

<b>Institution:</b> London South Bank University		
<b>Unit of Assessment:</b> 3 – Allied Health Professions, Dentistry, Nursing and Pharmacy		
<b>Title of case study:</b> Modelling the healthcare workforce to influence care standards and inform safety policy		
<b>Period when the underpinning research was undertaken:</b> 2014 – 2019		
<b>Details of staff conducting the underpinning research from the submitting unit:</b>		
<b>Name(s):</b>	<b>Role(s) (e.g. job title):</b>	<b>Period(s) employed by submitting HEI:</b>
Professor Alison Leary	Chair of Healthcare & Workforce Modelling	January 2012 – present
<b>Period when the claimed impact occurred:</b> February 2014 – December 2020		
<b>Is this case study continued from a case study submitted in 2014?</b> N		
<p><b>1. Summary of the impact</b> (indicative maximum 100 words)</p> <p>Effective healthcare workforce planning is vital to ensure appropriate levels and skills of staff are available to deliver safe, high quality care to patients and service users. This innovative body of research by Professor Leary has developed a detailed understanding of work that enables the building of models around the impact of: staffing levels on patient outcomes; workload activity in complex areas such as community nursing; and contribution that specialist roles make. Her research has influenced national policy in safety and care standards, with key impacts including:</p> <ul style="list-style-type: none"> <li>• informing key policy on safe staffing in the NHS across the UK;</li> <li>• an investment of GBP18,500,000 (£18.5m) to train 500 district nurses;</li> <li>• created the Apollo Nursing Resource, which enables managers/budget managers of specialist nurses to understand and quantify the value these nurses; and</li> <li>• influencing UK and European standards of care in Irritable Bowel Disease, which affects 300,000 people in the UK.</li> </ul>		
<p><b>2. Underpinning research</b> (indicative maximum 500 words)</p> <p>Professor Leary's research uses analysis of large data sets and mathematical modelling to determine how the healthcare workforce impacts on patient outcomes, with a particular focus on nursing. Her research encompasses the following five themes:</p> <p><b>1) Professional identity</b></p> <p>Nursing has been under scrutiny for many years in the UK due to a perception that it is not cost-effective. A common issue is the lack of consistency of job titles, a factor that causes confusion and which has implications for the wider perception of advanced specialist practice. Professor Leary's analysis of a pre-existing dataset revealed 595 job titles in use in 17,960 specialist posts. This large array of titles appeared to bear little correlation with other factors, like education, and demonstrated that there was widespread confusion among public employers and commissioners. It also highlighted that the Council for Healthcare Regulatory Excellence's assumptions that advanced practice labels are associated with career progression were unsound and required addressing [R1].</p> <p><b>2) The impact and work of specialist nurses</b></p> <p>National Standards for the <i>Healthcare of People Who Have Inflammatory Bowel Disease</i> (IBD) (2013) defined the number of nurse specialists required at 1.5 full-time equivalent (FTE) per 250,000 population. Professor Leary conducted a study to determine if these standards were being met, and published a new, robust, validated standard for optimising the UK nursing workforce model [R2]. Existing national data and specific workload and service data were collected from 164 IBD specialist nurses. Results showed a higher caseload than the</p>		

recommended level in 63% of respondents, and unpaid overtime was regularly carried out by 84% of respondents. Professor Leary therefore recommended that the standard be increased to 2.5 FTE specialist nurses per 250,000, in order to mitigate the increasing complexity of the role and care demands and also compensate for the fact that IBD specialist nurses are, on average, less experienced than other specialist nurses.

### **3) Understanding the relationship between staffing levels and patient and staff safety**

Incident reporting systems are commonly deployed in healthcare but resulting datasets are largely archived and inaccessible. Professor Leary mined and analysed incident reporting data recorded in an NHS acute Trust to establish whether the data could be used to improve quality, efficiency, and safety [R3]. The resulting analysis gave a deeper understanding of the timing and staffing levels associated with falls, and showed how analysis of this data can provide insight and application to improvements in patient safety.

Nursing is a safety-critical activity but its complexity means it is not easily quantified. Professor Leary aimed to determine if relationships between registered and non-registered nurse staffing levels and clinical outcomes could be discovered through the mining of routinely collected clinical data. The analysis identified 40 correlations between safety factors, physiological data and staffing factors. The research identified several inter-related factors whereby step changes in clinical outcomes/the incidence of falls/physiological parameters could be achieved through changing registered nurse availability [R4].

### **4) Gender status equality**

Professor Leary mined a bespoke dataset curated to focus on the activity of specialist advanced practice clinical nurses. Even in a gendered occupation such as nursing, the advantages that men received in terms of pay and progression were apparent, with men being over-represented at senior levels. This work therefore revealed a national gender differential towards men in higher paid nursing work [R5].

### **5) Medical services/safety at football grounds**

Professor Leary's research has also examined other areas. A new model of the provision of crowd medical cover at sports grounds was introduced in the 2009-10 football season to better meet demand. Professor Leary evaluated the new model of providing care based on demand. She ascertained that the new workforce model met increased service demands whilst reducing the number of referrals to acute care [R6].

### **3. References to the research** (indicative maximum of six references)

*All research is published in peer-reviewed journals. R4 is submitted as an output for REF2021 in UoA 03.*

[R1] Leary, A., Maclaine, K., Trevatt, P., Radford, M., & Punshon, G. (2017). Variation in job titles within the nursing workforce. *Journal of Clinical Nursing*. Dec;26(23-24):4945-4950 DOI: [10.1111/jocn.13985](https://doi.org/10.1111/jocn.13985)

[R2] Alison Leary, Isobel Mason, Geoffrey Punshon, Modelling the Inflammatory Bowel Disease Specialist Nurse Workforce Standards by Determination of Optimum Caseloads in the UK, *Journal of Crohn's and Colitis*, Volume 12, Issue 11, November 2018, Pages 1295–1301, <https://doi.org/10.1093/ecco-icc/ijy106>

[R3] Leary, A., Cook, R., Jones, S.J., Radford, M., Smith, J., Gough, M. and Punshon, G. (2020). Using knowledge discovery through data mining to gain intelligence from routinely collected incident reporting in an acute English hospital. *International Journal of Health Care Quality Assurance*. 33 (2), pp. 221-234. <https://doi.org/10.1108/IJHCQA-08-2018-0209>

[R4] Leary, A., Cook, R., Jones, S., Smith, S., Maxwell, E., Punshon, G., & Radford, M. (2016). Mining routinely collected acute data to reveal non-linear relationships between nurse staffing levels and outcomes *BMJ Open* 2016;6: e011177. <https://bmjopen.bmj.com/content/6/12/e011177>

[R5] Geoffrey Punshon, Katrina Maclaine, Paul Trevatt, Mark Radford, Oliver Shanley, Alison Leary (2019). Nursing pay by gender distribution in the UK - does the Glass Escalator still exist? *International Journal of Nursing Studies*, Volume 93, May 2019, Pages 21-29. <https://doi.org/10.1016/j.ijnurstu.2019.02.008>

[R6] Leary A, Kemp A, Greenwood P, et al. Crowd medical services in the English Football League: remodelling the team for the 21st century using a realist approach. *BMJ Open* (2017) <http://dx.doi.org/10.1136/bmjopen-2017-018619>

*Grants underpinning relevant research:*

R2 funded by Crohns and Colitis UK: GBP4,000

R3 funded by Datix: GBP50,000

R4 funded by NHS England: GBP96,000

#### 4. Details of the impact (indicative maximum 750 words)

##### **Apollo Nursing Resource: support for specialist nurses**

There are over 50,000 specialist nurses in the UK. They are experts in caring for people who have complex and diverse clinical needs. However, their ability to demonstrate and communicate the value they bring in a way that managers and those whose responsibility it is to pay for their services understand and value, tends to be less well-developed. In response to requests for help from the profession, recognising her research expertise, Professor Alison Leary developed *Apollo Nursing Resource* [S1] in partnership with a major global medical devices manufacturer and a UK university School of Nursing. The resource was launched in February 2014 and is free to access. Apollo Nursing Resource enables nurses to articulate their own value in terms of quality and efficiency to employers and commissioners of services.

Apollo Nursing Resource is used in several organisations across the UK, such as:

- The University Hospitals Birmingham NHS Foundation Trust: “*The Apollo Nursing Resource website is a practical and valuable tool. It captures the very essence of what we do and allows us to turn this into a meaningful dialogue which will assist with service provision and development*” (Colorectal Nurse Specialist, University Hospitals Birmingham NHS Foundation Trust) [S1];
- The Royal College of Nursing’s Standards for infusion therapy include an example business case for a nurse-led service, prepared by Coventry and Warwickshire NHS Trust drawing on the Apollo Nursing Resource [S1]; and
- The resource was used in a study to demonstrate the value of haemophilia nurse specialists in the NHS. The study estimated that the work of each nurse was associated with an estimated minimum saving of GBP83,000 (£83k) in emergency visits avoided, and GBP50,000-GBP100,000 (£50-100k) annually in clinic appointments in which nurses had replaced consultant physicians [S1].

Professor Leary also developed two workload tools, available on the Apollo Nursing Resource: *Alexa Caseload* and *Cassandra*. These are both included in an NHS Quality Board review of workforce tools [S1]. When *Cassandra* was used at Canterbury Christ Church University and Health Education Kent Surrey and Sussex, it was found that the “*tool provides a robust mechanism for collecting complex multidimensional workload activity data that represents an accurate picture of what care is being delivered, to whom, in a range of settings for different bands of practitioners*” [S1].

##### **Impacts on Policy and Organisational Change**

Professor Leary’s work has had wide-ranging influence on national policy and influenced organisational change.

*Nursing job titles are now the subject of more scrutiny*

Professor Leary’s finding that some employers were asking or allowing unregistered staff to use titles that indicated a more complex level of practice and education – for example, associate advanced nurse practitioner – prompted the Chief Nursing Officer for England to write to directors of nursing at NHS Trusts to ensure unqualified staff were not being referred to as nurses. “*This [study] has raised a lot of discussion within the profession and from those commenting on the profession... our preferred position is that only a [registered nurse] should have the word ‘nurse’ in their job title or in their job description.*” [S2]

*Staffing levels are now determined on the basis of need, and funded appropriately*

Professor Leary's research influenced a key policy document on safe staffing in the NHS: *Developing Workforce Safeguards* [S3]. The Chief Nurse for Health Education England confirms that "The work of Professor Leary was influential in this second policy document entitled *Developing Workforce Safeguards* which was published in 2018 and now forms the basis on which NHS Improvement measures and assesses NHS provider organisations in relation to safe staffing." [S3]

The Scottish Chief Nursing Officer invited Professor Leary to present evidence to inform the 2019 "Health and Care (Staffing) (Scotland) Bill" [S3]. Professor Leary's research into safety also underpins the Royal College of Nursing's policy on their *Safe Staffing* campaign, which is lobbying for similar regulation in England and Wales [S3].

Professor Leary worked with the Queen's Nursing Institute (QNI) to produce their first general review of the District Nursing workforce since 2014. The report '*District Nursing Today: The View of District Nurse Team Leaders in the UK*' [S4] resulted in an investment of GBP18,500,000 (£18.5m) to train 500 district nurses. The CEO of the QNI notes that:

*"A very welcome decision was made by Health Education England to reverse a situation where there was to be no more funding of the District Nurse programmes after the September 2019 intake. Funding of £18.5 million [GBP18,500,000] was identified for the education and training of 500 District Nurses in September 2020. This is a huge success, and it is in direct response to the research data and evidence produced by Professor Alison Leary in this report. The individuals, carers and families in receipt of District Nursing services in England will benefit from this decision – and it is likely to impact on HEE education funding decisions around District Nursing in future years, beyond this decision for 2020."* [S4].

*Specialist nurse workforces are now evidence-based*

Access to a specialist nurse service improves patient experience and outcome in Crohn's disease and ulcerative colitis. These are the most common forms of inflammatory bowel disease (IBD), affecting 1 in 250 of the population in the UK, i.e., approximately 300,000 people. Professor Leary's research on IBD directly informed the latest national workforce standard in the CCUK/Royal College of Physicians Gastroenterology standards, known as the *IBD Strategy Partnership* (2019). Her recommendation that there should be 2.5 FTE nurses per 250,000 population – an increase from 1.5 FTE in the previous standard – was accepted. It also informs the ECCO IBD (European Crohns and Colitis Organisation) standards, where Leary's research is included in the context of the Advanced IBD nurse's role and the benefits this brings [S5].

A nurse consultant and national nursing leader at the Royal Free Hospital (London) explains the significance of the work for national standards of IBD care: "*The enormous impact the modelling had is that the results are now embedded in the new national standards for IBD care. These were launched summer 2019, and now every acute Trust in the UK is benchmarking and action planning against them. Also, in England the standards are now of Trusts Quality accounts. We have also re-audited nursing roles nationally, and numbers are continuing to increase. The caseload modelling is a big driver in that.*" [S5].

*Gender status inequalities are more visible and debated*

Leary's work has been cited in several reports, including:

1. *Closing the Gap*, a joint report by The Kings Fund, Nuffield Trust and the Health Foundation, which sets out a series of recommended policy actions that should be at the heart of the workforce implementation plan [S6];
2. *Gender and Nursing as a Profession*: this Royal College of Nursing (RCN) report explores and critiques the gendered construction of value within the nursing profession and evaluates how value is attributed to nursing, the value placed on individuals and the status of the profession [S6]; and
3. *The Courage of Compassion*: a review from the King's Fund commissioned by the RCN

Foundation, investigated how to transform nurses' and midwives' workplaces so that they can thrive and flourish and are better able to provide the compassionate, high-quality care that they wish to offer. [S6].

This work also gained the attention of the Secretary of State for Health, Matt Hancock. In a speech at the Chief Nursing Officer's summit in March 2019, Hancock said he wants more nurses leading NHS trusts, and mentioned Professor Leary, referencing her analysis of gender gaps in the profession: *"As Professor Alison Leary puts it: The compassion and caring are really important, but it isn't generally compassion that will save somebody's life. If we can help society to understand that nursing is a "knowledge intensive occupation", she believes it would help nursing to be more valued and attract more men and women into the profession. I wholeheartedly agree with her."* [S7]

#### *Sports Ground Safety*

Professor Leary's work has been incorporated into in Chapter 18 of the sixth edition Guide to Safety at Sports Grounds 'Green Guide' by the Sports Ground Safety Authority, published in 2019 [S8]. The Green Guide helps sports grounds owners and operators calculate a safe capacity for their venue. Professor Leary contributed to the development and evaluation of the role of medical co-ordinator, a key addition to the latest edition of this guide. Its use is mandatory for all 92 English Football League Clubs.

The Green Guide is used around the world by architects and designers as a best practice guide for the development and refurbishment of stadiums. The sixth edition, containing Professor Leary's work, has sales figures of 2,500 and has been sent to 49 countries. The Secretary of State for Digital, Culture, Media and Sport noted that, *"Fan safety at sports grounds is paramount. The world looks to us as an example of how to manage risks and improve safety records and this guide will continue to contribute to that legacy."* [S8]

#### **5. Sources to corroborate the impact** (indicative maximum of 10 references)

[S1] [Apollo Nursing Resource file](#)

[S2] "Trusts should check unqualified staff are not working as 'nurses'"

<https://www.nursingtimes.net/news/professional-regulation/trusts-should-check-unqualified-staff-are-not-working-as-nurses-19-09-2017/>

[S3] File on impact on safety standards

[S4] File on work for the Queen's Nursing Institute

[S5] File on work on IBD

[S6] File containing papers citing Professor Leary's gender work

[S7] "Health secretary says he wants more nurses leading NHS trusts"

<https://www.nursingtimes.net/news/workforce/health-secretary-says-he-wants-more-nurses-leading-nhs-trusts-14-03-2019/>; text of Matt Hancock's speech available at

<https://cdn.ps.emap.com/wp-content/uploads/sites/3/2019/03/Matt-Hancock-speech.docx>

[S8] Email from the Sports Ground and Safety Authority; <https://sgsa.org.uk/greenguide/>