

AI Clinical Coding

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Background

Clinical coding teams face many challenges. These can include managing fluctuating activity levels (post Covid-19), finite skilled coding resources and a lack of capacity to spend time engaging with clinical teams. These issues will cause bottlenecks and can inevitably put pressure on clinical coding teams ultimately impacting on data quality. Clinical coding is paramount for healthcare organisations to understand quality of service delivery. Irrespective of national tariff payment systems, if you are not recording clinical coding timely and accurately you cannot determine service delivery and performance. This data plays a vital role in NHS Digital UK secondary care reporting of episodes of care.

The flow of high-quality data into your systems and out to NHS Digital in secondary care reporting (SUS) is essential to understanding service delivery and patient treatment and care. It is mandatory to return SUS data to enable national data and analysis. Increased demand on clinical coders may result in a reduction in coded episodes/increase in backlog and possibly reductions in data quality. Maintaining accurate and timely Trust and SUS data flows gives you and the rest of the NHS vital insight into the conditions of all discharged patients.

CHKS' clinical coding solutions, supported by our remote clinical coding team, can help you to utilise your existing resources more effectively by removing the burden of coding high volume low complexity activity, doing this automatically. This allows your skilled clinical coding team to focus on coding more complex activity, clinical engagement and data quality.

The work we have already undertaken with pilot sites means we have designed solutions for specific cohorts of activity: endoscopy, chemotherapy, cataract surgery, and well babies. However, this list is not exhaustive; we would welcome the opportunity to develop other areas of AI coding activity where you have good quality electronic source documentation.

Our clinical coding experience

CHKS Ltd is a leading provider of healthcare and healthcare improvement services. We are part of Capita. Since 1989 we have been delivering solutions for healthcare organisations in over 20 countries and have worked with over 300 healthcare providers throughout the world. We provide clinical coding services for the NHS and independent sector, offering a range of services to support healthcare providers to deliver high quality clinical coding including:

- Clinical coding services – all our coders are experienced, ACC qualified and will code activity on site or remotely
- Query resolution – working with our clinical coding services provides access to a national organisation with expert, in-depth and up-to-date knowledge of coding practice
- Clinical coding audit – as part of our financial assurance services we provide coding audits to support IGT requirements and to ensure payment accuracy, and
- Improvement reviews – our data quality consultants work in partnership with coding departments to ensure the processes in place support efficient and accurate coding and provide innovative ideas on coding delivery.

We are the largest and most experienced private provider of clinical coding services for the NHS and independent sector, offering a range of services to support NHS healthcare providers to deliver high quality clinical coding.

We provide scalable clinical coding services to produce accurate coded data in a timely, efficient, and effective manner. Our services range from short-term coding support to outsourced service delivery. These approaches encompass our coding services and our innovative AI coding.

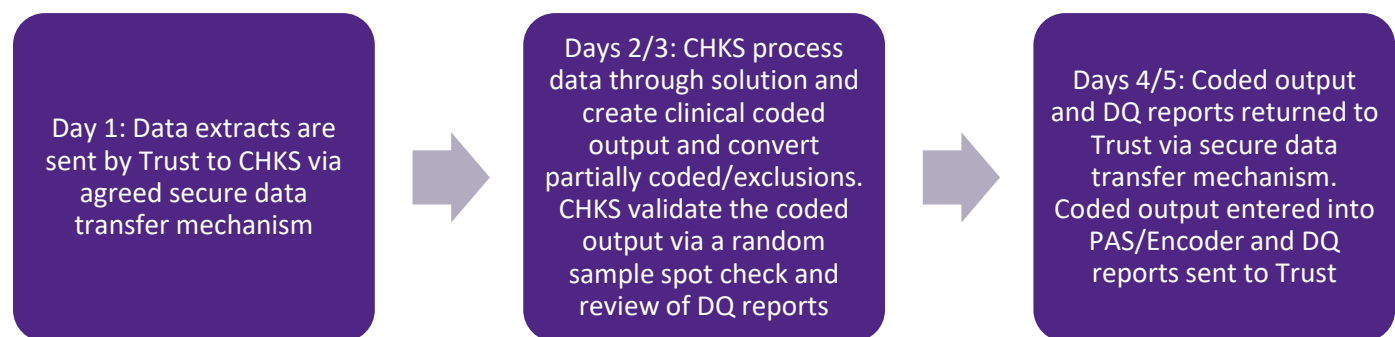
Overview of Remote and AI Coding Solution

Setting up and getting ready for AI clinical coding requires effective electronic health records and systems that are able to produce high quality outputs. Our remote clinical coding solutions will help support Trusts as they prepare for AI clinical coding. Remote clinical coding will operate as a standalone service until your organisation is ready to deploy our AI clinical coding.

CHKS' clinical coding solution, supported by our remote clinical coding team, can help you to utilise your existing resources more effectively by removing the burden of coding high volume low complexity activity, doing this automatically. This allows your skilled clinical coding team to focus on coding more complex activity, clinical engagement and data quality. Our solution can extract data from your electronic patient records and code specific types of episodes accurately and consistently to both national and local coding rules. We will work flexibly with you to get the right data and achieve high quality outputs. Once implemented, where the solution is unable to code the data fully, requiring a manual check to complete the coding, this check can be completed by our remote coders.

All fully coded data can be loaded automatically back into your systems. Using automation to support your clinical coders ensures backlogs do not accumulate and coders are free to focus on complex activity to get it right first time. It can also support you with clinical engagement as it gives tangible evidence on how the quality of source documentation directly impacts how the data is clinically coded.

When the solution is fully operational, we will automate the coding of the selected area(s) weekly on maximum of a five-day cycle. The flow chart below summarises how this will work. This ensures that data is processed quickly and entered into your systems. The process is designed to require minimal input from a Trust once it is running. Using robotic process automation (RPA) can reduce the Trust's input to a minimal amount giving even further long-term savings.



Our solution takes electronic data where information is recorded in systems in a structured format i.e.:

- Consistently used text/terminology in a “predictive text” style
- Small and succinct free text boxes
- Drop down selection lists and tick boxes
- Structured data coded in another classification (such as SNOMED)
- Previous clinical coding data (to enhance comorbidity coding)

During the project we will work with you to determine what data sources would be viable.

Whilst we are focussing on cohorts of activity that are high volume and low complexity, we can exclude subgroups of activity within these cohorts (e.g., therapeutic endoscopies) that you would prefer to still code manually. This can be done by either via flagging them as excluded within the solution using agreed exclusion criteria or by you using criteria within your data extract process so that you do not send them to us to process in the first place.

The solution will attempt to fully code as many episodes as it can based on the data provided. Where it is unable to do this, for example some data is missing or presented in the wrong format, it will mark these episodes as partially coded and give a reason why this has occurred. CHKS clinical coders can review these partially coded episodes and, where possible, manually update the episodes to fully coded. Alternatively, any episodes that we have been unable to convert (e.g., due to lack of information) would be highlighted to the Trust when the data is returned so that these can be picked up by your own clinical coding team. Or if it is known that key information is not sent to CHKS, such as comorbidities as they are still in paper format, the system can flag cases where data may need to be manually added by the Trust.

Any learning points from this conversion exercise (particularly during the dual running phase) would be fed back into the process to make refinements on a quarterly basis to try to continually reduce the amount of partially coded records that are returned.

The number of episodes that we can fully and partially code (or exclude) is quantified once we have initiated the project and started to share and process your data. Numbers can vary across organisations based on several factors including the format and quality of the data and the casemix that is being delivered.

Data that has been coded by the solution will be routinely monitored by CHKS via data quality reports and spot check audits. Using HES data (or your own supplied historic data) we will track activity numbers and casemix to agreed tolerance levels to ensure that there are no unexplained variances.

Future developments we are exploring include:

- Use of machine learning/AI technologies to apply structure to more lengthy free text data
- Optical Character Recognition (OCR) of scanned handwritten documents
- Move from a managed service from CHKS to a solution deployed and run solely by the Trust

Set-Up Requirements

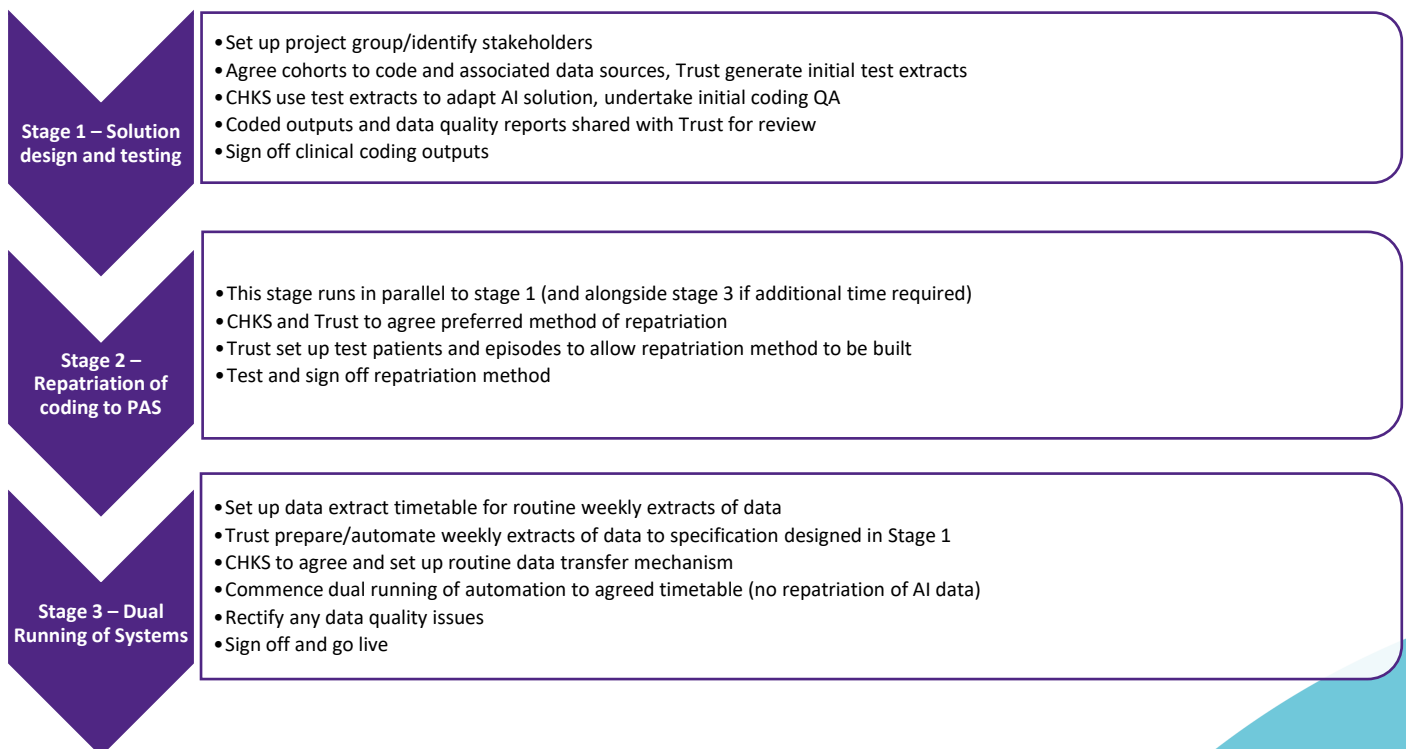
To successfully deploy the AI coding solution, you will need to commit some resource to establish the project. To successfully deploy the remote clinical coding elements, we will need remote access to your Electronic Health Record.

CHKS will support this work with a client lead who will be your first point of contact. You will also require someone to manage the project from your perspective. This would be someone who could monitor completion of tasks and chase up any outstanding requests which may slow down the delivery. This does not have to be someone from the clinical coding department or someone that is closely linked to the development work itself but could be, for example, an admin staff member or an IT project manager. Other key stakeholder staff will then be required to undertake specific pieces of work.

An overview of the process, timescales and the key stakeholders will be provided at initial discussion. We would incorporate these steps into a shared project plan which would need to be monitored by all stakeholders and kept updated by the two leads (CHKS and Trust). All timescales are estimates in the appendix are based on work we have undertaken previously; we would work with you to establish realistic timescales based on your resources.

We will also maintain a shared risk and issues log. This will include any technical constraints; Trust constraints and any data quality issues that may impact on the accuracy of the coding outputs so these can be managed.

It is recognised that the initial set up phase will be the most resource intensive part of the project. Once a routine process is established and the dual running phase has ended, the Trust support will reduce significantly.



Data Security

We will work with you to agree the most appropriate data transfer mechanism for your organisation. We may have an interim solution for the set-up period, where data is being shared on an adhoc basis, with a view to a more automated solution (such as secure FTP) once solution is deployed.

The CHKS service is ISO 27001 registered and compliant with routine surveillance audits taking place at least annually. We comply with NHS digital information governance standards and will complete your Data Protection Impact Assessment (DPIA) on request.

Compliance with national standards

We will operate at or exceed a minimum Level 2 on all requirements of the NHS Information Governance Toolkit. This requires demonstrating sufficient processes and practices to meet national standards on information governance management, confidentiality and data protection assurance, and information assurance.

We are registered on the Information Commissioner's Data Protection Register.

Data management

Secure transfer mechanisms available for clients are:

- SFTP Server
- Trust secure portal
- Secure access to folders on Trust network
- NHS.net email to NHS.net email

As a minimum, a local patient identifier (local to the Trust not NHS number) and an age on admission (for data quality validations using HRGs) are required within the datasets. No other patient identifiable information such as names, addresses, postcodes, dates of birth are required.

All data is processed using a Microsoft Azure cloud-based environment. This is solely a UK based environment utilising the UK South and UK West data regions.

Patient confidentiality

We may access patient identifiable information in the form of patient records to enable us to complete the services. This access is within a controlled environment agreed with the Trust, where case notes are stored securely, and electronic systems are protected with the standard IT security at the Trust.

All our staff are experienced in the handling of confidential information, having been part of clinical coding departments in the NHS, and having delivered clinical coding audits on behalf of the Department of Health and Monitor as part of the PbR assurance framework.

All staff and associates complete mandatory training and assessment in data protection, information security and handling confidential information on an annual basis. Compliance with training requirements is monitored centrally.

Appendix 1: Example AI Solution Process

Weekly Cycle ¹		
Step		Day
1	Data extracts are sent by Trust to CHKS via agreed secure data transfer mechanism	1
2	CHKS process data through solution and create clinical coded output	2
3	CHKS update clinical coding of partially coded records, where possible, to convert to fully coded	3
4	CHKS validate the coded output via a random sample spot check and review of DQ reports	4
5	Coded output and DQ reports returned to Trust via secure data transfer mechanism	5
6	Clinical coding repatriated to PAS/Medicode	5
7	Trust manually codes excluded and remaining partially coded episodes	TBC by Trust
Quarterly Cycle		
Updates to solution to make refinements following QA and partially coded conversion feedback ²		Timescales dependent on changes
Annual Cycle		
Updates to solution to support changes in national coding guidance		Timescales dependent on changes

¹ Timescales may be affected if there is failure in a step causing a delay e.g., issue with Trust data extract causing a failure to load data to the solution. Trust will need to support days 1 and 5 to ensure successful data transfers if issue occurs.

² During the initial build and the dual running phases of the project refinements would be carried out as and when required but would move to a structured quarterly review once the solution has been signed off and is running live.

