

Institution: Nottingham Trent University (NTU)		
Unit of Assessment: C17 - Business and Management Studies		
Title of case study: Healthcare: Ensuring patients are treated in the most appropriate clinical and care settings.		
Period when the underpinning research was undertaken: 2012-2020		
Details of staff conducting the underpinning research from the submitting unit:		
Names:	Roles:	Periods employed by submitting HEI:
Peter Murphy Michael Hewitt Don Harradine Malcolm Prowle	Principal Lecturer/Professor Senior Lecturer/Associate Prof Principal Lecturer Professor	2010 - present 2017 - present 2010 - 2018 2010 - 2016
Period when the claimed impact occurred: 2014-2020		
Is this case study continued from a case study submitted in 2014? No		
1. Summary of the impact <p>NTU's research findings and recommendations significantly improved two major contemporary operational challenges in the delivery of UK healthcare services, namely overcrowding in Accident and Emergency (A&E) and delayed discharges from hospitals (aka 'bed blocking'). As a result, significant demonstrable improvements were made to:</p> <ul style="list-style-type: none"> • A&E capacity, patient flow, treatment targeting, and clinical and non-clinical outcomes at the Queens Medical Centre's (QMC) in Nottingham with bed capacity/availability up 57% to 550. • at the Kings Mill Hospital in Mansfield, there were significantly reduced delays in discharge leading to reduced costs to the NHS, Social Services and welfare providers, and substantial benefits for patients. 		
2. Underpinning research <p>The operational efficiency and effectiveness of A&E and long-term increases in hospital discharge delays are two of the major operational inefficiencies in the NHS, both nationally and in Nottinghamshire. As a result of Murphy's previous experiences (including membership of the boards of Nottingham and Nottinghamshire Primary Care Trusts), NTU was commissioned to undertake two complementary research projects at the two major hospitals serving Nottingham and Nottinghamshire.</p> <p>A&E, Queens Medical Centre</p> <p>Nottingham University Hospitals Trust (NUHT) is the 4th largest acute hospital trust in the UK and the largest outside London, which despite implementing multiple innovations, consistently failed to meet the 4-hour waiting target between 2004 and 2016.</p> <p>NUHT and the Nottingham Clinical Commissioning Group produced an operational plan for urgent/emergency care, which identified four projects based around 4 major user groups of A&E. They had sufficient detailed information and predictive models for three groups and commissioned NTU to investigate the fourth [R1, R2]. People aged between 19-29 are infrequent and intermittent users of NHS services, but among the least efficient users and most difficult to assess or predict. QMC had over 60,000 students and 70,000 non-students in this age cohort in its catchment. This cohort are the biggest 'over-attenders' and represented 20% of attendances.</p> <p>NTU analysed data from the hospital, ambulance service, GPs, third sector providers and local authorities. It held focus groups with the target population and over 20 interviews with key staff from A&E, GPs, NHS111 and key stakeholders.</p>		

The research found attitudes and behaviour materially different from the previous 10-year cohort, upon which services had been configured. It identified the sources and reasons for over-attendances as:

- Poor knowledge of alternative out-of-hospital provision,
- Misdiagnosis of severity of conditions (by patients and advisors),
- Unwillingness to 'wait' for services such as GP, out of hours, or 111,
- Use of risk averse on-line algorithm-based advice,
- A spike in alcohol and drug abuse presentations.

NTU found over 60% were self-referrals, 70% in the four lowest triage categories of severity, 80% were in the 'mostly healthy' group with 80% discharged after treatment. These were all considerably in excess of any other groups and the averages for all patients.

Reducing delayed discharges (the ASSIST project).

Gross costs to the NHS of treating patients in hospitals no longer needing acute care were estimated by the NAO at £820 million p.a. (in 2015), with £16m being the pro-rata for Nottinghamshire.

Building on previous research [R3, R4], NTU was commissioned by a multi-agency consortium from Health and Local Government to research, design and evaluate a scheme to reduce delayed discharges from the Kings Mill Hospital, Mansfield. NTU developed bespoke databases and an evaluation process, collected and analysed financial and performance data, and acted as 'critical friends' and advisors to the project. [R5].

The 3-year research study found increased use of the 'ASSIST' service; significantly increased year on year savings (to both the NHS and adult social care), with falling costs and improved patient outcomes and a rising return on investment ratio of over 650% by the end of the study [R6].

3. References to the research

The quality of the underpinning research has been evidenced by rigorous externally peer reviewed outputs (books and articles) and by multiple commissions by national and local key stakeholders across the sector. For example, as a follow on to these projects, NTU is currently acting as evaluators and advisers to the implementation of the Integrated Care Systems for Nottingham and South Nottinghamshire and central Nottinghamshire.

R1. Harradine, D., Prowle, M. and Murphy, P., 2015. Interim report: an examination of the pre-admission decision making factors resulting in pressure on A&E at NUHNHST. Nottingham: Nottingham NTU.

R2. Harradine, D., Murphy, P., Valero-Silva, N. and Prowle, M., 2016. An examination of the reasons that result in Emergency Department attendances, in contrast to alternative care and diagnostic options, for a defined Millennials/Generation Y population in Nottingham. Nottingham NTU.

These two research reports relate to the appraisal of both in hospital A&E capacity, patient flow, treatment targeting, and clinical and non-clinical outcomes and the out of hospital provision for the Nottingham and surrounding area catchment

R3. Murphy, P., 2013. Public health and health and wellbeing boards: antecedents, theory and development. *Perspectives in Public Health*, 133 (5), pp. 248-253.

R4. Ferry, L., Murphy, P. and Glennon, R., 2019. Health and Social Care. In: P. Murphy, L. Ferry, R. Glennon and K. Greenhalgh, eds., *Public service accountability: rekindling a debate*. Cham, Switzerland: Palgrave Macmillan, pp. 75-90.

These two academic research and evaluation outputs relate to the functioning and interdependence of health and social care, both at the local level of Nottingham and Nottinghamshire and at the national level following the implementation of the Health and Social Care Act 2012. Following the passing of the 2012 Act, Murphy was appointed to chair the Nottingham and Nottinghamshire NHS Implementation Programme Board.

R5. Murphy, P., Harradine, D. and Hewitt, M., 2020. Evaluation of an early discharge from hospital scheme focussing on patients' housing needs: The ASSIST Project. Health and Social Care in the Community DOI: 10.1111/hsc.12977.

R6. Murphy, P. and Harradine, D., 2017. Better Together: the ASSIST hospital discharge scheme. In: National Institute for Health and Care Excellence (NICE) Conference, Liverpool Arena, Liverpool, 18th-19th May 2017.

These two publications relate to the research and evaluation of the reducing delayed discharges scheme centred on the Kings Mill Hospital, Mansfield.

4. Details of the impact

Improved patient flow and treatment in A&E and alternative settings.

NUHT is the single acute service provider for 2.5 million people. NTU's recommendations have been implemented both by the hospital [S1, S2] and by local NHS bodies, providing out-of-hospital healthcare [S3]. These recommendations directly stem from the NTU research conclusion that

"There are clear issues associated with accessing healthcare by the prescribed generation. These appear to be a product of the characteristics/cultural attributes of this particular cohort, the services available, and the level of understanding of the services and their purpose, all of which are compounded by the complexity of the system itself" [S4].

QMC was dealing with over 500 patients per day in an area designed to treat 350. As a direct result of NTU's research, the NHS and service providers in and out of hospital (including A&E, GPs Pharmacies, NHS111 and Out-of-hours services) adopted strategies to alleviate these capacity problems and improve outcomes. They improved triaging, reduced unwarranted presentations, and improved case mix and patient flow into A&E both before and at presentation.

Young adults generally had poor knowledge of alternative provision; students had poorer knowledge than residents with young overseas students the poorest-informed. GPs, and pharmacists redesigned and targeted their treatment practices and advice to the different groups, particularly around severity, and the availability of on-line services and telemedicine.

Information distributed to new students focussed on their parents and prior to arrival rather than distribution on arrival. (Nottingham has 28% of its population between 18 and 29; the national average is 16%). Changes were made in equivalent treatment practices, service reconfigurations and out-of-hours services serving the non-student community and incorporated in the major new NHS/Local Authority service centres at Clifton Cornerhouse, Mary Potter, Bulwell Riverside, and St Ann's. The spike in unwarranted alcohol and drug presentations, following the opening of the hospital stop on the new tramline, was also reversed by changing police, drug and alcohol services practices in the city centre [S3].

This significantly increased capacity for patients genuinely needing A&E and directed other patients to more appropriate treatment settings. However, it did not completely resolve the capacity issue and in December 2018, QMC was awarded £11.9m as a result of a portfolio of evidence (including NTU's findings), to revamp and extend A&E, which was completed in 2019 [S1,S4]. QMC has had adequate capacity throughout the Covid-19 pandemic and the project features in the Health Foundation report "Transformational change in NHS providers" [S2, S5].

Significantly reduced hospital discharge delays

The ASSIST service in Mansfield was commissioned by the NHS trusts and local authorities in central Nottinghamshire (approximately 300,000 population). NTU was commissioned to design develop and evaluate the service by creating databases, systems, evaluation metrics and advising the development team. To facilitate wider adoption, NTU also identified critical success factors for such services well as identifying areas (including Nottingham City), where such schemes had the most potential to be effective and where there was little potential.

The multi-agency 'returns on investment' delivered savings to the public purse of 130% in the pilot phase, 300% in year 2, and 650% in year 3. This excluded benefits to patients, which would have significantly increased the return, as the latter were impossible to capture or measure in the circumstances. It resulted in

- increasing return on investment (£1.3 m system savings in 2016),
- reduced delays in discharges (6,700 bed days in 2016),
- reduced avoidable admissions (saving £235,053),
- improved collaboration between health and social care,
- accelerated adaptations and re-housings,
- improved patient outcomes (illustrated by case studies) [S6, S7].

After stage 2, Dr Mark Holland, President of the Society of Acute Medicine said:

"If one were to scale up this work it would be massive across the UK. Savings of this magnitude would go a long way towards funding 7-day secondary care". [S7]

Following stage 2, ASSIST was shortlisted for multiple national awards, and won the prestigious Shared Learning Award at the 2017 NICE national conference, thus giving it an international profile [S8]. It has featured on the NICE Shared Learning database ever since. The scheme, or parts thereof, have been replicated or used as a model in all parts of the UK, including a scheme in Nottingham, which by 2019 was reporting savings of £5.4m and £11.42 benefits for every £1 invested [S9].

Following the NICE award, the scheme formed part of the national 'hospital-at-home' initiative and was evidence for the UK Parliaments "Delivering Core NHS and Care Services during the Pandemic and Beyond". Its continuing impact is demonstrated in the annual Adult Social Care Surveys by NHS between 2016-to-date [S10] and on the 'Housing to Health and the coronavirus pandemic webpages' [S9].

5. Sources to corroborate the impact

S1. Barlow J. QMC given £11m to revamp emergency department - which could improve waiting times. Available at <https://www.nottinghampost.com/news/nottingham-news/qmc-given-11m-revamp-emergency-2302901>

S2 Screenshot of QMC Website for Urgent and Emergency Care 7th December 2020

Barlow is the health reporter with the Nottingham Post. He demonstrates proposed physical changes to A&E and refers to significantly increased patient flow numbers. The screenshot is from the emergency department website during the COVID-19 second wave showing (highlighted) the new capacity and the impact additional capacity has had on waiting times.

S3. Nottingham City Care 2016 (Nottingham City community health services provider) news and photo gallery 2016 <https://www.nottinghamcitycare.nhs.uk/news-and-photo-galleries/news/2016/>

Nottingham City Care are the community services provider for the City. Created as a partnership between the former PCT communities' team, Nottingham City Council and the Nottingham GP

S4. An examination of the reasons that result in Emergency Department attendances, in contrast to alternative care and diagnostic options, for a defined Millennials/Generation Y population in Nottingham.

S5. Health Foundation/McKinsey Hospital Institute 2015. Transformational change in NHS providers. London The Health Foundation.

S6. Better Together – ASSIST hospital discharge scheme. Nottingham: Consortium of NHS Organisations and Local Authorities in Mid-Nottinghamshire.

<https://www.nice.org.uk/about/what-we-do/into-practice/shared-learning-case-studies/shared-learning-awards/shared-learning-award-winners-and-finalists/previous-years#2017>

S8. Nottingham City Homes 'Hospital to Home' Summary evaluation report November 2015-March 2019. Nottingham demonstrates the replicability of the ASSIST service. NTU have helped schemes in Scotland, Wales and Northern Ireland, as well as in England.

S10. NHS Personal Social Services Adult Social Care Survey England – 2019-2020 (latest) annual survey Available at <https://digital.nhs.uk/data-and-information/publications/statistical/personal-social-services-adult-social-care-survey>. With the datasets available at <https://app.powerbi.com/view?r=eyJrljoiMWE1MGQ0ZTA0ODlhMS00ZjM2LWJlNDgtNDVhN2NmYmQ1ZTZlIiwidCI6IjUwZjYwNzFmLWJiZmUtNDAxYS04ODAzLTU3Mzc0OGU2MjllMiIsImMiOiJh>