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Digital-driven service improvement during the COVID-19 pandemic

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Abstract
COVID-19 brought a lot of children’s routine clinical services in the UK to a complete halt in March 2020. The NHS had to radically change the way clinical services are provided with the rapid introduction of telementicine, virtual consultations, and video conferencing facilities to support team working. This paper describes how Peterborough Child Development Centre rapidly redesigned the services with digital tools to continue offering neurodevelopmental and neurodisability services more virtually. We demonstrate how we adapted our approaches to assess and manage complex long-term conditions with improved quality and outcomes by using digital tools. The changes to the clinical processes and systems are here to stay beyond the COVID-19 pandemic and have the potential to revolutionise the services.

Keywords digital transformation; neurodevelopmental disorders; neurodisability; service redesign; telemedicine; virtual clinics

Peterborough Child Development Centre provides neurodevelopmental and neurodisability services for children and young people as an integrated service with the Child & Adolescent Mental Health Service on a single site.

Our community paediatric team said goodbye to each other in March 2020 knowing that we may not meet face to face as a whole team as the COVID-19 took hold in the United Kingdom. The NHS was bracing for an apocalyptic change and was expecting to be overwhelmed with demand. The paediatricians were expecting to be redeployed and most of the routine work was paused. It was a time of immense anxiety for staff and children, young people, and families. Everyone was worried about the impact of COVID-19 on children with a complex physical disability. We describe how our team adapted using digital transformation to improve our services during the COVID-19 pandemic.

Our digital readiness
Peterborough community child health services and primary care services went paperless by implementing TPP SystmOne Electronic Health Record in 2010 as part of the National Programme for IT (NPfIT). Additional functionality was added using integrated pathology and radiology application to request laboratory tests and view results, clinical task management system within the electronic record, appointment management systems, waiting list management system, and digital dictation.

Cambridgeshire and NHS FT (CPFT) equipped the clinicians with laptops with secure access to the electronic health record through a virtual private network (VPN) that can be accessed with any WiFi. A well-developed management information dashboard allowed us to manage the demand, capacity, and workflow. CPFT was already migrating to Office365 and was beginning to use Microsoft Teams for video conferencing as part of agile working before the pandemic.

The Community Paediatric service was able to pivot very quickly to remote clinical work with deployment of Attend Anywhere video consulting platform and the use of Microsoft Teams for multidisciplinary team meetings and weekly team meetings to keep in touch, support each other and to promote wellbeing. See Boxes 1 and 2.

Initial response
- Pause in clinical services to establish command and control systems
- Interpret the national guidance from NHS England and the Royal College of Paediatrics and Child Health
- Review waiting lists, waiting times, clinical processes and multidisciplinary team working
- Use a prioritisation tool to decide which services should continue
- Develop new administration and clinical workflows to support remote walking, virtual consultations, and virtual multidisciplinary team meetings
- Train staff to use the digital tools for homeworking
- Procure additional telephones and laptops to work from home

Clinical prioritization
The MDT decided that anything that could be safely delivered virtually would be delivered digitally. Children were only brought in for in-person assessments when clinically needed and when this could be delivered safely. The services for Children in Care, Physical Disabilities and Safeguarding was prioritised (See Box 3).

Physical Disability Service Model
- Named professional as the key contact for each child
- A single number to access the service
- Initial virtual consultation to gather all the information
- One MDT appointment with all the professionals in the clinic
- Other professionals join through video consulting platform
Neurodevelopmental services
An expert panel conducted a review of the digital tools and services to facilitate virtual Autism and ADHD assessment. Staff accessed virtual training and picked Brief Observation of Symptoms of Autism (BOSA) as a suitable tool for socially distanced autism assessments. We tried three different pre-school autism assessment processes and selected a method with a judicious mix of virtual and face-to-face appointments.

Our multidisciplinary team recorded a series of webinars to deliver autism training and interventions for the families. We reviewed all the paper-based tools, questionnaires and assessment instruments and converted them to digital whenever possible.

Staff recruitment, welfare and wellbeing
We appointed a Team Manager and developed a weekly virtual team meeting. This allowed regular check-ins, peer support, wellbeing activities and onboarding of new team members. The Community Paediatric team recruited a health care assistant, two assistant psychologists and a speciality doctor and successfully inducted them into the team during the COVID-19 period. Applicants for our new jobs were able to meet the MDT virtually, were interviewed using MS Teams, and completed the recruitment process online.

Our current state
All initial history taking appointment is conducted over the telephone and Attend Anywhere video consulting platforms. Assistant Psychologists gather a lot of information about parental concerns, family functioning, development, and collect information from educational settings that the Consultants used to do.

The new autism pathway (Table 1) consists of Early Help Assessment by the referring team, followed by a 60-minute telephone history taking by an Assistant Psychologist. The MDT assessment consists of a review of videos uploaded by parents followed by live video consultation with Speech & Language Therapist and a Psychologist. Paediatrician is involved in a clinic appointment to undertake a physical examination, a development assessment, and to provide feedback to the family (See Box 4).
Plans for further digital transformation

- To review current SystmOne units used by the multidisciplinary team to make them more streamlined
- To develop standardised templates to record information in a structured way to facilitate the use of Artificial Intelligence to support decision making, early warning and research
- Explore the possibility of speech recognition to navigate the electronic health record and to transcribe spoken dictation to facilitate clinical documentation
- Use an app to allow families to access their child's electronic health record and upload information
- Use remote monitoring and digital support for the families to facilitate virtual wards in the community
- Use our portable video conference facility to undertake multidisciplinary clinics with district general hospital specialists and tertiary specialists
- Continue with the process of digital-first approach to improve outcomes, user experience and staff satisfaction

Physical environment and clinical estate

We have used the opportunity presented by COVID-19 to replace paper patient information leaflets with electronic display in the Child Development Centre. Digital sound and light systems are being introduced to replace toys to minimise infection risk. Our charity is funding interactive murals and digital ceiling tiles to provide a stimulating environment for children with neurodevelopmental difficulties and physical disabilities.

Conclusion

The NHS has not changed how it provides outpatient services for a long time, even though it is part of NHS long term plan to reduce face to face consultations and substitute virtual consultations. The NHS had to radically re-engineer its administration and clinical processes in response to COVID-19. The Child Development Centre at CPFT was in a fortunate position of advanced digital maturity driven by the organisation and the local team.

The digital transformation journey described here applies to hospital services and directly transferrable to the elective outpatient services. The emergency and urgent services can also implement similar digital transformation with the provision of suitable hardware, electronic health records, pathology management systems and electronic prescribing.

The pitfalls to avoid are that of neglecting people and processes and just concentrating on hardware and software. The productivity gains from implementing disruptive technology can only be realised if staff are involved in choosing the technology, trained and supported during and after the implementation phase and the clinical processes are re-engineered. Up to 80% of digital transformation projects fail because attention is not paid to cultural transformation and post-implementation support for the staff.

All staff working in the NHS should be willing and able to use digital tools and be receptive to digital transformation. NHS organisations should train their staff to evaluate which digital tools to select and integrate them into their clinical workflow to improve outcomes, improve user experience, and the staff’s working lives.

We are only starting on the journey to integrated health and care records for whole integrated care systems. Further developments will include access to electronic health records by the service users through user-friendly portals, structured data entry that can be used by artificial intelligence algorithms to provide intelligence decision support and remote monitoring.

There is an exponential rise in healthcare need with no corresponding increase in human and financial resources. There is significant information asymmetry between healthcare providers and service users. Intelligent use of digital health and technology can bridge this productivity gap and reduce information asymmetry.

FURTHER READING

https://facultyofclinicalinformatics.org.uk/core-competency-framework.
www.hee.nhs.uk/our-work/digital-literacy.
www.hee.nhs.uk/our-work/digital-readiness.
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