Institution: University of Leeds

Unit of Assessment: UOA3 (Allied Health Professions, Dentistry, Nursing & Pharmacy)

Title of case study: Case study 3. Improving the safe use of medicines for residents in care homes

1. Summary of the impact

Leeds researchers first proposed and tested the concept of a pharmacist-led clinical medication review and showed its effectiveness in care homes. This led to a collaborative study on medicines' safety in care homes which showed seven out of ten residents, on any one day, had at least one medication error. As a direct result, there was a ministerial-led summit, and the Department of Health (DH) issued a 'Health Alert' requiring NHS trusts to take immediate action, citing the study findings. This was followed by several national initiatives to take forward the recommendations of the study, including a DH commissioned initiative involving Royal Colleges, the National Care Forum, the Health Foundation and Age UK. Prototype tools developed on the basis of our research and with Leeds input were reported in 2012 and are now being evaluated for national roll out.

2. Underpinning research

Researchers at Leeds (including **David Alldred**, Research Clinical Pharmacist 2002 – 2005, Lecturer in Pharmacy 2005-2013; **David Raynor**, Senior Lecturer 1996-2001, Professor of Pharmacy Practice 2001- present) first proposed and tested the concept of 'clinical medication review' by pharmacists of people living in their own homes. This research showed that the approach could reduce the number and cost of medicines without adverse effects such as increased use of services. This model was subsequently successfully tested in the care home setting where frail older patients are commonly prescribed multiple medicines with an increased risk of adverse drug events. The study of 661 patients in 65 care homes in Leeds confirmed that the prescribing of medicines in this setting was sub-optimal, leading to a loss of potential benefit and an increased risk of harm [1].

In 2005 we responded to a Department of Health (DH) call for research into improving safe use of medicines in care homes and formed a collaboration with colleagues at the University of London School of Pharmacy (led by Nick Barber) and the University of Surrey (led by Peter Buckle) to carry out the *Care Homes' Use of Medicines Study* (CHUMS). With a £500,000 grant from the National Patient Safety Research Programme, we combined Leeds research expertise in medicines use in care homes (**Raynor** and **Alldred**) with medicine error research from London and ergonomics expertise from Surrey.

Alldred was the Project Co-ordinator for the three sites in the study, which comprised 55 care homes in West Yorkshire, Cambridgeshire and South London. Researchers undertook clinical medication reviews, scrutinised GP and care home records, visited pharmacies, observed medication administration in the homes and conducted 89 interviews. The analysis showed seven out of ten patients experienced at least one medication error. Errors occurred throughout the system, from prescribing to dispensing to medicines administration. Each stage had an 8-10% chance of being performed incorrectly. The research showed that factors contributing to errors included doctors who were not accessible, did not know the residents and lacked information in homes when prescribing; staff workload, lack of medicines training and drug round interruptions; lack of team work among care and health professionals; inefficient ordering systems; inaccurate medicine records and reliance on verbal communication [2,3].

We made a number of suggestions to reduce the risk of medicines errors, including that each home have a lead GP to co-ordinate prescribing and monitoring of medicines; that clinical pharmacists regularly review residents to identify and rectify errors; and that pharmacies and homes should review how they order and dispense medicines. We also recommended that within Primary Care Trusts in England, the Chief Pharmacist should take responsibility for ensuring safe systems.

As part of the CHUMS study we also published:
- A tool we developed and validated to identify monitoring errors in care home residents [4];
- Detailed analysis showing a lack of recording and sharing of drug sensitivity information [5];
- Research on problems associated with the administration of non-oral dose forms, notably inhalers [6].

3. References to the research

1. **Zermansky AG, Alldred DP, Petty D** et al. (2006). Clinical medication review by a pharmacist of elderly people living in care homes -randomised controlled trial. *Age and Ageing,* **35:**586-91. DOI:10.1093/ageing/afl075

First published paper demonstrating the now common use of 'clinical medication review' for care home residents.

2. **Alldred DP,** Barber ND, **Raynor DK,** Dickinson R et al. Medication errors in nursing homes - the CHUMS study - Care Homes Use of Medicines Study. Report on the funder's website. http://www.birmingham.ac.uk/Documents/college-mds/haps/projects/cfhep/psrp/finalreports/PS025CHUMS-FinalReportwithappendices.pdf

Peer reviewed report to the Department of Health Patient Safety Research Programme; from which the DH drew the evidence to develop recommendations.

3. Barber ND, **Alldred DP, Raynor DK,** Dickinson R et al. (2009). Care homes' use of medicines study: prevalence, causes and potential harm of medication errors in care homes for older people. *Quality and Safety in Health Care*, **18:**341-346. DOI:10.1136/qshc.2009.034231

Publication of the main findings of the CHUMS study.

4. **Alldred DP, Zermansky AG, Raynor DK** et al. (2008). Development and validation of criteria to identify medication-monitoring errors in care home residents. *International Journal of Pharmacy Practice*, **16:**317-323.

Publication of the novel tool developed in the CHUMS study for identifying medication errors in care homes.

5. **Alldred DP,** Standage C, **Zermansky AG,** Barber ND, **Raynor DK, Petty DR.** (2010). The recording of drug sensitivities for older people living in care homes. *British Journal of Clinical Pharmacology*, **69:**553-557. DOI: 10.1111/j.1365-2125.2010.03631.x

Detailed analysis of one of the main areas of concern identified in the CHUMS study – recording of drug sensitivities (allergies).

6. **Alldred DP,** Standage C, Fletcher O, Savage I, Carpenter J, Barber N, **Raynor DK.** (2011). The influence of formulation and medicine delivery system on medication administration errors in care homes for older people. *BMJ Quality and Safety*, **20:**397-401. DOI: 10.1136/bmjqs.2010.046318

Findings from the CHUMS study relating to another key area of concern – formulation (type of medicine e.g. tablet, liquid, inhaler) and medicine delivery system.

Note: All Leeds researchers in **bold**. Publications available on request from the HEI.

4. Details of the impact

There are more than 370,000 older people living in around 10,000 care homes in England, many of whom are frail, vulnerable and have multiple medical conditions. Work at Leeds introducing the concept of clinical medication review in care homes, led to collaboration with teams in London and Surrey to carry out the DH-commissioned CHUMS study. We showed that for 70% of care home residents, who were taking on average eight medicines each, there was one or more error(s) in prescription, monitoring, dispensing or administration [2]. It was clear from the research that errors were found in all parts of the process and there was a lack of team work from the health and care professionals involved. The publication of the report led to a ministerial summit to discuss the findings and develop a way forward [A].

In January 2010, the Chief Pharmaceutical Officer and the Director General of Social Care jointly

wrote to all Directors of Adult Social Services and PCT Chief Pharmacists drawing attention to CHUMS as "*an important research study*" which "*strongly indicates there is considerable scope for improvement*" in how medicines are used in care homes. At the same time an 'immediate action' DH Alert was issued citing the findings of CHUMS and requiring PCTs to work with care home staff, general practitioners and pharmacists to determine how medication errors in care homes can be reduced, with a four-month deadline [B]. This led to changes in practice across the country [A] including the commissioning of new services in NHS Bradford and Airedale, NHS Buckinghamshire and Oxfordshire, and NHS Surrey. Most notable was the introduction of a pharmacist-led medicines review for care home residents [A] to ensure they were safe and effective, as we had recommended on the basis of our research.

Press releases designed to get the findings to the public led to the research and subsequent recommendations by the DH receiving considerable national media attention. **Raynor** and **Alldred** were interviewed live on BBC News 24, Radio 5 Live, and more than 10 local radio stations. There were prominent reports of the study findings in the national (Times, Daily Telegraph, Guardian and Independent) and local press. One of the key points we made was that anyone concerned about a relative in a care home should ask for a medicines review.

In April 2010, the Care Quality Commission (CQC) approached **Alldred** and **Raynor** to review new assessment tools, developed on the basis of CHUMS findings, for the management of medicines in care homes [C]. The tools were subsequently used within a wider review of the quality of healthcare provision in care homes published in March 2012 [D], along with a report from the British Geriatrics Society showing a lack of access to NHS services for care home residents [E].

Also in response to CHUMS, the Health Foundation and Age UK hosted three focus groups for the Age UK network '*Experts by experience'*. This was the start of a nine-month improvement project to improve the safety of care for those living in care homes [F],[G].

A series of six workshops to allow participants to act on the CHUMS study were held in Spring 2010 across England, with speakers including the National Clinical Director for Primary Care, the National Clinical Lead for Quality and Productivity, the Chief Pharmacist at the DH. The Centre for Pharmacy Postgraduate Education developed a learning programme based on the CHUMS study and this has been delivered to 2500 pharmacy staff across England [H].

In 2010, *The Safety of Medicines in Care Homes Project* was launched, bringing together the Royal Colleges of Psychiatrists, Physicians, General Practitioners, Nursing, and the Royal Pharmaceutical Society, representatives from the Care Home Sector, Age UK and the Health Foundation to take forward the recommendations from the CHUMS report [G]. **Alldred** is a member of the Reference Group for this project, which has developed a suite of tools, on the basis of CHUMS findings, to improve medication safety in this setting. From summer 2012 these prototype tools were evaluated in 82 care homes, prior to national dissemination and implementation [I]. They include:

- A summary medication record (held by the resident): 54% of care homes that tested the record wished to use it in the future;
- Learners' workbook (to provide basic training in safe use of medicines): 70% wished to use the workbook in the future;
- Leadership guidance (to support managers in safe use of medicines): 84% wished to use in the future;
- Framework for making the best use of medicines across all settings: 80% found that the framework successfully clarified areas of responsibility in the home.

In 2012 the Royal Pharmaceutical Society Scotland published their report *Improving pharmaceutical care in care homes*. Of eight sources of evidence cited, two were from the CHUMS study and, of 16 recommendations four were based on the results of the CHUMS findings [J], [A].

Also in 2012, a DH commissioned report on improving the use of medicines for better outcomes, described CHUMS as a major study which formed a "*strong call to action to improve the use and safety of medicines in care homes*" [K], [A]. It stated its intentions to integrate recommendations from *The Safety of Medicines in Care Homes Project* upon completion.

5. Sources to corroborate the impact

A. Individual corroboration: Chief Pharmaceutical Officer, Department of Health

B. DH Alert (2010) 001: The use of medicines in care homes for older people. https://www.cas.dh.gov.uk/ViewandAcknowledgment/ViewAlert.aspx?AlertID=101328

C. Individual corroboration: Chief Pharmacist, Care Quality Commission

D. Care Quality Commission (2012). Meeting the health care needs of people in care homes http://www.cqc.org.uk/media/review-healthcare-services-care-home-residents-published

E. British Geriatrics Society (2012) Failing the Frail: A Chaotic Approach to Commissioning Healthcare Services for Care Homes. http://www.bgs.org.uk/index.php?option=com_content&view=article&id=1907:cqc-report-too-many-failing-hospitals&catid=6:prindex&Itemid=99

F. Health Foundation. Making care safer: Care Homes Use of Medicines Study http://www.health.org.uk/areas-of-work/programmes/making-care-safer/

G. Individual corroboration: Chair, Partnership Project Group, Department of Health; National Care Forum

H. Individual corroboration: Director, Centre for Pharmacy Postgraduate Education

I. Department of Health, Royal Colleges, National Care Forum, The Health Foundation (2012). An integrated approach to medication safety in care homes. http://patientsafety.health.org.uk/sites/default/files/resources/safety_of_medicines_in_the_care_home_0.pdf

J. Royal Pharmaceutical Society Scotland (2012). Improving pharmaceutical care in care homes. http://www.rpharms.com/promoting-pharmacy-pdfs/rpscarehomereportfinalmarch2012.pdf

K. Department of Health, 2012. Improving the use of medicines for better outcomes and reduced waste; an Action Plan. http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/212837/Improving-the-use-of-medicines-for-better-outcomes-and-reduced-waste-An-action-plan.pdf