

Creating and submitting Web Based Case Studies by Education Providers as part of the resources required for Endorsement for Scheduled Medicines with the Podiatry Board of Australia

March 2015

Contents	Page
Background	1
Resources and guidelines	2
Discussion of existing La Trobe University case study resource	2
Example of an existing La Trobe University case study	4
Education provider checklist	8
References	9
Application form for Assessment of Web-Based Case Studies by Education Providers	10

Background

One of the [Podiatry Board of Australia's](#) (the Board) stated requirements for an [Endorsement for Scheduled Medicines](#) (ESM), for Pathway 2, is the completion of 15 Board-approved web-based case studies. These written case studies are expected to cover a range of pathologies relevant to podiatry, and require applicants to review and extend their knowledge related to prescription of medicines (across the Board's National Podiatry Scheduled Medicines List). The case studies should be accompanied by an assessment. The Board requires that the web-based case studies be undertaken after completion of an approved program of study in podiatric therapeutics, but prior to commencing the Board's requirements for supervised practice for ESM as set out in the Board's registration standard for ESM.

Currently, the only Board approved web-based case studies are those [offered by La Trobe University](#) (LTU). To enable additional providers to develop web-based case studies and submit them to the Board for approval for the purpose of the Board's ESM requirements, the Board has requested that ANZPAC design a transparent process to assess those web-based case studies developed by other educational providers. This document outlines the requirements for development and submission of such case studies.

The web-based case studies resources developed by education providers will be assessed by ANZPAC on a fixed cost basis. The independent report of each assessment will then be reported to the ANZPAC Board of Directors who will then in turn make a recommendation to the Board as to whether or not the submitted case studies meet the stated requirements. A positive outcome of assessment will have a currency of three years, after which point education providers will need to have their resource reassessed.

The application form for assessment of web-based case studies by education providers is attached at the end of this document. This document presents the following:

- Recent medicines prescribing resources
- Discussion of the LTU case study resource, including a sample case study
- An education provider checklist to assist in developing new case study resources

Resources and guidelines

Case studies can be used to reinforce and supplement previous lecture or written information, or present information the first time to students in an authentic and realistic way (Vandenbroucke, 2001). More complex case studies have the opportunity to move beyond information delivery and illustration of fundamental concepts, to assist with problem solving, and the balancing of patient needs, need for an accurate diagnosis, treatment effectiveness and practicalities and pragmatics of working within a health system (Kanter, 2010).

A key Australian resource is the *National Prescribing Service (NPS) Competencies Required to Prescribe Medicines (2012)*. This document should continue to be the primary reference for education providers developing a case study resource.

Discussion of existing La Trobe University case study resource

Case study #3:
Ms Anne Boleyn,
Acute paronychia
Background/Assessment

Case study #5:
Mr Joseph Blaggs,
Acute gout

Case study #11:
Ms Carol Nguyen,
Neuropathic Ulceration
Background/Assessment

55 Year old Female – Not working
Married – 2 Daughters living at home (1 x currently studying nursing)
BMI: 28 Kg/m² (weight, 76 Kg, height 1.65 m).

Diagnosis
Gout is an acute inflammatory arthritis caused by the deposition of monosodium urate crystals in the joints and surrounding tissues. Although **gout** only occurs in some joints (toe joints) an acute gouty attack is usually precipitated by:

Medical/Surgical History
1986 Type 1 Diabetes Mellitus aged 28
1985 Hypertension
1995 Hyperlipidaemia
2006 Depression
2006 Cataract surgery and intra ocular lens implant bilateral
2006 Right 2nd toe **amputation** of clawed toe secondary to recurrent ulceration
2007 Thyroidectomy
2009 Gastric Banding surgery
2010 Breast Cancer, Mastectomy (Right breast) currently undergoing weekly chemotherapy

Current Pathology:
HbA1c: 7.8
Total Cholesterol: 5.0
eGFR: >90

Current Diabetes Foot Status:
Neuropathy: Sensory; Reduced Vibration and LOPS, no motor involvement, but may have elements of autonomic neuropathy with postural hypotension.
Pedal Pulses: palpable and regular
ABI: 1.16
Past history of digital ulceration and cellulitis requiring hospitalisation but no osteomyelitis
No amputations

Above: Sample pages from LTU's web based case studies; full example included later in this document.

LTU developed 15 therapeutics case studies over a number of years, with an aim to link entry-level program pharmacology and therapeutics theoretical subjects (now described as a [program of study in podiatric therapeutics](#) by the Board) prior to commencing the Board's requirements for supervised practice for ESM as set out in the Board's registration standard for ESM.

This resource was developed to be flexible/online delivery (ie. no face-to-face contact), be of reasonable cost to applicants, to take the average practitioner 20 hours to work through, have cases that spanned the Board's National Podiatry Scheduled Medicines List, and contain an assessment.

The resource was developed with 70 multiple choice questions attached to the case studies (approximately 4-6 questions at the end of each case), and the minimum pass rate was set at 80%.

Each of the cases presented with the LTU resource includes:

- Background information about the patient, including medical and podiatric history, any medicines that are currently being taken, any information of note about previously taken medicines (eg. allergies or known interactions). There is also a photo of each 'patient' and photos of the presenting problem if relevant (either real or obtained from [iStockphoto](#) or a combination of both)
- Results of any examinations and investigations
- Outline of immediate and long-term management plans
- Discussion of any practice and prescribing issues – eg. practicalities of dosing, or how not having a PBS subsidy for some medicines may affect whether a podiatrist or podiatric surgeon with an ESM will prescribe a medicine
- A series of multiple choice questions (approximately 4-6 per case)

The positives of web based case studies delivered as an online resource include:

- It is easy to update the 'master' case studies document and assessment when needed
- Increases functionality of the resource (eg. video or direct weblinks are able to be embedded in the resource)
- Students can "dip in and out" of the resource when they have time available
- Makes the assessment easier to administer, and reduces the chance of copying answers of the assessment between persons completing it (the answers could be randomised for each answer, and a larger question bank could be developed).
- Opens up the number of creative ways in which to make the cases more authentic. For instance, video could be recorded of patients, practitioners (perhaps podiatrists, medical practitioners, pharmacists).
- An online forum between persons completing the case studies could be set up to assist with discussions; this could be maintained for the period of supervised practice (potentially reducing the load on the primary supervisors of the persons working through the ESM application process).

Example of an existing La Trobe University case study



Case study #12: Mr Kevin Camino, Infected foot ulceration

Background

History:

- 47 year-old male
- Married, one son
- Occupation: Car Mechanic
- Type 2 Diabetes diagnosed in 1995; HbA1c 9% (Renal and hepatic function reported to be normal)
- Acromegaly (Pituitary tumour excised 1995)
- Sleep apnoea
- Psoriasis
- Non-smoker
- BMI 30 Kg/m² (weight 97.2 Kg, height 180 cm)

Medications:

- | | |
|--|----------------------|
| - Diabex XR [®] (Metformin) 500mg 2 bd | Hypoglycaemic agent |
| - Amaryl [®] (Glimepiride) 4mg – 1 daily | Hypoglycaemic agent |
| - Astrix [®] (Aspirin) 100mg – 1 daily | Antiplatelet agent |
| - Tritace [®] (Ramipril) 5mg – 1 daily | ACE Inhibitor |
| - Viagra [®] (Sildenafil) 100mg – 1 nocte prn | Erectile dysfunction |

Allergies – Penicillin (mild hypersensitivity reaction in childhood - a fine rash developed some days after starting amoxicillin).

Diagnosis

- The patient (referred from a friend) presented to private podiatry practice with a six-week history of left foot plantar ulcer, 4th MTPJ. There is no prior history of foot ulceration, nor any previous podiatry treatment.
- Peripheral neuropathy to ankle level was noted as determined by 10g monofilament.
- Foot pulses were palpable and strong. The presenting foot ulcer was the size of 5-cent piece approximately with surrounding callus and 4 mm deep. Bone not exposed.
- Infection complicating foot ulceration is suggested by wound odour, heavy exudate, spreading redness around the ulcer, local swelling (and systemic features which are absent in this case). Signs of inflammation may be suppressed in diabetes¹.

Diagnosis: Diabetes foot ulcer with moderate local infection, without osteomyelitis.

Non-pharmacological treatment

- Assess foot structure/function.
- Request weightbearing X-ray to assess bony alignment and establish osseous integrity.
- Advise on nature of pathology and cause of ulceration.
- Advise on diabetes control for wound healing and complications minimisation, and ensure follow up with Endocrinologist and Diabetes Educator.
- Probe edges and base of wound to determine deep tissue involvement.
- Investigate wound pathogens by tissue culture, remembering skin swabs are rarely diagnostic¹. Ask GP or other medico to sign pathology request if non-MBS fee for podiatrist-signed pathology may be an issue with patient
- Pressure relief is of prime importance (used multi-layer adhesive felt, allowing for daily dressing changes).

- Appropriate wound care.
- Explained time needed to heal (weeks/months) depending on a range of factors, with frequent (weekly) review and reduced weight bearing.
- Communicate findings to health care team.



Dorsal view of left forefoot



Weight bearing AP X-ray



Progress photo of left plantar forefoot (not initial presenting ulcer).

Issues related to medicine prescribing

1. Discuss medicines (all schedules) you may wish to prescribe (what & why).

Ideally wait until microbiology results are known (may be 1-3 days). Commence empirical antibiotic therapy. In choosing empirical therapy the selected antimicrobial should have documentation of both adequate penetration at the site and proven effectiveness against the common organisms usually isolated from that specific site¹. Definitive therapy should be based on the culture results and susceptibility data and the clinical response to the empirical regimen².

Staphylococcus aureus is the suspected primary wound pathogen, with likely presence of anaerobes. Knowledge of the organisms involved does not always help define the tissue depth of disease, but aids choice of antimicrobial therapy³.

Anti infective agents – Schedule 4

Flagyl[#] (Metronidazole) 400 mg orally, 12-hourly for 5 days **plus**

Keflex* (*Cephalexin*) 500 mg orally, 6-hourly for 7-10 days

[#] Indicated for anaerobic bacterial infections, including diabetic foot ulcers

*Indicated for Staphylococcal and streptococcal soft tissue infections in people with mild to moderate penicillin allergy. Should warn patient to watch out for any signs of breathing difficulty and/or the development of urticarial rash within the first 36 hours of treatment. Note, there is a 3-6% cross-over hypersensitivity with cephalosporins (cephalexin) (Therapeutic Guidelines: Antibiotic).

The dosage and drug are in accordance with the Therapeutic Guidelines for antibiotic therapy.

Alternatively,

Roxythromycin-RL 300mg film-coated oral tablets (Macrolide)

OR

Clindamycin 450 mg orally every 8 hours (Lincosamide antibiotic) can be useful in skin and soft tissue infections caused by methicillin-resistant *Staphylococcus aureus* (MRSA).

2. Identify any issues that help to guide your final prescription choice.

a. Penicillin allergy from childhood prevents prescription of any penicillin based antibiotic (eg amoxicillin/ clavulanic acid or flu/dicloxacillin).

b. Roxythromycin is only partially sensitive to *Staphylococcus aureus* (except MRSA, and also Enterobacteriaceae, Pseudomonas sp. and Acinetobacter sp. which are resistant)³.

c. Clindamycin is used primarily to treat infections caused by susceptible anaerobic bacteria, including skin and soft tissue infections. In patients with hypersensitivity to penicillins, clindamycin may be used to treat infections caused by susceptible aerobic bacteria as well. It is also used to treat bone and joint infections, particularly those caused by *Staphylococcus aureus*. This is a good alternative to the prescribed regimen⁴.

3. Explain the dosage regime

Aggressive management against all suspicious pathogens is required to produce a rapid and positive response.

The dose is the maximum recommended for this condition as suggested in Therapeutic Guidelines for antibiotic therapy (version 14, 2010).

4. Provide an example of a prescription.

Prescription

Mr. George Shaw BPod(Hons)
Registered and Endorsed Podiatrist (*Registration # 348*)
32 Watfoolin Rd, Shepparton VIC 3284
Tel: (03) 9456 2317

Patient's name: Kevin Camino

Address: 29 La Trobe Terrace, Shepparton VIC 3284

Date of Birth: 1/4/1967

Rx

Flagyl® (metronidazole) 400 mg tablets

10 Take one tablet twice a day after food at 12-hourly intervals for 5 days

Keflex® (cephalexin) 500 mg capsules, 6-hourly for 7-10 days

40 Take one capsule four times a day at 6-hourly intervals for 10 days



Prescriber Signature:

Today's date: 6th December, 2014

Notes:

1. Tell patient to avoid alcohol while taking the Flagyl®.
2. Warn patient to watch out for any signs of breathing difficulty and/or the development of urticarial rash within the first 36 hours of treatment.
3. Reinforce that both courses must be completed.

References

1. Bryant, B. Knights, K and Salerno, E. (2011) Pharmacology for health professionals 3rd edition. Elsevier Australia.
2. Lipsky, B (2004) Diagnosis and Treatment of Diabetic Foot Infections. Guidelines for Diabetic Foot Infections. 39
3. Gottlieb, T. Atkins, B.L. and Shaw, D.R. (2002) Soft tissue, bone and joint infections MJA; 176 (12): 609-615
4. http://www.gsk.com.au/resources.ashx/prescriptionmedicinesproductschilddataproinfo/358/FileName/68610AA9A2D3971F581608F173AC7BAE/PI_Roxithromycin-RL.pdf

Multiple-choice questions related to the case (one correct answer, unless indicated):

53. Some precautions that must be taken when prescribing cephalexin are:
 - a) blood sugar levels may rise sharply, monitor blood sugar levels
 - b) blood sugar levels may drop sharply, monitor blood sugar levels
 - c) renal function must be known and dose reduced in case of renal impairment
 - d) liver function must be known and dose reduced in case of liver impairment
54. Cephalexin is bactericidal and acts by:
 - a) inhibiting protein synthesis by irreversibly binding to the 30S ribosomal subunit and causing cell membrane damage
 - b) interfering with bacterial cell wall peptidoglycan synthesis by binding to penicillin-binding proteins, eventually leading to cell lysis and death
 - c) inhibiting bacterial DNA synthesis by blocking DNA gyrase and topoisomerase IV
 - d) inhibiting bacterial protein synthesis by reversibly binding to 30S subunit of the ribosome
55. Metronidazole is effective against anaerobic bacteria such as:
 - a) *Klebsiella* spp.
 - b) *Enterococcus faecalis*
 - c) *Pseudomonas aeruginosa*
 - d) *Clostridium difficile*
 - e) MRSA
56. Metronidazole should not be taken with:
 - a) alcohol – may lead to hangover-like symptoms
 - b) barbiturates – interferes with metabolism to reduce the effectiveness
 - c) warfarin – may enhance anticoagulant effects
 - d) all of the above
 - e) none of the above
57. If the pathology result shows MRSA as the offending organism:
 - a) stop the empirical regimen and commence Clindamycin
 - b) continue metronidazole and cephalexin and monitor the clinical response
 - c) advise the patient he should be isolated in hospital
 - d) add Clindamycin to the regimen

Education Provider Checklist

In the creation of an online resource for web-based case studies, it is expected that education providers will include the following:

- 15 case studies that cover a range of common podiatric pathologies and utilising medicines across the Board's National Podiatry Scheduled Medicines List
- Take the average practitioner 20 hours to work through
- Utilises the ANZPAC *Podiatry Competency Standards for Australia and New Zealand* (Updated December 2012)
- Has an assessment attached to each of the case studies
- Educationally positions the case studies between completion of the mainly theoretical qualification in podiatric therapeutics and prior to commencing the Board's requirements for supervised practice for ESM as set out in the Board's registration standard for ESM
- Be delivered as an online resource only
- Consideration of key prescribing resources, such as the *National Prescribing Service (NPS) Competencies Required to Prescribe Medicines (2012)*, the *Australian Medicines Handbook (2014)* and the Therapeutics Guidelines (various)
- Produce a set of intended learning outcomes customised for the web-based case study resource that provides a summation of the competencies a successful student will have obtained upon completion of the web based case studies.

The outcome of the assessment, after consideration by the ANZPAC Board of Directors and approval by the Board, will be communicated back to the education provider within a formal letter. This outcome of the assessment will have a currency of three years, after which time education providers will have their resource reassessed.

References

Vandenbroucke JP. In defense of case reports and case series. *Annals of Internal Medicine*. 2001;134:330–334

Kanter SL. Case Studies in Academic Medicine. *Academic Medicine* 2010;85(4):567.



Australian and New Zealand Podiatry Accreditation Council (ANZPAC) (Updated December 2012) *Podiatry Competency Standards for Australia and New Zealand*. Accessed from:

[http://www.anzpac.org.au/files/Podiatry%20Competency%20Standards%20for%20Australia%20and%20New%20Zealand%20\(Final\).pdf](http://www.anzpac.org.au/files/Podiatry%20Competency%20Standards%20for%20Australia%20and%20New%20Zealand%20(Final).pdf)



National Prescribing Service (NPS) (2012) *Competencies Required to Prescribe Medicines*. Accessed from: <http://www.nps.org.au/health-professionals/cpd/prescribing-competencies-framework>