GUIDE FOR USERS OF WEB BASED NUTRITION IMPLEMENTATION TOOLKIT (WNCIT)

Useful strategies for integrating nutrition into entry-level medical courses in Australia and New Zealand.
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ACKNOWLEDGEMENTS

The authors are indebted to a number of colleagues who contributed to this project and the accompanying resources:

Annabel Newnham
Jason Wells
Sharyn Milnes
Janet McLeod
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List of acronyms used

ACCLAiM Australian Collaboration for Clinical Assessment in Medicine project
AMC Australian Medical Council
AMSAC Australian Medical Schools Assessment Collaboration
ANZAHPE Australian & New Zealand Association for Health Professional Educators
CMT Curriculum Mapping Tool
DAA Dietitian’s Association Australia
DU Deakin University
GP General Practice / Practitioner
HERD Higher Education Research and Development Journal
MCQ Multi Choice Questions
MON Monash University
NCF Nutrition Competency Framework
NER Nutrition Education Resources
OLT Office of Learning and Teaching
OSCE Objective Structured Clinical Examination
QU University of Queensland
RACGP Royal Australian College of General Practitioners
UTAS University of Tasmania
WNCIT Web Based Nutrition Implementation Toolkit
Introduction

This Guide has been produced to assist educators in medical schools with an academic interest in nutrition to embed nutrition into entry-level medical curricula in Australia and New Zealand. This resource is applicable to all medical schools irrespective of their current levels of experience in curriculum development, mapping or medical education.

This Guide is a result of an Australian Government Office for Learning and Teaching (OLT) Collaborative Grant (2013/1014) “A Web –Based Nutrition Competency Implementation Toolkit (WNCIT) For Entry-Level Medical Courses” involving teaching staff from Deakin University, Monash University, The University of Queensland, University of Tasmania and the Dietitians Association of Australia. The project team aimed to develop a web based toolkit that would assist medical educators to effectively embed nutrition into the medical curricula and is the result of a thorough consultation process with all relevant stakeholders. It is therefore highly relevant and targeted to their needs and experiences.

The achievement of nutrition competencies on completion of entry-level medical training is an essential component of preparing graduates to assist patients to reduce their risk of developing chronic disease and malnutrition, promote wellness and to prepare them for their future role as clinicians. An integrated approach that embeds nutrition within the medical curriculum and ensures the development of basic nutrition competencies is likely to optimize the delivery of appropriate nutrition support to patients.

There is an international movement to embed nutrition into medical education with strong bases in the United States (USA) http://nutritioninmedicine.org/ and United Kingdom (UK) http://www.mrc-lhnrcam.ac.uk/jobs-and-training/nutrition-education-for-clinicians-nnedpro/

Worldwide ‘crowded curricula’ evident in medical programs highlights the need to produce tools and resources that can assist in enhancing nutrition integration.

This practical guide is not meant to be prescriptive and it recognized that different medical courses would seek out and use different resources and strategies to embed nutrition into the medical curricula dependent on the prevailing culture and curriculum at the time. Through collaboration and sharing of this resource, it is hoped that further advances in this area in all Australian medical schools can be achieved. These resources also emphasize development of these skills through different learning environments with a focus on the first two non-clinical training years and to a lesser (but as important) degree the latter years.
Starting at the beginning: Engagement

Summary
“Using strategies to engage and interest staff and students at multiple levels within the organization is imperative”

Considerations

1. Highlighting the gaps and publicizing and gaining support for the initiatives to embed nutrition into the medical curriculum at the higher levels of the university e.g. Medical School Dean, so as to assist in the implementation and sustainability of any curriculum changes.

2. Offer to be a resource for nutrition related course content for staff; organize nutrition related updates for staff and/or students. Illustrate clearly (with evidence) why nutrition is important in medicine.

3. Introduce the Nutrition Curriculum Framework to theme and topic coordinators and curriculum change facilitators.

4. Identify the critical staff that can make a change in increasing nutrition course content and then make contact, understanding their priorities.

5. Publicize importance of nutrition in medical education utilizing the information on this website.

The Nutrition Competency Framework (NCF) consisting of 4 knowledge and 5 skill based competencies
This has been well received by interested medical educators across Australia, and was designed to be integrated into the Australian Medical Council’s Graduate Outcome Statements. It has been linked to key competencies in this framework.

The challenge however remains to have nutrition competencies accepted by the Medical Deans Australia and New Zealand Inc. (Medical Deans ANZ), which is the peak body representing professional-entry level medical education, training and research in Australia and New Zealand. Currently the main generic nutrition related AMC graduate outcome statement is Domain 2.10: “Integrate prevention, early detection, health maintenance and chronic condition management where relevant into clinical practice.”

Until such time that Medical Deans ANZ accepts the NCF it is imperative to
seek support from senior staff, such as the Dean of the Medical School and the Head of Medicine. Integration of nutrition into the curriculum is currently dependent on the commitment of the university and teaching staff to include appropriate adequate nutrition content within the curricula.

One of the major hurdles in working with educators in universities is the time constraint for educators to consider areas outside their current field of expertise and existing workload. This difficulty is not unique to nutrition, with multiple disciplines, including other allied health and even medical specialties seeking more of “their own” core subject matter incorporated into medical curriculum. The challenge is to both acknowledge individual discipline investment and expertise, yet concentrate on effective integration of those discipline principles and practice into holistic patient centered care.

Results from a survey conducted with medical educators (see Appendix 1) indicated that there are number of barriers to the introduction of nutrition competencies. A survey of medical educators in 2013/2014 found that the major barriers to incorporating nutrition competencies within the curriculum were:

1. the already full nature of the curriculum (predominant response)
2. the lack of ability to train educators in nutrition
3. incumbent costs
4. the inability to use technology
5. unawareness of the existence of nutrition competencies
6. other subject matter given higher priority

However a number of enablers were cited including:

1. the relevance and importance of nutrition competencies
2. the potential for integration throughout courses including; distributing the content over several years, providing a timeline as to when information should be integrated; and alignment with existing problem based, case based and system topics
3. the low costs involved in accessing the competencies
4. strong support from Head of School
5. the ease of use
6. the added provision of useful resources
7. the provision of clear examples of how learning objectives can be achieved
8. the possible partnerships with nutrition and dietetics experts in teaching institutions

**Strategies to engage and interest staff and students include:**

- Making contact with staff at other universities who may have incorporated nutrition into their curriculum
• Offering assistance to topic coordinators in reviewing current modes of teaching such as problem based learning tutorials, team based learning sessions and lectures that may already have a nutrition focus or have the potential to incorporate nutrition.

• Offering to be a resource for any nutrition related curriculum issues that arise in the school; attending any professional update seminars held by the medical school; seeking a place on any relevant curriculum committees; presence at medical school staff and student professional and social functions.

• Offer to be part of any case panel studies where nutrition is relevant.

• Identification of supportive medical school staff- possibly one or two people who can be “cheerleaders” for nutrition.

• Identification of supportive staff who may be interested in assisting with mapping the development of nutrition competencies in the curriculum.

• Organize guest speakers to present on current nutrition issues.

• Initiate and support student nutrition related special interest groups.

• Publicize any relevant professional activities you have held as this generates further publicity and interest.
Nutrition Competencies

Summary
“...to enable medical students to become nutritionally competent on graduation by embedding the development of nutrition competencies into current medical curricula”

Steps Involved

1. Become familiar with the 5 knowledge and 4 skill-based competencies that have been developed (the NCF).

2. Be aware that the nutrition competencies can be readily embedded into the existing curricula of medical schools and should not exacerbate issues related to the already crammed curriculum.

Background to the NCF
Developed in 2011, the Nutrition Competency Framework (NCF) is a simple framework that includes 4 knowledge and 5 skill based nutrition competencies, mapped to current Australian Medical Council (AMC) Graduate Outcomes. This framework was extensively reviewed and further developed by a team of expert academics to provide a suite of useful key benchmarking documents.

Two versions of the NCF have been developed
- **NCF version 1**: a short concise version that is useful in mapping the course content for nutrition content.

- **NCF version 2**: an extended version, applicable when working towards incorporating Learning Objectives or Outcomes (LOs) around nutrition; demonstrating the scope of nutrition examples, including examples of specific topics. This version of the NCF provides example-learning outcomes for each of the knowledge and skill based competencies for medical graduates.

Examples of topics that could address these learning outcomes are given, as well as a range of contexts and environments in which a given competency could be demonstrated.

- **For example:**
  K4 — “Demonstrate awareness of food sources of nutrients, food habits and the cultural and social importance of food”

  **Suggested learning objective**: “Identifies food sources of the major macro and micro nutrients”. Discussion may include content on the
current Australian food supply and key sources of nutrients. This could be part of a PBL, lecture or incorporated into a number of practically based clinical scenarios.

**When to incorporate the NCF**
Some of the **knowledge based competencies** are more likely to be covered during the first two years of a medical program and are likely to be covered in topic areas that cover basic science, physiology, cardiovascular disease, endocrinology and gastroenterology; others in public health and ethics units.

**Skill based competencies** will be more evident in the clinically based teaching years as scenarios may be multifactorial, where nutrition is an important but not an exclusive topic within the case. The curriculum mapping tool used in this project maps years 1 and 2 - hence our experience has shown that in these years it is predominantly the knowledge based competencies that are evident, and further work will need to be done to modify this tool to assist in the mapping of the later clinical years.
Mapping the curriculum: Online nutrition curriculum mapping tool (CMT)

Summary
“A clear picture is needed of what nutrition content, learning activities and assessment tasks are evident”

Why map curriculum?
Curriculum mapping has become an essential tool for the implementation and development of a curriculum as it enables:
• Identification of key elements of the curriculum related to a specific topic/competency and relationships between these elements.
• More efficient curriculum planning by identifying both gaps in information and opportunities to integrate competencies
• Visualization of the vertical integration of a theme e.g. nutrition, throughout the curriculum
• Mapping the scope and sequence of student learning
• Mapping the links between student learning with assessment
• Identification of core elements relating to assessment of competency

The adoption of nutrition competencies is likely to prompt development of nutrition curricula in medical courses in Australia. However, curricular reform presents a challenge on a number of levels. Strong support from the Dean and other medical school leaders is important but is rarely sufficient to create meaningful and enduring change, as change requires redesign of existing formats and/or the integration of new content. In many instances, academics coordinating course components may be unaware of the content of the overall four to six year curriculum unless a careful evaluation process has been implemented, such as curriculum mapping. This is particularly true for non-core topics/elements such as nutrition, which benefit from being integrated in a developmental manner throughout the entire curriculum.

The Web Based Curriculum Mapping Tool (CMT)
This tool can identify nutrition content in current medical curriculum as well as report on various course components that are compulsory elements requested by governing bodies such as the Australian Medical Council (AMC) Graduate Outcome Statements. It is hence a “one stop storage facility” for many aspects of the curriculum.
Steps involved in curriculum mapping.
1. Collate learning outcomes/objectives and review to determine how they fit into the categories/fields in the database tool.

2. Document corresponding assessment occasions for all learning objectives.

3. Populate the four excel / CSV templates with all of the collected data.

4. Submit the Excel /templates to the WNCIT IT developer for uploading into the CMT.

5. Edit data uploaded as required.

6. Familiarize medical educators with the NCF.

7. Meet with topic coordinators to ascertain where nutrition competencies are evident and to what extent, and if assessed and how.

8. Generate a range of individually customized reports

Curriculum mapping is a useful tool for the implementation and development of nutrition within the curriculum as it identifies key elements of the curriculum that relate to nutrition, documents the vertical integration of nutrition throughout the curriculum, and maps the relationship between learning activities, assessment and the development of students’ nutrition competency.

Ensuring Australian medical courses meet the standards such as those set by AMSAC requires mapping of any medical curricula to AMSAC competencies. The WNCIT mapping tool can assist in this process and in the future could possibly be used to map to a range of different competencies. At Deakin University, interest in the mapping tool was driven by medical staff and the Head of Medicine, after recognition of the potential of such a tool to map to a range of outcomes. Its use to map medical course content to numerous other competencies, such as the AMSAC guidelines, global learning outcomes and subject areas simply via keyword searches generated great interest in this mapping tool.

The CMT developed at Deakin University was also trialled in one partner post-graduate medical course (University of Queensland) and two partner undergraduate medical courses (University of Tasmania; Monash University). The online tool was effective in mapping the nutrition competencies of the first two years of all four medical courses despite their different course structures.
Curriculum Mapping is not a simple process
The documentation of learning objectives or outcomes (LOs), teaching tools used, and assessment strategies vary, dependent upon factors such as curriculum structure, implementation models, staffing, resources and infrastructure, as well as organizational policies and procedures between universities. Methods of documentation vary between organisations, and curricula information can be located in one central depository or may be managed by individual topic/subject coordinators.

Scenarios can range from clear documentation of LOs to no evidence of any LOs, as well as unclear or non-existent assessment of some topics. There may be difficulty in locating specific course content related to individual LOs and it can be hard to clearly link topics to individual assessment questions. Additionally topic content may have been updated but the documented LOs may not reflect the updated material.

Given this complexity and variation, this project aimed to create an opportunity for clarity and consistency in curricula mapping and specifically, documentation of existing content, applied to nutrition competencies. Nutrition competencies are used as an example, but the applicability is wide-ranging where greater documentation will assist current planning and ongoing review.

Four separate excel templates have been created to provide a uniform vehicle for collection of data to aid in mapping the curriculum for nutrition content. A set of templates were developed to support data entry, collation, analysis and reporting. The completed templates become the data that populates the web based CMT. These templates are uploaded into the online system by the web developer. The information formatting is then checked by the developer to ensure that the information can be added to the mapping tool. Later curriculum content updates can be directly entered in the CMT.

Information collected via templates:
The templates include broad information on course structure and type of assessment undertaken, with more specific detail on topic content, form of teaching utilized and learning objectives. The four templates and examples of information are listed below:
Template 1: Course and Associated Units
These first two templates provide the background information relating to a course. This is not essential information in mapping the curriculum for nutrition content but provides a bigger framework and context for the LOs and assessment tasks being mapped.

<table>
<thead>
<tr>
<th>University</th>
<th>Course Code</th>
<th>Course</th>
<th>Level</th>
<th>Semester</th>
<th>Unit Code</th>
<th>Unit Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monash</td>
<td>MED111</td>
<td>Medicine</td>
<td>1</td>
<td>1</td>
<td>MON101</td>
<td>Intro to Medicine</td>
</tr>
</tbody>
</table>

Template 2: Units - themes – weeks – topics
This collects more detailed information around the course structure and could enhance reports that detail time allocated to nutrition education

<table>
<thead>
<tr>
<th>Unit</th>
<th>Theme</th>
<th>week</th>
<th>Topic type</th>
<th>Contact</th>
<th>Lecture hours</th>
<th>Practical hours</th>
<th>Tutorial hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEDI101</td>
<td>SBM</td>
<td>1</td>
<td>Intro lecture</td>
<td>Dr Smith</td>
<td>6</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>MEDI101</td>
<td>SBM</td>
<td>2</td>
<td>Intro lecture</td>
<td>Dr Smith</td>
<td>6</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>MEDI101</td>
<td>SBM</td>
<td>3</td>
<td>CVD PBL</td>
<td>Dr Smith</td>
<td>6</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>MEDI101</td>
<td>SBM</td>
<td>4</td>
<td>CVD PBL</td>
<td>Dr Smith</td>
<td>6</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Template 3: Learning Objectives
This is a labour intensive template to populate, unless LOs are already detailed in excel spreadsheets. This data is essential to map nutrition curriculum content, plus gives the level of detail required to later look at where the least covered nutrition competencies could be embedded.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Theme</th>
<th>Topic</th>
<th>LO No</th>
<th>LO</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEDI101</td>
<td>SBM</td>
<td>cardiovascular</td>
<td>1</td>
<td>Describe the normal structure and development of the cardiovascular system including: histology, gross Anatomy, surface Anatomy</td>
</tr>
<tr>
<td>MEDI101</td>
<td>SBM</td>
<td>cardiovascular</td>
<td>2</td>
<td>Understand the normal physiology of the cardiovascular system including: homeostasis, cardiac cycle, valvular function, blood pressure determinants and regulation, fluid compartments</td>
</tr>
<tr>
<td>MEDI101</td>
<td>SBM</td>
<td>cardiovascular</td>
<td>3</td>
<td>Describe common and serious conditions of the cardiovascular system including: major hemorrhage, shock</td>
</tr>
</tbody>
</table>
Template 4: Assessments

Linking of LOs to assessment is of relevance when mapping nutrition curriculum content, to determine if nutrition competencies are truly evident. If competencies are not assessed then the importance given to nutrition by medical graduates may be diminished.

This template provides general assessment information, but is addressed in detail when curriculum mapping is underway and the method of assessment of individual LOs is documented.

<table>
<thead>
<tr>
<th>University</th>
<th>Unit</th>
<th>Theme</th>
<th>Order</th>
<th>Type</th>
<th>Weight (%)</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monash</td>
<td>MON101</td>
<td>KHI</td>
<td>1</td>
<td>Assignment</td>
<td>10</td>
<td>1/10/2014</td>
</tr>
</tbody>
</table>

In order to complete the templates, some knowledge of content is required. Medical research assistants or subject coordinators could enter data into templates, but in-depth content knowledge is required in the mapping process whereby the subject matter attached to a LO and the assessment used to check nutrition competency, is what provides accurate curriculum mapping.

To assist in mapping the NCF to curricula, a video has been produced to assist in explaining the 9 competencies and how they were developed.

Examples of curriculum mapping processes.

1. Learning Outcome: “Describe the normal structure and development of the cardiovascular system”

   **Question:** are any of the nutrition competencies addressed in this LO? Examination of the 9 competencies (which will be visible in the mapping tool next to each LO listed) demonstrates that none of the competencies, partly or fully are addressed here, and so detailing of assessment is not relevant, and hence no boxes not need to be completed

2. Learning Outcome: “Outline the factors influencing repair and regeneration, including systemic and local factors such as wound infection, and controls and complications”

   **Question:** Are any of the nutrition competencies addressed in this LO? By looking at each of the 9 competencies it is evident that some of the competencies are addressed here:
   
   • K1 Demonstrate understanding of the basic sciences in relation to nutrition
   • K2 Demonstrate knowledge on the interactive role of nutrition in health and the prevention of disease
   • K3 Demonstrate knowledge of evidence based dietary strategies for prevention and treatment of disease

   Documentation of the level of the competency coverage is by selection from a
drop down box eg covered in multiple places and assessed. If assessed, the method of assessment is documented eg. multiple choice questions (MCQs).

**Reports**

Once all of the documentation of the competencies is done and the assessments applied have been completed, this information can provide the basis for reports to be generated on user specified parameters.

The types of reports and information that can be generated include:

- The number of occasions and location all or specific nutrition competencies have been covered
- The number of competencies assessed by specific types of methods e.g. MCQ, short answer questions
- The competencies covered but not assessed

Figure 1 is an example of a report. This documents the LOs in years 1 and 2 at Deakin University Post Graduate Medical Degree where the nutrition competencies K1-K4 were assessed by MCQs.

The columns form left to right are:
- The University the data is from
- In which unit the LO that links to a certain competency can be found
- The relevant theme
- The topic and weeks are indicated
- A description of the LO
- Which competency the LO maps to

A pictorial representation of the number of individual competencies that are linked to LOs are also given.
Instructional videos on the use of the mapping tool are available. Contact Jason Wells (jason.wells@deakin.edu.au) for further information if you are interested in using the mapping tool at your university.

Over the course of this project it became clear that another method of mapping the curriculum is required for the later clinical years. The curriculum mapping tool cannot encompass the course wide, detailed and consistent documentation of skill and knowledge development for all individual students. It is possible that the clinical experience portfolios kept by individual students...
to demonstrate competency might be a useful method of capturing the development of nutrition competencies during the clinical years. The development of this extension to the current CMT into the clinical years will be important as this would ensure mapping of the whole range of competencies developed by medical graduates during their entry-level medical training.
Nutrition Teaching and Learning Activities

Summary

“Trialling of these exemplars and improvements made as the result of student (and staff) feedback has maximised the successful implementation of these resources.”

Steps involved

1. Select a suitable activity from the list that cover the nutrition competencies of interest

2. Trial the activity in your organization and assess student and staff feedback on the teaching exercise.

3. Modify teaching activity based on student and staff feedback

To assist embedding of nutrition competencies into medical courses, teaching resources have been developed and assessed independently in the individual partner sites.

These include teaching modules on:

- Nutrition knowledge and practice (1st year)(DU);
- Clinical Nutrition Assessment (1st year) (UQ);
- The Patient Partner Program ‘Nutrition Week’ (4th year)(UTAS);
- Problem based learning tutorial on Type 1 Diabetes suitable for years one and two (MU).

Trialling of these exemplars and improvements made as the result of student feedback has maximised the successful implementation of these resources. The DU interactive lecture has now been successfully integrated into the first year medical curriculum, and will be incorporated again in 2015. The UQ “Nutrition Exercise Assessment Tool” has also become a mandatory part of the course for all 1st year medical students.
**Deakin University: Nutrition and Prevention of Cardiovascular Disease**

**Year Level:** End of first or second year  
**Topic area:** Nutrition and public Health

### Learning Outcomes
1. To develop an appreciation of the challenges of food behaviour change and develop skills in providing effective support to empower patients to make positive lifestyle changes. This is by examining dietary recommendations related to cardiovascular disease prevention and treatment (fruit, vegetable and salt intake).
2. To identify the extent of any difference between students’ nutrition knowledge and behaviour.

### Nutrition Competencies: K2-1; K2-2; K3-1; K3-2; K4-2

### Description
- A selection of core slides with key nutritional information that could be utilized within a lecture format.
- Six multiple choice questions delivered to students (using an audience response system) which assesses medical students’ self-reported nutrition practices and knowledge and illustrate the mismatch between practice and knowledge.
- Evaluation was undertaken in two first-year student cohorts (2013 and 2014); it was found that although more than half of the students knew the number of recommended daily servings of vegetables, less than two students in ten consumed the recommended amount.

This interactive lecture has been successfully integrated into the first year medical curriculum at Deakin University in two lectures delivered within the public health theme, and will be incorporated again in 2015.

### Quality Assurance
See Appendix 2 for student/staff evaluation, recommendations and modifications.

Educators can email Prof Caryl Nowson: caryl.nowson@deakin.edu.au for further information.
University of Queensland: Nutrition in Practice: NEAT - Nutrition Exercise Assessment Tool

Year Level: Year 1
Topic area: Knowledge of Health and Illness

Learning Outcomes:
1. Understand the role nutrition and lifestyle plays in the development of chronic disease.
2. Appreciate the nutritive and pharmacological roles of nutritional substances.
3. Differentiate between marketing and evidence based information on the benefits of particular lifestyle and dietary practices on health outcomes.
4. Gain practical skills and resources to effectively and succinctly provide beneficial lifestyle and nutrition advice to patients.

Nutrition Competencies: K1-1, K2-1, K2-2, K3-1, K1-3, K2-1, K1-3, K4-1, S1-1, S1-2, S1-3, S2-2, S3-1, S3-2, S3-3, S3.4, S3-5, S5-1, S5-2

Description
This practical 90 minute module introduces NEAT – the Nutrition Exercise Assessment Tool and associated solution sheets, allowing students to initially complete this on their own dietary practices and includes associated case study based practical examples.

The teaching exemplar includes:
- Preliminary lecture recording to enable participation in the practical sessions –
- Clinical Nutrition Myth Busting (60 min): provides an overview of the basics nutritional components and their physiological effects.

Set of MCQ’s to be answered at the completion of the recorded lecture so as to be able to attend the small group practical session; a selection of these MCQ’s may also be used as either formative or summative assessment
- Practical Nutrition Assessment session (90min) – tailored to accommodate 60 students per session
- Introduction to practical session slides
- NEAT assessment tool
- NEAT interpretation guide
- NEAT practical activity slides
- Support Resources

Quality Assurance: see Appendix 3 for student/staff evaluation, recommendations and modifications

Educators can email Dr Jennifer Schafer - j.schafer@uq.edu.au for further information.
University of Tasmania: Patient Partner Nutrition Program

Year Level – Years 4 and 5
Topic area – Clinical skills; Knowledge of Health and Illness

Learning outcomes:
1. Integrate nutrition in the medical history and physical examination.
2. Interpret and integrate findings from the assessment to define nutritional problems.
3. Apply clinical reasoning to prioritise nutritional management strategies.
4. Provide basic evidence based advice on nutrition to patients.
5. Appreciate the social and cultural importance of food (including the influence of the social determinants of health).

Nutrition Competencies: S1, S3, S4, S5, K2, K4

Description
The Patient Partner Nutrition Program (P3) allows students to learn from and with community members. By partnering weekly with volunteer ‘patient partners’ students are exposed to a variety of medical conditions and illnesses in a structured and safe consultation style. Students lead the consultation while being mentored by a clinician in the room. Hence the clinical content for nutrition is based in a patient centred framework.
The session aims to expose students to nutrition in as many ways of possible. Student evaluation/assessment is primarily via two mechanisms (1) a weekly reflective log/workbook kept by students and (b) feedback from academic staff on their workbook.
Evaluation by Student Evaluation Survey/Questionnaire and Clinical Tutor Feedback.

Quality Assurance: see Appendix 4 for student/staff evaluation, recommendations and modifications

Educators can email Dr Kim Rooney – Kim.Rooney@utas.edu.au for further information.
Monash University, Melbourne: Problem Based Learning Scenario

Year Level - Years 1 and 2

Topic area: Endocrinology; Knowledge of Health and Illness; Doctor and Patient

Learning Outcomes:

• Describe the pathophysiology and risk factors for Type 1 Diabetes and how it differs from Type 2.
• Explain how nutrition affects health and risk factors for disease.
• Describe the role of nutrition in treatment of disease.
• Describe the dietary management strategies for relevant medical conditions and disease.
• Appreciate the social and cultural importance of food.
• Discuss the principles of management including investigations of a patient with Diabetes.
• Describe the role and responsibility of the doctor, as a GP and as a specialist, in the management of a patient with Type 1 Diabetes.
• Identify the health issues facing adolescents and the responses of adolescents to chronic illness.

Nutritional Competencies: K2-2; K3-1; K3-2; K4-3

Description

This PBL has been developed to address knowledge and skill based nutrition competencies. This has been trialled with students and reviewed by PBL tutors. It provides a patient centred scenario which provides opportunities to consider nutrition and lifestyle issues in younger people. Evaluation was by feedback from PBL tutors and trialling of the PBL with undergraduate 2nd year students. Qualitative feedback was gathered from the students.

Quality Assurance: see Appendix 5 for student/staff evaluation, recommendations and modifications

Educators can contact - Jennifer Lindley - Jennifer.lindley@monash.edu to request further details regarding this PBL.
Assessment Tools

Summary

“...for nutrition to be effectively embedded into medical education programs, any nutrition content must be meaningfully assessed.”

Steps involved

1. Review current nutrition curricula and occasions of summative assessment.

2. Select topic areas for summative assessment (MCQ exam format) and contact caryl.nowson@deakin.edu.au to obtain relevant MCQs that have undergone quality review.

3. Review OSCE examinations and review the potential of including a nutrition based OSCE and contact caryl.nowson@deakin.edu.au to receive quality assessed OSCE.

After consultation with team members and medical educators it was clear that for nutrition to be effectively embedded into medical education programs, any nutrition content must be meaningfully assessed. See FOOTNOTE 1. It would also be useful to develop some extended MCQs that integrate nutrition components that cover broader disease topic areas when nutrition is one of a number of components.

Review of nutrition content in medical programs identified that in some medical schools, nutrition content, particularly when provided by guest lecturers, is not formally assessed. While guest lecturers may have significant experience in their field, they are not necessarily trained educators adept at assessment, or time constraints and lack of knowledge on Faculty assessment methods may mean they do not contribute to assessment of their area of expertise. The project team has developed two types of assessment that can be readily integrated into existing formal assessment processes, to assist in assessment in relation to the NCF.

FOOTNOTE 1 The acceptance of our recently developed nutrition related MCQs by AMSAC in their benchmarking database, would be a major step forward, as this would alert medical schools of the need to include sufficient nutrition content in their curriculum but to also assess it.
MCQs

A bank of 67 high quality, summative MCQs, in the appropriate format utilised by medical courses in Australia, to assess knowledge and skill based nutrition competencies.

These include 56 for first and second year students and 11 for third and fourth year students. All have been piloted with both nutrition and medical students, as well as expert review and quality evaluation. Topic areas covered include: diabetes, CVD, CCF, insulin resistance, allergy, pregnancy, breastfeeding, renal, gastroenterology, alcohol, macro and micronutrients, bone health, autoimmune disease, malnutrition, vegetarianism, public health. Two examples of MCQ’s developed that illustrate the format, level and competencies covered are below:

**Year level: 1 & 2 Nutrition** Competency: S1; 1, 2

The primary dietary concern for an 82 year old woman with congestive cardiac failure is intake of

A. saturated fat.
B. carbohydrate.
C. energy.
D. Vitamin B12.
E. Vitamin D.

**Year level: 3 & 4** Nutrition Competency: S3; 3

Isabel is the newborn child of Mary and Cameron. Cameron has an allergy to cow’s milk and nuts. Mary is planning to breastfeed Isabel for the first year of life. Which of the following dietary recommendations should be made to Mary to manage the risk of Isabel having a food allergy?

A. eat a normal diet
B. avoid nuts in her own diet
C. avoid dairy in her own diet
D. avoid nuts and dairy in her own diet
E. avoid all common food allergens in her own diet

Educators can email caryl.nowson@deakin.edu.au to request access to questions.

**Quality Assurance:** see Appendix 5 for student evaluation processes and protocol, recommendations and modifications

**OSCEs:** Two nutrition based OSCEs were developed, one suitable for use in year 3 (first year of clinical practice) which covers the following competencies

- Demonstrate patient-centred communication skills (NCF S1-2)
- Elicit social and lifestyle information from the patient
- Discuss the importance of lifestyle (diet and exercise) in management of illness (NCF S3-4)
- Appreciate the importance of social and cultural issues in patient management (NCF K4-3). This has been reviewed by external experts
using pre-determined criteria. This OSCE could be utilised as small group teaching resource.

Competencies Covered: S1-2; S3 -4; K4-3
The other will be submitted to ACCLAIM for consideration to be used Australia wide.
Educators can email Caryl.Nowson@deakin.edu.au to request further details.

**Quality Assurance:** see Appendix 6 for expert evaluation results processes and protocol.
Nutrition Education Resources

Summary

“...for nutrition to be effectively embedded into medical education programs, any nutrition content must be evidence based and current”

Steps involved

- Select the specific nutritional competency within the Nutrition Education Resource section of the website and search for the specific topic of interest (insert link). The Nutrition Resource section contains 9 separate pdf documents based on the NCF (4 knowledge, and 5 skill based competencies) with hyperlinks to suitable resources for each competency.

These resources provide information and learning opportunities to assist in the incorporation of the NCF and its nine knowledge and skill based competencies into Australian medical school curriculum. In particular, medical students need to be aware of government initiatives around food and nutrition, such as the Dietary Guidelines and nutrient reference values. In addition, to these resources, other peer reviewed, quality resources are available.

These resources are suitable for use by teachers, students and graduates and provide useful, evidence-based and current information and assessment tasks (primarily formative) relevant to the Learning Objectives/Outcomes outlined in the NCF.

Suitable resources are located alongside each competency, with up to date links provided.

Quality Assurance: An expert panel reviewed the materials collated using a quality template (Appendix 7).

For further information regarding these resources please contact Prof Caryl Nowson caryl.nowson@deakin.edu.au
APPENDIX 1:
Survey of medical educators in 2013/2014
August 26 2013

22 respondents

Higher Education Institutions Represented:
• Flinders University
• Griffith University
• Sydney Medical School
• University of Auckland
• University of Sydney
• University of Western Sydney
• Not all respondents indicated their institution

Demographics:
• Most individuals that responded were involved in the teaching/designing of graduate-entry level medical courses in Australia 14/17
Roles included (note respondents could select multiple roles: Lecturer (8), Member of curriculum or assessment committee (4), Tutor (3), Coordinator Theme/Topic/Unit (3), Associate Dean/Associate HOS (2), Coordinator of pre-clinical years (2), Placement clinical supervisor (1), Chair of curriculum or assessment committee (2)

Response:
Generally, respondents through each component of the WNCIT would be useful, but were less certain that their institution would actually use the components in their curriculum.

Barriers to the introduction of nutrition competencies:
1. The already full nature of the curriculum (predominant response)
2. The ability to train educators
3. Costs
4. Ability to use the technology
5. Lack of understanding of importance and existence of competencies
6. Not regarded as high priority compared to other subject matter

Facilitators to the introduction of nutrition competencies:
1. Their highly relevant nature
2. Potential for integration throughout courses (including distributing the content over several years, providing a timeline as to when information should
be integrated) and alignment with existing problem based, case based and system topics
3. Low cost (free)
4. Support from Head of School
5. Ease of use
6. Provision of useful resources
7. Providing clear examples of how learning objectives can be achieved
8. Partnerships with nutrition and dietetics experts in the teaching institutions
APPENDIX 2:
Deakin University Nutrition and Prevention of Cardiovascular Disease:
student/staff evaluation, recommendations and modifications

Evaluation method: knowledge and self-reported behavior assessed by a student quiz in class, and an external observer evaluated student engagement in class.

Evaluation results: Students in two cohorts (2013, 2014) each answered 6 multiple choice questions relating to knowledge of dietary recommendations and reported usual intake for fruits, vegetables and salt. The questions were delivered to students in two nutrition and population health lectures using an audience response system that was delivered to each cohort towards the end of their first year.

Results
Although more than half the students knew the recommended daily servings of vegetables, overall less than 2 students in 10 consumed the recommended amounts.

Outcome: This interactive lecture has been successfully integrated into the first year medical curriculum, and will be incorporated again in 2015.
APPENDIX 3:

University of Queensland Nutrition in Practice: NEAT - Nutrition Exercise Assessment Tool

Evaluation Method
Delivered by NS, WNCIT research fellow to 1st year medical students (2014) within 15 weeks of commencement in a large group lecture format, session was not a mandated component of the course. Students completed a short paper based questionnaire with rating scales and the capacity to provide written feedback and lecturer feedback.

Evaluation Results
Lecturer reflections: Attendance to the session was not as high due to timetabling confusion, and scheduling at the end of the day. The exercise cannot be run successfully in a large group lecture format (n= 200+). Positive feedback was received indicating that the assessment tools (NEAT) were useful, the case study was relevant and interesting, clinical examples were helpful and the interactive discussions were good.
APPENDIX 4:  
University of Tasmania: Patient Partner ‘Nutrition Week’

Evaluation Method: a. Student Evaluation Survey/Questionnaire- this questionnaire was developed by the project officer and piloted with four Launceston Clinical School staff members- including the Director of P3, the P3 facilitator, the Head of School and the P3 administrator. Comments were collected and refinements made to the survey. On the day of the session, the clinical tutors allowed time within their session for students to complete the survey at the end of their session. b. Clinical P3 Tutor Feedback- feedback was collected from clinical tutors who facilitated each session on: how the session ran, what did and did not work well, and their thoughts on how nutrition could be embedded into the P3 program in 2015.

Evaluation results: Thirty-three students participated and completed the evaluation questionnaires. The results indicate this exemplar displays a high degree of relevance to UTAS medical students. The students themselves recognized the need for more skills and knowledge in the area of nutrition, especially with regards to patient care. They identified a lack of this discipline in their undergraduate training so far. The evaluation indicated that the program would benefit from some process refinements including the provision of resources and briefing prior to the session for students, as well as an improved set of nutrition education resources.

Outcome: A ‘Nutrition’ session has now been incorporated into year 5 of the Program at UTAS in 2015.
APPENDIX 5:

Monash University, Melbourne: Problem Based Learning Scenario

Evaluation Method:
PBL scenario was reviewed by 2 PBL tutors and trialed with a group of undergraduate 2nd year students. Qualitative feedback was gathered from the students after trialing the PBL. Feedback indicated that the PBL scenario was authentic. Trialing of the PBL indicated that students were clearly able to indicate pertinent LOs and the need to include other health care members particularly dietitians and diabetes educators. Students believed that the PBL was very useful in terms of being patient centered and providing the opportunity to consider nutrition and lifestyle issues particularly relevant to an adolescent/young adult. They suggested it could be used to trigger self-reflection on patient management and inter-professional approaches to health care.
APPENDIX 6:

MCQs

A set of 67 MCQs were developed in the format required for medical school assessment and rigorously evaluated for quality. A group of team members and external members were trained by an MCQ expert Mr Neville Chiavaroli, and worked together as a working group to develop a set of MCQs and Extended Matching Questions (EMQs) for years one and two of medical courses in Australia. A pilot set of 35 questions was administered to 30 dietetic students from Deakin and University of Wollongong and these were subjected to item analysis to assess quality. The quality components assessed were: the relative difficulties of the items, discrimination index (point biserial) and Rasch statistics which provide an indication of poorly written items and provide information on the extent that a question discriminates between high-ability and low ability-examinees. After review of the item analysis the pilot set of questions were revised and additional questions drafted by members of the writing working group. Final testing of 84 MCQs was conducted on 171 students (140 dietetic students, from three universities and 31 second year medical students, from two universities. Item analysis was conducted and results reviewed by the expert team which resulted in the retention of 67 (56 for year levels 1 and 2; 11 for years 3 and 4) quality nutrition MCQs in the database. The MCQs have been matched to specific nutrition competencies in the NCF. Some of the MCQs will be submitted to AMSAC for consideration for inclusion in a small set of shared assessment MCQs which are embedded in examinations around the mid-point of the medical degree to enable benchmarking of student performance across all medical schools in Australia. This could have a longer term impact on increasing the nutrition content in medical education if selected for use. The majority of the remaining MCQs will be made available to medical educators on request with appropriate screening and security measures and a subset made available to educators for use in formative assessment.
APPENDIX 7:
OSCE Evaluation
Evaluation Method: Evaluated by 2 external experts (MU, DU), and two team member experts from QU and UTAS.
Evaluation results: Reviewers agreed that the OSCE was appropriate for assessment of students who had completed at least one year of clinical placement. Positive feedback indicated that this was an important area of patient care which should be assessed. Areas for improvement included shortening the length of the stem and editing to ensure simulated patient instructions matched the material and instructions for candidates. In addition, wording of the scenario should be revised to ensure that TB and malignancy are excluded. The marking rubric would need to be revised and customized for the specific assessment requirements and format of individual universities.
APPENDIX 8: Nutrition Education Resources

CRITERIA TO ASSESS NUTRITION RESOURCES FOR WNCIT

These resources are to provide information and learning opportunities to assist in the incorporation of the NCF and its nine knowledge and skill based competencies into Australian medical school curriculum. These resources be used in multiple ways, allow for flexibility and creativity in teaching and learning

AIMS:

# Provide useful, evidence-based and current information on the topics outlined in the NCF to help medical students become competent in basic nutrition

# Support teaching and learning:
  - Primarily year 1 and 2 medical students
  - By staff involved with teaching or writing nutrition specific and nutrition related curriculum

CRITERIA:

Content

- Evidence based and current
- High quality information
- From credible organisations
- Information is readily and easily accessible
- Australian specific when related to nutrition public health policy and practice
- Relevant to teaching, learning, assessment and practice across courses (e.g. medicine, nutrition, dietetics)
- Format: text, online written material video clips, audio presentations

Each Resource will be assessed utilising the following criteria:

<table>
<thead>
<tr>
<th>Name</th>
<th>Directly relevant to the skill-based competency</th>
<th>Evidence based / credible</th>
<th>Current</th>
<th>Cultural factors considered</th>
<th>Easy access via link</th>
<th>Information relevant to Health Prof</th>
<th>Core OR additional resource?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>Y/N</td>
<td>Y/N</td>
<td>Y/N</td>
<td>Y/N</td>
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<td>Core</td>
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<td>N</td>
<td>Y</td>
<td>Additional</td>
</tr>
</tbody>
</table>
Proposed Reviewer working group (6-8 persons):

- Qualified nutrition professional/s e.g. University Academic or clinician working currently in a medical school
- Current medical student/s – if has a nutrition background then also need a student without a nutrition background
- WNCIT Project Manager
- WNCIT Project Team member/s from other sites

Eligibility of working group members

- Nutrition degree
- Working in a teaching environment / student in a university
- Experience / knowledge / involvement with university medical curriculum