Institution: Swansea University
Unit of Assessment: 3a - Allied Health Professions, Dentistry, Nursing and Pharmacy
Title of case study: Developing and implementing national standards to improve the structure and content of patient records

1. Summary of the impact

Patient records underpin the delivery of healthcare. When the recorded data are aggregated, they provide information to support service delivery, audit and research. Research conducted at Swansea University from 2000 to 2011 showed that variations in the structure and content of records across the NHS limit their quality and utility. To address this, the University collaborated with the Royal College of Physicians to develop evidence-based national standards for the structure and content of patient records. First launched in 2008, the standards have been endorsed by numerous statutory bodies and professional organisations, including the Department of Health, NHS England, NHS Litigation Authority, Mid-Staffordshire Inquiry, Care Quality Commission, General Medical Council, Academy of Medical Royal Colleges, and Academy of Medical Sciences.

2. Underpinning research

In 2000 the President of the Royal College of Physicians (RCP) in London invited JG Williams, Professor at Swansea University since 1992, to set up a Health Informatics Unit within RCP to improve the clinical content of hospital patient records and the quality of information derived from them, and thus to support service delivery, audit and research. Since then Williams has directed that Unit from Swansea, forging a productive collaboration in research and development between RCP and Swansea University.

Initially Williams (in Swansea) and Mann (in London) reviewed the literature on the use of clinical data in patient records to monitor hospital activity through Hospital Episode Statistics (HES). The key findings were that data quality was poor, and could be improved by standardising the structure and content of records, and engaging clinicians in the process of data extraction, coding and validation [R1-2]. In 2004 the Department of Health (DH) and Welsh Government funded the University to undertake a joint project with the RCP to improve clinical engagement in both record-keeping and validation of the coded diagnoses and procedures extracted from records. Williams and Croft set up a virtual 'information laboratory' or 'iLab' in Swansea with electronic links to RCP; they used this to show individual physicians the potential value of analysing the coded diagnoses, procedures and episodes for patients under their care. We selected half these physicians at random for one-to-one discussions about this information. Overwhelming conclusions from this trial were that the data were not good enough for this purpose, or comparable across the country, confirming the need for national standards for the structure and content of records [R3].

This conclusion reinforced the findings of a study undertaken in Swansea in the late 1990s [R4], in which Williams and Hutchings replicated four small randomised trials using routinely collected data (clinical, administrative and demographic) in place of the designed research data to explore whether clinical trials could be reliably undertaken in this way, but at less cost. The study concluded that this would be possible if the quality of the routinely collected data was improved, but that this would require the implementation of clinical standards for the structure and content of medical records [R4]. In 2006 we used this evidence to persuade DH to commission Williams to develop national standards for hospital patient records based on evidence of good practice or, failing that, consensus amongst medical, nursing and other practitioners [R5]. In 2010 Williams and Roberts in Swansea further strengthened the case for this work when they explored the potential usefulness of routinely collected data in monitoring the quality of care through national audits, and concluded that quality of the data being collected was insufficient for this purpose [R6].

The standards developed so far address: the structure and content of records made on admission; communications at handover and discharge, including medication records; referrals to out-patients; letters back to primary care; core headings applicable in the majority of settings; and editorial principles to ensure sustainability of the standards over time. Since 2008 the standards have been available on the website of the Academy of Medical Royal Colleges (AoMRC); they were updated in 2013 (http://www.aomrc.org.uk/publications/reports-a-guidance.html).

Key researchers at Swansea are Williams, HA Hutchings (Senior Lecturer since 2002), SE Roberts (Reader since 2006) and IT Russell (Professor of Clinical Trials since 2008). Collaborators at the RCP Health Informatics Unit have included RY Mann (project officer), I Carpenter (associate director) and M Bridgelal-Ram (programme manager). Three current doctoral students under Williams's supervision at Swansea University are developing additional standards based on evidence and consensus – for clinical incident reporting (A Lewis, since 2012), endoscopy reports (C Hunt, 2010) and patient-focused summaries (P Rastall, 2012).

3. References to the research

Authors based at Swansea University during these studies are in bold. Journal Impact Factors (JIF) are for 2013, and number of citations (cit) are from Google Scholar.

R1 **Williams JG**, Mann RY. Hospital Episode Statistics: time for clinicians to get involved? *Clinical Medicine* 2002;**2**:34-7. doi:10.7861/clinmedicine.2-1-34 (JIF 1.2; cit 66).

R2 Mann RY, **Williams JG.** Standards in medical record keeping. *Clinical Medicine* 2003;**3**:329-32. doi:10.7861/clinmedicine.3-4-329 (JIF 1.2; cit 65).

R3 **Croft GP, Williams JG.** The RCP Information Laboratory (iLab): breaking the cycle of poor data quality. *Clinical Medicine* 2005;**5**:47-9. doi:10.7861/clinmedicine.5-1-47 (JIF 1.2; cit 15).

R4 **Williams JG, Cheung WY**, Cohen D, **Hutchings H**, Longo M, Russell IT. The value of routine data in health technology assessment: can randomised trials rely on existing electronic data? *Health Technology Assessment* 2003;7:(26). doi:10.3310/hta7260 (JIF 4.0; cit 34).

R5 Carpenter I, Bridgelal-Ram M, **Croft G, Williams J.** Medical records and record-keeping standards. *Clinical Medicine* 2007;**7**:328-31. doi:10.7861/clinmedicine.7-4-328 (JIF 1.2; cit 24).

R6 **Roberts SE, Williams JG,** Cohen DR, **Akbari A,** Groves S, **Button LA.** Feasibility of using routinely collected inpatient data to monitor quality and inform choice: a case study using the UK Inflammatory Bowel Disease audit. *Frontline Gastroenterology* 2011;2:153-9. doi:10.1136/fg.2009.000208 (JIF not yet available; cit 4).

Peer-reviewed grants that have supported this work:

1 JG Williams. The value of routine data in health technology assessment. NHS Research & Development Directorate – Health Technology Assessment Programme, 1998-2000, £157,625.

2 JG Williams. Development and evaluation of an Information Laboratory (iLab). Department of Health and Welsh Assembly Government, 2004-7, £320,000.

3 JG Williams, I Carpenter. Clinical documentation and generic record standards phases 1 & 2. NHS Connecting for Health, £753,000, 2006-13.

4 SE Roberts, JG Williams. Investigation of the feasibility of using routine data to monitor quality and inform choice. The Health Foundation, £80,000, 2007-9.

4. Details of the impact

The standards were first made publicly available in 2008. They have received full endorsement from all medical royal colleges in the UK, AoMRC, Royal College of Nursing, and professional bodies representing the allied health professions. Uptake of the standards until July 2013 is best summarised by more than 5000 accessions online and the distribution of 4000 paper versions (cumulative data since 2009 from AoMRC, and since 2012 from RCP). The standards have been widely recommended by the UK Government, and by professional and statutory bodies; they all believe national implementation will bring benefits to patient care and safety, litigation costs, and efficiency of communication; and provide better evidence for commissioning, audit and research. As the President of the Academy of Medical Sciences said [C1]:

> "*Standardising the way clinical data are collected and handled by all healthcare professionals will ensure data quality and accessibility for research and clinical use*."

There is evidence of early adopters achieving these benefits. In 2011 DH launched the Discharge Summary Implementation Toolkit [C2] for universal use in England. This incorporates the record

standards and has been successfully piloted in four NHS Foundation Trusts – Chelsea and Westminster Hospital; Kent and Medway Hospitals, Newcastle University Hospitals and South Tees Hospitals – with benefits to efficiency and patient safety. The Clinical Director for Information Standards Delivery at the Health & Social Care Information Centre commented [C3]:

> *"In my present role, and previous role as Director for Clinical Record Standards in DH, there has been a considerable challenge to design systems which can obtain coherent and comparable data on health care activity directly from clinical records. The collaborative work with Professor Williams and the RCP is the foundation of better records for the NHS and better data for analysis."*

There is also evidence of adoption in Europe, where the standards are recommended for use in the records of patients with sexually transmitted infections [C4]. In 2012 the DH Information Strategy recommended that the NHS collect data in standardised form, and referenced our research including the standards [C5]. The associated impact assessment recommended actions necessary to achieve wide implementation [C5]. The rapid acceptance of our work also led DH to commission a Joint Working Group (JWG), chaired by the National Clinical Director for Informatics, to explore how to advance standards. The JWG recommended [C6] that a self-funded, independent, professional record standards body (PRSB) be established. This was accepted by DH and NHS England, and supported by other important stakeholders, including the Academy of Medical Sciences and many research charities. The PRSB is now working closely with NHS England and the devolved administrations to oversee the development of further standards, and achieve universal implementation of record standards across the NHS (www.theprsb.org.uk).

The standards have the explicit support of statutory bodies including the NHS Litigation Authority [C7] and Audit Commission [C8]; are recommended by the General Medical Council [C9]; and have been welcomed by electronic patient record software suppliers, who previously had to rely on local consultation to define the structure and content of their products. The AoMRC has stressed the need for standardised patient-focused records, and published the standards themselves [C10]. The RCP Commission on the Future Hospital [C11] and the Mid-Staffordshire Inquiry [C12] also recommend them.

The NHS Wales Information Service has used the standards in developing clinical record software since 2009. A major implementation of the international 'Epic' electronic health record system by Cambridge University Hospitals is incorporating the standards, and NHS Trusts in England, particularly those supported by the Technology Fund, stipulate a requirement to conform to the standards in specifications for clinical information systems [C13].

To stimulate uptake of the standards and thus impact, Williams has since 2008 given invited talks at educational events hosted by RCP, British Computer Society, King's Fund, NHS Confederation, Nuffield Trust, Royal Society of Medicine, Association of British Pharmaceutical Industry and Intellect (the software suppliers' professional association). At RCP in July 2013 the standards were welcomed by senior leaders from healthcare and academia [C14] including:

- Chair of the Expert Advisory Group to the Clinical Practice Research Datalink, the new English NHS observational data and interventional research service, who stated:
  "they provide a platform for the spread of Electronic Patient Records, improve patient care and save time for clinicians"
- Chair of AoMRC:
  "they lay a strong foundation for electronic health records which will improve not only the patient experience, but also safety and efficiency"
- Director for Clinical Assurance at the Health & Social Care Information Centre:
  "they provide the essential foundation to build an information landscape that reflects more accurately what is actually happening in the NHS".

In 2013, the Academy of Medical Sciences endorsed the need for standardised record keeping to support stratified medicine – a new therapeutic approach of considerable potential for patients, and importance to the pharmaceutical industry in the UK [C15]

5. Sources to corroborate the impact

C1 Williams JG. Diagnosis driven data. *International Innovation;* December 2013: 21-23. Bristol: Research Media Ltd; ISSN 2051-8552. (Quote from President of Academy of Medical Sciences in box on p23)

C2 Health and Social Care Information Centre. Electronic 24-hour discharge summary implementation. http://systems.hscic.gov.uk/clinrecords/24hour/index_html. (Swansea University invoked throughout the document and on video, as accessed 13/11/13)

C3 Clinical Director for Information Standards Delivery, Health & Social Care Information Centre, Department of Health.

C4 Radcliffe KW, Flew S, Poder A, Cusini M. European guideline for the organization of a consultation for sexually transmitted infections. *Intl J STD & AIDS* 2012;23:601-12. doi: 10.1258/ijsa.2012.012115. (Swansea University cited on p6, as accessed 28/5/13)

C5 DH. The power of information: (a) putting us all in control of information we need. https://www.gov.uk/government/publications/giving-people-control-of-the-health-and-care-information-they-need (Swansea University cited on p44). (b) impact assessment. London: DH; 2012. (Swansea University invoked in box 8 of table D4 on p29, as accessed 13/11/13)

C6 Joint Working Group. Developing Standards for Health and Social Care Records. Report of Joint Working Group. London: NHS; 2012. http://www.rcplondon.ac.uk/resources/developing-standards-health-and-social-care-record. (Swansea University invoked on pp 6,9 & 14, as accessed 13/11/13)

C7 NHS Litigation Authority. Risk management standards 2013-14. London: NHSLA; 2013. http://www.nhsla.com/safety/Documents/NHS%20LA%20Risk%20Management%20Standards%202013-14.pdf LA Risk Management Standards 2013-14.pdf (Swansea University invoked on pp50 & 166, as accessed 13/11/13)

C8 NHS Audit Commission. Improving data quality in the NHS London: NHSAC; 2010. http://archive.audit-commission.gov.uk/auditcommission/sitecollectiondocuments/Downloads/26082010pbrnhsdataqualityreport.pdf (Swansea University cited in para 66 on p29, as accessed 13/11/13)

C9 General Medical Council. Tomorrows Doctors. London: GMC; 2009. http://www.gmc-uk.org/TomorrowsDoctors_2009.pdf_39260971.pdf (Swansea University invoked in para19 on p24 and appendix 3 on p92, citing document 43 on Record Standards, all as accessed 28/5/13)

C10 http://www.aomrc.org.uk/publications/reports-a-guidance/doc_details/9725-i-care-information-communication-and-technology-in-the-nhs.html Swansea University invoked in i-care: Information, Communication & Technology in the NHS, p2, and "Standards for the Clinical Structure and Content of Patient Records" dated 12/7/2013, both as accessed 13/11/13)

C11 Royal College of Physicians Report from the Future Hospital Commission: RCP London; 2013 http://www.rcplondon.ac.uk/sites/default/files/future-hospital-commission-report.pdf (Swansea University invoked in Chapter 9, pp 89-97, paras 9.5, 9.10 & 9.15, as accessed 13/11/13)

C12 Mid-Staffordshire NHS Foundation Trust Public Inquiry. Report. London: Stationery Office; 2013. www.midstaffspublicinquiry.com/sites/default/files/report. (Swansea University invoked in recommendation 262 in Executive Summary on p113, as accessed 28/5/13)

C13 NHS England. The Safer Hospitals, Safer Wards Technology Fund 2013. http://www.england.nhs.uk/ourwork/tsd/sst/tech-fund. (accessed 13/11/13)

C14 Royal College of Physicians. Press release. http://www.rcplondon.ac.uk/press-releases/stop-reinventing-wheel-standards-clinical-structure-and-content-patient-records-forma. (accessed 13/11/13)

C15 Academy of Medical Sciences, Realising the potential of stratified medicine 2013 http://www.acmedsci.ac.uk/index.php?pid=99 (Swansea University invoked on p47, as accessed 13/11/13