

Implementing Nurse Practitioner Prescribing Consultation Document

July 2005

Preface

The Ministry of Health is undertaking consultation on various aspects of a proposal to extend prescribing rights to appropriately qualified nurse practitioners. This consultation document builds on an earlier consultation document released by the Nursing Council of New Zealand in April 2005.

Following that consultation the document has been amended to include additional material on:

- the criteria used to determine exclusions to the lists of medicines that nurse practitioner prescribers will be able to prescribe
- how nurse practitioner prescribers will be monitored
- case studies to provide practical examples of nurse practitioner prescriber training, how prescribing will impact on nurse practitioners' practice and how prescribing by nurse practitioners will impact on health care teams.

The Ministry would particularly appreciate comment on these sections of the document and questions have been placed throughout the document to guide comment. Submissions on other aspects of the proposal are also welcome.

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no later than 26 August 2005

no extensions can be given.

Please note that all correspondence and submissions on this matter may be the subject of a request under the Official Information Act 1982. If there is any part of your correspondence that you consider should properly be withheld under the Act, please include comment to that effect and give reasons why you would want it withheld.

Acknowledgements

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- Marion Clark, CEO
- Barry Ayling, Manager, Registration
- Vincent Bailey, Nurse Advisor

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1 Executive Summary

This document presents an overview of nurse practitioner prescribing, including a framework for ensuring competence and public safety; summarises the submissions presented to the Nursing Council during consultation on an earlier version of this document; and recommends a list of exclusions from the pharmaceutical schedule for use by prescribing nurse practitioners (Appendices I & II).

In 1999, the Medicines Act 1987 was amended to enable other practitioners to prescribe. In 2001, Government, through regulations, enabled nurses practising in aged care and child health to prescribe (Medicines Amendment Regulations 2001 – 2001/230 and 2001/232). The regulations listed formularies of medications that these authorised nurses could prescribe. These were followed by gazette notices detailing the Nursing Council's education and monitoring requirements for prescribing medicines (Designated Prescriber: Nurses Practising in Child Family Health and Nurses Practising in Aged Care) Notice 2002¹ (Appendix IV).

There is currently one child health nurse practitioner approved for prescribing.

In September 2004, the Health Practitioners Competence Assurance Act 2003 (HPCA Act) was enacted. Under this Act, the Nursing Council of New Zealand has gazetted a scope of practice and qualifications for nurse practitioners² (Appendix V). It is now proposed that there should be new medicine regulations to reflect the scope of practice as defined by the HPCA Act 2003. The proposed regulations will only contain one broad scope, that of nurse practitioner, and the Nursing Council of New Zealand will administer the areas of practice in which individual nurse practitioners will be able to prescribe (for example, aged care, child health, sexual and reproductive health, primary health, and so on).

This model is similar to that which has been successful in ensuring safety for midwifery prescribing. Restrictions to the medications that an individual nurse practitioner can access is identified through a description of their clinical area of practice and by authorisation to prescribe included on their annual practising certificate. These set conditions limiting prescribing to the nurse practitioner's approved clinical area of practice rather than a specific schedule of medications. Existing Medicines Regulations also restrict prescribing to the treatment of patients under the prescriber's care (Medicines Regulations 1984).

This proposal is based on previous decisions to allow nurse practitioners to prescribe. Some classes of nurse practitioner are currently allowed to prescribe. This proposal extends that to all nurse practitioners but with the individual nurse practitioner's prescribing limited as described above. The nurse practitioner scope of practice, including prescribing, has been widely consulted on and was gazetted in September 2004 with the qualifications required for registration in this scope of practice.

This proposal provides a historical overview of the previous work and consultation on the role of nurse practitioners. It provides a context for the proposal in a description of the scope of practice and regulatory framework envisaged. It outlines the educational preparation for prescribing nurse practitioners with examples from two of the five currently approved clinical masters programmes of both the theoretical and clinical components of prescribing (Appendices IX & X).

¹ Notice 6045, *New Zealand Gazette*, 7/11/2002, No 163, p.4105 & Notice 6046, *New Zealand Gazette*, 7/11/2002, No 163, p.4106

² Supplement to *New Zealand Gazette*, 15/9/04, No 120, p.2059.

It is important to note that the HPCA Act provides mechanisms to ensure ongoing competency. The proposal describes these measures and how the Nursing Council will use these mechanisms, and others, to monitor the implementation of prescribing closely to ensure public safety. This monitoring will include re-certification and auditing of all nurse prescribers, at least over the first few years, at the time the annual practising certificate is renewed. It is expected that nurse practitioners will enrol in the established Best Practice Advocacy Service (BPAC) prescribing exercises, participate in multi-disciplinary protected quality assurance activities and development and maintenance of clinical guidelines, including prescribing. Nurse practitioners are also expected to practise collaboratively.

Case studies are provided from nurse practitioners in practice to demonstrate how a prescriber will prescribe in practice and the collaborative relationships in place between nurse practitioners and other health practitioners.

It is proposed that the new Medicines Regulations will include the regulation of a schedule of both medications from Schedule 1 of the Medicines Regulations, 1984 and Schedules 1-4, Misuse of Drugs Act, 1975 from which nurse practitioners will be able to access medications. This consultation document presents exclusion schedules derived from the schedules related to both Acts. The document also sets out the criteria for selection of exclusions, which was used to derive the schedules.

In New Zealand currently only nurse practitioners with scopes of practice in aged care and child health can apply for authorisation to prescribe. However, nurses have been prescribing for years in other countries and there is a significant body of international evidence on the safety, effectiveness and cost effectiveness of nurse prescribing. The Nursing Council and the Ministry³ have both extensively reviewed the international literature and the most significant studies are referenced in the bibliography presented in Appendix III.

In April 2005 the Nursing Council of New Zealand first consulted the health sector on its proposal for a schedule of medicines to be accessible by prescribing nurse practitioners but constrained by the Nursing Council by conditions on their individual scopes of practice. That consultation followed previous consultation on the nurse practitioner in New Zealand, nurse prescribing, and most recently, scopes of practice, as required by the Health Practitioners Competence Assurance Act 2003 (See Appendix VI for previous consultation documents and decisions regarding nurse practitioners, and nurse prescribing). The submissions on the April consultation document were reviewed and the proposal was subsequently amended to its current form. The submissions are summarised and presented in this document.

The Ministry of Health now seeks further submissions with a particular focus on the criteria for exclusions, the exclusion lists and how the criteria have been applied to each of the excluded medicines. Submitters are also invited to include comments on any other aspect of the proposal.

1.1 Recommendations

Under the proposal:

- (a) Nurse practitioner prescribers will be given access to all medicines on schedule 1 of the Medicines Regulations 1984 and schedules 1 to 4 of the Misuse of Drugs Act 1975 with the exception of those medicines on the exclusion lists as detailed in Appendix I and Appendix II of this document. The Nursing Council will administer this access by authorising the individual nurse practitioners to prescribe medications from these schedules but limiting prescribing by conditions on their annual practising certificate to their defined clinical areas of practice.

³ Ministry of Health, 2002a, *Nurse Practitioners in New Zealand*, Wellington

The Nursing Council is mandated to do this under section 22 (1) of the Health Practitioners Competence Assurance Act (2003);

- (b) The Government will repeal the provisions in the Medicines Amendment Regulations 2001 ref. 2001/232 for designated prescriber nurses to prescribe medicines from Schedule Part 1A – ‘*Prescription medicines nurses practising in aged care may be authorised to prescribe*’, and Part 1B – ‘*Prescription medicines nurses practising in child family health may be authorised to prescribe*’ and will replace them with the new schedule ‘*Prescription medicines nurse practitioners may be authorised to prescribe*’ (full formulary available in a separate document).
- (c) The Government will repeal the provisions in the Medicines (Designated Prescriber: Nurses Practising in Aged Care and Child Family Health) Regulations 2001 ref. 2001/230 and will replace them with similar provisions for nurse practitioners: Medicines (Designated Prescriber: Nurse Practitioners) Regulations.

2 Historical description of development and consultation of nurse practitioner prescribing

As early as 1993, Government started examining the feasibility of legislating to enable nurses to prescribe following an analysis of all current legislation to determine barriers to workforce utilisation. A report was commissioned from Dr John Shaw, Professor of Pharmacy, Otago University (now University of Auckland) in 1994. In 1997 the Ministry of Health (Ministry) developed a discussion document on extending prescribing to nurses and distributed it widely for consultation.⁴

In 1999, Government called for submissions on the amendment to the Medicines Act 1981 to allow designated prescribers (other than medical practitioners, dentists, and midwives) to prescribe. Many organisations and individuals submitted to the Health Select Committee on the proposed legislative changes. The legislation enabling designated prescribers to prescribe under regulations was passed in October 1999.

Over 1999 and 2000 the Ministry established multidisciplinary working parties to develop frameworks for nurses working in child health and aged care to prescribe. The frameworks included educational and practical requirements and formularies of medications. The Ministry published a discussion document on these two areas of practice and consulted fully. The regulations allowing prescribing in child family health and aged care were finally passed in September 2001.

Over the same time, the Nursing Council of New Zealand (Council) established an expert working party (including pharmacy and medical representatives) to develop competencies and standards for education programmes for prescribing. Council consulted on the draft competencies and standards. The standards and monitoring requirements were gazetted in November 2002.

During 2001 Council also established groups of clinical nursing specialists in a range of areas of practice to begin developing specific submissions and schedules of medications for applications for prescribing. The work of these groups led the Council to decide that nurse practitioners should be excluded from prescribing certain classes of medicine (see section 5.1) and forms the basis for the exclusion lists appended to this report (Appendices I & II). Sexual and reproductive health nurses, supported by Council, developed and consulted widely on a draft proposal including schedules of medications. In April 2002 Council

⁴ Ministry of Health (1997) *Draft discussion document: extending limited prescribing rights to registered nurses*. Wellington

presented a comprehensive proposal to Government, through the New Prescribers Advisory Committee (NPAC) on prescribing for sexual and reproductive health nurses that included an analysis of the international research, an analysis of submissions and strong letter of support from the Chairperson of the College of Sexual Health Medicine.

This proposal was accepted by NPAC, which recommended to the Minister of Health that prescribing be extended to sexual and reproductive health nurses and, further, that nurses authorised to prescribe in future have access to the open medicine schedule.

Concurrently, Council had developed a proposal to change the approach to regulating nurse prescribing to facilitate the process. The key point was to allow for nurse practitioner prescribing and remove the need for regulated schedules of medicines. This submission was presented to the Minister of Health in September 2002.

Government agreed to extend prescribing to sexual and reproductive health nurses in November 2002. This decision was not implemented because it was intended to replace the regulations enabling nurses in child health and aged care to prescribe with a move to nurse practitioner prescribing as proposed in this document.

In early 2004 Council consulted broadly on its scopes of practice under s14 of the Health Practitioners Competence Assurance Act 2003 (HPCA Act). In its discussion document, Council defined a scope of practice for *Nurse Practitioner* that included prescribing and the qualifications necessary for registration in this scope and prescribing. The consultation document was distributed very widely. 133 submissions (61 organisations or groups and 73 individuals) commented on the nurse practitioner scope with prescribing and/or qualifications required.

Summary of submissions on nurse practitioner scope of practice under the HPCA Act

The consultation demonstrated widespread support for the nurse practitioner scope of practice with only one organisation not supporting regulating a separate scope for advanced practitioners. A small number of submissions felt that the definition described the practice of many expert nurses not just nurse practitioners with a suggestion that a separate scope of practice be developed for nurses who were experienced but did not meet the criteria for registration as nurse practitioners. One submission considered that the scope encroached on medical practitioners' territory.

Six submissions considered that all nurse practitioners should prescribe and there were several suggestions for minor wording changes in the scope description.

There was general support for the qualifications although a small number thought a clinical masters degree was either too narrow or not necessary and one submission suggested that postgraduate diploma or equivalent was sufficient.

There was general support for the approach of identifying a broad scope with the use of conditions under s22 of the HPCA Act for restricting practice to specified areas except for one medical body that wanted "specific areas" to be specified and a couple which wanted anaesthesia to be excluded. There was also concern expressed about the potential relationship between nurse practitioners in obstetrics and the midwifery profession. The Health and Disability Commissioner particularly supported the Council's proposed nurse practitioner scope of practice and framework for regulating it.

I consider the Council's proposal to place safeguards on the nurse practitioner scope, including conditions that nurse practitioners practice (and prescribe) within a specific area of practice that will be denoted on their annual practising

certificate and registration paper to be sensible. This will assist employers to ensure that nurses practise in areas in which they are appropriately qualified and skilled, and provide consumers with services most appropriate to their needs.”
(Health and Disability Commissioner)

In early 2004, the Ministry consulted on changes to the regulatory framework to enable designated prescribers, including nurse practitioners, to prescribe with access to the open schedule of medications. The proposed changes did not proceed as they were not able to be implemented under the Medicines Act 1985.

Following this, the Council developed a proposal to allow nurse practitioners to become designated prescribers including a schedule of exclusions and distributed it for consultation to a range of organisations in April 2005. Fifty-two submissions were received and analysed and in June 2005 a proposal was submitted to NPAC. That document has now been redrafted following feedback and further consultation is being undertaken.

3 Definition of the nurse practitioner

Nurse practitioners⁵ are:

‘expert nurses who work within a specific area of practice incorporating advanced knowledge and skills. They practise both independently and in collaboration with other health care professionals to promote health, prevent disease and to diagnose, assess, treat and manage people’s health needs. They provide a wide range of assessment and treatment interventions, including differential diagnoses, ordering, conducting and interpreting diagnostic and laboratory tests and administering therapies for the management of potential or actual health needs. They work in partnership with individuals, families, whānau and communities across a range of settings. Nurse practitioners may choose to prescribe medicines within their specific area of practice. Nurse practitioners also demonstrate leadership as consultants, educators, managers and researchers and actively participate in professional activities, and local and national policy development’.

The Nursing Council of New Zealand competencies for nurse practitioners describe the skills, knowledge and activities of nurse practitioners (New Zealand Gazette, 15th September 2004, Issue No. 120, page 2959)

Unlike nurses whose registration allows them to work within a broad generic area of practice, each individual nurse practitioner defines a single specific clinical area when they apply for registration. For example, a nurse practitioner may choose to define her/his area of practice as mental health, palliative care or primary health care. This special area of practice is detailed as a condition on the scope of practice under section 22 (1) of the HPCA Act, and the nurse practitioner will only be able to prescribe within her/his clinical area of practice.

Each nurse practitioner is required to undergo a rigorous application process before being granted such status by the Council (described in Appendix VIII). A nurse practitioner is expected to demonstrate extensive depth and breadth of knowledge and skill relating to the practice of nursing. However, a nurse practitioner is only registered to work within her/his defined area of practice as specified by the condition on the scope of practice under section 22(1) of the HPCA Act. The nurse practitioner must demonstrate that her/his knowledge and skills are directly applicable to the selected area. This significantly minimises any risks to

⁵ Note that the term “Nurse Practitioner” is protected under section 7 of the Health Practitioners Competence Assurance Act 2003.

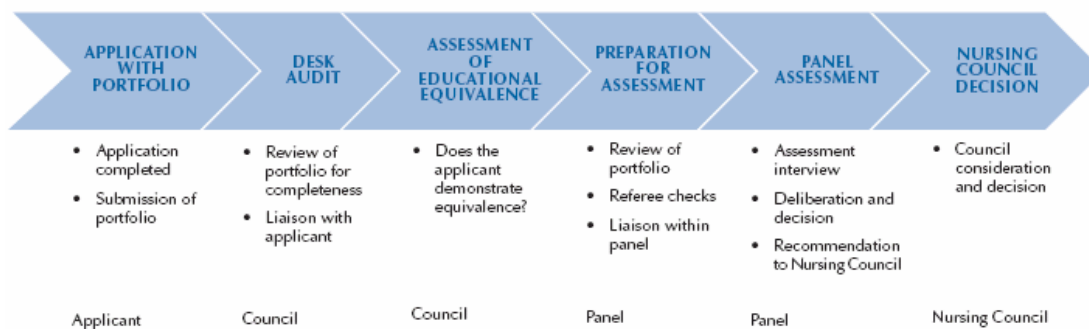
public safety, as it allows the boundaries of the area of practice to be defined precisely, and requires the prospective nurse practitioner to demonstrate that her/his education and skills are suited specifically to this particular area of practice. While some practice areas may be broader than others, a nurse practitioner in such an area will be required to display a commensurately wider range of skills (at the same advanced level) than one with a tightly focused area. A summary of the competencies that every nurse prescriber must meet is detailed in Appendix VII.

For registration of a nurse practitioner prescriber, an individual practitioner is required to demonstrate that she/he has the skills and knowledge necessary to prescribe and to do so in a safe and competent manner. A nurse practitioner who prescribes must have completed the approved educational requirements and have demonstrated competence and the ability to prescribe safely.

The registration of a nurse practitioner scope of practice with an approved clinical area of practice and authorisation for prescribing entered against that registration is awarded after an applicant has undertaken an extensive assessment process.

The process is outlined in the diagram below and detail is provided in Appendix VIII.

Figure 1. Overview of the nurse practitioner assessment process.



3.1 Additional educational requirements for nurse practitioner prescribers

The Council considers that nurse practitioners who are approved by Council as prescribers⁶ are well prepared to safely fulfil the prescribing function having completed a rigorous academic and clinical preparation which consists of at least four years previous experience in a specialty area of practice and successful completion of an approved clinically-focused masters degree before becoming nurse practitioners. The required curriculum is detailed in the Gazette Notice (Appendix IV). It includes:

- advanced health assessment
- physiology and pathophysiology
- pharmacology, pharmacodynamics and pharmacokinetics
- clinical decision making skills including differential diagnosis
- a prescribing practicum that is supervised in clinical practice by a registered New Zealand prescriber.

⁶ There are currently only seventeen nurse practitioners in New Zealand and not all of them will want to prescribe or meet the Council's criteria for prescribing.

Examples of two approved prescribing programmes with theory and practical components are provided in Appendices IX & X.

4 Monitoring nurse practitioner prescribers

The Council, in its role as the approval body for nursing education programmes in New Zealand, ensures that clinical masters programmes for nurse practitioner prescribers give sufficient coverage to required aspects of the prescribing process (refer to Appendices IV, IX & X).

Once a nurse's application for change in the scope of practice to nurse practitioner has been approved, a nurse practitioner with prescribing rights will have a condition on her/his scope of practice under section 22(3) of the HPCA Act which will limit the practice to their approved clinical area of practice and an authorisation for prescribing. The scope of practice, conditions (clinical area of practice) and authorisation for prescribing will be entered on her/his registration details, be printed on the practising certificate and on the public register. Each year, the nurse practitioner will be required to provide evidence of ongoing competency before being issued an annual practising certificate. This evidence includes at least 400 hours of ongoing nursing practice aggregated over a five-year period completed within the five years immediately prior to application for a practising certificate; a declaration that the nurse practitioner meets the nurse practitioner competencies; and at least 80 hours per year of relevant professional development aggregated over a five year period immediately prior to application for a practising certificate.⁷ Nurse practitioner prescribers will be audited annually to ensure that their competency is maintained prior to being re-certified.

Each nurse practitioner is required to remain conversant with the latest research and clinical developments in her/his area of practice, and for a prescribing nurse practitioner, this includes an up to date knowledge of the use of relevant medications. This will be assessed during the annual assessment conducted by the Council.

The usage of prescription medicines by prescribing nurse practitioners will also be subject to the same central monitoring procedures as other health professionals with prescribing rights, such as midwives and medical professionals. Nurse practitioners will be encouraged to enrol in the established Best Practice Advocacy Service (BPAC) prescribing exercises; and prescribe from software that captures both diagnostic and prescribing data. The prescriber will be expected to use peer and self-assessment analysis of prescribing patterns, participate in inter-disciplinary protected quality assurance activities related to prescribing and to develop and implement appropriate monitoring processes.

Patient safety around medicines management requires collaboration between health practitioners. Pharmacists have an important role to play in ensuring the safe use of medicines as part of their every day responsibility is to assess the suitability of prescriptions for any given patient. The Council and relevant pharmaceutical organisations, including the Pharmacy Council, will be maintaining regular communication with regard to areas of practice and approved medications for nurse practitioner prescribers.

4.1 Ensuring safety

The HPCA Act strengthens Council's role in monitoring to ensure ongoing competence. How the Council will ensure ongoing competence for prescribing nurse practitioners is outlined

⁷ Note these requirements were gazetted in 2002. Since then the requirements have been changed for non-prescribing nurses and Council plans to review the requirements for re-certification when (and if) the regulations are changed to allow nurse practitioner prescribing.

above. The Act also contains provisions to enable the Council to review competency of any nurse either when Council receives a notification that practice is below standard (section 34) or at any time (section 36). Council expects to use these provisions. If Council receives such notification, for example from the Health and Disability Commissioner or from a pharmacist reporting that a nurse practitioner had prescribed outside of her/his authorisation, then Council would make further enquiry and institute a competence review if necessary. Council would envisage seeking advice from other prescribers, such as medical practitioners, in undertaking any such competence reviews.

The HPCA Act also contains strong sanctions to prevent health practitioners from practising outside their scopes of practice. A nurse practitioner who is found to prescribe outside the boundaries of their annual practising certificate could be investigated and could be prosecuted before the Health Practitioners Disciplinary Tribunal under the provisions of section 100 of the Act.

Question One:

Do you think that the proposed monitoring of Nurse Practitioner prescribers is adequate? If not please outline why, suggest how the monitoring could be improved, and provide evidence to support your comments.

5 The nurse practitioner prescriber formulary

The Council reviewed a number of models for the establishment of a nurse practitioner prescriber formulary.

The proposal is that current specific schedules for child health and aged care are repealed and replaced with a nurse practitioner schedule which prescribing nurse practitioners can access. Access to the schedule would be limited to the individual nurse practitioner prescribing only within a clearly defined clinical area of practice specified as a condition on their annual practising certificate. This practice area would thus limit the range of health conditions for which the nurse prescriber could prescribe. The Council has developed exclusion lists (one for the general medicine schedule and one for controlled medicines) of medicines that are deemed to be inappropriate for nurse prescribing (see Appendices I and II). Council has inclusion schedules available on request. The regulations will contain schedules from which the nurse practitioner may prescribe.

5.1 Criteria for developing the exclusion lists

The two exclusion lists of medicines developed by the Council are based on a number of factors listed below. Assistance was sought on the development of the list from consultant pharmacists and current nurse practitioners:

- Substances for diagnostic/nuclear medicine and radiological purposes have been excluded on the basis of a combination of patient safety and/or a perceived lack of need for prescribing nurse practitioners to access these substances;
- After consultation with experienced nurses in a range of clinical areas the Council excluded some groups of medicines. The following substances were deemed to be better prescribed by a medical specialist:
 - ♦ Metabolic disorder agents

- ♦ Trophic hormones
 - ♦ Other endocrine agents
 - ♦ Chemotherapeutic agents (including alkylating agents, antimetabolites, and other cytotoxic agents)
 - ♦ Endocrine therapies
 - ♦ Immunosuppressants;
- Some substances in the above groups excluded by the Council were, after specialist pharmacist advice, included in the proposed formulary as they either have multiple uses (for example, methotrexate is used for rheumatoid arthritis as well as a cytotoxic agent), or do not have inherent safety issues and it is envisaged that some nurse practitioner prescribers may require access to them;
 - A range of therapies were included on the basis that the nurse practitioner prescriber involved would be working as part of a team in a specialised area. Thus any potential safety issues would be well managed within the environment e.g. more specialised antibiotics, enzyme therapies;
 - Martindale and Pubmed searches have been performed to identify substances that are no longer in use, have been withdrawn, have significant toxicity issues or have only a few citations in Pubmed which indicate that the substance may be experimental in animals or their medical use in humans is unclear. In these cases the decision has erred on the side of caution and these substances have been excluded from the nurse practitioner prescriber's formulary.

Question Two

Are the criteria that were used to derive the exclusions lists appropriate? If you believe the criteria are not appropriate please state why, provide evidence to substantiate any comments and suggest an appropriate alternative.

5.2 Rationale for the proposed nurse practitioner prescriber formulary

Nurse practitioner prescribers are responsible for defining their own areas of practice in their application for registration with the Council. The area of practice is defined and entered as a condition on their scope of practice prior to the nurse practitioner receiving authorisation to prescribe. As a result the classes of medicines to which a prescribing nurse practitioner requires access will vary from practitioner to practitioner. This model is similar to the successful model already in use by midwives. Midwives in New Zealand have prescribing rights within the midwifery scope of practice. There is no defined list of drugs that a midwife may prescribe. Rather, midwives are entitled to prescribe any drugs which may be necessary for a woman and/or baby for whom the midwife is providing care on her/his own responsibility⁸.

This means that midwives may prescribe drugs in pregnancy, labour and birth and up to six weeks after the birth where the woman is having an uneventful experience and where there

⁸ Midwifery Council of New Zealand (retrieved 2005). Pharmacology and prescribing. <http://www.midwiferycouncil.org.nz/main/Registprogs/>

is no reason for consultation or referral to a specialist. There is no specific medicines formulary for midwives.

It is proposed that a similar model can be successfully applied to nurse practitioner prescribers who will be able to prescribe within their clinical area of practice defined by a condition on their scope of practice, and refer patients on to other health care providers where an intervention is required that falls outside their area of practice.

The current method of regulating nurse prescribing by detailing a schedule of medicines for each specific area of practice is extremely cumbersome and has proved unworkable. Nurses practise in a wide range of areas. The regulation of a full schedule for each of these areas is impractical.⁹

The proposed nurse practitioner regulations will apply to all nurse practitioners who are authorised by the Council to prescribe regardless of their areas of practice. Although individual nurse practitioners work within defined areas of practice specified on the register and delineated by conditions and authorisation to prescribe on their annual practising certificates, as a collective they work in a wide range of areas across the health sector. Therefore the list of medicines for nurse practitioners needs to be broad to cover the diversity of roles and clinical areas. However, this does not mean that every nurse practitioner will be able to prescribe every medicine listed on the schedule. An individual nurse practitioner will be required to prescribe only those medicines appropriate to her/his specific clinical area of practice and encouraged to prescribe, where practicable, as part of an inter-disciplinary team.

Nurse practitioners' clinical areas of practice are listed on their annual practising certificates. This information is also publicly available on the Nursing Council website through the registration verification page "register search" (www.nursingcouncil.org.nz). Access to the public register over the Internet will enable pharmacists and members of the public to check the limits of prescribing authorisation of each nurse practitioner if necessary. The development of a web-based register was undertaken following consultation with the pharmaceutical industry relating to extension of prescribing rights.

The overall approach is in line with the NPAC recommendation that:

"A more practical and less administratively complex approach [than previous arrangements] may be that, rather than a prescribed formulary scheduled in the Medicines Regulations 1984, designated prescribers have access to the open Pharmaceutical Schedule. Access equating to the current midwife and dentist access is envisioned". (New Prescribers Advisory Committee 2002, p.3)¹⁰

The Council proposes that the nurse practitioner prescribing regulations define the pharmaceuticals using as its basis the same approach as the Medicines Regulations 1984 (and any subsequent amendments). The Council also widened the schedule to include controlled medicines which are currently regulated under Schedules 1 to 4 of the Misuse of Drugs Act 1974 on the basis of submissions received during the April 2005 consultation process. Thus the list of drugs that can be prescribed by prescribing nurse practitioners is broad, but would be limited by the clinical area of practice condition on individual prescribing nurse practitioner's annual practising certificates.

⁹ As evidenced by the fact that there is only one approved nurse practitioner prescriber and also the fact that prescribing for nurses practising in sexual and reproductive health was approved in 2002 but has yet to be implemented by Cabinet.

¹⁰ New Prescribers Advisory Committee, 2002, *Recommendations to the Minister of Health: Extending limited independent prescribing authority to new groups of registered health practitioners*, Wellington.

The Council has proposed a list of exclusions from the pharmaceutical schedule, updated to include all gazetted medicines until 20 July 2005, and the controlled medicines schedule, which contains medicines that are felt to be inappropriate or not required for nurse prescribing. This exclusion list was derived after consultation with specialist nurses and dialogue with pharmaceutical consultants and is presented in Appendices I and II. It is the Council's view that all other classes of medicines listed in the pharmaceutical schedules of the Medicines Regulations 1984 and the Misuse of Drugs Act 1974 will need to be included in nurse practitioner prescribing regulations.

Other restrictions on the medicines available to the prescribing nurse practitioner may apply in some cases, for example, a restriction or special requirement on the use of a particular medication. However, the general underlying principle of the proposal is that the prescribing nurse practitioner will have access to an extensive formulary, but each individual will be limited by the clinical area of practice condition on her/his annual practising certificate to medicines relevant to that clinical area of practice. As with other prescribers, the nurse practitioner prescriber would be expected to prescribe, where practicable, as part of an interdisciplinary team, to apply appropriate knowledge and skill to the application of their prescribing, ensuring judicious use of medications, and at all times ensuring patient safety within the prescribed treatment regime.

Question Three

Are the proposed exclusion lists appropriate? If you think the proposed exclusion lists are not appropriate, please state why and provide evidence to substantiate any comments.

5.3 Maintenance of the nurse practitioner prescriber formulary

Several submissions to the first consultation expressed concerns about how the schedules would be kept updated. It is envisaged that the schedules will be kept updated through the same processes used for other medication schedules. The role of the Medicines Classification Committee should be expanded to take on this role.

The Medicines Classification Committee is established under section 8 of the Medicines Act 1981. The functions of the Committee as laid down in section 9 of the Medicines Act 1981 are as follows:

- to make recommendations to the Minister in respect of the classification of any medicines as prescription medicines or restricted medicines or pharmacy-only medicines.
- to consider and report to the Minister on such other matters in relation to any of the purposes of the Medicines Act 1981 as may from time to time be referred to it by the Minister.
- to report to the Minister on any matters concerning the classification of medicines and access to medicines by health professionals and the public.

Under section 9 of the Medicines Act 1981 the membership of the Medicines Classification Committee consists of:

- two persons, to be nominated by the New Zealand Medical Association;
- two persons, to be nominated by the Pharmaceutical Society of New Zealand; and

- two persons, being officers of the Department of Health, one of whom shall be appointed as chairman.

Council considers that additions to the schedule for nurse practitioner prescribing fits within the Medicines Classification Committee's terms of reference as laid down in the Medicines Act. The expertise of the membership would ensure that decisions would be safe for the public and such expansion of its role need not be onerous as the mechanism is already there. The Committee could make such decisions as they are considering new medicines or established medicines in the light of new evidence. Any submissions coming from nurse practitioners wanting to extend their prescribing to medications not on the schedule could be submitted to the Medicines Classification Committee for consideration and approval.

6 Extension of prescribing rights to nurse practitioners

Although nurse practitioners are autonomous in their clinical practice and will have independent prescribing responsibility, usually the context within which they practise is interdisciplinary in nature, promoting a collaborative approach to care for their population groups. Furthermore, the expert clinical judgement that nurse practitioners possess ensures that referrals are made to medical or allied health colleagues as the need arises. A common perceived threat of initiating nurse prescribing is that increasing nursing independence will destroy the natural teamwork i.e. be divisive. However, the evidence suggests a completely opposite view, that collaboration is enhanced when it is between team members who have equivalent access to power, status, and information and who share mutual goals.^{11,12}

The role of the nurse practitioner as an independent prescriber in New Zealand is too new to provide comprehensive New Zealand patient safety data. International research, however, has consistently demonstrated the safety of independent nurse prescribing. This data tells us that in the over 35 year history of nurse practitioners there is no reported evidence that nurse practitioner services are detrimental to patient safety and generally shows that nurse prescribing equates well when compared with other prescribing professions.^{13,14,15} A summary of relevant research and bibliography is presented in Appendix III.

Council considers that the implementation of this proposal will allow for improved patient access to health care, improved outcomes, and therefore improved health gain for the people of New Zealand.

6.1 Nurse practitioner prescriber vignettes

Two examples of current nurse practitioners' approaches to prescribing are given below. An unsolicited letter from a specialist physician has also been included to highlight the collaborative nature of the nurse practitioner's practice and the benefits of extending prescribing to nurses.

¹¹ Jones, E.M. (2002). Interprofessional practice – the meaning for nursing in New Zealand. In E. Papps (Ed.), *Nursing in New Zealand: Critical issues, different perspectives* (pp. 138-149). Auckland: Pearson Education.

¹² Soothill, K. Mackay, L. & Webb, C. (1995). *Interprofessional relations in health care*. London, England: Edward Arnold.

¹³ Ministry of Health, (2002). *Nurse Practitioners in New Zealand*. Wellington, New Zealand.

¹⁴ Munding, M. Kane, R.L. Lenz, E. Totten, A.M. Tsai, W.Y. Cleary, P.D. Friedewald, W.T. Siu, A.L. Shelanski, M.L. (2000). Primary care outcomes in patients treated by nurse practitioners or physicians: A randomized trial. *Journal of the American Medical Association*, 238(1), 59-68.

¹⁵ Horrocks, S. Anderson, E. Salisbury, C. (2002). Systematic review of whether nurse practitioners working in primary care can provide equivalent care to doctors. *British Medical Journal*, 324(7341), 819-23.

6.2 Nurse Practitioner (Diabetes and related conditions across the lifespan)

“My specialty area of practice is ‘Focused health care: Diabetes and related conditions across the lifespan’. My practice crosses acute/specialist and primary health services and I have 16 years of experience within diabetes as part of the diabetes specialist service team. I practise within the context of a multidisciplinary team, alongside a diabetes specialist physician, obstetrician, paediatrician, other medical practitioners within the hospital, general practitioners, specialist nurses from other specialties and primary health nurses in many different roles. As I am committed to ongoing professional development, after completing 3 years of study to become a registered nurse, I completed a Post Graduate Diploma in Applied Science (with distinction in nursing) (2 years), a Master of Philosophy (with distinction in nursing) (2 years) and a Master of Nursing (with distinction) (2 years). A major component of the Master of Nursing was theoretical and practical clinical preparation for prescribing within my specialty area of practice. This included papers on advanced physiology and pathophysiology; advanced clinical assessment and decision making; pharmacology; and a supervised prescribing practicum. The diabetes specialist physician, obstetrician and paediatrician mentored and supervised me throughout this practicum. This culminated in providing two detailed case studies upon which I was examined by oral viva. All of this occurred alongside my daily clinical practice enabling immediate integration and consolidation of learning. As a nurse practitioner I have pursued the attainment of prescribing rights, as it will enable me to better meet the needs of the population group I serve.

My ongoing development has also included attending and presenting at national and international conferences, attending other relevant courses, teaching on the general practitioner registrar training programme, teaching on the postgraduate master of nursing programme, receiving email updates from Medsafe, weekly case review meetings with the diabetes specialist physician and regular reading of relevant journals and other literature. This year, I have been invited to Yale University, USA as a visiting scholar, and will attend in October. During this time I will meet with a multitude of nurse and medical practitioners to further extend my clinical skills and to gain any information that could be applied in New Zealand.

In general, on a day-to-day basis, my advice is frequently sought from my medical colleagues in both general practice and the hospital setting on appropriate pharmacological management for people with diabetes under their care. Likewise I seek advice from my medical colleagues about clinical matters that are outside my expertise. The nature of diabetes dictates that as clinicians we practice collaboratively to ensure that the person gets the right advice, care and therapies from the people with the right skills in a safe and timely fashion.

The extension of prescribing rights to me as a nurse practitioner will strengthen these collaborative relationships and help us as a team to better meet the needs of our patients. There are also times when the ability for me to provide prescriptions directly will be advantageous. For example, on Friday I saw three people who were potentially disadvantaged due to my inability to prescribe. The first man was referred to me by the diabetes specialist physician for follow up care and education. He had type 1 diabetes and upon assessment it became evident he was having problems with hypoglycaemia, particularly nocturnal hypoglycaemia. I provided him with advice on appropriate adjustment of insulin doses (under standing orders) but he needed a prescription for a GlucaGen (glucagon) hypo kit which I was unable to provide. The next young man was referred to me by his general practitioner. He had type 1 diabetes with poor glycaemic control due to adherence and lifestyle issues. He had a history of not attending his GP and the GP was asking for my help.

Upon assessment, I discovered the blood glucose test strips he had expired 10 months prior and he admitted to not having tested since that time. Furthermore, it was clear he would benefit from a lipid lowering agent and an ace inhibitor (both of which are standard therapies to reduce risk of macro and microvascular complications). However, I had to send this young man back to his GP to obtain a script. I am not confident he will attend. The third person required a script for insulin pen needles; again I could not provide this script. Lastly, a woman with gestational diabetes whom I was following daily between clinic visits with the multidisciplinary high risk pregnancy team, had elevated blood glucose levels and needed to commence insulin therapy. We have detailed guidelines within which we practice and she clearly met the criteria for insulin therapy, but I was unable to write a script. I then had to interrupt the diabetes specialist physician in his clinic to ask him to write a script for this woman, right then”.

6.3 Letter from a Specialist Physician outlining his experience with the above nurse practitioner

“I am writing to support the provision of prescribing rights for nurse practitioners.

I have particular contact with Ms X, Nurse Practitioner, working closely with her in the care of patients with diabetes mellitus. Ms X has had appropriate training in pharmacology and prescribing as well as a wide training and experience in the management of people with diabetes, and I believe would a careful and responsible prescriber. Most would be for non-pharmacological agents such as testing strips, Insulin pen needles and insulin syringes. Others would be for repeat prescriptions for insulin or oral hypoglycaemic agents or other agents commonly used in diabetes such as lipid lowering agents or antihypertensives. Initiation of such agents would be much less common, but I believe her training and her care in clinical practice would mean such prescribing would be appropriate and her prescribing standards would be equal of, and probably superior to the majority of medically qualified prescribers.

If Ms X has prescribing rights, it would certainly significantly improve the efficiency of the Diabetes Team, as well as being of great convenience for patients in obtaining prescription items.

I cannot speak for other nurse practitioners, but if they have similar training to Ms X and similar standards of practice, I see no reason why prescribing rights would have any negative effect on prescribing standards.

Clearly, their prescribing would need to be based on sound clinical practice, appropriate knowledge, ethical principles, recognition of their scopes of practice and good communication with patients and other health providers, just as it needs to be for all prescribers”.

6.4 Nurse Practitioner (Primary Health Care, Wound Care)

“Since I became a Nurse Practitioner (Primary Health Care, Wound Care), I have set up my own business and have a 3 day a week contract with the XX IPA working with, and educating, GPs and Practice Nurses in aspects of wound management. I am also employed as a Senior Lecturer at XX University and do contract work for ACC advising on guidelines and treatment reviews. I am also an advisor to the Health and Disability Commission.

Typical scenario where it would benefit all concerned if I could prescribe.

A 67-year-old patient referred by the GP with varicose eczema and venous ulcer resulting from long standing venous hypertension. GP has prescribed a steroid cream which has not

made any difference to the symptoms. The ulcer itself is 4x5cm on the medial malleolus exudating heavily and slightly offensive, but with no other signs of infection. Patient has full assessment to go into compression bandages, wound swab is taken and a paste bandage applied to the whole leg under compression. At the next visit the swab is back showing a heavy growth of Staph aureus, patient has to return to GP for a prescription for the antibiotics, as I cannot write one. While initially there is some improvement in the eczema, it flares up again within 3 weeks and a short course of strong steroid ointment (such as Dermol 0.5 %) is required daily for 5 days – this is in line with the guideline drawn up by the MCH dermatologist. The GP is contacted to prescribe this for the patient. Initially there was resistance to this from some GPs, and the patient had to try various other prescriptions before getting the Dermol, but this has improved as the GPs have become more familiar with my practice.

Other instances of needing to prescribe include analgesia, especially for patients with arterial pain, waiting referral to vascular surgeons and adjusting drugs which interfere with wound healing, such as steroids and non-steroidal anti-inflammatories. I would only undertake the latter in liaison with the GP or Consultant who had originally prescribed the drug, but following consultation, if I was able to write the prescription while the patient was present, it would be easier for them, especially as many of the patients I see are not very mobile.

GPs refer directly to me via telephone, or on a referral form which is faxed through by them or the practice nurse. Much of my return communication is by fax, but in urgent cases, I telephone the GP, or visit the surgery directly. I also see patients in the surgery with the GP and Practice Nurse when they need seeing urgently and cannot wait for a clinic appointment. I refer patients directly to hospital consultants via outpatients, and in urgent cases have telephoned to speak directly to the consultant. In complex cases I attend OPD with the patient to discuss ongoing management. A copy of the referral letter goes directly to the GP. On the 2 occasions where I have had to admit a patient to ED and have contacted the surgical registrar to arrange this, I have notified the GP on the telephone before phoning the hospital.

7 Review and analysis of submissions

The consultation document ‘*Implementing Nurse Practitioner Prescribing*’ released in April 2005 sought submissions on the proposed schedule of medicines which the nurse practitioner prescriber would have access to within their individual scope of practice. Most of the submissions addressed this issue. Many also commented on issues that were outside of the requested area for consultation.

All the submissions, including late ones, were analysed, with every point recorded and individually considered. A summary of the analysis and how Council has responded to the points raised is presented below.

Fifty-two submissions were received in total. These came from district health boards; PHARMAC; professional nursing organisations; responsible authorities under the HPCA Act; schools/faculties of nursing; other non-nursing professional associations or colleges; groups of nurses; individual directors of nursing; and individual nurses. Submissions were received from both individuals and representatives of organisations. A weighting of replies has not been included in this analysis.

While most supported the extension of prescribing rights to nurse practitioners in the way proposed, a small number, largely from the medical profession, opposed it.

Of the total submissions received, 42 (80.8%) supported and generally endorsed the proposal, 6 (11.5%) were opposed to the proposal and 4 (7.7%) did not state a preference. Of the submissions received, 18 (34.6%) agreed with the nurse practitioner prescriber formulary and 5 (9.6%) were either opposed to it or sought further clarification. The remaining 29 (55.8%) submissions did not make specific comment. The issues raised by those who did not support the formulary centred on concern regarding the preparation of nurse practitioners for prescribing; a desire for dependent prescribing under the overall control of a doctor; and concern about restricting a nurse practitioner to those medications that related to her/his area of practice only.

Council considers that the practicum, supervision and theoretical components of the nurse practitioner preparation, including that completed specifically to prepare to prescribe, develop a broad practical and theoretical knowledge base on all areas relating to medicines and their usage. Restricting the medicines that a nurse practitioner may actually prescribe to those used within the area of practice specified on her/his annual practising certificate does not mean the nurse practitioner is unaware of the broader picture. The clinical viva assessment and review of practice exemplars completed as part of a nurse practitioner applicant's assessment panel interview ensures an in-depth specialist expertise is underpinned by this broad knowledge base and the continuing competence requirements ensure it remains current.

As well as discussing the issues raised in the proposal, many submissions raised other issues around nurse practitioner assessment and prescribing in general. Some also used the process to state their personal views regarding the profession of nursing and their perception of its place in the health setting and were not considered relevant to this analysis. Relevant issues that were raised by several respondents are discussed below.

Fifty percent (26) of the submissions discussed the exclusion list and of those exactly half supported it as presented, and half did not. Issues raised included the need for regulation to be common amongst all health practitioners; that controlled drugs (listed in the Misuse of Drugs Act 1975) were not included within the proposal; the need for a system that enabled prescribing nurse practitioners to apply for exemption to use a medication listed on the exclusion list; and the practicalities of implementing a range of lists of approved medications for prescribing determined by area of practice. One submission wanted specific drugs added to the exclusion list. In the light of these suggestions the Council has amended its proposal to include controlled medicines in the nurse practitioner prescribers formulary. A separated exclusion list was developed using the same criteria given in section 5.1 and is attached to this document in Appendix II.

The Council accepts that there are practical difficulties in maintaining a formulary, however, Council has not changed its approach. Council accepts that the Medicines Act 1985 demands the regulation of a schedule and therefore it is not possible under the current legislation to allow nurse practitioners access to the full open schedule. Council also notes that there is no legal provision for enabling access to medicines on the exclusion list. Council has considered mechanisms for updating the schedule and this is included in this document. Council considered the recommendations for exclusion of specific medications and analysed the international evidence on these. They were not added to the exclusion list as there is strong evidence supporting the safety of nurses' use of them.

About fifteen percent (8) of submissions discussed the area of practice for prescribing nurse practitioners. Concern was raised that the defined area of practice may be too broad to enable adequate monitoring of appropriate prescribing. Equally, concern was raised that the defined area of practice may be too narrow for the prescribing nurse practitioner to address the holistic needs of her/his patient. Council considers that the proposed monitoring and the annual audit of nurse practitioner prescribers will ensure those with broad or narrow areas of practice will prescribe appropriately. The focus on both area of practice and general medication issues during the initial assessment process for registration as a nurse practitioner and the annual ongoing re-accreditation requirements will ensure a nurse practitioner has sufficient knowledge to remain competent regardless of the breadth of their area of practice. Council perceives the nurse practitioner prescriber as someone who works collaboratively as part of the health care team. The nurse practitioner prescribers who do not have the ability to prescribe a required medication due to the restrictions of their defined area of practice (as specified on their annual practising certificate) will use their advanced pharmacological and pharmacokinetic knowledge to make appropriate suggestions to whichever prescriber(s) they collaborate with. Council notes the concerns of these submitters but believe that the proposed framework will adequately monitor nurse practitioner prescribing. Council also notes that the general approach to regulation of nurse practitioners through a broad scope with the area of practice limited to that specified as a condition on their annual practising certificate had been well consulted on in 2004 with the development of scopes of practice and had been supported widely then.

About thirteen percent (7) of submissions discussed the on-going monitoring of prescribing nurse practitioners. Most were supportive of the defined process; however, concern was raised about how a pharmacist would be able to identify which medications were within the area of practice of a given nurse practitioner. Practical suggestions on how to uniquely identify each prescribing nurse practitioner were noted. Council noted that there are unlikely to be large numbers of prescribers and that it now has the nursing register with the registration information around scope of practice, conditions and authorisations accessible to the public and pharmacies through the internet. This will enable pharmacists to check the qualification of the nurse practitioner prescriber if they are concerned. Council also noted that registration numbers are among the data held by HealthPAC and regularly updated. The development of the Health Provider Index and a common provider number may also facilitate easier identification.

About thirteen percent (7) of submissions discussed the 5 year re-endorsement of nurse practitioners for prescribing. All were opposed to the length of the period which was seen as being too long. Some noted this is an additional requirement that no other prescribing health practitioner is required to undergo and felt it was excessive. Council noted these submissions and after further consultation with NPAC has accepted the recommendation that prescribing nurse practitioners undergo an annual audit based on a rolling 5 years of practice. This will be incorporated as part of the annual practising certificate requirements.

About thirteen percent (7) of submissions suggested or recommended the development of clinical guidelines as part of the monitoring process for prescribing nurse practitioners. Council recommends that nurse practitioners practice within the clinical guidelines used by other health professionals but has agreed to work with other regulatory authorities, including the Medical Council, as they develop these.

About eight percent (4) of submissions expressed concern regarding the educational preparation of nurse practitioner prescribers. One submission claimed their preparation was a risk to public safety. It was contended that a nursing masters degree is not sufficient for independent prescribing and that the minimum requirement for prescribing should be a medical degree. No supporting evidence was provided within the submissions to give weight to this argument. Council's own review of the literature can find no research to support this premise. Indeed, nurse prescribing is currently practised in numerous countries around the world, which in itself would seem to contradict the premise that only a medical degree could support prescribing rights. Current research also appears to support nurse practitioner prescribing. As an example, a recent Cochrane systematic review¹⁶ of 16 studies examining the substitution of physicians by nurses in the provision of primary care found that nurses can achieve equivalent health outcomes to medical practitioners.

Council also noted a strong international trend to masters' level preparation for advanced practitioners with the International Council of Nurses' (ICN) recommendation in their recent definition of an advanced practitioner. Consultation currently being undertaken in the United Kingdom by the Medicines and Healthcare Products Regulatory Authority, "consultation on options for the future of independent prescribing by extended formulary nurse prescribers"¹⁷, states that "*available evidence suggests that nurses are capable and careful prescribers who prescribe within their competencies. No public health risks have been identified*". This document looks at extending nurse prescribing rights for the 30,000 nurses currently able to practise some form of prescribing within the United Kingdom.

About ten percent (5) of submissions discussed the panel composition currently used for the initial assessment of nurse practitioners, including those seeking prescribing rights. It was suggested that panels should include a medical practitioner. Council noted that all assessment panels currently included a medical practitioner and that Council intend continuing with this practice, especially in assessment of prescribing competency.

8 Safety and efficiency of nurse practitioner prescribing

It is noted with interest that the United Kingdom is presently undertaking a similar consultation around the issue of nurse prescribing. Limited nurse prescribing has been in place since 1998, and since then has expanded with respect to the conditions nurses can treat and the number of medicines to which they have access. Over 3,000 nurses are qualified to prescribe from the Nurse Prescribers' Extended Formulary for around 80 medical conditions and 180 prescription only medicines, together with all pharmacy and general sales list medicines for these conditions. The extended formulary was introduced in April 2002. In addition to this, 25,000 district nurses and health visitors can already prescribe from a more limited formulary of products for patients in community nursing - the Nurse Prescribers' Formulary for District Nurses and Health Visitors¹⁸.

¹⁶ Laurant M, Reeves D, Hermens R, Braspenning J, Grol R, Sibbald B. (2004). Substitution of doctors by nurses in primary care. *The Cochrane Database of Systematic Reviews* 2004, Issue 4. Art. No.: CD001271.pub2. DOI: 10.1002/14651858.CD001271.pub2

¹⁷ Medicines and Healthcare Products Regulatory Authority (2005). *Consultation on the options for the future of independent prescribing by extended formulary nurse prescribers*. MHRA, ref MLX 320.

¹⁸ Department of Health, UK (2004). *Nurse prescribing powers to be expanded even further*. DOH, Press release, ref: 2004/0141.

The consultation currently being undertaken presents a number of options to extend nurse prescribing even further. These options range from no change beyond that which is currently in place, to allowing nurses to prescribe for any medical condition from the full British National Formulary¹⁹. The proposed advantages for expanding nurse prescribing are that patients will benefit from a speedier and more accessible service; doctors and other health professionals are able to focus their time and energies more clearly on the areas and patients who most need their expertise; and nurse prescribers benefit from the opportunity to develop and extend their skills. As with other NHS professionals, *'nurses are expected to work only within their level of professional competence and expertise, and to seek advice and make appropriate referrals to other professionals with different expertise. Nurses are accountable for their own actions, and need to be aware of the limits of their skills, knowledge and competence'*¹⁹. The Medicines and Healthcare Products Regulatory Agency who are currently consulting on this issue believe that the benefits of expanding nurse prescribing greatly outweigh any disadvantages¹⁹.

The New Zealand situation differs somewhat from the United Kingdom situation. Currently, only 17 nurses are registered in the nurse practitioner scope of practice. Of these 17 nurses, only one is authorised to prescribe. The number of nurse practitioners is projected to increase by fifteen over the next 12 months, although not all of these will apply for prescribing rights. The academic level to which New Zealand nurses are educated, allowing them to gain prescribing rights, exceeds that of nurses in the United Kingdom and other countries. Correspondingly, the numbers that achieve this qualification are small in comparison. The immediate impact of nurse prescribing on the New Zealand health system will be minimal in the initial years following implementation.

The Council respects the views of its medical colleagues and is aware that their concerns are driven by their belief that patient care and safety will be compromised by the extension of nursing practice into previously medically held domains. However, there appears to be little research to support this and no research has been presented to the Nursing Council with the submissions on the earlier consultation. The research that has been carried out appears to show the opposite. The recent (2004) Cochrane systematic review of 16 studies looking at the substitution of doctors by nurses in primary care²⁰ exemplifies this point. The review included research in which nurses were compared to doctors providing a similar primary health care service (excluding accident and emergency services). Primary care doctors included: general practitioners, family physicians, paediatricians, general internists or geriatricians. Primary care nurses included: practice nurses, nurse practitioners, clinical nurse specialists, or advanced practice nurses. The effects of the substitution were assessed according to patient outcomes (including morbidity, mortality, satisfaction, compliance, and preference), the process of care (such as practitioners' adherence to clinical guidelines, the quality of care, and practitioners' level of involvement in the patient's care), use of resources (for example, the frequency and length of consultations, return visits, prescriptions, testing and investigations, and referrals for other services). This study suggests that *'appropriately trained nurses can produce as high quality care as primary care doctors and achieve as good health outcomes for patients'*. Patient health outcomes were similar for nurses and doctors; but patient satisfaction was higher with nurse-led care.

¹⁹ Medicines and Healthcare Products Regulatory Authority (2005). *Consultation on the options for the future of independent prescribing by extended formulary nurse prescribers*. MHRA, ref MLX 320.

²⁰ Laurant M, Reeves D, Hermens R, Braspenning J, Grol R, Sibbald B. Substitution of doctors by nurses in primary care. *The Cochrane Database of Systematic Reviews* 2004, Issue 4. Art. No.: CD001271.pub2. DOI: 10.1002/14651858.CD001271.pub2.

Anaesthetists have particularly expressed reservations about nurse practitioner prescribing. Nurse anaesthetists practice in at least 96 countries, although their autonomy and scope of practice varies greatly between jurisdictions.^{21,22} It should also be noted the requirements on nurses practising anaesthetics in New Zealand would be somewhat stricter than those in the United States. While both require a similar post-graduate study, including an extensive practicum, entry into the United States programmes is possible after only one year of general acute care clinical experience, as opposed to the four years of experience specifically in anaesthetic practice required for nurse practitioners in New Zealand. The recent systematic review of literature comparing the effectiveness and safety of physician and nurse anaesthetists published in the *British Journal of Anaesthesia*²³ could find no recent high-level evidence that there are significant differences in safety between the two anaesthesia providers.

The medical position that nurses should only have access to 'dependent prescribing' i.e. being under the overall control of a doctor, usually by way of standing orders or protocols is, in the view of the Council, not in keeping with a modern health care delivery system, the best use of health care personnel, and the development of prescribing nurse practitioners.

9 Recommendations

After analysis of the submissions and further consultation and advice, the Nursing Council has included the medicines in schedules 1 to 4 of the Misuse of Drugs Act 1975 in the nurse practitioner prescribers formulary with the exception of those listed on the exclusions list (see Appendix II). The Council has also increased the level of monitoring required for prescribing nurse practitioners, with all nurse practitioners with prescribing rights now being required to be audited on a yearly basis.

The Nursing Council recommends to the New Prescribers Advisory Committee that a recommendation is made to Government that:

- (a) Nurse practitioner prescribers are given open access to all medicines on schedule 1 of the Medicines Regulations 1984 and schedules 1 to 4 of the Misuse of Drugs Act 1975 with the exception of those medicines on the exclusion lists as detailed in Appendix I and Appendix II of this document. The Nursing Council will administer this access by authorising individual nurse practitioners to prescribe medications from these schedules but limiting prescribing by conditions on their annual practising certificate to their defined clinical areas of practice. The Nursing Council is mandated to do this under section 22 (1) of the Health Practitioners Competence Assurance Act (2003)
- (b) The Government repeals the provisions in the Medicines Amendment Regulations 2001 ref. 2001/232 for designated prescriber nurses to prescribe medicines from Schedule Part 1A – '*Prescription medicines nurses practising in aged care may be authorise to prescribe*', and Part 1B – '*Prescription medicines nurses practising in child family health may be authorised to prescribe*' and replaces it with the new schedule '*Prescription medicines nurse practitioners may be authorised to prescribe*' (full formulary available in a separate document).

²¹ McAuliffe, M. Henry, B. (1993). Nurse anesthesia world-wide: an analysis of practice, education and legislation. *American Association of Nurse Anesthetists*, p9

²² McAuliffe M, and Henry, B. (1998). Survey of nurse anesthesia practice, education, and regulation in 96 countries. *AANA Journal*. 66(3):273-86.

²³ Smith, A. Kane, M. Milne, R. (2004). Comparative effectiveness and safety of physician and nurse anaesthetists: a narrative systematic review. *British Journal of Anaesthesia*, 93(4), 540-545.

- (c) The Government repeals the provisions in the Medicines (Designated Prescriber: Nurses Practising in Aged Care and Child Family Health) Regulations 2001 ref. 2001/230 and replace them with similar provisions for nurse practitioners: Medicines (Designated Prescriber: Nurse Practitioners) Regulations.

Appendix I

Prescription Exclusion List – Schedule 1 Medicines Regulations 1984.

It is proposed that nurse practitioners will be able to prescribe all medicines on the first Schedule of the Medicines Regulations 1984 with the exceptions listed below. The rationale for the exclusions criteria can be found in section 5.1.

A full schedule of medicines which should be included in the formulary is also available.

Ingredient	Reason for exclusion
4-chloromethandienone	Insufficient data
Acetylstrophanthidin	Insufficient data
Acokanthera	Ouabain – Specialised use, no perceived need
Actinomycin D	Cytotoxic – excluded by Nursing Council
Adrenocortical hormones;	Group excluded by Nursing Council
Aldesleukin	Recombinant interleukin 2 – Specialised use, no perceived need
Altretamine	Antineoplastic
Aminoglutethimide	Excluded by Nursing Council
Aminometradine	Insufficient data
Aminopterin	Antineoplastic
Aminorex	Anorectic – withdrawn due to toxicity
Amisometradine	Insufficient data
Amsacrine	Antineoplastic
Amygdalin;	Cyanogenic glycoside in apricot kernels – toxicity issues
Anabolic steroids	Group excluded by Nursing Council
Anastrozole	Hormone antagonist – Specialised use, no perceived need
Ancestim	Recombinant stem cell factor – Specialised use, no perceived need
Androgenic and anabolic steroidal agents	Group excluded by Nursing Council
Androgens	Group excluded by Nursing Council
Androisoxazole	Insufficient data
Androstenediol	Anabolic - excluded by Nursing Council
Androstenedione	Anabolic - excluded by Nursing Council
Apronal	Insufficient data
Arecoline	Nut chewed for euphoriant effect
Aristolochia spp;	Herbal, carcinogenic concerns
Aristolochic acid;	Herbal, carcinogenic concerns
Atamestane	Anabolic - excluded by Nursing Council
Bevacizumab	Monoclonal antibody – Specialised use, no perceived need
Bexarotene	Antineoplastic
Bicalutamide	Anti-androgen
Bleomycin	Cytotoxic - excluded by Nursing Council
Bolasterone	Anabolic - excluded by Nursing Council

Bolazine	Insufficient data
Boldenone	Anabolic – vet use
Bolmantalate	Insufficient data
Bortezomib	Inhibitor of proteasomes – Specialised use, no perceived need
Buniodyl sodium	Insufficient data
Busulphan	Alkylating agent – group excluded by Nursing Council
Butyl nitrite	Not used medicinally
Calotropis	Homeopathic, emetic, highly toxic in high doses
Calusterone	Anabolic steroid – excluded by Nursing Council
Camphotamide	Insufficient data
Capecitabine	Antimetabolite – excluded by Nursing Council
Carboplatin	Antineoplastic – excluded by Nursing Council
Carboprost	Post partum haemorrhage – Specialised use, no perceived need
Carmustine	Alkylating agent – excluded by Nursing Council
Ceruletide	Radiology use – Specialised use, no perceived need
Chloralformamide	Insufficient data
Chlorambucil	Alkylating agent – excluded by Nursing Council
Chlorandrostenolone	Insufficient data
Chlorazasil	Diuretic – no longer in use
Chloroxymesterone	Insufficient data
Chlorphentermine	Sympathomimetic – no longer in use
Cinchophen	Gout, severe toxicity issues, no longer in use
Cisplatin	Antineoplastic – excluded by Nursing Council
Cladribine	Antimetabolite – excluded by Nursing Council
Clofenamide	Insufficient data
Clorprenaline	Sympathomimetic – no longer in use
Colaspase	Antineoplastic – Excluded by Nursing Council
Convallaria	Lily of the valley – FDA recommendation too toxic for drugs/drinks/food
Coronilla spp	Herbal, cardiotoxic, cytotoxic, insufficient data
Corticotrophin	Diagnostic agent? – Specialised use, no perceived need
Cotarnine;	Hemostatic – no longer in use
Croton tiglium;	Potentially carcinogenic
Curare	No longer in use?
Cyclophosphamide	Alkylating agent – excluded by Nursing Council
Cyrimine	Insufficient data
Cymarin	Positive inotrope – no longer in use
Cynoglossum spp	Insufficient data
Cytarabine	Antimetabolite – excluded by Nursing Council
Dacarbazine	Antineoplastic – excluded by Nursing Council
Dactinomycin	Cytotoxic – excluded by Nursing Council
Danazol	Androgenic – excluded by Nursing Council
Daunorubicin	Cytotoxic – excluded by Nursing Council
Decamethonium	Depolarizing neuromuscular blocker – no longer in use
Dehydrochloromethyltestosterone	Insufficient data
Dibotermin	Bone morphogenic protein – Specialised use, no perceived need

Dihydrolone	Insufficient data
Di-iodohydroxy quinoline;	Insufficient data
Dimethandrostanolone	Insufficient data
Dimethazine	Synthetic anabolic steroid - excluded by Nursing Council
Dinitrocresols	Herbicide? Pesticide?
Dinitronaphthols	Insufficient data
Dinitrophenols	Pesticide? Explosive? Anorectant that caused fatalities.
Dinitrothymols	Insufficient data
Doxorubicin	Cytotoxic – excluded by Nursing Council
Drostanolone A	Anabolic/androgenic no longer in use - excluded by Nursing Council
Duboisia leichhardtii	Insufficient data
Dulcin;	Artificial sweetener, toxic in small doses
Enestebol	Insufficient data
Enprostil	Peptic ulcer treatment – no longer in use
Epicillin	Antibiotic – no longer in use
Epirubicin	Cytotoxic – excluded by Nursing Council
Epitiostanol	Anabolic – no longer in use, excluded by Nursing Council
Estramustine	Alkylating drug – excluded by Nursing Council
Ethamivan	Respiratory stimulant – toxicity now considered to be unacceptable
Ethisterone	Progesterone – no longer in use
Ethoglucid	Antineoplastic – excluded by Nursing Council
Ethoxzolamide	Insufficient data
Ethyldienolone	Insufficient data
Ethyloestrenol	Anabolic - excluded by Nursing Council
Etoposide	Antineoplastic – excluded by Nursing Council
Exemestane	Hormone antagonist – Specialised use, no perceived need
Farfugium japonicum	Carcinogen
Felypressin;	Used as vasopressor – dental use
Fenpiprane	Insufficient data
Fludarabine	Antimetabolite – excluded by Nursing Council
Fluorouracil	Antineoplastic – excluded by Nursing Council
Fluoxymesterone	Androgenic – growth retardant, excluded by Nursing Council
Flutamide	Antineoplastic – excluded by Nursing Council
Formebolone	Anabolic testosterone - excluded by Nursing Council
Formyldienolone	Anabolic testosterone - excluded by Nursing Council
Fosfestrol	Non-steroidal estrogen (synthetic) use in prostatic neoplasm – Specialised use, no perceived need
Fotemustine	Antineoplastic – excluded by Nursing Council
Fulvestrant	Hormonal oncologic – Specialised use, no perceived need
Furaltadone	Antibacterial – no longer in use
Furazabol	Anabolic – no longer in use, excluded by Nursing Council
Gefitinib	Metastatic lung cancer – Specialised use, no

	perceived need
Gemcitabine	Antimetabolite – excluded by Nursing Council
Gitalin	Cardiac glycoside – no longer in use
Gonadorelin	Hypothalamic hormone – breast and prostate cancer – Specialised use, no perceived need
Gonadotrophic hormones	Group excluded by Nursing Council
Hexamethonium	Ganglion blocker – no longer in use
Hexocyclium	Peptic ulcer treatment – no longer in use
Hydroxystenozol	Insufficient data
Hydroxyurea	Antineoplastic – excluded by Nursing Council
Ibritumomab tiuxetan	Antineoplastic – excluded by Nursing Council
Ibuprofen	NSAID – no longer in use
Idarubicin	Cytotoxic – excluded by Nursing Council
Ifosfamide	Alkylating agent – excluded by Nursing Council
Imatinib	Oncology – Specialised use, no perceived need
Indoprofen	NSAID – no longer in use
Interferon alpha-2a	Group excluded by Nursing Council
Interferon beta-1a	Group excluded by Nursing Council
Interferons	Group excluded by Nursing Council
Interleukins	Group excluded by Nursing Council
Iodothiouracil	Nuclear medicine – Specialised use, no perceived need
Irinotecan	Mitosis inhibitor – oncology – Specialised use, no perceived need
Lanreotide	Hormone antagonist – Specialised use, no perceived need
L-asparaginase	Antineoplastic – excluded by Nursing Council
Laudexium	Insufficient data
Letrozole	Hormonal oncologic – Specialised use, no perceived need
Levallorphan	Opioid antagonist – no longer in use
Ligularia dentate	Insufficient data
Lomustine	Cytotoxic – excluded by Nursing Council
Mannomustine	Cytotoxic – excluded by Nursing Council
Mebanazine	MAOI – no longer in use
Mebolazine	Anabolic steroid - excluded by Nursing Council
Mecasermin	Growth factor – excluded by Nursing Council
Melphalan	Antineoplastic – excluded by Nursing Council
Mepitiostane	Androgenic/anabolic - excluded by Nursing Council
Mercaptomerin	Mercurial diuretic – no longer in use
Mercaptopurine	Antineoplastic – excluded by Nursing Council
Mercury;	Toxicity issues
Mersalyl	Mercurial diuretic – no longer in use
Mesabolone	Anabolic steroid - excluded by Nursing Council
Mestanolone	Androgenic steroid – excluded by Nursing Council
Metandienone	Anabolic steroid - excluded by Nursing Council
Metenolone	Anabolic steroid - excluded by Nursing Council
Methallenoestril	Synthetic oestrogen – no longer in use
Methandienone	Anabolic steroid - excluded by Nursing Council
Methandriol	Anabolic steroid - excluded by Nursing Council
Methisazone	Smallpox prophylaxis – no longer in use
Methyl androstanolone	Androgenic steroid – excluded by Nursing Council
Methyl clostebol	Anabolic steroid - excluded by Nursing Council

Methyl mercury;	Toxicity issues
Methyl trienolone	Androgen/anabolic steroid - excluded by Nursing Council
Metribolone	Androgen/anabolic steroid - excluded by Nursing Council
Metyrapone	Diagnostic agent – excluded by Nursing Council
Mibolerone	Veterinary androgen/anabolic - excluded by Nursing Council
Mitobronitol	Antineoplastic – excluded by Nursing Council
Mitomycin	Cytotoxic - excluded by Nursing Council
Mitoxantrone	Cytotoxic - excluded by Nursing Council
Monoclonal antibodies;	Group excluded by Nursing Council
Muromonab	Monoclonal antibody – cytotoxic – excluded by Nursing Council
Mustine	Antineoplastic – excluded by Nursing Council
Mycophenolic acid	Immunosuppressant – excluded by Nursing Council
Nandrolone	Anabolic steroid - excluded by Nursing Council
Nilutamide	Antineoplastic – excluded by Nursing Council
Norandrostenolone	Anabolic steroid - excluded by Nursing Council
Norbolethone	Anabolic steroid - excluded by Nursing Council
Norclostebol	Anabolic steroid - excluded by Nursing Council
Norethandrolone	Anabolic steroid - excluded by Nursing Council
Normethandrone	Anabolic steroid - excluded by Nursing Council
Noxiptyline	Tricyclic antidepressant – no longer in use
Octreotide	Hypothalamic and pituitary hormone – Specialised use, no perceived need
Orthopterin	Antineoplastic – excluded by Nursing council
Ovandrotone	Ovulation stimulant – vet use
Oxabolone	Anabolic steroid - excluded by Nursing Council
Oxaliplatin	Cytotoxic - excluded by Nursing Council
Oxandrolone	Anabolic steroid - excluded by Nursing Council
Oxymesterone	Anabolic steroid - excluded by Nursing Council
Oxymetholone	Anabolic steroid - excluded by Nursing Council
Paclitaxel	Antineoplastic – excluded by Nursing Council
Pamaquin	Antimalarial – no longer in use
Paramethadione	Anticonvulsant – no longer in use
Pecazine	Phenothiazine – no longer in use
Peg interferon	Group excluded by Nursing Council
Peg interferon alfa-2b	Group excluded by Nursing Council
Pemetrexed	Cytotoxic - excluded by Nursing Council
Pempidine	Nicotinic antagonist ganglion blocker – no longer in use
Pentagastrin	Diagnostic aid – Specialised use, no perceived need
Pentamethonium	Ganglion blocker – no longer in use
Pentolinium	Ganglion blocker – no longer in use
Phenaglycodol	Anxiolytic/sedative – no longer in use
Phenglutarimide	Antiparkinsons agent – no longer in use
Phenthimentionium	Insufficient data
Picrotoxin	Respiratory stimulant – no longer in use
Pipobroman	Cytotoxic - excluded by Nursing Council
Pirprofen	NSAID – no longer in use
Plicamycin	Cytotoxic - excluded by Nursing Council

Polidexide	Anion exchange resin – no longer in use
Polyacrilamide	Raw ingredient – insufficient data
Potassium perchlorate	Diagnostic aid – Specialised use, no perceived need
Prampine	Insufficient data
Procarbazine	Antineoplastic – excluded by Nursing Council
Promoxolane	Insufficient data
Propetandrol	Anabolic steroid - excluded by Nursing Council
Protirelin	Diagnostic aid – Specialised use, no perceived need
Quinbolone	Anabolic steroid - excluded by Nursing Council
Raltitrexed	Cytotoxic - excluded by Nursing Council
Razoxane	Cytotoxic - excluded by Nursing Council
Ribavirin	Antiviral – Specialised use, no perceived need
Rituximab	Monoclonal antibody – cytotoxic - excluded by Nursing Council
Roxibolone	Androgenic – no longer in use - excluded by Nursing Council
Sermorelin	Diagnostic aid – Specialised use, no perceived need
Sialoepoetin	Insufficient data
Silandrone	Anabolic steroid - excluded by Nursing Council
Sirolimus	Antineoplastic – excluded by Nursing Council
Solasadine	Insufficient data
Sontoquine	Antimalarial – no longer in use
Sparteine	Diagnostic aid – Specialised use, no perceived need
Stanolone	Anabolic steroid - excluded by Nursing Council
Stanozolol	Anabolic steroid - excluded by Nursing Council
Stenbolone	Anabolic steroid - excluded by Nursing Council
Styramate	Muscle relaxant – no longer in use
T cell receptor antibody	Antibody – Specialised use, no perceived need
Tasonermin	Cytotoxic - excluded by Nursing Council
Tegafur	Cytotoxic - excluded by Nursing Council
Temozolamide	Antineoplastic – excluded by Nursing Council
Teniposide	Cytotoxic - excluded by Nursing Council
Teriparatide	Diagnostic aid – Specialised use, no perceived need
Terodiline	Antimuscarinic – withdrawn
Testolactone	Aromatase inhibitor – Specialised use, no perceived need
Testosterone	Anabolic steroid - excluded by Nursing Council
Tetracosactrin	Diagnostic aid – Specialised use, no perceived need
Thiambutosine	Antileprotic – no longer in use
Thiazosulfone	Antileprotic – no longer in use
Thioguanine	Antimetabolite – Specialised use, no perceived need
Thiomesterone	Anabolic steroid - excluded by Nursing Council
Thiopropazate	Antipsychotic – no longer in use
Thiotepa	Cytotoxic – excluded by Nursing Council
Thiourea	Limited therapeutic activity – carcinogen
Thyrotrophin	Diagnostic aid – Specialised use, no perceived

	need
Thyrotrophin-releasing factor	Diagnostic aid – Specialised use, no perceived need
Tienilic acid	Diuretic – no longer in use
Tigloidine	Antiparkinsons – no longer in use
Topotecan	Mitosis inhibitor – Specialised use, no perceived need
Trastuzumab	Monoclonal antibody – breast cancer
Trenbolone	Veterinary anabolic steroid - excluded by Nursing Council
Treosulphan	Cytotoxic - excluded by Nursing Council
Tretamine	Cytotoxic - excluded by Nursing Council
Triaziquone	Cytotoxic - excluded by Nursing Council
Trichodesma Africana	Toxic – insufficient data
Triethylene thiophosphoramide	Cytotoxic - excluded by Nursing Council
Trimustine	Antineoplastic – excluded by Nursing Council
Triparanol	Antilipemic – no longer in use
Uracil	Cytotoxic - excluded by Nursing Council
Urethane	Cytotoxic - excluded by Nursing Council
Vinblastine	Mitosis inhibitor – excluded by Nursing Council
Vincristine	Mitosis inhibitor – excluded by Nursing Council
Vindesine	Antineoplastic – excluded by Nursing Council
Vinorelbine	Mitosis inhibitor – excluded by Nursing Council
Zimeldine	SSRI – withdrawn worldwide

Appendix II

Prescription Exclusion List – Schedules 1 to 4 Misuse of Drugs Act 1975.

It is proposed that nurse practitioners will be able to prescribe all medicines on Schedules 1 to 4 of the Misuse of Drugs Act 1984 with the exceptions listed below. The rationale for the exclusions criteria can be found in section 5.1.

Note that a full list of those medicines which should be included on the formulary is available.

SCHEDULE 1	Comments
CLASS A CONTROLLED DRUGS	
1. The following substances, namely	
BUFOTENINE (3-(2-dimethylaminoethyl)-5-hydroxyindole)	Synonyms: Bufotenina; NN-Dimethylserotonin; 5-Hydroxy-NN-dimethyltryptamine; Mappine Bufotenine is an indole alkaloid obtained from the seeds and leaves of Piptadenia peregrina, from which the hallucinogenic snuff cohoba is prepared, and P. macrocarpa (Mimosaceae). It was first isolated from the skin glands of toads (Bufo spp.) and has also been isolated from species of Amanita (Agaricaceae). Bufotenine has serotonergic activity and is reported to have hallucinogenic properties. It has no therapeutic use.
CANTHARIDIN (hexahydro-3a,7a-dimethyl-4,7-epoxyisobenzofuran-1,3-dione)	Synonyms: Cantaridina. Cantharidin is obtained from cantharides or mylabris (see under Cantharides. Cantharidin in flexible collodion has been applied for the removal of warts and molluscum contagiosum. It has also been used in veterinary medicine. Owing to the high toxicity of cantharidin it has been recommended that preparations containing it should not be used medicinally. Adverse effects are those described for cantharides.
DESOMORPHINE (dihydrodeoxymorphine)	One ref only in Pubmed citations – 1970, no abstract available No pointers from MESH Headings. No human therapeutic use identified.
DET (N,N-diethyltryptamine)	Dimethyltryptamine is an active principle obtained from the seeds and leaves of Piptadenia peregrina (Mimosaceae) from which the hallucinogenic snuff cohoba is prepared. It may also be obtained from other South American plants. It has been reported to be present in the tropical legume Mucuna pruriens Dimethyltryptamine produces hallucinogenic and sympathomimetic effects that are similar to those of lysergide, but of shorter duration. It has no

	therapeutic use. Diethyltryptamine (DET) and dipropyltryptamine (DPT) are related synthetic hallucinogens with longer actions but are less potent than dimethyltryptamine
DMA (2-amino-1-(2, 5-dimethoxyphenyl) propane)	No information found in Pubmed citations MESH Headings point to 1 2,5 dimethoxyphenyl 2 aminopropane, otherwise known as 2,5-dimethoxyamphetamine. No human therapeutic use identified.
DMHP (3-(1,2-dimethylheptyl)-1-hydroxy-7, 8, 9, 10-tetrahydro-6, 6, 9-trimethyl-6H-dibenzo [b,d] pyran)	Pubmed citations suggests – analogue of delta-8-tetrahydrocannabinol (delta-8-DMHP) No pointers from MESH Headings, No human therapeutic use identified.
DMT (N,N-dimethyltryptamine)	Synonyms: Businessman's Trip; N,N-Dimethyltryptamine; Dimetilriptamina; DMT Dimethyltryptamine is an active principle obtained from the seeds and leaves of Piptadenia peregrina (Mimosaceae) from which the hallucinogenic snuff cohoba is prepared. It may also be obtained from other South American plants. It has been reported to be present in the tropical legume Mucuna pruriens. Dimethyltryptamine produces hallucinogenic and sympathomimetic effects that are similar to those of lysergide , but of shorter duration. It has no therapeutic use. Diethyltryptamine (DET) and dipropyltryptamine (DPT) are related synthetic hallucinogens with longer actions but are less potent than dimethyltryptamine
DOB (2-amino-1-(4-bromo-2, 5-dimethoxyphenyl) propane) (also known as bromo-DMA)	4-bromo-2,5-dimethoxyamphetamine (bromo-DMA) – Pubmed citations indicate hallucinogen MESH Headings point to 1 4 bromo 2,5 dimethoxyphenyl 2 aminopropane, otherwise known as 2,5-dimethoxy-4-bromoamphetamine. No human therapeutic use identified.
ETORPHINE (7,8-dihydro-7 □-[1 (R)-hydroxy-1-methylbutyl] -06-methyl-6,14-endoethenomorphine)	Synonyms: Hidrocloruro de etorfinaEtorfina, hidrocloruro de; M-99; 19-Propylorvinol Hydrochloride Opioid Analgesic Etorphine is not used therapeutically in humans.
LYSERGIC ACID (essential precursor for manufacture of LSD)	Lysergide was formerly used therapeutically but is now encountered as a drug of abuse for its hallucinogenic and psychedelic properties. No human therapeutic use identified.
LYSERGIDE (N,N-diethyllysergamide or lysergic acid diethylamide)	Lysergide was formerly used therapeutically but is now encountered as a drug of abuse for its hallucinogenic and psychedelic properties. No human therapeutic use identified.
MDA (2-amino-1-(3,4-methylenedioxyphenyl) propane)	Synonyms: MDA; Methylenedioxyamphetamine; 3,4-Methylenedioxyamphetamine; SKF-5; Tenamfetamina Tenamfetamine is a phenylethylamine compound, structurally related to amphetamine and mescaline, with hallucinogenic effects. It has been subject to abuse and dependence. A number of similar compounds are known because of their

	abuse.
MESCALINE (3,4,5-trimethoxyphenethylamine)	Mescaline is an alkaloid obtained from the cactus <i>Lophophora williamsii</i> (<i>Anhalonium williamsii</i> , <i>A. lewinii</i>) (Cactaceae), which grows in the northern regions of Mexico. The cactus is known in those areas by the Aztec name 'peyote' or 'peyotl' and dried slices of the cactus are called 'mescal buttons'. Mescaline produces hallucinogenic and sympathomimetic effects similar to those produced by lysergide , but it is less potent. Its effects last for up to 12 hours. It has no therapeutic use. Both Mexican and North American Indians have used peyote in religious ceremonies on account of its hallucinogenic activity
METHAMPHETAMINE (2-methylamino-1-phenylpropane)	Metamphetamine hydrochloride is a central stimulant and indirect-acting sympathomimetic with actions and uses similar to those of dexamphetamine Metamphetamine has been subject to extensive abuse
5-METHOXYDIMETHYLTRYPTAMINE (5-methoxy-N,N-dimethyl-tryptamine)	MESH Headings – Methoxydimethyltryptamines: Compounds that contain the biogenic monoamine tryptamine and are substituted with one methoxy group and two methyl groups. Members of this group include several potent serotonergic hallucinogens found in several unrelated plants, skins of certain toads, and in mammalian brains. They are possibly involved in the etiology of schizophrenia. No human therapeutic use identified.
2-METHOXY-4, 5-METHYLENEDIOXYAMPHETAMINE (2-amino-1-(2-methoxy-4, 5-methylenedioxyphenyl)propane) (also known as MDMA or MDMA-2)	MESH Headings point to 3,4-Methylenedioxyamphetamine – an amphetamine derivative that inhibits uptake of catecholamine neurotransmitters. It is a hallucinogen . It is less toxic than its methylated derivative but in sufficient doses may still destroy serotonergic neurons and has been used for that purpose experimentally.
3-METHOXY-4,5-METHYLENEDIOXYAMPHETAMINE (2-amino-1-(3-methoxy-4,5-methylenedioxyphenyl)propane) (also known as MDMA or MDMA-2)	MESH Headings point to 3,4-Methylenedioxyamphetamine – an amphetamine derivative that inhibits uptake of catecholamine neurotransmitters. It is a hallucinogen . It is less toxic than its methylated derivative but in sufficient doses may still destroy serotonergic neurons and has been used for that purpose experimentally.
PARAHEXYL (3-hexyl-1-hydroxy-7,8,9,10-tetrahydro-6,6,9-trimethyl-6H-dibenzo [b,d] pyran)	Martindale search says this is paracetamol! MESH Headings point to synhexyl – a euphoric for treatment of thalamus disorders. Uncertain of human therapeutic use.
PCE (N-ethyl-1-phenylcyclohexylamine)	Synonyms: CI-395; CN-25253-2; GP-121; Hidrocloruro de fenciclidina Fenciclidina, hidrocloruro de; NSC-40902; PCP Phencyclidine is related chemically to ketamine and is a potent analgesic and anaesthetic. It was formerly given intravenously to produce an amnesic trance-like state, with analgesia, but severe adverse effects, especially postoperative psychoses, precluded its

	<p>use. <i>It was formerly used in veterinary medicine as an immobilizing agent. Phencyclidine is widely abused</i> in some countries for its <i>hallucinogenic effects</i> and has been taken by mouth, sniffed, injected or smoked. Martindale links PCE to PCP</p> <p>Numerous analogues of phencyclidine have been similarly abused and include PHP (rolicyclidine; 1-(1-phenylcyclohexyl)pyrrolidine), PCC (1-piperidinocyclohexanecarbonitrile), PCE (N-ethyl-1-phenylcyclohexylamine), and TCP (1-[1-(2-thienyl)cyclohexyl]piperidine).</p>
PCPY 1-(1-phenylcyclohexyl) pyrrolidine)	MESH Headings indicates this is the pyrrolidine analog of phencyclidine. <i>Uncertain of human therapeutic use.</i>
PHP 1-(1-phenylcyclohexyl) pyrrolidine)	<p>Synonyms: CI-395; CN-25253-2; GP-121; Hidrocloruro de fenciclidina Fenciclidina, hidrocloruro de; NSC-40902; PCP</p> <p>Phencyclidine is related chemically to ketamine and is a potent analgesic and anaesthetic. It was formerly given intravenously to produce an amnesic trance-like state, with analgesia, but severe adverse effects, especially postoperative psychoses, precluded its use. <i>It was formerly used in veterinary medicine as an immobilizing agent. Phencyclidine is widely abused</i> in some countries for its <i>hallucinogenic effects</i> and has been taken by mouth, sniffed, injected or smoked</p> <p>Numerous analogues of phencyclidine have been similarly abused and include PHP (rolicyclidine; 1-(1-phenylcyclohexyl)pyrrolidine), PCC (1-piperidinocyclohexanecarbonitrile), PCE (N-ethyl-1-phenylcyclohexylamine), and TCP (1-[1-(2-thienyl)cyclohexyl]piperidine).</p>
PEPTP (1-(2-phenylethyl)-4-phenyl-1,2,5,6-tetrahydropyridine)	No info Pubmed citations or MESH Headings. <i>No human therapeutic use identified.</i>
PHENCYCLIDINE (1-(1-phenylcyclohexyl) piperidine)	Phencyclidine is related chemically to ketamine and is a potent analgesic and anaesthetic. It was formerly given intravenously to produce an amnesic trance-like state, with analgesia, but severe adverse effects, especially postoperative psychoses, precluded its use. <i>It was formerly used in veterinary medicine as an immobilizing agent. Phencyclidine is widely abused</i> in some countries for its <i>hallucinogenic effects</i> and has been taken by mouth, sniffed, injected or smoked
PIPERIDYL BENZILATES (N-methylpiperidyl benzilates and N-ethylpiperidyl benzilates but excluding the methobromide salts)	Pubmed citations suggest these are <i>experimental</i> ligands for muscarinic acetylcholine receptors in the brain. <i>No human therapeutic use identified.</i>
PMA (2-amino-1-(4-	Tenamfetamine is a phenylethylamine compound,

methoxyphenyl) propane)	structurally related to amphetamine and mescaline, with hallucinogenic effects. It has been subject to abuse and dependence. A number of similar compounds are known because of their abuse and include: methoxyamphetamine (4-methoxyamphetamine; p-methoxyamphetamine; PMA)...
PSILOCINE (3-(2-dimethylaminoethyl)-4-hydroxyindole	Psilocin is an indole alkaloid obtained from the sacred Mexican mushroom (teonanacatl), Psilocybe mexicana (Agaricaceae). The main indole alkaloid present in this mushroom, however, is psilocybine Psilocybine has hallucinogenic and sympathomimetic properties similar to those of lysergide. It is less potent than lysergide and its hallucinogenic effects last for up to 6 hours. There is evidence to suggest that psilocybine is converted to the active form psilocin in the body. It has no therapeutic use
PSILOTSIN (3-(2-dimethylaminoethyl)-4-hydroxyindole)	MESH Headings point to psilocin – psilocybine minus the phosphate ester. Uncertain of therapeutic use.
PSILOCYBINE (3-(2-dimethylaminoethyl) indol-4-yl dihydrogen phosphate)	Synonyms: CY-39; 4-Phosphoryloxy-NN-dimethyltryptamine; Psilocibina; Psilocybin [see psilocine entry]
STP,DOM (2-amino-1-(2,5-dimethoxy-4-methyl) phenylpropane)	Tenamfetamine is a phenylethylamine compound, structurally related to amphetamine and mescaline, with hallucinogenic effects. It has been subject to abuse and dependence. A number of similar compounds are known because of their abuse and include: ...2,5-dimethoxy-4-metamphetamine (DOM; methyl-2,5-dimethoxyamphetamine; Serenity, Tranquillity and Peace; STP)...
TCP (1-[1-(2-thienyl) cyclohexyl] piperidine)	Phencyclidine is related chemically to ketamine and is a potent analgesic and anaesthetic. It was formerly given intravenously to produce an amnesic trance-like state, with analgesia, but severe adverse effects, especially postoperative psychoses, precluded its use. It was formerly used in veterinary medicine as an immobilising agent. Phencyclidine is widely abused in some countries for its hallucinogenic effects and has been taken by mouth, sniffed, injected or smoked Numerous analogues of phencyclidine have been similarly abused and include PHP (rolicyclidine; 1-(1-phenylcyclohexyl)pyrrolidine), PCC (1-piperidinocyclohexanecarbonitrile), PCE (N-ethyl-1-phenylcyclohexylamine), and TCP (1-[1-(2-thienyl)cyclohexyl]piperidine).
TMA (2-amino-1-(3, 4, 5-trimethoxyphenyl) propane)	As for tenamphetamine entries above
2. The isomers of the	

substances mentioned in this Schedule whenever the existence of such isomers is possible within the specific chemical designation.	
3. The esters and ethers of the substances mentioned in this Schedule and the esters and ethers of the isomers mentioned in clause 2 of this Schedule whenever the existence of such esters or ethers is possible.	
4. The salts of the substances mentioned in this Schedule and the salts of the isomers, esters, and ethers mentioned in clause 2 or clause 3 of this Schedule.	
5. Substances containing any proportion of a substance mentioned in clause 1, clause 2, clause 3, or clause 4 of this Schedule.	

SCHEDULE 2	Comments
CLASS B CONTROLLED DRUGS	
PART 1	
1. The following substances, namely	
CANNABIS preparations: that is, any preparation containing any tetrahydrocannabinols, including cannabis resin (commonly known as hashish) and cannabis oil (commonly known as hash oil), produced by subjecting cannabis plant material to any kind of processing.	
METHCATHINONE	Pubmed citations include <i>Belhadj-Tahar H, Sadeg N. Methcathinone: A new postindustrial drug Forensic Sci Int. 2005 May 23; [Epub ahead of print]</i> which states, " Methcathinone, a methyl derivative of cathinone, is an illicit drug also known as ephedrone. It is a stimulant found in the "khat" plant, <i>Catha edulis</i> , which can easily be synthesized from pseudoephedrine. Its intoxication is difficult to diagnose and cure properly for two reasons: (i) target consumers are usually "well-educated people" aware

	of the risks and precautionary measures and (ii) intoxication by cathinone derivatives of synthetic or natural (derived from the khat) origin induce misleading symptoms. As a result, documented reports of methcathinone intoxication that are based on reliable analyses are rare.” MESH Headings point to monomethylpropion which is a metabolite of dimethylpropion
OPIUM	Opium is intended only as the starting material for the manufacture of galenical preparations and is not dispensed as such.
TETRAHYDROCANNABINOLS, except when contained in a Class C controlled drug.	MESH Headings state Tetrahydrocannabinol is a psychoactive compound extracted from the resin of Cannabis sativa (marihuana, hashish). The isomer delta-9-tetrahydrocannabinol (THC) is considered the most active form, producing characteristic mood and perceptual changes associated with this compound.
6. The substance gamma-hydroxybutyrate (“GHB”) (commonly known as fantasy) and	Synonyms: NSC-84223; Oxibato sodico; Sodium Gamma-hydroxybutyrate; Wy-3478. No human therapeutic use identified.
(a) the esters, ethers, and amides of GHB; and	As for GHB
(b) all substances from which GHB can be derived, including (without limitation)—	As for GHB
(i) 1,4-butanediol	As for GHB
(ii) gamma-aminobutyric acid:	As for GHB
(iii) gamma-butyrolactone	As for GHB
(iv) gamma-hydroxybutyraldehyde; and	As for GHB
c) the salts of GHB (including sodium oxybate) and the salts of any substance referred to in paragraph (a) or paragraph (b); and	As for GHB
(d) any substance, preparation, or mixture containing any proportion of GHB or any substance referred to in any of paragraphs (a) to (c).]	As for GHB
PART 2	
1. The following substances, namely:	
BENZPHETAMINE (2-benzylmethylamino-1-phenylpropane)	Benzfetamine hydrochloride is a central stimulant and sympathomimetic with properties similar to those of dexamfetamine. It has been used as an

	anorectic in the treatment of obesity, although amfetamines are no longer recommended for this indication.
CATHINONE (2-amino-1-phenylpropan-1-one)	Catha is used for its stimulant properties among some cultures of Africa and the Middle East, usually by chewing the leaves. Its effects are reported to resemble those of the amfetamines (see Dexamfetamine Sulfate), and are thought to be largely due to the content of cathinone. Dependence and psychotic reactions have been reported. Cathine, another constituent, is used as the hydrochloride as an anorectic
DOET (2-amino-1-(2,5-dimethoxy-4-ethylphenyl)propane)	No Pubmed citations MESH Headings suggest amphetamine derivative
N-ETHYL MDA (2-ethylamino-1-(3, 4-methylenedioxyphenyl)propane)	Pubmed and MESH Headings indicate amphetamine
N-ETHYLAMPHETAMINE (2-ethylamino-1-phenylpropane)	Excluded due to inclusion in amphetamine family
FENCAMFAMINE (N -ethyl-3-phenylbicyclo[2.2.1]heptan-2-amine)	Fencamfamin hydrochloride has been given by mouth as a central stimulant = THIS IS THE ONLY REFERENCE AVAILABLE IN MARTINDALE! Uncertain of human therapeutic use.
FENPROPOREX (2-(2-cyanoethylamino)-1-phenylpropane)	Fenproporex is a central stimulant and indirect-acting sympathomimetic with actions similar to those of dexamfetamine. Following administration by mouth it is reported to be metabolised to amfetamine. Fenproporex has been given as the hydrochloride, the diphenylacetate, and as a resinate Fenproporex hydrochloride has been used as an anorectic in the treatment of obesity although the use of stimulants in this way is no longer recommended. Regulatory authorities in the European Union have called for the withdrawal of all anorectics from the market (see under Effects on the Cardiovascular System in Fenfluramine.
N-HYDROXY MDA (2-hydroxyamino-1-(3, 4-methylenedioxyphenyl)propane)	As for Tenamfetamine entry
MDMA (2-methylamino-1-(3,4-methylenedioxyphenyl)propane)	Synonyms: MDMA; Methylenedioxymethamphetamine; 3,4-Methylenedioxymethamphetamine; Metilendioximetanfetamina Methylenedioxymethamphetamine is a phenylethylamine compound structurally related to amfetamine and mescaline and is an analogue of tenamfetamine. It is subject to abuse. Its toxicity is similar to that of dexamfetamine and may be treated similarly.
MEFENOREX (2-(3-	Mefenorex hydrochloride is a central stimulant

chloropropylamino)-1-phenylpropane)	and indirect-acting sympathomimetic with actions similar to those of dexamfetamine. It has been used as an anorectic in the treatment of obesity although stimulants are no longer recommended for this indication
METHAQUALONE (2-methyl-3-(2-methylphenyl)-4(3H)-quinazolinone)	Methaqualone is a quinazoline derivative with hypnotic and sedative properties. It has been given by mouth in the short-term management of insomnia but the use of methaqualone for this purpose is no longer considered appropriate. It has also been given with diphenhydramine for an enhanced effect. Methaqualone has been withdrawn from the market in many countries because of problems with abuse.
4-METHYLAMINOEX (cis - 2-amino-4-methyl-5-phenyl-2-oxazoline	Pubmed citations include <i>Gaine SP, Rubin LJ, Kmetzo JJ, Palevsky HI, Traill TA. Recreational use of aminorex and pulmonary hypertension. Chest. 2000 Nov;118(5):1496-7</i> , which states "Pulmonary hypertension has been associated with ingestion of the appetite suppressant aminorex. A similar compound , 4-methyl-aminorex (street names, "U-4-E-uh" [pronounced euphoria] or "ice"), is a "designer" drug with central stimulant activity." Human therapeutic use is unclear.
4-METHYLTHIOAMPHETAMINE	Amphetamine
N-HYDROXY MDA (2-hydroxyamino-1-(3, 4-methylenedioxyphenyl)propane)	Pubmed and MESH Headings indicate amphetamine
PROPYLHEXEDRINE (1-cyclohexyl-2-methylaminopropane)	Propylhexedrine is a central stimulant and indirect-acting sympathomimetic with actions similar to those of dexamfetamine. It has been used as an inhalant for nasal decongestion. Propylhexedrine hydrochloride has been given by mouth as an anorectic in the treatment of obesity but stimulants are no longer recommended for this indication
PYROVALERONE (1-(4-methylphenyl)-2-(1-pyrrolidinyl)-1-pentanone)	Pyrovalerone was formerly used as a central stimulant; it has been subject to abuse. Martindale archives
PART 3	
1. The following substances, namely	
ACETYLMETHADOL (3-acetoxy-6-dimethylamino-4,4-diphenylheptane)	Levacetylmethadol, a diphenylheptane derivative, is a long-acting opioid analgesic; it is a derivative of methadone. It was used in the management of opioid dependence. However, the proarrhythmic effects

	led to its withdrawal in the European Union and the USA
ALLYLPRODINE (3-allyl-1-methyl-4-phenyl-4-propionoxypiperidine)	Pubmed citations suggest little therapeutic use
ALPHAMEPRODINE (□-3-ethyl-1-methyl-4-phenyl-4-propionoxy-piperidine)	No information Pubmed citations or MESH Headings. (Possibly related to alphaprodine, an opioid which appears to have little therapeutic use). No human therapeutic use identified.
ALPHAMETHADOL (□-6-dimethylamino-4,4-diphenyl-3-heptanol)	Pubmed citations and MESH Headings suggest as for alphacetylmethadol, but little therapeutic use
ALPHAPRODINE (□-1,3-dimethyl-4-phenyl-4-propionoxy-piperidine)	Alphaprodine hydrochloride is an opioid analgesic chemically related to pethidine that was formerly used in obstetrics, as pre-operative medication, for minor surgical procedures, and for dental procedures. Martindale archives
BENZETHIDINE (1-(2-benzyloxyethyl)-4-phenylpiperidine-4-carboxylic acid ethyl ester)	No info Pubmed citations or MESH Headings. No human therapeutic use identified.
BENZYL MORPHINE (3-benzylmorphine)	Only one Pubmed citation – in French from 1956. No info MESH Headings. No human therapeutic use identified.
BETAMEPRODINE (□-3-ethyl-1-methyl-4-phenyl-4-propionoxypiperidine)	No information Pubmed citations or MESH Headings. (Possibly related to betaprodine, an opioid which appears to have little therapeutic use)
BETAMETHADOL (□-6-dimethylamino-4,4-diphenyl-3-heptanol)	Pubmed citations and MESH Headings suggest as for alphacetylmethadol, but little therapeutic use
BETAPRODINE (□-1,3-dimethyl-4-phenyl-4-propionoxypiperidine)	Pubmed suggests little therapeutic use
CLONITAZENE (2-para - chlorbenzyl-1-diethylaminoethyl-5-nitrobenzimidazole)	As for etonitazine
CODOXIME (dihydrocodeinone-6-carboxymethyloxime)	Only one Pubmed citation from 1967. No info MESH Headings. No human therapeutic use identified.
CONCENTRATE OF POPPY STRAW- that is, the material arising when parts of any plant of the species <i>Papaver somniferum</i> have entered a process for the concentration of the alkaloids.	No human therapeutic use identified.
DIAMPROMIDE (N-[2-(methylphenethylamino)propyl] propionanilide)	No info Pubmed citations No info MESH Headings No human therapeutic use identified.
DIETHYLTHIAMBUTENE (3-diethylamino-1,1-di-(2'-thienyl)-1-butene)	No Pubmed citations MESH Headings point to thiambutene which is a non-opioid; used mainly in veterinary medicine

DIMENOXADOL (2-dimethylaminoethyl 1-ethoxy-1, 1-diphenylacetate)	Only one Pubmed citation from 1983, describing dimenoxadol as a diphenylacetic acid derivative analgesic Listed in MESH Headings but no description No human therapeutic use identified.
DIMETHYLTHIAMBUTENE (3-dimethylamino-1,1-di-(2'-thienyl)-1-butene)	No Pubmed citations, but search for thiambutene yielded five articles, 3 of which were veterinary usage, none of which had abstracts and the most recent of which was from 1974 MESH Heading for thiambutene indicates veterinary use
DIOXAPHETYL BUTYRATE (ethyl 4-morpholino-2, 2-diphenylbutyrate)	No specific Pubmed citations found No info MESH Headings No human therapeutic use identified.
DROTEBANOL (3,4-dimethoxy-17-methylmorphinan-6 α , 14-diol)	Drotebanol is an opioid that has been used as a centrally-acting cough suppressant Martindale archive
EGGONINE, its esters and derivatives which are convertible to ecgonine and cocaine, except when contained in a Class C controlled drug.	No Pubmed citations of MESH Heading listings, but Pubmed citations and MESH Headings mention ecgonine as a Cocaine analog/derivative No human therapeutic use identified.
ETHYLMETHYLTHIAMBUTENE (3-ethylmethylamino-1,1-di-(2'-thienyl)-1-butene)	No Pubmed citations, but search for thiambutene yielded five articles, 3 of which were veterinary usage, none of which had abstracts and the most recent of which was from 1974 MESH Heading for thiambutene indicates veterinary use
ETONITAZENE (1-diethylaminoethyl-2- <i>para</i> -ethoxybenzyl-5-nitro-benzimidazole)	MESH Headings state narcotic analgesic similar to morphine in action; used mainly to study narcotic habituation, tolerance, and withdrawal in laboratory animals
ETOXERIDINE (1-[2-(2-hydroxyethoxy)ethyl]-4-phenylpiperidine-4-carboxylic acid ethyl ester)	No info Pubmed citations or MESH Headings No human therapeutic use identified.
[<i>p</i> -FLUOROFENTANYL (4'-fluoro- <i>N</i> -1-(phenethyl-4-piperidyl) propionanilide)]	Only three Pubmed citations the latest of which was from 2003. Two indicate abuse potential while one classifies <i>p</i> -fluorofentanyl as an opioid designer drug MESH Headings suggest as for fentanyl No human therapeutic use identified.
FURETHIDINE (1-(2-tetrahydrofurfuryloxyethyl)-4-phenylpiperidine-4-carboxylic acid ethyl ester)	No info Pubmed citations or MESH Headings No human therapeutic use identified.
HYDROMORPHINOL (14-hydroxydihydromorphine)	Only two Pubmed citations from 1965 and 1990. Indicate this is a morphine derivative opioid analgesic No MESH Headings No human therapeutic use identified.
α -HYDROXYFENTANYL (<i>N</i> -[1-(α -hydroxyphenethyl)-4-	As for fentanyl? Pubmed citation suggests minor metabolite of

piperidyl] propionanilide)	fentanyl No info MESH Headings No human therapeutic use identified.
□-HYDROXY-3-METHYLFENTANYL (N-[1-(□-hydroxyphenethyl)-3-methyl-4-piperidyl] propionanilide)	As for fentanyl? Pubmed citation suggests metabolite of alfenatril and sufentanil, which are synthetic analogies of fentanyl No info MESH Headings No human therapeutic use identified.
HYDROXYPETHIDINE (4- <i>meta</i> -hydroxyphenyl-1-methylpiperidine-4-carboxylic acid ethyl ester)	Pethidine derivative? Pubmed citation suggests minor metabolite of pethidine No info MESH Headings No human therapeutic use identified.
ISOMETHADONE (6-dimethylamino-5-methyl-4,4-diphenyl-3-hexanone)	Methadone derivative 14 Pubmed citations suggesting investigational use only? No human therapeutic use identified.
LEVOPHENACYLMORPHAN ((—)-3-hydroxy- <i>N</i> -phenacylmorphinan)	No info Pubmed citations or MESH Headings No human therapeutic use identified.
MECLOQUALONE (3-(2-chlorophenyl)-2-methyl-4-(3H)-quinazolinone)	Older Pubmed citations suggest sedative use. Newer Pubmed citations suggest high abuse potential MESH Heading listing but no description Human therapeutic use unclear.
METAZOCINE (2'-hydroxy-2,5,9-trimethyl-6,7-benzomorphan)	Pubmed citations indicate metazocine to be an intermediate efficacy mu opioid, similar to penatnocine and less potent than morphine. Use appears experimental. MESH Headings suggest same family as pentazocine. Human therapeutic use unclear.
METHADONE-INTERMEDIATE (4-cyano-2-dimethylamino-4,4-diphenylbutane)	As for methadone? No information Pubmed citations or MESH Headings Human therapeutic use unclear.
1-METHYL-4-PHENYL-4-PIPERIDINOL	Only one Pubmed citation from 1973 Listed in MESH Headings, but no description No human therapeutic use identified.
METHYLDESORPHINE (6-methyl- Δ^6 deoxymorphine)	No information Pubmed citations or MESH Headings No human therapeutic use identified.
METHYLDIHYDROMORPHINE (6-methyldihydromorphine)	Opioid? As for morphine? Only one Pubmed citation from 1950 No info MESH Headings Human therapeutic use unclear.
□-METHYLFENTANYL (<i>N</i> -[1-(□-methylphenethyl)-4-piperidyl] propionanilide)	As for fentanyl? Pubmed citations indicate designer analogue of fentanyl MESH Headings states combined with 3-methylfentanyl and sold as illicit "China White" Human therapeutic use unclear..
□-METHYLTHIOFENTANYL (<i>N</i> -[1-[1-methyl-2-(2-thienyl)ethyl]-4-piperidyl] propionanilide)	As for fentanyl? No info Pubmed citations or MESH Headings Human therapeutic use unclear

3-METHYLTHIOFENTANYL (N-[3-methyl-1-[2-(2-thienyl)ethyl]-4-piperidyl]propionanilide)	As for fentanyl? No info Pubmed citations or MESH Headings Human therapeutic use unclear.
METOPON (5-methyl dihydromorphinone)	Pubmed citations suggest outdated morphine derivative Human therapeutic use unclear.
MORAMIDE-INTERMEDIATE (2-methyl-3-morpholino-1,1-diphenyl-propanecarboxylic acid)	Dextromoramide is an opioid analgesic structurally related to methadone. It has been used in the treatment of severe pain although it was not recommended for use in obstetric analgesia because of an increased risk of neonatal depression. Dextromoramide is subject to abuse. Same as moramide intermediate? – exclude based on insufficient information/potential for abuse
MORPHERIDINE (1-(2-morpholinoethyl)-4-phenylpiperidine-4-carboxylic acid ethyl ester)	No info Pubmed citations or MESH Headings No human therapeutic use identified.
MPPP (1-methyl-4-phenyl-4-piperidinol propionate (ester))	Pubmed citations include <i>Maurer HH, Kraemer T, Springer D, Staack RF. Chemistry, pharmacology, toxicology, and hepatic metabolism of designer drugs of the amphetamine (ecstasy), piperazine, and pyrrolidinophenone types: a synopsis. Ther Drug Monit. 2004 Apr;26(2):127-31</i> , which states, “ Designer drugs of the ... pyrrolidinophenone type (eg, PPP, MOPPP, MDPPP, MPPP, MPHP) have gained popularity and notoriety as rave drugs. These drugs produce feelings of euphoria and energy and a desire to socialize. Although in the corresponding drug scene designer drugs have the reputation of being safe, studies in rats and primates in combination with human epidemiologic investigations indicate potential risks to humans. Thus, a variety of adverse effects have been associated with the use/abuse of this class of drugs in humans, including a life-threatening serotonin syndrome, hepatotoxicity, neurotoxicity, and psychopathology. Metabolites were suspected to contribute to some of the toxic effects.”
MYROPHINE (myristylbenzylmorphine)	No info Pubmed citations or MESH Headings No human therapeutic use identified.
NORACYMETHADOL (□-3-acetoxy-6-methylamino-4,4-diphenyl-heptane)	Only one Pubmed citation from 1963 No info MESH Headings No human therapeutic use identified.
NORPIANONE (4,4-diphenyl-6-piperidino-3-hexanone)	No info Pubmed citations or MESH Headings No human therapeutic use identified.
PEPAP (1-phenethyl-4-phenyl-4-piperidinol acetate (ester))	A synthetic analogue of pethidine, MPPP (1-methyl-4-phenyl-4-propionoxypiperidine), manufactured illicitly for recreational use , achieved notoriety when it was accidentally contaminated with MPTP (1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine) leading to an epidemic of

	parkinsonism among intravenous drug abusers. (1) WHO has also identified another analogue, PEPAP (1-phenylethyl-4-phenyl-4-acetoxypiperidine) as being liable to abuse.
PETHIDINE-INTERMEDIATE-A (4-cyano-1-methyl-4-phenylpiperidine)	Links to pethidine in Martindale – Human therapeutic use unclear
PETHIDINE-INTERMEDIATE-B (4-phenylpiperidine-4-carboxylic acid ethyl ester)	Links to pethidine in Martindale Human therapeutic use unclear.
PETHIDINE-INTERMEDIATE-C (1-methyl-4-phenylpiperidine-4-carboxylic acid)	Links to pethidine in Martindale Human therapeutic use unclear.
PHENADOXONE (6-morpholino-4,4-diphenyl-3-heptanone)	Only 4 Pubmed citations, three of which are pre-1952. Latest (1983) indicates methadone metabolite Human therapeutic use unclear.
PHENAMPROMIDE (N-(1-methyl-2-piperidinoethyl) propionanilide)	Only one Pubmed citation from 1965. No info MESH Headings No human therapeutic use identified.
PHENDIMETRAZINE (3,4-dimethyl-2-phenylmorpholine)	Phendimetrazine tartrate is a central stimulant and indirect-acting sympathomimetic with actions similar to those of dexamfetamine. It has been used as an anorectic in the short-term treatment of obesity, although stimulants are no longer recommended for this indication
1-PHENETHYL-4-PHENYL-4-PIPERIDINOL	No info Pubmed citations or MESH Headings No human therapeutic use identified.
PHENMETRAZINE (3-methyl-2-phenylmorpholine)	Phenmetrazine hydrochloride is a central stimulant and indirect-acting sympathomimetic with actions similar to those of dexamfetamine. It has been used as an anorectic in the treatment of obesity. Subject to extensive abuse
PHENOMORPHAN (3-hydroxy-N-phenethylmorphinan)	phenylmorphans = opioid receptor activity, Phenomorphan itself not in Pubmed. 3-hydroxy-N-phenethylmorphinan in Pubmed – human therapeutic use not clear
PIMINODINE (4-phenyl-1-(3-phenylaminopropyl)piperidine-4-carboxylic acid ethyl ester)	9 refs in Pubmed; 1960's, human therapeutic use unclear.
PROHEPTAZINE (1,3-dimethyl-4-phenyl-4-propionoxyzacycloheptane)	one 1960's ref in Pubmed; human therapeutic use unclear.
PROPERIDINE (1-methyl-4-phenylpiperidine-4-carboxylic acid isopropyl ester)	one 1950's Pubmed ref – in mice No human therapeutic use identified.
RACEMETHORPHAN ((±)-3-methoxy-N-methylmorphinan)	few references in Pubmed, most from 1950's & 60's. Human therapeutic use unclear.
RACEMORAMIDE ((±)-4-[2-methyl-4-oxo-3,3-diphenyl-4-(1-pyrrolidiny) butyl] morpholine)	one 1950's ref in Pubmed. Human therapeutic use unclear.

RACEMORPHAN ((±)-3-hydroxy- <i>N</i> -methylmorphinan)	Human therapeutic use unclear.
THEBAINE	? endogenous precursor to morphine production in human cells. Current therapeutic use of exogenous form unclear

SCHEDULE 3	Comments
CLASS C CONTROLLED DRUGS	
PART 1	
CANNABIS FRUIT	
CANNABIS PLANT (whether fresh, dried, or otherwise)— That is, any part of any plant of the genus <i>Cannabis</i> except a part from which all the resin has been extracted.	
CANNABIS SEED.	n/a
CATHA EDULIS PLANT	Catha Edulis references to Catha in Martindale Notes and Warnings: NOTE. Description. Catha consists of the leaves of <i>Catha edulis</i> (Celastraceae), and contains cathine, cathinone, celastrin, choline, tannins, and inorganic salts. Catha is used for its stimulant properties among some cultures of Africa and the Middle East, usually by chewing the leaves. Its effects are reported to resemble those of the amfetamines, and are thought to be largely due to the content of cathinone. Dependence and psychotic reactions have been reported. Cathine, another constituent, is used as the hydrochloride as an anorectic. Human therapeutic use unclear.
COCA LEAF—That is, the leaf of any plant of any species of the genus <i>Erythroxylon</i> , except a leaf from which all ecgonine, cocaine, and any other ecgonine alkaloids have been removed.	Coca is the dried leaves of <i>Erythroxylum coca</i> (Bolivian or Huanuco leaf) or of <i>E. truxillense</i> (Peruvian or Truxillo leaf) (Erythroxylaceae), indigenous to Bolivia and Peru and cultivated in Colombia and Indonesia. Coca was formerly used for its stimulant action and for the relief of gastric pain, nausea, and vomiting, but it has no place in modern medicine . The practice of coca leaf chewing still continues in South America
PART 3	
1. The following substances, namely:	
NICODICODINE (6-nicotinyldihydrocodeine or nicotinic acid ester of dihydrocodeine	Nicodicodine not identified in Pubmed or Martindale. No human therapeutic use identified.
PROPIRAM (<i>N</i> -(1-methyl-2-	Propiram fumarate is an opioid analgesic with agonist

piperidinoethyl)-N -2-pyridylpropionamide)	and antagonist properties; it is classified as a partial agonist at mu opioid receptors. It has been used for the relief of moderate to severe pain Martindale archives
PART 4	
1. The following substances, namely:	
ALLOBARBITAL (5, 5-diallylbarbituric acid)	Allobarbital is a barbiturate with general properties similar to those of amobarbital. It has been used in combination preparations for the treatment of sleep disorders and pain but barbiturates are no longer considered appropriate for such purposes
AMOBARBITAL (5-ethyl-5-(3-methylbutyl) barbituric acid)	n/a
BUTALBITAL (5-allyl-5-isobutylbarbituric acid)	n/a
BUTOBARBITONE (5-butyl-5-ethylbarbituric acid)	n/a
CYCLOBARBITAL (5-(1-cyclohexen-1-yl)-5-ethylbarbituric acid)	n/a
GLUTETHIMIDE (2-ethyl-2-phenylglutarimide)	Glutethimide is a piperidinedione hypnotic and sedative with effects broadly similar to those of the barbiturates. It also has antimuscarinic properties. It has been given for the short-term management of insomnia but it has been superseded by other drugs
NEALBARBITONE (5-allyl-5-neopentylbarbituric acid)	n/a
PENTOBARBITAL (5-ethyl-5-(1-methylbutyl) barbituric acid)	n/a
SECBUTABARBITAL (5-sec-butyl-5-ethylbarbituric acid)	n/a
SECOBARBITAL (5-allyl-5-(1-methylbutyl) barbituric acid)	n/a
VINYLBITAL (5-(1-methylbutyl)-5-vinylbarbituric acid)	n/a
PART 5	
1. The following substances, namely	
AMINOREX	Aminorex was used as an anorectic but was withdrawn because of its association with pulmonary hypertension which sometimes proved fatal Martindale archive
BARBITAL (5,5-diethylbarbituric acid)	n/a

ETHINAMATE (1-ethynylcyclohexanol carbamate)	Ethinamate is a carbamate derivative with mild sedative and hypnotic properties Martindale archive
MAZINDOL (5-(4-chlorophenyl)-2, 5-dihydro-3H-imidazo [2, 1-a]-isoindol-5-ol)	Mazindol is a central stimulant with actions similar to those of dexamfetamine , although structurally the two compounds are unrelated. It appears to inhibit reuptake of dopamine and noradrenaline. It has been used as an anorectic, given by mouth in the treatment of obesity, although stimulants are no longer recommended for this indication
METHYLPHENOBARBITAL (5-ethyl-1-methyl-5-phenylbarbituric acid)	n/a
METHYLPRYLON (3,3-diethyl-5-methylpiperidine-2,4-dione)	6 refs in Pubmed, some in animals, current human therapeutic use unclear.
PEMOLINE	It has been used in the management of hyperactivity disorders in children. In the USA 37.5 mg is given by mouth each morning initially, increased gradually at weekly intervals by 18.75 mg; the usual range is 56.25 to 75 mg daily and the maximum recommended daily dose is 112.5 mg. In the UK, pemoline was withdrawn from use for hyperactivity in children after reports of serious hepatotoxicity in the USA
PHENTERMINE (2-amino-2-methyl-1-phenylpropane)	Phentermine is a central stimulant and indirect-acting sympathomimetic with actions similar to those of dexamfetamine. It has been given by mouth as the base or hydrochloride as an anorectic in the short-term treatment of moderate to severe obesity.
PIPRADROL (1,1-diphenyl-1-(2-piperidyl)methanol)	Pipradrol hydrochloride has been given by mouth in tonic preparations as a CNS stimulant. Human therapeutic use unclear.
SPA ((—)-1-dimethylamino-1,2-diphenylethane	Insufficient information, human therapeutic use unclear.
5. Mixtures of a derivative of barbituric acid named or described in Part 4 of this Schedule compounded with one or more other pharmacologically active ingredients not named or described in Part 4 of this Schedule.	n/a
PART 6	
1. The following substances, namely	
(aa) Preparations containing a derivative of barbituric acid named or	n/a

described in Part 4 or Part 5 of this Schedule, in solutions containing not more than 0.5 percent of that derivative of barbituric acid:	
(b) Preparations of cocaine containing not more than 0.1 percent of cocaine base, being preparations compounded with one or more other pharmacologically active ingredients (none of which are substances named or described in Schedules 1 or 2 to this Act or in Parts 1 to 5 of this Schedule) in such a way that the preparation has no, or a negligible, risk of abuse, and in such a way that the cocaine cannot be recovered by readily applicable means or in a yield which would constitute a risk to health:	n/a
(ff) Preparations of propiram containing not more than 100 mg of propiram per dosage unit and compounded with at least the same amount of methylcellulose:	Propiram fumarate is an opioid analgesic with agonist and antagonist properties; it is classified as a partial agonist at mu opioid receptors. It has been used for the relief of moderate to severe pain <i>Martindale archives</i>
<i>PART 7</i>	
AMPHETAMINE ANALOGUES, in which the 1-amino-2-phenylethane nucleus carries any of the following radicals, either alone or in combination:	n/a
(a) 1 or 2 alkyl radicals, each with up to 6 carbon atoms, attached to the nitrogen atom:	n/a
(b) 1 or 2 methyl radicals, or an ethyl radical, attached to the carbon atom adjacent to the nitrogen atom:	n/a
(c) A hydroxy radical, attached to the carbon atom adjacent to the benzene ring:	n/a
(d) Any combination of up to 5 alkyl radicals and/or alkoxy radicals and/or alkylamino radicals (each	n/a

with up to 6 carbon atoms, including cyclic radicals) and/or halogen radicals and/or nitro radicals and/or amino radicals, attached to the benzene ring.	
PHENCYCLIDINE ANALOGUES, being chemical compounds with the 1-alkylamino-1-aryl cyclohexane structure, with any combination of the following alkylamino and aryl radicals:	Phencyclidine is related chemically to ketamine and is a potent analgesic and anaesthetic. It was formerly given intravenously to produce an amnesic trance-like state, with analgesia, but severe adverse effects, especially postoperative psychoses, precluded its use. <i>It was formerly used in veterinary medicine as an immobilising agent.</i> Phencyclidine is widely abused in some countries for its <i>hallucinogenic effects</i> and has been taken by mouth, sniffed, injected or smoked
(a) The alkylamino radical is 1-piperidinyl, 1-pyrrolidinyl, 4-morpholinyl, or any other radical with up to 6 carbon atoms in the alkyl portion:	n/a
(b) The aryl radical is phenyl, thienyl, pyridinyl, or pyrrolidinyl:	n/a
(c) The aryl radical, as described in paragraph (b), carries any combination of up to 5 alkyl radicals and/or alkoxy radicals (each with up to 6 carbon atoms, including cyclic radicals) and/or halogen radicals.	n/a
METHAQUALONE ANALOGUES, in which the 3-arylquinazolin-4-one nucleus has additional radicals, either alone or in combination, attached as follows:	Methaqualone is a quinazoline derivative with hypnotic and sedative properties. It has been given by mouth in the short-term management of insomnia but the use of methaqualone for this purpose is no longer considered appropriate. It has also been given with diphenhydramine for an enhanced effect <i>Methaqualone has been withdrawn from the market in many countries because of problems with abuse</i>
(a) An alkyl radical, with up to 6 carbon atoms, attached at the two position.	n/a
(b) Any combination of up to 5 alkyl radicals and/or alkoxy radicals (each with up to 6 carbon atoms, including cyclic radicals) and/or halogen radicals, attached to each of the aryl rings.	n/a
DMT (DIMETHYLTRYPTAMINE)	Dimethyltryptamine produces <i>hallucinogenic and sympathomimetic effects that are similar to those</i>

ANALOGUES, in which the 3-(2-aminoethyl)indole nucleus has additional radicals, either alone or in combination, attached as follows:	of lysergide , but of shorter duration. It has no therapeutic use. Diethyltryptamine (DET) and dipropyltryptamine (DPT) are related synthetic hallucinogens with longer actions but are less potent than dimethyltryptamine
a) 1 or 2 alkyl radicals, each with up to 6 carbon atoms, including cyclic radicals, attached to the amino nitrogen atom:	n/a
(b) 1 or 2 methyl groups, or an ethyl group, attached to the carbon atom adjacent to the amino nitrogen atom:	n/a
c) Any combination of up to 5 alkyl radicals and/or alkoxy radicals (each with up to 6 carbon atoms, including cyclic radicals) and/or halogen radicals, attached to the benzene ring.	n/a

SCHEDULE 4	Comments
PRECURSOR SUBSTANCES	
PART 1	
1. The following substances	
N-ACETYLANTHRANILIC ACID	Human therapeutic use unclear. 6 abstracts on Pubmed, majority of which are biochemical or microbiological refs
ISOSAFROLE	No human therapeutic use identified
LYSERGIC ACID	n/a
3, 4,- METHYLENEDIOXYPHENY L-2-PROPANONE	Unable to find in Pubmed or Martindale, human therapeutic use unclear
1-PHENYL-2-PROPANONE	No human therapeutic use identified
SAFROLE	Sassafras oil is a volatile oil distilled from the root or root bark of Sassafras albidum (Lauraceae), or from the wood of certain species of Ocotea (Lauraceae). It contains safrole Sassafras oil has rubefacient properties and was formerly used as a pediculicide. Neither sassafras nor the oil should be taken internally; the use of herb teas of sassafras may lead to a large dose of safrole. The use of safrole in foods has been banned because of carcinogenic and hepatotoxic risks. The use of safrole in toilet preparations is also controlled. Human therapeutic use unclear.

PART 2	
1. The following substances	
ACETIC ANHYDRIDE	<i>No human therapeutic use identified relevant to nursing practice.</i>
ACETONE	<i>No human therapeutic use identified relevant to nursing practice.</i>
ANTHRANILIC ACID	<i>No human therapeutic use identified relevant to nursing practice.</i>
ETHYL ETHER	<i>No human therapeutic use identified relevant to nursing practice.</i>
HYDROCHLORIC ACID	<i>no human therapeutic use identified relevant to nursing practice.</i>
METHYL ETHYL KETONE	<i>No human therapeutic use identified relevant to nursing practice.</i>
PHENYLACETIC ACID	<i>No human therapeutic use identified relevant to nursing practice.</i>
PIPERIDINE	<i>No human therapeutic use identified relevant to nursing practice.</i>
SULPHURIC ACID	<i>No human therapeutic use identified relevant to nursing practice.</i>
TOLUENE	Toluene is widely used as an industrial solvent, excluded based on <i>no human therapeutic use identified</i>

Appendix III

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Studies assessing care and patient related outcomes of advanced practice nursing – relevant to nurse practitioner prescribing

Study	Outcome indicators	Findings
Langner & Hutelmyer (1995) Patient satisfaction survey to 52 patients with HIV comparing Nurse Practitioner (NP) to physician provider care in an ambulatory care services clinic.	Clinic waiting time, patient perceptions of provider knowledge, continuity of care, social service support, patient education.	Overall satisfaction with patient care was high. NP ratings were higher in areas of provider knowledge, continuity of care, patient education and clinic waiting time.
Simborg et al (1978) Chart review of 1369 patient practitioner encounters to compare MD(<i>n</i> =109) to NP(<i>n</i> =35) in primary practices.	Diagnoses, tests, non drug therapies	Physicians (MDs) prescribed more drug therapies (<i>p</i> <.05); NPs recorded more signs and symptoms; NPs emphasised patient education more than MDs.
Mahoney (1995) National random sample comparison of prescribing decisions of NPs (<i>n</i> =298) and MDs (<i>n</i> =373) using 3 standardised geriatric case vignettes	Index of appropriateness of prescribing decisions	NPs scored higher on the index of appropriateness than physicians (<i>p</i> ,.001) a difference that remained whether or not the NP had prescriptive authority. NPs made more recommendations for non-drug therapeutic interventions compared to MDs (<i>p</i> <.001).
Munroe et al (1982) Six month evaluation of prescribing patterns (1,000 prescriptions randomly analysed and a detailed audit of 100 cases) of Advanced Practice Nurses (APNs) in urban university-affiliated ambulatory care facility.	Prescription practices for primary prevention, secondary prevention, chronic disease maintenance regarding (1) indication; (2) consistency with formulary and protocol; (3) drug safety	Study demonstrated effective and appropriate use of prescription drugs by APNs; 98% of drugs prescribed were indicated according to evidence in the record, 99% of drugs ordered were consistent with protocol; all audited records were deemed appropriate in relation to safety.
Batey & Holland (1985) review of log recordings of 89 NPs from 5 states in adult family practice on 7086 prescriptions issued during 890 clinical days and comparison to physician practices based on the National Ambulatory Medical Care Survey,	Number of prescriptions, average number of drugs prescribed per client visit.	Drug utilisation of NPs was similar to physician prescribing data; intensity of prescribing of NP was less than MD, MD consultation prior to prescribing occurred with the highest incidence for least frequently prescribed drugs; MD consultation or referral was reported for 14.3% of prescriptions.

<p>Bergeron et al (1999) Survey data from 285 rural hospitals. Use and benefits of Advanced Practice Nurses (APNs) was assessed</p>	<p>APN duties effect on MD workload. Benefit of APN in terms of revenues and reduced operating costs.</p>	<p>APNs are beneficial to rural hospitals. APNs were used to visit hospital inpatients, visit nursing home patients, educate patients and cover the emergency room. Reported benefits of APNs were ↓ costs, ↑ revenues, ↓ operating costs, ↑ patient volumes, ↓ staffing needs and improved physician recruitment and retention.</p>
<p>Spitzer, Sackett, Sibley, et al (1974) Randomised trial of NP (1058 families) and MD (n=540 families) care in primary practices in Canada</p>	<p>Clinical activities, diagnosis, procedures, mortality, physical functioning, emotional and social functioning</p>	<p>No difference between MD and NP care for mortality rates and patient physical and emotional or social functioning. Management of care was rated adequate for 69% of NP care versus 66% of MD care.</p>
<p>Chambers, Bruce-Lockhart, Black et al (1977) 1 year external audit and chart review of care given to rural Canadians by NP (n=167) versus MD group (n=1146) patients</p>	<p>Primary care visits Hospital days Health service costs</p>	<p>NP managed patient had 186% increase in primary care visits, hospital visits decreased 35% and hospital days decreased by 5%; NP managed patients also had an increase in pre-natal visits, well child visits and school exams; costs increased 26% for NPs versus 21% by MD group.</p>
<p>Horrocks, Anderson & Salisbury (2002) Meta-analysis of primary health nurses from Europe, North America, Australasia, South Africa and Japan that independently diagnose and treat.</p>	<p>Accurate diagnosis, patient education and appropriate medication use</p>	<p>Primary health nurses demonstrated safe and effective care for patients and were found to be as accurate as medical colleagues in interpreting x-ray and laboratory data.</p>

Appendix IV

Gazette Notices detailing the Council's education requirements for prescribing Medicines

Extract from *New Zealand Gazette*, 7/11/2002. No. 163, p. 4106

Medicines (Designated Prescriber: Nurses Practising in Child Family Health) Notice 2002

Pursuant to the Medicines Amendment Act 1999 and the Medicines (Designated Prescriber: Nurses Practising in Aged Care and Child Family Health) Regulations 2001, the Nursing Council of New Zealand gives the following notice.

Notice

1. Title and commencement – This notice is the Medicines (Designated Prescriber: Nurses Practising in Child Family Health) Notice 2002 and comes into force on 18 November 2002.

2. The purpose – The Schedule to this notice sets out the requirements that the Nursing Council of New Zealand (“nursing council”) has determined must be met by nurses who wish to prescribe prescription medicines. These requirements are imposed under Regulations 10, 11 and 12 of the Medicines (Designated Prescriber: Nurses Practising in Aged Care and Child Family Health) Regulations 2001.

Schedule

A Requirements for commencing prescribing (Regulation 10)

The nursing council requirements for training that nurse prescribers must undertake before commencing prescribing for the first time¹ are as follows:

- (i) The completion of an approved clinical masters programme which includes demonstration of the competencies, to the satisfaction of the nursing council, for advanced nursing practice and prescribing applied within the defined scope of practice of child family health. The programme must include relevant theory, research and concurrent practice.

The nurse practitioner seeking to prescribe is required to complete as part of their masters programme the following-

Assessment process:

- Advanced nursing practice skills and judgements;
- advanced health/clinical assessment;
- differential diagnosis;
- bioscience including epidemiology, microbiology and pathophysiology;
- laboratory/diagnostic tests and interpretation; and
- collaborative decision making.

Prescribing process:

- Interventions/appliances/treatments/medicines choice.
- Prescribing variation.
- Clinical pharmacology of authorised medicines/vaccinations including:
 - pharmacodynamics
 - pharmacokinetics
 - individualising doses

- antibiotic resistance
- adverse drug reactions and interventions.

Monitoring process:

- Legal/ethical issues including:
 - responsibilities
 - documentation
 - regulatory framework
 - auditing, ethics of drug trials.
- Critical appraisal of clinical trials including:
 - relevant research methodologies.

Appropriate multi-disciplinary input will be required into the programme (refer to *Nursing Council's Standards for Advanced Nursing Practice Programmes Leading to Nurse Prescribing*).

- (ii) As an alternative to the satisfactory completion of an approved New Zealand masters programme, an applicant must have completed an equivalent overseas qualification which meets the requirements specified in paragraph (i) above.

B Ongoing training required (Regulation 11)

Nurses authorised to prescribe within the scope of practice of child family health, must either undertake:

- (i) a minimum of 80 hours a year of professional development aggregated over a five-year period; or
- (ii) a minimum of 400 hours ongoing nursing practice aggregated over a five-year period within the child family health scope of practice.

C Competency assessment (Regulation 12)

The nursing council will monitor the ongoing competence of nurse prescribers through its policies for competence-based practising certificates for registered nurses.

All nurse practitioners must undertake an assessment every five years to determine their continuing competency as a nurse practitioner and nurse prescriber.

As part of this assessment, all nurses authorised to prescribe within the scope of practice for child family health must provide the nursing council with evidence that they have completed the ongoing training required by paragraph B above.

Key to Annotations

¹ When it is satisfied that an applicant has met the requirements to be entitled to prescribe, the nursing council will approve registration for nurse prescribing and enter the additional qualification on the register. The practising certificate will indicate nurse prescriber registration, and the relevant scope(s) of practice. Dated at Wellington this 5th day of November 2002. MARION CLARK, Registrar, the Nursing Council of New Zealand.

gs6046

Medicines (Designated Prescriber: Nurses Practising in Aged Care) Notice 2002

Pursuant to the Medicines Amendment Act 1999 and the Medicines (Designated Prescriber: Nurses Practising in Aged Care and Child Family Health) Regulations 2001, the Nursing Council of New Zealand gives the following notice.

Notice

3. Title and commencement – This notice is the Medicines (Designated Prescriber: Nurses Practising in Aged Care) Notice 2002 and comes into force on 18 November 2002.

4. The purpose – The Schedule to this notice sets out the requirements that the Nursing Council of New Zealand (“nursing council”) has determined must be met by nurses who wish to prescribe prescription medicines. These requirements are imposed under Regulations 6, 7 and 8 of the Medicines (Designated Prescriber: Nurses Practising in Aged Care and Child Family Health) Regulations 2001.

Schedule

A Requirements for commencing prescribing (Regulation 6)

The nursing council requirements for training that nurse prescribers must undertake before commencing prescribing for the first time¹ are as follows:

- (ii) The completion of an approved clinical masters programme which includes demonstration of the competencies, to the satisfaction of the nursing council, for advanced nursing practice and prescribing applied within the defined scope of practice of aged care. The programme must include relevant theory, research and concurrent practice.

The nurse practitioner seeking to prescribe is required to complete as part of their masters programme the following-

Assessment process:

- Advanced nursing practice skills and judgements;
- advanced health/clinical assessment;
- differential diagnosis;
- bioscience including epidemiology, microbiology and pathophysiology;
- laboratory/diagnostic tests and interpretation; and
- collaborative decision making.

Prescribing process:

- Interventions/appliances/treatments/medicines choice.
- Prescribing variation.
- Clinical pharmacology of authorised medicines/vaccinations including:
 - pharmacodynamics
 - pharmacokinetics
 - individualising doses
 - antibiotic resistance
 - adverse drug reactions and interventions

Monitoring process:

- Legal/ethical issues including:
 - responsibilities
 - documentation
 - regulatory framework

- auditing, ethics of drug trials.
- Critical appraisal of clinical trials including:
 - relevant research methodologies.

Appropriate multi-disciplinary input will be required (refer to *Nursing Council's Standards for Advanced Nursing Practice Programmes Leading to Nurse Prescribing*).

- (ii) As an alternative to the satisfactory completion of an approved New Zealand masters programme, an applicant must have completed an equivalent overseas qualification which meets the requirements specified in paragraph (i) above.

B Ongoing training required (Regulation 7)

Nurses authorised to prescribe within the scope of practice of aged care, must either undertake:

- (iii) a minimum of 80 hours a year of professional development aggregated over a five-year period; or
- (iv) a minimum of 400 hours ongoing nursing practice aggregated over a five-year period within the aged care scope of practice.

C Competency assessment (Regulation 8)

The nursing council will monitor the ongoing competence of nurse prescribers through its policies for competence-based practising certificates for registered nurses.

All nurse practitioners must undertake an assessment every five years to determine their continuing competency as a nurse practitioner and nurse prescriber.

As part of this assessment, all nurses authorised to prescribe within the scope of practice of aged care must provide the nursing council with evidence that they have completed the ongoing training required by paragraph B above.

Key to Annotations

¹ When it is satisfied that an applicant has met the requirements to be entitled to prescribe, the nursing council will approve registration for nurse prescribing and enter the additional qualification on the register. The practising certificate will indicate nurse prescriber registration, and the relevant scope(s) of practice.

Dated at Wellington this 5th day of November 2002.

MARION CLARK, Registrar, the Nursing Council of New Zealand.

gs6045

Appendix V

Gazette Notice detailing scope of practice and qualifications for nurse practitioners

15 SEPTEMBER 2004

NEW ZEALAND GAZETTE, No. 120

2959

2. Scope of Practice – Nurse Practitioner

Nurse Practitioners are expert nurses who work within a specific area of practice incorporating advanced knowledge and skills. They practise both independently and in collaboration with other health care professionals to promote health, prevent disease and to diagnose, assess and manage people's health needs. They provide a wide range of assessment and treatment interventions, including differential diagnoses, ordering, conducting and interpreting diagnostic and laboratory tests and administering therapies for the management of potential or actual health needs. They work in partnership with individuals, families, whanau and communities across a range of settings. Nurse Practitioners may choose to prescribe medicines within their specific area of practice. Nurse Practitioners also demonstrate leadership as consultants, educators, managers and researchers and actively participate in professional activities, and in local and national policy development.

The Nursing Council competencies for Nurse Practitioners describe the skills, knowledge and activities of Nurse Practitioners.

Qualifications

- a) Registration with the Nursing Council of New Zealand in the Registered Nurse Scope of Practice, AND
- b) A minimum of four years of experience in a specific area of practice, AND
- c) Successful completion of a clinically focused Masters Degree programme approved by the Nursing Council of New Zealand, or equivalent qualification, AND
- d) A pass in a Nursing Council assessment of Nurse Practitioner competencies and criteria.

Nurse Practitioners seeking registration with prescribing rights are required to have an additional qualification:

- e) Successful completion of an approved prescribing component of the clinically-focused Masters' programme relevant to their specific area of practice.

Appendix VI

Previous consultation documents and decisions regarding Nurse Practitioners, and nurse prescribing

Ministry of Health. 1997. *Draft Discussion Document: Extending Limited Prescribing Rights to Registered Nurses*. Wellington:Ministry of Health.

____. 1998. *Consultation Document: on Nurse Prescribing in Aged Care and Child Family Health*. Wellington Ministry of Health.

____. 2002a. *Nurse Practitioners in New Zealand*. Wellington:Ministry of Health.

____. 2002b. *Primary Health Care Strategy*. Wellington:Ministry of Health.

New Prescribers Advisory Committee. 2002. *Recommendations to the Minister of Health: Extending limited independent prescribing authority to new groups of registered health practitioner*. Wellington: New Prescribers Advisory Committee.

New Zealand Gazette. 2002. Notice 6046, No. 163, p.4106.

New Zealand Government. 2001. *Medicines (Designated Prescriber: Nurses Practising in Aged Care and Child Family Health) Regulations 2001*, 2001/230.

Nursing Council of New Zealand. 2001. *Framework for post-registration nursing education*. Wellington:Nursing Council of New Zealand.

____. 2002a. *The Nurse Practitioner: Responding to Health Needs in New Zealand*, 3rd Edition. Wellington:Nursing Council of New Zealand.

____. 2002b. *Nurse Practitioner Endorsement: Guidelines for Applicants*. Wellington: Nursing Council of New Zealand.

____. 2002c. *Application to the New Prescribers' Advisory Committee: Extending Prescribing Authority to Sexual and Reproductive Health Nurse PractitionersTM*. Wellington:Nursing Council of New Zealand.

Appendix VII

Competencies for the Nurse Practitioner²⁴

1 Articulates scope of nursing practice and its advancement.

The nurse:

- defines the scope of independent/collaborative nursing practice in health promotion, maintenance and restoration of health, preventative care, rehabilitation and/or palliative care
- describes diagnostic enquiry processes responding to actual and potential health needs and characteristics of the particular population group
- explains the application/adaptation of advanced nursing knowledge, expertise and evidence based care to improve the health outcomes for clients across the care continuum within the scope of practice
- generates new approaches to the extension of nursing knowledge and delivery of expert care with the client groups in different settings.

2 Shows expert practice working collaboratively across settings and within interdisciplinary environments.

The nurse:

- demonstrates culturally safe practice
- uses professional judgement to assess the client's health status; make differential diagnoses; implement nursing interventions and treatments; and refer the client to other health professionals.
- develops a creative, innovative approach to client care and nursing practice
- manages complex situations
- rapidly anticipates situations
- models expert skills within the clinical practice area
- applies critical reasoning to nursing practice issues/decisions
- recognises limits to own practice and consults appropriately, facilitating the client's access to appropriate interventions and/or therapies
- uses and interprets laboratory and diagnostic tests
- operates within a framework of current best practice and applies knowledge of pathophysiology, pharmacology, pharmacokinetics and pharmacodynamics to nursing practice assessment/decisions and interventions
- accurately documents and administers assessments, diagnosis, intervention, treatments and follow-up within legislation, codes and scope of practice
- evaluates the effectiveness of the client's response to prescribed interventions, appliances, treatments and medications and monitors decisions, taking remedial action and/or referring accordingly

²⁴ These competencies are currently being reviewed as part of the development of the scope of practice under the Health Practitioners Competence Assurance Act 2003. They are not expected to change significantly.

- collaborates and consults with the client, family and other health professionals providing accurate information about relevant interventions, appliances and treatments.

3 Shows effective nursing leadership and consultancy.

The nurse:

- takes a leadership role in complex situations across settings and disciplines
- demonstrates skilled mentoring/coaching and teaching
- leads case review and debriefing activities
- initiates change and responds proactively to changing systems
- is an effective nursing resource
- participates in professional supervision.

4 Develops and influences health/socio-economic policies and nursing practice at a local and national level.

The nurse:

- contributes and participates in national and local health/socioeconomic policy
- demonstrates commitment to quality, risk management and resource utilisation
- challenges and develops clinical standards
- plans and facilitates audit processes
- evaluates health outcomes and in response helps to shape policy.

5 Shows scholarly research inquiry into nursing practice.

The nurse:

- evaluates health outcomes, and in response helps to shape nursing practice
- determines evidence-based practice through scholarship and practice
- reflects and critiques the practice of self and others
- influences purchasing and allocation through utilising evidence-based research findings.

The following are additional competencies for those nurses who are seeking prescribing rights.

6. Prescribes interventions, appliances, treatments and authorised medicines within the scope of practice.

The nurse seeking prescribing rights:

- uses professional judgement to prescribe
- orders appropriate diagnostic tests, accurately interpreting the results and prescribing in accordance with these results

- collaborates and consults with, and provides accurate information to, the client, the client's family and other health professionals about prescribing relevant interventions, appliances, treatments or medications
- prescribes and administers interventions, appliances, treatments and medications (including vaccines) within legislation, codes, scope of practice and according to the established prescribing process and guidelines
- understands the use, implications, contra-indications, and interactions of prescription medications with each other and with alternative/traditional/complementary medicine and over-the-counter medications/appliances
- understands the age-related implications of prescriptive practice on clients within the particular area of practice
- evaluates the effectiveness of the client's response to the prescribed interventions, appliances, treatments and medications, and monitors decisions about prescribing, taking remedial action and/or referring accordingly
- demonstrates an ability to limit and manage adverse reactions/emergencies/crises
- recognises situations of drug misuse and acts appropriately
- understands the regulatory framework associated with prescribing, including the legislation, contractual environment, subsidies, professional ethics, and roles of key government agencies.

Appendix VIII

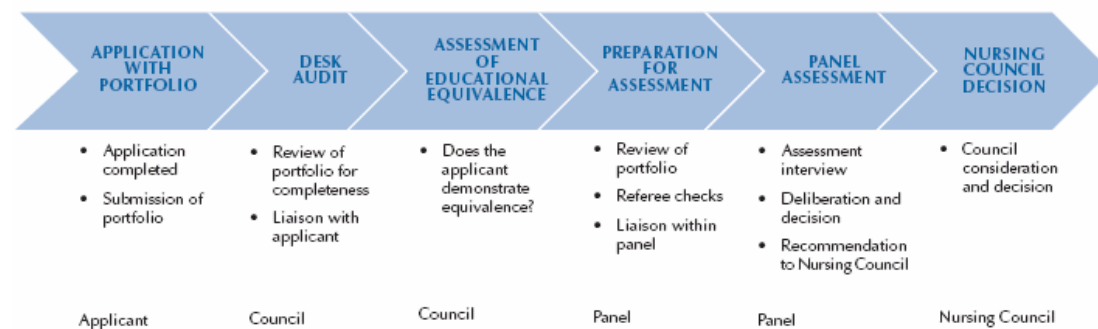
Process leading to nurse practitioner registration

Application

A formal application must be made to the Nursing Council for a change in the nurse's scope of practice. The following are the minimum criteria that must be met by all applicants applying for nurse practitioner registration:

- Registration as a nurse in New Zealand appropriate to the intended scope of practice
- Possession of a current annual practising certificate
- Good professional and personal standing
- At least four years post registration experience within the nominated scope
- Completion of the application form/statutory declaration
- Payment of the prescribed fee
- Submission of a practice portfolio to the Nursing Council of New Zealand.
- In addition to the above, the 2 key areas on which assessment of applications is based are that the applicant:
 - holds a Clinical Masters degree or recognised equivalent , and
 - demonstrates the competencies for advanced practice.

Figure 1. Overview of the nurse practitioner assessment process.



Desk Audit

Once completed applications and portfolios are received by the Nursing Council, a desk audit is completed by Council staff. The purpose of the desk audit is to carry out a preliminary assessment of the portfolio to:

- confirm the good professional standing of the applicant
- assist applicants to provide all required information for review by the assessment panel
- confirm that the applicant's practice appears to meet the competencies for advanced practice, and

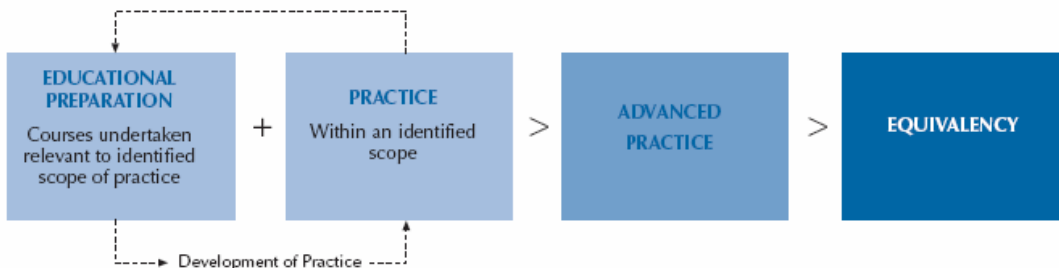
- confirm that the applicant's clinical educational preparation is at Masters or equivalent level.

Initially, the submitted portfolio is checked for completeness by Nursing Council staff. This stage of the assessment process may involve some ongoing dialogue between the applicant and Nursing Council staff as they work to finalise presentation of their practice for formal panel assessment.

Educational equivalence

Educational equivalence is assessed by the Education Committee of the Nursing Council. The process for determining educational equivalence recognises that nurses may achieve advanced practice through other pathways than via formal Masters preparation. Equivalence may be demonstrated by applicants who have completed other education programmes and achieved nurse practitioner competencies in other ways. The process is outlined in the diagram below and seeks to minimize barriers for nurses practising at an advanced level who have not yet had the opportunity to complete a formal clinical masters programme.

Figure 2. Process for determining educational equivalency



The concept of educational equivalence acknowledges the development of practice to an advanced level via a mix of clinical experience, educational programmes undertaken and reflection on practice. When assessing educational equivalence, evidence is required of the applicant's ability to integrate theory, research and practice. The applicant must be able to demonstrate the application of nursing frameworks to her/his practice and the application of critical thinking and evidence as the basis of clinical decision making.

Preparation for panel assessment

Each individual application undergoes assessment by a panel comprised of members from the following areas:

- A professional nurse leader with national/international understanding of advanced nursing practice;
- A nurse with expertise in education, experienced in the assessment of advanced competencies;
- A nurse practising at advanced level in a similar area of practice with ability to critique practice;

- A peer from the same clinical area of practice as the applicant, who is a medical specialist (if the application requires prescribing rights), but could in the future be a fellow nurse practitioner
- Another member as appropriate, for example a consumer

The role of the assessment panel is to fully evaluate applications against the competencies for a nurse practitioner. To do this the panel works through a number of tasks prior to the assessment interview including:

- Portfolio Review: Full review of the applicant's portfolio. Panels may request additional information from applicants.
- Reference checks: Confidential referee's reports from individuals nominated by the applicant. The panel may also request permission to seek further references.
- Site visits: A nominated panel member may undertake a visit to the applicant's workplace before and/or following the assessment interview. The panel will decide if a site visit is necessary. The purpose of site visits is to observe the applicant's scope of practice in her/his usual practice setting.

Panel assessment

The purpose of the assessment interview is to give the applicant an opportunity to present their practice and achievement of nurse practitioner competencies. The interview also allows the panel to explore with the applicant the content of their portfolio and to clarify in more depth their scope of nursing practice. Key areas of focus within the interview will include:

- Strategies used for assessment of client/patient health needs (groups/individuals)
- Application of nursing knowledge and evidence based practice
- Clinical decision-making, including judgement and management of complex situations
- Definition of the area of practice (independent and collaborative) including boundaries and how the applicant will bring the unique perspective of nursing to their practice

If the applicant is seeking prescribing rights, competencies related to the above areas are assessed specific to prescribing undertaken within the applicant's defined area of practice. This will include a rigorous 'viva voce' on the prescribing and pharmaceutical knowledge of the applicant. Clinical scenarios will be given and the applicant will be questioned by the medical specialist on the panel. No authorisation for prescribing will be given to the applicant without agreement by the panel that the applicant demonstrates adequate knowledge and skill.

Other areas of focus within the interview include:

- Reflective practice
- Innovation in practice and development of new nursing knowledge
- Cultural safety
- Professional leadership, teaching and role modeling
- Engagement with and contribution to the wider profession and health sector
- The applicant's strategies for maintaining and developing nurse practitioner competencies

Following completion of the assessment interview, the assessment panel completes its formal evaluation based on the defined nurse practitioner competencies for that applicant. If panel members are not satisfied that they have enough information to complete their evaluation, they may request the applicant to provide further information and/or complete further reference checking and/or a site visit. When the assessment panel has completed its deliberations, the outcome of the assessment is documented in a report and a recommendation is made for the consideration of the Nursing Council.

Nursing Council registration decision

The report of the assessment panel will be considered and the Nursing Council will make the registration decision. Successful applications will be granted nurse practitioner registration with an appropriate condition (under section 22) to denote area of practice and, if appropriate an authorisation to prescribe within the conditions outlined.

The registration database is freely available to the public on the Nursing Council's website. The public register presents information on scopes of practice including conditions and authorisations.

Unsuccessful applicants will be given the opportunity to request a review of the assessment decision. Reviews will be heard by the Nurse Practitioner Review Panel, an independent panel established by the Nursing Council. Grounds for a review include:

- That there are issues of justice and fairness related to the assessment process
- That the decision is clearly incorrect in fact.

The Nurse Practitioner Review Panel reports its decision to the Nursing Council that will formally notify the applicant of the outcome.

Appendix IX

MASSEY UNIVERSITY

SCHOOL OF HEALTH SCIENCES

EDUCATIONAL REQUIREMENTS FOR NURSE PRESCRIBING IN THE MASTER OF NURSING DEGREE

All students undertaking the Master of Nursing degree must be registered nurses with current practising certificates.

Theoretical Requirements

The preparation for prescribing requires students enrolled in the Master of Nursing degree to undertake each of the following 25 point papers:

1. 168.733 *Physiology and Pathophysiology*, which provides students with the knowledge of signs and symptoms related to normal and pathological physiological processes that occur at the biochemical, cellular and functional levels.
2. 168.728 *Assessment and Clinical Decision-Making* that provides students with advanced practice knowledge and skills in the undertaking of comprehensive health assessments and clinical decision-making, including differential diagnoses.
3. 168.734 *Clinical Pharmacology* that includes the pharmacokinetics, pharmacotherapeutics, and the legalities of prescribing. It is within this paper that issues relating to telephone and fax prescriptions, medication selection and the criteria for prescribing are covered with the focus on preventing medication errors.

Together these papers lay the foundation for students wanting to undertake preparation and practice in prescribing, and cover the curricular requirements outlined in the Gazette Notices (Appendices IV & V)

Prescribing Practice

Students wishing to become nurse prescribers must have completed all of the papers outlined above. They are then required to complete a minimum of 400 hours in 168.757 *Prescribing Practicum for Nurses* ('prescribing practicum'). In this paper a nurse who practises within a defined specialty area (for example Mental Health) applies for entry into the prescribing practicum, and must produce a proposal for approval. Included in this proposal is the identification of three key people who will be involved in the student's development:

1. A clinical preceptor/assessor who is a prescriber within the student's specialty area (for example a psychiatrist). This person works with the student to support and guide their development to undertake safe and competent prescribing. This person is prepared by the university so that they understand their responsibility, and is involved in the assessment of the student's competency to prescribe, and is a member of the clinical viva panel.
2. A clinical supervisor who will undertake professional supervision with the student.

3. An academic supervisor who will monitor the student's use of evidence and requirements for completion of the paper.

The student's knowledge and competency to prescribe is assessed in several ways: the completion of a clinical viva, the presentation of two in-depth formal case studies with evidence of consultation with the Clinical Preceptor/Assessor, a reflective activity, and assessment against the competencies for Nurse Practitioner, especially Competency 6. Prior to enrolling in the prescribing practicum, the student will have demonstrated competency in undertaking comprehensive health assessments, interpretation of laboratory and diagnostic investigations, and the ability to formulate differential diagnoses and use this information to make safe clinical decisions.

Case Study

My prescribing practicum was undertaken at XX Health, primarily with Dr D, Endocrinologist/Diabetes specialist physician as my clinical mentor/supervisor and Dr. N as my academic supervisor. Two clinics were attended – the new patient diabetic clinic every second Wednesday, and the diabetes follow up clinic every Friday morning. In addition to these clinics, as part of my role as clinical nurse specialist, I continued to attend and contribute to the 'high risk pregnancy' clinic (weekly), a children's clinic (fortnightly) and young adult clinic (every second month). The assessment requirements for the practicum included two case studies written up followed by a formal clinical viva with Dr D and Dr N, defending the decisions made in the case studies. In addition four patient information handouts on commonly used drugs (ace inhibitors, statins, rosiglitazone and acarbose) within my area of practice were written up for use in clinical practice.

My role in clinics (edited to two examples for the purposes of this paper)

In the new patient and follow up diabetes clinics, I observed and contributed to the clinical assessment, diagnosis and treatment decisions regarding both the non-pharmacological and pharmacological management of people with diabetes and their co-morbidities. Referrals to other services such as eye clinic, renal, clinic, and further investigations were made as required. Discussions were held about the rationale for treatment decisions (either discontinuing a medication, adding another or changing a dose) after each patient.

My role in the high risk pregnancy clinic is to review the women as part of the multidisciplinary team, consisting of an Endocrinologist/Diabetes specialist physician, obstetrician, diabetes nurse specialist, dietician and midwife. Women attend the clinic monthly, fortnightly or weekly, determined by the stage of their pregnancy and their level of wellbeing. In between clinic visits I maintain contact with these women every second day, usually by phone, and review their blood glucose levels and frequency of hyperglycaemia and/or hypoglycaemia (if treated with insulin). Foetal movements, presence of headaches or swelling and general wellbeing is also enquired about and any concerns are communicated to the midwife or obstetrician for their assessment. Attention is paid to their nutritional intake and suggestions are made as required. Appropriate adjustment of insulin doses occurs as necessary (under standing orders) to maintain the necessary tight glycaemic control required. Or for those women with gestational diabetes with suboptimal control, I would make a recommendation to commence on insulin. In this instance, I provide the education surrounding insulin therapy and follow up to evaluate effectiveness.

Written work

Writing up the case studies was a useful exercise requiring in-depth exploration of the pharmacokinetics and pharmacodynamics of individual drugs, and the effect of

individual variations due to co-morbidities or changes in body composition (as in pregnancy). Developing the patient information sheets was also useful.

Appendix X

UNIVERSITY OF AUCKLAND EDUCATIONAL REQUIREMENTS FOR NURSE PRESCRIBING IN THE MASTER OF NURSING DEGREE

Theoretical Component

The theoretical curriculum for prescribing nurse practitioners is embedded in the Masters of Nursing clinical programme.

The theoretical component of the prescribing programme consists of three papers (NURSING 706, NURSING 722 and Nursing 721).

Nursing 706 has a pre-requisite of an applied science paper.

- 1 Nursing 706 *Introduction to pharmacodynamics and pharmacokinetics*, which addresses pharmacological principles of pharmacodynamics and pharmacokinetics (including absorption, distribution, metabolism and elimination). Included in this paper are important aspects of pharmacological parameters, such as steady state concentration, half lives, clearance and concept of dosing, including maintenance dosing and loading dose. A strong emphasis on other areas of pharmacology such as therapeutic indices, toxicity potentials, adverse effects and formulation, in relation to dosing are also included in this paper.

Nursing 706 and a paper covering diagnostic and clinical rationale paper are pre-requisites to Nursing 722.

- 2 Nursing 722 *Therapeutics of Advanced Nursing Practice*. This paper provides the therapeutic background with strong emphasis on clinical and pharmacological reasoning. Here the aspect of drug interactions, drug monitoring and pharmacovigilance is given a strong emphasis. Students are also introduced to the legal and ethical aspects of prescribing and the role of MEDSAFE and PHARMAC. Prescribing legislation, including the Medicines Act (1985) and the Misuse of Drugs Act (1975), the legal requirements associated with writing a prescription, and issues of telephone and fax prescription are strongly emphasized in this paper. The risk-benefit analysis model is consistently addressed in all sessions using a case study approach. Clinicians and consultants are employed as guest lecturers for these sessions wherein the aspect of medication selection, criteria for prescribing, patient and drug factors are all taken into account when making a clinical decision such as prescribing. There are ten areas of therapeutics addressed in this paper, which are generic, such as antibiotic selection, analgesics and antipyretics, sexual health drugs, cardiovascular, diabetes and endocrinology, respiratory drugs and aspects of neuropsychopharmacology. The area of physiological differences amongst the elderly, the neonate and the paediatric client is also addressed. Medical practitioners and consultants and a clinical pharmacist teach the majority of the sessions.

Prescribing Practice

Students apply to undertake Nursing 722 *Prescribing practicum*. Acceptance on the paper is through interview. Students are not accepted unless they are well advanced in postgraduate study, have extensive clinical experience in their specialty focus and have support from their clinical area.

The prescribing practicum is the final paper in the Masters degree with prescribing. This paper is designed to enable the student to apply knowledge of prescribing, to gain prescribing experience under the supervision of an experienced prescriber and demonstrate competence in prescribing within a specific scope of practice. Prescribing practicum students undertake a supervised practical experience of prescribing under the direction and supervision of a mentor prescriber. The mentor is a prescribing clinician in the clinical setting, who works closely with the student and is familiar with the student's scope of specialty practice. Together they identify the formulation list of medications that the student will prescribe independently and those that both the student and the mentor identify as drugs that belong to only medical practitioners prescribing. In addition, the student has an academic adviser from the University to ensure standards are met in regard to the learning and assessment process.

Case Study

Nurse M has worked as an A&E nurse for ten years. She often admits patients with lacerations on the hand, arm and legs that require suturing and post suturing wound management. As a result of her years of experience in A&E, Nurse M would carry out the suturing, applying anaesthetic, then prescribing antibiotics and tetanus shots to the patients after consultation with the A&E registrars. Nurse M would then work closely with the medical practitioner to determine who shall take primary responsibility for the case.

The first meeting between Nurse M, the mentor medical practitioner and the Academic Supervisor was used to set a plan of action for both parties, for example, number of hours a week they should they meet to discuss the case studies, the feedback and the documentation process and the evaluation of each interaction. The framework for the discussions and the assessment of Nurse M's practice is the Nursing Council of New Zealand clinical standards related to prescribing competency.

Nurse M and her mentor met twice a week for about an hour to discuss the cases that Nurse M had put forward for analysis with the mentor. Nurse M chose cases for this session that both she and the mentor had been involved with. The mentor questioned Nurse M about her actions, rationale and other vital assessment variables and she formulated intervention decisions which, if approved, she carried out and evaluated at the next mentor meeting.

The relationship between the student and the mentor is collaborative, and both show equal respect for each other's skills and expertise. The mentor will also challenge the student re drug choices and potential toxicities as well as monitoring criteria. The discussion session for both mentor and student is a time for reflection and sharing therapeutic issues and experiences. The mentor then documents this session in a written format prepared by the academic adviser and submitted to the adviser for comments and final evaluation.

The final assessment in the paper involves the mentor-prescriber and the academic mentor examining the student in a clinical viva. This process is rigorous and uses the Nursing Council standards as grading criteria.

Feedback from mentor-prescribers attests to the rigour of the learning and assessment processes in this paper and their support is ongoing for expert nurses to add appropriate prescribing to their scope of practice.