Institution: University College London

Unit of Assessment: 3B - Allied Health Professions, Dentistry, Nursing and Pharmacy: Pharmacy

Title of case study: Development of the New Medicines Service increases patient adherence to medicines and improves patient safety

1. Summary of the impact

Work led by Professor Nick Barber at the UCL School of Pharmacy showed that a majority of patients have problems soon after starting a new medicine for a chronic condition, and this led to the development of a post-consultation intervention by pharmacists that was shown to be more effective and cheaper than normal care. This entered Department of Health policy for pharmacy in 2008 and Barber helped design the New Medicines Service that was launched in October 2011. This service is offered by community pharmacists in England and by the end of May 2013 over a million patients had received the service. The intervention increases patient adherence to medication, thus improving quality of care, and reducing cost to the NHS from wastage. It also improves patient safety through better identification and resolution of adverse effects.

2. Underpinning research

Professor Nick Barber at the UCL School of Pharmacy, along with colleagues at Kings College London and Birmingham Universities, received a Department of Health (DH) policy research grant on prescribing in 1995. A study on doctor-patient communication interviewed a series of patients after consultation with their GP. This revealed that many patients felt that they had not been able to raise the issues that they had in fact wished to raise before the consultation took place, resulting in misunderstandings on both sides. One significant consequence of this was that many patients did not take prescribed medicines as advised **[1, 2]**. Analysis of the consultations showed that 'biomedical' consultations had worse consequences in terms of adherence than 'lifeworld' ones (i.e. those that engaged with the patient's life and preferences) **[3]**. As a pharmacist, it seemed to Barber that patients' lives could be made better via professional intervention after the consultation and after they had experienced the medicine, and helping them solve their medicine-related problems in a patient-centred way via consideration of their individual needs and concerns.

On the basis of these findings, Barber (as PI) was funded in 2001, along with Rob Horne as co-investigator (then University of Brighton, now UCL School of Pharmacy) and Sarah Clifford (then UCL School of Pharmacy), by NW Thames Regional Health Authority to conduct a larger, quantitative study involving 258 patients recruited from 23 community pharmacies in south east England. It showed that 10 days after starting a new medicine, around one third of patients were non-adherent and two thirds stated that they had problems or concerns regarding their medicines **[4]**.

In 2003, NW Thames then funded Barber (with Horne, Clifford and Rachel Elliott, University of Manchester) to develop and evaluate a service to improve adherence. The team designed a telephone-based pharmacy advice service, guided by the self-regulatory model, which recognises that adherence to medication is frequently influenced by symptoms or beliefs about the illness that are unique to each patient. The theory was used in training the pharmacists to adopt a patient-centred approach. The intervention was designed to elicit patients' experiences with, and concerns about, their new medicine; this was then used as a starting point for the pharmacists to meet each individual's specific needs with information and advice. As non-adherence to new medicines for chronic conditions develops rapidly, the team developed a service in which a pharmacist telephoned patients two weeks after they had started a new medicine for a chronic condition. The pharmacist listened to the patient's problems and gave advice or information if needed. In this study the effectiveness, safety, utility and the patient acceptability of the service were assessed. The service was then tested in a proof-of-concept randomised controlled trial involving forty pharmacies across England. It was found that the proportion of non-adherent patients was significantly reduced in the intervention group **[5]**. What is more, the patients' beliefs regarding

their medicines became on balance more positive **[6]**. The study included a health economic evaluation (led by Elliott) that followed up patients' utilisation of health resources, modelled them and calculated incremental cost effectiveness ratios. The intervention was 90% likely to be both cheaper and more effective than normal care due to more efficient medicines usage **[7]**.

3. References to the research

[1] Barry CA, Bradley CP, Britten N, Stevenson FA, Barber N. Patients' unvoiced agendas in general practice consultations. BMJ. 2000 May 6;320(7244):1246-50. http://dx.doi.org/10.1136/bmj.320.7244.1246

[2] Britten N, Stevenson FA, Barry CA, Barber N, Bradley CP. Misunderstandings in prescribing decisions in general practice: qualitative study. BMJ. 2000 Feb 19;320(7233):484-8. http://dx.doi.org/10.1136/bmj.320.7233.484

[3] Barry CA, Stevenson FA, Britten N, Barber N, Bradley CP. Giving voice to the lifeworld. More humane, more effective medical care? A qualitative study of doctor-patient communication in general practice. Soc Sci Med. 2001 Aug;53(4):487-505. http://dx.doi.org/10.1016/S0277-9536(00)00351-8

[4] Barber N, Parsons J, Clifford S, Darracott R, Horne R. Patients' problems with new medication for chronic conditions. Qual Saf Health Care. 2004 Jun;13(3):172-5. http://dx.doi.org/10.1136/qshc.2003.005926

[5] Clifford S, Barber N, Elliott R, Hartley E, Horne R. Patient-centred advice is effective in improving adherence to medicines. Pharm World Sci. 2006 Jun;28(3):165-70. http://dx.doi.org/10.1007/s11096-006-9026-6

[6] Clifford S, Barber N, Horne R. Understanding different beliefs held by adherers, unintentional nonadherers, and intentional nonadherers: application of the Necessity-Concerns Framework. J Psychosom Res. 2008 Jan;64(1):41-6. http://dx.doi.org/10.1016/j.jpsychores.2007.05.004

[7] Elliott RA, Barber N, Clifford S, Horne R, Hartley E. The cost effectiveness of a telephone-based pharmacy advisory service to improve adherence to newly prescribed medicines. Pharm World Sci. 2008 Jan;30(1):17-23. http://dx.doi.org/10.1007/s11096-007-9134-y

4. Details of the impact

In 2008, the Department of Health published a white paper entitled *Pharmacy in England: building on strengths, delivering the future* in which it outlined the new service which was being developed, referencing the work of Barber, Horne and Clifford **[a]**. This idea was taken forward by the Labour government, but then frozen when the election was called. The coalition government, however, took up the policy again, naming it the New Medicines Service (NMS), and continuing its development through to implementation in October 2011 **[b]**. The Chief Pharmaceutical Officer for England has confirmed that "*it is the research in question that forms the fundamental building block to this important development in health policy*" **[c]**.

Barber, Horne and Clifford were involved in the development of the service during this period. They participated in stakeholder meetings in which the nature of the new service was agreed and the intervention and subsequent training designed **[c]**. Barber and Clifford co-authored the questions the pharmacist should ask and also some of the CPPE training manual and some of their teaching was put on YouTube to be widely available **[d]**. Barber participated in a series of national day long 'road show' which visited all Strategic Health Authorities to publicise the launch of the service.

The service is targeted at NHS priority groups and at medicines associated with avoidable hospital admissions (typically due to poor adherence). Any patient starting a chronic medication who is prescribed a diuretic, anticoagulant, or has asthma, chronic obstructive pulmonary disease (COPD) or type 2 diabetes is eligible, and should be offered the service **[e]**. The pharmacist sets up a

meeting with the patient a couple of weeks after the patient presented the prescription and asks a series of open questions to elicit the patient's experiences with the medicine, their adherence and any problems or questions. The pharmacist should explore possible ways to deal with any issues raised. Two weeks later the pharmacist contacts the patient again to see if the issues have been resolved, to check adherence and to find out whether any further advice is needed. The pharmacists are paid for this if patient completes the whole process.

Impacts on patients

By the end of May 2013, 1,023,697 patients had received the service **[f]**.

In December 2012, Gary Warner, Chairman of the Pharmaceutical Services Negotiating Committee's service development subcommittee (which had undertaken an interim evaluation of the NMS based on 224,554 patients) commented: "*NMS interventions are making a real difference to so many patients*". The report showed that 32% of formerly non-adherent patients became adherent to their medication after the NMS intervention. In addition, pharmacists gave 366,702 pieces of healthy living advice to patients while they provided the service **[g]**.

Improved patient safety

One of the innovations of the service was to encourage pharmacists to fill in 'yellow cards' reporting adverse drug events. In August 2012 the Medicines and Healthcare products Regulatory Agency (MHRA) announced that there was a 120% increase in Yellow Card reports received from community pharmacists since the launch of the NMS, compared to the same time period a year ago, indicating that the service leads to rapid identification of side effects of medicines, strengthening the national regulatory process **[h]**.

Impacts on professional training

Barber and Clifford were heavily involved in preparing the professional training for the NMS prepared by the DH-funded national Centre for Pharmacy Postgraduate Education (CPPE) and wrote some of their training material. They also made a series of videos for CPPE and ensured that these materials were open-access. The reference to this work can be found in YouTube videos (see above) and the CPPE open learning programme that can be accessed by GPhC members only **[i]**.

Economic benefits to the NHS

Elliot's health economic study showed a saving to the NHS of £95.40 per patient. The impact assessment prepared for the Government estimated the likely costs and benefits of the scheme under various scenarios. Using the middle of three scenarios they estimated the net benefits of adopting the service to be £1.5bn (discounted) over a 10 year period **[j]**.

Other national & international schemes

The research presented above has led to a similar service becoming policy in Scotland, where it has been integrated with their chronic medication service **[k]**.

There has been interest from other countries in introducing a similar scheme. For example, pharmacists from the Norwegian pharmacy organisation Apokus visited the UK in December 2012 to learn about the service. The visit followed interest from Norwegian community pharmacies in undertaking a pilot NMS for new anticoagulant medicines. The team learnt about the NMS and met with individuals involved, including a member of the UCL team (James Davies) involved in evaluating the service **[l]**.

5. Sources to corroborate the impact

[a] *Pharmacy in England: building on strengths, delivering the future.* Cm 7341. Department of

Health, 2008. White paper on the future of pharmacy in England, April 2008. Page 65 makes reference to Barber's underpinning research, and describes the new service that was developed.
http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_083815

[b] https://www.gov.uk/government/news/the-new-medicines-service

[c] Letter of testimony to corroborate this impact provided by the Chief Pharmaceutical Officer for England. Copy available on request.

[d] The videos for the NMS involving Barber and Clifford, can be found at:
http://www.youtube.com/watch?v=O30xnVtl3sk
http://www.youtube.com/watch?v=vWJBypKDlfM

[e] Details of the New Medicines Service from the Royal Pharmaceutical Society
http://www.rpharms.com/health-campaigns/new-medicines-service.asp

[f] Data aggregated from http://www.nhsbsa.nhs.uk/PrescriptionServices/3545.aspx

[g] Evaluation carried out by the Pharmaceutical Services Negotiating Committee:
http://psnc.org.uk/wp-content/uploads/2013/07/PO_NMS_data_evaluation_Nov_2012_full_report.pdf

[h] Press release about increase in yellow card reporting:
http://archive.psnc.org.uk/news.php/1391/nms_prompts_increase_in_yellow_card_reports.html

[i] New Medicine Service. Delivering quality and making a difference. Available to GPhC members on http://www.cppe.ac.uk/learning/Details.asp?TemplateID=NMS-D-02&Format=D&ID=18&EventID=42101

[j] See summary on p22 of
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/215423/dh_130231.pdf

[k] Scottish policy www.sehd.scot.nhs.uk/pca/PCA2012(P)19.pdf – see reference to research on p.3
Description of NMIST service in Scotland:
http://www.communitypharmacyscotland.org.uk/nhs_care_services/chronic_medication_service/new_medicine_intervention_support_tool/about_the_new_medicine_intervention_support_tool.asp

[l] Press release about interest from Norwegian pharmacies:
http://archive.psnc.org.uk/news.php/1471/nms_goes_international.html