

CARE OF THE ELDERLY

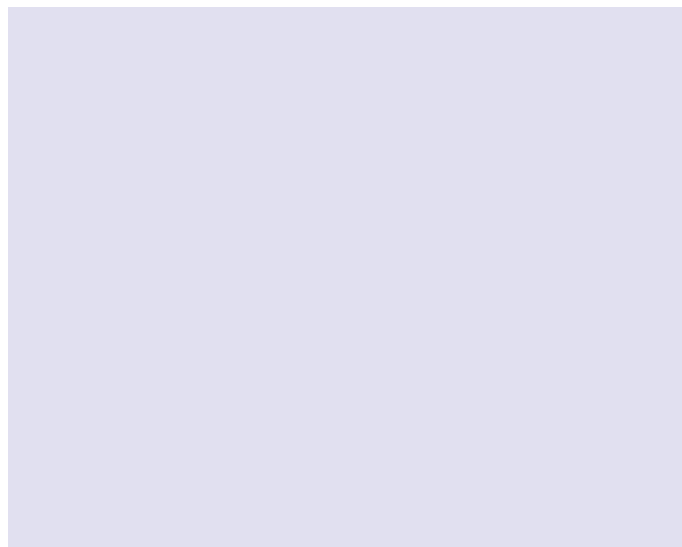
— an osteoporosis medication management clinic

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Osteoporosis is a disease of ageing that can cause hip fractures, requiring hospital admission and major surgery.

It can impair a person's ability to walk and can cause disability or death.

This article describes the development of the role of a pharmacist practitioner with a special interest in osteoporosis



Artwork of a human female skeleton degenerating due to osteoporosis

ALFRED PASTEK/SPL

Developing appropriate services that consider patient pathways and offer integrated care to enhance quality of life for the elderly population in the UK is recommended in the National Service Framework (NSF) for Older People.¹ Increasingly, emphasis is placed on preventive health care, which ideally should be in place throughout life. Primary care organisations, reflecting on reconfiguration or development of new service delivery models for the often vulnerable elderly patient group, need to consider both chronic disease management² and medication management.¹ These services should be embedded within a robust infrastructure that supports collaborative and multidisciplinary working between health professionals.

In this article, a pharmacist-led osteoporosis medication management clinic service is described. A menopause clinic is also mentioned, as this was the forerunner of the osteoporosis clinic. By providing structured pharmaceutical care (Panel 1, p232),³ the pharmacist aims to ensure efficacious medication. It is accepted that the patient will be provided with components of health care from many health profes-

sionals, including those based in primary and secondary care sectors. Lifestyle intervention and falls prevention advice are an integral part of the medication review offered by the clinic, to help promote health and independence with ageing.¹ Further discussion highlights how work in progress and development will facilitate enhanced delivery of patient care.

The evolving model incorporates improved liaison between the secondary and primary care health professional teams, with the pharmacist in post as a practitioner with a special interest^{2,4,5} and appropriately qualified to take on prescribing responsibility. Direct patient benefits include improved access and further choice for advice on medicines,⁶ and engaging in a concordance partnership^{1,7,8} to agree an individualised management plan. The strategic remit for the pharmacist practitioner⁵ encompasses use of mechanisms such as guideline development, a health professional telephone link-line to offer support, and multidisciplinary educational initiatives⁹⁻¹¹ including formulary and audit work to standardise and underpin evidence-based provision of patient care across the local health economy.

PHARMACIST'S ROLE

Our work supports the concept of pharmacists undertaking medication review at level three¹² (Figure 1, p234) and ongoing management within the hospital setting. Preliminary research before setting up the

menopause and osteoporosis medication clinics included the investigation in-depth, using action research methodology (see Panel 2, p234),^{13,14} of the role of a specialist menopause pharmacist (1996-99).¹⁵ This role is accepted both by patients¹⁶ (Table 1, p235) and health professional colleagues.^{15,17,18} The remit for the specialist pharmacist practitioner has been defined as combining clinical practice (service delivery), a teaching and training commitment, and research studies with emphasis on strengthening liaison between the secondary and primary care sectors.¹⁵

SERVICE AND REFERRAL

The weekly specialist menopause clinic offers an outpatient service on Thursday mornings, while the bone metabolic unit, located within the arthritis centre offers its osteoporosis outpatient clinic on Tuesday afternoons. These clinics offer patient care from within a district general hospital setting, providing services to two main primary care organisations with a total catchment population of over half a million.

The medication management clinic operates on-site, in parallel to the consultant-led outpatient clinics.⁹ This infrastructure uses health professional skill mix and supports good collaborative, multidisciplinary team working. This was identified as important from the outset to achieve our vision of providing seamless care to the patient, to include clinical, health and medication management.

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Panel 1: The primary care osteoporosis medication management service

This clinic, accepts referrals directly from GPs working within the primary care trust locality.

- Each new patient will be offered a 45-minute consultation
- Using the structured pharmaceutical care approach,³ all medicines being taken will be assessed for:
 - indication for treatment
 - safety
 - efficacy (eg, polypharmacy, drug interactions, side effects)
 - compliance/concordance
 - cost-effectivenessLifestyle advice is also provided
- Working in partnership with patients, the aim will be to help osteoporosis patients to agree their health and medication management plan
- To enhance compliance/concordance with treatment, evidence-based information and advice to assist informed decision making, will be provided. Within concordance theory,⁷ it would be acceptable for patients to make an informed decision not to take medicines
- This plan, with patient consent, will be forwarded to the patient's GP
- Where appropriate, patients will be given a follow-up appointment (eg, to undertake compliance checks, assess for any side effects)
- Follow up appointments will normally be for 20 minutes

The clinics have their own computerised patient lists, with referrals triaged by the consultant or senior registrar.

On receipt of a referral, either from GPs or from other consultant specialties within the hospital, the letter is assessed by the consultant lead or specialist registrar for the outpatient clinics and coded to indicate to the clinic clerk that the patient should be booked in for a medication review appointment. The clinic protocol details exclusion criteria for cross-referrals to the medication management clinic service. These exclusion criteria consist of mainly clinical assessments, eg, ultrasound investigation or pathological investigation, for example to exclude bone malignancy.

Within the osteoporosis medication management clinic both female and male patients are reviewed. With an average age of 75 these comprise the elderly population. Within the menopause medication management clinic, the average age of the female patients seen is

51. Some of course attend with their male partners, who often have pertinent questions that need to be addressed to assist the informed decision^{7,8} that a woman needs to make when considering hormone replacement therapy (HRT) or alternative treatment. At this stage, lifestyle advice often forms the basis of the management plan to optimise bone health and prevent future fractures. Lifestyle interventions include smoking cessation, alcohol advice, weight bearing and non-weight bearing exercise, and stress reduction strategies.¹⁹ This advice offers other benefits, as it impacts favourably on the management of other chronic diseases as well; one example is the reduction of a patient's cardiovascular risk profile.

Cross-referrals for patient support can be made to the smoking cessation services provided by local community pharmacists. This is a service protocol, funded and supported by medicines management and public health committees of the local primary care trust. In April 2004, with area wide collaborative working, the trust reported achievement of this prioritised target at 100 per cent, consequently improving patient care outcomes for the local population.

Other cross-referrals made from the medication management clinics are for stress management, including general counselling or specialised psychosexual counselling support. Falls prevention advice is also provided, with cross-referrals to the falls clinic to access balance and gait training exercise classes and care provision within the domiciliary setting if appropriate. Close working with voluntary groups is in place; currently the local National Osteoporosis Society branch has raised funds to enable referrals for severe osteoporotic patients for a course of hydrotherapy classes to help maintain mobility and muscle strength.

DEVELOPING SOPs

Formal clinics were first established in November 2001, after a two month pilot phase. Reflective practice, inherent within the action research cyclical approach used, informed the clinic protocol which is based on the experience gained during the specialist menopause pharmacist research programme¹⁵ and which is continuously modified and updated by the ongoing professional activity undertaken. This process has been useful in considering the management, information and communication processes necessary to ensure effective operation of these, pharmacist-led, medication management clinics within the secondary care setting. The aim is to ensure safe, risk-managed delivery of patient care. Successful establishment of the service necessitated formal meetings with local primary care organisation members. A patient information leaflet and consent form, both of which had to be approved by the trust clinical risks team, have been designed and are in use.

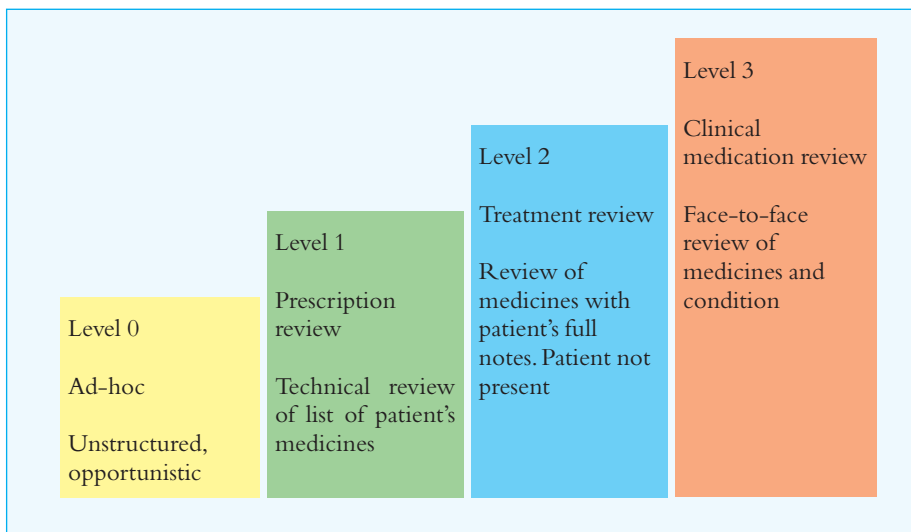


Figure 1. Diagrammatic presentation of the four levels of medication review. A proposed definition of medication review is a structured, critical examination of a patient's medication with the objective of reaching an agreement with the patient about treatment, optimising the impact of medicines, minimising the number of medication-related problems and reducing waste

A recent paper reported a randomised control trial which showed that a trained pharmacist can effectively conduct clinical medication reviews of elderly patients in the general practice setting, with associated cost savings and without affecting the workload of general practitioners.²⁰ A paper on pharmacists undertaking medication reviews emphasised accepting medication review as a clinical practice.²¹ This involves questioning the patient about their illness and all medicines being taken, both prescribed and non-prescribed, during a formal consultation. Pharmacists are suitably trained health professionals who can incorporate this clinical approach when undertaking medication review in liaison with the primary care team for any necessary clinical or pathological monitoring.²⁰

A history taking proforma,⁹ both for new and follow-up consultations, has been designed and is in use within the medication management clinics. This proforma incorporates sections for relevant clinical history taking, as this can direct the pharmaceutical care provided to ensure efficacious medication. Around 10 per cent of patients from those cross-referred to the medication management clinics, are managed jointly by the pharmacist and doctor. By recording both clinical and medication history on the proforma, the aim of reducing repetitive workload for the doctor who subsequently sees the patient, is addressed. The doctor simply adds in any further information from the clinical assessment.

The structured clinical review approach used in the osteoporosis medication clinic combines two practice philosophies. Firstly, pharmaceutical care,³ where each drug being taken by the patient is assessed for appropriate indication, safety, efficacy, for compliance issues and finally for cost-effectiveness. Any purchased over-the-counter medicines and alternative medicines taken are also noted,

with assessment for potential side effects and drug interventions. Second, patient concordance,^{7,8} where a therapeutic alliance is formed with patients, with the health professional assisting patients to make personally acceptable, informed decisions on their health and medication management.

Consultation times, to include patient consent and comprehensive history taking, vary. Although an audit in early 2002 showed that the average is 36 minutes and 41 minutes for the menopause and osteoporosis medication clinics respectively, an individual appointment can vary from 15 to 60 minutes. Longer waiting times can occur at the clinic. These are cases where a management plan has been agreed between the patient and pharmacist, but where a prescription needs to be signed off by a doctor. Some patients will attend for a follow-up review appointment, usually when a compliance check is necessary or where management decisions need to be based on further investigation, including biochemistry results. The patient is discharged after agreeing an individualised health and medication management plan, which is sent to the patient's general practitioner, and copied to the consultant for information.

Informing the standard operating procedure²² with ongoing professional activity and development has been part of the clinical governance strategy to ensure safe delivery of patient care. This process has identified that prescribing as part of the pharmacist's normal professional practice could improve service delivery for patients.

— PRESCRIBING PRACTICE

With the publication of the implementation guidance for supplementary prescribing by nurses and pharmacists,²³ a team meeting was convened to discuss whether the specialist pharmacist should go

Panel 2: Action research methodology

Action research: Participatory, critically reflective, evaluative research technique

Stage 1

- Pharmacist researcher as participant observer
- With funding, established specialist menopause pharmacist (SMP) post
- Exploratory phase: defined SMP role remit (clinical practice, research studies, professional liaison between secondary/primary care sectors)

Stage 2

- Hypothesis: The SMP performs a useful function.
- Qualitative data analysis (basic grounded theory) emerging themes to inform process.
- Confirmed hypothesis and validated findings

Stage 3

- Considering descriptive phrase useful, ie, is this role useful?
- Triangulated data collection. Three research studies to assess whether the SMP performs a useful function.
- Quantitative research methodology
- Reliability test for findings

forward for training to qualify as a supplementary prescriber when the first university courses were accredited by the Royal Pharmaceutical Society in September 2003. The discussion was informed by the pilot work²⁴ undertaken by the unit in January 2003 for the Department of Health (DoH). The results demonstrated that the pharmacist could be an effective supplementary prescriber, accepting delegated responsibility to manage patients within the scope of individualised clinical management plans,²⁵ with the patient's agreement. However, it is important to note that NHS infrastructure for current practice across the secondary and primary care interface does not allow for long-term management of patients within secondary care. This applies for chronic disease management where generally the majority of care is provided within primary care.² The work also identified that for the patient cases in this pilot study,²⁴ the consultant gynaecologist and specialist pharmacist acted as an "independent prescriber team", with the general practitioner taking on continuing management for the patient within the primary care setting.

The consultation phase for pharmacists to train as independent prescribers was started by the DoH earlier on this year in the UK, with expected publication of guidance in 2005. A Canadian report which reviewed the

evidence base for pharmacist prescribing supports the development of independent prescribing by pharmacists,²⁶ working within a collaborative health team environment, and where it acknowledges that pharmacists, like doctors and other prescribers, should be able to recognise their level of competence and the limits of the environment in which they practise to ensure safe delivery of patient care. Prescribing is a separate activity from diagnosing, and although dependent on a diagnosis, the premise is that the same individual does not need to perform both activities.

The medication management clinics model described above probably has one of the most robust infrastructures in place to date in the UK, developed within a research framework^{15,24} to support independent prescribing by pharmacists.

COMPETENCY/ACCREDITATION

Pharmacists have a central role to play in redesigning services around patients' needs and in ensuring the optimal use of increasingly powerful medicines. An example within the osteoporosis field is the recently launched injectable preparation, teriparatide. Significant quality improvements for patients and reduced costs can be achieved if medicines are managed across the whole health economy.²⁷ Maintaining competence with continual professional development (CPD)

helps ensure regularly updated and evidenced based delivery of patient care.^{28,29} Within pharmacy, work has started on developing an accreditation tool incorporating competency indicators for practitioners working at an advanced level in hospitals.³⁰ Other competency frameworks for pharmacists have also been published.^{31,32} Demonstration of achievement of competencies is going to be mandatory for reaccreditation and will form part of the assessment within the NHS "Agenda for change"^{30,33} for all health professional disciplines. Continuing professional development and training for the specialist pharmacist includes the clinical practice commitment, with development of competency for consultation, history taking and assessment skills and working within a multidisciplinary framework. The process of continual reflective practice, inherent within action research methodology^{13,14} and the practice based research commitment^{16,18,24,34,35} ensure that the specialist pharmacist practitioner engages in lifelong learning,²⁸ to deliver a high standard of safe patient care.

CASE STUDY

The work of the medication management clinic is illustrated by a case study. The patient details are presented in Panel 3 (p236), and the medication review is presented in Panel 4 (p237).

FURTHER DEVELOPMENT

Newly designed patient services are currently being established by many primary care organisations, to be delivered by general practitioners with special interests. The ideology behind these specialist practitioners was first proposed in the NHS plan (2000) for modernising the health service in the UK. Subsequently the idea of nurses and other health professionals offering specialist services has been suggested — the generic title of practitioners with a special interest is increasingly being used.²⁴ Pharmacist involvement in the specialist practitioner role has been advocated for managing anticoagulant patient services,³⁶ but this service is at the early stages of development.

Further expansion of the menopause and osteoporosis medication management clinic service, with the specialist pharmacist operating these clinics within primary care has been considered (Panel 1, p232, Panel 5, p237). This postulates the development of the specialist or consultant pharmacist role.⁵ The teaching primary care trust status³⁷ facilitates the setting up of portfolio career health professionals, who combine clinical practice, multidisciplinary teaching and training and a research and development commitment to enhance professional practice and delivery of patient care. Job satisfaction should also help improve recruitment and retention capacity of

Table 1: Patient acceptance of specialist menopause pharmacist service

Patient satisfaction level with clinic	Group 1 (study group) — consultation with pharmacist	Group 2 (control group) — did not see pharmacist
Not answered	1.9%	9.6%
Excellent	35.2%	25.0%
Very good/good	53.7%	53.8%
Average	7.4%	9.6%
Poor	1.9%	1.9%

Patients attending clinic over a three month period, between September and November 1997, were surveyed for this questionnaire (n = 112; response rate 70 per cent).¹⁵ In the 1997 questionnaire, designed to assess patient satisfaction with the service provided, 89 per cent of patients who saw the pharmacist stated that the care received within the multidisciplinary clinic setting was good or excellent. Ten per cent more patients indicated that the care received was excellent in comparison with the patient group who did not see the pharmacist. Having demonstrated patient acceptability of the menopause medication management clinic service, this service delivery model has been successfully transferred to the bone metabolic unit with the specialist pharmacist now running dedicated osteoporosis medication management clinics.

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experienced health professionals within primary care. Within this model of practice, affiliation with the consultant teams at the local hospital provides for ongoing competence and continuing professional development. The specialist or consultant pharmacist is in addition, in the ideal position to act as the professional link between the secondary and primary care clinical teams. Because this service is primary care based, additional advantages include improved access and additional choice for patients requiring advice on the use of medicines.⁶

Regular medication reviews are a value added service, especially for chronic disease management, and management of elderly patients on multiple therapy.^{1,2} The establishment of the consultant pharmacist model, with this practitioner with a special interest working within primary care and affiliated with a specialist secondary care unit, can offer patient benefits to include:

- Medication review service provided by a generalist pharmacist practitioner using specialist skills⁵
- Holistic care to ensure appropriate medicines usage, with informed patient decision making, using patient partnership/concordance approach^{7,8}
- Redesign and modernisation of services^{1,28}
- Improved quality of services with teaching and training commitment, and using multidisciplinary team working and skill mix within primary care^{4,28}
- Assisting development within clinical governance frameworks of community pharmacy services, identified as an under used health professional resource^{6,12,28,29,31,38}
- Development of community facilities, with the fitting of services around people's needs^{1,2,6}
- More responsive services, provided closer to the patient^{1,2,6}
- Managing demand to meet access needs⁶
- Closer working and liaison between secondary and primary care sectors^{4,6}
- Ongoing practice-based research and development⁴
- Increased job satisfaction for health professionals with impact on recruitment and retention^{4,37}

The pharmaceutical care model^{13,39} proposes that the pharmacist has a patient caseload and provides a medication review service, with responsibility for monitoring and management of patients. This practitioner would, in addition, take responsibility for patient health outcomes. The provision of pharmaceutical care can be facilitated by the infrastructure that the pharmacist practitioner with a special interest would practise within.⁵ It is important to note that the practitioner with a special interest has a clinical commitment, but also works at the

Panel 3: Patient case study

Mrs B A 71-year-old patient. Neatly dressed. Marked kyphosis (dowager's hump). Almost totally blind, due to congenital rod cone degeneration. Significant hearing loss, has had stapedectomy (the introduction of a prosthesis into the ear to improve hearing) for otosclerosis (a growth of bone in the ear that develops around the stapes, fixing it in place so that it will not vibrate properly) and wears hearing aids. Occasionally uses zimmer frame. Carer is Mr B, her 73-year-old husband. The couple live on their own, in adapted home supported by social services, and they stated that they are receiving good health care from their GP. Limited mobility. Mrs B active in the house, but does not like walking outside, as afraid of falling. Previous history of fractures, including proximal phalanges of left fourth and fifth toes in 1986 after a fall and clavicle and rib fractures after a road traffic accident in 1989. Diagnosis of osteomalacia and osteoporosis. Orthopaedic team reported degenerative cervical spinal changes after X-ray investigation in 1991.

Cross-referred Cross-referred to the osteoporosis medication management clinic by consultant. One hour appointment.

Mrs B has been attending the metabolic bone disorders specialist clinic since 1996. Has had three Dual Energy Xray Absorptiometry (DEXA) scans in 1998, 1999 and 2003 which show marginal maintenance of bone mineral density (BMD), but not the improvement that would be expected for patients on powerful anti-resorptive agents such as the bisphosphonates. In addition, records show that the patient is also taking HRT. For level three medication review and compliance check.

DEXA scan Osteoporosis was diagnosed by a DEXA scan. In September 2003, the T score (used for diagnosis) for spine L1-L4, left hip (femoral neck) and total hip was -4.57, -3.95 and -3.29, respectively (WHO definition of osteoporosis is a T score of -2.5 or lower). The Z score (age matched patient score) was -2.42, -1.63 and -1.60, respectively. The BMD was in the osteoporotic range. No significant change was found in BMD since previous scan in October 1999.

Medication review A level three medication review for Mrs B is described in Panel 4 (p237).

Follow-up Management plan agreed with Mrs B. Follow-up appointment in six months.

Request from Mr B Asked for review of his medicines as well, as he had some questions on his blood pressure drugs. Although Mr B was informed that his GP would be happy to do this, it was his wish that his medicines be reviewed when attending with Mrs B at the next appointment. Agreed that the repeat prescription counterfoils listing all medicines prescribed, for both husband and wife would be brought in at follow-up appointment. Mr B understood that he was not a clinic patient as he had not been cross-referred to clinic.

Management plan Mrs B to stay off HRT, take the calcium and vitamin D supplement regularly (chewed), and the Fosamax once weekly preparation appropriately. In addition, to undertake simple stretching exercises. Did not want to consider walking short distances outside as weight bearing exercise, as comfortable only moving around within home environment. Refused physiotherapy cross-referral for simple weight bearing exercise advice, as found it difficult to attend for frequent hospital visits.

Follow-up appointment Half-hour clinic appointment in April 2004. Mrs B taking calcium and vitamin D supplement regularly, Fosamax once weekly, as per strict routine advised. Other medication changes included GP prescription for paracetamol, with reduction of co-dydramol dose to one to two tablets in the morning, to help complaint of constipation. Also now using both Anusol cream and suppositories. Discussed increasing fibre, fruit and vegetable intake as lifestyle interventions.

Discharged back to GP care GP to re-refer for repeat DEXA scan in three years' time provided patient continues on Fosamax prescription. Otherwise minimum bone sparing prescription to be calcium and vitamin D supplement, with lifestyle interventions as acceptable. Mrs B could also access primary care trust funded falls clinic service for further support (referral criteria: on more than four medicines, afraid of falling, osteoporosis).

Mr B Reviewed Mr B's list of medicines as part of a level zero or level one medication review. Mr B had been diagnosed with osteoporosis, hypertension and colitis. Mr B wanted to confirm the indication for treatment, and receive advice to ensure efficacious use of medication. Over-the-counter purchased medicines and lifestyle interventions were also discussed.

Panel 4: Case study — medication review

Current medication

On “no bleed” hormone replacement therapy. Used for approximately seven years

Calcium and vitamin D supplement

Fosamax 70 mg once weekly. Patient taking bisphosphonate class prescription since 1995 or 1998

Painkillers for back, shoulder and neck pains

Anusol cream

Pharmaceutical care issues (All medicines being taken, prescribed or purchased, checked for indication, safety, efficacy, compliance/concordance and cost)

Indication for HRT — advised to start HRT for bones/osteoporosis in 1996 (while osteomalacia being corrected, before decision to initiate bisphosphonates). Advised to discontinue HRT in line with current evidence base. Discussed possible re-presentation of vasomotor symptoms, which should settle with time. Patient then admitted having stopped a month ago as husband had been ill and she was not being troubled by symptoms. Agreed that HRT would now not be taken.

Indication — “for bones and pain”, as advised by consultant and GP. Mr B stated that wife took the supplement regularly, but wife said she missed doses. Discussed importance of taking this supplement on regular basis, as often after 70 plus age, this could be minimum bone sparing therapy prescribed for osteoporosis. As patient was a strict vegetarian with osteomalacia, bone biochemistry including vitamin D levels were ordered. (Result in four weeks: vitamin D deficiency.) Clinically important that nutritional deficiencies, especially calcium and vitamin D, are corrected before a bisphosphonate is prescribed, to avoid hypocalcaemia. Bisphosphonates have also been shown to be ineffective in the context of vitamin D deficiency.

Previously patient has been on Didronel PMO; changed to the daily Fosamax formulation and now on the weekly preparation, which was started in July 2001. Indication — for bones/osteoporosis. When questioned on how the bisphosphonate was taken, both husband and wife were aware of advice to take in fasting state, with water (confirmed being counselled by GP, practice nurse, community pharmacist and specialist clinic). However, Mr B had osteoporosis as well, and was also taking the Fosamax once weekly preparation. Because of colitis he had decided to take his Fosamax after food to reduce gastrointestinal side effects, and advised his wife to do the same. After discussion, including simplified explanation of importance of strict routine with bisphosphonates, to ensure gastrointestinal absorption and subsequent anti-resorptive activity, Mr B indicated understanding that both he and Mrs B were not gaining any benefit from their bisphosphonate prescription, due to taking the medicines incorrectly. Agreed that both would now take bisphosphonate as advised. If gastrointestinal side effects were unbearable they could either rediscuss with their GP or at next appointment at medication management clinic. An option could be to discontinue bisphosphonate prescription, with calcium and vitamin D supplement and lifestyle interventions, and falls prevention advice, as Mrs B’s ongoing osteoporosis management plan.

Discussed importance of not exceeding maximum paracetamol dose of eight tablets per day. Patient taking co-dydramol (prescribed one up to three times a day) and paracetamol (over-the-counter purchase)

Applied as necessary, for haemorrhoids

Panel 5: Proposed primary care trust specialist/consultant pharmacist role

Remit of the pharmacist practitioner with a special interest:

- Multidisciplinary working, at strategic level, to design services and define practice to benefit the local health economy
- Portfolio career structure: service delivery/clinical post, including teaching, research and development
- Working within a learning and sharing culture and role
- Provision of additional patient care — medicines management clinic service
- Service delivery using patient partnership (concordance) approach

strategic level to improve patient services across the local health economy.⁴⁵ Depending on mix and complexity of patient caseload, and with appropriate training and qualification, this practitioner would work to provide holistic patient care. This would be accomplished by:

- Empowering patients with evidence-based information, working within public health determinants to provide lifestyle advice and making pharmaceutical interventions to improve medicine taking. At the basic level an example would be advising a change in prescribed or purchased formulations to improve patient compliance with treatment, or after identifying side effects or drug interactions
- Having a case load as a supplementary prescriber, where patients with chronic diseases such as osteoporosis or cardiovascular diseases would be managed. This would involve managing patients within clearly defined clinical management plans, with delegation of monitoring and prescribing responsibility from a medical independent prescriber after diagnosis, and where joint reviews would be undertaken, ideally on an annual basis.²³ The clinical management plans would identify the guidelines against which care is to be provided. These could be international, national such as NSF or National Institute for Clinical Excellence guidance, or locally developed guidelines.²³ Customisation of prescribing for patients would include selection of appropriate drug, dose, frequency, route and duration of administration.

● Building on supplementary prescribing practice,²³ and acting as an independent prescriber for appropriately identified patients, once the legal framework is in place. This would allow for autonomous prescribing decisions, thereby progressing further towards a model facilitating seamless delivery of patient care. Here the pharmacist would ideally work within a collaborative, multidisciplinary health professional team infrastructure with good interface liaison in place, and within individual competency. The pharmacist would manage patients on an ongoing basis, and take responsibility for patient outcomes. Independent prescribing rights would allow for greater flexibility, to manage both multiple diagnoses and new presentations as long as this is within the competency of the pharmacist.

SUMMARY

In conclusion, the development of the model of a pharmacist practitioner with a special interest in osteoporosis offers the opportunity to provide patients with the total package of pharmaceutical care.^{3,39} Management of chronic diseases is enhanced by undertaking level three medication reviews, where interventions to improve patient care outcomes are informed by multidisciplinary working and specialist, clinically oriented skills. Prescribing would be a normal part of professional practice for the pharmacist practitioner with a special interest. Combining both practitioner and strategic functions, this role would contribute positively to improve the local health economy. Strategic functions would include, among others, therapeutic guideline development, a supporting health professional link-line, a teaching and training commitment and practice-based research.

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