



Nutrition education within the University of Dundee's Medicine MBChB and Scottish Graduate Entry Medicine (ScotGEM) MBChB

Nutrition plays a key role in the prevention and management of disease and since 2009-2010 a small teaching team at the University of Dundee has been established to build nutrition into the MBChB Medicine curriculum. More recently, this remit has also been extended to include the new Scottish Graduate Entry Medicine MBChB (launched in 2018), taught in partnership between the Universities of Dundee and St Andrews.

University of Dundee Medicine MBChB

Nutrition had been recognised as being poorly addressed in the University of Dundee's MBChB undergraduate medical curriculum in 2009-10, with only five hours of specific nutrition teaching provided throughout the core five-year MBChB programme. A small amount of additional teaching was provided where nutrition was part of a wider topic. Professor Annie Anderson (Professor in Public Health Nutrition) initially appointed a 50% FTE dietitian to identify and address any inadequacies or gaps in nutrition teaching within the MBChB. Over the years this has grown and now a team has been established consisting of one 50% FTE dietitian, funded through the Scottish Government's Additional Cost of Teaching fund, plus two registered nutritionists (both 50% FTE) funded by the University of Dundee.

This programme of work is ongoing and while the hours delivered vary by year, students now receive a minimum of 30 hours of nutrition focused core teaching. In addition, students are given the opportunity to complete Student Selected component (SSCs) modules. In year 1 a longitudinal SSC is offered ('Nutrition in health and disease: a critical review'). In years 2 and 3 up to two four-week SSCs are offered each year (on topics including cancer prevention and early detection, cancer survivorship, breast and infant feeding, and prior to their integration into core teaching, obesity, and nutrition support). MBChB students completing the Bachelor of Medical Science (BMSc), an intercalated honours degree between years 3 and 4, also receive teaching on relevant nutrition topics, and are offered supervision for nutrition-themed student projects.

A key factor that has enabled the increase in delivery and optimised the quality of the teaching has been the support of the local NHS Tayside nutrition and dietetic workforce. Through close collaboration and arranging training in teaching skills, it has been possible to harness the specialist skills of the NHS dietetic workforce, whilst simultaneously providing opportunities for staff development. Ultimately this has offered a sustainable approach towards ensuring this work can continue in the future.

All MBChB teaching resources are uploaded to 'Medblogs', the virtual learning environment, and this has been used initially to identify and review nutrition content within existing teaching either focused on nutrition or where nutrition would be relevant. Components with potential for improvement have been addressed in collaboration with tutors delivering the teaching, by suggesting or providing amendments. Where gaps have been identified, collaboration with year leads, system convenors and theme leads have enabled opportunities to be identified and negotiated to integrate new nutrition-themed teaching into the curriculum.

Given that nutrition has relevance to virtually all organ systems, bridging basic science, clinical medicine and public health, nutrition runs as theme throughout the curriculum. Teaching has

CASE STUDY: NUTRITION EDUCATION WITHIN THE UNIVERSITY OF DUNDEE



University
of Dundee

predominantly been delivered during the pre-clinical 'Systems in Practice' (years 1-3) core teaching where relevant within the systems-based blocks (e.g. cardiovascular, gastrointestinal, dermatology, endocrinology, reproduction and sexual health, and child health). Teaching is delivered via interactive lectures, small group teaching (e.g. involving discussions, working through case studies and opportunities to taste oral nutrition support) and e-learning modules (e.g. using Microsoft Sway). Online tools such as Microsoft Forms, Mentimeter and Padlet have been used to build in interaction, particularly since the move to blended learning. Supervision has also been provided for fourth year projects and self-selected SSC projects. An example of the nutrition themed teaching within one of the blocks (Endocrinology) can be found in Table 1.

Years 4 and 5 are the clinical 'Preparation in Practice' years where MBChB students receive a wide range of learning opportunities rotating around clinical out-blocks. A 'transition block' is provided at the start of year 4 to help students prepare for their clinical experiences and at this point their learning on nutrition so far is consolidated via a formative assessment, case studies to work through, and a resource containing links to key documents and teaching. In the past, when timetables and capacity has allowed, the team have worked with NHS dietetic staff to give all students the opportunity to shadow a dietitian, an approach which has been demonstrated as valuable in improving confidence in communicating with and understanding the role of other health care professionals [2]. An online nutrition in oncology teaching resource has also been provided. Supervision has been offered to students completing their portfolios of learning.

In line with Biggs' Constructive Alignment theory [3], learning objectives are set for every aspect of teaching and a mapping exercise performed in 2017 (unpublished) found the majority of learning outcomes from the Academy of Medical Royal Colleges' Academy Nutrition Group (ANG) UK Undergraduate Curriculum in Nutrition [4] to have been addressed, at least in part throughout the MBChB. In addition, mapping to a draft of the AfN UK Undergraduate Curriculum in Nutrition for Medical Doctors in March 2020 (unpublished) found that Dundee students should be able to meet the majority of competencies and outcomes after receiving the teaching being provided during years 1 and 2 of study. Formative and summative assessment questions, and Objective Structured Clinical Examination (OSCE) stations aligned to the learning outcomes have been submitted and are incorporated into end of year exams.

Student feedback has been collected at the end of individual sessions, and/or at the end of blocks since the implementation of the first new teaching sessions in 2010. Sessions are reviewed every year in light of this and adjustments made to enhance the quality of the teaching and learning process. The frequency of which feedback is collected has varied over the years according to the overall demand placed on students for feedback in the wider curriculum and whether any amendments have been made to a session since the previous year. Since the move to blended learning, students have expressed a willingness to complete '1-minute feedback' at the end of a session, therefore a Microsoft Form link or QR code is now provided at the end of every session or resource. Students are asked to rate their enjoyment of the session (out of 5 stars) and are given the opportunity to comment on what their general impressions were, including what they found useful.

Student feedback from the 2020-21 academic year has been very encouraging across all teaching blocks, highlighting strong engagement and learning from the sessions. For example, during the year 2 endocrinology block student feedback on the 'Prevention of obesity – a clinical perspective' e-learning module highlighted the usefulness of being able to apply knowledge gained from lectures and workshops to a clinical scenario:

CASE STUDY: NUTRITION EDUCATION WITHIN THE UNIVERSITY OF DUNDEE



University
of Dundee

“Having to answer and apply the info to Sarah's case was very helpful in understanding how to use this info practically in a clinical scenario”

“I thought this covered all the important points and was helpful in being able to apply what we have been learning!”

“Informative and helped to reinforce points with a clinical scenario”

Scottish Graduate Entry Medicine (ScotGEM) MBChB

ScotGEM, a four-year medicine degree available only to graduates, was launched in 2018 and the development of this new curriculum presented a valuable opportunity to incorporate nutrition content from the outset. ScotGEM is taught as a partnership between the universities of Dundee and St Andrews, in collaboration with NHS Fife, NHS Tayside, NHS Highland, NHS Dumfries and Galloway and the University of the Highlands and Islands. Students receive two years of teaching led by the University of St Andrews followed by two years led by the University of Dundee.

The curriculum in years 1 and 2 takes a case-based approach to learning and the nutrition team in Dundee have provided face to face or self-directed nutrition focused teaching related to 11 systems based cases (Year 1) and four life cycle based cases (Year 2). In 2020-21 this equated to around 24.5 hours nutrition focused learning per student delivered via seven lectures, a clinical skills lab, an MDT session, and seven interactive self-directed resources which are now being converted into e-learning modules. Topics covered have included obesity, malnutrition, management of diabetes, hypertension and gastrointestinal diseases, nutritional deficiencies, sarcopenia, cancer prevention and management, and nutrition in childhood.

Contribution of this teaching has been incorporated into the remit of the nutrition teaching team. Unlike this University of Dundee MBChB, this has not yet required input from NHS dietetic staff beyond the existing team. Feedback has overall been very positive with 100% of students providing feedback agreeing or strongly agreeing that the resources or lectures were useful in 2020-21. Despite this excellent feedback, all materials are reviewed every year and adjustments made in light of any comments or suggestions.

References:

- [1] General Medical Council, 2018. *Outcomes for graduates*. [online] Available from: https://www.gmc-uk.org/-/media/documents/dc11326-outcomes-for-graduates-2018_pdf-75040796.pdf
- [2] Kusnoor, A.V. and Stelljes, L.A., 2016. Interprofessional Learning through Shadowing: Insights and Lessons Learned. *Medical Teacher*, 38 (12), pp.1278-1284.
- [3] Biggs, J., 1996. Enhancing teaching through constructive alignment. *Higher Education*, 32, pp.347-364.
- [4] Academy of Medical Royal Colleges., 2013. UK Undergraduate Curriculum in Nutrition. [online] Available from: <https://www.aomrc.org.uk/reports-guidance/uk-undergraduate-curriculum-nutrition/>



Table 1. Example of how nutrition-themed teaching is incorporated into the endocrinology block teaching for year 2 students on MBChB programme.

Week	Session topic and format (duration)	Intended Learning Outcome	Academy of Medical Royal Colleges' Academy Nutrition Group [4] learning outcome
1	<p>Preventing obesity – the role of the doctor: Lecture: Part 1 (30 mins)</p> <p>Lecture: Part 2 (30 mins)</p>	<ul style="list-style-type: none"> - Describe the prevalence and trends in overweight and obesity both nationally and globally and identify high risk population sub-groups. - List the key health risks associated with overweight and obesity. - Understand the role of the doctor in the prevention of obesity. - State three healthy lifestyle behaviours for obesity prevention. - Describe the main drivers that have contributed to the global epidemic of obesity. - Recognize that there are policy options targeting the prevention of obesity in adults and children. 	<p>A2, B1</p> <p>B2, B3</p>
2	<p>Nutritional Aspects of Diabetes Mellitus: Lecture (1 hour)</p>	<ul style="list-style-type: none"> - Understand the role of key lifestyle factors in diabetes prevention. - Explain the aim of the nutritional management of diabetes. - Describe the role of diet and lifestyle in the management of type 2 diabetes. - Describe the role of diet and lifestyle in the management of type 1 diabetes. 	<p>B1, C2</p>
2	<p>Prevention of obesity: a) Clinical perspectives – e-learning module using Microsoft Sway (1 hour)</p> <p>b) Public health perspectives - Live small group session over Blackboard Collaborate (1 hour)</p>	<ul style="list-style-type: none"> - Have an understanding of and use appropriate guidelines to classify overweight and obesity in adulthood. - State three key healthy lifestyle behaviours for obesity prevention. - Demonstrate application of the 5A's approach to behaviour change in the prevention of obesity using a case scenario. - Identify the main drivers (environmental factors) that have contributed to the global epidemic of obesity. - Be able to comment critically on key policy options for influencing energy intake and expenditure. - Have an understanding and appreciation of the challenges of avoiding weight gain while living in deprivation. 	<p>C2, E1</p>



3	<p>Carbohydrate Counting and Insulin Dose Adjustment: Interactive Microsoft Sway resource (2 hours)</p>	<ul style="list-style-type: none"> - Discuss the use of target blood glucose levels and a range of insulin regimens. - Identify carbohydrate containing foods, different types of carbohydrate in the diet and describe their effect on blood glucose. - Understand and apply methods used to estimate the carbohydrate content of foods and meals. Calculate insulin doses based on carbohydrate content of foods blood glucose measurements. - Describe key diet, lifestyle and other factors that may affect blood glucose control and complication risk. 	A3, B3, F1
4	<p>Management of obesity a) e-learning module using Microsoft Sway (1 hour) b) Live quiz / Q&A using Blackboard Collaborate and Mentimeter to consolidate learning (1 hour)</p>	<ul style="list-style-type: none"> - Understand the doctor's role in raising the issue of weight and appreciate the sensitivity required when communicating with patients. - Be aware of the core skills and key strategies that are essential when using a person-centred approach in weight management. - Be confident in raising the issue of weight in a sensitive manner. - Appreciate the importance of a multi-disciplinary approach to weight management and the role played by the different disciplines. - Be aware of the range of weight management interventions and the evidence to support their use. 	C2, D5, F1