SUPPLEMENTARY COURSE IN

DISPENSING AND

RATIONAL MEDICINE USE

COURSE SUMMARY CONTENT AND OUTLINE

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RATIONAL UNDERLYING PEI’S DISPENSING COURSE DESIGN

1. The objective of PEI’s ‘Supplementary Course in Dispensing and Rational Medicine Use’ (The Course) is to certify ‘Authorised Prescribers’ competent to apply for a License to Dispense. The Course complies fully with the SAPC’s Legally Binding Statutory Regulations for ‘Dispensing’ as set out in Section 2.7.1 of Council’s official publication ‘Good Pharmacy Practice in South Africa’ (GPP: 2010; 4th Ed.)

2. Because poor prescribing is the primary cause of Polypharmacy and Inappropriate Medicine Use, The Course places particular emphasis on the ‘CLINICAL COMPONENTS’ of Dispensing as specified in Sections 2.7.1.1 and 2.7.1.3 of GPP. These Sections of GPP place a heavy burden of LEGAL RESPONSIBILITY on the Dispenser to comply with legal obligations that require that all medications in the Regimen of a dispensed prescription will be optimally therapeutically effective, safe, and free from detrimental adverse reactions and drug interactions in the patient for whom the prescription is dispensed.

3. The Clinical Components of PEI’s Dispensing Course focus on the Training Modules that include (1) Medicine Regimen Review, (2) Drug Disposition and Interactions, (3) Adverse Reactions, (4) Patient Adherence and Behavior Change Counselling and Education and (5) Practical Pharmacokinetics. The OBJECTIVES of these modules are to IDENTIFY and suggest CLINICAL INTERVENTIONS in cases of:

   a. Non-achievement of desired therapeutic outcomes (treatment targets for relevant clinical markers not met)
   b. The presence of factors that are CONTRARY to RATIONAL MEDICINE USE which include:
      - Patient Non-adherence and lack of medication knowledge
      - Lack of effective Patient Counselling
      - Avoidable Polypharmacy and Inappropriate Prescribing that may include:
         - deviation from Standard Treatment Guidelines
         - incorrect medication doses / dose intervals / administration times
         - unnecessary prescribing for unrecognized medication-induced adverse reactions or drug interactions
         - treatment duplications
         - omission of indicated medication

4. The Course also comprehensively covers all the ‘PHARMACEUTICAL COMPONENTS’ of Dispensing that include the Legal and Mechanical aspects of correct dispensing including the Supply of Scheduled Medicines as well as the Management of Medicine Supplies and Pharmaco-Medical Calculations.

5. With the shortage of medical practitioners in the public health sector and the South African Government’s commitment to a Nurse driven Health Service, PEI considers it vital that Nurses need to have a good grasp of the basics of effective prescribing and rational medicine use so that they are able to both prescribe and dispense medication effectively and safely.

6. The primary purpose of ALL PEI’s training courses has been to address clinical topics that are fundamental to effective prescribing and rational medicine use.
SCOPE OF TRAINING: COURSE MODULES COVERED

To meet the legally binding objectives outlined in the Pharmacy Council’s “Good Pharmacy Practice in South Africa”, the scope of the learning material covered in The Course is summarised below.

The first four ("clinical") modules address the legally binding requirement (Section 2.7.1.1) in that “each prescription must be professionally assessed by the Dispenser with respect to:

1. **Therapeutic aspects** (Pharmaceutical and Pharmacological) i.e.
   - the safety of the medicine;
   - possible contra-indications;
   - drug/drug interactions;
   - drug/disease interactions;
   - treatment duplications

2. **Appropriateness** for the individual and indication for which the medication is prescribed

3. **Social, legal and economic aspects”**

The module on Patient Compliance and Education addresses the requirement outlined in Section 2.7.1.3 for the ‘Provision of information and instructions to the patient to ensure the safe and effective use of medicine’ and 2.7.1.3.2 for the ‘ongoing monitoring of patient outcomes’ are also fully covered.

These legal implications of these four ‘clinical modules’ are particularly important for Nurses and Medical Officers who dispense medications because of the mandate that these practitioners are responsible to their respective Statutory Councils for their own ‘Acts and Omissions’

COURSE STRUCTURE

The objective of training PEI delivers is to equip Participants with an Applied Competence, in terms of their clinical ability to dispense and prescribe medication rationally.

The Course is divided into the 2 Main Components of Dispensing: The ‘Clinical’ Components of Dispensing and the ‘Pharmaceutical’ Components of Dispensing. Consequently, the study of the course modules follows the summary outline:

**COURSE COMPONENT (1): “CLINICAL” COMPONENTS OF DISPENSING**

1. Rational Medicine Use: Regimen Review and Assessment of Medication ‘Appropriateness’
2. Drug disposition and Drug Interactions and how drugs work
3. Adverse drug reactions
4. Practical Pharmacokinetics: Application to drug dosing
5. Patient compliance and education

**COURSE COMPONENT (2): “PHARMACEUTICAL” COMPONENTS OF DISPENSING**

1. The dispensing of medicine
2. Legal aspects of dispensing
3. Management of medicine supplies
4. Pharmaco-medical calculations

DISPENSING COURSE THEORETICAL COMPONENT

The course theoretical component contains the Foundational Knowledge which is laid out in two clearly differentiated sections as they are presented in the Audiovisual Training Material and the two course training manuals.

The course training manuals are:-

1. VOLUME 1 – CLINICAL COMPONENTS OF DISPENSING: Basics of Applied Pharmacotherapy and Therapeutics

2. VOLUME 2 – PHARMACEUTICAL COMPONENTS OF DISPENSING: Dispensing Process, Legal Aspects, Drug Supply Management, Pharmaco-Medical Calculations and Patient Counselling

DISPENSING COURSE PRACTICAL COMPONENT

The course modules are reinforced by a practical component of Five Practical Assignments that are integrated and aligned with the Training Material. These assignments are to be completed and submitted in a Portfolio of Evidence (PoE) Workbook.

The assignments include the following 5 Practical Assignments:-

1. Undertake a Case Analysis in the form of a Clinical Audit on a patient whose case presents clinical problems where the therapeutic management has been unsuccessful because it has consistently failed to achieve a satisfactory clinical outcome

2. Assess the Adherence and Medication knowledge in 5 Patients receiving Chronic Medication

3. Compile a user friendly Patient Information Leaflet (PIL) that complies with legislation

4. Dispense the Medications of 3 Patients receiving Chronic Prescriptions

5. Complete a practical exercise in the management of drug supplies

The Portfolio Assignments reinforce both Foundational and Practical Competencies through application of the pharmaceutical and clinical competencies embodied in the PEI dispensing course. In addition, the clinical problems presented by the varying patient circumstances that are encountered in Patient Assignments 1 to 5 encourage analytical and problem solving skills.

COURSE CONTENT

CLINICAL COMPONENTS OF DISPENSING

The Clinical Components of dispensing in the PEI course are covered in VOLUME 1 of the training manuals – CLINICAL COMPONENTS OF DISPENSING: Basics of Applied Pharmacotherapy and Therapeutics. This manual is divided into 9 chapter modules:

1. CHAPTER 1: Basics of Applied Therapeutics. This module provides a logical and structured method to review patient cases to identify problems in treatment strategies and management. A key element of this section is learning how to make effective use of the SAMF and other clinical references.
2. **CHAPTER 2: Assessment of patient Adherence.** This module deals with the incidence, causes and detection of non-adherence and provides practical information on the management of non-adherence.

3. **CHAPTER 3: Dispensing in Patients with Compromised Drug Elimination.** This module deals with drug dosing in patients who have impaired mechanisms of drug elimination which includes patients with impaired renal and hepatic function, elderly patients and infants and children

4. **CHAPTER 4: Disposition – How the Body processes an Administered Drug.** This Chapter deals with the disposition of drugs – how they are absorbed, distributed, metabolised and eliminated from the body. These are the fundamental factors that control the action of drugs in the body because they govern the rate and extent of drug input (absorption) and output (elimination) from the body.

5. **CHAPTER 5: Clinical Aspects of Drug Interactions.** This module provides an understanding of the underlying mechanisms and classification of different categories of drug interactions and it reviews the principles of management of drug interactions and the assessment of drug interaction risk in patients.

6. **CHAPTER 6: Adverse Reactions.** This module discusses predisposing factors for an adverse reaction and provides a systematic classification of Adverse Drug Reactions (ADR's) according to the mechanisms by which they occur. It also provides clinical tools that are used to categorise the severity of an adverse reaction as well tools used to establish the probability that an adverse reaction is due to a particular drug.

7. **CHAPTER 7: Pharmacokinetics – Practical Application to Drug Dosing.** This module provides practical clinical information that equips practitioners to make informed decisions on drug doses and dosing intervals when initiating or changing drug therapy – rather than use a haphazard approach. Most importantly, it enables the clinician to anticipate and prevent potential problems when changes are made to patient drug therapy.

8. **CHAPTER 8: How Drugs Work – Pharmacodynamics.** This module provides a concise overview of how drugs work – it explains the mechanisms by which drug molecules exert their biological action. This also gives a clearer understanding of how some drug interactions occur.

9. **CHAPTER 9: Overview of Drug Delivery Systems.** This chapter provides a summary review of the dosage forms commonly encountered in clinical practice.

**PHARMACEUTICAL COMPONENTS OF DISPENSING**

The Pharmaceutical Components of dispensing in the PEI course are covered in VOLUME 2 of the training manuals – PHARMACEUTICAL COMPONENTS OF DISPENSING. This manual is divided into 5 chapter modules that include;

1. **CHAPTER 1: The Dispensing of Medicine.** This module outlines the Pharmacy council’s criteria and guideline for dispensing. It describes what is involved in the ‘Dispensing Process’.

2. **CHAPTER 2: Legal Aspects of Dispensing.** This module outlines Legal aspects that pertain to the supply of scheduled medicines by doctors, dentists and nurses.

3. **CHAPTER 3: Management of Medicine Supplies.** This module covers the practical and legal aspects related to the management of drug supplies.
4. **CHAPTER 4: Pharmacomedical Calculations.** This module covers the methods needed for dispensers to be able to accurately calculate drug doses, dilutions and intravenous fluid administration rates.

5. **CHAPTER 5: Patient Education and Counselling.** This module covers interviewing skills and facilitator technique and provides a practical guide to Behaviour-Change Counselling.

**METHOD OF COURSE DELIVERY AND TRAINING PROCESS**

The delivery method by which The Course is presented uses a ‘Blended learning’ method that involves self study using audio visual lectures that are presented by an e-learning process. The e-learning process is backed up by training manuals and study guides which are supplemented by tutor-facilitated communication (via Skype®) or face-to-face workshop type intervention when needed.

The e-learning process provides a judicious combination of images, animations, text and sound to provide a "multi-channel" learning experience and good retention.

If a concept is not immediately understood, the learning can be repeated. The use of a Glossary G as well as explanatory Notes N and ‘dig-deeper’ Documents D that provide literature references enriches the experience. The workshop activity allows for problem solving and demonstrates the use of the learned material in clinical practice.

The structure of the dispensing course has been designed to provide the student with a seamless learning experience by using a logically structured and integrated approach to learning and assessment.
The basic procedure is straightforward – for EACH MODULE of the course the learner is required to:

1. Study the content of the training material of the course module by:
   • referring to the Module Study Guide and
   • listening to the Audiovisual Lecture Presentation Material which compliments and re-enforces the content material of the Course Manual.
   • working through the Relevant Chapter in the Course Manual.
2. Achieve 80% or more for the end-of-module 25 Multiple Choice Question Formal Assessment Quiz
3. Download and compete the Formal Competency Assessment (FCA)
4. When you have completed the Formal Competency Assessment Questionnaire (but **before attempting the practical assignment**) you must complete the On-line Authenticity Declaration certifying that you have completed the FCA questionnaire.
5. Download the Memorandum for the FCA and mark your completed FCA against this Memo.
6. If the module requires a practical assignment, study the Practical Assignment Brief very carefully – it tells Participants EXACTLY how to go about the Assignment.
7. **Notify us when you start** the practical assignment by completing the on-line notification form.
8. Undertake and complete the Practical Assignment as laid out in the Assignment Brief.
9. When you have **completed** the Practical Assignment, **notify us** by completing the on-line notification form.

10. Make sure all assessments are added to your Portfolio of Evidence.

### COURSE DURATION AND SEQUENCE

- **Start**
  - Introduction
  - Self study
    - Medication regimen review

- **2 weeks**
  - Workshop 1 – Clinical modules
    - Self study
      - Drug disposition and interactions
      - Adverse drug reactions
      - Practical pharmacokinetics
      - Patient compliance and education

- **8 weeks**
  - Workshop 2
    - Review clinical modules
    - Preview pharmaceutical modules
    - Self study
      - The dispensing of medicines
      - Legal aspects of dispensing
      - Management of medicine supplies
      - Pharmaco-medical calculations

- **14 weeks**
  - Workshop 3
    - Review pharmaceutical modules
    - OSDE preparation / portfolio

- **16 weeks**
  - OSDE, written assessment and portfolio evaluation

1. The projected duration of the course is 16 weeks.

2. The total lecture (i.e. listening) time, as it is presented in the format of the electronic course material, is ± 18 hours.

3. The course starts off with an orientation seminar. This will include setting you up to be able to access the on-line lectures and assignment of the work to be covered before the 1st workshop.

4. Workshop 1, which will be held on week 2 will present an overview of the clinical modules of dispensing.

5. Workshop 2 will be held in week 8 when you will be expected to have completed the clinical modules. There will be 2 objectives at this workshop:
   - review whether you have been able to apply the knowledge gained.
   - preview the pharmaceutical modules.

6. Workshop 3 will be in week 14 after the start of the course, by which time you will be expected to have completed the course modules as well as the assignments. There will be 2 objectives at this workshop:
9. Review the clinical and pharmaceutical modules and discuss possible problem areas where there may be uncertainty.

10. Prepare you for the OSDE (Objective Structured Dispensing Examination) and the written assessment.

11. 16 weeks after starting the course the final assessments will take place (OSDE and written assessment).

**COURSE ASSESSMENT PROCESS AND EXAMINATION DETAILS**

**ASSESSMENT PROCESS**

- Open course in portal
- Self-study using audio-visual lectures
- End-of-section quiz
- Complete module self-study
- End-of-module formal quiz
- Minimum result 80%
- Download & complete formal assessment questionnaire
- On-line declaration of authenticity
- Download memorandum (model answers) and review your answers
- Notify start of practical assignment
- Complete practical assignment exactly according to assignment brief
- Notify completion of practical assignment
- Add all assessment/assignment information to portfolio
- Evaluation of portfolio, OSDE & written assessments (where applicable)

For each training module, the learning and assessment process consists of:

1. After each section of the module a short **quiz** is used to test your understanding of the content of that section.

2. At the end of each module there is a **comprehensive quiz** that must be successfully completed (you must obtain a mark at least 80%):
   - This allows you to download and print the Formal Assessment for the module.
   - If you do not have access to a facility that can download and print this assessment, please contact your training administrator;
   - The Formal Assessment assesses your understanding of the content material of the module and will, for certain modules that include practical assignments, assess your practical application of the module.
3. The **Formal Assessment** must form part of your portfolio and is CRITICALLY IMPORTANT for your overall course mark. The first part of the Formal Assessment is a “Formal Competency Assessment” (FCA) Question Paper. For the Modules that include a practical, the second part of the Formal Assessment is a Practical Assignment. When you have completed your Formal Assessment:-

- You can request the model answers after completing the question paper.
- Before getting access to the model answers, you will have to certify that you have personally completed the formal assessment according to the instructions; It is important to note that, if it were to be found that it is not your own work, the assessment will not be accepted and you will not pass the course.
- This declaration can be filled in and submitted on-line.
- You can then download and print the Memorandum (model answers). If you do not have access to a facility that can download and print the model answers, please contact your training administrator;
- You must then use the model answer to compare, mark and correct your own answers;
- Your corrected, original Formal Assessment for each module must be included in your portfolio when this is submitted at the end of the course.
- If necessary, you may want to revise some of the learning material;
- If you are uncertain about any aspect of an assignment – you must contact PEI directly for guidance.

4. The **OSDE** (Objective Structured Dispensing Examination):

- will be administered/coordinated by PEI;
- at an agreed time;
- 16 weeks after the start of the course;
- you will be expected to have completed all the relevant modules of the course;
- if, for whatever reason, you do not attend on the arranged dates/times, additional cost may be involved in organizing repeat assessments.

**EXAMINATION DETAILS**

All assessments are “open book”.

The Certification criteria for successful completion of the Dispensing course are based on the following three components of Learner evaluation:

1. **Summative Written Assessment**

   The written assessment is comprised of one question paper covering the clinical and pharmaceutical modules of the course.

2. **The Portfolio of Evidence**:

   The Portfolio of Evidence must contain the results of all your Formal Assessments. In the case of the following FIVE modules, the Formal Assessment will include a Practical Assignments covering the following topics:
a. Medication Regimen Review: Conduct a Patient Case Review
b. Patient Adherence and Education: Assess Adherence & Medication Knowledge in 5 Patients
c. Legal Aspects of Dispensing: Compile a User-friendly Patient Information Leaflet (PIL)
d. The Dispensing of Medicines: Dispense the Prescriptions of 3 Patients with Chronic Illness
e. Medicine Supply Management: Conduct a Practical Exercise in the Estimation of Stock levels

3. Objective Structured Dispensing Evaluation (O S D E)

In the process of assessment of practical dispensing competency by means of the OSDE practitioners are required to ‘Dispense and Counsel’ the medications to a ‘patient’ – which is the patient on which their cases for Patient Assignment 1 were based. These cases were selected to contain examples of poorly managed therapy, inappropriate prescribing, incorrect doses, polypharmacy as well as missing therapy, drug interactions and adverse reactions. In compiling a critical clinical analysis of this case, practitioners are required to:

- Compile a summary medical history of the case;
- Review the patients past Regimen History;
- Identify treatment problems and recommend interventions they may consider necessary;
- Set therapeutic goals (lifestyle and drug therapy);
- Write a prescription that complies with legal requirements;
- Assemble and label the dispensed medication according to the standards required for good dispensing practice;
- Issue the medication to the ‘patient’ (a role-play patient) and provide appropriate information and counselling

HOW LEARNER PROGRESS IS MONITORED AND RECORDED

The method of course delivery allows COMPREHENSIVE REAL TIME MONITORING OF STUDY PROGRESS as well as MANAGEMENT OF LEARNER PROGRESS by electronically capturing learner time spent studying with feedback to Learner.

1. As Participants progress through the COURSE MODULES their LEARNING STATUS RECORD develops as shown below. ALL DATES and TIME SPENT STUDYING are recorded as shown below. Before Participants start studying a module, their status for that module is reflected as "not started"

2. When Participants begin studying a module and they work through each section, their study status is recorded as "LEARNING"
3. When Participants have obtained 80% or more for the FORMAL Assessment Quiz (FAQ) at the end of a module Participants are allowed access to the FORMAL ASSESSMENT for that module. As soon as Participants download the FORMAL Assessment their learning status changes and is recorded as “ASSESSMENT”

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4. After completion of the questionnaire (BUT BEFORE ATTEMPTING THE PRACTICAL ASSIGNMENT) Participants are required to complete a Declaration of Authenticity. When they do this their learning status is recorded as “STATEMENT”

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5. Once Participants have completed the Declaration of Authenticity referred to in Step (4) above, they are granted access to and are allowed to download the Formal Assessment Memorandum (Model Answer). When they do this, their Learning Status changes to “MEMO”

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6. Start the Practical Assignment for the Module (only applies to modules where there is a practical assignment). Before starting the practical however, Participants are required to go online and complete a declaration that they have read, and clearly understand, the Practical Assignment Brief. At this point the Learning Status changes to “PRACTICAL”

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7. When Participants have completed the Practical Assignment they are required to notify PEI that they completed the assignment by going online once again to complete a final declaration to this effect. At this point the recorded Learning Status changes to ‘COMPLETED’

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ACTIVE LEARNING: LAW OF THE FARM VERSUS LAW OF THE SCHOOL

In the words of former South African president, Nelson Mandela, "Education is the most powerful weapon that you can use to change the world".

However education can involve either active learning or passive learning. The value of the active versus passive learning is beautifully illustrated in the extract below from the book by Stephen R. Covey and A. Roger Merrill: First Things First

“In agriculture, we can easily see and agree that natural laws and principles govern the work and determine the harvest. But in social and corporate cultures, we somehow think we can dismiss natural processes, cheat the system, and still win the day. And there's a great deal of evidence that seems to support that belief.

For example, did you ever follow the Law of the School – where you "crammed" at the last minute, after goofing off during the semester – then you spent all night before the big test trying to cram a semester's worth of learning into your head?

Stephen: I'm ashamed to admit it, but I crammed my way through undergraduate school, thinking I was really clever. I learned to psych out the system, to figure out what the teacher wanted. "How does she grade? Mostly on lectures? Great! I don't have to worry about reading the textbook. What about this other class? We have to read the book? Okay, where are the Study Notes so I can get a quick summary instead?" I wanted the grade, but I didn't want it to crimp my lifestyle.

Then I got into graduate work, a different league altogether. I spent my first three months trying to cram to make up for four years of undergraduate cramming, and I wound up in the hospital with ulcerated colitis. I was trying to force the natural processes, and I found out that, long term, you simply can't do it. I spent years trying to compensate for the foolishness of getting myself into a value system that was not tied to principles at all.”

Can you imagine "cramming" on the farm? Can you imagine forgetting to plant in the spring, flaking out all summer, and hitting it hard in the fall – ripping the soil up, throwing in the seeds, watering, cultivating – and expecting to get a bountiful harvest overnight?

Cramming doesn't work in a natural system, like a farm. That's the fundamental difference between a social and a natural system. A social system is based on values; a natural system is based on principles. In the short term, cramming may appear to work in a social system. You can go for the "quick fixes" and techniques with apparent success.

But in the long run, the Law of the Farm governs in all arenas of life. How many of us wish now we hadn't crammed in school? We got the degree, but we didn't get the education. We eventually find out there's a difference between succeeding in the social system of school and succeeding in the development of the mind – the ability to think analytically, creatively, at deep levels of abstraction, the ability to communicate orally and in writing, to cross borders, to rise above outmoded practices and solve problems in newer, better ways.

What about character? Can you "cram" and suddenly become a person of integrity, courage, or compassion? Or physical health? Can you overcome years of a potato-chip, chocolate-cake, and no-exercise lifestyle by spending the night before the marathon working out at the health spa?

What about a marriage? Whether it's governed by the Law of the School or the Law of the Farm depends on how long you want it to last. Many people who marry don't want to change their lifestyle at all. They're
married singles. They don't take the time to nurture seeds of shared vision, selflessness, caring, tenderness, and consideration, yet they're surprised at the harvest of weeds. The social system quick fixes and personality ethic techniques they try to install to solve the problem simply don't work. These "solutions" can't take the place of seasons of planting, cultivating, and caring.

What about relationships with children? We can take the shortcuts – we're bigger, smarter, we have the authority. We can talk down, threaten, and impose our will. We can try to shift the responsibility for training them to schools, churches, or day-care centers. But over time, will these shortcuts develop responsible, caring, and wise adults empowered to make effective decisions and live happy lives? Will they result in rich, rewarding relationships for us with those who have the potential to be our closest friends?

In the short term, we may be able to go for the "quick fix" of the Law of the School with apparent success. We can make an impression; we can put on the charm. We can learn manipulative techniques – what lever to pull, what button to push to get the desired reaction. But long-term, the Law of the Farm governs in all areas of life. And there's no way to fake the harvest.

Active learning embodies the principles of the Law of the Farm. Active learning is the key that underlies the principles embodied in the training material of PEI's Supplementary Course In Dispensing and Rational Prescribing. That is why we believe that the practitioners we train and certify distinguish themselves by delivering a Health Care Service that truly enhances patient lives.

As Dr. Sidney Bremer observed in his book, Spirit of Apollo:

*Nature is evenly balanced. We cannot disturb her equilibrium, for we know that the law of Cause and Effect is the unerring and inexorable law of nature; but we do fail to find our own equilibrium as nations and as individuals, because we have not yet learned that the same law works as inexorably in human life and in society as in nature - that what we sow, we must inevitably reap.*