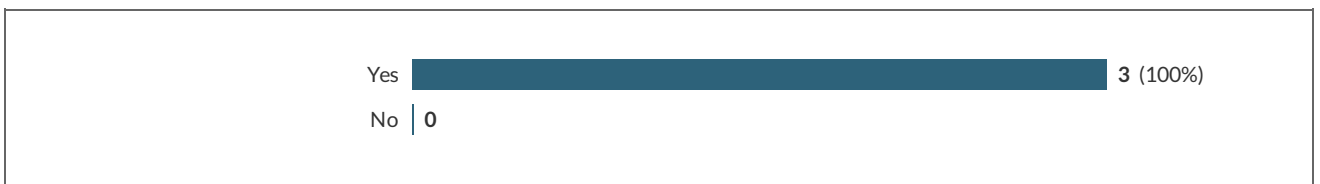
15 Are you active in the role of personal data processor in your NMR facility?



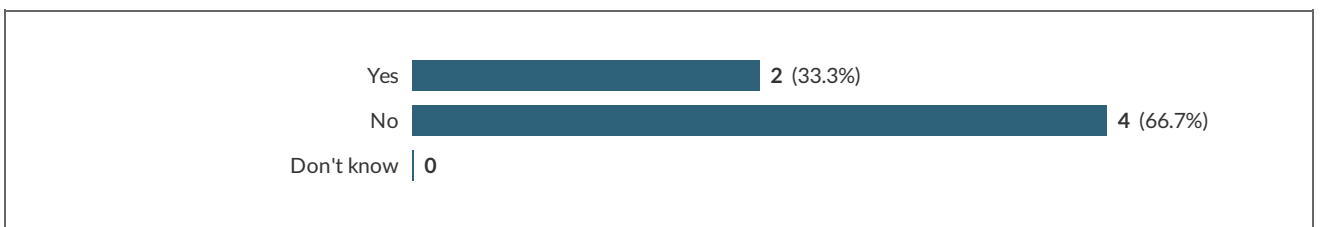
15.a If you are not the personal data processor in your facility, do you know who the responsible person is?



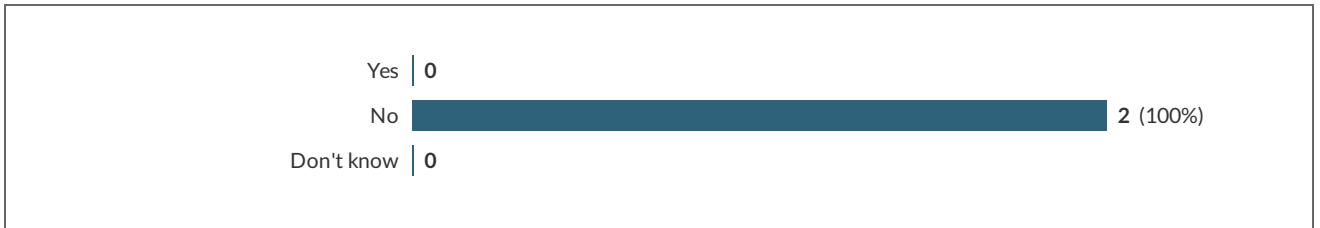
15.b Are you aware of the legal requirements as personal data processor?



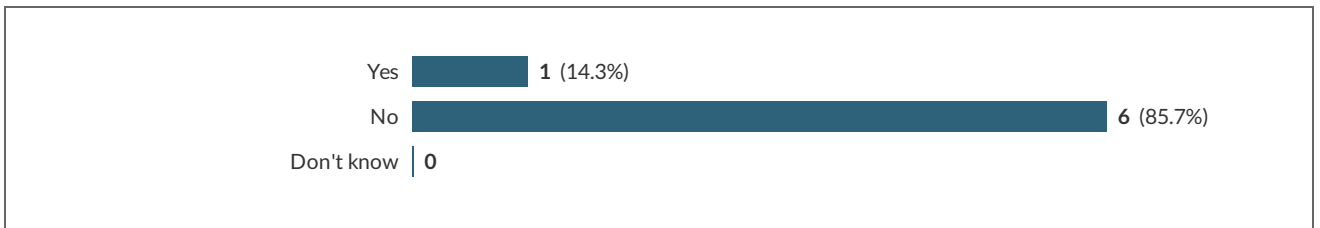
16 Is your NMR facility using the Bruker IVDr concept?



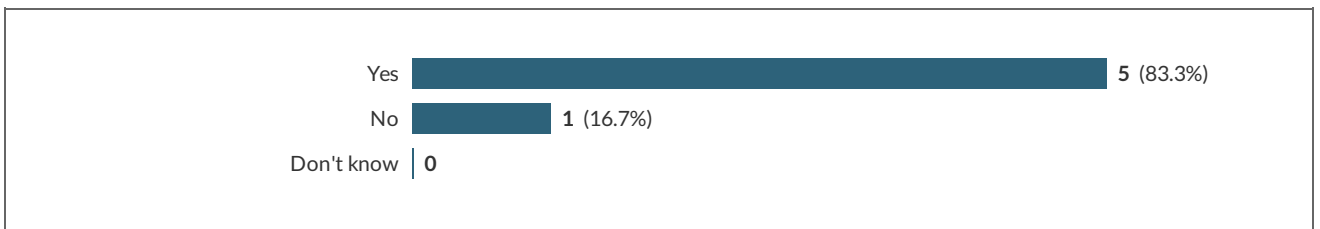
16.a Have you signed an agreement in which Bruker is defined as personal data sub-processor?



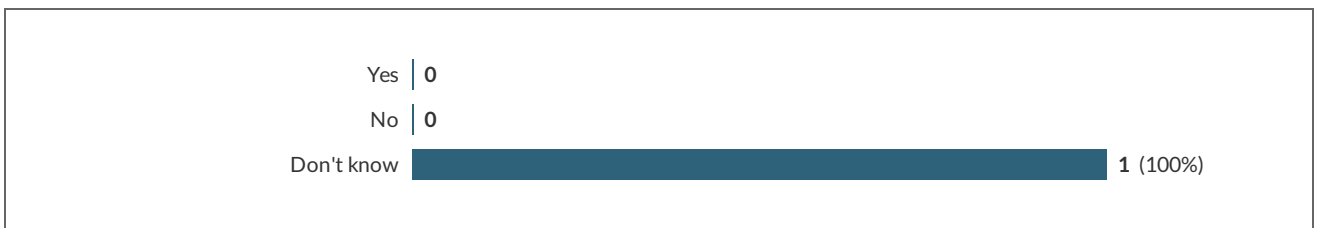
17 Do you process your data on one or more servers located outside of the European Union?



18 Do you routinely delete sensitive personal data after a fixed time period?



18.a Do you have permission to keep data for an extended period of time (e.g. for model building or database purposes)?





APPENDIX 4

Remote-NMR (R-NMR): Moving NMR infrastructures to remote access capabilities

INTERNAL SAMPLE SHIPMENT SURVEY

SUMMARY OF RESPONSES TO INTERNAL R-NMR PARTICIPANT SURVEY OF SAMPLE SHIPMENT PRACTICES

