SCHOOL OF MEDICINE

University of St Andrews

University of St Andrews

BSc (Hons)
Clinical Placements
MD4000 Student Guide

2019 - 20

Introduction	4
Attendance & Contacts	4
Transport and reporting arrangements	5
Placement Safety	5
Raising Concerns	6
Professional Behaviour	6
Confidentiality	7
Occupational Health	7
Standard Infection Control Procedures	7
Dress Code & Phones	8
Structure of Clinical Attachments	9
Format of the day	9
Lunchtime Talks	10
Tips	11
Supporting Work & Submission of Case Reports	12-13
Feedback	14
Learning Log	14
Clinical Medicine: Impact of Disease on Life	15
-Cardiology	16
-Dermatology	17
-Endocrinology/ Diabetes	18
-GI ANP/ Cardiology ANP	19
-Gastro Intestinal and Liver Disease	20
-Haematology	21
-Infectious Diseases	22
-Renal	23
-Respiratory Medicine	24
Clinical Reasoning	25
Emergency Medicine	26
ENT	27
Every Person, Every Time	28
Inter-Professional Care	29-30
Loss – Spiritual Care	31
Medicine of the Elderly	32

Neurology	33
General Adult Psychiatry	34
Old Age Psychiatry	35
Orthopaedics	36
Paediatric Orthopaedic Physiotherapy	37
Palliative Care	38
Pre-Operative Assessment	39-40
Psychiatry – Queen Margaret	41
Rehabilitation Medicine	42
Reproductive Health	43-44
Rheumatology	45
Surgery	46-47
Urology	48
When Organs Fail	49
Acute Modules 2019-20	50-51
Appendix 1	
Appendix 2	
Appendix 3	

Introduction

Welcome to Year 3 of the clinical strand of the University of St Andrews medical course. Every student will have 5 full day clinical attachments during the academic year. Each attachment will vary in content but the overall aim of this strand is to allow you to increase your direct contact with patients and to give you the opportunity to refine and practice your communication and clinical skills in a clinical environment.

Building on the experience you gained in Year 2, seeing patients principally in the community, this year takes you mainly to the hospitals in Fife. Each attachment will be led by a clinician who, in addition to creating opportunities for you to practise your skills, will help you understand the application and relevance of the basic sciences to clinical practice.

This placement guide will remind you of information pertinent to working in a clinical environment and give you information necessary for this part of the course.

Attendance & Contacts

All clinical attachments are compulsory. If a situation arises where you find yourself unable to attend please notify the admin office in advance as early as possible. If you do not notify us then you will receive a yellow card.

If you believe you are suffering from an infectious disease which may be communicable such as influenza or a diarrhoea and vomiting type illness it is in the patient's best interests for you not to attend your clinical attachment.

We expect you to apply high standards of professionalism and responsibility in making this judgment. **Students who are unable to attend a clinical attachment due to illness will be required to make up this session. Students who have missed an attachment will attend the School at 0800 whenever alternative classes are not scheduled.** The student should be prepared to go to the hospital should any spaces become available. We obviously cannot guarantee it will be the same session you missed.

Admin office contact; medclinical@st-andrews.ac.uk Ext 1890

If you have any questions or difficulties regarding your clinical attachments you should contact:

Dr Ruth Cruickshank. Email rc24@st-andrews.ac.uk Ext 1888

Transport and reporting arrangements

Buses will leave the front of the Medical School building at 8.00am promptly unless otherwise instructed.

Students allocated to **Victoria Hospital, Kirkcaldy (VHK)** should report to:
Education Centre, Level 2, Phase 2 at 9.00am.

Students allocated to **Queen Margaret Hospital, Dunfermline (QMH)** should report to:
Education Centre, Level 2 (next to ward 14) at 9.00am.

Students allocated to **Cameron Hospital, Windygates** should report to: Sir George Sharp Unit, Cameron at 9.00am and ask for Dr Lance Sloan.

Students allocated to **Whytemans Brae Hospital** should follow the signs for the Dunniker Day Hospital in Whytemans Brae Hospital and ask for Dr Vijay Arulnathan.

Students allocated to **Stratheden Hospital** will should report to Muirview Ward at 9.00am and ask for Dr Katie Paramore. For the afternoon session, please report to the Lomond Ward 1.15pm to meet with Dr Howson.

On occasion some students will be required to travel at lunchtime from Cameron Hospital to Victoria Hospital/Whytemans Brae, Kirkcaldy. Transport between hospitals will be at 12.15pm unless otherwise stated. Make your way to the designated pick-up area at Cameron Hospital ensuring you take all your belongings with you as your return transport will be from Kirkcaldy. On arrival at Victoria Hospital make your way promptly to the Education Centre as the lunch time talk will start at 12:30pm.

Own transport and Placement Safety

As stated in the Placement Safety Policy;

Any student who wishes to take their own vehicle may do so on the understanding that it is their responsibility to ensure they are licensed and insured to do so, and that the vehicle meets all relevant requirements. No student will be required to travel in the vehicle of another student. However, if they decide to do so, it is entirely at their own risk: the University cannot vouch for the competency or legality of the driver or vehicle, or that appropriate insurance is in place.

Any student planning to use their own transport must inform office staff of this the day before by emailing medclinical@st-andrews.ac.uk

Prior to going on placement, make sure to read and familiarise yourself the Placement Safety and Patient Safety Policies.

Raising Concerns

You will find information regarding this within the above Patient Safety Policy.

Remember that:

"All members of the healthcare team have a duty to act when they believe patients' safety is at risk, or that patients' care or dignity are being compromised. Students who have any concerns about patient care, must speak to their session tutor or senior member of staff in the placement area (e.g. nurse in charge of department) for immediate action. Students who feel unable to raise concerns with their session tutor or placement staff should contact a member of Medical School staff as soon as possible (e.g. Clinical Programme Lead, through medclinical@st-andrews.ac.uk / 01334 461890)".

Further guidance regarding raising and acting on concerns about patient safety is available on the GMC website https://www.gmc-uk.org/concerns and in the attached flow chart (see appendix 2 at end of guide).

Please also raise concerns not relating to patient safety, for example concerns about teaching, to a member of staff, following the same flow chart.

Professional Behaviour

You will now be seen as members of the medical profession albeit the most junior members, and as such are expected to maintain the highest professional standards.
Becoming a member of the medical profession is a great privilege; however, with privilege comes responsibility and it is your responsibility to uphold the standards of the profession.

As a professional member of the team you are expected to treat all other members of the team with the professional courtesy that they deserve. Introduce yourself at all times and ask permission to join them in their activities e.g. "Would it be alright if ...?" In return they too should treat you with courtesy and respect and help you to achieve your learning objectives.

Remember that it is your responsibility to uphold the professional values expected of you. These values are outlined by the General Medical Council in the following publications:

1. "Achieving good medical practice" http://www.gmc-uk.org/education/undergraduate/achieving_good_medical_practice.asp
2. "Professional behaviour and fitness to practice: guidance for medical schools and their students" http://www.gmc-uk.org/education/undergraduate/professional_behaviour.asp
3. "Outcomes for graduates" http://www.gmc-uk.org/education/undergraduate/undergrad_outcomes.asp

Confidentiality

As a member of the profession patients and colleagues will entrust you with information which it is anticipated that you will treat as confidential, this may relate to patient histories or details, or perhaps information about other colleagues. **ALL** information that students hear or see in a clinical setting must be regarded as confidential and all students have signed the **Medical School Agreement** stating they will ensure they abide by these practices.

NB Any breach of confidentiality will result in you being reported to the medical school and will result in you being subject to Fitness to Practise procedures.

Occupational Health Safety Advisory Service

One aspect of professionalism is to ensure your required immunisations and any required tests for communicable diseases are complete. This is for both your own protection and that of patients. All students must have a complete Occupational Health report prior to attendance at clinical attachments. Most students will have fulfilled this requirement in MD2000 but some students will receive an email requiring them to attend Occupational Health.

Standard Infection Control Procedures

Throughout your course teaching staff have reiterated the need for the standard infection control procedures, the most important of which is hand hygiene. Please remember to implement these procedures in the clinical environment.

Dress Code for Students in Clinical Placements

NHS Fife expects all staff and medical students to adopt the standards we set for conduct, dress and appearance. The way staff and students dress sends messages about their professionalism and standards of care to service users, carers, colleagues and members of the public.

The following guidance is not meant to be exhaustive but provides a quick framework for students to follow. It is in keeping with NHS Fife Dress Code and Uniform Policy (2017) which aims to ensure that all involved in care delivery maintain safety, convey a professional image and instill and maintain public confidence.

As students learning within a practice environment, you are expected to follow this guidance at all times during hospital or community based placements and also within a simulated clinical environment.

- Wear your identity badge that confirms you are a student.
- Dress in a discreet and professional manner to convey a professional image and create and maintain public confidence. Denim jeans, short skirts or revealing tops which expose large areas of flesh are not appropriate clothing to wear.
- Wear appropriate footwear (clean, soft soled, closed toe shoes). Trainers or excessively high heels should not be worn.
- Tattoos that could be considered offensive should be covered where this does not compromise good clinical practice.
- Keep hair tied back and off the collar.
- Arms should be **'bare below the elbow'**. Long sleeves should be rolled up. Wristwatches, fitness tracker wrist-straps and bracelets must not be worn when in clinical areas.
- Jewellery is restricted to wearing one plain metal finger ring and one pair of plain stud earrings. Any other visible body piercings should be removed.
- Keep finger nails short and clean. No nail varnish, false nails or nail extensions should be worn.
- White coats, neck ties or lanyards should not be worn.
- Pens or scissors should not be carried in outside breast pockets.
- Store your stethoscope in a safe place such as your pocket or in your bag when moving between clinical areas or during breaks. Stethoscopes should not be worn around the neck.

Medical Education Department 09 January 2018

N.B. If it is thought that you are not appropriately dressed, your tutor may ask you to leave the teaching session.

Phones

Just as it is entirely inappropriate to have phones in the dissecting room it is also inappropriate to have phones with you in clinical areas and in the lecture theatre of the education centre. Phones and other valuables should be left in the coin-operated lockers at the education centre.

Structure of Clinical Attachments MD4000

Every student will have 5 full day (Thursday) hospital attachments throughout the academic year. Each individual experience will be very different but we hope you will all achieve the following learning outcomes:

The clinical attachments should allow you to:

- Employ general principles of good communication
- Take a history from patients, relatives and others
- Undertake physical and mental state examination of patients
- Record findings
- Measuring and recording physiological variables
- Utilise the general principles of patient investigation
- Interpret results of history taking, physical examination and investigations
- Employ general principles of teamwork
- Knowledge of commonly prescribed drugs

Preparation

It is anticipated that students will do 1-2 hours of preparation prior to each clinical attachment. Students should familiarise themselves with their allocation and read the relevant page in this guide. Clinicians have been asked to identify relevant material to allow you to prepare optimally for your session. They will assume this task has been completed.

Format of day

Morning session will run from 9.00 until 12.10 noon

A series of lunchtime learning events will be held which all students should attend. Clinicians give up their time to deliver these talks which have been organised for St Andrews medical students but will be open to all healthcare students attached to the hospitals. A programme of talks is attached.

Your lunchtime talk will take place 12.30pm-1pm in the Education Centre.

Students are asked to gather in the Education Centre of VHK or QMH at 12.15.

Lunch may be eaten in the Education Centre. Although food is available for purchase in the hospital for both financial reasons and time constraints it is strongly suggested you **bring a packed lunch**. There are coin operated lockers in the Education Centres, a £1 coin (returnable) is required to use these.

Afternoon sessions will run from 1.15pm until 4.15pm. Transport will leave the hospitals at 4.30pm.

Acute Modules 2019/20
Lunchtime Talk (12.30 – 13.00)

Semester 1

Date	Topic	Speaker
19th September	Organ Donation	Dr Robert Thompson
26th September	A Day in the life of an Emergency Psychiatrist	Dr Rachael Sibett
3rd October	Palliative Medicine	Dr Kim Steel
10th October	Health Advice – Personalise Your Prescription	Dr Gordon Shepherd
17th October	Careers in Obstetrics and Gynaecology	Dr Isioma Okolo
31st October	A career in psychiatry/ child and adolescent psychiatry	Dr Farah Rozali
7th November	Clinical Reasoning	Dr Tina Bylinski
14th November	A Day in the life in Dermatology	Dr Susannah Frazer
21st November	Infectious Diseases	Dr Naomi Butlteel
28th November	Ophthalmology	Dr Martin Anderson

Semester 2 (2019)

Date	Topic	Speaker
30th January	Orthopaedics	Dr Phil Walmsley
6th February	Do Not Attempt Resuscitation	Ms Jackie Beatson
13th February	Organ Donation	Dr Robert Thompson
20th February	Spiritual Care	Mr Mark Evans
27th February	Effective Feedback	Dr Pauline McLean
5th March	A Day in the life of an Emergency Physician	Dr Surinder Panpher
12th March	Feedback session	Dr Essam Hadoura

Tips to make the most of your clinical attachments

Be friendly: Patients are at the heart of everything we do as doctors and learning how to interact with patients and pick up non-verbal clues are essential skills. Remember a patient who likes your company will be more amenable and obliging.

Be observant: Medicine is all about looking for clues. Look for clinical signs when chatting to patients, notice intravenous drips, read the label. What does the drip contain? What is on the patient's bedside cabinet? Inhalers? Sputum pots? Look at the observation charts.

Question yourself: "Why is this patient covered in bruises?" "What is the tube going into the lateral chest wall?" Do not see this strand in isolation from your other teaching. You already know lots! When you are in a clinical situation ask yourself what knowledge, learned at the medical school, could you apply.

Be enthusiastic: ask questions but also be aware, that for members of the healthcare team, care of the patient must come first.

Be cheerfully willing to assist healthcare practitioners in the more mundane tasks. Not only will you learn, and grow in confidence by doing this but staff will then create more exciting opportunities for you to learn.

Be adaptable: remember in many cases you will be in a "working" environment. Pressures of work may result in last minute changes of plan, adapt to those changes to optimize your learning opportunities

Be realistic: At the core of Medicine is taking histories and conducting physical examinations. This is what you are likely to be doing whilst on hospital attachments. These skills are the "bread & butter" of Medicine

Supporting Work

CLINICAL ACADEMIC ESSAY GUIDANCE

Assignment Briefing: 1000 word (+/- 10%) essay based on one patient you have seen during your clinical placement in MD4001.

Select **one** aspect of the patient's case. For example, this might be the patient's presenting complaint, diagnosis or differential diagnosis, investigations, management plan or treatment.

Choose one of the following topics from the list below and critically analyse the direct impact of this topic on the aspect of the case you have chosen to focus on.

- Core knowledge including relevant basic sciences
- Evidence base for clinical practice
- Critical analysis of clinical information
- Ethics and governance
- The impact of effective/ineffective interprofessional team work

Where possible, relate back to the patient case and integrate the findings from the information you gathered about your patient. Your critical analysis must be supported by current, peer reviewed literature and evidence from scholarly books and research papers as opposed to web pages. This evidence should be cited within your essay using either the Vancouver or Harvard method. For the purpose of this academic assignment, please write in the third person

IMPORTANT! Your essay must not contain any identifiable patient information. A pseudonym may be used. For example, 'Patient A'

Gathering information to help you with your essay

The onus is on you to identify a patient who would be suitable for you to base your essay on. Supervising clinicians are aware this is required work and will be happy to support you. Use the standard history/examination document provided (attached on Galen page) to gather as much as information as you can related to the patient's history, examination findings and relevant investigations. This information could come from a history and/or examination you have undertaken with a supervising clinician or where you have observed a peer assessing a patient. It must be related to a patient you have seen during one of your clinical placements as opposed to a volunteer patient in the medical school. Although you may have spoken to or examined the patient with a peer, the case report must be written independently.

A complete history and examination may not always be either possible or appropriate. Do not let gaps in this deter you from submitting an otherwise interesting case. Please note that you are required to submit a copy of this history/examination document

Essay Structure and Format

- Submit as word processed document. Use at least 1.5 spacing and a font that is easy to read e.g. 12 pt. Arial, Calibri or Times New Roman
- **Title page:** Title of your essay, date and matriculation number.
- **Lay summary:** 200 words (not included in total word count): This is a summary of your essay written for an audience with no scientific or medical background. The following guidance may help you with preparing this: https://acmedsci.ac.uk/more/news/10-tips-for-writing-a-lay-summary
- **Summary of patient**: 50 words (not included in total word count): A brief summary of your patient's medical history.
- **Main body of essay**: 1000 words (+/- 10%) addressing the assignment brief.

Suggested structure

Introduction: Identify the one aspect and one topic area that you have decided to focus on. Identify the importance of this topic. State the aim of your essay

Discussion: Critically analyse the chosen topic area in relation to the chosen aspect of the patient case. Remember to support this analysis with current, peer reviewed evidence.

Conclusion: Provide a summary of the main areas covered in your essay

Reference list: A list of all references cited within your essay (Vancouver or Harvard style)

Submission Arrangements

Date of submission: can be viewed on the Galen element page

Electronic submission by two different mechanisms:
1. Upload to your Galen portfolio to allow feedback to be given.
2. Upload in PDF format to MMS via the link provided on Galen

Uploading to MMS will generate a plagiarism report which will only be visible to staff. The purpose of this is twofold:

- To better inform students about good academic practice
- To help students to identify where further academic writing support may be required in preparation for MD4002

This report will provide a percentage originality value and highlights parts of the text where there may be concerns over plagiarism. Students will receive generic feedback on the reports at the introduction to MD4002 academic misconduct lecture. Any students whose plagiarism report gives serious cause for concern will have an advisory meeting with teaching staff to review their academic practice.

In Year 1 on the programme, all students were required by the University to complete training in Good Academic Practice (TGAP). Please repeat the training this academic year to remind yourselves of the academic standards expected of you. TGAP can be accessed via moodle.

FEEDBACK

This assignment will not be graded and will not contribute to your MD4001 module grade. All essays will be reviewed by clinical staff and feedback will be provided if work has been submitted by the deadline. This feedback will be made available to your MD4002 dissertation supervisor to allow them to gain insight in to your academic writing skills

A prize will be awarded for the best submission. Pre-requisites to be considered for the prize are completion of MD4001 clinical attachment feedback and submission of this assignment by the due date.

Learning Log

It is your responsibility to complete the Log and (within a week of your placement) scan it onto the correct portfolio task on Galen. The contents will be reviewed by University staff (during "Portfolio Review") to ensure you have attended placements, performed satisfactorily and uploaded the documents (a minimum of 75% satisfactorily completed Reports uploaded). It will also be flagged up by staff if engagement/professionalism has been below expected, for further review.

One Placement Report needs to be completed for each **half day** of hospital placements. This includes one or two learning goals. However, only one reflective account needs to be completed over the course of a whole day. Guidance on goals/reflection is given within the Log itself, including how to reflect and what would be suitable topics (an interesting case etc.).

For each placement you must also ask your tutor to complete their highlighted section. This confirms attendance, level of professionalism and level of engagement. If there are repeated concerns about poor attendance or poor performance (lack of engagement, lack of professionalism) this will be passed onto the Professionalism Committee.

At the back of the Log is a section where you can document practical procedures that you have completed on placement. This is for your own use to show your knowledge and skills are developing over time. You can "self-sign" for any clinical skill performed, with competency being tested for a selection of these skills within the OSCE examinations. **Venepuncture / invasive techniques must not be practised in a clinical environment, unless fully supervised and following the appropriate policies (e.g. NHS Fife sharps policy).**

There is also a tool to develop your own Personal Drug Formulary and prescribing skills; an additional electronic version of the Formulary is available on Galen. This will be reviewed during "Portfolio Review".

CLINICAL MEDICINE: Impact of Disease on Life

These modules aim to show how patients are cared for in an acute hospital setting. In many cases, the individual cases will illustrate the impact of chronic disease requiring acute hospital intervention but also link into the care patterns seen in the Community experience. In this medical modular scheme, students will be taught in small groups of 6-7 students.

Case history skills will be emphasised, basic clinical examination techniques assessed and the understanding of the disease and its management (or prevention where possible, e.g., alcohol- and smoking-related illness, sexually-transmitted and recreational drug-induced problems, polypharmacy especially in elderly patients, etc.) will be promoted. Communication skills will be stressed and with the small groups it will be possible for individual students to enhance their abilities to interact fully with patients.

Each module will involve two to four consultant physicians and, in some instances (e.g., GI/liver, renal, respiratory modules), a consultant pathologist will also be involved to illustrate the value of tissue biopsy in diagnosis. In other instances (e.g., infectious disease), a consultant microbiologist will be involved and in diabetes/endocrinology, a senior clinical biochemist will be available to show the interaction of different laboratory specialties in making a definitive diagnosis.

CARDIOLOGY

Aims & Objectives

Students should be able to elicit a detailed history in order to assess potential acute cardiac presentations
Gain an understanding of the impact of cardiac conditions on an individual, including on lifestyle and employment.

Programme outline

Students will be met by the Consultant Cardiologist on arrival to ward 23. Students will be split into groups to take a history and/or conduct a clinical examination, dependent on the mix of cases in the cardiology unit. The group will reconvene to discuss the cases seen and how these relate to cardiac pathophysiology and may discuss the pharmacology of drugs used in the cases seen. There will be an opportunity to practise interpretation of ECGs and see ECGs of some common presentations. There may also be an opportunity to see echo images, and possibly see an echocardiogram being performed

Typical cases that students may encounter on this attachment may include:

- Myocardial infarction and Unstable angina
- Cardiac failure
- Arrhythmias (including atrial fibrillation and syncope)
- Valvular heart disease
- Infective endocarditis

Students will see a variety of cases although case mix will be determined by the patients on the ward on the day of the session

You will be interviewing and examining patients and are expected to follow an appropriate dress code, bring your own stethoscope and observe standard infection prevention measures.

Intended learning outcomes

Gain confidence in communicating with patients
History taking in cardiac conditions
Clinical examination of the cardiovascular system
Understand the pathophysiology of common cardiac symptoms and clinical signs
Gain confidence in ECG interpretation
Understand the social/psychological implications of heart disease on patients

Session preparation

You should revise the components of history taking and clinical examination technique relevant to the cardiovascular system

Course Facilitators

Dr Lynn Miller & Dr Kirsten Kruszewski
Consultant Cardiologists

DERMATOLOGY

A good history can give a lot of clues to the diagnosis even before the skin is examined. The main symptoms of skin disease are **itch** and **burning/stinging**, but the history includes the following pointers as well:

- **How long has the lesion/rash been present?** Did it appear suddenly or gradually?
- **Have there been previous episodes?** Is there any obvious trigger?
- **Does it fluctuate/change, or is it persistent?**
- **Where is it present? Is it on the flexural or extensor surfaces? Is it on sun-exposed sites? Is it symmetrical? Are there any blisters (large or small)?**
- **What treatments have been tried? (Over the counter and prescribed) Has anything helped?**
- **Associated symptoms**
    - **Itch**
    - **Tenderness**
    - **Bleeding or discharge**
    - **Associated systemic symptoms**
- **Past medical history**
    - **General health**
    - **Skin-specific history**
- **Family history (e.g. eczema or psoriasis)**
- **Occupational history (e.g. exposure to chemicals; sun exposure)**
- **Travel and hobbies**
- **Drug history – any new medications, or recent dose increases; also ask about drug allergies**
- **Smoking/alcohol consumption**

Recommended Reading:

Clinical Dermatology, 5th Edition, by Richard B Weller, Hamish JA Hunter and Margaret W Mann
www.bad.org.uk is the official website of the British Association of Dermatologists and provides useful information leaflets.
www.dermnetnz.org also has helpful descriptions

Course Facilitator:
Dr Susannah Fraser, Consultant Dermatologist

Learning Outcomes

- Introduction to dermatology
- To gain an understanding of the basics of dermatology terminology and the importance of descriptive terms
- To feel comfortable with taking a history from a dermatology patient and examining the skin, and presenting findings in a concise manner
- To observe a demonstration of dressings in order to understand topical treatment of skin disease

ENDOCRINOLOGY / DIABETES

Aims & Objectives
An ideal opportunity for students to see how abnormal structure (pathology) leads to abnormal physiology and biochemistry in the resultant disease.

Programme outline
Students will be met by the Consultant Physician. The group will then be split into smaller groups where you will practice your communication skills, history taking and examination skills with patients.

The shape of the session will be a mixture of tutorial and bedside teaching with an emphasis on the clinical aspects of care.

Intended learning outcomes

How to take a good history
Communication skills
Understanding of how Diabetes/Endocrinology disease affects quality of life

Reading
Revise the complications/treatment of Type 1 diabetes
Have a look at http://www.nhs.uk/Conditions/Diabetes-type1/Pages/Complications.aspx

Module Facilitators:

Dr John Chalmers, Consultant Physician

GI ANP/ Cardiology ANP

13.15 – 16.15

Learning Outcomes

- Develop an understanding of the role of an ANP
- To understand common GI / Cardiology diseases and their management
- To gain experience and confidence in taking a GI/ Cardio history and examination

Advanced nurse practitioners – definition Advanced nurse practitioners (ANPs) are experienced and highly educated registered nurses who manage the complete clinical care of their patients, not focusing on any sole condition.
ANPs have advanced-level capability across the four pillars of practice:
• clinical practice
• facilitation of learning
• leadership
• evidence, research and development.

Programme outline
We will be based on Ward 44 (GI speciality) and Ward 23 (Cardiology); these are both busy medical wards. Patients on these wards have variety of conditions but we will be focusing on gastroenterology in ward 44 and cardiology in ward 23. Patients are admitted to these wards from Admission unit 1 (AU1), clinic, endoscopy and from CCU.
The students in this session will be divided between ward 44 and ward 23. There will be an opportunity for you obtain a history and examine by yourself or in pairs.

- You will be expected to take a history from the patient and undertake relevant clinical examination
- You will then have the opportunity to discuss your findings and formulate patient management plans

Preparation
https://www.nes.scot.nhs.uk/media/4031450/cno_paper_2_transforming_nmahp_roles.pdf
You should study the components of history taking and clinical examination technique relevant to gastrointestinal system and cardiovascular system.

Module Facilitators Tanya Sullivan GI ANP & Una Walker Cardiology ANP

GASTRO INTESTINAL & LIVER DISEASE

Aims & Objectives

- To develop better understanding of common GI diseases and their management
- To gain experience and confidence in history taking

Programme outline

The gastroenterology ward is a busy unit. On arrival you will be met by the Consultant and taken up to the ward. A brief presentation on what is expected of you during this session. The group will be split into smaller groups and then they will go and undertake history from a patient.

Students will then re-convene to discuss and present cases to the consultant

You may get to take history from patients with some of the diseases listed below but this is dependent on the patients who are in the ward on the day.

- Upper GI bleeding
- Flare up of Inflammatory bowel disease (Ulcerative colitis & Crohn's disease)
- Decompensated chronic liver disease secondary to Alcohol, NAFLD
- GI malignancy, biliary, pancreatic, oesophageal
- Endoscopic intervention e.g PEG and ERCP
- Nutrition enteral/parenteral feeding

Intended learning outcomes

How to take history with particular reference to gastroenterology
Understanding concept of "break bad news"
Tips on enhancing communication skills
Effect of disease on quality of life

Course Facilitators

Dr Aman Shams, Consultant Gastroenterologist. NHS Fife Gastroenterology Department.

HAEMATOLOGY

Aims & Objectives

Welcome to Haematology Department. We hope you enjoy your time with us. The Day Ward area is where we treat a large number of patients attending for procedures such as blood transfusions, chemotherapy, venesections, bone marrows and lumbar punctures. The in-patient area, next door (Ward 34), will typically have a number of patients undergoing more intensive chemotherapy requiring in-patient admission and patients being treated for the complications of their disease and side-effects of treatment. We hope you will learn something about the link between haematological diagnoses and patient presentations and also the holistic approach required for caring for these patients.

Programme Outline

Typically, we will meet in the Education Centre, VHK, and go to the Day Area on Ward 34 with 2 of the 5 consultants in Haematology. There, we will observe the process for checking and setting up a blood transfusion and have a discussion about the risks and benefits of transfusion. We will then go to the in-patient area where students, in groups of 2 or 3, will have 45 minutes with a patient for the purpose of taking a history and appropriate examination. We will then return to the Education Centre and have a short break, followed by presentation of the cases to the whole group. Radiological images and pathological investigations will be available to view on the screen, with discussion about how these have aided diagnosis and treatment for the patient who is being presented.

Intended Learning Outcomes

After this placement we would expect you to:

1. Be aware of the procedure for safe administration of blood transfusion.
2. Be able to discuss the risks and benefits of blood transfusion.
3. To have taken a clinical history, including an understanding of how the patient and their family have coped with the illness. Also to examine the patient as appropriate.
4. Be able to understand how laboratory and radiological tests aid a patient's diagnosis and treatment.

Recommended Reading

- Blood Groups http://galen.st-andrews.ac.uk/element/scheduled/71985
- Haematopathology http://galen.st-andrews.ac.uk/element/scheduled/73025
- MD 2002 Lectures entitled "Blood Groups" and "Haematopathology – Anaemias and Leukaemias"
- Attached to the Lecture Notes are recommended set reading sections from Kumar and Clark

Course Facilitators

Dr Kerri Davidson (kerri.davidson@nhs.net)

INFECTIOUS DISEASES

Aims & Objectives

Explore and understand the role of infection in hospital. This is a broad topic and will overlap with disciplines in many medical specialties, microbiology and infection control. The Infectious Diseases service in NHS Fife is currently in transition and we can discuss how such issues can be managed in today's NHS.

Programme outline

We will try to cover the following issues, although some will be dependent on the case mix at the time of the session. The shape of the session will be a mixture of tutorial and bedside teaching with an emphasis on the clinical aspects of care.

The management of infectious diseases in modern day healthcare systems
Managing infection in secondary care
Acute infection – including 'Sepsis'
Chronic infection
Healthcare-associated infection and Infection Control
HIV
Imported fever

Intended learning outcomes

See above.

Recommended reading

Sepsis
http://www.survivingsepsis.org/Guidelines/Pages/default.aspx

Health Protection Scotland
http://www.hps.scot.nhs.uk/

List of notifiable diseases
http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/NotificationsOfInfectiousDiseases/ListOfNotifiableDiseases/

The UK Imported Fever Service
http://www.hpa.org.uk/ProductsServices/MicrobiologyPathology/LaboratoriesAndReferenceFacilities/RareAndImportedPathogensDepartment/ImportedFeverService/

Module Facilitator:
Dr Derek Sloan

This will be a relaxed but interactive session. Bring a drink, or be well-fed and hydrated pre-session. There will be rest time if required, but only after you wash your hands!

RENAL

Aims & Objectives

The aim of this session is for the students to gain some experience of key symptoms and clinical signs which renal patients might exhibit. The pathological diagnoses will be discussed in the context of the patient's real clinical experience. A systematic approach to examination of the renal patient will be provided, including fluid status. Teaching will include an approach to evaluation of the renal patient with acute kidney injury and how to identify if the problem is pre-renal, renal or post-renal. There may be an opportunity to assess patients on dialysis or having a renal transplant.

Programme outline

- Meet on renal ward for introduction (30minutes)
- Divide into pairs/threes to see patients with renal problems (1hour)
- Present patients to the group (10mins per pair)
- Discussion

Intended learning outcomes

Students will consolidate their history taking, particularly that pertinent to renal disease
Opportunity to practice clinical examination on patients
Students will learn how to present their findings in succinct and orderly fashion

Recommended Reading
Macleod's Clinical Diagnosis Chapters 16.
https://elsevierelibrary.co.uk/product/macleods-clinical-diagnosis

Have a look at http://www.nhs.uk/conditions/Kidney-disease-chronic/Pages/Introduction.aspx

Course Facilitators

Drs Annette Alfonzo and Kate Shiell, Consultant Nephrologists

RESPIRATORY MEDICINE

Aims & Objectives

- To gain an insight into the practice of medicine on an acute respiratory ward
- To meet patients and gain experience in taking their medical histories

Programme outline

- Small group and consultant led session
- Teaching on the respiratory ward.
- Students will get the chance to take histories and examine patients with acute respiratory problems

Intended learning outcomes

Students will have increased their confidence in how to approach a patient with respiratory disease.

Module Facilitator

Dr Ian Fairbairn and Dr Joe MacKenzie (Consultant Respiratory Physicians)

CLINICAL REASONING

What is the Clinical Reasoning module?

Clinical reasoning is a skill which takes years to develop and is a vital part of what it means to be a doctor.

You started on day one of year one as a student doctor with Introduction to Clinical Reasoning and have been gradually developing these thought processes since then. You are now going to take this skill into the ward setting with real patients.

Programme Outline

This programme will be delivered mainly by Medical School staff and has been designed to encourage and develop clinical reasoning skills. The patients will be inpatients on the acute medical wards (patients are mostly suffering from cardio respiratory problems +/- gastro–intestinal pathology) This will be an active hands-on module where students working in pairs will be encouraged to take part in ward procedures assessing patient's cardio respiratory health. After your initial patient assessment staff will discuss with you your clinical reasoning and the role investigation (e.g. blood tests and imaging) may play in your judgment. The discussion will also focus on risks and benefits to the patient of different management pathways.

Intended Learning Outcomes

- to become observant and comfortable within the ward environment
- to explore the processes involved in clinical reasoning
- to assess patients' cardio respiratory health
- to measure and record physiological and pathophysiological findings
- to understand the principles of patient investigation
- to interpret history, examination and investigation results
- to consider patient safety aspects of drug prescribing

Preparation

You will be taking a history and examining patients independently, ensure you are confident in your examination techniques for the cardiovascular, respiratory and abdominal systems. Read Chapter 1 "What's in a diagnosis?" Macleod's Clinical Diagnosis by Japp & Robertson plus one other chapter of your choice.

EMERGENCY MEDICINE

Aims & Objectives

The emergency medicine module aims to show how undifferentiated, acutely unwell and injured patients are cared for in an acute hospital setting.
The Emergency Department at Victoria Hospital in Kirkcaldy is a modern, busy facility staffed by 10 consultants and sees approximately 80,000 patients per annum. There is a diverse case mix of acute medical pathology, major and minor trauma.
The atmosphere of the emergency department lives up to the expectations of being dynamic, brisk, exhilarating, challenging and unpredictable.

Programme Outline

- Students are given a tour of the department following which they will be invited to practise clinical assessments within this vibrant environment.
- The emphasis is on communication, clinical examination skills and clinical reasoning with patient contact being made in small groups.
- The 7 students in attendance will be split into groups; groups will assess patients with emergency medical problems, emergency surgical problems and with acute injuries.
- Typical Example of Cases: Acute Chest Pain or Shortness of Breath, Undifferentiated Abdominal Pain, Peripheral Limb Injuries

Intended Learning Outcomes

- Once patients have been assessed, each subgroup will present a history and examination findings to the tutor so that the aspects of emergency clinical care can be identified.
- Clinical reasoning will be used to come to a differential diagnosis and further reasoning used to identify the correct investigations required to come to a conclusive diagnosis.
- Data interpretation is done in real time and students will use ECG, Radiology and Laboratory results to formulate patient management plans.
- Essentially, the students will perform as if working as a junior doctor in the Emergency Department.

Recommended reading

Have a look at http://www.rcem.ac.uk/

Module Facilitator:

Dr Surinder Panpher, Consultant in Emergency Medicine

ENT (Otolaryngology)

Aims and Objectives

Many medical students and junior doctors do not experience much ENT. The aim of this session is to gain an appreciation of ENT as a specialty and the range of medical cases we deal with. Special attention will be placed upon the special senses associated with ENT and basic examination skills.

Programme Outline

You will be met by the ENT consultant who will take you back to the ward. You will then be given an orientation on the ward and see the patients on the ward. We will then allow the students to present their patients and discuss their findings. We then will have a presentation on ENT. We will then carry out examination practice. The amount of patient contact will depend on the patients on the ward at the time of the visit. We have a high turnover in patients and few long stay patients and it may not be possible to carry out an individual history taking.

Learning Outcomes

- Know the range of conditions dealt with by ENT
- Know how to do basic examination

Recommended reading

ENT UK has a website describing ENT conditions from a patient perspective (https://entuk.org/patient-information). This discusses the most common ENT conditions.

Course facilitator

Dr David Walker, ENT Consultant

EVERY PERSON, EVERY TIME – Ward 44

Intended Learning Outcomes

- Develop an understanding of the management of clinical risk within the acute healthcare setting
- Consider the anticipated risks and benefits associated with different clinical situations
- Develop an understanding of the systems and processes in place to minimise clinical risk and avoidable harm within the healthcare setting.

"Every person, every time" is the strap line of the Scottish Patient Safety Programme (SPSP). SPSP is a unique national initiative that aims to improve the safety and reliability of healthcare and reduce harm, whenever care is delivered. Implementation of the SPSP has helped to significantly reduce avoidable harm in Scotland in the last 10 years.

Programme Outline

Ward 44 is a very busy, 30 bed acute medical ward. Patients on this ward have a variety of conditions including gastroenterology, endocrinology and occasionally neurology pathology. Patients will normally have been admitted via Admissions Unit 1 (AU1) and may only have been in hospital for 24-72 hours, and are likely to be acutely unwell.

As there are only 7 medical students on the ward at any time, there will be the opportunity for you to talk to patients yourself or in a pair if you prefer.

- You will be expected to take a history from the patient and undertake relevant clinical examination.
- You will then have the opportunity to utilise clinical reasoning and available data e.g. laboratory results, radiology and ECG to formulate patient management plans.
- You will then present your patient to the FY1 using the SBAR format. As part of this process, you will be expected to consider the clinical risk associated with the management of the patient, and provide recommendations to the FY1 as how risk can be minimised for the patient.

Whilst this is a busy ward all staff are very friendly so please ask questions.

Preparation

To enable you to get the most of the session, please consider watching approximately 5 minutes of video and reading the JAMA article all which provide context for the session.

1. The first video provides a little background to the SPSP and what it hoped to achieve when it was first conceived. It is presented by Professor Leitch who is a maxillofacial surgeon by background but is now the Clinical Director for the Scottish Government. This video is approximately 5 years old but is interesting to see how much healthcare in Scotland has improved since this video was made: https://www.youtube.com/watch?v=Ka5We31Botc

2. The second video is from the most recent Scottish Patient Safety Conference and demonstrates why patient safety is important to everyone in healthcare: https://www.youtube.com/watch?v=62wCEXdfLwQ

3. Finally, please read the following 2 page JAMA article: http://jamanetwork.com/journals/jama/article-abstract/2528945. You should be able to read the whole article utilising your Athens or University library details.

Module Facilitators: Clinical Teaching Fellow (Patient Safety) and an FY1

INTER-PROFESSIONAL CARE – Learning and working together in practice

Ensuring that inter-professional care is effective is essential for maximising patient safety and clinical effectiveness. This module provides an opportunity for undergraduate students to learn with, from and about each other in a real ward environment and to improve collaborative team working.

Intended Learning Outcomes

- To discuss the roles of other health and social care professionals and their contribution to patient care.
- To recognise your contributions to team dynamics and processes and reflect on how you would use your skills as a qualified medical practitioner.
- To recognise the values of working effectively as a multi-disciplinary team.
- To be able to identify the health and social care needs of the patients in your care.

Programme Outline

The module will be delivered initially on the acute renal ward (Ward 22) and then within the Alberta Room in the Education Centre at the Victoria Hospital, Kirkcaldy.
Working with students from other healthcare professional groups (mostly nursing, but potentially others if on placement at the time) you will be allocated a patient and asked to take a comprehensive history. This should include asking what matters to the patient with respect to their own ideas, concerns and expectations for their future health and social care needs.

Please note that composition of each team will vary depending on the different student professions available on the day.

Each team will then be given access to the patient's documentation i.e. medical notes, monitoring charts, drug prescriptions, investigation and management plans. The team should take note of the contributions made by the multi-disciplinary team thus far in the patient's journey. Tutors will be available to facilitate understanding of the documentation.
Each team will discuss plans for the patient's discharge any barriers which need to be overcome and any possible ongoing care needs in the community.
Once completed, the teams will reconvene in the Alberta Room in the Education Department. Each team will present and discuss their patient's discharge plans using the SBAR format with the wider group and a Consultant who will give feedback on the presentations.

S (the current **Situation** or problem)
B (relevant and important points about the patient's **Background)**
A (your team's **Assessment** of the patient)
R (your team's **Recommendation** of what is needed in order to safely discharge the patient)

If time allows, there will be an interactive game or discussion to end the afternoon's activities.

Preparation

1. The NHS Scotland ***Careers*** and NHS England's ***Health Careers*** websites explore the various roles of the health and social care team:
   http://www.careers.nhs.scot/careers/explore-our-careers/
   https://www.healthcareers.nhs.uk/

   Look up at least 4 of the following health/social care careers and write down 2 of the main roles of each:
   - Nurse
   - Chaplain / Spiritual Care worker
   - Pharmacist
   - Physiotherapist
   - Occupational Therapist
   - Social Worker
   - Dietitian
   - Speech and Language Therapist
   - Podiatrist
   - Orthoptist
   - Radiographer
   - Prosthetist/orthotist
   - Arts Therapist
   - Paramedic

   Be prepared to discuss what you have learnt at the end of the afternoon activities.

2. Consider what the characteristics of an effective healthcare team are and be prepared to discuss this at the group discussion.

3. Reflect on the benefits of using a validated communication tool like the SBAR to enhance patient safety.

Module Facilitators
Temby Chigaru (Renal Nurse Educator), Dr Sarah Marshall (Consultant Physician), Lyn McDonald (Medical Education Pharmacist), Margaret Braid (AHP Practice Education Lead).

Loss – Spiritual Care

Aims & Objectives

Welcome to the Department of Spiritual Care.

Spiritual Care seeks to help patients, relatives and staff to find meaning, purpose and hope in the midst of illness and uncertainty; affirming that tears and laughter, pain and joy are part of normal human experience.

Programme outline

Thinking and talking about death, dying and bereavement can be uncomfortable for many within society including medical staff. When we talk about loss and grief we're not talking about an illness, a problem or a condition. Rather we are sharing an experience that is shaped by our own experience.

Within a small group setting students are given time within a safe and informal environment to explore and reflect on death and bereavement. Through a variety of different activities, including meeting with a bereaved relative and a visit to the mortuary, students are supported to reflect on loss; the effects on individuals and themselves and how to maintain compassion and build resilience.

Intended learning outcomes

- Be aware of your understanding and experience and of loss.
- Describe the experience of visiting a mortuary, including a neonatal mortuary, and identify possible reactions to visiting (and working) in such environments.
- To become more comfortable discussing issues surrounding death and bereavement and understand the needs of those experiencing grief.
- Develop an understanding on the effects of bereavement and how it can affect an individual both professionally and personally.

Preparation:

Read:

"What I know I owe to patients" by James Munro *chief executive officer, Patient Opinion*

http://www.bmj.com/content/349/bmj.g6734

Watch:

A short video by NHS Education for Scotland "Discussing Dying"

https://vimeo.com/170436673

A transcript of the video can be found here:

http://www.sad.scot.nhs.uk/media/16017/transcript-of-discussing-dying.pdf

Module Facilitator: Mark Evans, Head of Spiritual Care and Bereavement Lead

MEDICINE OF THE ELDERLY

Aims and Objectives

Medicine for the Elderly is a dynamic medical specialty which is evolving to meet the needs of an ageing population. The programme design at Victoria Hospital, Kirkcaldy is structured to enable students to gain firsthand experience of clinical examination on selected clinical cases in a ward based setting. There is ample opportunity to undertake history taking and engage in wider discussion about cases seen. It is envisaged that students will gain insight into the challenges faced with an ageing population where complexity of medical conditions and frailty often co-exist. Medical education is traditionally focussed on single organ teaching and with this grounding Medicine of the Elderly aims to deliver holistic patient centred care.

Programme Outline

- Meet course facilitators
- Introduction to frailty
- Rotation through bedside teaching and simulation session (GERT suit – see http://www.age-simulation-suit.com)
- Plenary session and feedback

Intended Learning Outcomes

By the end of this session you should be able to:

1) Describe the concept of frailty
    - What it is and what it means
    - Frailty models
2) Differentiate frailty from disability and long term conditions
3) Use the frailty screening tool
4) Identify common frailty syndromes in elderly inpatients

Recommended Reading

Davidson's Medicine 23rd Edition Chapter 32 Ageing and Disease
www.ecglibrary.com
Patient Experience of Delirium (5 minute teaching video) - http://vimeo.com/31892402
'Being Mortal' by Atul Gawande ISBN-13 978-1846685828 recommended general reading (will take more than one hour)

Course Facilitators

Dr Morag Patterson, Consultant Geriatrician, morag.patterson@nhs.net

Dr Joanna Hadoke, Specialty Doctor in Orthogeriatrics, jhadoke@nhs.net

Mrs June Adamson, Clinical Skills and Simulation Facilitator, juneadamson@nhs.net

NEUROLOGY

Aims & Objectives

"From the brain and the brain only arise our pleasures, joys, laughter and jests, as well as our sorrows, pains, grief and tears…..These things we suffer all come from the brain, when it is not healthy, but becomes abnormally hot, cold, moist or dry."

Hippocrates
The Sacred Disease, Section XVII

Programme outline

Students will be met by a Consultant Neurologist and given a brief presentation on Neurology. Students will have the opportunity to meet patients with neurological conditions. This might be taken in the ward but this is entirely dependent on availability of suitable patients or past patients may be asked to come in to discuss their condition/s and the impact this may have on their life. Students will be given an opportunity to take a history and practice examination of the nervous system

Intended learning outcomes

Communication skills
Understanding and practice of examination of the nervous system
Taking a patient history

Any Pre and/or Post recommended reading

Macleod's Clinical Diagnosis Chapters 10 and 18.
https://elsevierelibrary.co.uk/product/macleods-clinical-diagnosis

The neurological examination made easy (Geraint Fuller) published by Churchill Livingstone.

Course Facilitators

Dr Katja Lassak , Consultant Neurologists

GENERAL ADULT PSYCHIATRY - Lomond Ward, Stratheden Hospital, Cupar

Aims & Objectives

This teaching session provides an introduction to the skills needed to take a psychiatric history (a key skill to learn) and examine the mental state.

Programme Outline

- The teaching takes place on an acute admission ward for Adult Psychiatry.
- Students will receive a short tutorial about history taking and mental state examination.
- Students will then have the opportunity to practice these skills with a patient and provide feedback on their experience at a further teaching tutorial afterwards.

Intended Learning Outcomes

- History taking
- Observation skills
- Communication

Recommended Reading

Any Undergraduate text book, with a chapter on Psychiatric History taking and the mental state examination (MSE).

Module Facilitator

Dr George Howson, Consultant Psychiatrist

OLD AGE PSYCHIATRY - Venue Muirview Ward, Stratheden Hospital

Aims and objectives

- To gain an overview of the mental health problems that affect older people
- To increase confidence and experience in speaking with older people with mental and cognitive health problems.
- To have an understanding of the mental state examination as it applies to older people
- To have a basic theoretical and practical understanding of cognitive assessment.

Programme Outline

- The morning begins with an outline of Old Age Psychiatry.
- Students are then split into pairs/groups of three and spend time interviewing patients on the ward.
- They then use the information they have gathered, and their observations to feed into a whole group discussion of mental state examination.
- The morning finishes with a short tutorial on cognitive assessment and an opportunity to undertake an Addenbrookes Cognitive Examination.

Intended Learning Outcomes

- Psychiatric history taking
- Mental State Examination
- Cognitive assessment

Reading

A chapter on Old Age Psychiatry in any of the standard psychiatry text books. Also a journal article called "Cognitive Assessment for Clinicians" by CM Kipps and JR Hodges (J Neurosurg Psychiatry 2005;76(suppl 1):i22-i30)
Macleod's Clinical Diagnosis Chapters 8.
https://elsevierelibrary.co.uk/product/macleods-clinical-diagnosis

Module Facilitator:

Dr Katie Paramore, Consultant Psychiatrist in Old Age Psychiatry

ORTHOPAEDICS

Aims and objectives

The orthopaedic and trauma session aims for the students to understand the key symptoms and clinical signs which are applicable to osteoarthritis and inflammatory arthritis.

A systematic approach to examination of the hip and knee will be taught. Basic principles of fracture management will also be discussed.

Programme Outline

- The teaching sessions will normally be conducted by 2 Orthopaedic Trauma Consultants between 0900 - 1215.
- Teaching will normally take place on Ward 10, Orthopaedic Outpatient Clinic and in the Education Centre.
- The first part of the teaching session will comprise a short presentation to introduce you to common pathologies seen by the Orthopaedic Trauma Team.
- Students will then be divided into two groups, supervised by one of the two Consultants to do a history taking exercise using patients on ward 10 for history taking.
- Demonstrations of hip and knee examinations with the introduction of the “Look, Feel, Move” approach to examination of the musculoskeletal system. (A volunteer is asked to please bring a pair of shorts to allow adequate examination of the lower limb.)
- The same groups will then revisit examination of the knee joint with the opportunity to put this into practice using ward patients.
- The groups will then revisit examination of the hip joint with the opportunity to put this into practice using ward patients
- The last 10 minutes of the teaching will be used for questions and feedback on the session.

Intended Learning Outcomes

During these outpatient and ward based periods students will have the chance to consolidate their history taking and practice examination of the major joints of the lower limbs.

Recommended Reading

Macleod’s Clinical Diagnosis Chapters 20, 23.
https://elsevierelibrary.co.uk/product/macleods-clinical-diagnosis

Module Facilitators

Mr Phil Walmsley, Consultant Orthopaedic Surgeon & Mrs Sarah Mitchell, Consultant Orthopaedic Surgeon

Paediatric Orthopaedic Physiotherapy – Baby Hip clinic
Course facilitators; Joyce Henderson - APP and Joyce Cummings - APP

Aims & Objectives
Increase in awareness of common Paediatric Orthopaedic conditions in Infants in particular Developmental dysplasia of the hip (DDH).

Increase in confidence in handling babies and communicating with parents of newborns.

Increase awareness of Clinical examination and the use of Ultra sound scanning for differential diagnosis.

Increase in awareness of public health information/ advice specific to newborns.

Programme Outline
You will be met by an Advanced Practice Physiotherapist in the CACU VHK who will describe the format of the morning. Usually this will be baby hip review pt appointments with opportunity to watch and asses babies both clinically and using Ultrasound scanner. This will be followed up with presentation and more in depth discussion/ workshop.

Usual timings
0900-10.30 Baby Hip
10.30 – 10.45am Break
10.45 – 11.15 Baby Hip
11.15 -12.00 Presentation and Finish

Intended Learning Outcomes
After this placement we would expect you to:

Demonstrate knowledge of the infant hip surveillance service in NHS Fife
Recognise the signs of DDH
Demonstrate knowledge of the referral pathway including referral criteria
Demonstrate Clinical examination of the infant hip.

Recommended Reading
https://global-help.org/products/clubfoot ponseti management

Sewel et al (2009) Clinial Review: Developmental dysplasia of the hip, BMJ, Vol 339, 1242-1248

Graf R. (2006) Hip Sonography; Diagnosis and Managemnet of infant hip dysplasia, 2nd Edition Springer

Course Facilitators
Joyce Henderson and Joyce Cummings
Advanced Practice Physiotherapists, Paediatric Orthopaedics, CACU VHK

Palliative Care – The Experience of a Serious Illness and Symptom Control

Aims and Objectives

- Gain insights into the impact of a person's experience of illness on their health as well as their social and psychological wellbeing
- Gain experience in symptom control
- Gain experience in holistic assessment of patients living with serious and life threatening illness

Program Outline

The program will be delivered in the Victoria Hospice Kirkcaldy. The students will be met by a Consultant in Palliative Care. The module will be delivered in the hospice and will include experiential learning. There will be a brief walk around of the Victoria Hospital to illustrate patients experience of hospital care. The students may also spend time with a patient who has an advanced illness but this will depend on the availability of patients and the student group.

Intended Learning Outcomes

- Exploring the experience of serious illness
- Fundamental aspects of symptom control
- Specific symptom issues relating to current curriculum content

Recommended Reading

Scottish Palliative Care Guidelines: http://www.palliativecareguidelines.scot.nhs.uk

If possible to attend having read the guidance on pain assessment.

Course Facilitator

Dr Kim Steel, Consultant in Palliative Medicine, NHS Fife

PRE-OPERATIVE ASSESSMENT

Location: Phase 2, Level 1, Victoria Hospital Kirkcaldy (Base of tower block; next to WRVS coffee shop)

Tutor: Dr Andreas Rogowski, Consultant Anaesthetist

Team: Leah Hicks, Advanced Nurse Practitioner, Nicola D'Mello, Senior Nurse Practitioner Lorraine McCormiskie, Senior Nurse Practitioner, Nicola McGhee, Senior Nurse Practitioner, Sherral Wilson, Senior Nurse Practitioner, Caroline Coull, Senior Nurse Practitioner, Lesley Archer, Health Care Support Worker, Jackie Hart, Nurse Auxiliary, Kerrin McCue, Clerkess

Welcome to the Pre-assessment Clinic! Here the nurse practitioners see a wide range of patients who will have surgery in the near future. The pre-assessment clinic provides its services for different specialities including General Surgery, Gynaecology, Maxillofacial Surgery, Orthopaedics and Urology.

Going through any form of surgery causes a lot of stress and is also frequently associated with anxiety and worries. The purpose of this department is to assess the surgical risk, to identify any problems, to provide information and to re-assure the patients and their relatives well in advance of the procedure. Our staff take a history from each patient, examine them and consult with anaesthetists, surgeons, GPs and physicians (if necessary) regarding the need for further investigations or medication changes. The aim is to ensure that our patients are in the best condition possible when they undergo surgery.

On Thursdays staff usually see patients who will undergo some form of day surgery procedure either in Orthopaedics or General Surgery; procedures comprise endoscopic shoulder surgery and common surgical ones like removal of gallbladder or hernia repairs. Usually there are 5 or more patients booked for the afternoon which allows us to allocate one patient to each of you to look after.

For every patient it is important to keep a holistic approach in mind: think of the specifics but also of general health, medication, family and social circumstances in order to meet the needs of your patient.

A pre-assessment booklet is attached similar to the one that you will complete during the session. Don't worry if it looks quite complex: our staff members at the pre-assessment clinic will be available to guide you through the process.

Your timetable:

13:15 Introduction (VHK education centre)

13:30 Meet your patient: take a complete history, examine heart and lungs and fill in relevant paperwork. Make sure that for any documentation to use a black pen only!
You will be involved in the entire pre-assessment process which might include further tests/investigations like ECG, MRSA swabs, basic observations etc.
Some (but not all) patients need to have bloods taken; so some of you will have the opportunity to perform this task, too.
Friendly staff will be on hand to guide you along and to give you a hand if necessary.

Short break

15:15 Discussion of the patients you have assessed. You should give a comprehensive summary of the patient and highlight any issues which could affect the peri-operative management of your patient.

16:10 End of session

Learning objectives:

1. Describe the purpose of pre-assessment and where it fits in within the clinical setting.
2. Take a history and clinical examination.
3. Perform basic observations and further investigations if required (ECG, bloods etc); interpret parameters within context of particular patient.
4. Present your findings during the group discussion and explain potential issues for peri-operative management of patient.

Recommended reading: a selection of some interesting and relevant articles

1. Scott MJ, Baldini G, Fearon KCH, Feldheiser A, Feldman LS, Gan TJ, Ljungqvist O, Lobo DN, Rockall TA, Schricker T, Carli F. **Enhanced Recovery After Surgery (ERAS) for gastrointestinal surgery, part 1: pathophysiological considerations.** Acta Anaesth Scand (2015) 59 (10): 1212-1231

2. Preiser JC, Ichai C, Orban JC, Groeneveld ABJ. **Metabolic response to the stress of critical illness.** Br J Anaesth (2014) 113 (6): 945-954

3. Clevenger B, Richards T. **Pre-operative anaemia. Anaesthesia** (2015) 70: 20–e8.

4. Revenig LM, Canter DJ, Taylor MD, Tai C, Sweeney JF, Sarmiento JM, Kooby DA, Maithel SK, Master VA, Ogan K. **Too Frail for Surgery? Initial Results of a Large Multidisciplinary Prospective Study Examining Preoperative Variables Predictive of Poor Surgical Outcomes.** J Amer Coll Surg (2013) 217 (4): 665-670.

PSYCHIATRY – Venue Queen Margaret Hospital, Dunfermline

On arrival please wait in the Education centre until the tutor comes to collect you

It is intended that this module affords the opportunity to meet and interview patients with mental illness, and to observe experienced psychiatrists perform history taking and mental state examination.

Most patients seen by general adult psychiatry services suffer from functional psychosis (schizophrenia and bipolar affective disorder); depression, anxiety disorders, and personality disorder. Increasingly, patients with developmental disorders such as high functioning autism (Asperger's syndrome) and adult attention deficit hyperactivity disorder (ADHD) are also referred, as are patients with acquired brain injuries. Whilst addiction is seen as a separate specialty, there is considerable co morbidity and overlap between patient groups.

Aims & Objectives

- To gain experience taking a psychiatric history.
- To meet with patients suffering from mental illness.
- To be introduced to the methodologies involved in mental state examination.

Programme outline

- Students will be met in the Education Centre, Queen Margaret Hospital.
- Placement commences with an introduction.
- The group is divided into smaller groups who are introduced to a patient and from whom they are asked to take a history, focussing on one particular aspect.
- One of the tutors then joins to demonstrate mental state examination.
- Feedback in small groups and discussion of the cases seen.
- Re-convene as a larger group to review issues raised.

Intended learning outcomes

- Interview techniques,
- History Taking,
- Mental State Examination

Module Facilitator:
Dr Paul Cavanagh & Dr Helen Alderson, Consultant Psychiatrists

REHABILITATION MEDICINE – Cameron Hospital

Aims & Objectives

"No head injury is too severe to despair of, nor too trivial to ignore."

Hippocrates
400 BC

Programme outline

Students will be taken for the whole session by the Consultant. There will be an initial session in the seminar room for introduction to the session and setting the scene and discussion. Students will then be taken to the ward and have the opportunity see patients who have neurological disability and to examine them.

Intended learning outcomes

Why rehabilitation is the basis of all good medical practice
Improve understanding and confidence in clinical examination especially nervous system
Improve understanding of potential consequences of injury to the brain

Any Pre and/or Post recommended reading

The neurological examination made easy (Geraint Fuller) published by Churchill Livingstone.
Students will be provided with relevant references at the end of the session

Module Facilitator

Dr Lance Sloan, Consultant in Rehabilitation Medicine

REPRODUCTIVE HEALTH

Module Facilitator: Dr Essam Hadoura (Consultant Obstetrician & Gynaecologist)

Aims and Objectives

- Clinical introduction to Obstetrics and Gynaecology
- Overview of the progress into the clinical diagnosis and management options using up to date technology
- To learn about the basic clinical skills of history taking and principles of clinical examination
- To learn the principles of early diagnosis and ambulatory services with the aim to achieve improvement in quality of life and safe practice in Women's Healthcare
- To be aware about the legal aspects and social issues in Reproductive Medicine

Programme outline

- Introductory lecture to Reproductive Medicine
- Clinical skills session using models to practice hands-on experience in a gynaecological examination. Learn the use of common instruments and observe obstetric clinical skills within a workshop environment
- Students will then be split into groups to take a history from a pregnant / postnatal patient on the maternity ward and also from gynaecological patient on Ward 32
- Observe a live ultrasound scan session including antenatal booking scans, routine and emergency obstetric scans and early pregnancy cases
- Round up session to discuss the history taking cases and to share experiences of the mornings events.

Intended Learning Outcomes

- To gain a brief outline of the basic knowledge and principles of clinical skills in reproductive medicine
- To be familiar with common instruments and procedures
- To gain insight about ethical knowledge associated with Reproductive Medicine

We aim to provide a brief introduction to the speciality of Reproductive Medicine and to share the philosophy in clinical assessment and management options. Using the advantages and progress made in modern technology to achieve early diagnosis and the improvement in the quality of Women's Healthcare.
We endeavour to maintain consistency to all groups and everyone should experience the same exposure on this module. We actively encourage anyone who has more interest and would like to observe a vaginal delivery, caesarean section or to attend gynaecology theatre to come forward and we will try to accommodate every request where possible.

Recommended Reading

- **Royal College of Obstetricians and Gynecologists, www.rcog.org.uk**

- **Oxford Handbook of Obstetrics and Gynaecology, Sally Collins, Sabaratnam Arulkumaran, Kevin Hayes, Publisher:** Oxford University Press,
  ISBN 13: 9780199698400 **ISBN 10:** 0199698406

- **Essential Obstetrics and Gynaecology,** E. Malcolm Symonds, Ian M. Symonds, Sabaratnam Arulkumaran
  Publisher: Churchill Livingstone
  ISBN 13: 9780702030680 **ISBN 10:** 0702030686

- **Obstetrics by Ten Teachers,** Philip N. Baker, Louise C. Kenny
  Publisher: Hodder Arnold
  ISBN 13: 9780340983539 **ISBN 10:** 0340983531

- **Gynaecology by Ten Teachers**, Ash Monga, Stephen Dobbs, Stephen P. Dobbs
  Publisher: Hodder Arnold
  ISBN 13: 9780340983546 **ISBN 10:** 034098354X

RHEUMATOLOGY

Aims & Objectives
To understand the role of history and examination in diagnosis of arthritis and other rheumatology conditions. To be able to diagnose arthritis

Programme Outline

- Introductory Lectures - Aims and objectives & How to diagnose arthritis
- Students watch the GALS video
- Students form pairs and meet 6-8 patients for 10-15 minutes each to ask questions and examine joints. A prompt sheet is provided for each patient.
- Students form pairs and complete a GALS examination on each other
- Students give feedback on the types of arthritis that patients have, history and examination findings. A lecture using pictures of arthritis is used to facilitate discussion.

Intended learning outcomes

The student will be able to

- Take a history from a patient complaining of musculoskeletal pain
- Undertake a screening examination of the musculoskeletal system (GALS)
- Recognise signs of arthritis & understand the use of pattern recognition in diagnosing common types of arthritis

Recommended reading

http://www.arthritisresearchuk.org/health-professionals-and-students/student-handbook/the-msk-examination-gals.aspx
GALS screening examination - YouTube www.youtube.com/watch?v=IKZukBf7t1I
The GALS locomotor screen and disability. M J Plant, S Linton, E Dodd, P W Jones, and P T Dawes. Ann Rheum Dis. Dec 1993; 52(12): 886–890.
Rheumatology Guidebook R. Ferrari, J. Cash and P. Maddison. Bios Scientific Publisher.

Module Facilitators:

Dr Helen Harris, Rheumatologist and Mr Craig Morris, Physiotherapist (QMH)
Dr John McLaren, Rheumatologist, Mrs Irene Moore, Physiotherapist (VHK)
Dr Jane Gibson, Rheumatologist, Mrs Paula Dowie, Physiotherapist (VHK)
Dr Sarah Hailwood, Rheumatologist (VHK)

SURGERY

Aims & Objectives

This module will consolidate your knowledge gained in the first two years, particularly surgical anatomy, pathology, physiology and microbiology. You will have the opportunity to come into contact with patients in a hospital situation and to learn how multidisciplinary teams work. The module will highlight the surgical patient journey. Students will have an overview of day-to-day surgical practice, highlighting the importance of sound knowledge of basic sciences. Please remember to dress appropriately.

Programme Outline

- The teaching will be provided at the bedside by consultants or registrars in surgery with various sub-specialty interests. Preferred ward will be the acute Surgical Admissions unit. Students will be able to attend the operating theatre, where they will see some live operating and also have an introduction into theatre management.
- Students will be introduced to patients, and be able to spend some time taking a history usually in pairs. Some patients may be examined also, but their teacher will guide them in this. Hopefully each pair of students will be able to see at least 2 patients, and will then be able to discuss their findings with their teacher.
- We will discuss the differential diagnosis of these patients, and also talk about further assessment, in particular relating to appropriate blood tests and imaging. The continued management of these patients will also be discussed, and we will stress the importance of patient confidentiality.
- Topics will depend upon the conditions presenting on the ward but will usually include:- acute abdominal conditions such as appendicitis, diverticulitis, bowel obstruction and hepatobiliary emergencies, and sometimes acute urological cases. If time allows we may have some discussion about fluid and antibiotic management of acute surgical cases.
- Time in theatre will include some live operating and also details of the patient journey through theatre with special reference to safety; there may be an opportunity to have some input from our anaesthetic colleagues.

Intended Learning Outcomes

Students will learn about:-

- Areas of the abdomen, differential diagnoses, surgical causes of abdominal pain, common signs and symptoms of acute abdomen. Applied surgical anatomy and pathophysiology. Appropriate further management of the acute abdomen.
- Safety in theatre.
- Depending on the cases presented:
    - overview of fluids and electrolytes, administration of fluids, metabolic response to trauma
    - the value of imaging in the acute abdomen
    - complications of surgery and post-operative management
    - gall bladder disease – causes and treatment, pancreatitis – signs and symptoms, complications and treatment
    - usage of common antibiotics and prophylaxis in surgery

Recommended Reading
Students are encouraged to refresh their knowledge of basic science in order to maximize the learning opportunities.

Module Facilitator
Mr Nick Evgenikos & Mr Symon Macpherson, Consultant Surgeons

UROLOGY

Location: Arriving at: Ward 54 VHK. Leaving From Day Treatment Centre

On arrival: Present to Ward 54 and wait to be met by Mr Chapman

Tutor: Mr R A Chapman

Goals of Clinical Attachment

- To learn to perform a history, physical examination and manage patients with common urologic diseases
- Gain an overview of diagnostic tools in urology

Common Urology Conditions

1. Uro-oncology (renal tumors, transitional cell carcinoma bladder, prostate cancer, testicular cancer and penile cancer);
2. Stone disease;
3. Incontinence and bladder dysfunction;
4. Urinary tract infections;
5. BPH, bladder outlet obstruction and lower urinary tract symptoms;
6. Erectile dysfunction and Male infertility

We look forward to meeting you for this brief exposure to the Urology Department. Urology is a surgical specialty with many subspecialties within its remit. We will look to gain more confidence in taking a focussed history, targeting questions around a differential diagnosis.

We will discuss an initial case of a gentleman with frank/visible haematuria. It is then hoped you will be able to take some additional histories from patients on the ward or in clinic. It would be helpful to do a little background reading prior to coming. See reading list below.

Please be aware, that we will try to give you access to real patients with real conditions, however because of this there will always be a degree of uncertainty when it comes to the case mix or which patients are able or willing to see students on the day you attend.

RECOMMENDED RESOURCES:

- Oxford Handbook Clinical Urology: John Reynard, Simon Brewster, Suzanne Biers
- Lecture Notes on Urology: John Blandy
- emedicine website: all Urology topics

WHEN ORGANS FAIL – An introduction to Intensive Care Medicine

Aims and Objectives

Differences between ICU and ward areas:-

- Organ support in ICU.
- Principles of critical care pathophysiology.
- Ethical issues in ICU.
- Data interpretation in ICU.

Programme Outline

- You will be met by one of the Critical Care Consultants in ICU.
- You will be tutored throughout the session– be prepared to be questioned!
- At the start there will be a brief session defining what Intensive Care means and talking about patients likely to benefit from Intensive Care treatment.
- "Rules" will be established for patient contact.
- Up to 2 hours will be spent on the Intensive Care Unit.
- Opportunities provided by the patients that are currently in the unit, and as such these will vary from week to week.
- Opportunity to discuss aspects of the patients' care in detail, both with the supervising Consultant and with other members of the Intensive Care Team.
- Working constructively from your knowledge of "normal" physiology and the physiological influence of critical illness, we will help you develop an understanding of the principles of organ support and the problems that can ensue.

Intended Learning Outcomes

- Describe the differences between critical care and other wards within secondary care.
- Describe the principles of organ support in the critically ill patient
- Apply principles of physiology and pathophysiology to patient management
- Use data to determine basic pathophysiological trends in critically ill patients
- Discuss ethical issues regarding life support and end of life care.

Recommended Reading

- We would suggest that you read the "ABC of Intensive Care", Nimmo and Singer (Eds) ISBN: 9781405178037. First 4 chapters should take <60 mins.
- If you have time, the Scottish Intensive Care Society website is very good. www.scottishintensivecare.org.uk/education and select Induction tutorials - see monitoring, respiratory failure, shock and nutrition. "Brush up" your knowledge of respiratory and cardiovascular physiology in particular.

Notes: Do have breakfast. You will spend a lot of time standing and students have fainted on the ward – this is much less likely if you are fed and watered!

Module Facilitator

Dr Ben Slater, Consultant in Anaesthesia & Critical Care
Dr Robert Thompson, Consultant in Anaesthesia & Critical Care

Semester 1 2019/20	Week 1 19/09/2019	Week 2 26/09/2019	Week 3 03/10/2019	Week 4 10/10/2019	Week 5 17/10/2019	Week 6 24/10/2019	Week 7 31/10/2019	Week 8 07/11/2019	Week 9 14/11/2019	Week 10 21/11/2019	Week 11 28/11/2019
Special Assessments ***All at VHK unldess stated***		ENT **VHK** 8 Medicine of the Elderly **VHK** 8	Rehab **Cameron** 8 Medicine of the Elderly **VHK** 8	Rehab **Cameron** 8 Medicine of the Elderly **VHK** 8	Old Age Psychiatry **Stratheden** 8 General Psychiatry **Stratheden** 8		ENT **VHK** 8 Neurology **VHK** 8	Rehab **Cameron** 8 Psychiatry **QMH** 8	Paeds Physio **VHK** 4 Cardiology / GI **VHK** 4	Paeds Physio **VHK** 4 Cardiology / GI **VHK** 4	Old Age Psychiatry **Stratheden** 8 General Psychiatry **Stratheden** 8
AM Surgery	6	8	8	8	6		8	8	8	8	6
PM Interprofessional Care	8	8	8	8	Cardiology / GI 6		8	8	8	8	8
AM When Organs Fail	6	7	7	7	7		7	7	7	7	6
PM Every Person, Every Time		7	7	7	7		7	7	7	7	7
AM Repro Helth	7	8	8	8	8		8	8	8	8	7
PM Impact of Diease - Medicine	8	8	8	8	8		8	8	8	8	Cardiology GI 4
AM Clinical Reasoning	7	8	8	8	8		8	8	8	8	8
PM Emergency Medicine	8	8	8	8	8		8	8	8	8	8
AM Orthopaedics	6	8	8	8	8		8	8	8	8	8
PM Loss	Cardiology / GI 4	8	8	8	8		8	8	8	8	8
AM Urology/ Peri-op		4	4	4	4		4	4	4	4	4
PM Palliative Care	4	4	4	4	4		4	4	4	4	4

Semester 2 2019-2020	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
	30/01/2020	06/02/2020	13/02/2020	20/02/2020	27/02/2020	05/03/2020	12/03/2020
Special Assessments ***All at VHK unless stated***	Rehab **Cameron** 8		ENT **VHK** 8	Rehab **Cameron** 8	Rehab **Cameron** 6	Rehab **Cameron** 8	Old Age Psychiatry **Stratheden** 8
	GI **VHK** 8	Medicine of the Elderly **VHK** 8		Medicine of the Elderly **VHK** 8		Paediatric Physiotherapy **VHK** 4 Neurology **VHK** 4	General Psychlatry **Stratheden** 8
AM Surgery	8	8		8	8	8	8
PM Interprofessional Care	8		8	8	8	8	9
AM When Organs Fail	7	7	7	7	8	7	
PM Every Person, Every Time	ANP 7	ANP 7	ANP 8	7	ANP 8	ANP 7	ANP 8
AM Repro Health	8	8	6	8	8	8	6
PM Impact of Disease – Medicine	8	8		8	9	8	
AM Clinical Reasoning	8	8	8	8	8	8	8
PM Emergency Medicine	8	8	9	8	9	8	9
AM Orthopaedics	8	8	8	8	8	8	6
PM Loss	8	8	9	8	9	8	
AM Peri Op	4	4	4	4	4	4	4
PM Palliative Care	4	4	7	4	7	4	6

Molecular Mechanisms Governing Brain Metastasis from Breast Cancer and the Factors Implicated in Its Latent Spread

Lay Abstract

Breast cancer is the most common cancer affecting the UK population (Cancer Research UK n.d.). While breast cancer itself can be treated relatively easily, using conventional treatments such as chemo and radiotherapy, the spread of cancer to other organs of the body remains a major challenge. It is these 'secondary' tumours that have the worst prognosis and are often responsible for the death of the patient (Steeg 2006). Not only this, but they can occur many years after the treatment of the first cancer has finished, due to the ability of tumour cells to lie dormant for prolonged periods, before becoming activated again (Karrison et al. 1999). An understanding of how breast cancer can spread to specific areas of the body, such as the brain and what allows tumour cells to lie dormant for so long, without being detected, is essential to improving the treatment of secondary disease.

In this essay, the mechanisms behind the spread of breast cancer to the brain and the factors that influence latent spread are reviewed; to explain how Patient X could have developed a secondary brain tumour, 11 years after her initial breast cancer.

A case study of my patient (X) lead to the investigation of the mechanisms that govern brain metastasis, to establish how neoplastic cells are able to cross the blood brain barrier and form secondary tumours, like the one Patient X presented with. Interested in understanding why it took 11 (seemingly cancer-free) years for her breast cancer to finally metastasise, the processes involved in the latent spread of breast cancer are also reviewed in this essay.

Why is Breast Cancer Important? Prevalence and Complications

Breast cancer is the most prevalent cancer in the UK, affecting approximately 5,000 new people per year in Scotland and accounting for 29.1% of cancers in women (Information Services Division Scotland 2017). The greatest incidence of breast cancer in females occurs within the 65-69-year-old age group, as shown by (Cancer Research UK 2016). This is the same demographic that Patient X fits into, as she developed her primary cancer at the age of 65.

One of the major complications associated with breast cancer is the metastatic spread of malignant cells to other tissues within the body. Of the thousands of patients diagnosed with breast cancer each year 10-15% will go on to develop a secondary tumour, within the first 3 years alone (Weigelt et al. 2005). Studies at autopsy suggest that, like Patient X, approximately 25% of patients with stage IV breast cancer will have developed brain metastases (BM) within their lifetime (Weigelt et al. 2005). Often, BM is an indicator of poor survival, as shown by (Sperduto et al. 2012). In their retrospective study, they ascertained that the median survival for breast cancer patients with BM is approximately 13.8 months.

It is the high prevalence of breast cancer, coupled with the poor outcomes of secondary tumours, such as BM, that makes breast cancer progression an important area to understand and research.

Mechanisms Underpinning Brain Metastasis

Capillary endothelial cells and their tight junctions, along with the foot processes of astrocytic glial cells, within the brain, form an important obstacle to neoplastic cells

(Medeiros & Silva 2015). This is known as the blood brain barrier (BBB). Whilst the mechanisms governing the metastatic spread of breast cancer are largely unknown (Bos et al. 2009; Chiang & Massague 2008; Weil et al. 2005), one thing remains clear: in order to reach the brain, malignant cells must cross the BBB to colonise areas of it. *In vitro* experiments, such as those conducted by (Bos et al. 2009) have demonstrated that breast cancer cells may be able to navigate this barrier via two mechanisms. In their model, they described how the factors expressed by brain-targeting tumour cells, indicate that they can infiltrate the brain via 'extravasation through capillaries', which is then augmented by 'enhanced cell passage through the BBB'.

In extravasation, circulating tumour cells in the blood vessels (or lymphatics) are able to 'physically occlude' small capillaries, or attach themselves to the endothelium of larger ones (Melzer et al. 2017). Once adhered, the tumour cells are able to 'incorporate' themselves into the walls of the capillaries and disrupt surrounding vascular endothelial cadherin; an important molecule involved in endothelial cell-cell adhesion (Hamilla et al. 2014). These two factors combined, lead to the disruption of the endothelial barrier and a reduction in its ability to prevent the passage of harmful substances and non-immune cells.

Tumour cell passage through the BBB, specifically, can be enhanced by the expression of *ST6GALNAC5*, as shown by (Bos et al. 2009). This gene is responsible for the coding of a Sialyltransferase, an enzyme that is not usually expressed in breast tissue (Okajima et al. 1999), but can mediate cell-cell interactions (Dall'Olio & Chiricolo 2001). The production of this enzyme by breast cancer cells enhances their adhesion to brain endothelium, furthering their ability to cross the BBB (Bos et al. 2009).

Factors Influencing Dormancy

One of the most intriguing aspects of Patient X's case is how long it took for her to develop a secondary tumour and without the primary breast cancer ever re-growing. A paper by (Karrison et al. 1999) reported that the upper limit of breast cancer dormancy can be 20-25 years, with most relapses occurring in the first 10 year period, after treatment. Interestingly, this indicates that clinical scenarios, like those experienced by patient X, are actually fairly common. However, the important questions remain: Why does this prolonged dormancy occur? And which molecules regulate it?

In vitro experiments conducted by (Ghajar et al. 2013) have shown that dormant tumour cells can survive in the very small blood vessels of organs such as the lungs and the brain. These cells are then kept quiescent by tumour suppressor molecules, such as Thrombospondin-1, which are produced by the endothelium of these vessels. The quiescent cells appear to only become activated and grow within neo-vascular environments; where there is greater expression of active TGF-131 and POSTN ('tumour-promoting factors') and where the expression of tumour suppressor molecules is reduced.

Discovering the influence that these factors have on tumour progression can allow for the advancement of cancer treatment. As (Ghajar et al. 2013) have suggested, TGF-131 and POSTN, along with angiogenesis, could potentially become targeted therapeutically, as a way of prolonging dormancy. Similarly, they suggest that an understanding of exactly where in organs these tumours cells reside (i.e. microvasculature) can allow for the development of more targeted treatment plans that actually kill the cancer cells. This demonstrates exactly how important research into and an understanding of the mechanisms involved in cancer metastasis and

quiescence are. As indicated above, this knowledge can allow for new treatment plans to be designed and old ones improved upon, so that one day the clinical outcomes for people like Patient X won't be so poor.

Bos, P D. et al., 2009. Genes that mediate breast cancer metastasis to the brain. *Nature*, 459(7249), pp.1005–1009.

Cancer Research UK, 2016. *Breast Cancer (C50): 2012-2014 Average Number of New Cases Per Year and Age-Specific Incidence Rates per 100,000 Population, Females, UK*, Available at: http://www.cancerresearchuk.org/sites/default/files/cstream-node/cases_crude_f_breast_I14.pdf.

Cancer Research UK, Breast cancer statistics. Available at: http://www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/breast-cancer#heading-Zero [Accessed November 5, 2017].

Chiang, A. & Massague, J., 2008. Molecular Basis of Metastasis. *N Engl J Med*, (359), pp.2814-2823.

Dall'Olio, F. & Chiricolo, M., 2001. Sialyltransferases in cancer. *Glycoconjugate Journal*, 18(1112), pp.841-850.

Ghajar, C.M. et al., 2013. The perivascular niche regulates breast tumour dormancy. *Nature Cell Biology*, 15(7), pp.807-817. Available at: http://www.nature.com/doifinder/10.1038/ncb2767.

Hamilla, S.M., Stroka, K.M. & Aranda-Espinoza, H., 2014. VE-cadherin-independent cancer cell incorporation into the vascular endothelium precedes transmigration. *PLoS ONE*, 9(10).

Information Services Division Scotland, 2017. *Cancer Incidence in Scotland (2015)*, Available at: http://www.isdscotland.org/Health-Topics/Cancer/Publications/data-tables.asp?id=1233#1233.

Karrison, T.G., Ferguson, D.J. & Meier, P., 1999. Dormancy of Mammary Carcinoma After Mastectomy. *JNCI Journal of the National Cancer Institute*, 91(1), pp.80-85. Available at: https://academic.oup.com/jnci/article-lookup/doi/10.1093/jnci/91.1.80.

Medeiros, L. & Silva, D., 2015. *Brain Metastasis from Breast Cancer: Molecular Mechanisms*, Elsevier Inc. Available at: http://dx.doi.org/10.1016/B978-0-12-801419-6/00008-2.

Melzer, C., Von Der Ohe, J. & Hass, R., 2017. Breast Carcinoma: From Initial Tumor Cell Detachment to Settlement at Secondary Sites. *BioMed Research International*, 2017, p.11.

Okajima, T. et al., 1999. Molecular cloning of brain-specific GD1ct synthase (ST6GalNAc V) containing CAG/glutamine repeats. *Journal of Biological Chemistry*, 274(43), pp.30557-30562.

Sperduto, P. et al., 2012. Effect of Tumor Subtype on Survival and the Graded Prognostic Assessment for Patients With Breast Cancer and Brain Metastases. *International Journal of Radiation Oncology*Biology*Physics*, 82(5), pp.2111-2117.

Steeg, P.S., 2006. Tumor metastasis: mechanistic insights and clinical challenges. *Nature Medicine*, 12(8), pp.895-904. Available at: http://www.nature.com/doifinder/10.1038/nm1469.

Weigelt, B., Peterse, J.L. & van't Veer, L.J., 2005. Breast cancer metastasis: markers and models. *Nature Reviews Cancer*, 5(8), pp.591-602. Available at: http://www.nature.com/doifinder/10.1038/nrc1670.

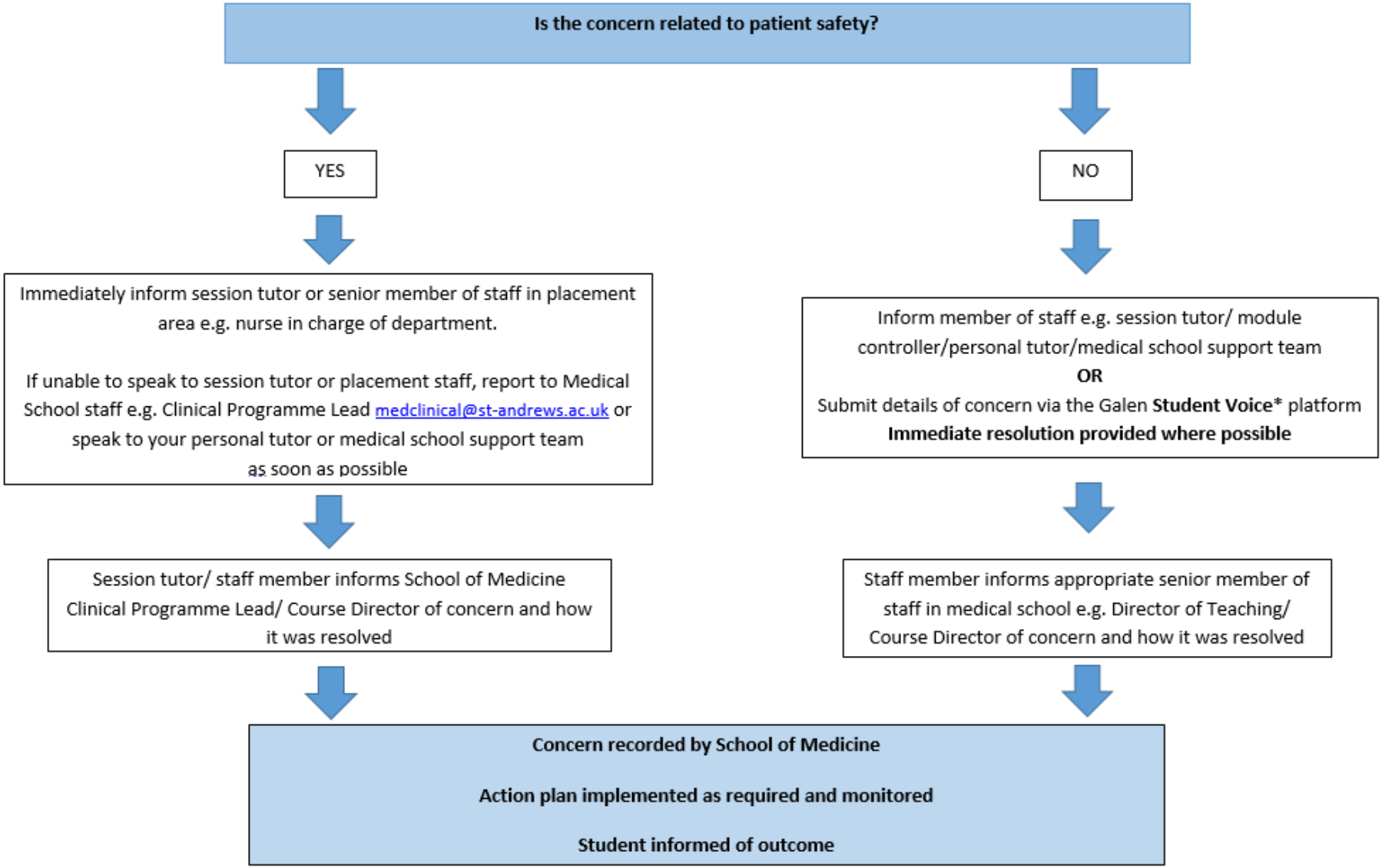
Weil, R.J. et al., 2005. Breast Cancer Metastasis to the Central Nervous System. *The American Journal of Pathology*, 167(4), pp.913-920. Available at: http://linkinghub.elsevier.com/retrieve/pii/S0002944010611807.

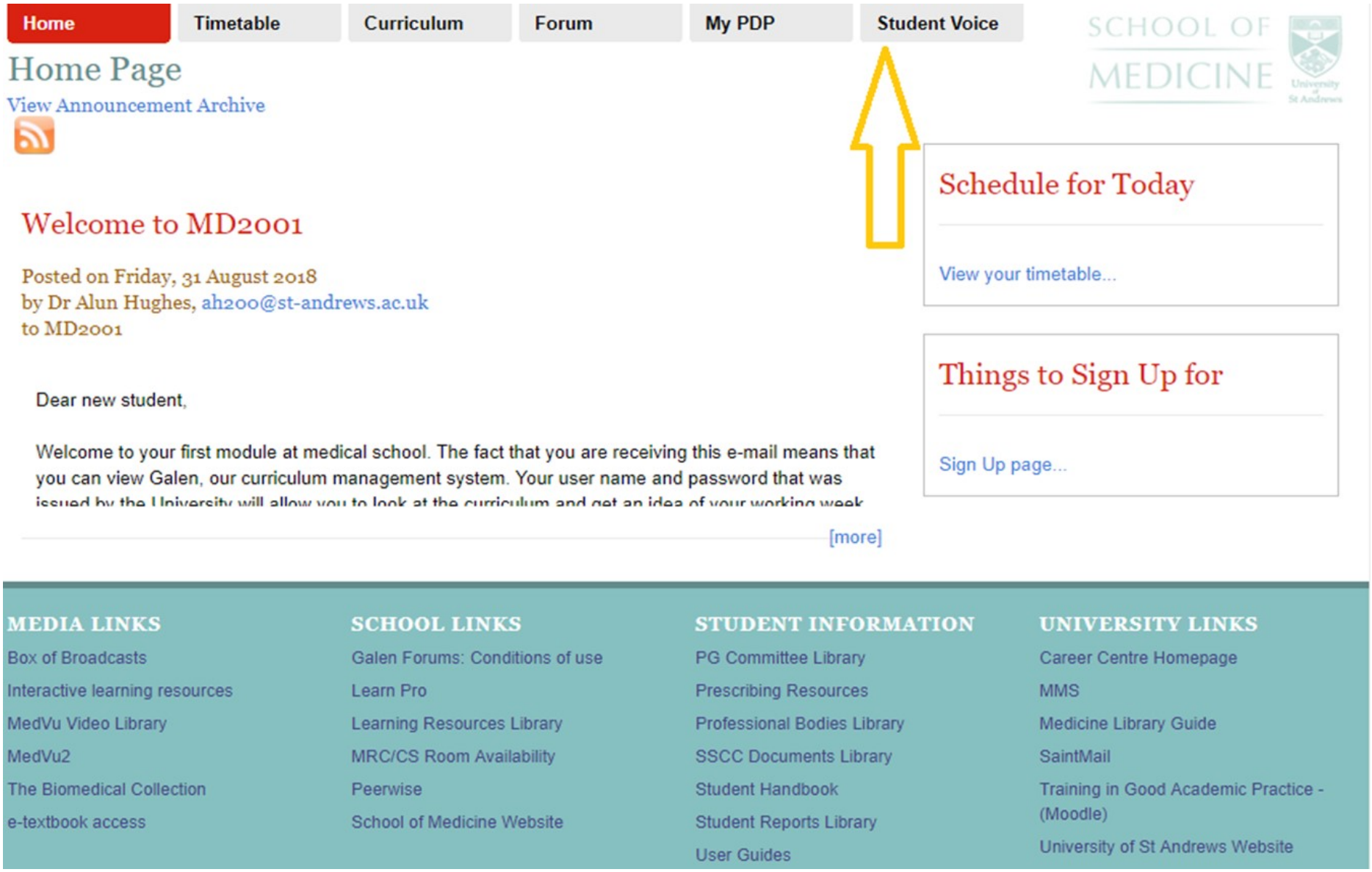
APPENDIX 2

School of Medicine, University of St Andrews

Raising a Concern in the Placement or Medical School Setting

Guidance for Students




Home
Timetable
Curriculum
Forum
My PDP
Student Voice
SCHOOL OF MEDICINE
Home Page
View Announcement Archive
Welcome to MD2001
Posted on Friday, 31 August 2018
by Dr Alun Hughes, ah200@st-andrews.ac.uk
to MD2001
Dear new student,
Welcome to your first module at medical school. The fact that you are receiving this e-mail means that you can view Galen, our curriculum management system. Your user name and password that was
[more]
Schedule for Today
View your timetable...
Things to Sign Up for
Sign Up page...
MEDIA LINKS
Box of Broadcasts
Interactive learning resources
MedVu Video Library
MedVu2
The Biomedical Collection
e-textbook access
SCHOOL LINKS
Galen Forums: Conditions of use
Learn Pro
Learning Resources Library
MRC/CS Room Availability
Peerwise
School of Medicine Website
STUDENT INFORMATION
PG Committee Library
Prescribing Resources
Professional Bodies Library
SSCC Documents Library
Student Handbook
Student Reports Library
User Guides
UNIVERSITY LINKS
Career Centre Homepage
MMS
Medicine Library Guide
SaintMail
Training in Good Academic Practice - (Moodle)
University of St Andrews Website

Appendix 3

WHAT TO DO IF YOU HAVE A SHARPS/NEEDLESTICK INJURY

BLEED IT - Encourage the area to bleed

WASH/ IRRIGATE IT - with liquid non-antimicrobial soap and warm running water

COVER IT - with a waterproof dressing

REPORT IT - to the technician, or another member of staff. Ensure that the item that caused the injury is disposed of safely.

For further advice contact the St Andrews community hospital on 01334 465683

Additionally:

If the injury occurs out of hours attend the Minor Injury Department for advice.

If out-with NHS Fife, ensure to follow the local arrangements in the placement health board and familiarise yourself with these in advance/on arrival.

Afterwards, **also** report it to the School (medclinical) ASAP, to ensure the appropriate occupational health longer term follow-up is arranged