

# Pharmacy practice research reviewed

In this review of the pharmacy practice research to be presented next week at this year's British Pharmaceutical Conference, **Clare Bellingham** highlights some of the most interesting research described in the 92 abstracts that have been accepted by the practice research adjudicating panel

This year's pharmacy news has been dominated by the new community pharmacy contracts. So it is perhaps not surprising that a number of papers included in the BPC 2005 practice research sessions aim to shed light on aspects of the contracts. Throw the recent controversy over pharmacist-conducted medication reviews into the mix and you end up with an interesting research programme.

So this review begins with the new contract and medication review, moves on to prescribing errors and pharmacist prescribing, looks at POM-to-P switches, and finally examines pharmacy education issues.

## New contract

Just after the details of the new contract in England and Wales were published in late 2004, **Candlish and Higgins** investigated what pharmacists in north-east England thought of it. Questioning 198 pharmacists identified some clear divisions. Younger pharmacists were significantly more enthusiastic about the new contract: pharmacists qualified for less than 10 years looked forward to providing enhanced services much more than older pharmacists, who preferred to concentrate on dispensing. A difference also occurred between the sectors in which pharmacists worked. Those working for large multiples were more positive about the new contract than those who owned a pharmacy or worked for a small chain. Half of all the respondents looked forward to spending at least a quarter of their time on new enhanced services.

Repeat dispensing is a key part of the new contracts in England, Wales and Scotland. The experiences of some pathfinder sites of repeat dispensing in England were assessed by **Morecroft et al** from the University of Manchester. In one study, they examine the opinions of the repeat dispensing leads at primary care trusts and, in another, the views of community pharmacists involved. From a PCT perspective, they found that the service was seen as convenient, time-saving and offering improved patient access to medicines. Its roll-out was dependent on GP practices taking up the service and this represented a problem since there were competing priorities for GPs, not least the implementation of the new GP contract. Other problems identified were with computer software and difficulties when patients' medicines needed to be changed.

In a second study, **Morecroft et al** found that community pharmacists wholeheartedly endorsed repeat dispensing services. Perceived benefits included guaranteed business, improved management of workload and better communication with patients. The fact that the service was paper-based was regarded as a serious drawback, as were concerns over changes

to patients' medicines and communication difficulties between the pharmacist and GP.

As community pharmacists consider what new services they could offer under their new contracts, **Newton** gives insight into a hepatitis C antibody testing service delivered from a community pharmacy in Lincoln. Testing was offered to all patients visiting the pharmacy for substance misuse services over a 16-week period. Oral swabs were taken and patients given pre- and post-test counselling, along with advice on harm minimisation and safe injecting technique. Altogether, 61 patients enquired about the service and half were tested. Of these, 32 per cent tested positive for hepatitis C virus antibody. **Newton** concludes that the trial suggests that it is feasible to offer hepatitis C antibody testing in a community pharmacy for this hard-to-reach patient group that might not access other health services.

Examining a different form of new service provision — the local pharmaceutical services (LPS) contract — **Bradley et al** from the University of Manchester investigated how the first wave of LPS pilots went. The most common services provided under LPS were found to be medication review, compliance aid supply and minor ailments schemes. All pharmacies reported an increased workload relating to documentation but other changes depended on the size of the pharmacy. Larger multiple chains had an increased workload in dispensing and staff training; smaller chains and independent pharmacies had a greater workload in patient consultations and communication with other health professionals were found. The authors comment that this could be because independent pharmacies and small chains were more likely to provide medication reviews under LPS than large multiples. Another difference was on expenditure: small chains

and independents were more likely than large multiples to need to increase their workforce, whereas the problem for multiples was with their premises, since private consultation areas were less common in their stores.

Perhaps one of the biggest problems with new services is maintaining their long-term delivery. **Hansford et al** found that few pharmacists in Angus Local Health Care Co-operative who achieved accreditation to provide a medication review service continued to offer the service in the long term. Lack of time was the most frequently cited barrier.

## Medication review

A number of researchers have tackled medication review this year. **Mackie et al** provide evidence to support medication reviews by community pharmacists. In their study, 37 pharmacists in Barking and Havering Health Authority were accredited to provide reviews following 300 hours of training. Patients were interviewed by the pharmacist at a location of their choice — 50 per cent chose their own home, 33 per cent the pharmacy and only 14 per cent the GP surgery. The patients were divided into an active group, in which pharmacist-written active referrals were actioned by the GP practice, and a control group, in which referrals were not actioned and patients received normal care under the practice's usual repeat prescribing system. A total of 342 patients were followed-up one year later. A review of 3,353 medicines identified 1,552 drug therapy problems, split equally between the active and control groups. However, at follow-up, 64 per cent of these problems had been resolved in the active group compared with just 25 per cent in the control group.

**Ahitan et al** also demonstrate the value of medication reviews conducted by community pharmacists. Their study examines a specific patient group — 51 patients with cystic fibrosis. Community pharmacists in Birmingham were trained to conduct reviews and were provided with medical information from the patients' hospital notes. Altogether, 136 interventions were made, with education being the most common need. A quarter of interventions involved referrals to other professionals, and of 35 recommendations made to GPs all but two were accepted. The authors note that on many occasions the interventions were only possible because hospital information was available to the pharmacists.

It was **Holland et al** from the University of East Anglia who, in the HOMER study published earlier this year, cast doubt on the value of medication reviews by pharmacists. And they are back again, presenting new data from the study on whether the results varied according to pharmacists' characteristics.

## Practice research abstracts

The BPC practice research abstracts are being published as a supplement to the September issue of the *International Journal of Pharmacy Practice*. Copies of the supplement are made available to those attending the conference practice research sessions as well as to *IJPP* subscribers. Copies can be purchased for £14.95 from the Pharmaceutical Press, Turpin Distribution, Stratton Business Park, Pegasus Drive, Biggleswade, Bedfordshire SG18 8TQ (tel 01767 604971; fax 01767 601640; e-mail [custserv@turpin-distribution.com](mailto:custserv@turpin-distribution.com)). The abstracts are also available in the form of PDF files, which can be downloaded via the BPC section of the Royal Pharmaceutical Society's website ([www.rpsgb.org/events](http://www.rpsgb.org/events)).

Altogether, 22 pharmacists took part in the study: 68 per cent were experienced community pharmacists and 76 per cent had a postgraduate qualification. The increased rate of hospital admission following medication review found was not related either to the level of experience of the pharmacist or the area in which they practised. However, the authors comment that, although the proportion of pharmacist recommendations enacted was similar in the HOMER study to other medication review studies involving multiple pharmacists, studies involving either a single pharmacist or close liaison with doctors demonstrate a greater level of enactment.

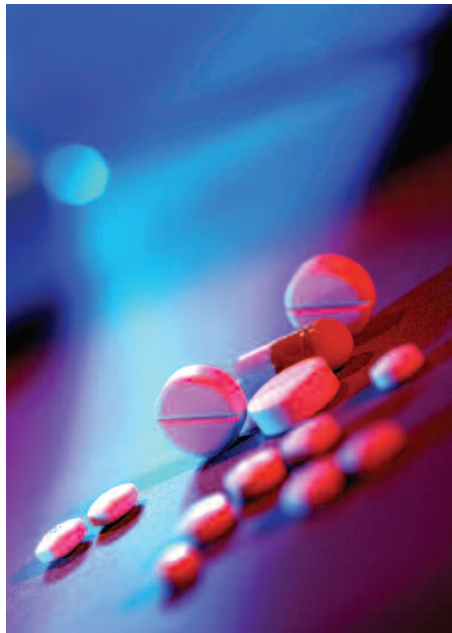
**Safwat and Goodyer** offer a different explanation for the HOMER trial's negative finding. In a smaller but similar study, they used a hospital-based liaison pharmacist to counsel patients before discharge from St Thomas' Hospital, London, with follow-up reviews at home after two and six weeks. No significant difference between readmission rates was found between the intervention and control groups after six months. Compliance was higher in the intervention group, as was a tendency to report adverse drug reactions. The authors suggest that patients with a better understanding of their illness are more likely to seek help.

Also tackling the issues raised by the HOMER trial are **Kraska et al** from Aberdeen. They re-examined data from an earlier trial to identify whether any pharmaceutical care issues that could have been addressed by a pharmacist contributed to hospital admissions. Of the 332 patients in the trial, there were 77 admissions and patient data relating to each of these was examined by two medical reviewers. In 59 cases, the reviewers thought that pharmaceutical care issues were not responsible for admission. Pharmaceutical care issues contributed to 17 admissions. Of these, seven were considered preventable by pharmacist medication review and three possibly preventable. The authors conclude that numbers of hospital admissions may not be a sufficiently sensitive measure of the benefits of pharmacist interventions.

Adding to the debate is a paper from **Rosenbloom et al** which suggests that, despite patients and carers appreciating the role of medication reviews, it is the views of other members of the health and social care team that may be the barrier to community pharmacists developing such services. The researchers interviewed a selection of professionals from three primary care trusts in south London. They found that some perceived community pharmacists to be out of their depth when conducting medication reviews.

### Preventing ADRs and medication errors

What are the barriers to community pharmacists preventing adverse drug reactions? **Howard et al** from the University of Nottingham interviewed community pharmacists about their role in the hospital admission of 12 patients with preventable drug-related events. The most commonly identified barriers to a community pharmacist role in risk management were time and workload pressures. On



**Medication review by pharmacists is the subject of several abstracts being presented at the conference this year**

top of these were inadequate communication between pharmacist and patient, poor access to clinical information and a reluctance to intervene following past negative reactions from GPs. Pharmacists' lack of follow-up information was also a problem. This was demonstrated by some pharmacists' failure to recognise risks, reasoning that they had dispensed similar prescriptions before but were unaware that patients had suffered morbidity as a result.

In Norway, one of these barriers has been tackled. The clinical indication for a drug is a mandatory requirement on prescriptions, yet **Haavik et al** found that a third lacked this information. In a review of prescription errors identified by community pharmacists, they found errors in 2 per cent of nearly 70,000 prescriptions. Most errors were minor, but 17 per cent were judged to have potential clinical significance. They included errors such as the wrong drug, strength or dosage.

Prescribing errors occur in all care settings, and **Tully and McElduff** from Manchester investigate prescribing errors at different stages of hospital admissions. Errors were present in 3,463 of 33,012 prescriptions. Pharmacists were most likely to identify errors in prescriptions written on the patient's admission to hospital than at later stages of their stay. They also found an association between the type of error and the stage of a patient's stay: errors relating to a need for a drug were most common on admission or discharge than at other stages.

In Carmarthenshire, **Rees et al** found that 16 per cent of 100 elderly patients admitted to an acute medical assessment unit had contra-indicated drugs prescribed. Furthermore, 34 per cent were prescribed interacting drugs, with 21 per cent on a combination deemed hazardous by the British National Formulary.

But health board guidance will do little to reduce inappropriate prescribing if the findings of **James et al** represent the national

picture. An audit of selective COX-2 inhibitors was undertaken before and after the withdrawal of rofecoxib when prescribing guidance was issued by Swansea Local Health Board. The guidance had little impact: doctors continued to prescribe selective COX-2 inhibitors for patients with cardiovascular disease and patients taking aspirin, despite the guidance stating that they were inappropriate for these patient groups.

Low adherence to a formulary is highlighted by **Shaw and Wright**. They found that 18 months after the introduction of a joint primary and secondary care formulary in Peterborough, most prescribers were aware of it but less than half adhered to it. They comment that non-adherence is addressed in secondary care by hospital pharmacists and that, if joint formularies are to be successful, community pharmacists may have to assume similar responsibilities in primary care.

Electronic prescribing may be one way to reduce prescribing errors but its impact on errors during the medicines administration process is less well known. In London, **Franklin et al** investigated the impact on administration errors of a closed-loop system that included electronic prescribing system, automated dispensing, barcode patient identification and electronic administration. They observed 56 drug rounds before the system was installed and 55 afterwards and found a significant reduction in administration errors due to the selection of wrong drug, wrong dose, wrong patient, extra dose and omission.

### Reporting errors

If errors do occur then it is hoped that they are reported and analysed in order to learn from them. But will hospital pharmacists and technicians report incidents? This was researched by **Bentham et al** in Manchester. They asked 10 pharmacists and 10 technicians to rate the likelihood of reporting nine scenarios and the severity of each incident. Both groups were highly likely to report the incidents with no difference in reporting rate between the two. However, a marked difference was found in the severity ratings of the incidents with technicians tending to consider incidents to be more severe than pharmacists.

### Recording weight

Doses of some drug therapies need to be calculated according to a patient's weight, yet **Fox et al** from the University of Sunderland and Wansbeck District Hospital found that of 100 patients admitted to hospital, 43 did not have their weight recorded accurately. More seriously, 15 patients who had not been weighed were receiving a drug that required an accurate dose calculation based on body mass. When these patients were weighed, five were found to be receiving incorrect doses.

### Drug omission

Also from the University of Sunderland, **Rashid et al** investigated the problem of regular medicines being omitted during the "nil by mouth" perioperative period. In a

seven-week period on three general surgical wards, 31 patients were designated "nil by mouth". A review of their notes showed that 202 doses of regular medicines were omitted of which 50 should have been continued according to current medical opinion.

### Cost saving from patients' own drugs

Three years after the use of patients' own drugs (PODs) was first introduced at University Hospital Lewisham, Cairns *et al* have found that cost savings are not only maintained over time but are increased. They identified the number of PODs used at discharge during two four-week periods two and three years after the system was first introduced. At two years, 19 per cent of patients were discharged with PODs compared with 49 per cent at three years. The number of PODs also increased significantly, representing an estimated annual saving for the hospital of £110,000 in year two and £168,000 in year three.

### Infection control

A big issue for hospitals, and certainly a preoccupation of the national media, is methicillin-resistant *Staphylococcus aureus* (MRSA). Aldeyab *et al* studied the relationship between the use of four antibiotics and the incidence of MRSA at a medium-sized general hospital in Northern Ireland. Over the two-year study period, 520 patients contracted MRSA. The researchers found a statistically significant correlation between the use of ciprofloxacin and co-amoxiclav and incidence of MRSA cases. No such correlation was identified for use of erythromycin or tazocin.

The effect that the wrapping material around syringes and needles used in aseptic dispensing has on subvisual particle counts was investigated by Smith and Curnyn from Aston University and Birmingham Heartlands Hospital. They found that plastic-wrapped components generated significantly fewer subvisual particles than those wrapped in paper.

### Pharmacist prescribing

A number of abstracts — more than can be included in this review — examine supplementary prescribing by pharmacists, which began in 2004.

Factors that could affect adoption of pharmacist prescribing were assessed by Buckley *et al* at Dudley Group NHS Trust. In particular, they sought doctors', nurses' and pharmacists' views on pharmacist prescribing. General support was found for pharmacist prescribing but with some reservations. Concerns that pharmacists lack the diagnostic skills required to prescribe existed among 61 per cent of doctors, 38 per cent of nurses and 40 per cent of pharmacists. Also, 64 per cent of doctors and 52 per cent of nurses thought pharmacists did not have enough knowledge of patients to prescribe, and 36 per cent of pharmacists shared this concern. The researchers also identified different levels of support for the type of prescribing, with more support seen for pharmacists being able to prescribe within protocols than for independent prescribing.

In two similar studies, Lloyd *et al* assessed the views of nurses and doctors on supplementary prescribing by hospital pharmacists at nine hospitals in Northern Ireland. Only 20 per cent of nurses were aware of the role of the pharmacist prescriber although once aware they tended to be positive about it. Of 205 nurses questioned, 74 per cent said that pharmacists were the most knowledgeable health professionals about drugs but only 34 per cent thought pharmacists were the most appropriate professional to prescribe. If a diagnosis had already been made by a doctor, 54 per cent of nurses thought pharmacists would then be competent to manage the prescribing. Although 66 per cent said that pharmacist prescribing would not encroach on their territory, 47 per cent were concerned that it would encroach on doctors' territory.

Doctors, however, appeared to be less concerned about this, according to the second study by Lloyd *et al*. Awareness of pharmacist prescribing was higher among doctors than nurses but 68 per cent of doctors did not know about this new role. Benefits such as decreased doctor workload and decreased medication error were cited by 74 and 83 per cent of doctors, respectively. However, half were concerned that pharmacist prescribing would result in loss of their own prescribing skills and 80 per cent thought that doctors are the most appropriate health professional to prescribe.

Perhaps poor communication between the health professions is a problem relating to all aspects of professional life, not just prescribing. Diack and Denison from the University of Aberdeen asked pharmacists what competencies a medical student should have on graduation. In addition to the top two competencies of legible handwriting and an ability to complete a drug prescription chart, the importance of communication was highlighted. Pharmacists wanted junior doctors to be aware of the pharmacist's role on the ward, to use pharmacists' advice on prescribing and to know that pharmacists can have roles in counselling, advice and education for both staff and patients.

What community pharmacists in Scotland think of proposals for independent prescribing was investigated by Pfleger *et al*. Of 217 pharmacists who returned a questionnaire, nearly all thought that independent prescribing by community pharmacists would improve patient access to medicines. In terms of its acceptability, 26 per cent strongly agreed and 59 per cent agreed with the statement "independent prescribing by community pharmacists is likely to be acceptable to patients". Similar proportions agreed that community pharmacists would prescribe as safely as GPs. Most thought they were already competent to diagnose in four areas — musculoskeletal, eye, urinary tract and skin. In addition, confidence was high in their ability to select drug treatment. Asked to rate the statement "community pharmacists already have the knowledge and skills to become competent independent prescribers", 19 per cent strongly agreed, 37 per cent agreed, 24 per cent were unsure, 17 per cent disagreed and 3 per cent strongly disagreed. But overall 77 per

cent were confident in their ability to become independent prescribers.

### OTC medicines

It is often said that independent prescribing is an extension of what pharmacists do every day: diagnose minor ailments and provide over-the-counter remedies. Switching medicines from prescription-only to pharmacy status adds to pharmacists' armoury.

Community pharmacists' views on the POM-to-P switches of simvastatin and omeprazole were investigated in separate papers by Hansford *et al* from the University of Aberdeen. Postal questionnaires were sent to a random sample of 2,000 community pharmacists and 1,156 replies were received. Examining simvastatin first, the researchers found that 60 per cent of pharmacists were entirely confident about selling it, although 83 reported having made no sales in the 14 days before answering the questionnaire. In the same period, 16 per cent had refused at least one sale. Nearly all pharmacists had received educational material about the switch and 78 per cent thought that an appropriate risk assessment for use of simvastatin could be made in the community pharmacy. With the omeprazole switch, fewer pharmacists had received educational material, although the figure was still high at 80 per cent. But more pharmacists — 72 per cent — were entirely confident about selling omeprazole. Sales of omeprazole in the previous 14 days were higher than for simvastatin, although 68 per cent still reported no sales of omeprazole.

Meanwhile, over-the-counter use of a drug that has been on the market for much longer was examined by Rogers *et al* from the University of Bath. They examined how OTC use of low-dose aspirin has developed over the previous seven years. A total of 773 patients from 172 pharmacies were questioned. Nearly all were taking aspirin for primary or secondary prevention of cardiovascular disease. Since a similar survey was carried out in 1997, an increase in the proportion of younger females taking aspirin was seen and this was largely for preventing deep vein thrombosis. The mean daily dose was lower than in 1997, falling from 90.4mg to 82.8mg. A lower proportion of patients are now experiencing upper intestinal side effects, something suffered by 13 per cent of patients in 1997 compared with 7 per cent in the new survey. The proportion of patients who took aspirin without informing their GP fell only slightly, from 15 to 13 per cent.

### Support staff

Many OTC medicines are supplied by pharmacy support staff, not pharmacists, so an investigation by Watson *et al* of support staff's compliance with guidance for supply of medicines makes interesting reading. The researchers, from the University of Aberdeen, observed 196 consultations and rated their compliance with WWHAM guidance (*who* is it for, *what* are the symptoms, *how* long have the symptoms been present, *any* other medicine taken, *medication* already tried). Total pos-

sible score was 5 (one point for each question asked). They found a median WWHAM score of 2, with 22 per cent of consultations scoring 0. In only 36 per cent of consultations was it discovered whether the patient was taking other medicines. Consultations involving requests for specific products appeared to receive less questioning and advice than consultations in which a specific product was not requested.

In a second study, **Watson** examined the supply of non-prescription medicines from community pharmacies using the Medical Research Council's framework for complex interventions. Communication between pharmacy staff and customers was found to be sub-optimal with pharmacy staff tending to focus on harm avoidance rather than the effectiveness of medicines. Only one in four consultations were deemed compliant with professional guidelines for the supply of pharmacy medicines. Appropriate outcomes were more likely if the consultation was not a request for a specific product, if the pharmacist was involved, and if there was more communication between the staff and customer.

### Health advice

Also on the front line of providing health advice to the public are NHS 24 and NHS Direct. **Smith and McQuillan** found that 35 per cent of all calls to NHS 24 involved a significant element of pharmaceutical advice. Analgesia was the most commonly discussed clinical area, followed by skin conditions and gastrointestinal problems.

### Compliance issues

Patients' attitudes to medicines and adherence to medication regimens is explored by a number of studies. The usefulness of compliance aids, specifically Dosette boxes, in improving compliance was investigated in North Tyneside by **Barrett et al**. The boxes were well-received among patients, with 82 per cent believing they needed their medicines to be supplied in this way. However, when the contents of 34 Dosette boxes were examined, 76 per cent were found to contain inappropriate medicines, including cytotoxic and hygroscopic medicines. When 15 community pharmacists were asked about filling Dosette boxes, 11 said that they had no information on stability of drugs placed in Dosette boxes.

**Horne et al** investigated whether adherence to antihypertensives differed between patients involved in the Brighton arm of the ASCOT trial and patients not involved in a clinical trial. Contrary to expectations, they found no significant difference in self-reported adherence to medication between the two groups. This suggests that trial participants may well be representative of the general population. In both patient groups, they found an association between adherence and patient's beliefs about hypertension and its treatment. Low adherence was associated with greater concerns about taking antihypertensives.

Patients' attitudes towards their disease was examined by **Munro et al** from Aberdeen. In a study of 183 patients with type 2 diabetes,



**Careers in industry are overlooked because students favour direct patient contact, Kirby-Smith et al found**

they found that patients lacked understanding about the condition. One-third either did not know why they took at least one of their medicines or gave an inappropriate reason for its use. Knowledge about why certain parameters were measured was lower, with 69 per cent knowing why blood pressure was measured, 49 per cent cholesterol and 32 per cent HbA<sub>1c</sub>.

### Undergraduate education

The balance of science and practice within the undergraduate pharmacy course has been a matter of some debate. **Jesson et al** from Aston University explored 935 final year students' opinions at schools of pharmacy across Britain. The net opinion was that the balance is about right: 54 per cent said that time devoted to sciences is about right, 13 per cent said it is not enough and 33 per cent said it is too much. In addition, 57 per cent agreed that the science content in the early part of the course was necessary for professional studies in later years. But 67 per cent still thought that the amount of material of relevance to the practice of pharmacy was insufficient in the first year.

It would be interesting to know how the pharmacy course influences students' career choices. An investigation of why so few pharmacy students opt for a career in industry was conducted by **Kirby-Smith et al** from NDA Regulatory Science and the University of Portsmouth. They found that final year students' desire for direct patient contact was a major factor, along with opinions that industrial careers would be difficult, dull and laboratory-based. Students' opinions contrasted with those expressed on application forms to study pharmacy, in which the liking for science and a desire to develop drugs were placed above the desire to help people.

An evaluation of the gaps in final year students' clinical skills was carried out by **Corbo et al** from the Universities of Uppsala

and Brighton. Using objective structured clinical examinations (OSCEs), they found that students were best at patient counselling but poor at calculations and problem solving.

### Postgraduate education

Use of OSCEs in assessing pharmacists' competence to provide an anticoagulation service was piloted by **Man et al** from the Whittington Hospital in London. Despite the widespread use of OSCEs in undergraduate training, the authors comment that their use in a clinical service is novel and was successful.

An increase in the number of pharmacists using e-learning was observed by **Lau** of Cardiff University. A survey of pharmacists showed that, in 2002, 50 per cent were using a computer at home for pharmacy-related learning compared with 88 per cent now. However, 78 per cent indicated that they lacked knowledge about the continuing education websites available.

Another study to identify a gap in pharmacists' knowledge was conducted by **Scott et al** from the University of Bath. They found that 58 per cent of 121 pharmacists involved in needle exchange were not aware of the 2003 change to the law which permits supply of certain paraphernalia. Of the others, only 2 per cent had a full understanding of the legislation.

An incomplete understanding of ethics among pharmacists was identified by **Deans** from Keele University. Although pharmacists showed a clear awareness of ethics within their work and were confident in dealing with concepts such as confidentiality and patients' best interests, in some areas their use of ethics was confused. For example, a need to justify decisions was observed and, in some cases, this was linked more strongly to a fear of disciplinary authorities than to doing what is morally right.

### Next year

This year's practice research offers many insights into the development of pharmacy practice, although it has to be said that some papers did little more than state what most pharmacists would consider obvious. Another concern is that two papers using what appear to be the same data set were submitted under different names. Still, on balance, a lot can be gained from reading this year's research abstracts.

With pharmacy changing at its current rate of progress, next year's practice research looks set to be equally interesting. One area to watch is work by **Patterson et al** on adapting a US model of pharmaceutical care in nursing homes for use in the UK. The researchers describe how the Fleetwood model, in which nursing home residents at high risk of adverse drug reactions receive structured pharmaceutical care from pharmacists, has to be adapted before it can be tested in a randomised controlled trial in the UK.

Along with the early experiences of the new community pharmacy contracts and the probability of independent prescribing rights, there is bound to be plenty of interesting research at next year's conference.