International Cartilage Regeneration & Joint Preservation Society

ICRS PATIENT REGISTRY

Guidance for Seeking Ethical Approval

2023

Version 1

AUTHORS

Gwenllian Tawy
Angie Botto-van Bemden
Pieter Emans

On behalf of the ICRS Registry Steering Committee

Thank you for supporting the International Cartilage Regeneration and Joint Preservation Society Patient Registry.

We are aware that some institutes require confirmation of ethical approval before their clinicians and patients can use the Registry, and we recognise that seeking ethical approval can be an onerous task for the institutes in question. To expedite this process, we have developed answers to common questions asked by ethics committees, in the hope that this will encourage many more clinicians and institutes to apply for ethical approval to utilise our free and multi-lingual resource.

Please note that the answers in this document may need to be personalised for your institute and your chosen ethics board's needs. Please also note that this document is subject to change. The most up-to-date version of this document is available on our website: https://cartilage.org/society/icrs-patient-registry/

If you require further assistance with your application, please contact the Registry Manager on registry@cartilage.org.

We wish you the best of luck with your application.

Angie Botto-van Bemden & Pieter Emans
Chair and Vice Chair of the ICRS Registry

Table of Contents

Basic Information

Protocol Title

International Cartilage Regeneration & Joint Preservation Registry

Summary

This application is a request for permission to add patient data from this hospital/clinic to the ICRS Registry to manage and monitor the outcomes of patients undergoing treatments of cartilage repair or joint preservation.

The ICRS Registry mission is to create a global source of unbiased outcomes data for treatments that preserve the joint and repair articular cartilage lesions. The area of expertise of the ICRS Registry is cartilage repair and joint preservation. Any patient undergoing treatment that is classified as cartilage repair or joint preservation of the knee can be enrolled into the ICRS Registry. All conservative treatments, injections, and surgical procedures that are classified as cartilage repair or joint preservation of the knee can be reported in the ICRS Registry.

Clinicians contributing to the ICRS Registry at this hospital/clinic will discuss the Registry with eligible patients, then direct them to the patient portal, where they can consent themselves and complete the baseline questionnaires. The clinicians will then complete pre-assessment forms on the patients' diagnosis, and later complete a form on the type of treatment performed on the patient. Consenting patients will then be followed-up by the Registry. Patients will be invited by e-mail to complete validated questionnaires 6-weeks, 6-months, and then annually for up to 10-years.

Locally, the data can be analysed by the clinician in charge of the patient, to track individual or group outcomes within the hospital. However, the ICRS will also pool together large numbers of anonymized data, including those from this hospital/clinic, and analyse these. These analyses will provide an accurate picture of which techniques are working best for which patients. Ultimately, the ICRS Registry data will help future patients with similar injuries, and rapidly identify treatments that are showing great benefit, or those that may not be performing as well as hoped.

Background

The International Cartilage Regeneration & Joint Preservation Society (ICRS) is a forum for international collaboration in cartilaginous tissue research. It brings together basic scientists and clinical researchers engaged or interested in the field of cartilage biology and orthopaedic tissue engineering. The link between laboratory work and the daily treatments of patients in a clinical setting is very important. Subsequently, ICRS aims to educate and promote research within the field of cartilage repair and joint preservation through regular meetings, skills courses, publications, and other forms of communication.

The Registry was established in 2016 at the ICRS Congress in Sorrento. It is guided by a Steering Committee comprised of orthopaedic surgeons, veterinary surgeons, clinician scientists, and research scientists.

The ICRS Patient Registry is the first international database for the clinical outcomes of cartilage repair and joint preservation treatments. The ICRS Patient Registry is currently the only multilanguage database for the clinical outcomes of cartilage repair and joint preservation treatments. The languages currently offered by the Registry include the following:

- Arabic
- Chinese
- Dutch
- English
- German
- Greek
- Italian
- Japanese
- Lithuanian (in progress)
- Polish
- Portuguese
- Spanish
- Swedish

The ICRS Registry has active users in 50 different countries and is free for clinicians and patients to use. Clinical users do not need to be members of the ICRS to contribute. This resource is therefore entirely free for all users.

The Registry can monitor the progress of patients who have been diagnosed with pathologies of the articular cartilage, subchondral bone, or other tissues within the knee. It can thus allow a study of the natural history of such pathologies, whether they are treated surgically or conservatively. The response of patients to injury and to joint preservation or cartilage repair treatments can be variable. It is thus vital that patient progress is monitored, particularly as treatments at the forefront of medical advances may be expensive.

Clinicians may monitor their own patients' progress through the Registry, as users have direct access to their own data. Clinicians can also export their data for analysis at any time. Irrespective of the health care location in which a clinician practices, recording this data is increasingly required for continued service provision.

To monitor the progress of all patient data within the Registry, the ICRS pool together large numbers of anonymized data and analyse these. These analyses provide an accurate picture of which techniques are working best for which patients. Ultimately, the data held by this Registry will help future patients with similar injuries, and rapidly identify treatments that are showing great benefit, or those that may not be performing as well as hoped. The inclusion of the EQ-5D score in the Registry will also enable the ICRS to perform cost effectiveness and health economic analyses of the data in future. This will be particularly important for new and emerging technologies.

The ICRS Registry publishes annual reports, which are publicly available on the ICRS website (https://cartilage.org/society/icrs-patient-registry/registry-annual-reports/).

Aim/Objective

Monitor the progress of patients who have been diagnosed with and require treatment for pathologies of the articular cartilage, subchondral bone, or other tissues within the knee, through enrolment of patients with the ICRS Patient Registry.

Scientific Justification

The ICRS Registry is the only international clinical registry that collects outcome data for patients with a cartilage defect or injury requiring joint preservation. The data collected will be used to provide better insight, knowledge and understanding required to aid the continuous improvement of treatment outcomes in cartilage repair and joint preservation. Particular research carried out by the ICRS will focus on a deeper understanding of the nature of these injuries, the identification of trends in practice, tracking and monitoring new developments, and detecting techniques that may have suboptimal outcome at the earliest opportunity. Registries of this nature are a cost-effective way of monitoring long-term outcomes across multiple countries.

Participants

Number of Participants

Any eligible patients at the hospital/clinic may be approached for inclusion in the ICRS Registry. As this is a Registry and not a research study, there is no recruitment target.

The ICRS Registry currently includes 3,500 patients. On average, roughly 300-500 new patients are added to the Registry each year. This figure has fluctuated in recent years, given the impact of the COVID-19 pandemic on the treatment of cartilage injuries. However, with most practices now resumed and engagement with surgeons improved, the number of patients recruited annually can be expected to increase over coming years.

Sample Size

As this is a Registry and not a research study, no sample size equation was performed for this application. Instead, any eligible patients at the hospital/clinic may be approached for inclusion in the ICRS Registry.

Gender of Participants

All genders will be eligible for inclusion in the ICRS Registry.

Age of Participants

Patients of all ages will be eligible for inclusion in the ICRS Registry.

Language of participants

The languages currently offered by the Registry include the following:

- Arabic
- Chinese
- Dutch
- English
- German
- Greek
- Italian
- Japanese
- Lithuanian (in progress)
- Polish
- Portuguese
- Spanish
- Swedish

Duration of participation

Up to 10-years

Inclusions criteria

All patients with a clinically diagnosed joint injury can be included in the ICRS Patient Registry. This includes chondral, osteochondral, subchondral, meniscal, ligamentous, and tendinous injuries.

Eligible treatments include injections, any conservative approach (bracing/physiotherapy etc.), and surgical treatments that repair or regenerate the joint (including joint realignment surgery). Clinicians can also choose to include patients who are not undergoing active treatment to monitor progress.

Patients undergoing multiple simultaneous procedures on the joint, and patients who require subsequent treatments are also eligible for inclusion.

Patients who have injuries in multiple joints of the body are also eligible for inclusion.

Exclusion criteria

Patients who are diagnosed with a joint injury that requires replacement are not eligible for inclusion in the ICRS Patient Registry. This includes partial and total joint replacements.

Patients whose clinician is not enrolled as a clinical user of the ICRS Registry are not eligible, as the patient's account must be linked to their clinician's account.

Withdrawal criteria

Capacity is not monitored by the ICRS. However, clinicians can withdraw patients who they believe no longer have the capacity to consent to their participation in the ICRS Registry. Data provided with consent will not be deleted, unless requested by the patient. However, the data can be anonymised at the discretion of the clinician.

Patients can also withdraw consent from the ICRS Registry at any time by contacting their clinician or the ICRS (the Data Controller) directly. At this point, they may ask for the data they already provided to be deleted or anonymised. According to the Consent Form: 'At any time you can ask to be deleted from any database managed by the Data Controller. Please contact The International Cartilage Regeneration & Joint Preservation Society on office@cartilage.org in order to request this.'

Criteria for electively stopping prematurely

Participation in the ICRS Registry will end at the hospital/clinic if the ICRS Registry is discontinued by the ICRS.

Procedures and person responsible for recruitment

Clinicians in charge of the care of patients with joint injuries at the hospital/clinic, and who are registered users of the ICRS Registry will be responsible for approaching potentially eligible patients.

The clinicians must discuss the ICRS Registry with potentially eligible patients ahead of their enrolment. The ICRS Registry have produced a leaflet for patients that can be provided to patients by the clinician after this discussion. This leaflet is submitted with this application.

There are two ways in which consent can then be obtained for the ICRS Registry. The first is the recommended approach, whereby patients are directed by their clinician to enrol themselves in the Registry following this discussion. Patients can be directed to the portal by their clinician via a link or QR-code and may enrol at the clinic or at home on a smartphone, tablet, laptop, or PC. When patients self-enrol with the Registry, a consent form is presented to the patient to read and agree to before they complete any Registry questionnaires. The consent form describes the way in which personal data is handled by the ICRS (the data controllers) and Amplitude (the data processors). Retrospective analysis of the data is included, as this is a Registry and not a clinical trial. Patients are aware that their anonymous data will be included in future analyses as this is the purpose of the Registry, as per the consent form. A copy of the consent form is submitted with this application.

For patients who are unable to enrol themselves, or for clinicians who prefer to enrol their own patients, the process is different. In this event, the clinician must obtain consent from the patient directly. This consent must be recorded by clinician in the patient's electronic records and within the ICRS Registry Clinician Portal. If clinicians

prefer to take this route, they must also create an account on behalf of the patient. This includes completing a short form with information about the patient that would otherwise be collected directly from the patient had they self-enrolled. This method is more time consuming for the clinician and is therefore not recommended as the primary method of obtaining informed consent from patients.

Medical screening – who and how

While the majority of patients are expected to be recruited prospectively, clinicians may wish to add patients to the Registry retrospectively (i.e. after their procedure). In this event, the clinician may screen their own patient records to find patients who may be eligible for inclusion in the ICRS Registry. This can take place at any time.

Patients who are identified through screening of medical records must still have a discussion about the Registry with their clinician. The consenting procedure remains the same as for prospective patients.

Intervention and Methodology

Intervention

Patients undergoing treatments for joint injuries, including of the chondral, osteochondral, subchondral, meniscal, ligamentous, and tendinous tissues can be included in the ICRS Registry.

The ICRS Registry monitors the outcomes of all regenerative and repair procedures of the joint. Eligible treatments include injections, any conservative approach (bracing/physiotherapy etc.), and surgical treatments that repair or regenerate the joint (including joint realignment surgery). Clinicians can also choose to include patients who are not undergoing active treatment to monitor progress.

All procedures registered in the ICRS Registry will be routine.

Number of interventions per participant

The majority of patients enrolled in the ICRS Registry will be enrolled for one joint preservation or cartilage repair procedure. However, some patients may require multiple consecutive or subsequent procedures. All procedures will be routine.

Time taken per intervention

The duration of the interventions or procedures will vary depending on the type. The ICRS Registry monitors the outcomes of all regenerative and repair procedures of the joint. Eligible treatments include injections, any conservative approach (bracing/physiotherapy etc.), and surgical treatments that repair or regenerate the joint (including joint realignment surgery). Clinicians can also choose to include patients who are not undergoing active treatment to monitor progress.

Thus, some of these procedures may last minutes (e.g. injections), others hours (e.g. complex surgeries), and others days or weeks (e.g. physiotherapy).

However, all patients will be followed up by the ICRS Registry for up to 10-years. Patients may finish their involvement early if they undergo a joint replacement or if they are withdrawn from the ICRS Registry (voluntarily, or by their clinician).

Detailed Methodology

Clinician Registration

To use the ICRS Registry, clinicians at the hospital/clinic must first register for access on the ICRS website (https://cartilage.org/sign-up-icrs-registry/). Once ratified by the ICRS Registry Manager, account details will be provided to the clinicians to access the Registry's Clinician Portal. These account details are provided directly by Amplitude, the data processors. Clinicians can access their account with a unique username and password. A second method of authentication is also required to log into the Registry, for added security (dual-factor authentication).

Clinicians may also nominate a delegate to help them complete the Registry's forms. Delegates are typically other members of the patients' clinical care team. Delegates must also register for access on the ICRS website (https://cartilage.org/sign-up-icrs-registry/). The clinician must confirm they wish the individual to be their delegate before they can be provided with an account.

Patient Identification

Orthopaedic clinicians in charge of the care of patients with joint injuries at the hospital, and who are registered users of the ICRS Registry will be responsible for approaching potentially eligible patients.

The clinicians must discuss the ICRS Registry with potentially eligible patients ahead of their enrolment. The ICRS Registry have produced a leaflet for patients that can be provided to patients by the clinician after this discussion.

Patient Consent

There are two ways in which consent can be obtained for the ICRS Registry. The first is the recommended approach, whereby patients are directed by their clinician to enrol themselves in the Registry following this discussion. Patients can be directed to the patient portal by their clinician via a link or QR-code. Patients can enrol at the clinic/hospital or at home on a smartphone, tablet, laptop, or PC. When patients self-enrol with the Registry, a consent form is presented to the patient to read and agree to before they complete any Registry questionnaires. The consent form describes the way in which personal data is handled by the ICRS and Amplitude (the data processors). Retrospective and future analyses of the data is included in the consent form, as this is a Registry and not a clinical trial.

For patients who are unable to enrol themselves, or for clinicians who prefer to enrol their own patients, the process is different. In this event, the clinician must obtain consent from the patient directly. This consent must be recorded by clinician in the patient's electronic records and within the ICRS Registry Clinician Portal. If clinicians prefer to take this route, they must also create an account on behalf of the patient. This includes completing a short form with information about the patient that would otherwise be collected directly from the patient had they self-enrolled. This method is more time consuming for the clinician and is therefore not recommended as the primary method of obtaining informed consent from patients.

Patient Data Collection

Once patients have provided consent to take part in the Registry, they are asked to complete a 5-10 minute questionnaire within the patient portal. The questions are about the nature of their injury and their symptoms. The section titled 'List of Data Recorded' specifies the questions that are asked to patients at this stage.

Following their treatment, patients are followed up with automated emails from the ICRS Registry. The emails direct patients to complete validated questionnaires at specific dates post-operatively to monitor their outcome. The section titled 'List of Data Recorded' specifies the questions that are asked to patients following their treatment. These questionnaires take 5-10 minutes to complete.

Patients can complete the questionnaires on any device with a web browser, including smartphones, tablets, laptops and PCs. Up to three automated emails are sent to patients to remind them to complete their due questionnaire. Patients who do not have an email address or do not wish to share their email address with the ICRS Registry can be prompted by their clinician to log into their patient portal at the desired times to complete the due questionnaires. Clinicians can also input the patients' scores on their behalf; this is primarily used with patients who do not have access to a device with a web browser.

Clinician Data Collection

The ICRS Registry has a clinician portal for clinicians. In this portal, clinicians or their delegates can search for patients who have enrolled themselves under their care. They can also add new patients to the ICRS Registry if the patient is unable to enrol themselves. It is important to note at this stage that clinicians and their approved delegates only have access to their own patients' data.

Once a patient is enrolled with the ICRS Registry, the clinician or their delegate only have two forms to complete. One form must be completed prior to the patient's treatment and the second must be completed after the treatment. The section titled 'List of Data Recorded' specifies the questions that are asked to patients following their treatment. These questionnaires take 2-5 minutes to complete each. Clinicians can also generate 'Default' forms for procedures that they perform regularly, whereby the form is part-filled for the procedure of choice. This saves the clinician time when entering data.

Clinicians can also choose to complete a third form on treatment complications at a later date. However, this form is optional.

Data Analysis

Clinicians who wish to analyse their own patients' data can do so using a reporting function within the clinician portal. This function is extremely flexible and allows clinicians to analyse all of their data in any combination to monitor their patients' progress. This data can also be used by clinicians for their annual appraisals, as it can also be used to monitor their own clinical progress.

To monitor the progress of all patient data within the Registry, the ICRS pool together large numbers of anonymized data and analyse these. These analyses give the ICRS an accurate picture of which techniques are working best for which patients. Ultimately, the data held by the ICRS Registry will help future patients with similar injuries, and rapidly identify treatments that are showing great benefit, or those that may not be performing as well as hoped. Registry data analysed by the ICRS is published in peer-reviewed journals and presented at national and international scientific meetings. Sharing this data with the scientific and clinical community is important for progressing our knowledge in the field of cartilage repair and joint preservation.

List of Data Recorded

Data captured by patients when they enrol:

- Completion date for the form
- Consent
- Personal details (name, date of birth, contact information)
- Demographics (age, sex, height, weight, smoking status)
- Information about joint in question
    - Side of injury
    - Mechanism of injury/condition (if known)
    - Previous history of treatments on the joint (+ date if applicable and if known)
    - Duration of symptoms
    - Condition of other joints
- Patient Reported Outcome Measures (PROMs)
    - KOOS
    - EQ-5D
    - Kujala (if patella is involved)
    - Pre-injury and pre-treatment activity scores

Data captured by patients following treatment (6-weeks/6-months/annually for up to 10 years):

- Completion date for the form
- PROMs
    - KOOS
    - EQ-5D

- Kujala (if patella is involved)
- Pre-injury and pre-treatment activity scores

- Complications

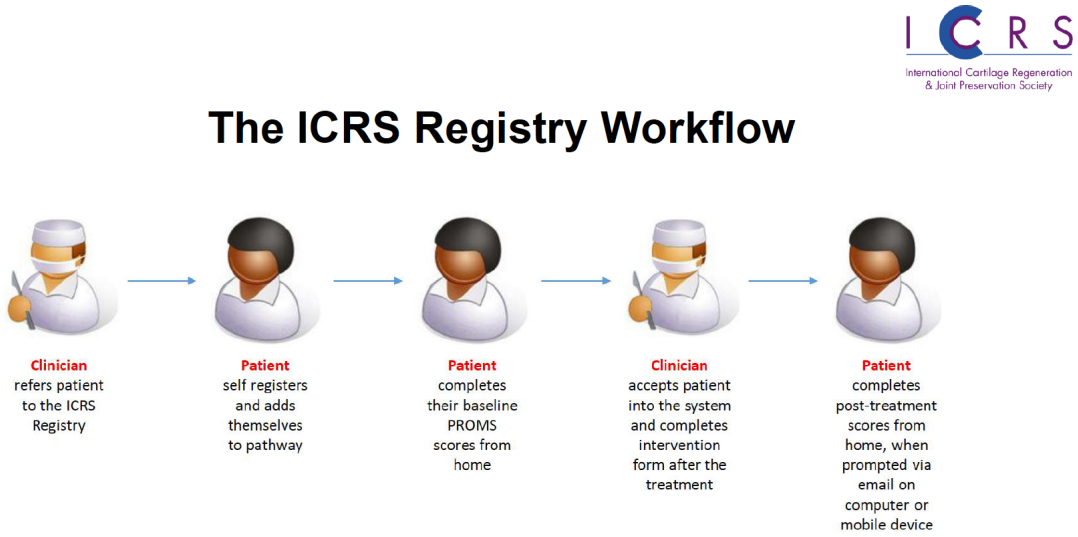
Data captured by clinicians pre-treatment:

- Demographics (age, sex, height, weight, smoking status - if not provided by patients)
- Information about joint in question
  - Side of injury
  - Mechanism of injury/condition (if known)
  - Previous history of treatments on the joint (+ date(s) if applicable and if known)
  - Duration of symptoms
  - Onset of symptoms
  - Any concomitant injuries
  - Condition of other joints

Data captured by clinicians post-treatment (ideally on treatment date):

- Completion date for the form
- Treatment date
- Side of injury
- Condition of opposite knee
- Clinical findings
  - Laxity assessment results
  - If surgical
    - type of anaesthetic/torniquet use/primary or revision/approach/antibiotic use/incisions/portals/instruments used
    - State and volume of synovial fluid
    - State of synovium
    - If cartilage defect
      - Location(s) of any abnormal cartilage
      - Total area of cartilage defect(s)
      - Depth, length and width of each individual defect
      - ICRS Grading of each defect
      - Description of cartilage defect e.g. Osteophyte presence/shouldered/contained etc.
    - State of menisci
    - State of ligaments
- Procedure performed (this can be conservative/injections/surgery)
  - Type of procedure (primary)
  - If articular cartilage repair
    - Location(s) of repair
    - Type(s) of repair per location
  - Other procedures carried out at the same time e.g. meniscal/ligamentous etc.
  - Adverse events/complications at time of treatment
  - Duration of treatment
  - Post-treatment bracing protocol
  - Post-treatment weight-bearing protocol
  - Post-treatment physio protocol

Graphical representation of study design



Schedule of events for participants

Patients will have no additional face-to-face appointments or visits if they decide to take part in the ICRS Registry. However, they will be required to complete routine questionnaires for the ICRS Registry, as follow:

Patients are requested to complete the Registry questionnaires prior to their treatment. This form includes the consent form if they are enrolling themselves. If they have been enrolled by their clinician, the consent form will not be produced at this stage, as they will have already provided consent to their clinician.

Post-treatment, patients are requested by automated e-mail to complete Registry questionnaires at the following timepoints:

- Six-weeks post-treatment
- Six months post-treatment
- 1-Year post-treatment
- 2-Years post-treatment
- 3-Years post-treatment
- 4-Years post-treatment
- 5-Years post-treatment
- 6-Years post-treatment
- 7-Years post-treatment
- 8-Years post-treatment
- 9-Years post-treatment
- 10-Years post-treatment

The dates at which the e-mails are triggered are based upon the date of treatment their clinician has entered into the Registry. Patients are sent up to 3 automated reminder e-mails to complete the questionnaire when initially asked.

The questionnaires take 5-10 minutes to complete. Patients do not have to complete all questions in one sitting; If they wish to complete some questions one morning and return later to complete the questionnaires later, this is possible. The system saves the patient's progress so that they do not have to repeat questions they had previously answered.

Timeline of data collection

Clinicians have two mandatory forms to complete per patient. One pre-assessment form, which details the patient's diagnosis. The second is completed after the patient's treatment, and details the type of treatment performed. Clinicians can also choose to complete a third form on treatment complications at a later date. Each form takes 2-5 minutes to complete.

Patients are requested to complete the Registry questionnaires prior to their treatment. This form includes the consent form if they are enrolling themselves. If they have been enrolled by their clinician, the consent form will not be produced at this stage, as they will have already provided consent to their clinician.

Post-treatment, patients are requested by automated e-mail to complete Registry questionnaires at the following timepoints:

- Six-weeks post-treatment
- Six months post-treatment
- 1-Year post-treatment
- 2-Years post-treatment
- 3-Years post-treatment
- 4-Years post-treatment
- 5-Years post-treatment
- 6-Years post-treatment
- 7-Years post-treatment
- 8-Years post-treatment
- 9-Years post-treatment
- 10-Years post-treatment

The dates at which the e-mails are triggered are based upon the date of treatment their clinician has entered into the Registry. Patients are sent up to 3 automated reminder e-mails to complete the questionnaire when initially asked.

Statistical analysis of data

This application is seeking ethical approval to enrol patients into the ICRS Registry at the involved hospital. This is not a research study that requires a sample size

calculation, nor will the data provided be statistically analysed by the applicants for publication. Should the applicants and clinical users of the Registry at this hospital wish to undertake research studies on their own patients' data at a later date, a separate application form will be submitted at that stage for the study of interest.

Ethical Considerations

Summary of ethical issues

- Informed Consent

There are two ways in which consent can be obtained for the ICRS Registry. The first is the recommended approach, whereby patients are directed by their clinician to enrol themselves in the Registry following this discussion. Patients can be directed to the patient portal by their clinician via a link or QR-code. Patients can enrol at the clinic/hospital or at home on a smartphone, tablet, laptop, or PC. When patients self-enrol with the Registry, a consent form is presented to the patient to read and agree to before they complete any Registry questionnaires. The consent form describes the way in which personal data is handled by the ICRS and Amplitude (the data processors). Retrospective and future analyses of the data is included in the consent form, as this is a Registry and not a clinical trial.

For patients who are unable to enrol themselves, or for clinicians who prefer to enrol their own patients, the process is different. In this event, the clinician must obtain consent from the patient directly. This consent must be recorded by clinician in the patient's electronic records and within the ICRS Registry Clinician Portal. If clinicians prefer to take this route, they must also create an account on behalf of the patient. This includes completing a short form with information about the patient that would otherwise be collected directly from the patient had they self-enrolled. This method is more time consuming for the clinician and is therefore not recommended as the primary method of obtaining informed consent from patients.

- Adverse Event Monitoring

The data processors of the ICRS Registry (Amplitude) and the ICRS Registry Steering Committee can monitor trends in the data collected by the ICRS Registry. However, clinicians are responsible for monitoring their own individual patients. Any treatment complications should be reported in the Registry using the 'Complications' form. Data breaches should be reported to Amplitude's customer support, the ICRS Registry Steering Committee, or the ICRS Registry Manager within 24 hours of the incident being identified.

- Distress to patients

The risk of distress to patients who enrol in the ICRS Patient Registry is low. However, some questions may trigger distress. In particular, questions on the patient's injury, the symptoms associated with the injury, as well as the impact the injury has had on the patient's quality of life may cause distress. Patients who are dissatisfied with the

outcome of their treatment may also be distressed by some questions. Patients who complete the questionnaires for the Registry are encouraged to contact their clinician directly should they feel distressed or upset when completing the questions. It should be highlighted at this stage that completion of the questionnaires for the Registry is not mandatory, and patients can choose not to answer the questionnaires should they choose not to. They are also free to withdraw themselves from the Registry at any time.

- Confidentiality of data

While clinicians and patients can volunteer to provide data to the ICRS Registry anonymously, most patients will consent to provide personally identifiable data to the Registry.

Only the clinician and any approved delegates at the hospital will have direct access to the patient's data. Access to the clinical portal is restricted by a unique username and password. Dual-factor authentication is also employed for added security. Only clinicians and delegates verified by Amplitude are provided with login details to their own portal. Patients also require a password to access their own portal.

Clinicians can only access their own patients' data, and delegates can only access the data of patients whose clinician they are delegating for. If the clinician or delegate chooses to download any of their data for analysis, this can be done in anonymous or pseudonymous format (each patient dataset is provided with an ICRS code, which can be used to de-anonymise downloaded pseudonymous data).

The ICRS Patient Registry Manager (Data Controller) and some staff at Amplitude (Data Processors) have access to all data held by the ICRS Registry. If the Registry Manager is required to download any of the data for the purposes of research or generation of annual reports, only anonymous data is downloaded. Any published data is also published in anonymous format.

All users of the ICRS Registry must follow the ICRS User Agreement and abide by the highest standards of international data protection and the General Data Protection Regulation (GDPR). Users are not permitted to share the confidential Registry data with any persons.

Risks

The use of a clinical registry is minimally burdensome to patients and their clinicians. The main burden to both parties is time. However, the Registry has been co-designed by patients, clinicians and scientists to be as straightforward and efficient as possible.

The questionnaires for patients take 5-10 minutes to complete. These can be completed in the patients' own time, or at the clinic/hospital during a routine appointment. They can also be completed on any device with a web browser. Furthermore, patients can complete the questionnaires in multiple sittings, as the portal saves the individual's progress through the questions. Patients who do not have

access to a web browser can take part in the ICRS Registry with assistance from their clinician.

While patients who provide the ICRS Registry with their e-mail address are prompted by automated e-mail to complete the questionnaires at specific time points, no more than 3 automated reminders are sent. This is to ensure that patients do not feel coerced into completing the questionnaires.

The two mandatory questionnaires for clinicians take 2-5 minutes to complete per patient. For efficiency, clinicians can choose to delegate the task of completing the registry forms to a trusted colleague. They can also create 'Default' forms for treatments that are commonly performed, to save time when completing the questionnaires.

The greatest risk to patients and their clinicians is a breach of confidentiality. The Registry contains identifiable personal information including the name, date of birth and address along with clinical information about the patient, including past medical history, diagnosis and treatments.

The type of processing comprises the following:

- Personal information entered to the Registry by the patient, and clinicians and their administrative staff. Only administrative staff who have been delegated administrative rights by the clinician responsible may enter or view such data.
- Clinical information regarding the outcome of treatments in the form of patient reported outcomes scores (known in the profession as PROMS) is entered both by patients and hospital staff.
- Consent to add a patient to the Registry is obtained from the patient as part of the process of collecting this clinical outcome data.

The ICRS Registry also collects the names, contact details and workplaces of clinicians and their delegates.

The risk of distress to patients who enrol in the ICRS Patient Registry is low. However, some questions may trigger distress. In particular, questions on the patient's injury, the symptoms associated with the injury, as well as the impact the injury has had on the patient's quality of life may cause distress. Patients who are dissatisfied with the outcome of their treatment may also be distressed by some questions. Patients who complete the questionnaires for the Registry are encouraged to contact their clinician directly should they feel distressed or upset when completing the questions. It should be highlighted at this stage that completion of the questionnaires for the Registry is not mandatory, and patients can choose not to answer the questionnaires should they choose not to. They are also free to withdraw themselves from the Registry at any time.

All data collected and stored by the ICRS Registry is tightly regulated by Amplitude, the data processors. All data is subject to the highest international standards of data

protection and the General Data Protection Regulation (GDPR), and as such is collected under the following principles:

The ICRS are the Data Controller, and Amplitude are the Data Processor under Data Protection rules. Terms and conditions of usage of this Registry require users to abide by the highest standards of international data protection and the General Data Protection Regulation (GDPR).

Amplitude is a company that specifically creates safe and robust registries for clinical outcome assessment. Originally it was the outcomes division of a larger associate company, Bluespier, focussed on IT in healthcare. However, now it is its own entity and has successfully managed six orthopaedic registries since 2012, with that number set to increase in the near future.

All Amplitude registry software is hosted with an ISO27001 accredited data centre and Amplitude have also been certified by Nettitude, [http://www.nettitude.com] confirming that the software is robust and secure.

The ICRS User Agreement defines the usage of the Registry and the methods required to adhere to the UK Data Protection Act, which are an appropriate international standard. A copy of this policy is submitted with this application.

Other risks for users of the ICRS Registry are shown in the table below:

Risk	Likelihood of harm	Severity of risk	Overall risk
Risk to surgeons	Remote / Possible / Probable	Minimal / Significant / Severe	Low / Medium / High
Benchmarking and outcome stratification may identify performance outliers. It is essential that prior to any form of outcome analysis that the data set is complete and validated.	Remote	Significant	Medium
Being identified as a negative clinical outlier is likely to be associated with considerable emotional stress	Remote	Significant	Medium
Risk to patients			
Inadvertent data breaches could result in patient clinical information being published	Remote	Significant	Medium
Appropriate management of outcome data could result in identification of adverse clinical outcomes related to an individual surgeon or hospital. Patient will need to be notified of this.	Possible	Significant	Medium
Risk to organisations			
ICRS /Amplitude Clinical Solutions– reputational and financial risk of potential legal action taken by a surgeon or patient due to data breach or mishandling	Remote	Severe	Medium

These risks are mitigated as shown in the table below:

Risk	Options to reduce or eliminate risk	Effect on risk	Residual risk	Measure approved
		Eliminated / Reduced / Accepted	Low / Medium / High	Yes / No
Malicious or inadvertent data breach releasing patient clinical information				
a. Ensure that all patients' identifiable data is consented for. b. Ensure appropriate data security is in place at Amplitude Clinical Services Ltd c. Ensure that surgeon users are aware of risks of saving or exporting patient sensitive data. Outlined in the data and usage policy.		Eliminated	Low	Yes

Who will have access to the data?
The clinician and any approved delegates at the hospital will have direct access to the patient's data. Clinicians can only access their own patients' data, and delegates can only access the data of patients whose clinician they are delegating for.

The ICRS Patient Registry Manager (Data Controller) and some staff at Amplitude (Data Processors) have access to all data held by the ICRS Registry.

All users of the ICRS Registry must follow the ICRS User Agreement and abide by the highest standards of international data protection and the General Data Protection Regulation (GDPR).

Who will be responsible for monitoring the data collected, including the data related to adverse events and their respective roles in the research activities?

The data processors of the ICRS Registry (Amplitude) and the ICRS Registry Steering Committee can monitor trends in the data collected by the ICRS Registry. However, clinicians are responsible for monitoring their own individual patients. Any treatment complications should be reported in the Registry using the 'Complications' form. Data breaches should be reported to Amplitude's customer support, the ICRS Registry

Steering Committee, or the ICRS Registry Manager within 24 hours of the incident being identified.

Benefits/Expected Outcomes

The ICRS Registry has value to patients in the following ways:

a) The Registry keeps an accurate record of their clinical activity and the outcomes achieved. Recording such data is not only essential for the surgeons' professional revalidation, but is vital for monitoring the outcomes of patients.
b) The data contained on the Registry may be used for clinical audit or research purposes. It is anticipated that the data will be used to measure and compare variation in clinical outcomes between surgeons so as to identify clinical outliers (both positive or negative). This may help improve clinical outcomes.
c) The data may also be used to identify whether different medical procedures used for the same clinical conditions are associated with better or worse clinical outcomes. Patient care may therefore meet the best standards because the Registry can yield valuable evidence.
d) The Registry provides patients with an independent place to provide feedback on their treatment outcomes. This can be cathartic for patients.
e) Engagement events hosted by the ICRS Registry Steering Committee show patients that they are part of a community and that they are not alone in their treatment journey.

Dissemination of Data

Will results be shared with participants/members of the public?

On an individual basis, clinicians at the hospital may discuss their patients' questionnaire results with them in a private consultation during a clinical appointment.

With regards to the general data held by the ICRS Registry, the ICRS organise and host engagement events with patients and members of the public to provide updates on the data held by the Registry. All Registry users are invited to these events. These are organised by the ICRS Registry Steering Committee. Only group data in anonymous form are shared with the public.

Annual Reports on the Registry's progress are also published by the ICRS Registry Steering Committee. These are published publicly on the ICRS website: https://cartilage.org/society/icrs-patient-registry/registry-annual-reports/

The ICRS also have their own webpage for patients to learn more about the society, the Registry and the Registry's upcoming events: https://cartilage.org/patient/. In future, lay summaries of published research on the Registry data will be posted on this webpage for patients and members of the public to read.

Importantly, the Steering Committee also organise and host patient-public involvement events, whereby members of the public and patient users are invited to provide feedback on the ICRS Registry and contribute to the expansion and development of this valuable resource.

Other

Funding Arrangements

No funding is required to enrol patients into the ICRS Registry. The resource is free for all clinicians and patients. Thus, use of the ICRS Registry will incur no cost to the hospital/clinic.