

South London & Maudsley NHS Foundation Trust

CRIS Extraction Team

Service Model

The CRIS Extraction Team – The Service Model

CRIS provides access to clinical data for research, audit, service evaluation, and quality improvement purposes in a way that protects the legal and ethical rights of patients.

Launched in 2009, CRIS has support over 300 peer-reviewed publications and the growth in projects applying to use CRIS is a testament to the value of clinical data for research.

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
CRIS Project Applications	39	41	49	55	98	127	108	109	125	116	120	83	126	92	121

The CRIS Extraction Team aims to help users through the various stages of a CRIS project, e.g., addressing questions such as: -

- Is it feasible to answer my question from CRIS data?
- Has anyone else used CRIS to research the same question or area?
- What data should I extract and how?
- How am I going to process the data?
- Am I meeting the required governance standards for accessing and using clinical data for research/audit?

Guiding Principle to the Service

The CRIS service aims to guide users rather than instruct them – helping users help themselves by making effective and appropriate decisions.

Using clinical data for secondary purposes, such as research, presents an interesting challenge. For example, data may be incomplete or inconsistent; the same information may be recorded in various places, in different formats and may change over time; etc. In the light of these challenges different approaches or methods may be appropriate for different research questions.

The CRIS service does not instruct users on the best approach or method. Rather, we aim to provide the best information and options available to enable users to develop the approach they deem most academically suitable for themselves.

The CRIS Extraction Team is based in the Centre for Translational Informatics (CTI) at the Institute of Psychiatry, Psychology and Neuroscience on the Maudsley Hospital site. CRIS users can access advice from 9am-5pm Monday to Friday. For further information, please contact the CRIS administrator at cris.administrator@slam.nhs.uk.

The CRIS Project Life Cycle

The CRIS Extraction Team provides a range of services designed to support users throughout the lifespan of their project, from initial interest through to data extraction and processing. This service catalogue presents the services available at different stages throughout this process. It includes the support available for researchers using Natural Language Processing (NLP).

Further detail of these services is available from the service lead: Amelia Jewell, Research Informatics and Governance Lead (amelia.jewell@slam.nhs.uk).

Stage 1 – Interest in CRIS as a research tool

Stage 2 – Expression of interest, project feasibility and system demonstration

Stage 3 – Project application and approval

Stage 4 – Development of a project specification and suitable extraction method

Stage 5 – Data extraction

Stage 6 – Project data analysis

Stage 7 – Ongoing user support and project monitoring

The CRIS Support Service Catalogue

Stage 1: Increasing Awareness and Inviting Interest

A 'live' written communications plan details a range of methods employed to inform relevant stakeholders about CRIS and to invite further interest and queries. Methods employed include:

- Information about CRIS, including a list of all approved research projects, is available on public facing Maudsley Biomedical Research Centre (BRC) and South London and Maudsley NHS Foundation Trust (the Trust) websites.
- Routine presentations and generic demonstrations to CAG and other Trust groups.
- Posters and leaflets are distributed throughout Trust sites informing staff and service users about CRIS.
- Quarterly CRIS drop-in mornings are held to provide general information and advice on using CRIS to all CRIS stakeholders.
- CRIS Admin email address (cris.administrator@slam.nhs.uk) invites interested parties and potential users to seek further information.

The CRIS Oversight Committee oversee and monitor the CRIS communications plan¹.

Stage 2: Responding to Expressions of Interest

New users may approach the service to find out more about CRIS and its potential to support specific projects or grant applications. Services to support initial enquiries include:

- Simple feasibility checks and queries (up to the equivalent of one hour's work) are undertaken to assess the potential to use CRIS for a particular study, e.g., potential cohort sizes.
- Users are directed to the on-line list of approved CRIS projects to consider overlaps or collaborations with others.
- Focused demonstrations are given to individuals or groups with specific research questions in mind, including discussions around feasibility, available tools and any potential special requirements or constraints.
- Information about the CRIS project application process and other relevant security and governance arrangements is made available.
- Information about CRIS use governance requirements including those covering access to linked datasets is provided.

Stage 3 – Supporting Project Application and Approval

Following initial expressions of interest, users are required to submit a project-specific application for approval before they can proceed. It is a requirement of all CRIS projects that a least one person named on the project is an employee of King's Health Partners (KHP), i.e., King's College London, South London and Maudsley NHS Foundation Trust, King's College Hospital NHS Foundation Trust, or Guy's and St Thomas' NHS Foundation Trust. As well as providing local knowledge and perspective, this person will also take responsibility for the project and the conduct of those working on it alongside the project supervisor. Services to support project application and approval include:

- A link to the on-line application form, including relevant guidance notes on completing the application, is made available.

- Once the application form has been submitted, applications are sent to the approval body – the CRIS Oversight Committee - for review within 1 week¹. All communication between the applicant and the CRIS Oversight Committee is supported by the service, including distribution of the completed application form, questions and responses, confirmation of the final decision.
- Confirmation of project approval is sent to the applicant along with a guide including relevant information on next steps/ requirements.

Stage 4 – Developing a Data Extraction Specification and Extraction Method

Following project approval, there are services available to help users develop data extraction specifications, data extraction and processing methods, services include:

- One-to-one project consultation with a member of the Extraction Team for project specific support including an introduction to CRIS data extraction and management tools, project relevant data challenges with strategic approaches and methods to meet these.
- Supported development of iterative project specification document and extraction method¹.
- Signposting to relevant CRIS service specialists as needed. This may include the CRIS NLP Lead for support with NLP app use and development, the Clinical Data Linkage Service (CDLS) for support with linked data or Clinical Informatics Lead for priority Trust operational projects.
- Access to a secure network drive with written, approved user guidance and storage areas for project specification development templates and feasibility data extracts.
- Completion of a free text security review with a member of the Extraction Team to document and plan any manual free text or NLP development work¹.
- One-to-one or small group training to use the CRIS Front End tool for manual free text work.

The service aims to offer information and support tailored to the requirements of each project and each user. These requirements are user led; the service recognises the need for the user themselves to determine project specifications that meet their own academic requirement.

Stage 5 – Supporting Data Extraction

Once data requirement specification is complete, assistance with data extraction is provided by the CRIS service, including the following:

- CRIS Informatician led extraction of the data from SQL CRIS and associated linked databases against agreed specification requirements¹.
- Team quality checks conducted at least once a quarter to ensure consistency and accuracy in SQL data extractions between members of the team¹.
- SQLCRIS_User database working area and secure network drive storage for SQL data extraction.
- SQLCRISImport database working area for secure storage of tables and views relating to CRIS-only data extractions conducted by the CRIS Extraction Team.
- CDLS_Workspace database working area for secure storage of tables and views relating to linked data extractions conducted by the CRIS Extraction Team.
- Supported use of the CRIS Front End to construct simple queries and complete manual coding of free text.

¹ Commitment monitored in monthly CRIS Extraction Team Balance Business Scorecard.

Stage 6 – Providing an Environment for CRIS Data Analysis

The CRIS service maintains licences to a catalogue of data analysis software. Services include:

- Access for CRIS users to licensed analysis software via onsite Trust desktops and the Trust Windows Virtual Desktop (WVD).

Stage 7 – Study Monitoring/Audit

The CRIS team maintain a purpose-built project database for monitoring project progress and accurate record keeping. Up to date records facilitate the provision of services such as:

- Service updates (infrastructure developments, service downtimes, etc.) via an administrator managed current user email list.
- Provision of CRIS project metrics as required for Maudsley BRC, CRIS users, or NHS Trust reporting.
- Storage and review of CRIS project audit logs according to Trust Information Governance security requirements.
- Regular communication with CRIS users for project support, progress, and output monitoring.
- Monitoring of CRIS Security Model requirements including ensuring users have appropriate contracts in place with the Trust and have completed Information Governance training in the past year².

² Commitment monitored in monthly CRIS Extraction Team Balance Business Scorecard.

Appendix 1: CRIS Service Portfolio/Support Tools

Stage	Active and Supported Tools
Stage 1 - Increased awareness	Communications plan Service user leaflets and posters Website written info and videos Project archive CRIS publications list Video introduction to CRIS for researchers CRIS academics videos CRIS administrator email address
Stage 2 - Initial interest, feasibility, demonstration	SQLCRIS CRIS Front End Project archive CRIS publications list 'Welcome to CRIS' written guide Introduction to CRIS for researchers' video
Stage 3 - Project application and approval	Online application form CRIS administrator email address Project database 'Welcome to CRIS' written guide
Stage 4 - Developing a data-extraction specification and extraction method	Project specification templates CRIS Front End Free Text Security Review template/ NLP Extraction Review template
Stage 5 - Project data extraction	CRIS Front End SQLCRIS SQLCRIS_User CDLS_Workspace SQLCRISImport BRC_CRIS shared network drive NLP app catalogue
Stage 6 - An environment for CRIS data analysis	Hot desks Licenced software library
Stage 7 - Ongoing project support and monitoring	Project database CRIS administrator email CRIS Front End SQLCRIS

Appendix 2: CRIS Service Model Assurance Processes

To ensure the CRIS service meets and maintains its operational goals, audit processes have been implemented at all stages. Details of these process and those accountable, responsible, consulted and informed at each stage are outlined below.

R – Responsible, A – Accountable, C – Consulted, I – Informed

Communications	Research Informatics and Governance Lead	CRIS Administrator	CRIS Oversight Committee	CRIS Academic Lead	Trust/ BRC Communications Teams	Evidence
Communications plan reviewed at quarterly Oversight Committee meetings	R, A	I	C			CRIS Oversight Committee meeting minutes CRIS Extraction Service Audit Programme
Service User leaflet/poster: distributed and visible in each clinical area	R	I	A, I		C	Communications strategy work plan Report from Trust Information Governance Team
Open events: CRIS staff attend events to answer questions and present CRIS	R	C	A, I			Communications strategy work plan
Monthly web resource review, events, publications, project search, training, application form accessible and updated	C, I	R	A, I	R, I		Communications strategy work plan
Quarterly CRIS Drop-In Morning	R		I, A			Communications strategy work plan

South London and Maudsley NHS Foundation Trust – CRIS Extraction Team

Applications and Approval	Research Informatics and Governance Lead	CRIS Administrator	CRIS Oversight Committee	CRIS Academic Lead	Clinical Informatics Lead	Evidence
CRIS applications site available to CRIS users	R, C	R, I		R, I	A	Website: www.slam.nhs.uk/research/cris/cris-project-application CRIS Extraction Service Audit Programme
CRIS applications submitted to Oversight Committee	A, C	R	I, C	I		CRIS Application form: www.slam.nhs.uk/research/cris/cris-project-application CRIS Applications Spreadsheet: Nucleus_Team\Nucleus Admin\Debbie Adhoc Stuff The CRIS Applications spreadsheet, managed by the CRIS Administrator, outlines submission date, outstanding queries and due. CRIS Applications Database: http://crisapplications.slam.nhs.uk/products_list.aspx Approval send date and approval decision date are also recorded on the CRIS Project Database, with any outstanding comments or updates recorded in the amendments field, and where applicable also saved in the relevant project folder. CRIS Extraction Service Audit Programme
Oversight Committee response sent to applicants' ref. CRIS application	A, C	R	C	I		Template – Approval Email: Nucleus_Team\Nucleus Admin\CRIS Admin\Approval The CRIS Applications spreadsheet, managed by the CRIS Administrator records the due date on which the applicant should be updated. The date of approval is recorded on the CRIS Project database.
CRIS Security Model available to users	R, C	R	A	I		CRIS Security Model: www.maudsleybrc.nihr.ac.uk/facilities/clinical-record-interactive-search-cris/information-for-researchers/
CRIS application database updated with approval details and required amendments	I	R		C	A	CRIS Applications Database: http://crisapplications.slam.nhs.uk/products_list.aspx
Project folder created on Nucleus_Team shared network drive	I, C	R			A	Individual Project Folders: Nucleus_Team\CRIS Admin\Applications for Individual CRIS Projects

South London and Maudsley NHS Foundation Trust – CRIS Extraction Team

Governance	Research Informatics and Governance Lead	CRIS Administrator	CRIS User	Extraction team	Clinical Informatics Lead	Evidence:
Trust Honorary Contracts/Research Passports in place	I	R	I	R	A	<p>CRIS Guide: Nucleus_Team\Nucleus Admin\Welcome to CRIS_Active.pdf</p> <p>Researchers send copy of contracts to the CRIS Administrator; these are then sent on to Trust HR to request a network account.</p> <p>Contracts are saved in the Project folder or Trust HR folder: Nucleus_Team\Nucleus Admin\CRIS Admin\HR Correspondent</p> <p>CRIS Applications Database: http://crisapplications.slam.nhs.uk/products_list.aspx</p> <p>Contract status is recorded in the project application database.</p> <p>CRIS Extraction Service Audit Programme</p>
CRIS users informed of service support options	A, R	R	I	C	C	<p>CRIS Guide: Nucleus_Team\Nucleus Admin\Welcome to CRIS_Active.pdf</p>

South London and Maudsley NHS Foundation Trust – CRIS Extraction Team

Project Specifications and Data Extraction	Research Informatics and Governance Lead	Extraction Team	CRIS Administrator	CRIS User/ Project Owner	Evidence
Active specification saved in project folder on Nucleus_Team shared network drive	A, R	R, I	I	I	Individual Project Folders: Nucleus_Team\CRIS Admin\Applications for Individual CRIS Projects
Output and link to SQL view saved in project folder on Nucleus_Team shared network drive	A	R, I	I	I	Individual Project Folders: Nucleus_Team\CRIS Admin\Applications for Individual CRIS Projects Completion of extraction noted on Extraction Team planner: https://tasks.office.com/slamonline.onmicrosoft.com/en-GB/Home/Planner/#/plantaskboard?groupId=3e206e52-3d89-4215-acf2-56c77b23d01e&planId=4SGSIJQJnkignyrgCDWiyZYAFz8
Extraction date and responsible team member noted on extraction planner	A, R	R		I	Recorded on Extraction Team planner: https://tasks.office.com/slamonline.onmicrosoft.com/en-GB/Home/Planner/#/plantaskboard?groupId=3e206e52-3d89-4215-acf2-56c77b23d01e&planId=4SGSIJQJnkignyrgCDWiyZYAFz8
CRIS user informed of expected extraction completion date	A, R	I, C			Email to CRIS users following allocation of data extraction

South London and Maudsley NHS Foundation Trust – CRIS Extraction Team

CRIS Environment Accessibility	Research Informatics and Governance Lead	CRIS Administrator	CRIS User	Clinical Informatics Lead	Digital Services Software Librarian	CRIS DBA	Evidence
CRIS Front End accessibility check	C, I	C, I	R, C, I	A		R, C, I	Daily BAU monitoring
SQLCRIS accessibility check	C, I	C, I	R, C, I	A		R, C, I	Daily BAU monitoring
Hot desk facility availability check	R, I	R, C, I	I	A			Online booking calendar: https://outlook.office365.com/owa/calendar/CRISHotDesks@slamonline.onmicrosoft.com/bookings/ Daily use
STATA accessibility via WVD	I	I	R		I	R, C	Daily use
STATA licence up to date	I	R		A, C, I	R		Annual renewal email to CRIS Administrator and payment receipt
CRIS network drive accessibility check	R, C, I	R, C, I	R, C, I	A, C, I		R, C, I	Daily use

South London and Maudsley NHS Foundation Trust – CRIS Extraction Team

Audit and Monitoring	Research Informatics and Governance Lead	CRIS Administrator	CRIS Oversight Committee	CRIS User	CRIS Extraction Team	Evidence
Audits completed monthly/ 6-monthly/ annually	C	R	A	I	R	Audit Logs: Nucleus_Team\Service Portfolio\Extraction Service Audits
Annual projects follow ups	A, C	R		I, C		Automated email sent via MS Flow. Responses recorded in spreadsheet, saved in MS Teams channel: CRIS Extraction Team Project updates Microsoft Teams
Annual network drive access review	R	R	A		R	Applications website project status and researcher response to automated project follow up email

Appendix 3: Budget

The CRIS service is funded by the Maudsley BRC and is free for use* for academic and Trust services. Funding is currently secured until November 2027.

Including:

Full Time Personnel:

Clinical Informatics Lead
Research Informatics and Governance Lead (Service Lead)
Technical Lead
Senior Clinical Informatician x2
CRIS Administrator
Database Administrator

Core Infrastructure:

Support and development budget
Software licenses

Supporting Infrastructure:

Communications, including BRC website design, leaflets etc.
Office provision – Centre for Translational Informatics, Institute of Psychiatry, Psychology and Neuroscience

Support for hardware management and maintenance (servers, network) is funded through Trust Digital Services

*Additional funding is received on an ad hoc basis through charging of commercial partners/ grant funding to use the CRIS service on a project-by-project basis.