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An integrated approach to neuroscience care: An innovative model to support the new integrated care system

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ABSTRACT

Integrated care systems join up health and care services, so that people have the support they need, in the right place, at the right time. The aims include improving outcomes in healthcare, tackling inequalities in access and enhancing productivity and value for money. This is needed for neuroscience care as the traditional delivery of neuroscience care is inefficient, outdated and expensive, and can involve complex referral pathways and long waiting times.

In preparation for the formation of the integrated care system (ICS), a novel innovative collaboration across multiple NHS trusts developed across North Central London in 2021. We developed a model where neuroscience specialists engage in collaborative care with clinicians outside the specialist hospital setting. Pivotal to the pathway is a multidisciplinary meeting, and collaborative working enables joint clinical reviews, diagnostics and medication initiation.

This innovative collaboration has already significantly improved access, addressed inequalities due to borough variation and enhanced the delivery and quality of neuroscience care in our ICS. It is a translatable model that can be adapted to suit other regions in the UK. It fulfils many of the objectives of the integrated care system and these benefits are seen without the need for significantly more resource.

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Introduction

Integrated care systems bring organisations together to join up health and care services, so that people can get the support they need, in the right place, at the right time.[1] The key aims are to improve outcomes, tackle inequalities and enhance productivity and value for money.[2] This is much needed for neuroscience care, as the traditional delivery of neuroscience (neurological, neurosurgical, neuropsychiatric including functional neurological disorders (FND)) care within a dominant secondary care setting is inefficient, outdated and expensive. Patient access to neuroscience services can involve complex referral pathways and long waiting times. Patients are 'falling through gaps' for services because they do not fulfil locally determined referral criteria. Patients waiting for specialist input face lengthy waits and are often reviewed by services who report lack of expertise or support as barriers to them providing care. Although e-RS advice and guidance is accessible to all GPs and allows a referrer to request advice, there are limitations and it is also not available to healthcare professionals without appropriate medical training.[3]

Neurological disorders are the leading cause of disability worldwide and are associated with significant cost.[4] While there has been considerable investment in defining stroke pathways to improve the quality of care for patients who have had a stroke,[5] pathways for several other neuroscience conditions remain poorly defined, despite the fact it is estimated that one in six people are currently living with a neurological condition in the UK and the average (hitherto named) Clinical Commissioning Group (CCG) in the UK was responsible for over 75,000 people with neurological conditions.[6] People are living longer with multiple complex long-term conditions, requiring long-term support from different services that are not effectively coordinated around their needs.[2] Lack of timely access to appropriate neuroscience support for complex cases results in inefficient, often repeated encounters with inappropriate services, avoidable emergency attendances and admissions, and renders patients at risk of complications due to prolonged delays for the specialist input that they need. Work by Nayar and colleagues has produced a collaborative neurological rehabilitation service 'SNROS' comprising hospital-based and virtual rehabilitation beds in the patient's own home;[7] however, a workable collaborative neuroscience model integrating primary, secondary, tertiary and community care within a patient pathway had yet to be defined.

The case for a new model of care

The case for a new model of care, involving collaboration of multidisciplinary agencies, has already been recognised to lead to better outcomes, highlighted in the work by Dr Zameel Cader (Thames Valley Strategic Clinical Network) and Dr Nicholas Losseff (London Strategic Clinical Network).[8,9] The conclusions of the London Neuroscience Strategic Clinical Network (2013–2017) included proposals to modernise the delivery of neurology, including strengthening the management of common neurological conditions in primary care, ownership to be taken at a secondary care level by neurologists for emergency and urgent care, and improved responsiveness of neurological crises in the community. They outlined the case for neurology to move from the traditional outpatient setting to acute and community settings, not only to improve quality of care but also to reduce avoidable GP and outpatient appointments and avoidable unplanned emergency admissions.

Proposal

We proposed that the delivery of neuroscience care can be improved in terms of efficiency and quality through the implementation of a model wherein specialist neuroscience clinicians (doctors, nurses, therapists) engage in collaborative care alongside teams in the community to support the care of their patient with a neuroscience condition. This innovative approach would provide timely access and promote collaborative care across community, primary, secondary and tertiary care for the benefit of patients and the system.

Background to the current model

North Central London Integrated Care System (ICS) consists of five London boroughs (Barnet, Camden, Enfield, Haringey and Islington). With a population of approximately 1.6 million residents, almost a quarter of a million adults in North Central London have a neurological condition on their GP records. There are 12 NHS trusts across the sector, of which four provide daily adult neurology services to include inpatient liaison and outpatient clinics. Two of the trusts have dedicated beds serving at a regional (Royal Free London NHS Foundation Trust, University College London Hospitals NHS Foundation Trust) or at a national (University College London Hospitals NHS Foundation Trust) level. There are approximately 200 general practices across the sector and each borough has access to varying degrees of community services with therapy and nursing. Despite the wealth of neurology services in this sector, waiting times can be 6–9 months for general neurology services with longer waits for the subspecialist clinics.

Commencing in October 2021 the National Hospital for Neurology and Neurosurgery has implemented the North Central London Community Neuroscience project with partners across North Central London (NCL), bringing together clinicians from community services, primary, secondary and tertiary care, to understand the existing neuroscience services in each region of NCL, to define inequalities and unwarranted variation in accessing neuroscience services across boroughs, and explore models to harmonise neuroscience care.[10] The Community Neuroscience Project team worked closely with NCL CCG and now the NCL ICB, exploring ways to support existing primary care and community services across the sector.

The core team consisting of a community neurophysiotherapist, community neuro-occupational therapist, complex care nurse and hospital-based consultant neurologist, engaged with emergency departments, neurology departments, primary care and community services across the whole sector to identify the current pathways for patients accessing emergency services and outpatient care within this sector, explore ways to reduce avoidable hospital intervention (eg avoidable emergency admissions and unnecessary outpatient appointments), and improve management of patients with neurological conditions in the community. This work demonstrated:

- many examples of excellent practice across the sector
- the patient journey can be fragmented due to traditional boundaries between primary, secondary, tertiary and community care
- certain aspects of care (for example, therapy services) were taking place in the hospital setting when they could be delivered closer to the home of the patient
- certain boroughs have less access to specialist neuroscience services than neighbouring boroughs within the same sector.

We subsequently mapped the community neurology and stroke services across NCL and developed this model to raise the profile of community services and promote collaborative integrated patient care closer to the home of the patient.

Model

This integrated model for the ICS optimises existing patient pathways and has several facets, including:

- The development of sector-wide symptom management pathways with primary care and neurology services across the sector, thus supporting delivery of high-quality care for common neurological conditions in the community.
- Weekly virtual multidisciplinary meetings (MDM) that provide timely access to support. Within this setting, collaborative discus-

sions (rather than written referrals) enable the development of a coordinated care plan where core issues are addressed collectively.
- A strong focus on training and education (formal and informal).

This serves to complement and improve efficiency of the existing services available in the sector (neurology liaison, neurology inpatient, outpatient and e-RS advice and guidance).

Primary care pathways

A previous neurology referral audit across NCL sites in 2017–2018 identified that headache, transient loss of consciousness and dizziness constituted 50% of referrals to the general neurology clinic. Neurology pathways for headache, dizziness and transient loss of consciousness were developed and implemented within the five CCGs (Barnet CCG, Camden CCG, Enfield CCG, Haringey CCG and Islington CCG) in NCL in 2019; the first year of pathway implementation was associated with a 25% reduction in neurology referrals to secondary care (Turner C, personal communication, 2021). The pathways were published on the GP website and their content varied according to borough (ie CCG) and respective local governance process. NCL CCG formed in 2020; however, the pathway review and updates were postponed due to the pandemic.

In preparation for the formation of the new NCL Integrated Care System (ICS) which would include all five boroughs, the project team coordinated the review of the pathways and their update, working with primary care, neurologists and subspecialist colleagues in the neurology services across the sector to develop and proceed through the statutory governance process to publish NCL-wide ICB neurology pathways in headache, dizziness and transient loss of consciousness. Interactive sessions with the ICB and ongoing engagement with primary care leads facilitated the development process. These pathways are commissioned and promoted by the ICB and published on the regional primary care website to be accessible to all GPs across the sector.

Formal teaching sessions

A Neurological Alliance survey of 1,001 GPs reported that 85% feel that they could benefit from further training on identifying and managing people presenting with neurological conditions.[11] As part of this collaborative endeavour, primary care and the community services across the sector have requested neurological topics for teaching. Unlike standard lectures, the aim of these sessions is to provide a practical approach for clinicians in the community of NCL (primary care, community services and interface/acute services). We have coordinated this neurological seminar series which is currently being delivered by the NCL Training Hub.

Clinical pathway for the integrated delivery of neuroscience care

The clinical model was developed to complement the existing services across the sector. In this model, specialists work across primary, secondary, tertiary and community care. The model requires a core team (Neuroscience Multidisciplinary Specialist Team) consisting of a community neurophysiotherapist, community neuro-occupational therapist, complex care nurse and consultant neurologist. There is additional support where appropriate from a consultant neuropsychiatrist, FND specialist physiotherapist and social prescriber. This core team work to support neurological and non-neurological clinicians (eg community therapists, GPs, community nurses, acute hospital services) across the sector in managing their patients. This provides specialist expertise (see Fig. 1) which is equitable and timely, regardless of borough and local service availability.

Virtual multidisciplinary meetings (MDMs) have been utilised in healthcare in local (eg Frailty MDM), regional (eg NCL Stroke MDM) and national (eg National Hospital for Neurology and Neurosurgery Encephalitis MDM) settings. Pivotal to this clinical pathway is the collaborative virtual multidisciplinary professionals discussion, where referrals are invited from clinicians of any discipline across the sector.

The current integrated MDM model has capacity to support local clinicians (primary care and community clinicians) and services with 500 complex case discussions a year with joint working with the referring team or until the patient is reviewed in a required subspecialist appointment.

To date, our team has supported local clinicians/teams with over 300 patients across the sector and the conditions have included movement disorders, multiple sclerosis, traumatic brain injury, nerve and muscle disorders, dementia, cerebral palsy, epilepsy, neuro-oncology disorders, neurosurgical disorders, migraine, and FND. This model benefits from the core team having a broad neuroscience skill set to support patient care for a variety of neuroscience conditions and that the core team includes both hospital and community representation. The value of the MDM is enhanced by the core team having a good understanding of the neuroscience services through the previous engagement work across our sector (NCL).

Collaborative working impacts on patient care in the following ways:

- The referrer is supported to look after their patient and specialist input, therefore starts at the time of the MDM rather than following a wait for an outpatient appointment. Our team has supported the diagnostic pathway, advised on symptom management and liaised with subspecialist neuroscience services regarding onward pathways where necessary.
- Neurological investigations and onward referrals are made through the MDM, thus reducing time and pressure on primary care and other partners.
- Urgent neurology reviews have been planned through Neurology SDEC to prevent avoidable emergency attendances.
- Urgent planned neurology admissions have been coordinated with the appropriate subspecialist team to prevent avoidable emergency attendances and acute (non-specialist) medical admissions.
- Referrals to level 1 neurological rehabilitation units and admissions to NCL level 2/3 neurological rehabilitation units can be facilitated through the MDM.

Our core team has participated in patient consultations alongside the patient's clinicians in the community (GPs, community therapists, nurses and other healthcare professionals) in patient homes (virtually) and in virtual and face-to-face consultations within primary care, community inpatient rehabilitation units, community hospitals and acute hospital settings. Collaboration with the clinicians in the community who have initiated the need for referral means that the right care can be delivered closer to the patient home, providing support of the community clinician and facilitating timely management. Community clinicians also feel more confident with the support of the MDT. Case examples are shown in Appendix 1.

Governance

The core team consists of hospital and community representation. The host provider for the North Central London Community Neuroscience Team is University College London Hospitals NHS Foundation Trust which manages the service with service level agreements (SLA) with the other partners (Royal Free London NHS Foundation Trust, Central and North West London NHS Foundation Trust) whose employees work within the core team. All activity of the North Central London Community Neuroscience Team comes under the governance processes of University College London Hospitals NHS Foundation Trust.

Collaboration with Acute Care: Neurology SDEC (N-SDEC)

The UCLH Neurology Same Day Emergency Care (N-SDEC) service works closely with the North Central London Community Neuroscience

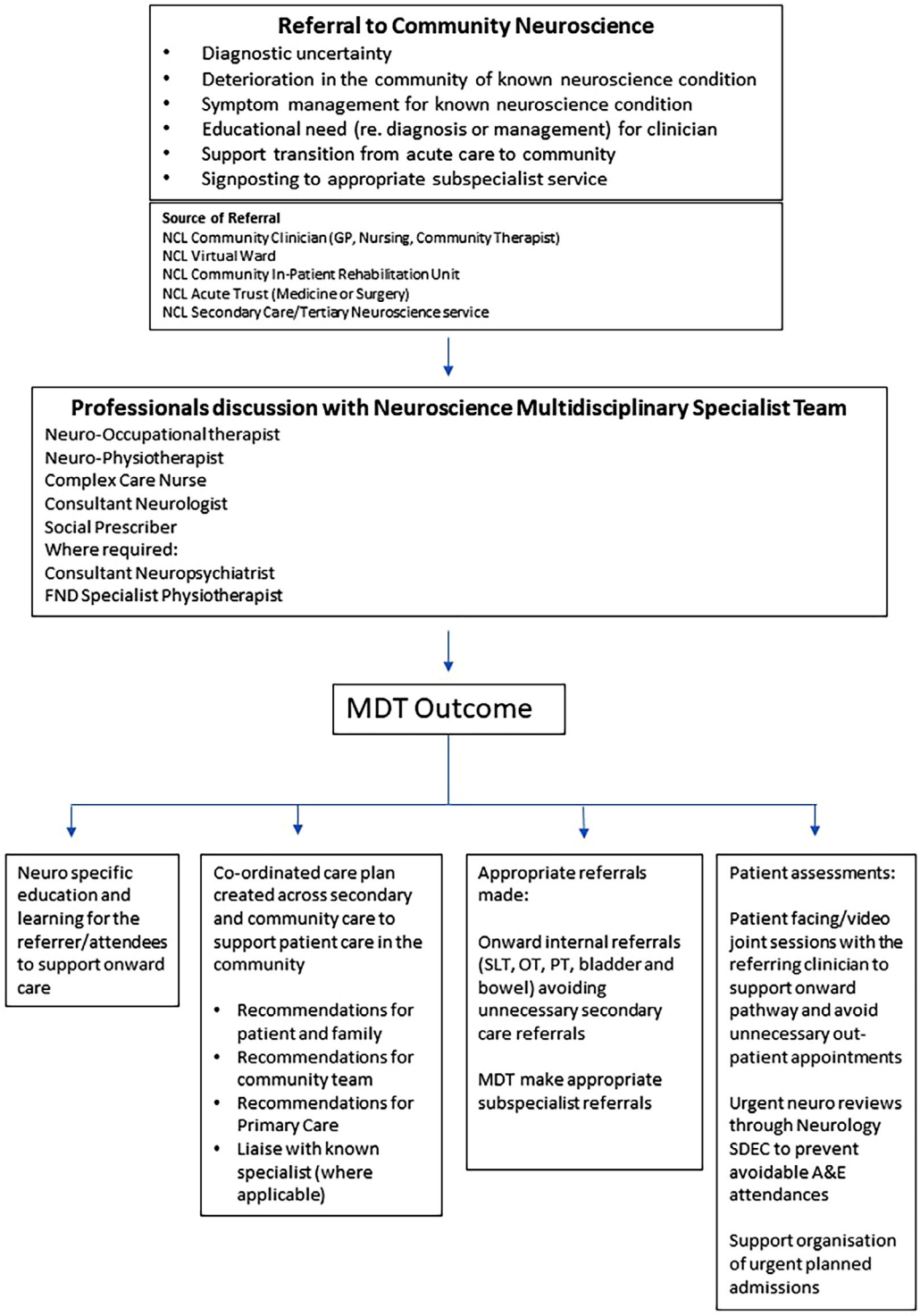

Fig. 1. Clinical Model: Referral to Community Neuroscience.

Project. N-SDEC is a novel model of acute neurological care delivery, providing a weekday neurology consultant-delivered service embedded within UCLH Accident and Emergency Department (ED).[12,13] This supports the standard on-call neurology service by placing consultant neurologists at the front line, providing senior specialist decision makers at the point of contact in emergency care. The service is supported by an acute neurosciences nurse practitioner and internal medical training (IMT) doctors.

A major impact of the model includes reduced time to diagnosis and treatment and reduced onward referral. Admissions are avoided and only 5% of referrals to N-SDEC required onward general neurology outpatient services (the N-SDEC results will be described in a further publication). There are acute pathways for status migrainosis,[14] FND[15] and acute vertigo.[16] N-SDEC provides timely patient assessment and management, prevents avoidable hospital admission, and streamlines the patient pathway and admission when necessary. For ED patients who are recurrent attenders, multidisciplinary consultations provided by the Community Neuroscience MDT has been associated with a dramatic reduction in ED attendances thereafter (see Appendix 1 patient F).

Benefits for the sector

This is an innovative model with a core clinical team of neuroscience expertise to deploy into the community and support neuroscience care across the ICS, where it is needed. This complements existing neuroscience services, and provides collaborative care across primary, secondary, tertiary and community care.

Equity of access to neuroscience care

This model provides equitable access to senior specialist neuroscience clinical support for primary care and community teams regardless of borough across NCL and local service availability. The patient pathway is streamlined, ensuring optimal care is provided closer to home in a timely manner. It facilitates the collaboration between community and primary care with secondary care and tertiary services where required, for the benefit of the patients.

Enhances existing services

The flexible approach by a core specialist team enables the benefit of the model to be at the appropriate time in the patient pathway. This model enhances the effectiveness of the existing services by collaborative working, providing a joined-up approach to care.

Reduces avoidable paperwork for our colleagues in primary and community care

Colleagues in primary care and community care have timely access to senior neuroscience support. This reduces time-consuming emails and other avoidable paperwork trying to identify the appropriate pathway.

Optimisation of patient pathways

The primary care symptom-directed pathways support the delivery of high-quality care for common neurological conditions in the community.

The knowledge and experience gained through engagement within the MDT discussions can be harnessed to build expertise within the community.

Reduced time to diagnosis and treatment

While waiting for specialist services, many patients are held in primary care and community services. Collaborative working with these teams means that patients access the right pathway at an earlier stage which facilitates timely diagnosis and management. When an urgent clinical review is necessary, the model is supported by N-SDEC.

Improvement in care

The model improves patient care through multidisciplinary, cross-sector collaboration that identifies the important interactions required early in the patient journey, and then facilitates integration with the most appropriate clinical teams. Patients with acute neurological problems and those with long-term conditions are therefore supported earlier in their patient journey and provided with timely, high-quality care.

Professional support

Weekly access to discussion with a specialist multidisciplinary core team additionally provides senior professional support for clinicians who ordinarily work in isolation caring for patients with complex neurological needs. The value of this should not be underestimated.

Health economics

In addition to the support benefitting colleagues in the community, there is evidence to suggest that this approach to neuroscience care is likely to produce significant savings and improved efficiency of care for the ICS. The heterogeneity of neuroscience conditions means that the financial savings following each discussion will be varied; however, for each patient discussed at the MDM, there is an immediate cost saving by streamlining neuroscience care for the patient; preventing avoidable GP appointments, unnecessary outpatient appointments, as well as reducing avoidable ambulance call-outs, ED attendances and hospital admissions outweighs the cost of the professionals required for the MDM. The healthcare savings associated with the intervention of the MDT can be over £3,000 for some complex neuroscience patients.

Considerations

There are neuroscience considerations specific to this sector which are outside the scope of this paper. However, observations translatable to other ICSs include involving the many examples of good practice that exist outside the hospital setting to support patients with neuroscience conditions. These include the role of neuro-navigators to access appropriate services,[17,18] community services to provide care closer to home and social prescribing to facilitate social interaction. We would propose that the profile of such services is raised, and that there is more seamless integration of these services with secondary care to provide 'joined-up' care for patients closer to home.

For collaborative neuroscience care in the ICS, the initial priorities should be to invest in the resources required for patients to have access to an integrated community neurological therapy team appropriate for the size of the population. This should include neurophysiotherapy, neuro-occupational therapy, nursing, speech and language therapy and neuropsychology. There should be investment in the resources required to optimise neuroscience care at the primary care/community/secondary care interface (including for example, a good quality triage system, advice and guidance service, N-SDEC model), and for a neuroscience network that crosses over the traditional boundaries of primary, community and secondary/tertiary care to be formed within each ICS across the UK.

This model has been created by those working within it, thus proving it is workable across our sector. NCL can be considered to have a large population over a relatively small area, compared to other ICSs across the UK. However, the principle of this collaborative regional work consisting of a core senior neuroscience team engaging with services and interfacing with the subspecialist services where needed, is translatable to a larger ICS. Nevertheless, each ICS is encouraged to adapt this model according to the needs of their respective region.

Conclusion

We have proposed a model for neuroscience care which enhances the quality of existing services by developing relationships between primary, secondary, tertiary and community care. As recommended in the conclusions of the London Neuroscience Strategic Clinical Network (2013–2017) the Community Neuroscience and N-SDEC models strengthen the management of common neurological conditions in primary care, promotes ownership at a secondary care level by neurologists for emergency and urgent care, and facilitates responsiveness of neurological crises in the community that do not need an emergency ambulance call-out. We have created and implemented this model. The model has developed a neurological network across our sector in North Central London, supporting clinicians in providing patients with the right care, in the right place and in a timely manner. This neuroscience model is translatable to other integrated care systems across the UK and has the potential to improve neuroscience care for more individuals, without the need for significantly more resource.

Declaration of competing interest

There are no competing interests related to this piece of work.

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CRediT authorship contribution statement

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Supplementary materials

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