FACULTY OF CLINICAL INFORMATICS

Building successful clinical informatics teams

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Executive summary

The Faculty of Clinical Informatics (FCI) model JD for a Chief Clinical Informatics Officer (CCIO) and linked guidance were published in September 2021. Following on from this work, the FCI Professionalism Standing Committee identified a further need to not only define the CCIO role itself but also how that role works with other clinical informaticians, as well as the wider clinical and technical workforces.

This report presents advice on successful team development, together with a sample of case studies that describe real life examples of how clinical informaticians are able to come together as teams in health and care organisations across the United Kingdom today. The good practice advice around clinical informatics teams has been developed from:

- results of a sample of 14 completed case study proformas
- seven interviews conducted with clinical informatics teams across England, Scotland and Northern Ireland
- roundtable discussions of an expert multi-professional working group, based on their wide-ranging experiences and their review of the evidence from the completed case study proformas.

The advice presented is intended to be consistent with and to complement What Good Looks Like in relation to clinical informatics teams. The aim is to provide practical hints and tips ('a recipe for success') from clinical informaticians working in practice, based on their lived experiences, which will be beneficial to any organisation or individual.

The themes centre around the following: Building the team; Functions vs. Job roles; Team working methods; Engagement with wider clinical workforce; Professional development for individuals and clinical informatics teams; Engagement with the wider digital / technical workforce; Clinical informatics representation at Board level.

The case studies provided are rich with examples that bring to light the vital necessity of clinical input into the digital work of organisations. These are shared in the 'Why do organisations need clinical informatics teams?' section of the report and cover roles such as that of translator between IT and clinical staff, reducing administrative burden, increasing data quality, implementing improvements, coordinating training, understanding workflows and ensuring clinical safety.

1. Introduction, objectives and methods

1.1 Introduction

The Faculty of Clinical Informatics is the UK-wide professional membership body for clinical informaticians working in digital health and care.

One of the key recommendations from the report of the Faculty of Clinical Informatics (FCI) Core Competency Framework (CF) Working Group was to work with key stakeholders to review job descriptions (JDs) for clinical informaticians to develop a set of job / role descriptions and person specifications, beginning with a Chief Clinical Informatics (or Information) Officer (CCIO), before expanding to multiple roles.

The FCI was aware anecdotally that there was inconsistency in terms of content of JDs and a desire from its membership to have guidance in addressing this. In response, the FCI developed a resource, based on the CF, for members to use within their own organisations to support the professionalisation of the CCIO role. The model CCIO JD and linked guidance were published in September 2021 and should be referred to in parallel with this report.

Following on from this work, the FCI Professionalism Standing Committee identified a further need to not only define the CCIO role itself but also how that role works with other clinical informaticians, as well as the wider clinical and technical workforces.

The guidance in the model CCIO JD noted that the Wachter report (2016) recommended that an average sized Trust in England should have a CCIO who devotes at least 75% of their time to this task.

The Wachter advisory group estimated that an average-sized trust in England should have approximately five (WTE) clinical informaticians ("well-qualified clinicians with advanced informatics training") representing a range of disciplines (medicine, nursing, allied health and pharmacy). The CCIO, although an integral part of this team, should provide overall leadership and represent the interests of all professions, particularly in relation to organisational strategy.

In the FCI guidance, organisations are advised to consider this steer from Wachter in line with local needs and service provision. In addition, the team of clinical informaticians should work closely with their information technology colleagues to support the delivery of the organisation's strategic aims. The CCIO also has a role in supporting the personal development of the competencies of the clinical informaticians within the team and to support a route to career progression.

In its Interim report of 2021 (Data Driven Healthcare in 2030), Health Education England (HEE) produced a prediction of the workforce required by 2030 in England by area of work. For clinical informatics the forecast was for an extra 12,000 extra whole-time equivalents, a six-fold increase.

In this report we explore the picture in reality:

- are organisations meeting Wachter's quotas?
- do clinical informatics teams represent a range of disciplines?
- what factors contribute to a successful clinical informatics team?

The sample case studies describe real life examples of how clinical informaticians are able to come together as teams in health and care organisations across the United Kingdom today. They are not intended to be exemplars, rather the aim is to contribute valuable lessons for others.

1.2 Objectives

To provide guidance to health and care organisations, as employers, clinical informaticians and their colleagues about:

- effective organisational structures
- building a multi professional digital leadership team in an organisation that together represent a breadth and depth of skills and experience

To use case studies as examples of clinical informatics teams structures and ways of working.

1.3 Methods

Our findings and recommendations are based on:

- results of a sample of 14 completed case study proformas
- seven interviews conducted with clinical informatics teams across England, Scotland and Northern Ireland
- roundtable discussions of a multi-professional working group, based on their wide-ranging experiences and their review of the evidence from the completed case study proformas
- review of What Good Looks Like to ensure this guidance is concordant with and complements national recommendations.

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2. Summary of findings

This section summarises the findings from the 14 completed case study proformas. A more detailed analysis is provided in *Appendix B*.

The findings are based on a sample of 14 health and social care organisations and show much variation in the nature of clinical informatics teams across them.

Of the 14, 12 proformas were completed by NHS providers, one for an integrated case system (ICS) and one was provided for a County Council. As a small sample, the results cannot be considered representative of all UK organisations but give a snapshot of information about a selection of teams.

The total number of whole-time equivalent (WTE) clinical informaticians in each organisation ranged from 0.2 to 13.1 (mean 5.3). In the sample collected, there was no correlation between the number of WTE clinical informatics staff and the total staff employed in the organisations. From this sample, 5 out of the 13 NHS provider organisations did not meet the recommendation in the 2016 Wachter report of having five WTE clinical informaticians (in an average sized Trust).

Teams showed much variation in the clinical backgrounds of the members, but most teams did include a range of different experiences. The highest proportion of teams was made up by doctors (mean 44%, but ranging from 8 to 100%), followed by nurses (mean 31%), AHPs (mean 11%), then pharmacists/pharmacy technicians (mean 10%). There were very few social workers in digital teams.

It was noted that non-medic clinical informaticians were more likely to spend a higher proportion of their time (often full time) in their informatics role than their medical colleagues.

The teams in the sample were mostly led by the Chief Nursing Informatics Officer (CNIO) and CCIO, working together. The CCIOs and CNIOs mostly had different reporting lines for their informatics roles and there were a range of different roles that they reported to across the organisations. The CCIOs in this sample were almost exclusively from a medical background. The mean WTE for CCIOs in the sample was 0.6; for CNIO the mean was 0.9 WTE.

Few teams had direct representation on the Executive Board, but were represented via other senior staff, including the CIO/Chief Nurse/CMO/CDIO/Digital Director/Director of Finance/Medical Director. Some respondents described that the CCIO and CNIO advised the Board, and attended on occasion, as necessary.

3. Why do organisations need clinical informatics teams?

The case studies identified clinical informatician roles and associated positive benefits that they bring to a digital team, which can help to provide a clear case for further development of teams within health and care organisations:

- **Translator between IT and clinical staff.** The clinical informatics team translate information back and forth between technical and clinical workforces. Clinical informaticians support wider communication to clinicians about what a system will do and what it will mean to them.

  *"Taking a clinical first and **person first approach** is the unique thing that the CCIO can bring to the digital leadership team."*

  *"An electronic patient record is a good example where [the digital team] are expected to save lots of time and money, but if you're doing it properly it maybe takes a little bit more time in some cases, but the **data quality increases** which means better connectivity, influence and clinical decision making."*

- **Identifying and helping to resolve issues.** Clinical informaticians use systems in practice and, importantly, amongst the wider staff who are using the systems. This gives them a much better opportunity to understand how changes will affect workflows and **identify issues**.

  People may not be able to identify problems if asked directly, but it is through this exposure and being embedded in the clinical workforce that provides a **unique perspective**.

  *"Technical colleagues might suggest something that would triple the **administrative burden**, and they wouldn't know that."*

- **Improving ways of working.** Clinical informaticians understand both the IT systems and processes and can identify ways in which processes can be improved, supported by the systems, and can communicate credibly with clinicians about the changes required and benefits.

  *"The sell [for recruiting clinical informaticians on a permanent rather than fixed-term basis] is the ability to **implement improvements**. Especially for clinical informaticians, there is no point in them only doing day to day maintenance stuff. That's not what their clinical input is for really. It's for improving the system,*

getting feedback from staff and getting a clinical view of the system and how it can work better for clinicians and for our patients at the end of the day."

- **Coordinating training.** Clinical informaticians can help with raising the profile of what digital can do for all.

  There is an important role in coordinating training appropriately for all staff, for example when new systems are implemented and also in digital capabilities for all staff.

- **Clinical safety**. It's important to know what computer systems can do and what they can't do; what they are checking and what they aren't checking. For example, just because a system allows you to prescribe something, that doesn't mean that the prescription is right.

  "There could be a sense that, because a computer has allowed something, then it is ok, which is somewhat dangerous."

4. How to increase the chance of success

This section synthesises recommendations for successful clinical informatics team development.

The recommendations apply equally to health and social care organisations. Accordingly, the terms clinician and (social care) practitioner are used interchangeably.

Theme	Ingredients for success
Building and marketing the team	• Implementation projects help drive recruitment. They can give clinicians from the departments involved a glimpse into the world of healthcare IT which might prompt them to develop new skills.
	• Secondments can lower the threshold for staff to become involved in healthcare IT.
	• Business cases should include the need for ongoing clinician/practitioner involvement during the business-as-usual phase.
	• Multi-professional representation is essential, but this doesn't necessarily require a formal WTE job role for every clinical discipline, especially in a smaller organisation, or in an organisation that is early on in its journey towards digital maturity.
	• It is a vital part of a team member's role to engage with colleagues to ensure relevant voices across health and social care are engaged. • Representation from varied clinical backgrounds could be gained from advisory groups and support from subject matter experts who understand the work flows relevant to their own professions. See also "Engagement with wider clinical workforce" below. • Organisations may, in some cases, find it more helpful to recruit on the basis of clinical informatics competency, rather than clinical background.
	• Help everyone with any form of clinical informatics role within an organisation identify themselves as part of the 'clinical informatics team. • By coming together as a team to work on projects, whilst also working on additional projects in the periphery, there can be a lot more engagement and shared learning. • Consider the work being completed rather than the individuals or job titles and use this as a way to help these individuals to constitute a team, even if they aren't already working together.

	• Offer some flexibility of clinical vs non-clinical time for informatics roles within contracts. In this way, as informatics roles grow for individuals, they can step away more from their clinical background if required and if they wish. • It also allows flexing for peaks and troughs in digital workload. Having flexibility around this in job plans will encourage more individuals to develop their careers as clinical informaticians.

Theme	Ingredients for success
Functions vs. Job roles	• There is no blueprint as yet for a clinical informatics team. There are benefits in roles which are based on speciality or discipline in terms of credibility with peers and understanding of the working practices and issues, but there are also benefits in having functional definition of roles, for example clinical safety, information governance.
	• Consider "**functions**" that need to be fulfilled within a clinical informatics team, and then consider who may be able to contribute to filling those functions. An example is the Digital Patient Safety Function. • A function could be met by one person, or it may require input from ten individuals as a part of their role. This may also help to overcome the-reluctance that is recognised in some cases for individuals to identify themselves using the term "informatician".
	• Define responsibilities and functions of each clinical informatics role within the team. This is particularly important for clinical informaticians working in Integrated Care Systems or at a regional level, where the role and boundaries can sometimes be less clear.
	• Be clear what the options are for career progression and what qualifications, skills and experience would be required if seconded-to posts were to become permanent – this will also help with recruiting to these posts.
	• It is more important to have the right people rather than necessarily having to have them from specific disciplines. The ability to communicate and an understanding of systems and processes is key.

Theme	Ingredients for success
Team working methods	• To help build the team identity, consider holding regular meetings and develop the team profile within the organisation, eg through presenting as a team, team logo etc.

	• Consider other collaboration opportunities to help bind the team together, such as via Microsoft Teams. • This is particularly relevant when the team members may be working on apparently unconnected projects as it helps to identify common themes, processes and issues that need to be addressed outside individual projects and which may relate to wider organisational policies and processes.

Theme	Ingredients for success
Engagement with wider clinical workforce	• Clinicians and Practitioner Informaticians should retain some time working directly with patients/clients. This can: a. Provide lived experience to understand the challenges within our systems. b. Provide more credibility with peers. c. Give ease of access for engagement, information sharing, training, etc. d. Make it easier to identify and describe hazards, risks and issues.
	• Communicate with the wider workforce to demonstrate where feedback has made an impact, 'You said, we did' approach.
	• Consider 'digital cabinets' - meetings where all clinical staff can be invited in order to be provided with updates on digital developments and to give them a chance to raise any issues. • Floor walking and informal conversations are also important to find out whether communications have been understood.
	• Consider development of more flexible contracts that allow variation in the proportion of informatics and non-informatics work so that the work is distributed among a greater pool of frontline staff, who can be drawn upon when needed to increase their informatics activity and can bring broader experience to informatics and engagement benefits through contact with their peers.

Theme	Ingredients for success
Professional development for individuals and clinical	• Make CPD a standing item on informatics team meeting agendas.
	• Encourage use of the FCI Core Competency Framework for clinical informaticians to identify areas for professional development. • All individuals with any form of clinical informatics role should complete a gap analysis against the FCI CF, identify

informatics teams	where there are gaps across all the team and consider how to fill them. Make use of internal teaching & communication to help upskill.
	• Welcome training from the wider digital team on topics that clinical informaticians may be less experienced in, for example, writing problem statements, process mapping and requirements engineering.
	• Make clinical safety part of the culture of the entire digital team and train everyone in this.
	• Encourage digital team members to join regional and national digital health & care networks.
	• Encourage team members to join relevant professional societies, such as the FCI and BCS
	• When looking at skills across the whole team, take into account the specific interests of individual team members to allow them to develop expertise within the areas that are most engaging to them.
	• For individuals who have 1-1 appraisal meetings, appraisers need to ask about all domains of a clinical informatician's job and be competent enough to review all areas. This may mean joint appraisals with an informatics and a clinical appraiser. This is a lever to promoting professional development and having time to complete training.
	• For larger organisations, or larger clinical informatics teams, consider arranging dedicated training specifically for the team, rather than using an external training provider. Although this takes away some opportunities for networking, it can be much more cost effective.

Theme	Ingredients for success
Integration with wider digital team	• Physical proximity can help develop relationships between clinical, technical and managerial staff, eg shared workspaces for clinical informaticians and IT staff / engineers, or locating offices near to each other to be able to ask questions quickly in a face-to-face way.
	• A democratic and non-hierarchicial ethos, valuing each member of the team.
	• Multidisciplinary meetings, working groups and project teams help people to understand their respective roles and how to work effectively together.

Theme	Ingredients for success

Clinical informatics representation at Board level	• Where the-most senior clinical informatician is not part of the Executive Team themselves, having easy access to communication with executives is key.
	• Having allies on the Board or Executive Team will be instrumental in the development of the team and help to raise the profile of the importance of clinical informatics.
	• Consider the priorities of the Board/Executive Team and help them to see what problems the clinical informatics team could help to solve, and explain where a clinician would be best placed to lead.

5. Clinical informatics case studies

5.1 Medium sized mental health and community services provider

Organisation: Medium sized mental health and community services provider

Interviewee: Chief Clinical Information Officer

Size of team: 6.9 WTE

Development of the team so far: The clinical informatics team has accelerated in its development in the past 5 years from having only a CCIO and a Digital Nurse (band 7) to now a team of 13, spanning multiple professional clinical backgrounds. The organisation is split into five clinical business units or "networks" and an Associate CCIO is aligned with each of them (five). So there is an obvious point of contact for clinicians in every network.

Factors for success: A supportive Trust Board and digital director have been the key driving factors, as well as benefitting from being in the right place at the right time.

The CCIO post is at Deputy Director level, which has been instrumental in helping to build the team and to give easy access to other Board colleagues. It has enabled strategic conversations eg with Chief Executive, non-Exec directors and Chair, which helps to raise the profile of the importance of clinical informatics.

The CCIO has formal **ring-fenced time** to do the role at close to full time, which has been essential to make the progress that has been made.

All staff **maintain patient-facing** role to some extent. This helps with: a) having credibility, and b) having the lived experience – to understand the challenges with the clinical systems.

The CCIO has always taken the approach of being part of the organisation's digital leadership team, for example, **inviting themselves to senior digital meetings**, which was welcomed.

The CCIO represents all clinical areas, not just the specialty they practice in.

"A CCIO is the clinical digital leader for their entire organisation and so needs to remain broad not tied to their niche area. Keep your view broad to have credibility."

Requirements for an implementation project can drive recruitment and are an argument for needing more resource. Also having good relationships with other directorates has meant the clinical informatics team can suggest how they can help if more resource was provided, eg for additional training for clinicians.

"It would be inconceivable now to run digital projects without clinical input. When building Electronic Patient Record (EPR) functionality you can tell which bits have

had very good, robust clinical input as clinicians can understand how to use these quite quickly. If part of an EPR is developed in a bit of a rush then you might see a form that doesn't cover all the options that a clinician needs.

We have fostered a culture where all of our business analysts, project managers and technical colleagues are really good at asking for a clinical opinion. All major digital projects have a clinical informatician attached to them to lead and be available to contact."

The clinical informatics team have fortnightly meetings, where CPD is a standing item. There have been recent attempts to promote team members specialising in different areas eg clinical safety, data, to help with building skills across the team as a whole. Sharing knowledge with non-clinical digital colleagues has also been beneficial. eg clinical informatics training project managers in basic clinical safety principles. Technical colleagues have also offered training to clinical informaticians, eg business analysts teaching clinical informaticians topics such as writing problem statements, process mapping and requirement engineering. This has helped the clinical informaticians to fill some gaps in their competencies across the FCI Core Competency Framework (CF).

The team have made use of the FCI CF:

"We examined the competency framework as a team; then individual members were asked to rate their biggest knowledge gaps in the curriculum. We used this to identify most the common gaps for the team, then we will approach other digital colleagues to see if they will put on training for us all to fill those gaps."

The team would like to do further work to raise awareness of the clinical informatics team across the organisation.

"Would love to see Digital champions embedded within clinical business units so that it isn't the job of a little remote team but to really spread the function of clinicians being involved in digital all throughout the organisation from Board to ward."

Clinical safety was not something widely appreciated five years ago in the organisation, but the CNIO has now taken an operational lead and has put on training for the project managers so that they now nudge the clinical informaticians, eg to book in a hazard workshop. This is because clinical safety is in their project documentation. There has been a definite change to clinical safety being part of the organisational culture - to be an absolutely fundamental part of every project. This has been a very positive cultural shift.

"We need to invest to save. More high quality safe services are cheaper in the long run but that doesn't always manifest immediately."

5.2 Small specialist provider covering acute, community and mental health services

Organisation: Small specialist provider covering acute community and mental health services

Interviewees: Chief Clinical Information Officer, Chief Information Officer, Clinical Safety Officer

Context: A provider of integrated healthcare for children and young people, including community and mental health care as well as acute and specialist services. It is a **small-sized Trust** with approx. 3000 staff.

Size of team: 8 WTE

Development of the team so far:

The Trust has all the specialties of a large teaching hospital but with lower level of resources and so relied historically on goodwill and informal ad hoc arrangements. The clinical informatics team was set up in 2019 with the appointment of a CCIO and has grown into a multi-disciplinary team in part through secondments and PA sessions, working on EPR and other systems projects. It is still at an early stage. Whilst doctors can allocate sessions to digital, it is harder for other clinical staff such as nurses and AHPs, where there is less flexibility.

The Trust already had clinical digital services in specific departments, such as pharmacy, radiology and pathology with established working practices and standards and efforts are now being made to better integrate them into the wider digital team. Projects provide an opportunity to do so, with an example being order communications.

The Trust has a care group structure with each group having a similar structure – director, lead nurse, lead doctor – which has contributed to the recreation a similar model in the clinical informatics team. The team is trying to break the boundaries between the different disciplines with the aim of achieving more integrated systems.

Factors for success:

A democratic and non-hierarchical approach has been taken by the Trust so there are no rivalries or blockages between Exec and corporate functions, having to up and down the chain of command for a decision.

This is mirrored in the digital team, where the role of all team members is seen to be of value.

You need to have the right people in the team, rather than discipline specific roles

"If you can talk to people and understand the system and the process it doesn't

matter, but it only doesn't matter if you have the flexibility in the team to bring in SMEs where necessary."

Flexible contracts, enabling people to shift between clinical and digital roles, as needed are very helpful. With implementations and improvements to systems more input may be required, which reduces during periods of ongoing maintenance.

"Although the work is ongoing, there are peaks and troughs, and flexible contracts can help with this."

A lot of engagement with the wider workforce is done as a team and presented as a team, for example with their own logo.

"Being part of a team, we might be working on a single project, but all of us have an overview of other projects and can see and spot and highlight and engage and get feedback."

Multidisciplinary working and clinical engagement work well on projects, as they bring together the clinical and wider digital team through regular meetings of productive and proactive project groups. It is less so on systems which have been live for some time - having sufficient funding to address issues and continue improvements to existing systems would help with this.

The clinical informaticians have been welcomed by the more technical staff who have less interaction with the front line as they put the work into context.

"Discharge summaries are a good example. It's much easier to engage a multi-disciplinary team to resolve issues with regular working group meetings."

The team has a responsibility for developing the digital skills in the wider clinical workforce and patients and their families. The appointment of formal educators who have produced teaching videos and wider outreach has made a difference.

Challenges:

The funding for IT which is often capital based makes it difficult to retain staff and build career pathways.

"If you can rely on permanent money, that allows people to move about flexibly between digital and clinical roles, so that your have subject matter experts available when and where you need them."

"Capital funding makes it difficult to build a team as people take a secondment but have to go back into a clinical role to obtain promotion."

Funding which is determined at a clinical discipline/specialty/service level makes for a lack of flexibility in the deployment of clinical informatics staff with the right skills at the right time.

"There is a lack of flexibility if the posts are funded by clinical teams."

5.3 Medium-large integrated health and social care organisation

Organisation: Medium-large integrated health and social care organisation

Interviewee: Chief AHP Information Officer

Context: The Trust is an integrated organisation, incorporating acute hospital services, community, mental health and social care and serves a population of approx. 345,000 people with a budget of almost £500 million. With approx. 12500 staff, this is a **medium-large Trust**.

Size of team: 4.6 WTE

Development of the team so far: The clinical informatics teams are currently in development due to the recent procurement of a provider for an electronic patient record (EPR) implementation. The Trust has had a CCIO for a number of years at 2PAs. Due to the procurement and build of the EPR multidisciplinary clinical informatics teams are being put in place to provide clinical leadership within the programme.

The team will include a CCIO (6PAs), Deputy CCIO (2PAs, both medical), Social Care EPR Lead, Chief Nursing and Midwifery Information Officer(IO), Chief Allied Health Professional IO and a Pharmacy EPR Lead. The non-medical posts are full-time in their informatics roles and are banded at an 8c level.

The CCIO and CNMIO are the only permanent posts, the rest are for three years, in line with the EPR implementation.

In terms of skills across the team, all individuals come from different backgrounds with varying amounts of digital experience.

Factors for success:

From an AHP perspective there is good senior management support and we are hoping to further develop a network across the region to increase the awareness of digital for all AHPs.

"The multi-professional point of view has been really important and all bringing our different and varied skillsets. We've done that right in terms of having parity and involvement from all areas."

It is important to have all health and social care professions involved. There is a challenge to see the bigger picture and think about how we ensure all professions are involved in an ongoing basis once programme work is completed.

5.4 A large NHS Trust providing both general and specialist acute and community services

Organisation: A large NHS Trust providing both general and specialist acute care and community services

Interviewee: Chief AHP Information Officer

Context: The Trust provides a full range of lifelong, general and specialist care, as well as clinical research, innovation, education and training, across five main hospitals and the community.

This is a **large Trust** with 23,500 staff and is part of an Integrated Care Service.

Size of team: 6 WTE in the core team, some full time, some part-time. There are also additional informatics staff implementing the new electronic health record system.

Development of the team so far: There is a core clinical informatics leadership team with discipline specific roles, eg CCIO, CNIO, CAHIO. There are also large teams, with both technical and clinical staff responsible for deployment, readiness and change associated with the EHR.

A network of champions, subject matter experts and super users is also in place. They are front-line clinicians, outside the core team, with a small amount of dedicated time for informatics, with whom the core team work closely.

The core teamwork across and liaise with the EHR implementation teams. They support both implementation and business as usual and training and development of clinical staff and have a specific role in medical device integration with the EHR.

Whilst the EHR implementation teams have been funded from an EHR programme budget as time-limited funding, the core team is funded through routine specialty or discipline budgets, with decisions being made at a directorate rather than a Trust level. This has resulted in variability in levels of resources.

The team was rapidly pulled together in response to the EHR implementation and is still developing.

The discipline specific roles provide benefits in credibility 'on the shop floor' and in understanding the nuances of working practices and activities, but this is just the approach taken historically and the make up of the team could be based on function instead.

"We are all trying to understand utility and function but there are no blueprints (for clinical informatics teams) to say whether they are right or wrong."

"While some people need specific skills, for example to implement an ePMA system, many roles need to build up a broad core set of skills and experience."

Factors for success:

Having a team made up of people with different levels of knowledge and experience and varied specialties/disciplines has resulted in a wide diversity of knowledge and skills across the team.

As the EHR is rapid transformation at scale, clinical informaticians have a key translational role as they have an understanding of the workflows, functionality available in the EHR and opportunities for improvement, but also understand the clinical areas, activities and issues and hence can advise on what is practicable.

"You see people that may not work in the clinical area having a discussion with staff and whilst they may have a surface level view of activities they lose the nuance. We can describe different scenarios and examples which demonstrate change and that works better on the shop floor."

The clinical informatics team also help to escalate common issues raised with them by clinical service leads and help technical teams to prioritise them.

Integration with front line clinicians has been achieved through floor-walking and conversations outside more formal communications channels.

Communications are key to success: ***'make every contact count'***. There are clear dissemination channels throughout the Trust, and the clinical informatics team has a rota to cover these meetings.

There is also a large network of SMEs, champions etc who are designated front-line clinicians with a small amount of dedicated informatics time. The team use this network as a sounding board and to make sure communications are reaching the frontline clinicians and are being understood.

The HEE digital capabilities framework is used by front-line clinical staff, but where staff are beginning to take on more skills and responsibilities in informatics the FCI Competency Framework is used.

5.5 Small provider of acute care and specialist services with a largely rural population

Organisation: Small provider of acute care and specialist services with a largely rural population.

Interviewee: Lead Pharmacist for Digital Medicines

Context: Trust providing acute care and specialist health services across three main hospital sites. This is a **small organisation** with approx. 5000 staff.

Size of team: 10.2 WTE

Development of the team so far: The digital team has developed as systems have developed, and thinking about what was required to develop those systems, with the theory that it would be useful to include some clinicians in that work.

Factors for success:

For legacy projects we tend to just recruit people as they are needed. For new projects we would think in advance how many people we think we will need to have a reasonable coverage. It is different for roll-out vs business as usual (BAU). We need more people for an implementation and can generally predict that in advance. It's harder to predict how many you will need to just manage the system.

"If there aren't enough people then you're only managing things, not improving things, which is what we try to do. So the driver is to have a slightly bigger team than we need to just manage the day to day."

The clinical informaticians have an important role in translation between IT-minded and clinical-minded people.

"There are plenty of examples where a change sounds good on paper but the actual workflows don't work. That's what you don't think about if you are just building or changing a system to do a task – you don't think about how it fits in the wider workflow…

People tend to assume that computers are better than they are and that changing things is easier than it is. You don't have to work with a system for very long to know that changing anything is pretty difficult, so need to give that feedback and set expectations that way."

This translation role extends to teaching clinicians about the role of a system:

"Translating what the system can do, what it can't do and what you need to know about what it can't do. The example I give to doctors is that the e-prescribing system will check some things, but just because it allows you to prescribe something that doesn't mean that the prescription is right."

In the past we have run digital cabinets where clinical staff are invited so that we can give updates on what is happening and give them a chance to raise issues. The best way to integrate with the wider clinical workforce, however, is just to be amongst them and using the systems.

"If someone asks you [about your use of a system] at a specific time you might not be able to think of everything, but if you're actually using the system and are around for an hour/shift/day then you're much more likely to pick up those issues."

Challenges:

Recruitment into clinical informatics roles can be challenging as it is difficult to show

people a career path:

"The only way to go up is to go into a more operational, managerial role, rather than it being a more clinical informatics role. People join because they're interested but they don't necessarily stay if they want some advancement, which is problematic for us as it means higher turnover and makes it harder to have that broad general view of systems."

5.6 A very large integrated care organisation, including acute, primary and community services

Organisation: Very large integrated care organisation, including acute, primary and community services

Interviewees: Joint Clinical Lead for e-Health and eHealth AHP Clinical Lead

Context: The organisation is very large, with around 40,000 staff. It is responsible for provision of all acute and community health services and oversight of all contractors (including GPs).

It works alongside partnership organisations including Local Authorities and the voluntary sector.

Size of team: ~3.5 WTE

Development of the team so far: There are 14 sessions per week of dedicated time (two medical consultant leads, one nurse lead, one GP lead, two AHP leads, a pharmacy lead, a mental health lead and a midwife). Members of the team are employed in their informatics roles on a secondment model.

In addition, there is a network of clinical e-health links, who are digital leaders in each of the directorates and interest areas. These are people whose interests range from informatics and analytics, to change leadership and clinical safety.

This is a consultative network of people who the core leadership team can troubleshoot with, or they can come to the team to ask for help. Their services support them to do these roles, but they do not have protected time for their digital role. They are like 'digital champions'. In the case of doctors, they may use their "supporting professional activity" (SPA) time for this type of work.

Factors for success:

The secondment model works well to enable people to get into these roles and to keep a proportion of their time for patient-facing work. Posts can be backfilled for one year without too much difficulty. But it should also be recognised that it does take quite some time to get up to speed in the role and to understand how a really

complex organisation takes decisions, meaning that these may work better as two to four-year posts. In some cases secondments have been extended, which can help to take account for that time required to learn. Having flexibility to allow individuals to decide how they can make best use of their time for the wider health and care service works well. An alternative to the secondment model would be to appoint externally, e.g. for a CCIO who is 80% in their informatics role with a couple of clinical sessions a week, but are there enough people at the moment who are interested in those sorts of jobs?

Posts are advertised as "dual roles" with clinical time with patients as well as clinical informatics time. A key part of the informatics role is to act as a translator between clinical and technical teams, and so maintaining time "at the coal face" is essential.

Members of the clinical informatics team (both in formal posts and also the clinical link roles) have been able to undertake professional development via nationally provided digital literacy and digital leadership courses, and the new courses coming up will provide more opportunities. CPD for clinical informaticians hasn't been done in a structured way yet, however.

We give members of the team opportunities to present their work at UK events – giving people some external awareness is important.

We are thinking about how we can measure the impact of clinical informatics input into the wider digital team. It's difficult to directly attribute quantifiable benefits to the work of the clinical leads but we are looking at things like the number of service desk issues that have been raised as a result of the rolling out of a product and other experiential measures.

5.6 Integrated Care System

Organisation: Integrated Care System

Interviewee: CCIO and Caldicott Guardian at an NHS Trust and CCIO of an Integrated Care Board

Context: The Integrated Care System works in partnership with NHS organisations, councils, Healthwatch, charities and the community voluntary and social enterprise sector to improve the health and wellbeing of local people. The ICS is governed by an Integrated Partnership Board and incorporates a new organisation within it – the Integrated Care Board (ICB).

The Integrated Care Board aims to join up health and care services, improve people's health and wellbeing and reduce health inequalities, manage unwarranted variation, use our collective resources wisely and secure the wider benefits of investing in health and care.

Size of team: 0.2 WTE (ICB role)

Development of the team so far:

Three to four years ago, there was a call for an ICS CCIO (and also a CIO). There were no money flows for these roles. Two CCIOs (a GP and physician) took on the primary and secondary care roles with a day a week each. The secondary care CCIO role was supported by the employer organisation to take on the role both for personal development, as well as to ensure that District General Hospital's had a line of sight and a Digital voice into the ICB.

At the ICB, the digital portfolio within the "Clinical and Professional" Directorate. The Executive director is the Medical Director for the ICB to whom the CCIO reports. This gives the CCIO more of an opportunity to be an influencing and leadership role.

Remit:

There is a Project Management Office (PMO). At ICB level the PMO work on GP Futures, GP Connect, GP-IT, diagnostics programmes, shared imaging collaboratives, shared laboratory information systems across the ICB, and all other projects supporting ICB-wide developments. The Shared Care Record is an overarching piece of work to deliver a Care Record that is integral with the priorities of the ICB.

Factors for success:

The lead CCIO in the ICB coordinates a meeting with all CCIOs on a monthly basis. This an active forum. During the COVID pandemic the group met on a weekly basis (an 8am check-in, across the ICB), with 20-25 CCIOs joining at one point; the group continue to meet weekly at a regular check-in which is valued by the attendees, an opportunity to share learning and offer support to peers.

Challenges:

The role and responsibilities of the CCIO within the ICB have not yet been drawn as the leadership team develops within the new accountability framework at the ICB. The distributed leadership between the executive sponsor, CIO and CCIO works effectively.

5.7 Clinical informatics in a local authority

In a **different style** to the case studies presented above that describe clinical informatics teams, the case study below shares a single example to demonstrate clinical informatics in action within adult social care and how it could be utilised better to support patient care.

The FCI Core Competencies Project defined **clinical informatics** as: "*the application of data and information technology to improve patient and population health, care and wellbeing outcomes and to advance treatment and the delivery of personalised, coordinated support from health and social care.*"

With this definition in mind, clinical informatics is very much relevant to both health AND social care, yet there is a problem of identity, particularly within social care, where the words "clinical" and "informatics" are both rarely recognised. Use cases, such as those below, may help to increase the understanding of the involvement of the clinical informatics profession across all of health and social care.

Local Authority OT involvement in the implementation of a shared care record and patient portal

"I was involved with the original tender for the shared care record many years ago now and it is so great to see it today in its current form, supporting our social care frontline staff with information gathering. It really helps to have that extra ability to find out medical and health information that we would have otherwise had to write to GP's for or telephone up and ask.

Our client record system, now directly links into the shared care record so staff don't have to log in separately. However, this access only enables us to have a certain amount of read only info. Much of what is on the shared care record is still very much 'health led' – there are some social care feeds going into the system but not enough in my opinion.

I sit on the project board for the patient's portal side of the shared care record. This enables the person to see clinic letters, results etc. There is nothing occupational therapist (OT)-related on there yet and my use case is for Local authority information to be uploaded e.g. Care Act assessments and support plans, OT assessments, Moving and Handling plans and carer assessments/support plans. If they are uploaded onto the patient's portal then that patient can choose to share them with other health professionals involved in their care e.g. if the patient is admitted to hospital then that hospital OT/Physio would see important docs such as the existing moving and handling plan (they would then see how the patient is supported at home by carers and what particular tasks are carried out).

I have also campaigned for Adult Social Care (ASC) documents to be part of the main shared care record – apparently there was an 'aspiration' some time ago that ASC documents were going to be added to the list of feeds into the shared care record, and then potentially automatically uploaded into the patient portal, however, the system suppliers wanted an all-or-nothing approach to the amount of docs that fed through and the council said they only wanted certain docs to feed through. There were also issues around the data sharing agreement and things like retention and destruction of documents, as each organisation has different rules. Our digital programme manager feels that adding documents into the patient portal would only work if there was a way in which, when the document 'expires', it

automatically gets destroyed – this is part of the Digital Process Automation (DPA). I understand talks to progress all this have halted because the various parties could not agree.

Also, with being able to digitally offer the patient/client/user their ASC documents, the intention is that this would replace sending them in the post, but if they automatically got added into the shared care record and patient portal then it would save staff time as the council staff member would not have to go through the process of downloading it into pdf format in a file area first, then upload it to the shared care record and patient portal.

OTs are using the shared care record within their daily practice but there is no standardised OT information within the shared care record. In terms of professional contacts, there are no ASC professional contacts on a patient's portal, but plenty of health ones. On the shared care record there is a section titled 'Circle of Care' where info on family, Care teams or 'organisations' can be listed, but I haven't seen any so far where ASC contacts are listed.

To summarise, there is much scope within the shared care record/patient portal but because there are many parties involved in getting anything to fruition, our social care needs are often at the end of the list and health documents from the other parties takes precedent."

6. Acknowledgements

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Case study author	Organisation
Steve Baguley	NHS Grampian
Simon Noel	Oxford University Hospitals NHS Foundation Trust
Chris Tack	Guy's and St Thomas' NHS Foundation Trust
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Abida Abbas	South West Yorkshire NHS Foundation Trust
Martin Sykes	Northern Lincolnshire & Goole NHS Trust
Liam Bastian	Royal Cornwall Hospitals NHS Trust
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Basil Bekdash	Sheffield Children's NHS Foundation Trust
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Ayesha Rahim	Lancashire and South Cumbria NHS FT
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Sarah Thompson	Stockport NHS FT

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Interviewees	Organisation
Basil Bekdash, Caroline Kerrison and Kevin Connolly	Sheffield Children's NHS Foundation Trust
Ayesha Rahim	Lancashire and South Cumbria NHS FT
Liam Bastian	Royal Cornwall Hospitals NHS Trust
Pippa McCabe	South Eastern Health and Social Care Trust, Northern Ireland
Andrew Winter and Chris Grant-Pantrey	NHS Greater Glasgow and Clyde, Scotland
Chris Tack	Guy's and St Thomas' NHS Foundation Trust
Justin Tuggey	West Yorkshire & Harrogate ICS

Appendix A: Methods and proforma used to collect case studies for clinical informatics teams.

Methods

1. An expert, multi-professional Working Group was assembled of FCI members and a Chair of the group was appointed via application, selected by Chair and Vice Chair of Professionalism Standing Committee. The group was made up of clinical informaticians with experience of being part of a digital team and willing to their varied experiences.
2. A proforma was developed by the Working Group to collect a sample of case studies that describe team structures, factors that have brought success and what challenges have been experienced. Interviews were conducted with some organisations in order to provide more context for the case studies presented in this report. A copy of the proforma is included in Appendix A
3. The Working Group reviewed the data collected via the proforma and used these to drive discussion at a series of roundtable-style meetings which helped to develop the guidance presented in this report.
4. The project manager collated all findings from the Working Group roundtables, case study proformas and interviews to draft the guidance below, which was then reviewed and developed further by the Working Group.

Proforma
Clinical Informatics Teams
Case study

Background

The Faculty of Clinical Informatics is gathering case studies to describe a range of clinical informatics teams in health and care organisations in order to develop guidance around roles, responsibilities, competencies and organisational structures. We are keen to hear from organisations across primary, secondary, ambulance, health and social care.

This work follows on from publication of a model job description and guidance for the role of a Chief Clinical Informatics (Information) Officer (CCIO).

This job description is based on the FCI Core Competency Framework for clinical informaticians.

A clinical informatician is defined by the FCI as follows:
"*Uses unique knowledge and experience of person- centred care and informatics concepts, methods and tools to promote care that is safe, effective, efficient, timely, person centred and equitable*." (Ref)

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To provide a case study please complete the form below and submit to info@fci.org.uk. Alternatively please contact us to arrange a time to be interviewed to provide this information. The form can be completed by any members of a clinical informatics team within a health and care organisation. Please enlarge the boxes for your answers, as required.

The aim of this work is to develop guidance on the structure, skills and composition of clinical informatics teams in order to enhance their effectiveness.

Date:	
Name(s):	
Job title(s):	
Email address:	
Organisation:	
Is your organisation part of an Integrated Care System (ICS?) If so, please specify.	

1. Please list the members of clinical staff with a clinical informatics role in your organisation, their clinical backgrounds, the proportion of time they spend in their clinical vs informatics roles and their reporting lines (please add additional lines if required)

Role	**Clinical background of individual**	**Proportion of time spent in informatics role***

- Please expand on how the roles listed above work together as a team

*For example, as a percentage of whole time equivalent (WTE))

2. How are clinical informaticians represented at Board level in your organisation?

3. How do clinical informatics roles fit within the organisational structure and relate to wider informatics roles? If you have diagrams that represent the organisational structure of your leadership and clinical informatics team please include.

4. A) Can you describe any steps taken to build a wide breadth of skills across the whole of your clinical informatics team? i.e. looking at skills and experience across the team rather than in any single individual.
B) Do you use the FCI Core Competency Framework to support any of the steps you have described above?

5. Which of the following methods do you use to promote continued professional development of clinical informatics professionals in your organisation?
☐ Line managers meet regularly with line reports to check development needs for both clinical and informatics parts of role ☐ Promote membership of the Faculty of Clinical Informatics ☐ Local mentoring scheme ☐ Encourage staff to take advantage of FCI Mentoring Scheme ☐ Time set aside for staff from all clinical backgrounds to take part in learning opportunities ☐ Suggesting/requiring/funding formal training courses (eg NHS-D clinical safety) ☐ Availability of sabbaticals for staff to undertake training and education opportunities

☐ Sponsoring fellowships/higher degrees (eg Topol, NHS Digital Academy) ☐ Shadowing opportunities available ☐ Attendance and networking at Digital Health conferences ☐ Ensuring formal/job planned/funded time in normal contracted hours to fulfil CPD for clinical informatics role
Others (please add):

6. What factors have generated the most success for your clinical informatics team?

7. What challenges have you experienced with your clinical informatics teams and has anything helped to overcome these?

8. Do you have any other comments regarding your clinical informatics team as a case study?

☐ **Please check this box if you are willing to be interviewed to discuss this case study in more detail.**

☐ **Please check this box to confirm you are willing for this case study to be published as part of the FCI project to define clinical informatics teams.**

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Appendix B: Results and discussion related to completed case study proforma

The proforma, included in **Appendix A**, was completed by 14 organisations and the results show much variation in the nature of clinical informatics teams across them. Of the 14, 12 proformas were completed by NHS providers, one for an integrated case system (ICS) and one was provided for a County Council, to consider what would be described as a clinical informatics team within the social care sector.

As a small sample, the results cannot be considered representative of all UK organisations, but give a snapshot of information about a selection of teams and the results helped to steer discussions of the Working Group to support the development of the advice presented in section 5.

The results below provide a summary of the information shared in the proformas, as well as discussion of these results by the Working Group.

Team structures

The total number of whole-time equivalent (WTE) clinical informaticians in each organisation ranged from 0.2 to 13.1 (mean 5.3). In the sample collected, there was no correlation between the number of WTE clinical informatics staff and the total staff employed in the organisations. From this sample, 5 out of the 13 NHS provider organisations did not meet the recommendation in the 2016 Wachter report of having five WTE clinical informaticians (in an average sized Trust).

Teams showed much variation in the clinical backgrounds of the members but most teams did include a range of different experiences. The highest proportion of teams was made up by doctors (mean 44%, but ranging from 8 to 100%), followed by nurses (mean 31%), AHPs (mean 11%), then pharmacists/pharmacy technicians (mean 10%). See Figure 1, below.

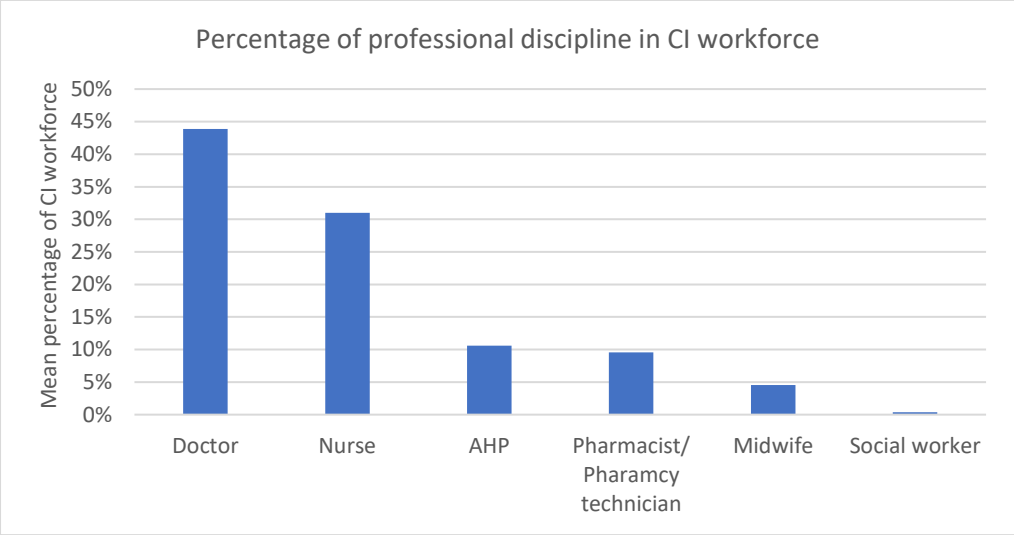

Figure 1: Mean percentages of different professional clinical disciplines in the clinical informatics teams in the sample of case study proformas received (n=14)

It was noted that non-medic clinical informaticians were more likely to spend a higher proportion of their time (often full time) in their informatics role than their medical colleagues. The Working Group commented that, perhaps more important than the proportion of time that individuals spend in their informatics roles, would be having a clinical informatics team who work *together*.

"We find there is a lot more engagement by having a team that work together on most projects and have peripheral input beyond the project work – eg. "have you considered the impact of this new EPMA on this other thing we just implemented?" So the concept of a group that work together, even if just for part of their time, is very useful."

The lack of social workers in digital teams was noted by the Working Group and felt to be disappointing. The group recognised that social workers as a professional group do not recognise themselves as "clinicians" and the term "clinical" seems to be a barrier. Partnership working with local authority colleagues is key.

Surrey and Borders Partnership Trust NHS Foundation Trust have a social worker in the digital team who is an advanced nurse practitioner, as well as being one of the directors and a clinical safety officer. Despite this, and after being in post for three years, there is still some reticence about the term "clinical" for this role. There are more issues around identity for clinical informatics skills in social care than just the use of terms, but it is one of the large hurdles to get over.

Please also refer to Case study 3, from a Health and Social Care Trust (HSC) in Northern Ireland, where a Social Care Clinical Lead is being recruited to every clinical informatics team across each of the five HSCs. HSCs are integrated organisations, incorporating acute hospital services, community health and social services.

The teams in the sample were mostly led by the Chief Nursing Informatics Officer (CNIO) and CCIO, working together. The CCIOs and CNIOs mostly had different reporting lines for their informatics roles and there were a range of different roles that they reported to across the organisations. The CCIOs in this sample were almost exclusively from a medical background. The mean WTE for CCIOs in the sample was 0.6; for CNIO the mean was 0.9 WTE.

Team working methods

Methods described to help clinical informatics teams work together as a unit included having regular meetings; close working between clinical informatics and technical teams and multi-professional working.

Board representation

Few teams had direct representation on the Executive Board, but were represented via other senior staff, including the CIO/Chief Nurse/CMO/CDIO/Digital Director/Director of Finance/Medical Director. Some respondents described that the CCIO and CNIO advised the Board, and attended on occasion, as necessary.

Skills across the team

The case study proforma asked respondents to describe any steps taken to build a wide breadth of skills across the whole of your clinical informatics team? i.e. looking at skills and experience across the team rather than in any single individual. Responses did not refer to many techniques to describe how the team comprises all the required competencies (eg a skills gap analysis tool), but rather described techniques/actions used to generally upskill all members of the digital team.

One response mentioned ensuring that the organisation recruit across different healthcare disciplines, attempting to promote team members specialising in different areas and sharing knowledge with colleagues. One described cross sharing skill sets e.g. spreadsheet manipulation / project plans. Another mentioned having "an understanding of the unique skills that each of us bring to the table, and a respect for that."

Of the 14 responses, 50% reported use of the CF to support development of clinical informatics teams. 21% answered that they don't yet use the CF but hope to or intend to; and 29% responded that they don't use the CF.

Continuing professional development (CPD)

In the proforma, respondents were presented a list of ten activities they might be undertaking to support CPD. A mean of 6/10 activities were selected, with the most commonly selected options being, "attendance at Digital Health conferences" and "funding formal training courses". See Figure 2, below.

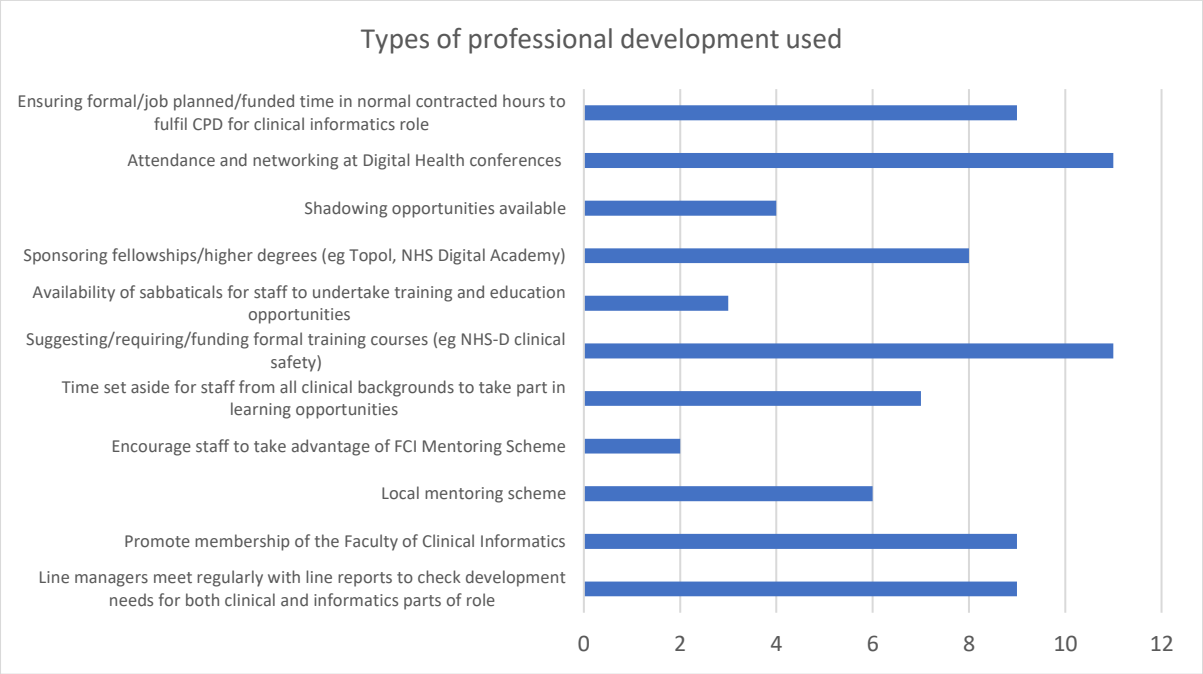

Figure 2: Frequency that CPD methods were selected by case study proforma respondents

Of note is the lack of mentoring opportunities being promoted. The FCI mentoring scheme is free to Members, and local mentoring is a relatively easy, low-cost method of supporting personal development and career progression.

For further results from the case study proforma sample, see Appendix B, including themes around factors that have driven success and challenges experienced. These have been incorporated into the "Conclusions and advice" section, below.

Factors for success

When asked to reflect on factors that had led to successful development of clinical informatics teams, common themes that emerged included:

- **Regular, scheduled meetings**
- **Professional heterogeneity**
- **Significant involvement of clinicians/ward presence.**
- **Fully funded roles/senior sponsorship**

Other factors reported included:

- Learning from digital teams across the country
- Improved data quality to provide meaningful insights

Challenges

Challenges described centred around two main themes:

- **Lack of funding**
- **Lack of support/engagement/vision/understanding of what these roles/skills are**

Other challenges described included:

- Formalising roles for longer term – substantive posts
- Difficulty of recruiting within Agenda for Change as clinical informatics roles are relatively new.