UNSW Medicine & Health

MFAC1521: Beginnings, Growth and Development A

Student Guide 2024

Contents

Welcome

Welcome to Beginnings, Growth and Development A!

The Beginnings, Growth and Development courses in Phase 1 have been designed to help you gain an understanding of the particular health issues that arise during conception, pregnancy and childhood.

In BGD A there are three scenarios, focusing mainly on the course themes of conception, pregnancy and birth, with a minor emphasis on some issues related to the course themes of childhood, growth and development, sexuality and nutrition.

The first scenario considers health beginnings. The focus here is on normal pregnancy and on the medical, social and cultural issues facing woman in Australia. The second scenario involves two new mothers and traces their experiences, with a focus on screening issues. The third scenario involves a couple who are having difficulty conceiving a baby.

This course will be your first opportunity to put into practice the learning skills you were introduced to in Foundations, and to begin to build on the basic knowledge gained in all disciplines there. We have a range of activities planned for scenario group sessions to complement and add to the lecture and practical class schedule and other components of the program.

Like Foundations, BGD A runs exclusively for Year 1 students. If you find the material challenging or the course structure bewildering, remember to seek help early. The convenors and your facilitators, lecturers and second year colleagues, and importantly your fellow Year 1 students, are all important sources of information and advice.

Most importantly, we hope that you enjoy the course!

Staff Involved in the Course

The members of the Design and Implementation Group hope that you find this course stimulating and interesting and wish you well in your studies in BGD A and beyond.

Course convenors

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Beginnings, Growth and Development A Design Group 2024

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With special thanks to…
- Gary Velan (online assessment)
- Karen Gibson
- Marty Le Nedelec

- Narelle Mackay
- Elena Mankovskaia (timetabling)
- Chinthaka Balasooriya

Also to the many other individuals, including teachers, health professionals, patients and administrative staff who have contributed to course development.

Other contacts

Ethics and Legal Aspects
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Campus and Hospital Clinical Skills
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Student support
UNSW Medicine Student Wellbeing Advisor: https://med.unsw.edu.au/student-life/wellbeing
UNSW Psychology and Wellness: https://www.student.unsw.edu.au/counselling

Student Services	*Teaching Support*
https://nucleus.unsw.edu.au/en/contact-us https://portal.insight.unsw.edu.au/web-forms/	BMed.PM@unsw.edu.au
eCOE	Assignments
Enrolment enquiries and help	Learning Plans/miniCEXs
Recognition of Prior learning	Exams – clinical and non-clinical
Program Leave/Discontinuation	Exam adjustments
Internal Program Transfer	Special Consideration
Review of Results	Results (eMED/MyUNSW)
Standard letters (Jury Duty, Enrolment confirmation etc)	Special Study Plans
	eMED questions

Teaching Support

MedTimetable	02 9065 7110	Timetable queries
Cara Elvidge	02 5524 1532	Ph1 Admin/Student Support (Port Macquarie)
Rochelle McPherson	02 9065 4833	Ph1 Admin/Student Support (Wagga Wagga)
Learning Resources	02 9065 1177	Room resources, eMed Map and Moodle Helpline Email: BMed.LR@unsw.edu.au

Medicine Computing Support Unit and IT Support

Medicine IT Support	*02 9065 8683*
AV Support	*02 3385 4888*
IT Help Desk	*02 9385 1333*

General information

Course themes

The four themes for the Beginnings, Growth and Development domain are:
- Conception, pregnancy and birth
- Childhood growth and development
- Puberty, adolescence, sexuality and relationships
- Nutrition, growth and body image

BGD A emphasises the first of these themes but includes material relevant to all four. The last three themes are the focus of BGD B.

Aims of the course

The three scenarios focus on a range of issues surrounding conception, pregnancy, birth and the care of neonates. They aim to stimulate student interest in:
- The medical sciences that inform medical practice in the area of obstetrics and gynaecology, especially in relation to conception, pregnancy, and birth
- Embryology and fetal development
- Biochemistry, molecular biology, and genetics
- Reproductive physiology and anatomy
- Microbiology of infection
- Pathology of inflammation and cervical cancer
- Pharmacology of the autonomic nervous system and reproduction
- Impact of history, culture, and socio-economic status on reproductive health, especially on Aboriginal and Torres Strait Islander reproductive health, and on access to health care
- Maternal responsibility, including contraception and pregnancy planning, nutrition and drug taking
- Screening, both antenatal and newborn, including the physiological, genetic and clinical issues
- The notion of rights and duties, especially in relation to reproduction
- Communication issues, including dealing with ambiguous test results, giving advice and gaining consent
- The psychological impact of pregnancy and infertility on women and on couples

Course overview

- Further details on each activity, including detailed capability references, suggested readings and websites, and information on relevant disciplines, are contained in the eMed Map at http://emed.med.unsw.edu.au

Timetable

- Consult the eMed Timetable for the details of session dates, times, and locations for face-to-face classes / access details for online activities.

Resources

- Resources relevant to the course can be accessed on the eMed Map and on the Beginnings, Growth and Development A UNSW Moodle site.

A note on feedback

We regularly seek feedback and have taken note of feedback from the BGD A course in previous years in making changes to the course. Students provided feedback in 2023 and advised the following to the students in 2024.

Previous students told us that they:

- Were satisfied with the quality of the course (Sydney – 93.1%, Wagga Wagga – 90.5%, Port Macquarie – 84.6%).
- Really liked the scenarios, gaining confidence in clinical skills and obstetrics and gynaecology, the exploration of sociocultural aspects, and the opportunity to meet real mothers.
- Found the content interesting and loved the structure and organisation of the course.
- Enjoyed the in person practical classes and lectures.
- Enjoyed working together in small groups, both for collaborating with their peers but also gaining confidence in discussing more sensitive subjects with patients.
- Appreciated the formative assessments and online learning modules.
- Felt the course covers a lot of content, and they would like assistance with managing content, staying engaged, and helping consolidate and put into practice what they are learning.
- Sometimes had challenges with timetable logistics.
- Found some subjects like embryology challenging.
- Found the SGS engaging.

Students suggested that the course could be improved by:

- Having more face-to-face session – both lectures and practicals.
- Increased opportunities for interactions with peers and tutors.
- Having more formative assessments throughout the course.
- More time spent in role play.
- More support in learning embryology.

We have responded to this feedback by:

- Increasing the number of lectures held face-to-face, while maintaining flexibility with streaming lectures while also having some dedicated to online format.
- Role play/hands-on activities have been increased in SG sessions to make the sessions more interactive.
- Small group work activities have been increased in SG sessions.
- Integration of homework tasks into some SG sessions to reduce workload outside of class, especially around assignment submission dates.
- The format of the week 7 review lectures has been adapted to include practice questions and formative feedback.
- The number of formative quizzes has been increased. They will now be held more regularly.
- Inclusion of a MS Teams site to enhance pathways of communication with conveners and facilitators.
- Carefully reviewing the timetable to ensure that wherever possible, lectures are scheduled a few days before associated activities (practicals, SG sessions and tutorials), and face to face sessions are not back-to-back with in person classes.

Evaluation

Periodically student evaluative feedback on both courses and teaching is gathered. The UNSW myExperience digital student surveys are used along with student focus groups, student forums, and at times additional evaluation and improvement instruments developed in consultation with the Faculty of Medicine's Program Evaluation and Improvement Group. Student feedback is taken seriously, and as discussed above, continual improvements are made to the course based in part on such feedback.

Significant changes to the course will be communicated to subsequent cohorts of students taking the course through inclusion of information in student course guides, and in presentations by course convenors. Evaluation activities across the Faculty are strongly linked to improvements and ensuring support for learning and teaching activities for both students and staff.

Clinical sessions

Students should consult the eMed Timetable for details of their Clinical Skills sessions.

BGD A is a bit of a mixed feast. In campus sessions we will be working on course relevant material around menstruation and pregnancy. However, in BGD A hospital sessions in your allocated hospitals we continue the focus on the skin system from Foundations campus sessions.

To prepare for campus sessions please complete the Symptom Surveys on menstruation and pregnancy found at these links:
Menstruation – Symptoms & History - https://moodle.telt.unsw.edu.au/mod/scorm/view.php?id=6452845
Pregnancy – Symptoms & History - https://moodle.telt.unsw.edu.au/mod/scorm/view.php?id=6452847

To prepare for face-to-face hospital sessions please review your *Foundations* CS teaching and the Skin Symptom and Signs Survey and get ready to meet your hospital tutor and your first real patient! Session guidelines have been provided to Clinical Schools. Please liaise with your allocated Clinical School admin contact (see Phase 1 CS Guide for email addresses) should you have any questions on these sessions.

Every student will also perform their first *practice* OSPIA appointment in this course, interacting with a Simulated Patient on a skin scenario. This will result in your first SOCA assessment. **Students must take note of their emails for information on accessing OSPIA and the timeline for use of the platform**.

Attendance

You are expected to attend **all** classes and it is in your best interest to do so. Studies have shown that high attendance correlates with better engagement and success in courses and disciplines. By attending, engaging and actively participating in your classes you not only increase your own opportunities for success, but you also help build a learning community with other students. Attendance is a student's responsibility, and attendance and engagement are important aspects of professionalism. Please see the university policy on Class Attendance. https://student.unsw.edu.au/attendance

UNSW Medicine expects students to attend **all** scheduled activities (including those online) and be punctual. It is important that you contact your course convenor or the Phase 1 convenors if you need to allow for illness or misadventure. If you fail to comply with the attendance and engagement requirements for a course or term, you may be awarded an Unsatisfactory Fail (even if you pass the end of course examination).

If you have a potentially infectious illness, it is important to stay home. If you will miss your scenario group session, you should inform your facilitator that you will be absent. Please copy that email to medphase1@unsw.edu.au. Please also inform the relevant teachers for any other small group sessions you will miss (e.g. clinical skills, ethics tutorials). If you will miss a practical class, it is not necessary to inform the principal teacher unless you want to discuss whether you can attend an alternative session on another day (if this is possible). It is your responsibility to ensure that you catch up on any material that you missed. If you are going to be away from campus for a prolonged period (more than 3 days) you will need to present a medical certificate and inform your Course Convenor. If you are unable to complete an assessment or exam on time because you are incapacitated due to illness or other causes you will also need to complete a Special Consideration application. Information about the Special Consideration application process and the online application form can be found on the Special Consideration website. Once you have submitted your application you should hear back within 3 days but usually within less time. Please also see the Student Wellbeing Tab at the top of the page for further assistance.

Where a significant absence is anticipated during course time (such as conference attendance or important cultural or personal commitments) it is imperative that the student contact the Phase 1 Convenors as soon as possible so that leave of absence can be considered and alternative arrangements for study/assessment put into place. Failure to provide sufficient notice may result in an Unsatisfactory Fail grade for the course.

If a student is absent from any learning activity, it is their responsibility to independently learn the material they missed. If a student fails a course, they cannot use absences from learning activities, for any reason, as grounds for appeal.

Facilitators and tutors will keep attendance records in all scenario group sessions, campus clinical skills sessions, hospital sessions, ethics tutorials and practical classes. Student attendance at hospital teaching sessions is particularly important. Poor attendance is flagged by shared systems across all clinical campuses and Faculty. Failure to attend without an acceptable reason will result in a comment regarding a lapse in professional behaviour being added to the student's Portfolio. More than one such Professionalism comment in eMed may lead to a recommendation that the student is not eligible to sit the Phase 1 Clinical Skills examination. It is important that students are aware of and comply with NSW Health (ClinConnect) compliance requirements, as discussed in the Program Guide.

It is your responsibility to frequently check the timetable for assigned classes and for any changes. Ignorance of classes, which are scheduled in the timetable, is not an acceptable excuse for non-attendance.

You can attend only classes to which you are allocated. You **may not attend** hospital sessions, practicals or other classes at different times or locations to those in your timetable. Staff may ask you to leave if you are not in the correct class.

Students taking Self-Care Days must register online using eMed portfolio at least 24 h ahead. Please ensure that you follow the guidelines on the Medicine Program website.
https://medprogram.med.unsw.edu.au/getting-started-0#SelfCare

Note that this includes notifying relevant teachers/facilitators of any small group classes that you will be missing eg scenario groups, ethics tutorials, clinical skills and hospital sessions, **at least 24 hours ahead.**

Special Consideration

UNSW operates under a Fit to Sit/ Submit rule for all assessments. If a student wishes to submit an application for special consideration for an exam or assessment, the application must be submitted **prior to the start of the exam or before an assessment is submitted**. If a student sits the exam/ submits an assignment, they are declaring themselves well enough to do so.

Material required for SG sessions

Many scenario group sessions rely on worksheets or information contained in this guide. Please ensure that you have access to a printed or electronic copy of the relevant section of the guide when attending your scenario group sessions. You should also ensure that you have completed any pre-reading or other preparation that has been set prior to attending the session. Some sessions also have post-SGS activities (videos, quizzes); you should ensure you complete these post-SGS activities in a timely manner.

Scenario group session preparation

Please note the following scenario group sessions have essential readings or other tasks to be completed before the session. You are expected to complete this preparation to ensure you are able to effectively participate in scenario group sessions, and to enhance your learning during the course. The pre-reading and /or associated preparation tasks will assist you in understanding the content of each session and will allow you to engage more deeply with the learning activities for each SGS.

Pre-reading and/or associated preparation tasks are detailed in Moodle, and summarised in the table below.

Week	Session	Activity
1	SGS 1	Bring Student Guide and laptop.
2	SGS 2	Pre-reading, Brown, S. J., Gartland, D., Weetra, D., Leane, C., Francis, T., Mitchell, A., & Glover, K. (2019). Health care experiences and birth outcomes: Results of an Aboriginal birth cohort. *Women and Birth : Journal of the Australian College of Midwives*, *32*(5), 404–411. https://doi.org/10.1016/j.wombi.2019.05.015
	SGS 3	Review "Physiology of male reproduction" & "Physiology of female reproduction" lectures
3	SGS 4	Pre-reading, Complete sympto-thermal chart.
	SGS 5	Prepare student led activity or quiz
4	SGS 6	Pre-reading
	SGS 7	Prepare SGS 7 group presentations
5	SGS 8	Watch Spots for Tots video. Pre-reading. Complete required columns of Newborn Screening Table
	SGS 9	Pre-reading. Review "The cervix in health and disease" lecture
6	SGS 10	Prepare Group Project presentations
	SGS 11	Pre-reading
7	SGS 12	Complete the online activity: "The Hexamethonium Man". Review "Introduction to Autonomic Nervous System" online lecture, and Cholinergic Mechanisms 1 & 2 and Adrenergic Mechanisms 1 & 2 lectures
	SGS 13	Review "Pathology of the female reproductive tract" lecture

Scenario 1: Healthy Beginnings

Schedule

Please refer to the eMed Timetable for dates, times and locations of learning activities

Learning Activity	Principal Teacher
Scenario Plenary 1: Healthy Beginnings	Hulme, Anneliese; Lees, Justin
Lecture 1: Indigenous reproductive health panel	Pitt, Sophie
Lecture 2: Female Reproductive Tract Histology	El-Haddad, Joyce
Campus Clinical Skills Session 1: Communication skills - the difficult stuff	Spencer, Kalli
Scenario Group Session 1: Rural Maternal Health and Teenage Pregnancy	Hulme, Anneliese
Science Practical 1: Histology of the female reproductive tract	El-Haddad, Joyce
Lecture 3: Anatomical framework of the pelvis Lecture	El-Haddad, Joyce
Lecture 4: Infection Screening in Pregnancy	Rawlinson, William
Lecture 5: Pregnant at 15	Islam, Raisa
Lecture 6: Ethics: Ethical issues in human reproduction	Langendyk, Vicki
Lecture 7: Trauma-informed Care	Cullen, Patricia
Lecture 8: Gametogenesis, fertilization and preimplantation development	Shirazi, Reza
Lecture 9: Physiology of male reproduction	Lewis, Trevor
Online Activity 1: P2: Anatomical framework of the pelvis prac Self-Directed prework	El-Haddad, Joyce
Science Practical 2: Anatomical framework of the pelvis prac	El-Haddad, Joyce
Lecture 10: Gene Function 1: Replication & Transcription	Lutze-Mann, Louise
Lecture 11: Prepregnancy counselling and screening: Integrated Prenatal Care (IPC)	Welsh, Alec
Lecture 12: Physiology of female reproduction	Lewis, Trevor
Scenario Group Session 2: Aboriginal and Torres Strait Islander Maternal Health	Pitt, PSophie
Hospital Clinical Skills Session 1: Presenting symptoms and skin lesions	Spencer, Kalli
Science Practical 3: Gametogenesis	Shirazi, Reza
Lecture 13: Gene Function 2: Translation	Lutze-Mann, Louise
Lecture 14: PCR and individual variation	Lutze-Mann, Louise
Lecture 15: Growth and differentiation of cells	Macer-Wright, Jessica
Lecture 16: DNA damage, repair and mutation	Galea, Anne
Scenario Group Session 3: Physiology of reproduction	Lees, Justin
Online Activity 2: P4: Polymerase Chain Reaction (PCR) Prac Self Directed Preparation	Lutze-Mann, Louise
Science Practical 4: Polymerase Chain Reaction (PCR)	Ly, Lana
Lecture 17: Female reproductive tract anatomy	El-Haddad, Joyce
Lecture 18: Reproductive Pharmacology	Wu, Lindsay
Lecture 19: Implantation, placentation and the establishment of the basic body plan	Shirazi, Reza

Scenario 1: Healthy Beginnings

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Learning Activity	Principal Teacher
Lecture 20: Signal Transduction	Finch, Angela
Online Activity 3: P5: Female reproductive System Anatomy prac self-directed prework	El-Haddad, Joyce
Science Practical 5: Female reproductive system anatomy	El-Haddad, Joyce
Lecture 21: Maternal Physiology	Gibson, Karen
Lecture 22: QMP: Screening Basics	Ariff, Amir
Tutorial 1: Ethics 1: Reproductive technologies, designer babies and human rights	Langendyk, Vicki
Campus Clinical Skills Session 2: Menstrual and obstetric histories	Spencer, Kalli
Scenario Group Session 4: Fertility awareness and contraception	Hulme, Anneliese
Science Practical 6: Placentation and the establishment of the basic body plan	Shirazi, Reza
Lecture 23: Initiation of labour at term and before term	Gibson, Karen
Lecture 24: Male Reproductive Tract Anatomy	Shirazi, Reza
Online Activity 6: QMP Online Tutorial: Bias - the biggest enemy	Ariff, Amir
Online Activity 7: QMP Online Adaptive Tutorial: Becoming a Critical Reader	Ariff, Amir
Tutorial 2: QMP Screening Tutorial	Ariff, Amir

Note: This schedule is subject to change. It only shows the first instance of any one activity. Refer to the eMed Timetable system and email updates sent to your UNSW email account for accurate times and locations for face-to-face classes / access details for online activities.

Overview

This scenario addresses the question: What inhibits, and what enhances, healthy outcomes in pregnancy?

It will examine the basic science surrounding a healthy pregnancy such as:
- Anatomy and physiology of reproduction and development, including conception and implantation
- Embryology
- Anatomy and physiology of labour
- Cellular mechanisms in reproduction and development, including genetics and biochemistry

It will also explore a range of issues including:
- Impact of the social determinants of health – particularly history, culture, geography, socio-economic status and politics – on Aboriginal and rural reproductive health
- Maternal responsibility, including nutrition and drug taking
- Access to health care, including options for care, choices in reproduction (termination, adoption etc.) and equity issues
- Contraception and pregnancy planning

Description

The scenario explores two women's pregnancy journeys.

The first woman is Nareen, a 32-year-old Indigenous Australian mother residing in a rural community and needing to navigate the healthcare system in pursuit of maternal care.

The second is Jessica, a Caucasian girl living in a small country town and is in year 9 at the local high school. It follows her journey as she discovers she's pregnant and must make important healthcare decisions.

SGS 1: Rural Health and Teenage Pregnancies

Aims:

This session aims to help the group to explore and understand the social and cultural issues that might impact a pregnancy in a rural or remote community. It will also explore the scenario of a teenage pregnancy.

During this session, the students will also choose their assignments and projects for this course.

Key concepts:

What social and cultural factors may influence the outcome of pregnancy?
- Social determinants of health in pregnancy
- Explore some of the relevant policies and policy needs
- Review the rural setting and specific challenges faced by mothers and infants in rural vs urban areas
- Link this with our growing understanding of the role of social determinants of health in maternal and child health.
- Rural health care and access issues; family and community support; choice; lack of anonymity/privacy; role of the rural GP; and rural culture
- Maternal responsibility, including nutrition, smoking, alcohol use and drug taking

Process:

Activities
1. Introducing yourself and setting ground rules
2. Introduction to the rural setting
3. Researching rural health statistics and Policies
4. Maternal health in rural and remote communities
5. Jessica's Story
6. Project and assignment choices
7. Materials needed for SGS 2

Activity 1. Introducing yourself and setting ground rules

Activity 2. Introduction to the rural setting
As a group, explore your understanding of rural and remote communities by answer the following questions.

What do you think of when you think about rural and remote communities?

What is defined as rural and remote?

Those living outside of metro areas often have poorer health outcomes compared with those living in metro areas. This is measured by comparatively high rates of hospitalisations, mortalities, risk of injuries, and lower access and utilisation of health care.

Discuss some of the factors that may contribute to these health inequalities.

Activity 3: Researching rural health statistics and policies
Using the information from the Australian Institute of Health and Welfare, compare rural and remote areas to major cities for the following categories. When you report the statistics back to the group, discuss the **social determinants that may influence these statistics.**

Profile of rural and remote Australians

1. First Nations People	
2. Age	
3. Education	
4. Employment and income	
5. Health risk factors	
6. Family, domestic and sexual violence	

7. Burden of disease

8. Deaths

9. Potentially avoidable deaths

Rural health policies

Government policies are continually being developed to try and address the health inequalities and differences in access to healthcare experienced by people living outside of major centres. Answer the following questions relating to three aspects of the Australian government strategies.

1. What is the Modified Monash Model?
a. What is it used for?
b. Why does population size not directly relate to funding?

2. **Stronger Rural Health Strategy – 2028 ***
   a. What is the aim of this strategy?
   b. What are the 3 themes the strategy targets?

3. **Higher education loan program debt reduction or elimination for doctors and nurses**
   a. What is the aim of this scheme?
   b. What are the eligible areas?

Activity 4: Maternal health in rural and remote settings
As a group discuss the following: What are factors that are going to influence maternal health in a rural setting?

Researching maternal health. Using the information from the Australian Institute of Health and Welfare, compare rural and remote areas to major cities for the following categories. You will have 5 minutes to research and discuss the statistics in your groups, following this you will have 2 minutes to report your findings to the class. In addition to reporting the statistics, also consider the data for limitations and influencing factors.

1. **How do fertility rates vary with degrees of remoteness?**

2. **How many children are born to teenage mothers?**

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3. **How have birth rates to teenage mothers changed over time?**

4. **How do teenage pregnancy rates differ across different population groups?**

Activity 5: Jessica's Story

Jessica, a Caucasian girl living in a small Australian country town and is in year 9 at the local high school. It follows her journey as she discovers she's pregnant and has to make important healthcare decisions.

Reflect on your impressions of the video. What did you think of the video, how did you react, what was interesting, what was unexpected, what was familiar etc.?

Recall your lecture from Foundations on intersectionality. Consider different components of Jessica's story and how things would be different if some of those circumstances were different.

1a. Using the Dahlgren and Whitehead determinants of health model

You will be familiar with the Dahlgren and Whitehead determinants of health model from Foundations. This model, also referred to as the Socio-ecological model, creates a good framework for summarising and comparing the social and cultural issues facing Jessica.

Dahlgren and Whitehead determinants of health model (a.k.a Socio-ecological model)

Image adapted from Dahlgren & Whitehead 1991.
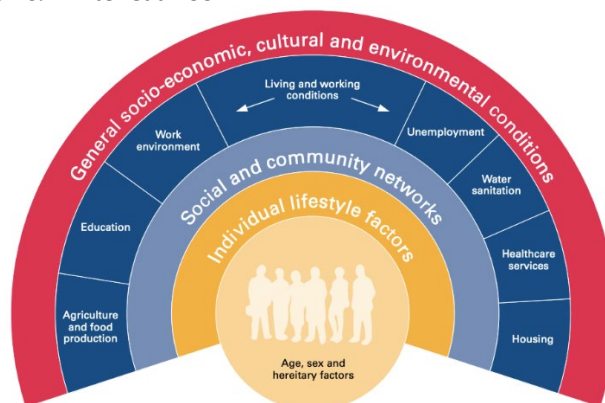
Using the Dahlgren and Whitehead determinants of health model, work in groups to complete one part of the following table and then share it with the rest of the class.

Factor	Jessica
Age, sex and constitutional factors	*15 year-old Caucasian female*
Individual lifestyle factors	
Social and community networks	
Living and working conditions	
General socio-economic, cultural and environmental conditions	

Activity 6. Review the project and assignment options
Registrations for all assignments and projects must be made by **4 pm, Friday 3rd May, 2024 (week 2)**.

Activity 7. Materials needed for SGS 2
In SGS 2, we will be to exploring the social and cultural issues that might impact pregnancy for Aboriginal and Torres Strait Islander populations. As preparation please read the following:
Brown, S. J., Gartland, D., Weetra, D., Leane, C., Francis, T., Mitchell, A., & Glover, K. (2019). Health care experiences and birth outcomes: Results of an Aboriginal birth cohort. *Women and Birth : Journal of the Australian College of Midwives*, *32*(5), 404–411. https://doi.org/10.1016/j.wombi.2019.05.015

Access: https://unsw.alma.exlibrisgroup.com/leganto/public/61UNSW_INST/citation/60916907390001731?auth=SAML

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SGS2: Aboriginal and Torres Strait Islander Maternal Health

Aims:

This session aims to help the group to explore and understand the social and cultural issues that might impact pregnancy in for Aboriginal and Torres Strait Islander populations. It will also explore Closing the Gap in Aboriginal and Torres Strait Islander social and health outcomes.

Key concepts:

- Understand Closing the Gap in Aboriginal and Torres Strait Islander Health Determinants
- Explore some of the relevant policies and policy needs
- Review Aboriginal and Torres Strait Islander health and specific challenges faced by mothers and infants
- Link this with our growing understanding of the role of culturally safe care in maternal and child health
- Culturally safe care and access issues; family and community support; Aboriginal Community Controlled Health Organisations
- Impacts of the Stolen Generations

Process:

Activities
1. Closing the Gap
2. Maternal health in Aboriginal and Torres Strait Islander communities
3. Review of plenary discussion and case study
4. Assignment and Projects finalising choices
5. Materials needed for SGS3

Activity 1: Closing the Gap

History of Closing the Gap
**The National Agreement on Closing the Gap*:*
The objective of the National Agreement on Closing the Gap is for Aboriginal and Torres Strait Islander people to work in collaboration with governments to overcome the inequity in life outcomes for their communities. The National Agreement on Closing the Gap (the National Agreement) has 17 national socio-economic targets across areas that have an impact on life outcomes for Aboriginal and Torres Strait Islander people. These targets relate to the following outcome areas; health and wellbeing, education, employment, justice, safety, housing, land and waters, languages, and digital inclusion.

Part A
Students will work in pairs and choose one of the 17 targets. Students should review the data attached to the chosen target/outcome and research the strategies currently being utilised to improve the outcomes of these indicators. Students will have 1-2 minutes each to report back to the rest of the class.

Students should spend 15 minutes researching outcomes and targets:
https://www.closingthegap.gov.au/national-agreement/targets

Now that you have learned about the current gaps in health and wellbeing outcomes for Aboriginal and Torres Strait Islander populations, reflect on the pre-reading for SGS2, and consider how that may impact the Close the Gap targets.

Part B
The pre-reading for this SGS discussed the impacts of racism on maternal healthcare for Aboriginal populations. Discuss with the group which of the Close the Gap targets this may impact.

Activity 2: Maternal health in Aboriginal and Torres Strait Islander communities

Australia has a long way to go in providing respectful and culturally appropriate childbirth care for Aboriginal and Torres Strait Islander women. This is particularly evident in the lack of clear guidelines and policies for culturally safe maternity care. Additionally, the following issues are consistently experienced by Aboriginal and Torres Strait Islander women who are giving birth.

- Few Aboriginal and Torres Strait Islander healthcare workers are available in hospitals.
- Pregnant women from remote areas often travel long distances to regional birthing centres.
- Hospitals lack interpreters for Aboriginal and Torres Strait Islander languages.

These factors all contribute to a healthcare system that may not be sensitive to the cultural needs and preferences of Aboriginal and Torres Strait Islander women during childbirth.

Culturally unsafe practices continue to be problematic for Aboriginal and Torres Strait Islander women, which can lead to negative experiences in healthcare settings. Shame, a complex concept in Aboriginal and Torres Strait Islander cultures, is a prime example. Shame arises from feelings of guilt and occurs when someone feels singled out, violates group norms, or breaches cultural obligations. In maternity care, a common source of shame is having male healthcare workers present during childbirth. This clashes with cultural traditions and can cause significant distress, as highlighted by Kruske et al. (2006). Unfortunately, providing female practitioners for all aspects of childbirth remains a challenge for many healthcare services, with limited incentives to address this cultural need.

Watch the following video: Episode 8: Jarjums' Story | Waijungbah Jarjums - https://vimeo.com/569187464

Identify strategies that could be implemented to improve culturally safe care for Aboriginal and Torres Strait Islander women in maternal health.

Kruske, S., Kildea, S., & Barclay, L. (2006). Cultural safety and maternity care for Aboriginal and Torres Strait Islander Australians. Women and Birth, 19(3), 73-77.
https://unsw.alma.exlibrisgroup.com/leganto/public/61UNSW_INST/citation/61047090080001731?auth=SAML

Activity 3: Review of Plenary discussion and case study

Reflect on the plenary and discuss what you have learned about culturally safe practice so far and how it relates to healthcare outcomes.

The National Collaboration Centre for Indigenous Health in Canada (2013) notes that culturally safe health care systems and environments are established by a continuum of building blocks:
Cultural awareness-> Cultural sensitivity-> Cultural competency-> Cultural Safety

What is cultural safety?

Cultural safety is about *how* care is provided, rather than *what* care is provided. It requires practitioners to deliver safe, accessible and responsive health care that is free of racism by:
- recognising and responding to the power imbalance between practitioner and patient
- reflecting on their knowledge, skills, attitudes, practising behaviours, and conscious and unconscious biases.

Two important aspects of culturally safe health care across the literature are, how it is *provided* and how it is *experienced*, and these form the basis for the monitoring framework (see AHMAC 2016; CATSINAM 2014; AIDA 2021; DHHS 2016; NACCHO 2011; DoH 2015).

How health care is <u>provided</u>. What might this encompass?

How health care is <u>experienced</u> by Indigenous people. What might this encompass?

Case study

This case study explores the experiences of Nareen, a 32-year-old Indigenous Australian mother residing in a rural community, as she navigates the healthcare system in pursuit of maternal care.

Nareen is a Wiradjuri woman, and has a strong connection to her culture, community, and Country. With a history of disparities in health outcomes among Indigenous Australians, Nareen's journey underscores the importance of understanding and addressing the unique needs and challenges faced by Indigenous individuals in the healthcare system. Upon discovering her pregnancy at 6 weeks gestation, Nareen sought prenatal care at the local mainstream healthcare clinic. Despite the clinic's efforts to provide inclusive care, Nareen encountered barriers rooted in cultural differences. The initial paperwork and communication materials were not tailored to her levels of health literacy and cultural needs, making it difficult for her to fully engage with the healthcare process.

Nareen's primary healthcare provider lacked cultural competence, leading to a lack of understanding regarding Indigenous cultural practices. The health professional didn't understand the significance of extended family involvement in pregnancy, or the significance of cultural protocols around Women's Business. The healthcare provider placed high significance on the biomedical aspects of Nareen's pregnancy, and appeared to disregard Nareen's cultural preferences, deeming them to be of lesser importance. This communication gap resulted in a failure to address Nareen's holistic needs, including the emotional and social aspects of her pregnancy.

Recognising the need for a more culturally responsive approach, the healthcare clinic referred Nareen to The Aboriginal Material and Infant Health Service (AMIHS). The AMIHS is delivered through a continuity-of-care model, where midwives and Aboriginal Health Workers collaborate to provide a high-quality maternity service that is culturally sensitive, women-centred, based on primary health-care principles and provided in partnership with Aboriginal people.

Although referring Nareen to AMIHS was the best outcome in this situation, services like these are not always available. There are changes that mainstream health services can implement in order to provide better, and more culturally safe care for Indigenous women.

As a group consider create a list of some changes that could be implemented.

Consider Nareen's story, as a class discuss the differences between a culturally safe experience for her and the mainstream approach.

Activity 4. Assignment and Projects finalising choices

Registrations are due at the end of this week!

Activity 5. Materials needed for SGS 3

In SGS 3, we will be undertaking some peer-teaching designed to reinforce your understanding of the physiology of the male and female reproductive systems.

As preparation for SGS 3, all students should make sure they have reviewed the following lectures:
"Physiology of male reproduction" and "Physiology of female reproduction" presented by Dr Trevor Lewis
Ensure you have access to the notes for these lectures.

SGS 3: Physiology of reproduction

Aim:

The main activity in this session is designed to reinforce the basic physiology of the reproductive system in males and females. Students will also discuss the estimation of delivery dates.

Key concepts:

- Male reproduction – actions of testosterone, control of spermatogenesis and testosterone secretion
- Female reproduction – control of reproductive cycle, follicular phase of cycle, luteal phase of cycle, actions of estrogen
- Estimated date of delivery

Process:

Activities
1. Physiology of reproduction
1a. Working on allocated question
1b. Presenting answers to the scenario group
2. Calculating the estimated date of delivery (EDD)
3. Preparation for SGS 4
4. Progress reports for projects and assignments

Activity 1. Physiology of reproduction
There are four different questions in the worksheet. Students should attempt to answer the questions using their lecture material and textbooks.

Activity 1a. Working on allocated questions
Students will have about 20 minutes in total in which to research and answer their questions, and then to get the answer to their allocated question in a format that they will present to the rest of the group. Groups need to use this time to prepare any diagrams or graphs they wish to use for peer-teaching to the rest of the SG (either on the whiteboard or in PPT) so they are ready to present efficiently.

Activity 1b. Presenting answers to the scenario group

WORKSHEET

QUESTION 1
Q1a. Match the following.

epididymis	Sertoli cells	Leydig cells
urethra	rete testes	testis

i. _____ site for storage and maturation of sperm.

ii. _____ nurture sperm.

iii. _____ produce testosterone.

iv. _____ contains small, mucus-secreting glands.

v. _____ is the site of spermatogenesis.

vi. _____ structures into which the seminiferous tubules drain.

Q1b. What do the secretions from the following structures contain and what are the functions of these substances? Approximately what percentage of semen volume does each accessory gland contribute?

      i.   seminal vesicles

      ii.   prostate

      iii.   bulbourethral glands

QUESTION 2

Q2a.

i) Using a flow diagram, describe the control of spermatogenesis and testosterone secretion. Ensure you denote any feedback loops as being positive (stimulatory) or negative (inhibitory). Make some explanatory notes so that you are able to take the SG group through this diagram step by step.

•

ii)   Indicate what occurs to this feedback system if there is an excess of testosterone.

iii)   Indicate what may happen to the feedback if there is damage to the testes and spermatogenesis is decreased.

Q2b

i) Where is testosterone produced in the human male?

ii) Some of the actions of testosterone and its two active metabolites (estradiol and 5α-dihydrotestosterone, DHT) are listed in the table below. Match these with the hormone responsible.

Action	Hormone
Embryonic sexual differentiation	
Pubertal changes:	
Beard growth	
Prostatic enlargement	
Enlargement of the penis and seminal vesicles	
Stimulation of sebaceous gland activity at puberty (causing acne)	
Enlargement of the larynx	
Spermatogenesis	
Skeletal muscle growth	
Accumulation of abdominal visceral fat	
Fusion of epiphyseal plates (growth plates) in long bones	
Haematopoiesis	
Suppression of gonadotropin secretion	
Libido	

QUESTION 3

Q3. Complete the following diagram of events occurring during a 28-day menstrual cycle to show:

    i)   Plasma hormone levels throughout the cycle (Graph A: estrogen, progesterone, LH and FSH; Graph B: inhibin A and inhibin B)

    ii)   The names of the 2 ovarian structures circled

    iii)   The names of the ovarian and uterine cycle phases

    iv)   The secretion at 'X' and the structures at 'Y'

    v)   Plasma hormone levels throughout the cycle (Graph A: estrogen, progesterone, LH and FSH; Graph B: inhibin A and inhibin B)

    vi)   The names of the 2 ovarian structures circled

_____

    vii)   The names of the ovarian and uterine cycle phases

_____

_____

    viii)   The secretion at 'X' and the structures at 'Y'

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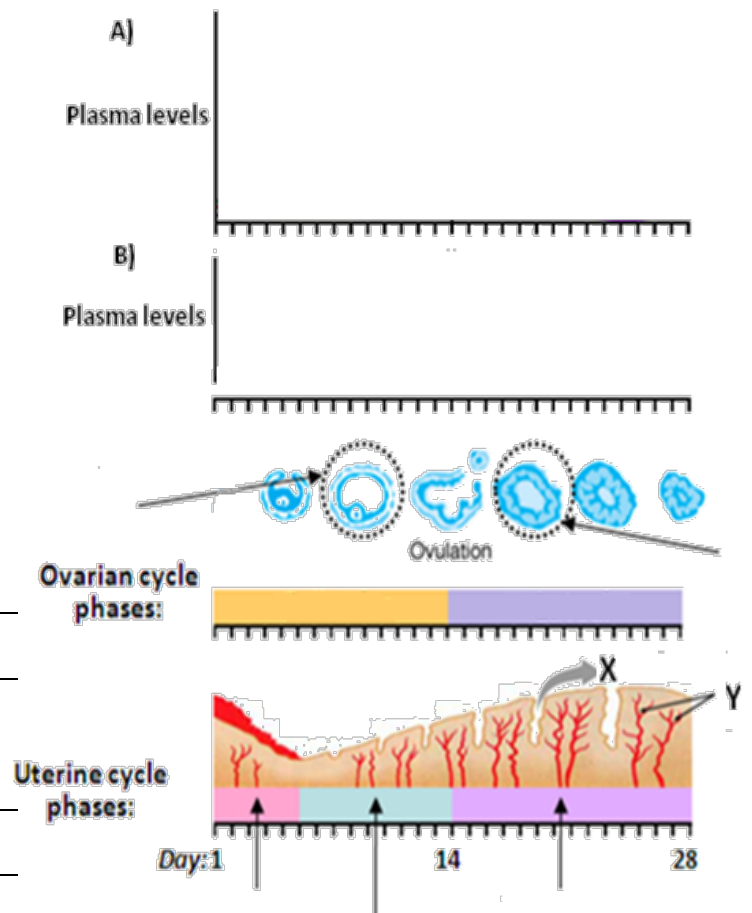
QUESTION 4

i) Explain the rise in estrogen levels during the first half of the cycle. What cells produce estrogen and where does its precursor come from? Use diagrams of the follicular cells (the two cell model) and of the feedback mechanisms from your lecture to aid your explanation.

Early follicular phase:

Late follicular Phase:

ii) Why does the dramatic mid-cycle spike in LH and FSH occur?

iii) What structure and cell type produce progesterone and estrogen during the second half of the cycle?

Activity 2. Calculating the estimated date of delivery (EDD) –
Students are to answer the following questions at the end of their worksheet.
Online pregnancy wheel is available at:
http://www.premierus.com/dynamic-pregnancy-wheel
http://www.prokerala.com/health/pregnancy/pregnancy-wheel/

A.	**Why is it important to estimate delivery dates?**
B.	**How is the EDD calculated and what information would you need from a pregnant woman to calculate her EDD? How accurate is this estimate?**
C.	**You calculate a patient's EDD to be the 20th October 2024. You then find that her menstrual cycle is usually 35 days long. How will you adjust your estimate?**
D.	**Use the pregnancy wheels to work out the expected date of delivery if the patient's last menstrual period was on the 4th March 2024.**

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Activity 3. Preparation for SGS 4
In SGS 4, we will be looking at Natural Family Planning (NFP) and other methods of contraception.

1. Completion of a sympto-thermal chart for SGS 4
Students are to complete a sympto-thermal chart using the data given below (chart on next page). The interpretation of this chart will be discussed in SGS 4.

Temperature recordings

Day 1	36.8°C	Day 16	36.6°C
Day 2	36.7°C	Day 17	36.9°C
Day 3	36.6°C	Day 18	37°C
Day 4	36.7°C	Day 19	36.9°C
Day 5	36.6°C	Day 20	36.9°C
Day 6	36.7°C	Day 21	37°C
Day 7	36.7°C	Day 22	36.9°C
Day 8	36.6°C	Day 23	37°C
Day 9	36.6°C	Day 24	36.9°C
Day 10	36.7°C	Day 25	36.9°C
Day 11	36.7°C	Day 26	36.8°C
Day 12	36.6°C	Day 27	36.9°C
Day 13	36.6°C	Day 28	36.8°C
Day 14	36.7°C	Day 29	36.8°C
Day 15	36.6°C	Day 30	36.5°C

Cervical Secretions

Day 1 - Day 5	period
Day 6 - Day 9	dry, no secretions
Day 10 - Day 13	thick, cloudy, sticky mucus
Day 14 - Day 16	wet, slippery, transparent and stretchy mucus
Day 17 - Day 19	thick, cloudy, sticky mucus
Day 20 – Day 29	dry, no secretions
Day 30	period

Cervix

| Day 6 – Day 11 | low, firm, closed |
| Day 12 – Day 17 | high, soft, open |

Shortest cycle in last 6 cycles = 28 days

Other facts: Patient experienced some abdominal pain on day 16

Natural Family Planning Chart

Name

Age

Chart #

Month & Year

CYCLE LENGTH

# of days in shortest of last six cycles

minus 19 =

Draw a vertical line before this day

Length of this cycle =

TEMPERATURE

Time of taking temperature:

Basal Body Temperature °C

38.0 .1 .9 .8 .7 .6 .5 .4 .3 .2 .1
37.0 .9 .8 .7 .6 .5 .4 .3 .2 .1
36.0 .9

MENSTRUAL CYCLE DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Circle day of intercourse																																								
Date																																								

CERVICAL SECRETIONS (Feel, look & touch)
- Wet, slippery, transparent or stretchy
- Thick, cloudy or sticky
- Dry, no secretions seen or felt
- Period

CERVIX
- High, soft, open
- Low, firm, closed

COMMENTS
- Disturbances, schedule changes, etc.

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2. Pre-reading homework for SGS 4: Background information on the menstrual cycle and fertility awareness:

UNDERSTANDING THE BASICS OF NATURAL FAMILY PLANNING
Natural methods of family planning use fertility awareness to identify the fertile and infertile phases of a woman's menstrual cycle. This involves observing the natural signs and symptoms or clinical indicators of fertility.

Fertility awareness involves
- Understanding basic information about fertility and reproduction.
- Identifying the signs and symptoms of ovulation during the woman's menstrual cycle.
- Applying this information to oneself, discussing it with a partner, and with health professionals.

Uses of fertility awareness
Helping to conceive: Fertility awareness can help couples to maximise their chances of conception, by recognising signs of ovulation and optimising the timing of intercourse.

Helping to avoid pregnancy: Couples can also learn to identify the fertile and infertile phases of the cycle and to abstain from intercourse during the fertile phase if pregnancy is to be avoided. This is the basis of Natural Family Planning (NFP) methods of contraception, which is also sometimes referred to as Fertility Awareness Methods (FAM) of contraception.

Several techniques have been developed to identify fertile days. These include the calendar or rhythm method, standard days method using cycling beads (particularly useful for women in areas of the world with low literacy), basal body temperature method and the Billings technique (using changes in cervical/vaginal secretions that reflect the hormonal swings of the menstrual cycle). The most effective technique is the sympto-thermal technique. This method requires observation of more than one clinical indicator of fertility (usually a combination of waking temperature and cervical mucus) and may add other potential signs and symptoms to detect ovulation like cervical signs, and minor indicators of fertility (see below). This ensures the highest degree of effectiveness in avoiding pregnancy.

When motivated couples are taught by experienced teachers, natural methods can be up to 99% effective. (Range 75-99% effective – Family Planning NSW; https://www.fpnsw.org.au/health-information/contraception/fertility-awareness-based-methods-contraception-lactational)

Pertinent features of male and female reproductive physiology
To avoid or achieve a pregnancy, you need to be aware of some of the pertinent features of the male and female reproductive tracts.

Features of MALE fertility pertinent to NFP:
- Men are always potentially fertile, whereas a woman's fertility depends on where she is in her cycle.
- Sperm are produced continuously by the testes.
- At ejaculation, between two and six millilitres of seminal fluid is released, containing 50-150 million sperm per millilitre.
- Sperm may survive for up to 3-5 days in the female reproductive tract, in the presence of fertile mucous. Sperm penetration requires "sperm friendly" cervical mucous.
- When a woman is in the infertile phase of her cycle, sperm penetration is prevented by the mucous plug blocking the cervix. Sperm remaining in the vagina are destroyed within hours by the acidity of the vaginal secretions.

Features of FEMALE fertility pertinent to NFP:
- Cycles vary in length from 23 days or less in a short cycle, to over 35 days in a long cycle. Few women have an absolutely regular menstrual cycle, and a variation of up to 7 days is perfectly normal. For convenience, we generally use an average length cycle of 28 days.
- The reproductive cycle may be conveniently divided into two phases - the phase before ovulation (pre-ovulatory or follicular) and the phase after ovulation (post-ovulatory or luteal).

Pre-ovulatory phase / follicular phase – controlled by FSH and estrogen

FSH (follicle-stimulating hormone) is secreted by the anterior pituitary gland and stimulates follicular growth and development. These developing follicles produce increasing amounts of estrogen. The rising estrogen levels cause the following changes within the female reproductive tract:

- The **endometrium:**   proliferates and becomes thicker.
- The **cervix:**   becomes higher, softer and open (see figure 1 below).
- The **cervical mucus:**   becomes thinner and more watery (see figures 1 & 2 below). It is said to be more "sperm-friendly". It contains more salts, sugar and amino acids to nourish sperm. The mucus volume may increase up to 10-fold. Highly fertile mucus is 98% water and is transparent, glistening, slippery and stretchy. The *Spinnbarkeit effect* is the property that allows cervical mucus to be stretched or drawn into a thread. It can be estimated by stretching a sample of cervical mucus and measuring the maximum length of the thread before it breaks. At ovulation, spinnbarkeit usually exceeds 10 cm. Fertile mucus gives a ferning pattern when dried on a glass slide. When examined by nuclear magnetic resonance this mucus shows a loose network which aids sperm penetration.
- **Body temperature**:   is unchanged.

When the increase in estrogen levels becomes high enough, the anterior pituitary gland is stimulated to release a surge of LH (luteinising hormone) which leads to ovulation within 36 hours.

Post-ovulatory phase / luteal phase – controlled by progesterone

Following ovulation, luteinising hormone (LH) causes the ruptured follicle to develop into the corpus luteum which produces both progesterone and estrogen. In this phase, progesterone causes the following changes within the female reproductive tract:

- The **endometrium:**   secretes glycogen-rich fluids (called "uterine milk") in preparation for the implantation of a fertilised ovum.
- The **cervix:**   becomes lower, firmer and closed (see figure 1 below).
- The **cervical mucus:**   becomes thicker and sticky (see figures 1 & 2 below). This mucus is described as "hostile" as it prevents sperm penetration. It contains a dense network of filaments that form a thick sticky mucus plug which impedes sperm penetration. Sperm are rapidly destroyed by the acidic vaginal environment.
- **Body temperature:**   increases by at least 0.2°C, but it may be more.

The corpus luteum remains for around 14 days, then it regresses. At the end of the cycle, the levels of estrogen and progesterone are low, the temperature drops and the endometrium is shed causing menstrual bleeding.

Figure 1. Changes During the Fertility Cycle
(*adapted from "The Menstrual Cycle" pdf found at* http://www.fertilityuk.org *)*

FSH causes the development of the egg follicles, which in turn produce estrogen. As the estrogen levels rise this causes a surge in LH which triggers ovulation (total egg survival time is around 48 hours).

After ovulation the collapsed follicle (corpus luteum) produces progesterone.

Estrogen and progesterone cause observable changes in the cervical secretions, temperature and cervix – the indicators of fertility.

The period is the shedding of the endometrium.

Approaching ovulation the cervix produces secretions which nourish the sperm and help them to swim towards the egg.

After ovulation the secretions form a thick plug blocking sperm penetration. The endometrium thickens ready for pregnancy.

Estrogen and progesterone cause subtle changes in the cervix. It changes from low, firm, closed and tilted (at the infertile time) to high, soft, open and straight at the fertile time. After ovulation the cervix changes back to low, firm, closed and tilted again (infertile state)

The cervical secretions change throughout the cycle. At first they feel moist or sticky and appear white or cloudy. Then they become wetter, transparent, slippery and stretchy (the most fertile time). After ovulation, the secretions change back to sticky then dry again.

Sperm can fertilise a woman's egg for up to one week after sex when secretions are present. Allowing for the lifespan of the egg, the fertile time lasts around 9 days.
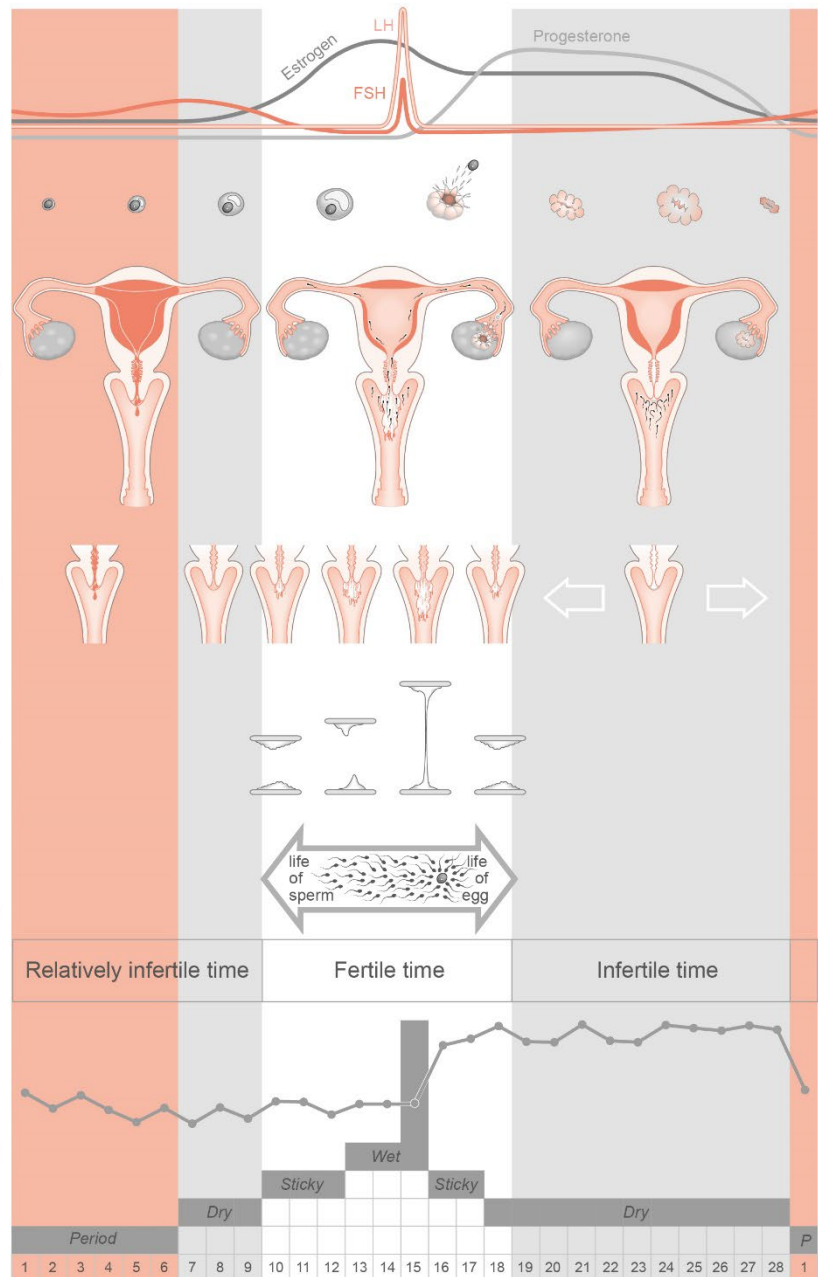
The days before the fertile time starts are only relatively infertile. The days after the fertile time ends are infertile - the safest time to have intercourse for pregnancy avoidance.

The menstrual cycle is measured from the first day of one period until the day before the next period starts (28-day cycle shown here).

The waking temperature rises by approximately 0.2 degrees centigrade after ovulation. It stays at the higher level until the start of the next period.

A woman who is planning pregnancy has the highest chance of pregnancy when the secretions are wet, transparent, slippery and stretchy.

A woman who is avoiding pregnancy must consider that *any* secretions are potentially fertile.

Relatively infertile time | Fertile time | Infertile time

life of sperm — life of egg

| Period | Dry | Sticky | Wet | Sticky | Dry | P |
| 1 2 3 4 5 6 | 7 8 9 | 10 11 12 13 14 15 | 16 17 18 | 19 20 21 22 23 24 25 26 27 28 | 1 |

Figure 2. Changes in the properties of cervical mucus during the menstrual cycle
(*Taken from Johnson, M.H. (2007). Essential Reproduction (6th ed). Blackwell, Malden, MA; Chapter 8, Figure 8.5, page 153*)
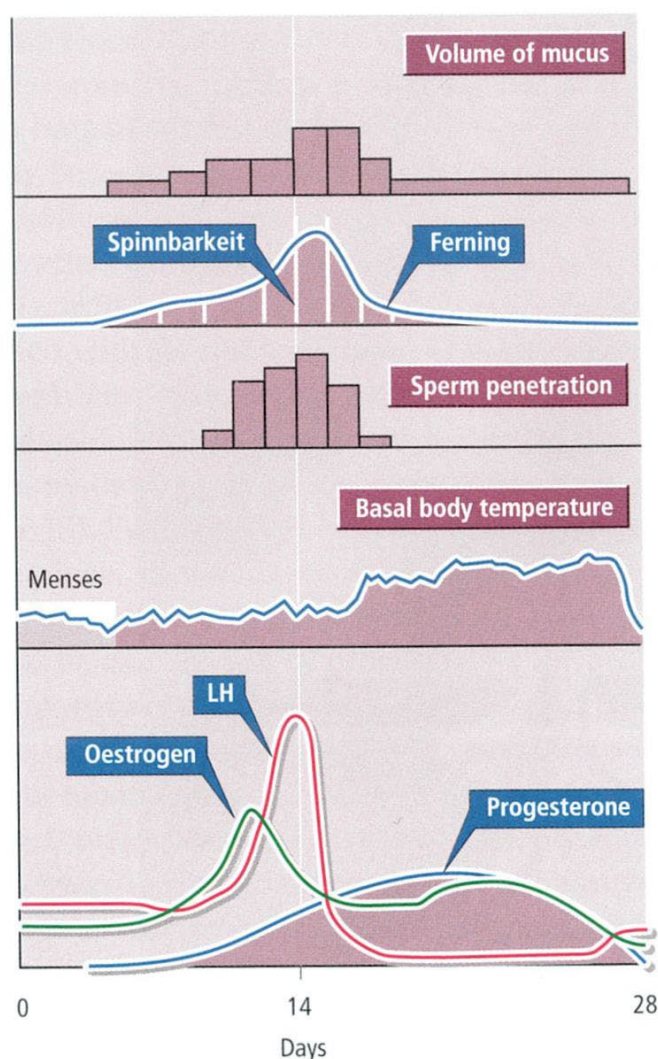

Fig. 8.5 Schematic view of changes in properties of cervical mucus at various days of the human cycle (blood hormone levels and basal body temperature shown). Parameters changing under the influence of high oestrogen and low progesterone are: volume of mucus; spinnbarkeit of mucus (bar height illustrates relative length to which mucus thread can be stretched before snapping); ferning (curve illustrates proportion of crystallized mucus that shows a ferning pattern when dried on a slide); and *in vitro* tests of the ability of spermatozoa to penetrate mucus. Note luteal oestrogen does not induce changes due to elevated progesterone at the same time. Progestagenic contraceptives, including the emergency 'morning-after' pill, prevent or reduce normal periovulatory changes. LH, luteinizing hormone.

The cyclic phases of fertility and infertility
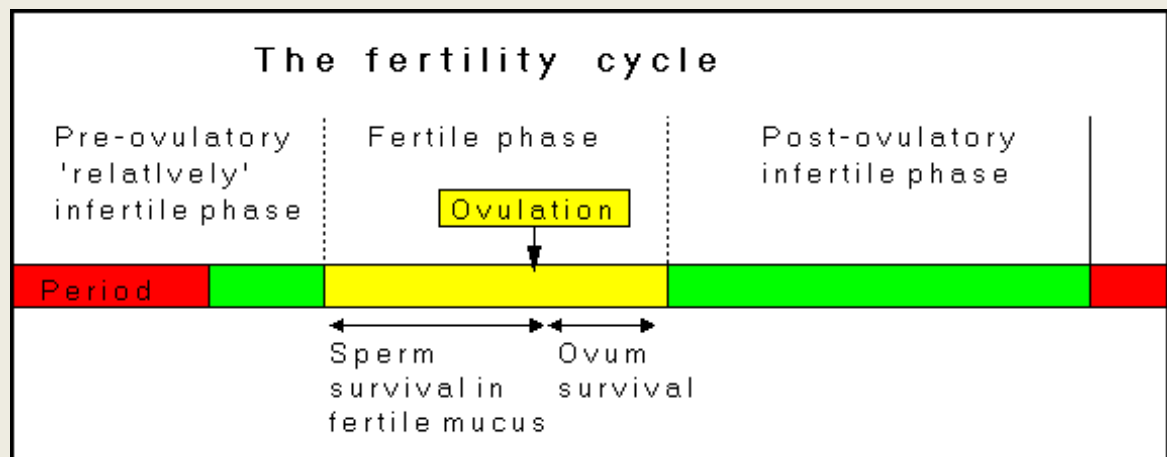
The fertility cycle figure above illustrates an average fertility cycle of 28 days.

The first day of menstruation is day 1 of the cycle. Subsequent days are numbered up to but not including the first day of the next menstrual period. As can be seen in the figure above, a number of infertile days follow menstruation – this is the *pre –ovulatory 'relatively' infertile phase*. The *fertile phase* occurs on either side of ovulation. The first sign of cervical mucus designates the onset of the fertile phase, because sperm can survive in fertile mucus for 3-5 days awaiting ovulation. After ovulation, time must be allowed for ovum survival (about 2 days) and the possibility of a second ovulation occurring within 24 hours. The *post-ovulatory infertile phase* is confirmed by a combination of temperature and mucus signs about three days after ovulation. This phase lasts until the onset of the next menstrual period. The post-ovulatory infertile phase is the most effective in avoiding pregnancy.

Variations in cycle length
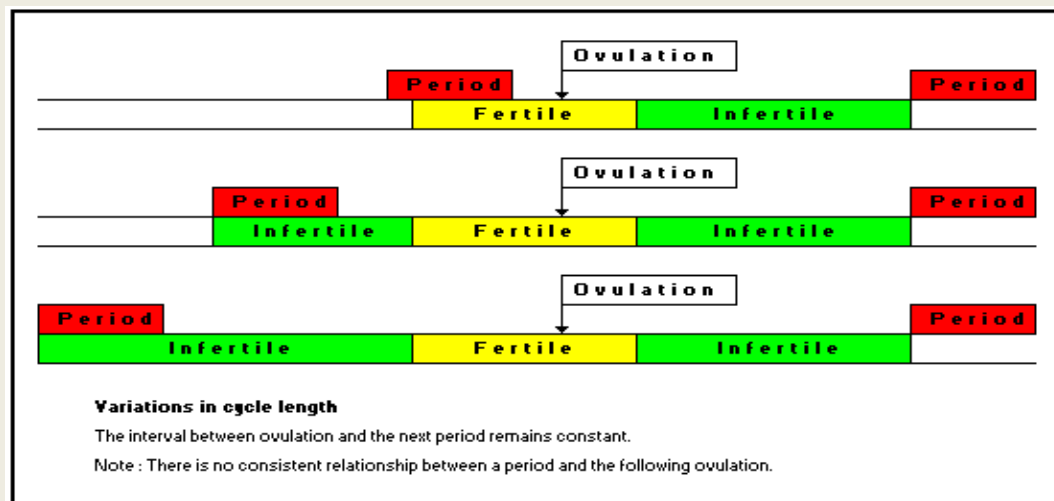
In a "classic" 28-day cycle, ovulation usually occurs around day 14, but few women consistently have 28-day cycles and this is normal. A variation in cycle length of up to 7 days is still considered regular.

As can be seen in the above figure, the post-ovulatory phase or interval between ovulation and the next menstrual period remains fairly constant at around 14 days. When there is variability in cycle length, this is due to variation in the pre-ovulatory phase or the interval between menstruation and ovulation.

In a short cycle of 21 days, ovulation will occur around day 7 and there will be no pre-ovulatory infertile days. With a normal length cycle (around 28 days) there will be a few pre-ovulatory relatively infertile days prior to the onset of fertility. In a long cycle (for example 35 days) where ovulation does not occur until around day 21, there will be many pre-ovulatory relatively infertile days prior to the onset of fertility.

MONITORING PHYSIOLOGICAL CHANGES

A woman learns to monitor her fertility cycle subjectively by observing physiological changes, using a combination of indicators of fertility that reflect changes in the ovarian hormone levels and fertility status.

Indicators of fertility

1. The waking temperature:

- Progesterone (from the corpus luteum) causes a slight increase in waking temperature; this is used to confirm ovulation.
- To be able to detect the subtle change, the temperature must be taken immediately on waking, before getting out of bed i.e. prior to undertaking any activity, or consumption of food or drink.
- Ideally, it should be taken at about the same time each morning.
- The temperature can be taken either orally, vaginally or rectally (usually orally). Importantly, the same site should be used each day.
- The temperature reading must be clearly marked on a reliable recording system; specially designed fertility charts are recommended and can be downloaded from websites like fertilityuk.org in Excel format.
- **Ovulation is confirmed by a temperature rise of at least 0.2°C that is maintained.** The temperature rise helps to identify the end of the fertile period.
- A sustained rise in temperature for 3 days indicates 48 hours past ovulation and determines the onset of the post-ovulatory infertile phase.
- The **rule of 3 over 6** states that there must be three undisturbed high temperatures above the level of the previous six daily temperatures. The shift can be as small as 0.1°C but one of the three high temperatures should be at least 0.2°C above the level of the previous six. **The post-ovulatory infertile phase begins after the third high temperature has been recorded.**
- It is important to note that temperature readings give no indication of the onset of the fertile phase and the temperature is of no value in timing intercourse to achieve pregnancy. However, it is valuable in confirming that ovulation has occurred and thus when the post-ovulatory infertile phase begins. Also, if the temperature remains elevated at the time of the next expected menses, this is a good early indicator of pregnancy.
- Note: Using information from at least 6 cycles, the first fertile day of the cycle can be estimated using the **Doering rule**. The Doering rule is that the day of the earliest temperature shift minus 7 gives the first fertile day of the cycle.

2. Cervical mucus changes:

- Cervical mucus changes are observed at the vulva (vaginal entrance) and are recorded at the end of each day.
- Mucus changes can also be observed at the cervix - mucus may appear here one day before its appearance at the vulva.
- Cervical dryness is an indicator of the infertile phase.
- A sensation of moistness or dampness indicates potential fertility.
- A sensation of wetness, slipperiness and the presence of transparent, slippery, stretchy mucus indicates maximum fertility. This is the most valuable indicator for any woman experiencing difficulty conceiving.
- **Peak day** is the last day of highly fertile-type mucus recognised retrospectively. Peak day coincides closely with ovulation. Following peak day there is a rapid return to dryness until the next menstruation.
- Developing awareness of cervical mucus changes takes time and persistence. These changes may be masked by seminal fluid, spermicide or vaginal infections, so it is vital that a woman receives adequate teaching and support to monitor this sign.

3. Changes in the cervix:

- Detecting cervical changes can give additional information and is particularly useful for women with very long cycles, during breast-feeding or pre-menopausally.
- However, it is something that women and even clinicians find very difficult to assess and its usefulness is therefore doubtful.
- The first change in the cervix is frequently noted one or two days prior to changes in cervical mucus, and can give a very early warning of approaching fertility.
- A low (i.e. closer to the vagina; can be more easily reached), long, tilted, firm, closed, dry cervix indicates infertility.
- A high, short, straight, soft, open, wet cervix indicates fertility.

4. Recording cycle length / calendar calculations:

- While there is always a risk of pregnancy from intercourse in the early part of the cycle, a personalised calculation based on past cycle lengths can help to identify the start of the fertile time and improve the effectiveness of fertility awareness methods.
- Some couples choose to use a calendar calculation based on past cycle length as a backup for physiological monitoring.
- The cycle length should be measured from the first day of a period (fresh red bleed) up to, but not including the first day of the next period. Any spotting prior to a period should be included in the previous cycle (pre-menstrual). This helps to determine the length of the pre- and post-ovulatory phases more accurately.
- The calendar calculation is based on the fact that ovulation occurs 12-16 days before the following menstruation regardless of cycle length.
- From a record of at least the previous 6 cycles, the lengths of the shortest and longest cycles are noted.
- The following formulae allow 3 days for sperm viability in the female genital tract and 2 days for the life of the ovum, and take into account that ovulation may occur on any of 5 days in each cycle:

  Shortest cycle minus 20 days = last infertile day. For many women, this calculation will determine the end of the pre-ovulatory infertile phase a day or two before the warning given by the first mucus symptoms. **Longest cycle minus 10 = last fertile day**.

4. Minor indicators of fertility:

- Ovulation or Mittelschmerz pain - a sharp pain or dull ache on one side of the lower abdomen for up to a few hours.
- Breast symptoms – a characteristic tenderness or tingling sensation may be experienced around ovulation.
- Increase in libido – some women report increased libido when they are most fertile.
- Note that these are the least reliable indicators but may be useful for some women to confirm other observations.

Disturbances affecting cycle or recordings of fertility indicators:

When using NFP, any disturbance or change from normal routine should be noted. Some disturbances affect specific indicators of fertility while others cause more generalised disruption to the menstrual cycle. Disturbances include:

- Alcohol
- Late night, disturbed sleep, oversleeping
- Holidays, travel, particularly air travel and crossing time zones
- Shift work, particularly night shifts
- Daylight saving / changing the clocks
- Stress and anxiety
- Rapid weight loss or gain
- Intensive exercise
- Illness: acute or chronic
- Some medications
- Abnormal vaginal discharge
- Gynaecological conditions such as polycystic ovary syndrome (PCOS)

Some women will be more affected by common disturbances than others. With appropriate support most women will learn to define their limits of fertility while recognising the effects of disturbances on the cycle.

Activity 4. Progress reports for projects and assignments

Discuss with your faciliator any issues with assignment and project choices.

SGS 4: Fertility awareness and contraception

Aims:

The first part of this small group session aims to make students aware of the natural signs and symptoms which can be used to indicate the most fertile and relatively infertile phases of a woman's menstrual cycle. This information can be used by couples either to increase the likelihood of a successful pregnancy or to avoid pregnancy. The use of these indicators to avoid pregnancy is the basis of Natural Family Planning/Fertility Awareness Methods. The second part of this session aims to introduce students to the main contraception methods that are available and to develop an understanding that an individual's contraceptive needs may change depending on his/her personal characteristics, circumstances, and the context of use.

Key concepts:

- What fertility awareness involves and how it is used
- Relevant features of male and female fertility, changes that occur under the influence of estrogen and progesterone
- Monitoring physiological indicators of fertility
- Interpretation of a sympto-thermal chart
- Using the indicators of fertility to plan or avoid a pregnancy
- Protection from pregnancy versus safe sex
- Contraception comes in many forms, each with their own particular advantages and disadvantages
- Attributes of the 'ideal' contraceptive
- Different people have different contraceptive needs

Process:

Activities
1. Fertility awareness and natural family planning
a. Overview and questions based on pre-reading
b. Interpretation of a sympto-thermal chart (chart completed before class)
2. Contraception
a. Why learn about contraception and sexual health?
b. Role play of contraceptive options
c. Discussion of the "ideal" contraceptive
d. Mini case studies in contraception
3. Preparation for SGS 5 (peer teaching activity)

Activity 1. Fertility awareness and Natural Family Planning
1a. Overview and questions based on pre-reading

Key Concepts of Fertility awareness and natural family planning:
Fertility awareness involves:
- Understanding basic information about fertility and reproduction.
- Identifying the signs and symptoms of ovulation during the woman's menstrual cycle.
- Applying this information to oneself, discussing it with a partner, and with health professionals.

Uses of fertility awareness:
Helping to conceive: Fertility awareness can help couples to maximise their chances of conception, by recognising signs of ovulation and optimising the timing of intercourse.

Helping to avoid pregnancy: Couples can also learn to identify the fertile and infertile phases of the cycle and to abstain from intercourse during the fertile phase if pregnancy is to be avoided. This is the basis of Natural Family Planning (NFP) methods of contraception, which is also sometimes referred to as Fertility Awareness Methods (FAM) of contraception. Note that this session does not seek to advocate the use of NFP as a reliable contraceptive, but NFP is a very useful way to introduce students to fertility signs.

Several techniques have been developed to identify fertile days. These include the calendar or rhythm method, standard days method using cycling beads (particularly useful for women in areas of the world with low literacy), basal body temperature method and the Billings technique (using changes in cervical/vaginal secretions that reflect the hormonal swings of the menstrual cycle). The most effective technique is the sympto-thermal technique. This method requires observation of more than one clinical indicator of fertility (usually a combination of waking temperature and cervical mucus) and may add other potential signs and symptoms to detect ovulation like cervical signs, and minor indicators of fertility. This ensures the highest degree of effectiveness in avoiding pregnancy.

Questions based on pre-reading
Answer the following questions based on the pre-reading you did as homework.

Q1.	**What are the three phases of the fertility cycle?**
Q2.	**What is the effect of estrogen on cervical secretions?**
Q3.	**What is the effect of progesterone on cervical secretions?**
Q4.	**What is peak day? What event in the cycle is it associated with?**
Q5.	**True or false: when reproductive cycles vary in length, it is the pre-ovulatory / follicular phase that constitutes the variable phase of the cycle.**

Q6. One of the indicators of fertity is the waking temperatue. How does temperature help to indicate the onset of the fertile phase?

Q7. If the waking temperature remains elevated at the time of the next expected menses, what does this suggest?

Q8. You have carefully recorded the length of your menstrual cycle for the previous 6 cycles: your longest cycle was 35 days and your shortest cycle was 32 days. Use the calendar calculation to identify your fertile phase.

1b. Interpretation of a sympto-thermal chart (chart completed before class)

Examine the sympto-thermal chart that you completed for homework and answer the following questions.

1. On what day has ovulation occurred?

2. **Which day marks the start of the fertile phase? Explain how you arrived at this conclusion.**

3. **Which day is peak mucus day?**

4. **Which day confirms the post-ovulatory infertile phase? Until when does this phase last?**

Completed sympto-thermal chart showing correlation between all indicators of fertility

Activity 2. Contraception
2a. Why learn about contraception and sexual health?
Discuss why students need to learn about contraception and sexual health

2b. Role play of contraceptive options
Students will be divided into small groups and assigned a contraception method from the kit. Within your groups you are to develop a small roll play to present to the class. The scenario for the role play is a 18 and 19 year old couple visiting a doctor wanting advice on contraception. The student playing the doctor must describe the contraception and how it is to be used correctly. Students should discuss efficacy rates and some factors that could cause the difference between perfect and typical use efficacy rates. The students playing the young couple must discuss with each other and the doctor the advantages and disadvantages of this method.

Groups:
- Male condom *NB: this group will need to demonstrate putting one of the provided out of date condoms on the banana model. Ensure in their prep time they practice this and are comfortable to demonstrate.*
- Natural family planning
- Long acting reversible contraceptives (both copper and hormonal IUD)
- Shorter acting hormonal methods (both combined and mini pills)

Barrier Methods
Male condom:
- Thin, soft sheath to be used when penis is erect.
- Works by collecting ejaculated semen, so that the sperm cannot reach the uterus.
- Also provides a barrier to prevent the transmission of sexually transmitted infections (STI)s through skin to skin contact or the transfer of body fluids.
- Most common type is a fine latex rubber sheath, but non-latex condoms made from other materials including polyisoprene are also available.
- Most condoms are already lubricated. Extra water-based lubricant can also be used on the outside of the condom. Oil-based lubricants and products may impair the integrity of the latex.
- Single use; a new condom should be used for each time having sex.
- 98% effective at preventing pregnancy when they are used perfectly (i.e. correctly, every time). 88% effective with real life or "typical" use (i.e. when not always used correctly and consistently by the average person) i.e. approximately 12 women in every 100 may fall pregnant in a year
- No side effects, except if you are allergic to latex rubber or to the lubricant. In this case, non-latex condoms can be used instead.

Advantages?	Disadvantages?

Other barrier methods: include the female condom, diaphragm, cervical cap and sponge. Some of these may be in the contraceptive box in the SG. Notes on these are included in the contraceptives summary that will be made available in Moodle after all groups have completed SGS 4.

Natural Methods
Natural Family Planning (NFP)/Fertility Awareness Methods
- Based on identifying the fertile days of the menstrual cycle to avoid a pregnancy [discussed in detail in the first part of this SGS (activity 1A)]
- Natural Family Planning methods include:
  - symptoms-based methods that involve identifying one or more indicators of fertility such as basal body temperature, cervical mucus secretions and cervical changes e.g. the basal body temperature method, the cervical mucus method (Billings technique) and the sympto-thermal method, and
  - calendar-based methods such as the calendar / rhythm method that involves monitoring the days of the menstrual cycle and calculating the fertile days using the dates of previous months' cycles.

How effective are Natural Family Planning methods?
- Effectiveness of these methods relies on the motivation to avoid a pregnancy and the type of method used.
- Advice from an expert educator is recommended.
- The first years use always carries the highest risk of unplanned pregnancy due to the time taken for a couple to learn to use the method effectively.
- If correctly used every time these methods are 75 – 99% effective.
- The sympto-thermal method is the most effective of the Natural Family Planning methods. Several studies of the sympto-thermal method have reported a user effectiveness rate of 99% if used correctly. However, perfect use is difficult to achieve.

Advantages?	Disadvantages?

Other natural methods: include lactational amenorrhoea and withdrawal. Notes on these are included in the contraceptives summary that will be made available in Moodle after all groups have completed SGS 4.

Long-acting reversible contraceptives (LARCs)
Intrauterine devices (IUDs)
Also known as intrauterine contraceptive devices (IUCDs), these are a form of long-acting reversible birth control (LARC). IUDs are small devices placed inside the uterus by a doctor to prevent pregnancy. The IUD has a fine nylon string attached to it. When the IUD is in place, the string comes out through the cervix into the top end of the vagina, making it easy for a doctor to remove the IUD. IUDs are suitable for most women who want a reliable, long-term contraceptive. Not suitable for women who could be pregnant, have a current pelvic infection,

have undiagnosed abnormal vaginal bleeding or women awaiting treatment for cervical cancer or cervical changes.

Two types of IUDs are available – the copper IUD and the hormonal IUD.

Copper IUD
- A small plastic device which has copper wire wrapped around its stem.
- Two types currently available in Australia, the Multiload which lasts up to five years and the Copper T (or TT380R) which lasts up to ten years.
- Works via several mechanisms that are not entirely understood; It is toxic to the egg and the sperm which prevents the sperm from fertilising the egg. It slows the transport of the egg in the fallopian tubes, thus reducing the chance of the sperm and egg meeting. It also changes the lining of the uterus, making it less suitable for pregnancy.
- The copper IUD is at least 99% effective.

Hormonal IUD
- There are two types of hormone-releasing intrauterine devices available in Australia – they are called the Mirena and Kyleena.
- They are a small plastic T-shaped device with the hormone levonorgestrel (a progestogen) in their stem.
- Kyleena is slightly smaller than Mirena and contains a slightly lower amount of hormone.
- Both the Mirena and Kyleena last for up to five years.
- The hormone in these devices makes the mucus in the cervix thicker so that sperm cannot get into the uterus. It affects the ability of the sperm to move through the uterus, which reduces the chance of fertilisation. It controls the monthly development of the uterine lining so that it is not thick enough to facilitate implantation. It can also prevent ovulation in some women.
- Both types of hormone-releasing IUDs are at least 99% effective.

Advantages?	Disadvantages?

Other LARCs: include the contraceptive implant (Implanon NXT™; a small plastic rod that is placed under the skin of the upper arm that slowly releases a low dose of progestogen), and the contraceptive injection (Depo-Provera™ or Depo-Ralovera™; an intra-muscular injection of a progesterone-like hormone given every 12 weeks). Notes on these are included in the contraceptives summary that will be made available in Moodle after all groups have completed SGS 4.

Shorter-acting hormonal methods
Combined oral contraceptive pill ('the Pill')
- Contains two hormones, an oestrogen and a progestogen.
- Main mechanism of action is to inhibit ovulation by suppressing the release of GnRH, LH and FSH. Also prevents the uterine lining from developing sufficiently for implantation and increases the thickness of the cervical mucus so that sperm are prevented from entering the uterus.
- Many brands of the Pill are available which all have different types and doses of these two hormones.
- Typically comes in a 28-day pack, which depending on the type of pill, will have between four and seven non-hormonal pills (sugar pills). Withdrawal vaginal bleeding (like a period) occurs during the days the sugar pills are taken.
- 99.5% effective with perfect use. With real life or "typical" use it is less effective (93%)
- The pill is contraindicated if there is a history of deep vein thrombosis, stroke, heart attack, severe liver problems or liver cancer, breast cancer, certain types of migraine, or you are over 35 and smoke

Advantages?	Disadvantages?

Other shorter-acting hormonal methods: include the Progestogen-only contraceptive pill (the 'Mini-Pill'; a daily oral contraceptive containing a low dose of progestogen) and the contraceptive vaginal ring (NuvaRing®; a soft plastic ring that remains inside the vagina for three weeks and releases low doses of oestrogen and a progestogen). Notes on these are included in the contraceptives summary that will be made available in Moodle after all groups have completed SGS 4.

Other contraceptives also available: Permanent contraception (male sterilisation, female sterilisation) and emergency contraception. Notes on these are included in contraceptives summary that will be made available in Moodle after all groups have completed SGS 4.

Summary of effectiveness of contraceptives:

FPAA (Family Planning Alliance Australia) efficacy of contraceptive methods – available at
https://www.fpnsw.org.au/sites/default/files/assets/FPAA-Efficacy-of-Contraceptive-Methods_2019.pdf

Note:
1. **Perfect use:** the effectiveness of a contraceptive in preventing pregnancy when it is used consistently and correctly according to the instructions every time.
2. **Typical use:** the effectiveness of a contraceptive in preventing pregnancy when it is used by the average person who does not always use methods correctly and consistently (i.e. takes human error into account).
3. Chances of pregnancy during typical use of adherence-dependent methods generally vary widely for different groups using the same method, primarily due to difference in the propensity to use the method correctly.

2c. Discussion of the "ideal" contraceptive

Discuss what attributes an "ideal" contraceptive would have? (Note at present there is no such thing). To come up with this list, think about the advantages and disadvantages of the contraceptives discussed previously.

2d. Mini case studies in contraception

Individuals will have different contraceptive needs, depending on age, gender, sexual activity, relationship status, illness, access to healthcare, religious and cultural beliefs, and many other factors.

Review the mini case studies and discuss what contraceptive might be best for each case. Imagine you are the doctor – what would you recommend and why? What factors may you consider when making your recommendation? Are there multiple options you may offer the patient/s?

Mini case 1: Tracey is 40, and Harry is 45, they have been married for 15 years and have 3 children under 5, the youngest is 12 months old and is no longer breast fed. They do not want to fall pregnant again. Tracey has recently resumed training for a 50km ultra trail run.

Mini case 2: Veronica is 28 and newly married but is not wanting to start a family for another 5 years. She works as a flight attendant.

Mini case 3: Janet is 24 and recently ended a 5-year relationship in which they'd chosen to abstain from sex, after finding out her boyfriend had been cheating on her. She is wanting to start dating and is unsure if she will practice abstinence again.

Activity 3. Preparation for SGS 5 *(peer teaching activity)*

In SGS 5, there will be a peer teaching exercise. There are two options for this activity, which has been allocated roughly 20 minutes of class time:

1. **Reviewing learning issues of the Healthy Beginnings Scenario**. If your scenario group includes students who are doing Project 2 ("Understanding the Healthy Beginnings Scenario"), this activity is a requirement of the project and must be led by these students. **Please remind students that they need to plan the timing of this session accurately, so they adhere to the 20-minute time allocation provided in SGS 5.**

2. **Student-run quiz.** Alternatively, if you do not have a group doing Project 2, you might wish to have students design and run a quiz in this part of SGS 5. The class is to choose 2 quiz masters, allocate several students to a particular discipline (e.g. physiology, embryology, biochemistry, etc.) and ask each student to develop a multiple-choice question on their allocated discipline. Questions might also be of the true/false variety. Aim for approximately 15 questions to allow time for discussion**. In addition to the questions students should provide feedback on each answer. Before the next class all students are to send 2 questions to the quiz masters who will put them together in a Kahoot or similar quiz format. The quiz masters will run the quiz in the following SG. Students will only know the answers to the questions they have written and can therefore participate.**

Scenario 2: Two New Mothers

Schedule

Please refer to the eMed Timetable for dates, times and locations of learning activities

Learning Activity	Principal Teacher
Scenario Plenary 2: Two New Mothers	Ewans, Lisa
Lecture 25: Male Reproductive Tract Histology	Shirazi, Reza
Scenario Group Session 5: Common complaints in pregnancy	Lees, Justin
Lecture 26: QMP: Critical Appraisal and Bias	Ariff, Amir
Lecture 27: The cervix in health and disease	Weber, Martin
Online Activity 5: P9: Phenylketonuria prac Self Directed Preparation	Lutze-Mann, Louise
Science Practical 8: Female reproductive hormones and their effects	Gibson, Karen
Lecture 28: Prenatal Screening Tests	Welsh, Alec
Lecture 29: Maternal and Perinatal mortality	Welsh, Alec
Science Practical 9: QMP: How to be critical in a world full of 'evidence'	Ariff, Amir
Scenario Group Session 6: Vaginal Delivery versus Caesarian Section	Ulman, Lesley
Science Practical 10: Histology of the male reproductive tract	Shirazi, Reza
Online Activity 8: L30 Introduction to ANS online activity prior to lecture	Liu, Lu
Lecture 30: Cholinergic mechanisms 1	Liu, Lu
Lecture 31: Newborn screening	Wotton, Tiffany
Science Practical 7: Phenylketonuria - PKU	Lutze-Mann, Louise
Lecture 32: Cholinergic Mechanisms 2	Liu, Lu
Lecture 33: Development of ectoderm derivatives and the nervous system	Mohammadiroushandeh, Amaneh
Lecture 34: Introductory Genetics 1 - Mendel's laws of heredity	Waters, Paul
Scenario Group Session 7: Overview of DM and Gestational Diabetes	Waters, Paul
Lecture 35: Enzymes, vitamins and cofactors	Le Bard, Rebecca
Lecture 36: Development of endoderm and mesoderm derivatives	Mohammadiroushandeh, Amaneh
Online Activity 9: P12: Autonomic Pharmacology prac self-directed prework	Liu, Lu
Science Practical 11: Autonomic Pharmacology: Drugs and the Eye	Liu, Lu
Lecture 37: Genetics 2: Mechanisms of Inheritance	Waters, Paul
Lecture 38: Cardiac Embryology	Mohammadiroushandeh, Amaneh
Online Activity 4: P12: Male reproductive anatomy prac self-directed prework	Spencer, Kalli
Science Practical 12: Male reproductive system anatomy	Shirazi, Reza
Lecture 39: Clinical Skills Review in BGD A	Spencer, Kalli
Lecture 40: Genetics 3: Genetic prediction and diagnosis	Chung, Clara
Scenario Group Session 8: Newborn Screening	Ariff, Amir
Science Practical 13: Organogenesis	Mohammadiroushandeh, Amaneh

Scenario 2: Two Mothers

Learning Activity	Principal Teacher
Science Practical 14: Cardiac Development	Mohammadiroushandeh, Amaneh
Hospital Clinical Skills Session 2: The psychosocial history and examining lumps/bumps & ulcers	Spencer, Kalli

Note: This schedule is subject to change. It only shows the first instance of any one activity. Refer to the eMed Timetable system and email updates sent to your UNSW email account for accurate times and locations for face-to-face classes / access details for online activities.

Overview

In this scenario the focus is on the later stages of pregnancy and on neonates. It supports the Domain themes: Conception, pregnancy and birth.

The scenario aims to stimulate interest in the following topics:
- Quality of medical practice (QMP)
- Embryology
- Factors influencing maternal and perinatal outcomes.
- Screening, both antenatal and newborn, including the physiological, genetic and clinical issues.
- Communicating ambiguous test results, and issues in giving advice and gaining consent.
- The implications of obtaining genetic information on an individual, the family and society.
- Anatomy and histology of the cervix.

Description

Close friends Olivia and Amelia, who are both pregnant with their first babies, catch up and naturally their discussion turns to their pregnancies. Olivia is 37 years old and is thrilled to be pregnant after having difficulty conceiving and suffering several miscarriages. Amelia is 32 years old and was not planning on conceiving yet – she and her husband were intending to focus on their careers for a few more years before starting a family. While the pregnancy was unexpected, now that it has happened, Amelia very much wants this baby. She is, however, worried when genetic testing shows that she and her husband Mark are both Cystic Fibrosis carriers. She is told that this means there is a 1 in 4 chance that her baby will be born with Cystic Fibrosis. She chooses not to have diagnostic testing during her pregnancy, opting instead to have specific genetic testing for Cystic Fibrosis when her baby is born. While Olivia's pregnancy is initially normal, she goes into premature labour at 28 weeks, and the baby is delivered pre-term.

SGS 5: Common complaints in pregnancy

Aims:

This session is designed to examine the science underlying some of the common, normal discomforts experienced by pregnant women. We will also undertake a play-dough modelling activity to help you become more familiar with the early stages of embryo development.

There is then time set aside at the end of the session for peer-teaching activities. Those groups doing the "Understanding the 'Healthy Beginnings' Scenario" project (P2) can run a student-led review of the learning issues associated with this scenario. Alternatively, if the SG does not have a group doing this project, this time can be used for a student-led quiz to help the group test their understanding of some of the course content covered so far.

Key concepts:

This session addresses the following issues:
- The normal physiological changes that occur in women during pregnancy
- Common maternal complaints during pregnancy, their physiological basis and management
- Modelling the early stages of embryonic development

Process:

Activities
1. Explore the plenary
2. Common complaints associated with normal pregnancy
3. Play-dough modelling of the early stages of fertilisation and development
4. Peer teaching session
5. Preparation for SGS 6

Activity 1. Explore plenary, identify key issues
Students will work together to reflect upon the plenary and relate the issues to graduate capabilities.

Activity 2. Common complaints associated with normal pregnancy
Students will present their 'expert' answers to the patient questions in a role play format. A volunteer 'patient' from the class will ask the group each of the questions. The group will take turns answering the patient's questions that they have researched. Each group member will need to have a turn answering as the 'doctor'.

The rest of the class can ask additional questions if they don't understand, or if they expect an average patient in the population would not understand a part of what is being explained. Presenting students can use visual aids if they feel it will help the patient better understand.

GROUP 1
"I'm 15 weeks pregnant and my digestion seems to be going haywire. I can't eat very much before I'm full, then it seems to take forever to go through my system. I'm constipated, and lately I've been getting heartburn. And I'm still getting morning sickness – I throw up a couple of times a week. It doesn't just happen in the morning either."

1. What is heartburn?

2.   **Is it common? Why do I have it?**

3.   **Is there anything that I can do about it?**

4.   **It feels as if my stomach has shrunk – is that right?**

5.   **Why am I constipated?**

6.   **Is it bad for the baby?**

7.   **What can I do about it?**

8. **Why do I feel so nauseous?**

9. **It's called 'morning sickness' but I feel sick at any time of the day. Is that normal?**

10. **The nausea and vomiting seem to be lasting a long time with me – is that normal?**

11. **Will the vomiting hurt the baby?**

12. **Will I feel this bad during my next pregnancy?**

13. **What can I do to try to reduce the nausea?**

GROUP 2

"I'm 13 weeks pregnant with my first baby. I have to get up twice now in the night to empty my bladder. I seem to be going to the loo more often during the day as well."

1. Why do I need to make so many trips to the toilet? I seem to spend most of my life emptying my bladder.
2. Is it common?
3. I've been like this for a few months now – but my baby couldn't have been pressing on my bladder back then… Is it that my bladder is smaller now? Or is it that I'm making more urine?
4. I'm waking up at least 3 times during the night needing to wee – why is that?
5. What can I do about it – should I try to drink less water?

"I normally get cold hands and feet in winter, but I'm pregnant this year and they've been quite warm. Actually, since I've been pregnant, I haven't felt the cold as much as usual."

6. Why can I tolerate the cold more easily?

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7. Why are my hands and feet so warm?

"I've noticed that I'm not losing much hair at all since I've been pregnant – a little used to come out onto my brush or when I washed my hair but hardly any does now. My friend told me that her hair came out in handfuls after she had her baby."

8. Why am I not losing as much hair as normal?

9. Will my hair get back to normal after I have the baby?

GROUP 3
"I'm 28 weeks pregnant and lately I've been having trouble fitting into my shoes – my ankles and feet are swollen. It's more noticeable if I've been on my feet for a while."

1. **Why are my ankles and feet so swollen?**

2. **What can I do about it?**

"My mum got varicose veins when she was pregnant with me. Now I've got them, at 34 weeks, and I have haemorrhoids as well. I'm hoping they'll go away after I have the baby."

3.   What are varicose veins?
4.   Why have I developed them?
5.   What can be done about them?
6.   Will they go away after I have the baby?
7.   What are haemorrhoids?
8.   Why do I have them?

"I'm 34 weeks pregnant and fainted the other day. The bus was late, and as I was standing there waiting for it, I passed out. I've also noticed for a while now that I get dizzy if I try to get out of bed quickly. It's also pretty uncomfortable lying flat on my back now."

9.   Why did I faint at the bus stop?
10. Why do I feel so dizzy when I get out of bed quickly?

11. A few visits ago you said that I should try not to sleep flat on my back – why is that?

12. How does the blood get back to my heart when I'm lying down if the major blood vessel is being closed off by the baby?

GROUP 4

"I'm 16 weeks pregnant and I've been really tired and breathless. My obstetrician just told me that I'm anaemic. I don't really understand it: My sister is due in a few weeks and is short of breath too, but her doctor says she's not anaemic. A friend of mine said that her haemoglobin levels went down when she was pregnant, but her doctor told her that it was normal and nothing to worry about. I'm confused."

1. What is anaemia?

2. Why do I have it?

3. What effects will it have on my baby?

4. If I'm iron deficient does that mean my baby is too?

5. How did I get anaemic when I'm not even losing any blood? I thought that periods were the reason why women had problems with anaemia more often than men.

6. Why have I been feeling a little out of breath?

7. **Why would my sister be breathless if she's not anaemic?**

8. **Why did my friend's haemoglobin level fall? Why was that considered normal when I have to get treatment for anaemia?**

9. **What can I do to fix the anaemia?**

10. **I've been told to take folate along with my iron supplement – why is that?**

"My lower back has been sore since a couple of months into my pregnancy. Now I'm 35 weeks and my pubic bone is aching – it's incredibly painful, especially when I walk. If I sleep with a pillow between my legs, it helps."

11. **Why is my back so sore? I got the backache well before I was even showing, so it can't all be because of the weight of the baby.**

12. **Why is my pubic bone hurting so much?**

13. **What can be done for my pubic pain?**

Activity 3. Play-dough modelling of the early stages of fertilisation and development

To familiarise students with the early stages of human development, this activity allows for creative modelling of different characterised stages. The class will be divided into pairs and each pair will use the provided play-dough to make a model. Students will then briefly describe the different aspects of their model to the class.

- Mature Sperm
- Pre-ovulation follicle OR secondary oocyte
- Fertilised oocyte
- Day 2 blastomere
- Blastocyst
- Bilaminar embryo
- Trilaminar embryo

Activity 4. Peer teaching session

For classes with a peer teaching group, this time is allocated for that teaching. Otherwise, the elected quiz master's (from SGS 4) will run the group produced quiz.

Activity 5. Preparation for SGS 6

Articles for pre-reading to be divided amongst the students:

Each article below will be allocated to 3-4 students. The students allocated to a particular article can divide up the parts of the article between them as they see fit. Students should note down any advantages or disadvantages of vaginal delivery or caesarean section which are described in the article they read. The information will be collated during SGS 6. Students may like to also consider the source of the article and whether they detect any bias on the part of the author.

1. Buhimischi, C.S. and Buhimischi, I.A. (2006). Advantages of Vaginal Delivery. Clinical Obstetrics and Gynaecology, 49 (1), 167-183.
   https://unsw.alma.exlibrisgroup.com/leganto/public/61UNSW_INST/citation/53003279530001731?auth=SAML
2. Zelop, C. and Heffner, L.J. (2004). The Downside of Cesarean Delivery: Short-and Long-Term Complications. Clinical Obstetrics and Gynaecology, 47 (2), 386-393.
   https://unsw.alma.exlibrisgroup.com/leganto/public/61UNSW_INST/citation/53003279520001731?auth=SAML
3. Goer, H., Romano, A. and Sakala, C. (2012). Vaginal or Cesarean birth: What is at stake for mothers and babies? A best evidence review.
   https://unsw.alma.exlibrisgroup.com/leganto/public/61UNSW_INST/citation/54147602000001731?auth=SAML
4. Gregory,K.D., Jackson,S.,Korst,L.and Fridman,M. (2012). Cesarean versus Vaginal Delivery: Whose Risks? Whose Benefits? American Journal of Perinatology 29(1):7-18.
   https://unsw.alma.exlibrisgroup.com/leganto/public/61UNSW_INST/citation/54147610410001731?auth=SAML

All students should read:

The Royal Australian and New Zealand College of Obstetricians and Gynaecologists. College Statement **C-Obs 37.** Delivery of the Fetus at Caesarean section, and College Statement **C-Obs 39**. Caesarean Delivery on Maternal Request

Delivery of the fetus at caesarean section C-Obs 37:
https://ranzcog.edu.au/wp-content/uploads/2022/05/Delivery-of-the-fetus-at-caesarean-section.pdf

Caesarean Delivery on Maternal request (CDMR) C-Obs 39:
https://ranzcog.edu.au/wp-content/uploads/2022/05/Caesarean-Birth-on-Maternal-Request-CBMR-C-Obs-39.pdf

SGS 6: Vaginal Delivery versus Caesarean Section

Aims:

- Gain an overview of a normal vaginal delivery and a caesarean section
- Understand some of the advantages and disadvantages of vaginal delivery and caesarean section
- Gain an understanding of some of the statistics on Australian mothers in terms of maternal age and birth mode

Key concepts:

- Normal vaginal delivery
- Normal caesarean section
- Advantages and disadvantages of vaginal delivery and caesarean section
- Statistics for maternal age and mode of delivery in Australia

Process:

Activities
1. Introduction
2. Viewing footage of a vaginal delivery and a caesarean section
3. Indications for having a caesarean section delivery
4. Generating a list of the advantages and disadvantages of vaginal delivery vs caesarean section
5. Statistics for mode of delivery in Australia and comparison with other countries
6. Preparation for SGS 7

Activity 1. Introduction
Overview of the video being presented.
Activity 2. Viewing footage of a vaginal delivery and a caesarean section
View videos and take notes.

Activity 3. Indications for having a caesarean section delivery
Discuss the following:

(a) What are the major medical reasons for planning delivery by caesarean section?
(b) Why would a woman having a vaginal delivery need to have an emergency caesarean section?

Activity 4. Generating a list of the advantages and disadvantages of vaginal delivery vs caesarean section

Each student should have developed a partial list based on the articles they read for pre-reading, making sure to consider any percieved bias. Work with the group as a whole to generate 4 lists –

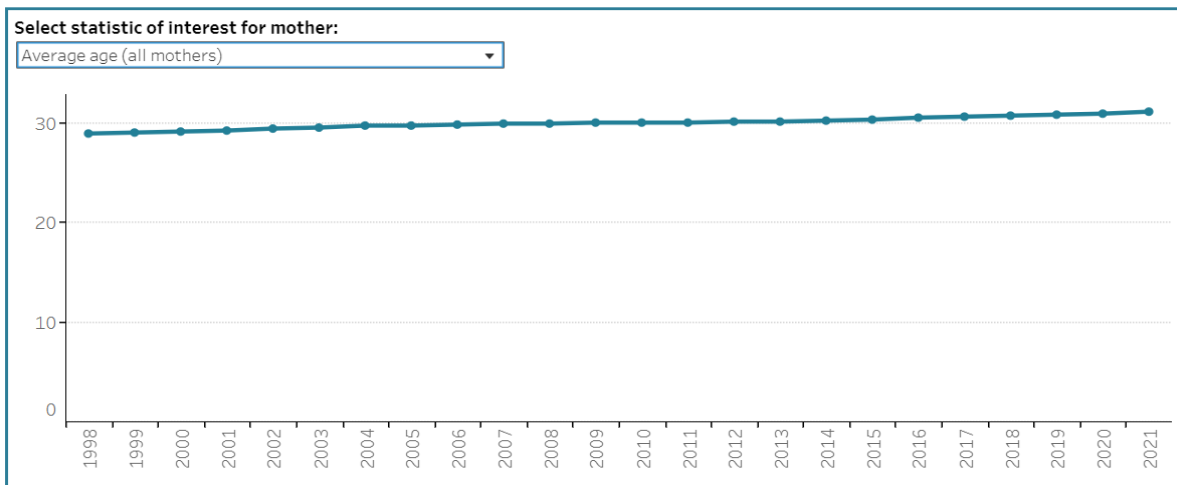| Advantages of vaginal delivery	Disadvantages of vaginal delivery
Advantages of caesarean section	**Disadvantages of caesarean section**

Once the Table is complete, discuss the RANZCOG College Statements C-Obs-37 and C-Obs-39 and summarise these recommendations.

Note: A revision exercise based on the material in the table will be available on Moodle after the session.
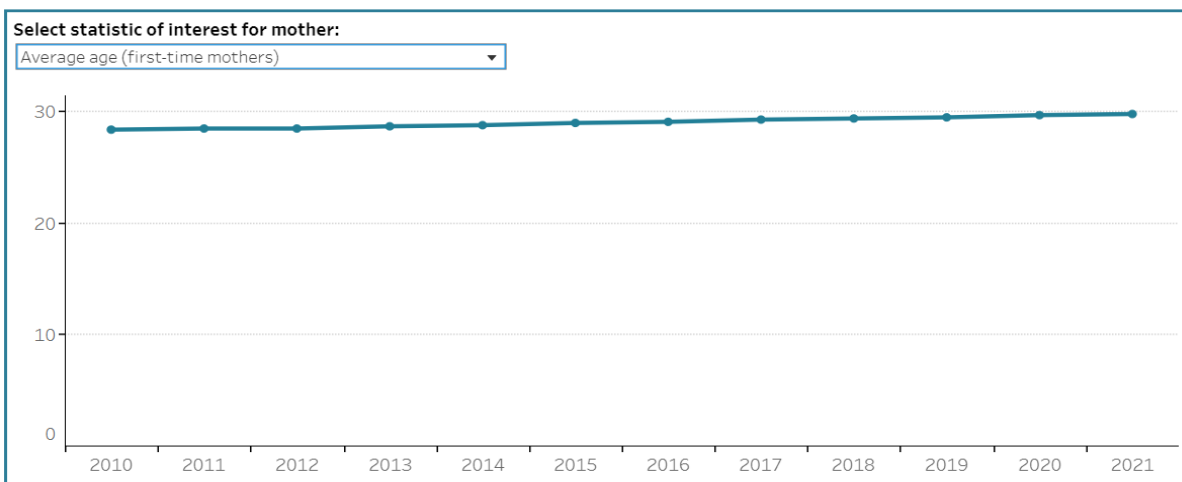
Review article:

Mylonas, Ioannis and Friese, K. (20115) Indications for and Risks of Elective Cesarean Section. Deutsches Arzteblatt International. 112;29-30

https://unsw.alma.exlibrisgroup.com/leganto/public/61UNSW_INST/citation/60769750460001731?auth=SAML

Activity 5. Statistics for mode of delivery in Australia and comparison with other countries

a) i)   How has the average age of all mothers changed between 2010 and 2021?

Select statistic of interest for mother:
Average age (all mothers)

Source: AIHW analysis of National Perinatal Data Collection
https://www.aihw.gov.au/

https://www.aihw.gov.au/reports/mothers-babies/australias-mothers-babies/contents/overview-and-demographics/state-and-territory

ii)   How has the average age of first-time mothers changed between 2010 to 2021?

Select statistic of interest for mother:
Average age (first-time mothers)

Source: AIHW analysis of National Perinatal Data Collection
https://www.aihw.gov.au/

https://www.aihw.gov.au/reports/mothers-babies/australias-mothers-babies/contents/overview-and-demographics/state-and-territory

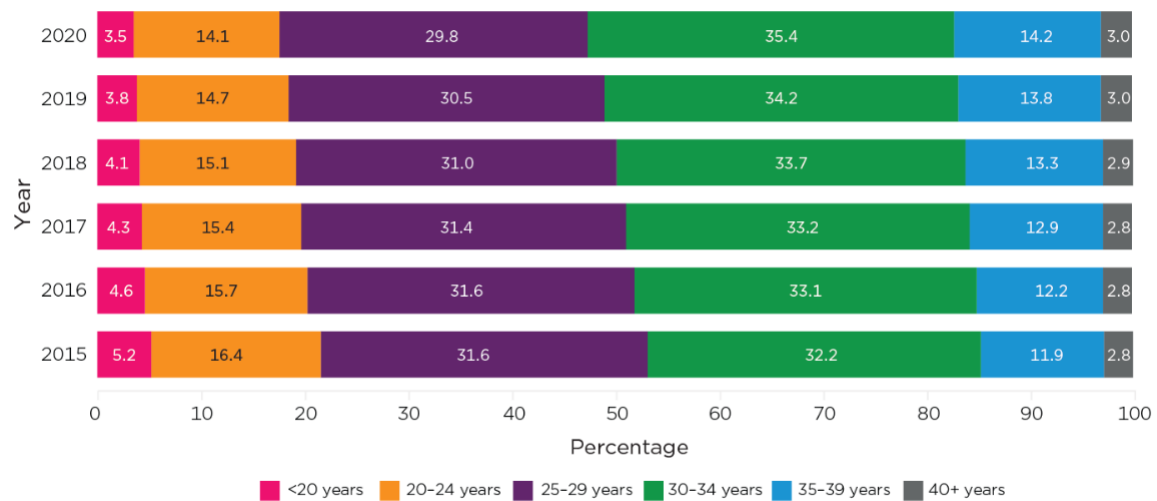iii)   **Comment on the trends in age distributions of first- time mothers between 2015 and 2020?**

Figure 5: Age of first-time mothers, 2015–20

Source: AIHW (various years)

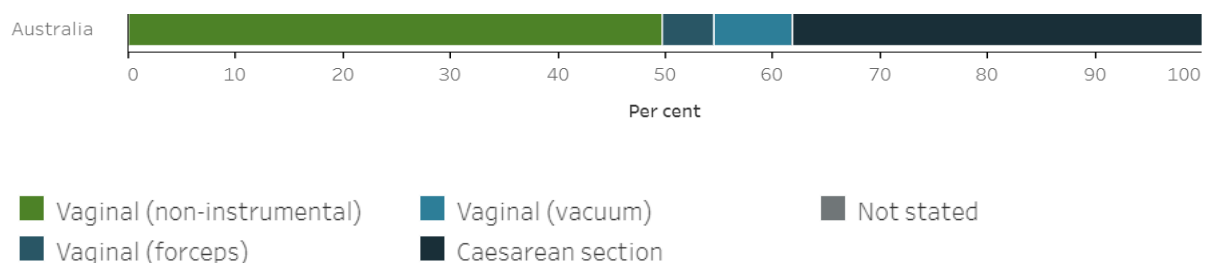https://aifs.gov.au/research/facts-and-figures/births-australia-2023

b)   **By examining the table and graph below, comment on how the methods of birth in Australia have changed between 2011 and 2021.**

Percentage of women who gave birth by method of birth in Australia 2011-2021

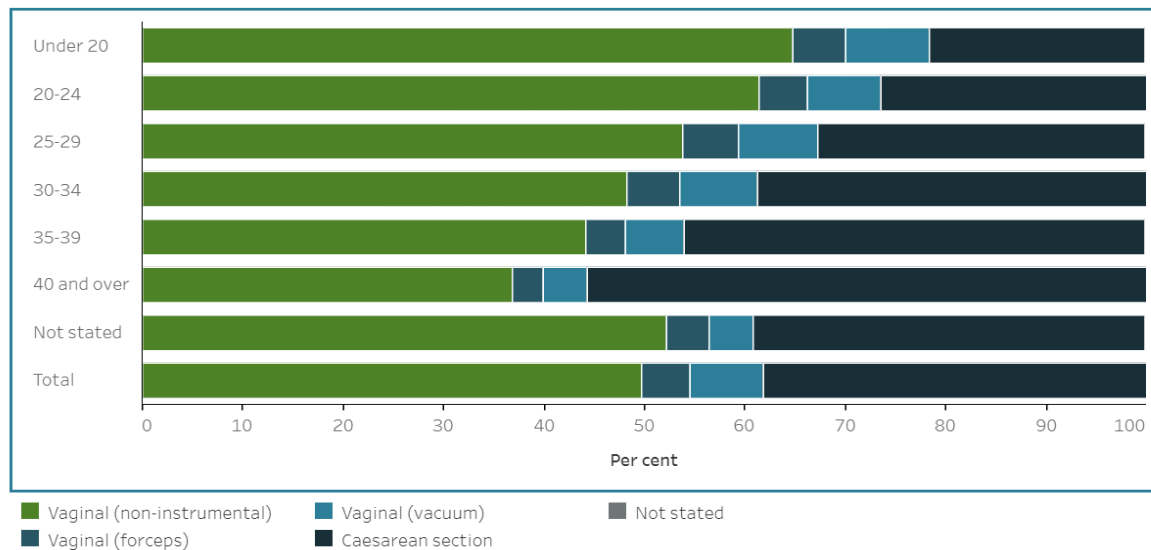|	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Vaginal	55.6	55.2	54.8	54.4	54.2	53.4	52.8	52.0	51.3	50.0	49.7
Forceps	4.2	4.3	4.7	5.0	5.1	5.2	5.3	5.2	5.1	5.2	4.9
Vacuum	7.9	8.1	7.7	7.4	7.3	7.5	7.3	7.5	7.5	7.4	7.2
Caesarean section	32.3	32.4	32.8	33.1	33.3	33.8	34.6	35.3	36.0	37.3	38.2

Proportion of women who gave birth, by method of birth in 2021.

https://www.aihw.gov.au/reports/mothers-babies/australias-mothers-babies/contents/labour-and-birth/method-of-birth
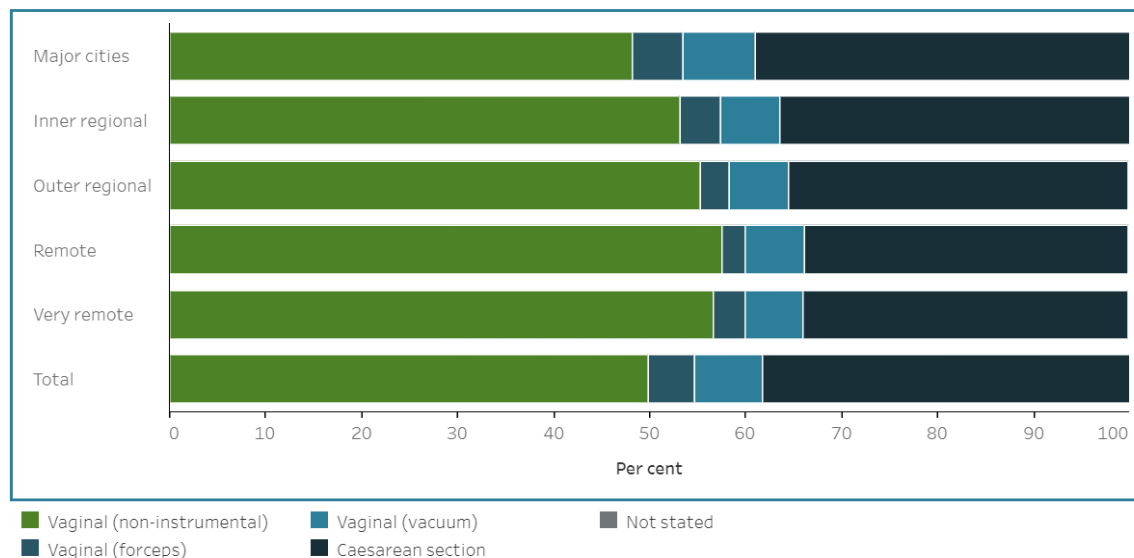
c) How does maternal age, remoteness and socio-economic status impact the method of birth in 2021?
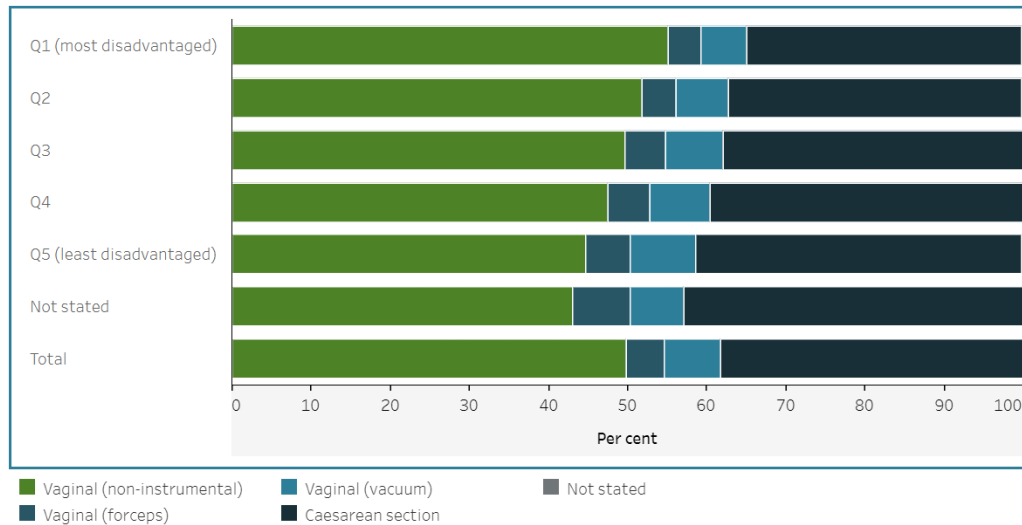
Proportion of women who gave birth, by method of birth and maternal age in 2021.

https://www.aihw.gov.au/reports/mothers-babies/australias-mothers-babies/contents/labour-and-birth/method-of-birth

Proportion of women who gave birth, by method of birth and remoteness area in 2021.

Proportion of women who gave birth, by method of birth and socioeconomic status in 2021.

Legend:
- Vaginal (non-instrumental)
- Vaginal (forceps)
- Vaginal (vacuum)
- Caesarean section
- Not stated

d)   How does hospital sector impact the method of birth (2021)?

Legend:
- Vaginal (non-instrumental)
- Vaginal (forceps)
- Vaginal (vacuum)
- Caesarean section
- Not stated
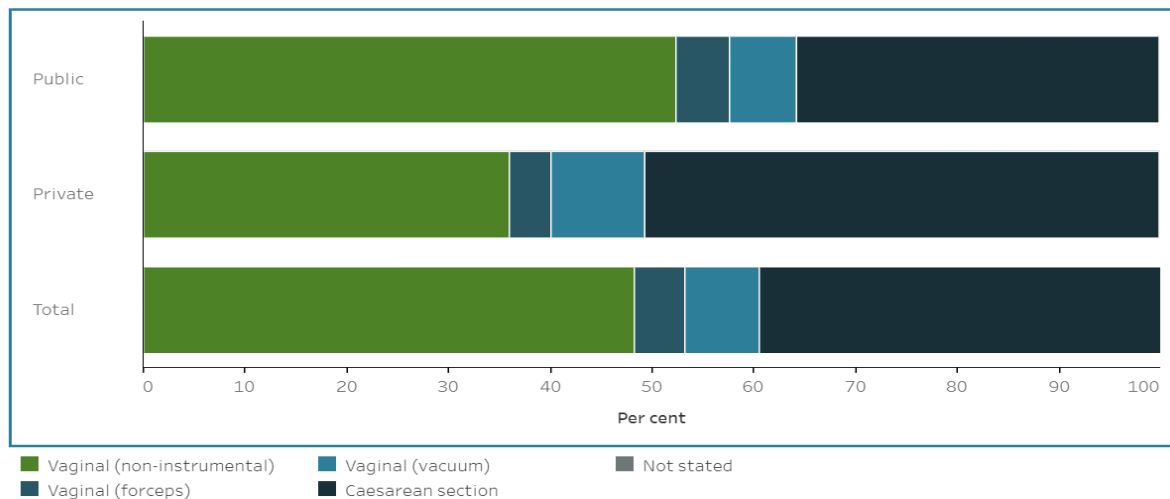
e)   How does the method of birth differ in Indigenous and Non-Indigenous Australian mothers (2021)?

Legend:
- Vaginal (non-instrumental)
- Vaginal (forceps)
- Vaginal (vacuum)
- Caesarean section
- Not stated
- n.p.
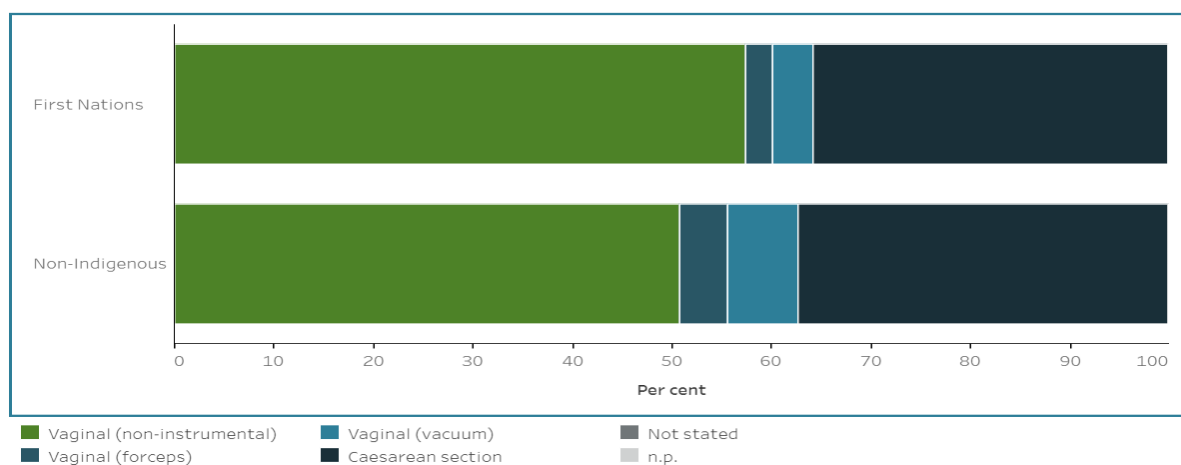
f)   How do Australian statistics for caesarean section rates compare with those of other countries?

Caesarean section rates, 2017 (or nearest year)
See also C-Section Rates by Country 2024 (worldpopulationreview.com)

Per 100 live births
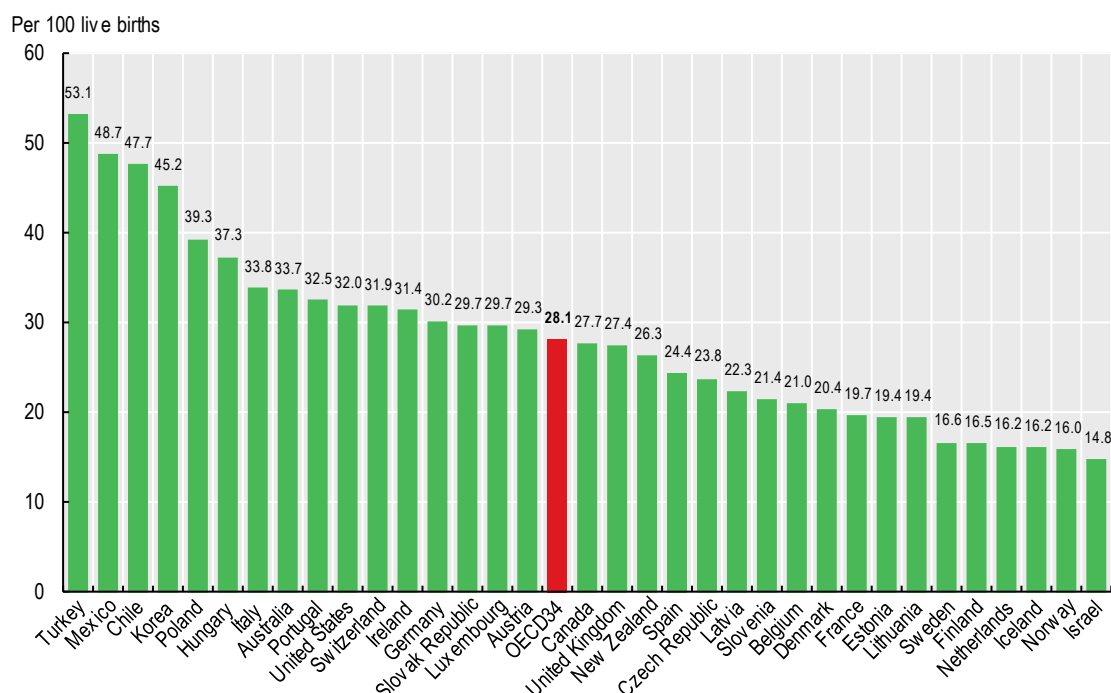
Source: OECD Health Statistics 2019. StatLink https://doi.org/10.1787/888934017918

https://www.statista.com/statistics/283123/cesarean-sections-in-oecd-countries/

Activity 6. Preparation for SGS 7
In SGS 7, students in Teams 1 and 2 will present an overview of diabetes mellitus to provide a background for the activity on gestational diabetes. Teams 3 and 4 will specifically research gestational diabetes mellitus.

Team 1:
1.   Explain how the body normally regulates blood glucose.
2.   What happens to this mechanism in diabetes mellitus?
3.   Differentiate between Type I and Type 2 diabetes.
4.   What are the causes of Type I and Type 2 diabetes?
5.   What is the prevalence of diabetes in Australia?

Most information can be found in standard textbooks, but the following resources may be helpful for some of the questions.
• Diabetes Australia website http://www.diabetesaustralia.com.au/
• McElduff, A. (2013). Non-type 1, Non-type 2 diabetes: what's in a name? Australian Prescriber 36:196-8
  https://unsw.alma.exlibrisgroup.com/leganto/public/61UNSW_INST/citation/60883376720001731?auth=SAML

Team 2:
6.   How is diabetes diagnosed? (Note this question refers to individuals who are not pregnant)
7.   Can diabetes be prevented?
8.   What are the associated complications or risks of diabetes?
9.   Does pre-existing diabetes pose any risk in pregnancy?

Most information can be found in standard textbooks, but the following resources may be helpful for some of the questions.

- RACGP Clinical guidelines for diagnosis of diabetes
- Defining-and-diagnosing-type-2-diabetes.aspx (racgp.org.au)D'Emden, M. (2014). Glycated haemoglobin for the diagnosis of diabetes. Australian Prescriber 37, 98-100.
  https://unsw.alma.exlibrisgroup.com/leganto/public/61UNSW_INST/citation/60883406610001731?auth=SAML

Team 3

10. What is gestational diabetes?
11. What causes gestational diabetes?
12. Who is at increased risk of gestational diabetes?
13. How is gestational diabetes diagnosed?

Team 4

14. How is gestational diabetes treated?
15. What are the consequences of gestational diabetes in the short term for both the mother and the fetus/newborn?
16. Are there any long term consequences for the offspring of a diabetic pregnancy?
17. Are there any long term implications for the mother (e.g. Will she remain diabetic after the pregnancy? Does she have a greater chance of developing diabetes later in life?)

The following resources will be helpful for both Teams 3 and 4.

- Australasian Diabetes in Pregnancy Society (ADIPS) Consensus Guidelines for the Testing and Diagnosis of Gestational Diabetes Mellitus in Australia and New Zealand (modified November 2014).
  http://www.adips.org/information-for-health-care-providers-approved.asp
- Diabetes Australia Website
  Gestational Diabetes | Diabetes Australia
- Diabetes – gestational. Better Health Channel
  https://www.betterhealth.vic.gov.au/health/conditionsandtreatments/diabetes-gestational
- Nankervis,A., Price,J. and Conn,J. (2018). Gestational Diabetes Mellitus – A pragmatic approach to diagnosis and management. AJGP vol 47 no.7, 445-449.
  https://www1.racgp.org.au/ajgp/2018/july/gestational-diabetes-mellitus

Another resource for those interested in understanding the origin of the most recent ADIPS guidelines:

- Report of a world Health Organization Consultation Diagnostic criteria and classification of hyperglycaemia first detected in pregnancy: A World Health Organization Guideline. Diabetes Research and Clinical Practice 2014; 103:341-363.
  http://apps.who.int/iris/bitstream/handle/10665/85975/WHO_NMH_MND_13.2_eng.pdf?sequence=1

SGS 7: Overview of Diabetes Mellitus and Gestational Diabetes

Aims:

This session focuses on diabetes mellitus and gestational diabetes. Students will examine a case study of gestational diabetes and answer questions related to the case. We will also play a fun game of Jeopardy to test your knowledge of lecture material to date.

Key concepts:

The major issues concerning gestational diabetes addressed in this session: definition, causes, risk factors, diagnosis, long-term prognosis, effects on fetus and infant, treatment.

At the end of this SGS, you should be able to:

- Explain how gestational diabetes is distinct from Type 1 and Type 2 diabetes mellitus.
- Discuss risk factors, diagnosis and management of gestational diabetes in pregnant Australian women.

Process:

Activities
1. Team presentations answering questions on diabetes mellitus and gestational dabetes
2. Case study on gestational diabetes
3. Who wants to play 'Jeopardy'
3. Preparation for SGS 8

Activity 1. Team presentations answering questions on diabetes mellitus and gestational diabetes

Most cases of diabetes mellitus fall into three broad categories: Type 1, Type 2 and gestational diabetes. Students are to present an overview of diabetes mellitus by presenting the answers to the following questions. Teams 1 and 2 will focus on Type 1 and Type 2 diabetes, whereas Teams 3 and 4 will focus on gestational diabetes mellitus.

Team 1:

1. **Explain how the body normally regulates blood glucose.**
2. **What happens to this mechanism in diabetes mellitus?**
3. **Differentiate between Type 1 and Type 2 diabetes.**

4. **What are the causes of Type 1 and Type 2 diabetes?**

5. **What is the prevalence of diabetes in Australia?**

Team 2:

6. **How is diabetes diagnosed? (Note this question refers to individuals who are not pregnant)**

7. **Can diabetes be prevented?**

8. **What are the associated complications or risks of diabetes?**

9. **Does <u>pre-existing</u> diabetes pose any risk in pregnancy?**

Team 3:

10. **What is gestational diabetes?**

11. **What causes gestational diabetes?**

12. **Who is at increased risk of gestational diabetes?**

13. How is gestational diabetes diagnosed?

Team 4:

14. **How is gestational diabetes treated?**

15. **What are the consequences of gestational diabetes in the short term for both the mother and the fetus/newborn?**

16. **Are there any long term consequences for the offspring of a diabetic pregnancy?**

17. **Are there any long term implications for the mother (e.g. Will she remain diabetic after the pregnancy? Does she have a greater chance of developing diabetes later in life?)**

Activity 2. Case study on gestational diabetes
Students are to read the following case study and answer the questions below.

Case Study
A 34 year-old woman who is in her second pregnancy and has had one live birth and no abortions is seen for prenatal care at 24 weeks gestation. Her height is 1.7 m and her weight is 98 kg (pre-pregnancy weight was 89 kg). Her blood pressure is 130/80 mmHg. Uterine size is appropriate for gestational age. The patient's past obstetric history includes the spontaneous vaginal delivery of a 4.3 kg male infant at 40 weeks gestation, 8 years ago. The patient reports that the child is doing well. Her family history reveals that her mother has type 2 diabetes mellitus.

Because of her history this patient is at high risk for gestational diabetes. She was provided instructions to prepare for an oral glucose tolerance test (OGTT) which was booked for 4 days later. After a check of her compliance with the preparation for test, the glucose tolerance test results were reviewed and showed a fasting glucose of 6.1 mmol/L and a 2 hour value of 9.4 mmol/L. Gestational diabetes was diagnosed.

Case Study Outcome
The patient was taught home glucose monitoring the next day and instructed in healthy eating and gentle exercise regimens. The recommendations included eating 3 meals and 3 snacks per day that each included some low glycaemic index carbohydrate. When reviewed 1 week later, well over 20% of her glucose values were above target even though she had been strict with her diet and exercise regimen. Because of this she was commenced on insulin therapy. The targets for both the diet therapy and the subsequent insulin therapy were a fasting value of ≤5.0 mmol/L and <6.7 mmol/L at 2 hours after eating. Because insulin resistance and hence insulin requirements steadily increase in the second trimester, her insulin levels were increased each week by about 10% in anticipation of the glucose rises. With this regimen she rarely recorded a glucose value out of range, except when she ate out. At 34 weeks gestation when insulin requirements are known to plateau, she ceased having elevated insulin levels.

At 28 weeks, the patient was instructed in daily fetal movement counting to assess fetal well-being, and at 32 weeks gestation fetal heart rate testing with non-stress tests was begun twice weekly. An ultrasound examination at 37 weeks revealed the fetus to be growing normally with an estimated weight of 3.2 kg. At 39 weeks, the patient started spontaneous labour and underwent the vaginal delivery of a 3.7 kg boy. The infant was evaluated for but did not demonstrate hypoglycemia or any other problems.

Six weeks after delivery, the patient returned to the clinic for an evaluation of her glucose tolerance. Her fasting plasma glucose was 7.1 mmol/L. She returned the next day, and a repeat fasting plasma glucose was 7.3 mmol/L. Given these findings, the diagnosis of diabetes mellitus was made, and a 75-g OGTT test was not needed.

Questions

1. **What factors in this woman's history place her at high risk for development of gestational diabetes mellitus?**
2. **If she had no risk factors, would this woman have needed an oral glucose tolerance test?**
3. **What did the patient need to do to prepare for the oral glucose tolerance test?**
4. **How much glucose is consumed in an oral glucose tolerance test during pregnancy?**

5. What are the fasting, one hour and two hour plasma glucose levels needed for a diagnosis of gestational diabetes mellitus?
6. Why are these cut offs lower than those used to diagnose diabetes mellitus in non-pregnant patients?
7. What does "low glycaemic index carbohydrate" mean?
8. Why was it particularly important to monitor fetal well-being in this woman?
9. If the patient had not gone into spontaneous labour, when would labour typically be induced in a patient like this? Why?

Activity 3. Who wants to play 'Jeopardy'

Form three teams and compete with your classmates in the BGD A jeopardy challenge.

Activiy 4. Preparation for SGS 8

Students are advised to utilise all remaining time of this SG to starting the homework tasks, particulary 'TASK 2'.

3 Research Tasks

TASK 1. Newborn screening video. All Students.

Students are to watch Part 2 of the video "Spots for Tots – NSW Newborn Screening Program" which can be found in the "Video resources" section of the Sydney Children's Hospitals Network website:

[27:58 mins. Part 2 commences at 11:25 min into the video.]

A short Moodle quiz will be available to test your understanding of this section of the video.

TASK 2. Research on newborn screening

        Group 1. Phenylketonuria (PKU)
        Group 2. Congenital hypothyroidism (CH)
        Group 3. Galactosaemia

Each group should research the following information and fill out their column in the **blank table (Word doc)** (available in SGS 8). Use the website resource (1) below:

• incidence   • clinical effects • number per year in NSW   • what is measured in the initial newborn screen? • carrier frequency   • the sensitivity of the newborn screen • genetic basis   • intervention available disease mechanism   • outcome of the condition (following intervention).

TASK 3. Cystic Fibrosis. All students.
We will also be looking at cystic fibrosis in more depth in SGS 8.
Use the recommended resources (below) to research the pathophysiology of this condition and how the various screening and other tests are used to diagnose this disorder.

All students should:
1. Fill in the blank table column for cystic fibrosis.
2. Further research to answer the following questions:
    - o   How is the sweat test performed?
    - o   What does this test measure and why does it increase in cystic fibrosis?
    - o   How are these screening test results, and confirmatory tests, communicated to parents?

Research Resources:
1. The Sydney Children's Hospital Network website is a recommended resource
    https://www.schn.health.nsw.gov.au/clinical-hub/laboratory-services/nsw-newborn-screening   Click on the disorder of interest to reveal further information.
2. NSW Newborn Screening Programme, Information for parents/Carers for Cystic Fibrosis:
3. https://www.schn.health.nsw.gov.au/cystic-fibrosis-factsheet   Sorscher, E.J. (2021). Chapter 291. Cystic Fibrosis. In Loscalzo J, Fauci A, Kasper D, Hauser S, Longo D, Jameson J. (Eds), Harrison's Principles of Internal Medicine, 21e.
    https://unsw.alma.exlibrisgroup.com/leganto/public/61UNSW_INST/citation/60772386460001731?auth=SAML

SGS 8: Newborn screening

Aims:

- To look at newborn screening as an example of population screening and gain an overview of four conditions that are currently screened for.
- To work through an example newborn screening (cystic fibrosis) in order to further understand and interpret test results.
- To gain a basic understanding of the procedure for taking the blood for the newborn screen and potential errors.

Key concepts:

- The implications of a screening test on a population, health resources, the implication of genetic information for the baby and his or her parents.
- Screening tests for phenylketonuria, congenital hypothyroidism, galactosaemia and cystic fibrosis and some features of these conditions.
- Terminology and interpretation of results of screening tests.
- The procedure used for newborn blood screen collection.

Process:

Activity
1. Collation of newborn screening research
2. Clarification of cystic fibrosis and screening tests
3. Screening worksheet
4. Preparation for SGS 9

Activity 1: Collation of newborn screening research

This exercise is aimed to encourage students to think about why newborns might be screened. (How severe is the disease? What are the consequences if not detected early? Are suitable tests available? Suitable treatments? etc.)

*The completed table is below.***Newborn Screening Table**

Disorder	PKU	CH	Galactosaemia	Cystic Fibrosis
Incidence				
No. per year NSW				
Carrier frequency (NSW)				
Genetic basis				
Disease mechanism				
Clinical effects				

Disorder	PKU	CH	Galactosaemia	Cystic Fibrosis
What is measured in the initial Newborn Screen?				
Sensitivity / specificity of the newborn screening test for this disorder				
Intervention				•
Outcome of disorder following intervention				

Activity 2. Clarification of cystic fibrosis and the screening tests

> **Answer the following questions.**
> - **How is the sweat test performed?**
> - **What does this test measure and why does it increase in cystic fibrosis?**

Activity 3. Screening worksheet
"What is baby Callum's risk of having cystic fibrosis?"

> **Clinical case scenario:**
> You are Katrina's GP. Katrina telephones you to say that the hospital has contacted her and asked her to bring her newborn baby, Callum, in for a sweat test. The hospital has informed her that Callum may have cystic fibrosis. She is very concerned and wants to know how likely it is that Callum has cystic fibrosis.

Questions:
1. What information will help the GP to understand the likelihood that Callum has cystic fibrosis?

The table below compares a screening test (e.g. CF newborn blood spot test) to a gold standard (i.e. sweat test).

2. Fill the appropriate boxes with the following: True positive (TP), True negative (TN), False positive (FP), and False negative (FN)

Gold Standard – Disease Status

Screening Test Result	Disease present	Disease Absent	TOTAL
Positive			
Negative			
TOTAL			

Students should fill in the following table as they answer Questions 3-10.

Screening measures	Formula (Q.3-8)	Calculation (Q.10)	Calculated value (Q.10)	Interpretation (Q.10)
PPV				
NPV				
Sensitivity				
Specificity				

3. How do you calculate the positive predictive value of the test (PPV)? How do you interpret the PPV?

4. How do you calculate the negative predictive value of the test (NPV)? How do you interpret the NPV?

5. How do you calculate the sensitivity of the test? How do you interpret the sensitivity?

6. If you know the sensitivity of a test, how do you calculate the false negative (FN) rate? How do you interpret FN rate?

7. How do you calculate the specificity of the test? How do you interpret the specificity?

8. If you know the specificity of a test, how do you calculate the false positive rate? How do you interpret the FP rate?

9. Using the information given below complete the following table:
1. The number of births in NSW/ACT is 100,000 per year
2. The incidence of CF is 1 in 2500
3. CF newborn screening misses 4 cases of CF per year
4. CF newborn screening detects 48 false positive cases per year

Gold Standard Test - Cystic fibrosis status (CF)

CF newborn screening IRT/DNA test	CF present	CF absent	TOTAL
Positive			
Negative			
TOTAL			

10. Using the information given in the table above calculate the following for the CF newborn screening test (IRT/DNA) and provide an explanation of what your findings mean:

a) **Positive predictive value (PPV)**

b) **Negative predictive value (NPV)**

c) **Sensitivity and FN rate**

d) Specificity and FP rate

11. As Katrina's GP, what advice would you give her regarding baby Callum's risk of CF?

Additional resources for those interested:
Newborn Bloodspot Screening National Policy Framework. (2018) Australian Health Minters' Advisory Council. https://www.health.gov.au/sites/default/files/documents/2020/10/newborn-bloodspot-screening-national-policy-framework.pdf

Newborn bloodspot screening video: Lived experience of a rare health condition (Better Health VIC): https://www.betterhealth.vic.gov.au/health/videos/newborn-bloodspot-screening-video%20(3 minutes)

Activity 4. Preparation for SGS 9
Students should review "The Cervix in Health and Disease" lecture (Dr Martin Weber) and should ensure they have access to the notes for this lecture.

All student are to access the following websites prior to SGS 9:
- Australian Government Department of Health: National Cervical Screening Program, specifically:
  - "Changes to the National Cervical Screening Program" at https://www.health.gov.au/news/important-changes-to-the-national-cervical-screening-programs-clinical-guidelines-pathway-for-women-at-intermediate-risk and
  - "National Cervical Screening Program – Information pack for health professionals" at https://www.health.gov.au/resources/collections/resources-for-healthcare-providers-national-cervical-screening-program (browse through the brochures, fact sheets and guidelines).
- The recently revised cervical screening pathway (https://wiki.cancer.org.au/australiawiki/images/4/4b/Flowchart_6_1_NEW.pdf)

Scenario 3: Infertility

Schedule

Please refer to the eMed Timetable for dates, times and locations of learning activities

Learning Activity	Principal Teacher
Scenario Plenary 3: Infertility	Chapman, Michael
Lecture 41: Many fertilized eggs do not lead to a baby	Chapman, Michael
Campus Clinical Skills Session 3: Online 'Bumps and bundles': eliciting histories from women	Spencer, Kalli
Lecture 42: Adrenergic Mechanisms 1	Finch, Angela
Lecture 43: Genetics 4: Population Genetics	Waters, Paul
Scenario Group Session 9: Cervical neoplasia-clinical application	Shirazi, Reza
Lecture 44: Adrenergic Mechanisms 2	Finch, Angela
Lecture 45: Ethics: human rights, reproduction and termination of pregnancy	Langendyk, Vicki
Online Activity 10: P15 Chromosomal Analysis prac Self Directed Preparation	Waters, Paul
Science Practical 15: Chromosome analysis and population genetics	Waters, Paul
Lecture 46: Folate metabolism	Le Bard, Rebecca
Lecture 47: Chronic inflammation	Champion, Sophia
Tutorial 3: Ethics 2: Is termination of pregnancy a right?	Langendyk, Vicki
Tutorial 4: Embryology Tutorial	Shirazi, Reza
Lecture 60: Embryology Review	Mohammadiroushandeh, Amaneh
Scenario Group Session 10: Project Presentations	Hulme, Anneliese
Hospital Clinical Skills Session 3: Eliciting a full medical history and summarising	Spencer, Kalli
Science Practical 16: Fetal Development	Mohammadiroushandeh, Amaneh
Lecture 48: Pathology of the female reproductive tract	Tedla, Nicodemus
Lecture 49: Sexually transmitted infections	Zhang, Li
Lecture 50: Microbiology of Pelvic Inflammatory Disease (PID)	Zhang, Li
Lecture 51: Fetal Physiology	Gibson, Karen
Scenario Group Session 11: Two Peas in a Pod?	Champion, Sophia
Lecture 52: Fertility and Fecundity	Sacks, Gavin
Lecture 53: An Infertile Couple	Sacks, Gavin
Science Practical 17: Organisms in PID	Zhang, Li
Lecture 54: Male sexuality	Balasubramanian, Sama
Lecture 55: Genetics Review	Waters, Paul
Scenario Group Session 12: Autonomic pharmacology	Liu, Lu
Science Practical 18: Healing and Chronic Inflammation	Weber, Martin
Lecture 56: Adaptation of the newborn to extra-uterine life	Gibson, Karen
Lecture 57: Female Sexuality	King, Rosie

Learning Activity	Principal Teacher
Tutorial 5: Anatomy Tutorial	Shirazi, Reza
Lecture 58: Physiology Review	Lewis, Trevor
Scenario Group Session 13: Revision, evaluation and Quiz	Lees, Justin
Lecture 59: Pharmacology Review	Liu, Lu

Note: This schedule is subject to change. It only shows the first instance of any one activity. Refer to the eMed Timetable system and email updates sent to your UNSW email account for accurate times and locations for face-to-face classes / access details for online activities.

Overview

This scenario focuses on a couple who have been so far unsuccessful in conceiving a child. They are seen discussing the issues with their GP and fertility specialist and undergoing a series of tests.

The scenario supports the course themes of 'conception, pregnancy and birth', and it aims to stimulate interest in a range of topics including:
- Molecular, cellular and microbiological causes of infertility
- Fetal physiology
- Adaptation of the newborn in term and pre-term delivery
- Counselling and screening
- The psychological impact of infertility on women and on couples.

Description

Married couple Lucy (38 years old) and Philip (42 years old) have been trying to get pregnant (unsuccessfully) for the last 6 months. Lucy has a history of pelvic infection (chlamydia) in her late teens and had an ectopic pregnancy 6 years ago. Lucy and Philip have a preliminary consultation with their GP to discuss their difficulties in trying to get pregnant. Their GP refers them to a fertility specialist, who organises a series of investigative tests.

Scenario 3- Infertility

SGS 9: Cervical neoplasia – clinical application

Aims

- To develop an understanding of the aetiology and pathogenesis of cervical neoplasia
- To apply this understanding to a clinical case scenario

Key concepts

- National Cervical Screening Program (NCSP)
- Human Papilloma Virus (HPV)
- The Cervical Screening Test (CST)
- Transformation zone
- Human Papillomavirus (HPV) Test with partial genotyping
- Low- and high-grade squamous intraepithelial lesions (LSIL and HSIL)
- Cervical carcinoma

Process

Activities
1. Explore the plenary, identify key issues
2. Introduction & clinical case scenario
3. Patient assessment and management, and Social and cultural issues
4. Effective communication / ethical & legal issues
5. Reflection - identify take home messages
6. Preparation for SGS 10

Activity 1. Explore plenary, identify key issues
Students will work together to reflect upon the plenary and relate the issues to graduate capabilities.

Activity 2. Introduction & clinical case scenario
This SGS will deal with HPV infection, cervical screening, HPV DNA testing, cervical cytology and squamous intraepithelial lesions (LSIL and HSIL). It begins by discussing a clinical case scenario.

Clinical case scenario: Michelle, a 38-year-old woman, presents for a Cervical Screening Test (CST). Her last Pap test was 6 years ago, which was normal.

Activity 3. Patient assessment and management, and Social and cultural issues
Students are to discuss possible answers to the questions below.

a.   How often should women have Cervical Screening Tests?

b. **What is the Cervical Screening Test? How does it differ from the Pap test? Is there any difference between having a Cervical Screening Test versus a Pap test from the patient's perspective?**

c. **Do HPV-vaccinated women still need to participate in cervical screening?**

d. **If Michelle's Cervical Screening Test results showed that oncogenic HPV was not detected, what advice should she be given?**

e. **If Michelle's Cervical Screening Test results showed that oncogenic HPV (not 16/18) was detected, and reflex Liquid-based Cytology (LBC) conducted on the same sample showed FIG. 1 (available on Moodle), what action should be taken?**

f.   If Michelle's Cervical Screening Test results showed that oncogenic HPV (not 16/18) was detected, and LBC conducted on the same sample showed FIG. 2 (available on Moodle), what action should be taken?

g.   If Michelle's Cervical Screening Test results showed that HPV 16/18 was detected, what action should be taken?

h.   What percentage of women participate in cervical screening?

i.   What barriers may have prevented Michelle from participating in cervical screening? What strategies may overcome these barriers?

j.   How might the change from previous cervical screening using Pap smears to the new Cervical Screening Test help overcome the barriers?

	Barriers	Strategies
Patient		
Economic		
Access		

Activity 4. Effective communication/ethical and legal issues
Students are to read the following article.

I spent 10 years not knowing I had cancer after my smear test was mixed up
Iggulden, Caroline. The Sun; London (UK) [London (UK)]19 May 2011: 44.
https://unsw.alma.exlibrisgroup.com/leganto/public/61UNSW_INST/citation/43180654530001731?auth=SAML

Discuss the following.

a. **How accurate are Pap smears?**

b. How accurate is HPV DNA testing?
c. Do you think this woman would be suing if she had been informed an error had been made?
d. Who is responsible for this error?

Note: This is not an isolated case. In 2018, it was revealed that 206 women in Ireland developed cervical cancer after their initial Pap test results had been incorrectly reported; of these, 162 women (79%) had not been informed that their original Pap test results were incorrect.

Students wishing to read more about what is now referred to as the "Cervical Check cancer scandal" can access the links below:
https://www.irishtimes.com/news/health/cervicalcheck-scandal-what-is-it-all-about-1.3480699
https://www.thejournal.ie/what-is-the-cervicalcheck-controversy-5358081-Feb2021/

Activity 5. Reflection – identify take home messages
Reflect on today's SG activities.

Activity 6. Preparation for SGS 10
Reminder – project presentations
Time has been set aside in SGS 10 for presentation of projects.

Recommended timing for presentations: 15 minutes presentation; 5 minutes questions/feedback

Generic criteria for giving feedback on oral presentations
Students should allocate an F, P-, P or P+ for each of the following criteria, with justification.
- **Explanation of project** – Project aim, methods and findings were clearly explained; findings are based on the evidence available; methodology is appropriate and adequate for the task.
- **Presentation** – Oral presentation was clear, well-structured and easily understood; Timing was controlled so that most aspects were covered; Audio visual aids or handouts were clear, well-structured and easy to read.
- **Understanding** – Project team appeared to have a good understanding of the topic; able to answer audience questions.
- **Stimulating learning** – Presentation was interesting; significant issues and unanswered questions were highlighted; the audience should be able to learn a lot from this presentation and be stimulated to find out more about the topic.

SGS 10: Project Presentations

Aims:

Most of the session is devoted to Project Presentations.

Process:

Activities
1. Project Presentations; feedback and discussion
2. Stress at the pointy end of term
3. Preparation for SGS 11

Activity 1. Project Presentations

Recommended timing for presentations: 15 minutes presentation; 5 minutes questions/feedback

Generic criteria for giving feedback on oral presentations
Students should allocate an F, P-, P or P+ for each of the following criteria, with justification.

- **Explanation of project** – Project aim, methods and findings were clearly explained; findings are based on the evidence available; methodology is appropriate and adequate for the task.
- **Presentation** – Oral presentation was clear, well-structured and easily understood; Timing was controlled so that most aspects were covered; Audio visual aids or handouts were clear, well-structured and easy to read.
- **Understanding** – Project team appeared to have a good understanding of the topic; able to answer audience questions.
- **Stimulating learning** – Presentation was interesting; significant issues and unanswered questions were highlighted; the audience should be able to learn a lot from this presentation and be stimulated to find out more about the topic.

Activity 2. Stress at the pointy end of term
This short activity is to review the experience of stress, the potential management of stress, coping mechanisms (both helpful and unhelpful), and to remind students to seek help when very stressed.

Activity 3. Preparation for SGS 11
Students are to pre read the following article on Moodle:

van Jaarsveld, C., Llewellyn, C., Fildes, A., Fisher, A. and Wardle, J. (2012). Are my twins identical: parent may be misinformed by prenatal scan observations? BJOG 119: 517-518
https://obgyn-onlinelibrary-wiley-com.wwwproxy1.library.unsw.edu.au/doi/epdf/10.1111/j.1471-0528.2012.03281.x

SGS 11: Considering Two Peas in a Pod?

Aims:

This session is devoted to "Two peas in a Pod". This exercise sees students work through a clinical case scenario, using their knowledge of reproductive physiology and biochemistry.

Process:

Activities
1. 'Two Peas in a Pod' clinical case
2. Post SGS 11 homework activity – The Stuart Twins videos
3. Preparation for SGS 12

Activity 1. 'Two Peas in a Pod?' clinical case
Students will work together on a clinical case. Information will be provided in a PPT.

Activity 2. Post SGS 11 homework activity: The Stuart Twins videos
After the SGS, students should watch the excerpts from an NBC Dateline documentary on the Stuart twins and their family. There are 3 excerpts - the links for these short videos are provided in Moodle (running time: approx. 20 minutes in total).

Although the quality of these videos is poor, Wilma Stuart very clearly articulates some of the challenges the family has faced. Furthermore, these videos show students that the second half of our 'Two Peas in a Pod' case was based on an actual case.

Activity 3. Preparation for SGS 12
In SGS 12 we will be undertaking some peer-teaching designed to reinforce your understanding of autonomic pharmacology.

Prior to SGS 12 students need to complete the online activity "The Hexamethonium Man" which can be found on Moodle.

As preparation for SGS 12, students should also review the Cholinergics 1 & 2 and Adrenergics 1 & 2 lectures and ensure they have access to their notes for these lectures.

SGS 12: Autonomic Pharmacology

Aims:

- Understand the structure of the autonomic nervous system
- Study some of the chemical mediators of the autonomic nervous system
- Identify and classify receptors in cholinergic and adrenergic transmission
- Understand the effects of autonomic neurotransmission on effector organs
- Help students to apply this knowledge to relevant cases

The autonomic nervous system innervates the heart, blood vessels, glands and many other visceral organs that contain smooth muscle. Studies on the autonomic nervous system have resulted in the classification of its receptors and many major types of drug action. In this session, students will work through a number of cases involving drugs that affect or have side effects mediated by the autonomic nervous system. Students have had 5 lectures on autonomic pharmacology.

Key concepts:

Autonomic nervous system, muscarinic, nicotinic and adrenergic receptors, effects of blockade/stimulation of these receptors, agonists and antagonists.

Process:

Activity
1. Autonomic pharmacology questions and answers
2. Preparation for SGS 13

Activity 1. Autonomic pharmacology questions and answers

Students will work in 4 groups and work through their allocated case using their lecture notes +/- research online to assist them (30 mins). Each group will present their answers and peer teach the other groups about their case (60 mins; approx. 15 mins per group). (See the following worksheet)

Cholinergic Questions

Case 1

A 45-year-old woman is brought to the hospital due to increasing muscle weakness, and severe urinary and faecal incontinence.

On examination: The patient is drooling and diaphoretic, and her pupils are constricted. She is dyspnoeic and has difficulty in carrying out a conversation. Bilateral lung wheezes are heard on auscultation. Her heart rate is slow but maintains a regular rhythm.

Vital signs are as shown below.

On review of her medical history, you learn that the patient suffers from myasthenia gravis and is being treated with neostigmine.

Vital Signs		
Heart rate	50 beats/min	Bradycardia (normal in adults is 60–80)
Blood pressure	130/88 mmHg	Normal
Respiratory rate	24 breaths/min	Rapid (normal resting rate 12-20)
Temperature	37 ° C	Normal
Pupil diameter	2 mm	Constricted (under normal conditions, the pupil dilates in
Pupillary light reflex	Absent	the dark and constricts in the light. When constricted, the pupillary diameter is about 3-4 mm, and the dark-adapted pupil can vary from 5 to 9 mm.)

Terminology:
Incontinence: involuntary loss of urine (urinary incontinence) or stool (faecal incontinence).
Drooling (salivary incontinence): saliva flows outside the mouth due to excess production of saliva
Diaphoretic: profuse sweating
Dyspnoeic: laboured or difficult breathing

---

a. What is myasthenia gravis?

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b. What is neostigmine? What is its mechanism of action in the treatment of myasthenia gravis?

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c. The patient has a neostigmine overdose. Explain each of the signs and symptoms presented by the patient. In your discussion, be sure to explain the structure of the cholinergic nervous system and what normally happens in each tissue and what type of receptors are involved.

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d. How do you manage this patient?

Case 2

An 8-year-old boy presents to the hospital with somnolence, slurred speech, and combative behaviour. His mother tells the doctor that he has eaten "blueberries" that he collected from the garden. On examination: His skin is warm and dry, and his mucous membranes are dry. His pupils are dilated and not reactive. He is running a high temperature and has a rapid heartbeat. The doctor suspects that the boy has anticholinergic poisoning.

Vital signs are as shown below.

Vital Signs		
Heart rate	140 beats/min	Tachycardia (normal in children under 10 is 70-120)
Blood pressure	100/60 mmHg	Normal
Respiratory Rate	22 breaths/min	Slightly rapid
Temperature	39°C	Fever
Pupil diameter	9 mm	Dilated
Pupillary reflex	Absent	

a. Why does the doctor suspect that the boy has anticholinergic poisoning?

b. What receptors are implicated in each of the symptoms presented by this boy? In your discussion, be sure to explain the underlying mechanisms.

c. How do you manage this patient?

Adrenergic Questions
Case 3
Julie is a 45-year-old woman who is obese (body mass index (BMI) of 35) and has type II diabetes. She comes to see you, her GP, following an overnight fast as she is going to have her blood glucose levels checked. During her consultation, she tells you that she is having trouble sleeping and feels like her heart is racing. She also tells you that she is taking a Chinese herbal medicine called ma huang to help her lose weight. She has been taking two capsules twice a day (twice the recommended dosage). Each capsule contains approximately 25 mg of ephedrine. You check her vitals (noted below)

Vital Signs		
Heart rate	100 beats/min	Tachycardia (normal in adults is 60–80)
Blood pressure	150/95 mmHg	Hypertensive
Blood glucose	8.3 mmol/L	Hyperglycaemic (normal fasting 3.5-6 mmol/L).
Pupil diameter	8 mm and do not respond to increases of ambient illumination	Dilated. Under normal conditions, the pupil gets wider in the dark and narrower in the light. When narrow, the diameter is about 3-4 mm, and the dark-adapted pupil can vary from 5 to 9 mm.

a.   **Describe the mechanism of action of ephedrine (a diagram may be used).**
b.   **Which of the changes induced by ephedrine may aid in weight loss?**
c.   **The activation of which receptors could account for each of Julie's adverse reactions (insomnia, hypertension, tachycardia, hyperglycaemia and pupil dilation)? In your discussion, be sure to explain the underlying mechanisms of action in respective tissue/organ and specify the adrenoceptor subtype responsible for mediating each side effect.**

Side Effect	Receptor

Case 4

George is a 75-year-old male. When he was in his early fifties, his GP regularly monitored his blood pressure as it had been elevated for some time. He tried to lose weight and exercise to reduce his cardiovascular risk, however his blood pressure was still elevated, so his GP prescribed a β-blocker (β-adrenoceptor antagonist). George's blood pressure has been well controlled by the β-blocker medication over the past 20 years. George has mild asthma that is triggered when he exercises.

Vital Signs		
Heart rate	70 beats/min	Normal (60–80 bpm in adults)
Blood pressure	130/88 mmHg	Normotensive
Respiratory rate	15 breaths/min	Normal
Temperature	37 ^{o}C	Normal

a.   **Describe the mechanism by which a β-adrenergic antagonist will lower blood pressure.**

b.   **How will the β-blocker affect George's heart rate at rest and when he exercises?**

c.   **Which β-adrenergic antagonist, metoprolol or propranolol, would be the best treatment for George's hypertension? Provide a reason for your choice.**

d. **What side effects might George experience from taking the β-adrenergic antagonist you chose above?**

Activity 2. Preparation for SGS 13

Students should review the "Pathology of the female reproductive tract" lecture (Prof Nicodemus Tedla) and have access to the notes for this lecture. This will assist with completion of activity 1 (Clinicopathological correlations of female reproductive diseases) and activity 2 (comparison of endometritis and endometriosis) in SGS 13.

SGS 13: Revision, Evaluation and Quiz

Aims

- To provide revision of key material and to assist in exam preparation
- To provide an opportunity for feedback to the course designers and to the facilitator

Key concepts:

Chronic inflammation, pelvic inflammatory disease, *Neisseria gonorrhoeae*, *Chlamydia trachomatis,* ectopic pregnancy, addressing learning issues from scenario and course.

Process

Activities
1. BGD A battle for SGS glory
2. Evaluation
3. Online activity: Clinicopathological correlations of female reproductive diseases
4. What is the difference between endometritis and endometriosis?
5.Group photo

Activity 1. BGD A battle for SGS glory
Preapre to battle for your SG!

Activity 2. Evaluation
Students are kindly requested to provide feedback on the course and facilitators for BGD A.

All students are to complete the myExperience surveys via the link in Moodle.

Thank you for your time to provide feedback, as it will be used to help plan the course for next year.

Activity 3. Online activity: Clinicopathological correlations of female reproductive diseases
Students will work through an online module revising key concepts of pelvic inflammatory disease and endometriosis. Students are to access the online activity in Moodle.

Activity 4. What is the difference between endometritis and endometriosis?
Complete the following table outlining the differences between these two conditions.

	Endometritis	**Endometriosis**
Definition		
Pathogenesis		

	Endometritis	Endometriosis
Signs and symptoms		
Diagnosis		
Treatment		

Activity 5: Group Photo
Memories last a life time. Capture the memories of your SGS by taking a group photo and posting it in the Teams general channel.

We hope that you have enjoyed BGDA in 2024!

Assessment

Assessment overview

Assessment in this course involves an assignment, a group project, a course examination and attendance requirements.

You must complete one group project and one assignment from the set list. Successful completion of the assignment and project work is necessary before your exam results will be released.

You are reminded that questions relating to the tutorials and scenario group sessions may be included in the end-of-course examination.

Refer to the Phase 1 guide and Medicine Program website for information on the format of the end-of-course examination and for detailed progression rules.

Online formative assessments will also be available throughout the course.

While your final result for the course will largely be determined by your performance in the end-of-course examination, the assignment and project work is also an important component of the assessment for the course. The graded assignments and projects will form part of the portfolio examination at the end of your second year, where they will be used as evidence of your achievement in each of the capabilities.

Academic honesty and plagiarism

Students should be familiar with the UNSW Student Conduct Policy and the policies relating to code of conduct particularly relating to academic misconduct and plagiarism
https://student.unsw.edu.au/conduct

The Faculty of Medicine and Health regards the maintenance of academic integrity by staff and students as a matter of the highest priority. The Faculty participates in the University's use of the similarity detection software Turnitin. Students work submitted to the eMed Portfolio system will be compared to other items in the eMed system, to material on the Internet, electronic publications and to items in the Turnitin database.

You can check your own assignments and projects against Turnitin before you submit it to eMed Portfolio by using the link in the Moodle module for this course located under "Assessment Activities".

You may use standard editing and referencing software, but not generative Artificial Intelligence (AI). You are permitted to use the full capabilities of the standard software to answer the question (e.g. such as Microsoft Office suite, Grammarly, etc.). If the use of generative AI such as ChatGPT is detected, it will be regarded as serious academic misconduct and subject to the standard penalties, which may include 00FL, suspension and exclusion.

The Learning Centre website is the main repository for resources for staff and students on plagiarism and academic honesty. These resources are located at: http://www.student.unsw.edu.au/plagiarism

Word count

The word count for assignments and projects includes all the text in the report, apart from the cover page, Acknowledgement of Country (if this is included) and the reference list. Assignments are up to 2000 words and projects up to 2500 words, unless there is an explicit exception for any individual assignment or project.

You should format your report in accordance with the specification on the Medicine program website, and include a word count. Ensure that you carefully reference your written work using the UNSW Medicine referencing style (APA). – In Moodle under the Assessment Activities and Information:
(https://moodle.telt.unsw.edu.au/mod/resource/view.php?id=4304185)

Please refer to the Medicine program website for penalties that will be applied to reports that exceed the maximum length:
http://medprogram.med.unsw.edu.au/assignments-and-projects-phase-1#tab-303400342

Asking for help
Each assignment and project has a discussion board on Moodle - please post any questions you may have there. For all general questions related to assignments and projects such as word limits, report requirements and submissions, please contact Anneliese Hulme (a.hulme@unsw.edu.au) or Justin Lees (justin.lees@unsw.edu.au).

Use of AI in Phase 1 Assignments & Projects

During the early planning, researching and evaluation stage of your assignment or group project you are permitted to use software to generate initial ideas and structures. However, you must develop or edit those ideas to such a significant extent that what is submitted is your own work, i.e., what is generated by the software should not be a part of your final submission. It is a good idea to keep copies of your initial drafts to show the convenors if there is any uncertainty about the originality of your work.

If you have used AI tools during any stage of your assignment or project, you should reflect on this usage in your generic reflection/teamwork reflection including how it helped your learning or preparation. All students are required to include the Phase 1 AI declaration on the title page of their assignment.

Please note that your submission will be passed through an AI-text detection tool. If your marker has concerns that your answer contains passages of AI-generated text that have not been sufficiently modified you may be asked to explain your work, but we recognise that you are permitted to use AI generated text as a starting point and some traces may remain. If you are unable to satisfactorily demonstrate your understanding of your submission you may be referred to UNSW Conduct & Integrity Office for investigation for academic misconduct and possible penalties.

Phase 1 AI Declaration
Please include ONE of the following declarations on the title page (not included in word count).
- During the preparation of this assessment, I/we used [NAME of TOOL/ SERVICE/ SOFTWARE] for the purpose of [briefly explain]. After using this AI assistance, I/we reviewed and edited the content and take full responsibility for the content of this assessment.
  OR
- During the preparation of this assessment, I/we did **NOT USE ANY** AI tools, services or software.

Assignments and projects offered in BGD A 2024

There is a discussion board open for each assignment and project in Moodle.

Assignments

	Title	Focus Capabilities
A1	The Age of Consent	• Ethics and Legal Responsibilities • Effective Communication
A2	The Placenta	• Using Basic and Clinical Sciences • Patient Assessment and Management
A3	QMP: Delaying Pregnancy until you are over 35 years old: What can be the Harm in that?	• Social and Cultural Aspects of Health and Disease • Self-Directed Learning and Critical Evaluation
A4	Pharmaceutical use During Pregnancy	• Using Basic and Clinical Sciences • Patient Assessment and Management

Projects

	Title	Focus Capabilities
P1	Endometriosis	• Using Basic and Clinical Sciences • Patient Assessment and Management
P2	Understanding the Healthy Beginnings Scenario	• Self-Directed Learning and Critical Evaluation • Teamwork
P3	Three Biological Parents	• Using Basic and Clinical Sciences • Ethics and Legal Responsibilities
P4	Surrogacy: An Ethical Conundrum	• Using Basic and Clinical Sciences • Ethics and Legal Responsibilities

Please note that all project groups will be expected to report to their scenario group **in scenario group session 10**, and that all members of the group will be expected to answer questions from the group and the facilitator on the presentation.

Submission to eMed

Information on submitting assessments to eMed is available at:
https://medprogram.med.unsw.edu.au/emed-portfolio

Please refer to the Medicine Program website for penalties that you will incur if you submit after the due dates.
https://medprogram.med.unsw.edu.au/penalties

If there are extenuating circumstances that prevent you from meeting the due date for submission, contact the course convenor **before the due date** to request an extension. In most cases a medical certificate or a similar level of documentation will be required. Since assignments are due on Monday at 9 am in week 5 and projects are due on Monday at 9 am in week 7, requests for extensions should be submitted **by 3 pm on the previous Friday**. An exception may be made for an incident or misadventure during that weekend. Students experiencing ongoing issues must apply earlier.

Compulsory registration of assignment and project choice

All projects and assignment choices must be registered via eMed Registrations (MyPreferences submenu) **by 4pm, Friday 3rd May, 2024 (Week 2).** You are encouraged to choose your assignment early and begin work on this in Week 1.

Registration of assignments and projects is **compulsory**. Your assessment task may not be marked if you have failed to register it and you may be given a maximum grade of P- for your generic Self-Directed Learning and Critical Evaluation capability.

Only one student from your project group should register in eMed on behalf of the group. While you need to finalise the composition of your group by the end of week 2, the formal declaration of group membership only occurs at the time of group submission into eMed Portfolio.

Due dates for submission of project reports and assignments

Submission of **Assignments**	9am, Monday 20th May 2024
Submission of **Project reports** and any supporting evidence	9am, Monday 3rd June 2024

Capabilities

The criteria for assessment of the focus capabilities are described in each assignment and project.

The criteria for assessment of the generic capabilities are provided below (and are also available in the Program Guide and on the Medicine Program website: https://medprogram.med.unsw.edu.au/grading.)

Capability	Criteria
Effective communication: (applicable to both assignments and projects)	• Clarity (clear, simple, grammatical language, terms explained) • Logical structure. • Appropriate language, length, style and format for the intended audience. • Appropriate use of media (visuals, graphs, video, etc).
Self-directed learning and critical evaluation: (applicable to both assignments and projects)	• Sources (range, citation standards, quality, relevance, search strategy, people consulted) • Scope (addresses all requirements of the assignment or project) • Critical thinking (evidence of awareness of bias in sources, others' viewpoints, own views, logical argument)
Development as a reflective practitioner*: (applicable to assignments)	• Provides a credible self-assessment of the quality of the assignment report in terms of its strengths and weaknesses in meeting the assessment criteria for the focus and generic capabilities. • Identifies strengths and weaknesses of the research process used and articulates credible plans to improve research skills. • Reflects on the assignment topic, the research process and draws implications for wider learning and future practice.
Teamwork: (applicable to projects)	• Provides evidence of team meetings by appending to the project report documents such as: agendas, minutes, summaries of discussions, or lists of decisions made. • Provides evidence of the evaluation of the group process using tools provided, focusing on at least one of the following: group roles and responsibilities, communication between group members, resolution of conflicts, behaviour in group meetings (task, support, non-productive). • Identifies teamwork issues, (e.g. discussion of the contributions of team members as required) that facilitated or impeded the group process and outlines plans to address these in future group work.

Assignment 1: The Age of Consent

Graduate capabilities assessed in this assignment

- Ethics and Legal Responsibilities
- Effective Communication

The report will also be assessed for each of the generic capabilities for assignments (Effective Communication, Self-Directed Learning and Critical Evaluation, and Development as a Reflective Practitioner).

Aims

The age of consent is an important social and legal age, which aims to protect young people from sexual abuse and exploitation whilst also considering their right to age-appropriate sexual relationships and development. Medical professionals have an important role when dealing with cases where the age of consent is at issue and there is potential for sexual abuse. Indeed, a treating doctor may be the first person consulted by a victim of sexual abuse. Therefore, knowledge of the laws relating to the age of consent is essential.

Course themes and related learning activities

This assignment relates to the Beginnings, Growth and Development course theme: Conception, pregnancy and birth.

Task description

1. Review current laws relating to the age of consent in NSW. Describe two examples of how these laws will impact your future treatment of patients.
2. Briefly outline how NSW laws regarding age of consent differ from other states and territories in Australia. Include a discussion of any significant impact upon patient health outcomes due to variations from NSW laws.
3. Review age of consent laws in one other country. Briefly discuss any significant impact upon patient health outcomes due to variations from NSW laws.
4. Outline any possible legal issues for the local treating doctor to consider in relation to the video you viewed in scenario group session 2 (SGS2) – 'Teenage Pregnancy: Jessica'.
5. Write a 600-word letter to the office of the 'NSW Chief Health Officer' presenting your opinion of the currently available guidelines and information for medical practitioners concerning the age of consent. Include your opinion of the laws in NSW with respect to patient welfare and healthy pregnancies.

Time allocation guide

Weeks 1 & 2   Background reading and research. Read the suggested reference and do a literature search using key words to source further relevant information on the areas required.

Week 3   Begin drafting responses to each of the tasks. Think about what information needs to be included in your letter.

Week 4   Finalise your letter and prepare your final report.

Week 5   Proofread and submit your assignment with no track changes into eMed and Turnitin in Moodle by the due date. Submit your letter as part of the single assignment document as an appendix directly after your reflection **(i.e. before the reference list; use only one reference list for all tasks including the letter, if you decide to include referencing in the letter)**.

Report requirements

The report should be a maximum of 2000 words, including a reflective component and the 600-word letter.

Reports should be formatted in accordance with the specification on the Medicine program website and include a word count on the title page (refer to word count guidelines). Ensure that you carefully reference your work using the UNSW Medicine referencing style (APA 7th edition). Please refer to the Medicine program website for penalties that will be applied to reports that exceed the maximum length:
https://medprogram.med.unsw.edu.au/penalties (login required).
Further details at: http://medprogram.med.unsw.edu.au/assignments-and-projects-phase-1.

Assessment criteria

For a **P** grade, the written report (including the appendix) should meet the following criteria:

Focus Capability 1: Ethics and legal responsibilities
- Reviews the legal regulations that apply to the age of consent in NSW and other jurisdictions. **(1.7.7 Understands the legal responsibilities of health professionals in relation to duty of care)**
- Explains how these age of consent regulations can affect patient treatment and welfare. **1.7.5 Understands the need for patient autonomy, informed consent, confidentiality and privacy.)**

Focus Capability 2: Effective Communication
- Writes a clear opinion of the information available to medical students and practitioners, regarding the current laws of age of consent.
- Clearly articulates to health authorities in NSW any concerning issues for medical practitioners associated with laws relating to the age of consent. **(1.4.4 Develops clear written/visual information in relation to health and health promotion for specific target groups; 1.4.6 Writes clearly and logically, using appropriate language, media and style for the intended audience.)**

In addition to the focus capabilities listed above, the generic capabilities (Effective Communication; Self-Directed Learning and Critical Evaluation; Development as a Reflective Practitioner) will be assessed using the generic criteria for assignments available in this course guide, in the Program Guide and on the Medicine Program website. https://medprogram.med.unsw.edu.au/grading

References

The listed references should be used for background reading on the topic. Students should also carry out their own **extensive** research of published literature and legislation.

- Mathews, B., & Sanci, L. A. (2021). Doctors' criminal law duty to report consensual sexual activity between adolescents: legal and clinical issues. *Med J Aust*, 215(3), 109-113 e101. Doctors’ criminal law duty to report consensual sexual activity between adolescents: legal and clinical issues (mja.com.au)
- Petroni, S., Das, M., & Sawyer, S. M. (2019). Protection versus rights: age of marriage versus age of sexual consent. *Lancet Child Adolesc Health*, 3(4), 274-280. https://doi.org/10.1016/S2352-4642(18)30336-5
- Pitre, A., & Bandewar, S. S. (2024). Law Commission of India report on the age of consent: Denying justice and autonomy to adolescents. *Indian J Med Ethics*, IX(1), 3-6. https://doi.org/10.20529/IJME.2024.001
- Tallarico, R., Ozah, K., & Orievulu, K. S. (2021). Age of consent: A case for harmonizing laws and policies to advance, promote and protect adolescents' sexual and reproductive health rights. *Afr J Reprod Health*, 25(2), 94-102. Age of consent: A case for harmonizing laws and policies to advance, promote and protect adolescents' sexual and reproductive health rights - PubMed (nih.gov)

Contact

Please post any questions regarding this assignment in the discussion board available in Moodle.

Assignment 2: The Placenta

Graduate Capabilities assessed in this assignment

- Using Basic and Clinical Sciences
- Patient Assessment and Management

The report will also be assessed for each of the generic capabilities for assignments (Effective Communication, Self-Directed Learning and Critical Evaluation, and Development as a Reflective Practitioner).

Aims

The placenta is an amazing organ formed from tissues of both the embryo and the mother. In this assignment, you will research the development of the placenta and its functions. Additionally, you will consider why the maternal immune system rarely rejects the placenta and developing fetus, even though they are genetically different from the mother. You will also outline abnormalities associated with the development of the placenta and describe basic clinical diagnosis and management procedures.

Course themes and related learning activities

This assignment relates to the course theme: Conception, pregnancy, and birth.

Task description

Write a report that includes the following. Include illustrations where appropriate.
1. Describe the development of the placenta.
2. Describe the structure and functions of the mature placenta.
3. Investigate and describe the current explanations for immune tolerance of the mother to the conceptus.
4. Examine three abnormalities associated with placental implantation – placenta accreta, placenta praevia and vasa praevia. For each of them, describe and compare following:
   a. Clinical features (including complications)
   b. Diagnosis and risk factors
   c. Principles of management

Time allocation guide

Weeks 1 & 2 Background reading and research. Read the suggested references and do a literature search using key words to source further relevant information on the areas required.

Week 3 Begin drafting responses to each of the tasks.

Week 4 Finalise your report.

Week 5 Proofread and submit your assignment with no track changes into eMed and Turnitin in Moodle by the due date.

Report requirements

The report should be a maximum of 2000 words, including a reflective component.

Reports should be formatted in accordance with the specification on the Medicine program website and include a word count on the title page (refer to word count guidelines). Ensure that you carefully reference   your work using the UNSW Medicine referencing style (APA 7th edition). Please refer to the Medicine program website for penalties that will be applied to reports that exceed the maximum length:
https://medprogram.med.unsw.edu.au/penalties (login required).
Further details at: http://medprogram.med.unsw.edu.au/assignments-and-projects-phase-1.

Assessment criteria

For a P grade, your report should meet the following criteria:

Focus Capability 1: Using Basic and Clinical Sciences
- Clearly describes the formation of the chorionic villi and establishment of the uteroplacental circulation. Clearly describes the relationship of the chorion and decidual tissues. **(1.1.1 Explains mechanisms that maintain a state of health).**
- Demonstrates an understanding of the structure and function of the mature placenta. Demonstrates an understanding of maternal immune tolerance of the conceptus. **(1.1.1 Explains mechanisms that maintain a state of health).**
- Demonstrates an understanding of three (3) potential abnormalities associated with the development of the placenta**. (1.1.2 Recognises health problems and relates normal structure and function to abnormalities).**

Focus Capability 2: Patient Assessment and Management
- Clearly describes the clinical features, risk factors and potential complications associated with three (3) developmental abnormalities of placental implantation. **(1.3.8 Applies clinical reasoning to relevant health scenarios, including the identification of key features and clinical patterns).**
- Demonstrates an understanding of the diagnosis and principles of management of these placental abnormalities. **(1.3.9 Articulates a general strategy of management, consistent with the pathophysiological model of illness at an elementary level that includes an understanding of foundation principles).**

In addition to the focus capabilities listed above, the generic capabilities (Effective Communication; Self-Directed Learning and Critical Evaluation; Development as a Reflective Practitioner) will be assessed using the generic criteria for assignments available in this course guide, in the Program Guide and on the Medicine Program website. https://medprogram.med.unsw.edu.au/grading

References

1. Online Resources
- Jansen, C., Kastelein, A.W., Kleinrouweler, C.E., Van Leeuwen, E., De Jong, K.H., Pajkrt, E., & Van Noorden, C. (2020). Development of placental abnormalities in location and anatomy. *Acta Obstetricia et Gynecologica Scandinavica*, *99*(8), 983-993. https://unsw.alma.exlibrisgroup.com/leganto/public/61UNSW_INST/citation/60483329130001731?auth=SAML
- Melcer, Y., Maymon, R., & Jauniaux, E. (2018). Vasa previa: prenatal diagnosis and management*. Current Opinion in Obstetrics & Gynecology, 30*(6), 385-391 https://unsw.alma.exlibrisgroup.com/leganto/public/61UNSW_INST/citation/60483331570001731?auth=SAML
- UNSW Embryology Homepage: http://embryology.med.unsw.edu.au/

2. Textbooks
- Moore, K.L., Persaud, T.V.N., & Torchia, M.G. (2019). The Developing Human: clinically oriented embryology. (11th ed.). Saunders. (The 2015 edition is available online through UNSW Library at https://unsw.alma.exlibrisgroup.com/leganto/public/61UNSW_INST/citation/52581516230001731?auth=SAML)
- Sadler, T.W. (2019). Langman's Medical Embryology (14th ed.) Wolters Kluwer. (Hard copy available at UNSW Library)
- Schoenwolf, G.C, Bleyl, S.B., Brauer, P.R., & Francis-West, P.H. (2015). Larsen's Human Embryology (5th ed.). Churchill Livingstone. (Available online through UNSW Library at https://unsw.alma.exlibrisgroup.com/leganto/public/61UNSW_INST/citation/52581595330001731?auth=SAML)

Contact:

Please post any questions regarding this assignment in the discussion board available in Moodle.

Assignment 3: Delaying pregnancy until you are over 35 years old: what can be the harm in that?

Graduate Capabilities assessed in this assignment

- Social and Cultural Aspects of Health and Disease
- Self-Directed Learning and Critical Evaluation

The report will also be assessed for each of the generic capabilities for assignments (Effective Communication, Self-Directed Learning and Critical Evaluation, and Development as a Reflective Practitioner).

Aims

Over the last few decades, women in Australia have tended to have their babies later in life. The media has publicised births of healthy babies to several celebrities who are in their 40s (e.g. Madonna, Nicole Kidman, and more recently Janet Jackson, Alanis Morissette and Kenya Moore). While there may be compelling social and cultural reasons for postponing childbearing, is it medically sound to delay pregnancy beyond 35 years of age?

In this assignment you will examine the statistics for age-specific fertility rates in Australia and consider the social and cultural reasons why women are delaying childbearing. You will also critically evaluate the scientific literature to determine the impact of **'advanced maternal age'** (≥35 years of age at expected time of the birth) on obstetric complications and fetal and maternal outcomes. Note: while it is recognised that ability to conceive declines with age, this assignment should focus on population fertility rates and outcomes of pregnancy rather than infertility.

Course themes and related learning activities

This assignment relates to the course theme: Conception, pregnancy and birth. Also, your QMP skills of evidence-based practice (EBP) will be useful here, i.e. literature searching, identification of best available evidence and critical evaluation.

Task description

1. **Epidemiology:**
   - Find and interpret the **trends in fertility rate** and **maternal age** in Australia from the past 30 years using data e.g. from the **Australian Bureau of Statistics** and the **Australian Institute of Health and Welfare** *(see Reference/Source tips below)*. We suggest that you use the following measures, but you can include others if appropriate:
     - Trends in maternal age and fertility rates (age-specific fertility rates over time, in comparison to other countries and by various socio-economic comparisons)
     - Trends in maternal age at first birth
     - Trends in childlessness
     - Relevant perinatal statistics by maternal age (including live birth rate, stillbirth rate, neonatal mortality, gestational age at birth, Apgar scores, birthweight etc.).
   - Discuss possible **social and cultural** reasons for these trends including effects of socioeconomic advantage on age-specific fertility rates. Explain these findings as a factual background at the beginning of your assignment.
2. **Searching for evidence:**
   - Using appropriate databases and online sources, starting with Medline, perform a literature search to find information that will help you **to determine** whether advanced maternal age **influences pregnancy outcome**.
   - You will not find clinical randomised controlled trials for your primary research question as it is not ethical to carry out experimental trials of pregnancy by age in humans. However, there are some recent systematic reviews, with and without meta-analyses, and cohort and case-control studies. There are also animal studies. In addition, you might search for clinical practice guidelines (Hint: see relevant Specialist College websites e.g. https://www.ranzcog.edu.au/; https://www.rcog.org.uk/guidance/).
   - Factors to consider include fetal outcomes (e.g. prematurity and low birth weight), maternal medical complications of pregnancy (e.g. hypertension, gestational diabetes), birth complications (e.g. breech presentation, caesarean section) as well as fetal and maternal mortality.
3. **Search strategy and results:** Keep a record of your search strategy and outcomes so that you can tabulate and append this. Use a simple table with column headings such as: database used, keywords used, limits set, number of viable hits, suitable sources further appraised, usefulness.

4. **Critical appraisal:** The evidence that you find should be appraised using a simple appraisal method (e.g. 'CRAAP') or using an appropriate checklist such as CASP (see references below). Append a second table that summarises your appraisal of one key article (an actual research study is preferable). Due to the nature of this topic, most studies that you will find will be observational.

5. **Presentation of findings and conclusion:** Present your appraisal findings within your report, including the specific topics below:

   a. **Background and Discussion:** Present the epidemiological data you collected to demonstrate the patterns across time (the last thirty years) and demographic groups. Identify and discuss the main social and cultural reasons that are contributing to the trend for women to have their children later in life. Specifically, you should provide a table of pregnancy outcomes influenced (adversely or favourably) by advanced maternal age, indicating the magnitude of the effects that have been identified.

   b. **Evidence for the research question:** Present and discuss whether the available data provide sufficient evidence to advise women to have their children before the age of 35 years. Weigh this up against the possible advantages of delaying pregnancy past this age. If you think there is sufficient evidence to suggest advising pregnancy earlier, what measures are likely to be most effective in reversing the current trend to delay childbearing?

   c. **Conclusion:** Conclude with a logical argument for or against whether there is sufficient medical evidence to advise women to have children before the age of 35 years. If there is sufficient evidence that delay is harmful, briefly describe plausible public health measures that have been or might be introduced to alert women to these issues and allow them to make informed choices about whether or not to delay pregnancy.

Time allocation guide

Weeks 1 & 2 Examine Australian data on age-specific fertility rates. Investigate possible reasons for women tending to delay childbearing.

Weeks 2 & 3 Conduct a literature search on effects of advanced maternal age on pregnancy outcomes. Evaluate the quality and relevance of the information found.

Week 4 Write up your report. Proof read the final report.

Week 5 Submit your assignment and any appendices with no track changes into eMed and Turnitin in Moodle by the due date.

Report requirements

The report should be a maximum of 2000 words, including a reflective component. The two appendices are not included in the wordcount.

Reports should be formatted in accordance with the specification on the Medicine program website and include a word count on the title page (refer to word count guidelines). Ensure that you carefully reference your work using the UNSW Medicine referencing style (APA 7th edition). Please refer to the Medicine program website for penalties that will be applied to reports that exceed the maximum length: https://medprogram.med.unsw.edu.au/penalties (login required).

Further details at: http://medprogram.med.unsw.edu.au/assignments-and-projects-phase-1.

Assessment criteria

For a P grade, your report should meet the following criteria:

Focus Capability 1: Social and Cultural Aspects of Health and Disease

- Demonstrates an understanding of terminology used including total fertility rate, age-specific fertility rate, socio-economic advantage /disadvantage. Clearly describes the changing demographics of maternal age in Australia over the last three decades, including the effects of socio-economic advantage on age-specific fertility rates in Australia. **(1.2.4 Describes and interprets patterns of illness including use of basic statistical and epidemiological concepts)**

- Develops a list of the pregnancy outcomes which are influenced (adversely or favourably) by advanced maternal age, indicating the magnitude of the effects that have been identified. **(1.2.1 Identifies environmental, psychological, social and cultural issues which contribute to health problems in a scenario)**

- Identifies the main social and cultural reasons contributing to the trend for women to have their children later in life. **(1.2.1 Identifies environmental, psychological, social and cultural issues which contribute to health problems in a scenario)**

Focus Capability 2: Capability: Self-Directed Learning and Critical Evaluation
(**1.6.4. Demonstrates the following skills in Phase 1: Formulating and applying appropriate information searching strategies; using databases such as Medline and other information sources appropriately; appraising the quality and relevance of the information found; using appropriate citation standards)**

- Sources appropriate, high quality and relevant information on pregnancy outcomes and maternal age, appending a comprehensive search strategy in a tabulated form.
- Critically evaluates and discusses different sources found, demonstrating an appropriate appraisal process in a summary table for one key study.
- Presents a logical argument for or against whether there is sufficient medical evidence to advise women to have children before the age of 35 years.

In addition to the focus capabilities listed above, the generic capabilities (Effective Communication; Self-Directed Learning and Critical Evaluation; Development as a Reflective Practitioner) will be assessed using the generic criteria for assignments available in this course guide, in the Program Guide and on the Medicine Program website. https://medprogram.med.unsw.edu.au/grading

References/ Resources

Statistical resources:
- Australian Bureau of Statistics (2013). One for the country: recent trends in fertility. In *Australian Social Trends* 4102.0. Canberra: AIHW. Retrieved 31 Jan 2024 from:
  https://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4102.0Main+Features1Nov%202013
  Note that these data are quite old but have not been comprehensively updated since 2013. Therefore, it is a good starting point for further data and literature exploration.
- Australian Bureau of Statistics (2022). Population Projections. Retrieved 31 Jan 2024 from:
  https://www.abs.gov.au/statistics/people/population/population-projections-australia/latest-release
- Australian Bureau of Statistics (2022). *Births, Australia*. Retrieved 31 Jan 2024 from:
  https://www.abs.gov.au/statistics/people/population/births-australia/2022
- Australian Institute of Health and Welfare (2023). Australia's mothers and babies. Retrieved 31 Jan 2024:
  https://www.aihw.gov.au/reports/mothers-babies/australias-mothers-babies/contents/about

(Make sure you look at the "perinatal data visualisations" available from this page – excellent charts are generated at the touch of a button with maternal age options).

- Laopaiboon, M., Lumbiganon, P., Intarut, N., Mori, R., Ganchimeg, T., Vogel, J.P., et al. (2014). Advanced maternal age and pregnancy outcomes: a multicountry assessment. *BJOG: An International Journal of Obstetrics & Gynaecology, 121 Suppl 1*,49-56. Doi 10.1111/1471-0528.12659
  https://unsw.alma.exlibrisgroup.com/leganto/public/61UNSW_INST/citation/60483357330001731?auth=SAML
- Schimmel, M.S. Bromiker, R., Hammerman, C., Chertman, L., Ioscovich,A., Granovsky-Grisaru,S., etal. (2015). The effects of maternal age and parity on maternal and neonatal outcome. *Archives of Gynecology & Obstetrics, 291(4)*,793-8. Doi 10.1007/s00404-014-3469-0
  https://unsw.alma.exlibrisgroup.com/leganto/public/61UNSW_INST/citation/60483358600001731?auth=SAML

EBP Tools:
Critical Appraisal Skills Programme. (2018). CASP checklists for cohort, case-control and other types of studies. Retrieved 31 Jan 2024 from: https://casp-uk.net/casp-tools-checklists/

Video on the 'CRAAP' tool by University of South Australia: Retrieved 31 Jan 2024 from:
https://www.youtube.com/watch?v=2U3dkTLjuvE

Contact:
Please post any questions regarding this assignment in the discussion board available in Moodle.

Assignment 4: Pharmaceutical use during pregnancy

Graduate capabilities assessed in this assignment

- Using Basic and Clinical Sciences
- Patient Assessment and Management

The report will also be assessed for each of the generic capabilities for assignments (Effective Communication; Self-Directed Learning and Critical Evaluation; Development as a Reflective Practitioner).

Aims

More than 80% of women have reported taking at least one medication during pregnancy and the average number used anytime in pregnancy increased from **2.5** in 1976-1978 to **4.2** in 2006-2008 (Mitchell, 2008). Considering that most drugs cross the placenta and that fetal drug concentrations are close to maternal concentrations, maternal drug use may pose a risk of congenital defects. On the other hand, many pregnant women suffer from medical conditions that require ongoing or episodic medications to maintain maternal health and well-being, which is critical for the optimal development of the conceptus. Thus, the risks and benefits of drug use during pregnancy need to be carefully balanced. The aims of this assignment are:

1. To develop your understanding of how drug use during pregnancy can affect the fetus.
2. To understand how the pharmacokinetics of drugs taken are affected by the pregnancy.
3. To appreciate the importance of balancing the risks and benefits of pharmacotherapy during pregnancy.

Course themes and related learning activities

This assignment relates to the Beginnings, Growth and Development course theme: Conception, pregnancy, and birth.

Task description

1. Provide a general overview of medication use during pregnancy, discussing drug classes [e.g. analgesic drugs, anti-epileptic drugs, antidepressants] rather than detailing individual drugs. You are required to consider the following areas:
   - The categorisation of the risk of drugs in pregnancy (you should use the TGA Categorisation System)
   - Effects of the pregnancy on pharmacokinetics [e.g. drug metabolism, clearance and volume of distribution] and how this may affect drug dosing
   - Drugs associated with teratogenicity
2. Choosing ONE example drug class you have discussed above that is used to treat a medical condition, explore the potential advantages and disadvantages of using this drug class during pregnancy, with an emphasis on health benefits to the mother versus adverse effects on the fetus.
3. Identify the issues medical practitioners need to consider when prescribing medications to pregnant women.

Time allocation guide:

Weeks 1 & 2   Background reading and research.
Week 3   Continue research, linking together the main concepts and outlining your discussion. Begin drafting responses to each of the tasks.
Week 4   Prepare final report.
Week 5   Proof read and submit your assignment with no track changes into eMed and Turnitin in Moodle by the due date.

Report requirements

The report should be a maximum of 2000 words, including a reflective component.

Reports should be formatted in accordance with the specification on the Medicine program website and include a word count on the title page (refer to word count guidelines). Ensure that you carefully reference your work using the UNSW Medicine referencing style (APA 7th edition). Please refer to the Medicine program website for penalties that will be applied to reports that exceed the maximum length:
https://medprogram.med.unsw.edu.au/penalties (login required).
Further details at: http://medprogram.med.unsw.edu.au/assignments-and-projects-phase-1.

Assessment criteria

For a **P** grade, the written report should meet the following criteria:

Focus Capability 1: Using Basic and Clinical Sciences

- Demonstrates an understanding of the pharmacokinetics relevant to drug dosing during pregnancy. **(1.1.1 Explains mechanisms that maintain a state of health)**
- Demonstrates an understanding of the pharmacological basis for the adverse effects of drugs on fetal development. Explains the reasons for these effects and the possible consequences. **(1.1.3 Describes the pathophysiological process of health problems and can explain their basis at the whole person, organ system, cellular and molecular levels)**
- Demonstrates an appreciation that *the benefits of some drugs to the mother likely outweigh their risks to the fetus.* **(1.1.3 Describes the pathophysiological process of health problems and can explain their basis at the whole person, organ system, cellular and molecular levels)**

Focus Capability 2: Patient Assessment and Management

- Identifies the issues that need to be considered when making therapeutic decisions during pregnancy [health benefits to the mother versus adverse effects on the fetus]. **(1.3.8 Applies clinical reasoning to relevant health scenarios, including the identification of key features and clinical patterns)**
- Outline strategies to ensure the safe and effective use of medications in pregnant women with pre-existing medical conditions for which treatment must continue. **(1.3.8 Applies clinical reasoning to relevant health scenarios, including the identification of key features and clinical patterns)**

In addition to the focus capabilities listed above, the generic capabilities (Effective Communication; Self-Directed Learning and Critical Evaluation; Development as a Reflective Practitioner) will be assessed using the generic criteria for assignments available in this course guide, in the Program Guide and on the Medicine Program website. https://medprogram.med.unsw.edu.au/grading

References

These listed references should be used for background reading on the topic. Students should also carry out their own research of published literature.

- Anger, G.J. and Piquette-Miller, M. (2008). Pharmacokinetic studies in pregnant women. *Clin Pharmacol Ther 83*(1):184-187. doi: 10.1038/sj.clpt.6100377
  https://unsw.alma.exlibrisgroup.com/leganto/public/61UNSW_INST/citation/60483510060001731?auth=SAML
- Australian Government Department of Health-Therapeutic Goods Administration: Australian categorisation system for prescribing medicines in pregnancy.
  https://www.tga.gov.au/australian-categorisation-system-prescribing-medicines-pregnancy
- Bánhidy, F., Lowry, R.B. and Czeizel. A.E. (2005). Risk and benefit of drug use during pregnancy. *Int J Med Sci 2*(3):100-106. doi: 10.7150/ijms.2.100
  https://unsw.alma.exlibrisgroup.com/leganto/public/61UNSW_INST/citation/60483511480001731?auth=SAML
- Feghali, M., Venkataramanan, R., & Caritis, S. (2015). Pharmacokinetics of drugs in pregnancy. Semin Perinatol, 39(7), 512-519. https://doi.org/10.1053/j.semperi.2015.08.003
- Henerson, E. and Mackillop, L. (2011). Prescribing in pregnancy and during breast feeding: using principles in clinical practice. *Postgrad Med J 87*(1027): 349-354. doi: 10.1136/pgmj.2010.103606.
  https://unsw.alma.exlibrisgroup.com/leganto/public/61UNSW_INST/citation/60483512360001731?auth=SAML
- Mitchell, A. A., Gilboa, S. M., Werler, M. M., Kelley, K. E., Louik, C., Hernandez-Diaz, S., & National Birth Defects Prevention, S. (2011). Medication use during pregnancy, with particular focus on prescription drugs: 1976-2008. Am J Obstet Gynecol, 205(1), 51 e51-58. https://doi.org/10.1016/j.ajog.2011.02.029
- Moreira, F.L., Benzi, J.R.L., Leonardo, P., Thomaz, M.L., Duarte, G. and Lanchote, V.L. (2023). Optimizing Therapeutic Drug Monitoring in Pregnant Women: A Critical Literature Review. *Ther Drug Monit 45*(2):159-172. doi: 10.1097/FTD.0000000000001039.
  https://unsw.alma.exlibrisgroup.com/leganto/public/61UNSW_INST/citation/60483523640001731?auth=SAML
- Shamy, T.E. and Tamizian, O. (2021). Principles of prescribing in pregnancy. *Obstet Gynaecol Reprod Med 31* (11): 317-322. Principles of prescribing in pregnancy - ScienceDirect
- UNSW abnormal development-drugs
  http://embryology.med.unsw.edu.au/embryology/index.php?title=Abnormal_Development_-_Environmental

Contact

Please post any questions regarding this assignment in the discussion board available in Moodle.

Project 1: Endometriosis

This project is suitable for 4 - 6 students.

Graduate capabilities assessed in this project

- Using Basic and Clinical Sciences
- Patient Assessment and Management

The report will also be assessed for each of the generic capabilities for group projects (Effective Communication, Self-Directed Learning and Critical Evaluation, and Teamwork).

Aims

Endometriosis is a potentially debilitating condition affecting women of reproductive age. In Australia, the prevalence of this disease is approximately 11% (Rowlands et al., 2021). Endometriosis can take a long to time to diagnose, with a study in 2017 finding the average time between first presentation and diagnosis had been 4.9 years (Armour et al., 2020). Treatment of endometriosis will depend on several factors and spans a diversity of modalities. This project allows students to develop a greater understanding of presenting symptoms, theories of pathogenesis, diagnosis, and possible treatments of endometriosis.

Course themes and related learning activities

This project relates to the Beginnings, Growth and Development course theme: Conception, pregnancy and birth.

Task description

Write a report that:
1. Defines endometriosis.
2. Considers theories of pathogenesis.
3. Explores potential risk factors.
4. Describes the range of presenting symptoms and signs.
5. Discusses the diagnosis of endometriosis.
6. Discusses the range of treatments for endometriosis.

Time allocation guide:

Week 1	Develop a plan and begin researching the topic.
Weeks 2 & 3	Read the references suggested and do a literature search using key words to source further relevant information on the areas required.
Week 4	Complete your research and compile a draft report.
Week 5	Prepare a group presentation and edit the report.
Week 6	Give the group presentation and edit the final report, considering any feedback from your presentation. (Have you addressed all the assessment criteria?).
Week 7	Proof-read and submit your group project with no track changes into eMed and Turnitin in Moodle by the due date.

Report requirements

The report should be a maximum of 2500 words. Include a component evaluating your group's teamwork.

Reports should be formatted in accordance with the specification on the Medicine program website and include a word count on the title page (refer to word count guidelines). Ensure that you carefully reference your work using the UNSW Medicine referencing style (APA 7th edition). Please refer to the Medicine program website for penalties that will be applied to reports that exceed the maximum length:
https://medprogram.med.unsw.edu.au/penalties (login required).
Further details at: http://medprogram.med.unsw.edu.au/assignments-and-projects-phase-1.

Assessment Criteria

For a **P** grade, the written report should meet the following criteria:

Focus Capability 1: Using Basic and Clinical Sciences

- Defines endometriosis, discusses potential risk factors, and demonstrates an understanding of the current theories of the pathogenesis of endometriosis. (**1.1.3 Describes the pathophysiological processes of health problems.)**
- Applies this basic and clinical science knowledge to explain the clinical presentation of endometriosis. **(1.1.2. Recognises health problems and relates normal structure and function to abnormalities.)**

Focus Capability 2: Patient Assessment and Management

- Demonstrates an understanding of diagnosing endometriosis and discusses the different modalities that can be used to aid diagnosis. **(1.3.8 Applies clinical reasoning to relevant health scenarios, including the identification of key features and clinical patterns.)**
- Demonstrates an understanding of the various treatment options available for patients with this condition. **(1.3.9 Articulates a general strategy of management, consistent with the pathophysiological model of illness at an elementary level that includes an understanding of foundation principles.)**

In addition to the focus capabilities listed above, the generic capabilities (Effective Communication, Self-Directed Learning and Critical Evaluation; and Teamwork) will be assessed using the generic criteria for group projects listed in the Program guide, in this course guide and on the Medicine Program website.
https://medprogram.med.unsw.edu.au/grading

In meeting the generic Teamwork capability, you must include an analysis and reflection on your teamwork of approximately 300 to 500 words. The reflection must involve the application of an accepted model of teamwork (Select from: https://medprogram.med.unsw.edu.au/teamwork-group-projects).
You should provide an appendix (not included in the word count) that shows a record of the interactions between your group members, whether by email or group meetings.

References

These listed references should be used for background reading on the topic. Students should also carry out their own research of published literature.

- Armour, M., Sinclair, J., Ng, C. H. M., Hyman, M. S., Lawson, K., Smith, C. A., & Abbott, J. (2020). Endometriosis and chronic pelvic pain have similar impact on women, but time to diagnosis is decreasing: an Australian survey. Sci Rep, 10(1), 16253. https://doi.org/10.1038/s41598-020-73389-2
- Australian clinical practice guideline for the diagnosis and management of endometriosis (2021) RANZCOG, Melbourne, Australia.
  https://ranzcog.edu.au/resources/endometriosis-clinical-practice-guideline/
- Endometriosis Australia https://www.endometriosisaustralia.org/
- Hickey, M., Ballard, K., & Farquhar, C. (2014). Clinical Review: Endometriosis. *BMJ*, *348*, g1752. https://www.bmj.com/bmj/section-pdf/752208?path=/bmj/348/7950/Clinical_Review.full.pdf
- Koninckx, P. R., Fernandes, R., Ussia, A., Schindler, L., Wattiez, A., Al-Suwaidi, S., Amro, B., Al-Maamari, B., Hakim, Z., & Tahlak, M. (2021). Pathogenesis Based Diagnosis and Treatment of Endometriosis. *Frontiers in Endocrinology*, *12*, 745548. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8656967/
- Members of the Endometriosis Guideline Core Group, Becker, C. M., Bokor, A., Heikinheimo, O., Horne, A., Jansen, F., Kiesel, L., King, K., Kvaskoff, M., Nap, A., Petersen, K., Saridogan, E., Tomassetti, C., van Hanegem, N., Vulliemoz, N., Vermeulen, N., & ESHRE Endometriosis Guideline Group (2022). ESHRE guideline: endometriosis. *Human Reproduction Open*, *2022*(2), hoac009. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8951218/
- O'Hara, R., Rowe, H., & Fisher, J. (2022). Managing endometriosis: a cross-sectional survey of women in Australia. *J Psychosom Obstet Gynaecol*, *43*(3), 265-272. https://doi.org/10.1080/0167482X.2020.1825374
- Parasar, P., Ozcan, P., & Terry, K. L. (2017). Endometriosis: Epidemiology, Diagnosis and Clinical Management. *Current Obstetrics and Gynecology Reports*, *6*(1), 34–41. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5737931/

- Rowlands, I. J., Abbott, J. A., Montgomery, G. W., Hockey, R., Rogers, P., & Mishra, G. D. (2021). Prevalence and incidence of endometriosis in Australian women: a data linkage cohort study. *BJOG*, *128*(4), 657-665. https://doi.org/10.1111/1471-0528.16447
- Teamwork for Group projects – Please refer to this webpage for resources to help you meet the requirements for the generic Teamwork capability: https://medprogram.med.unsw.edu.au/teamwork-group-projects

Contact:

Please post any questions regarding this project in the discussion board available in Moodle

Project 2: Understanding the 'Healthy Beginnings' Scenario

This project is suitable for 4-6 students.

Graduate Capabilities assessed in this project

• Self-Directed Learning and Critical Evaluation
• Teamwork

The report will also be assessed for each of the generic capabilities for projects (Effective Communication, Self-Directed Learning and Critical Evaluation, and Teamwork).

Aims

1. To develop a deep understanding of the learning issues that arise from the 'Healthy Beginnings' scenario.
2. To develop skills to optimally utilise the learning opportunities that are available in Phase 1.
3. To develop skills in self-directed learning and collaborative learning (teamwork).

Course themes and related learning activities

This project relates to the Beginnings, Growth and Development course theme: Conception, pregnancy and birth.

Task description

1. You are expected to take a systematic approach to addressing the learning issues that arise from the 'Healthy Beginnings' scenario. You should:
   • Generate a concept map of all the learning issues that arise from the 'Healthy Beginnings' scenario. Ensure that all graduate capabilities are covered and the links between capabilities are highlighted.
   (The term 'learning issue' is used to cover topics, questions and any important points that arise through discussion of the scenario).
   • Identify ways to address (follow up and understand) 4-6 key learning issues from the concept map, through timetabled and/or self-directed learning activities. You may choose a method that involves all project group members working on all learning issues OR a method of dividing up the learning issues amongst project group members and engaging in peer teaching that ensures that all project group members learn all the material.
2. Keep a reflective diary of how the above learning activities help your project group to better understand the identified learning issues.
3. Work with your project group and scenario group to ensure that your developing understanding of the learning issues is shared with your project and scenario group peers.
   • Conduct peer teaching sessions to ensure that all project group members share what they learn and develop their understanding to the highest possible level. You should use a range of peer teaching strategies that may include presentations by individual members, group discussions of complex content, peer-run quizzes, or any other methods that help you support each other.
   • Regularly conduct brief peer-teaching sessions for your scenario group. These sessions will be based on your learning of the relevant learning issues (above) and will highlight how lectures, practicals and tutorials contribute to understanding these learning issues. For example, use five minutes of a scenario group session to recap the lectures, practicals, tutorials and other activities that took place during the preceding week, discuss how they relate to the learning issues and how they helped clarify questions that the group had. Identify aspects that require further exploration through self-directed activities. Alternatively, you may use a weekly email to achieve this. Communicate clearly and concisely with the group and ensure that each member of your project group gets an opportunity to do this at least once.
   • Develop a mechanism to gather evidence of the effectiveness of your peer teaching. This could take the form of peer or facilitator feedback from your scenario group subsequent to your peer teaching/emails to the group. Use this or any other mechanism that evaluates the effectiveness of the peer teaching methods of each member of your project group. While individuals within the team can lead certain activities, you must ensure that all project group members develop a sound understanding of all learning issues and are confident in handling questions.
   • Keep a diary of how your **project group** works together to achieve the objectives of the project. Maintain accurate records that will help you to identify both strengths and areas for improvement in your teamwork. Use this diary when analysing the effectiveness of your teamwork.

Please note we have allocated 20 minutes for peer teaching in SGS 5. However, aside from this, it should be noted that facilitators will not be able to allocate large amounts of time during other SGS for peer teaching. The most that you may be able to negotiate with your facilitator might be 5-15 minutes at the end of some SG sessions and this is only if time is available after completion of scheduled SGS activities. Please ensure you communicate with your facilitator in advance of any planned peer teaching sessions you would like to hold during SGS time.

In previous years, many student groups have arranged with their SG colleagues to conduct peer teaching either immediately before or after SG sessions. Alternatively, you can share your content via group email or other means and use 5-10 min to clarify/ expand on the shared content.

Students will be required to present their project findings in SGS 10, similar to all project groups.

Time allocation guide:

Week 1	Identify learning issues arising from the 'Healthy Beginnings' scenario and generate a concept map highlighting the links between these learning issues.
Week 2	Select 4-6 key learning issues on which you will focus in your report. These will be learning issues that best represent the major aspects of the scenario. Identify and plan the methods you will use to address these key learning issues.
Weeks 2 - 4	Conduct peer teaching sessions with your project group members and your wider scenario group to develop and share your understanding of these 4-6 key learning issues. Gather evidence to evaluate the effectiveness of these peer teaching sessions. Generate a diary to reflect on this process. Compile a draft of your report.
Week 5	Complete your peer teaching and evaluations. Edit your report. Prepare your group presentation.
Week 6	Give your group presentation and complete final editing of your report, addressing any feedback from your presentation. (Self-assess to see whether you have addressed the assessment criteria).
Week 7	Proof-read and submit your group project with no track changes into eMed and Turnitin in Moodle by the due date.

Report requirements

Your report should be a maximum of 2500 words and should include:

1. A concept map of all the learning issues identified by the group, highlighting interrelationships between them (categorised by capability). From this, select 4-6 learning issues as examples that best represent the key aspects of the scenario (you should try to use examples from 4-6 capabilities not including SDLCE and TW). Include a discussion of how your project group undertook further learning in relation to the 4-6 selected learning issues through scheduled and/or self-directed learning activities.
   The concept map does not count towards your word count. However, please note that the concept map should be clear and concise, and it should not be used as a strategy for including additional text.

2. A section that reflects on how your group worked together as a team. This section should:
   a. Discuss how your project group collaborated to ensure that all group members achieved a sound understanding of the learning issues. This should include a discussion of the peer teaching strategies used by your group and the extent to which these strategies were effective.
   b. Discuss how your project group collaborated with your scenario group to integrate material learnt through various scheduled and self-directed learning activities.
      These sections (2a & 2b) should be supported by evidence, which may take the form of self-assessments, peer or facilitator comments, or any other evidence that the group may have generated.
   c. Identify three strengths in the approach your group adopted, and identify three ways in which you could improve the process. (This may overlap with the requirements for the generic Teamwork capability.)

3. A separate teamwork reflection that addresses the generic Teamwork capability. This could include an analysis of your project group's behaviour and the contributions made by each member. The analysis should be undertaken from the perspective of **a relevant theoretical model**. (Select from: https://medprogram.med.unsw.edu.au/teamwork-group-projects).

Reports should be formatted in accordance with the specification on the Medicine program website and include a word count on the title page (refer to word count guidelines). Ensure that you carefully reference your work using the UNSW Medicine referencing style (APA 7th edition). Please refer to the Medicine program website for penalties that will be applied to reports that exceed the maximum length: https://medprogram.med.unsw.edu.au/penalties (login required).
Further details at: http://medprogram.med.unsw.edu.au/assignments-and-projects-phase-1.

Assessment criteria

For a **P** grade, the written report should meet the following criteria:
Focus Capability 1: Self-Directed Learning and Critical Evaluation
- Identifies questions and learning issues arising from the scenario (categorised by capabilities) and generates a concept map that highlights the links between these learning issues. **(1.6.1 Identifies questions and learning issues arising from scenario sessions and other teaching activities.)**
- Demonstrates ability to select 4-6 key learning issues (from the above) that represent the major aspects of the scenario. **(1.6.1 Identifies questions and learning issues arising from scenario sessions and other teaching activities.)**
- Using an appropriate level of content detail, demonstrates how various learning activities contributed to the group's understanding of these learning issues. **(1.6.1 Engages in appropriate activities to address identified needs.)**

Focus Capability 2: Teamwork
- Develops appropriate methods of peer teaching. Discusses the effectiveness of the methods of peer teaching that were used by the group. Identifies strengths and areas for improvement. **(1.5.1 Discusses differences in contribution styles and identifies contributions in terms of task focused behaviour, group support behaviour, non-productive behaviour; 1.5.4 Monitors roles and contributions of group work, the learning environment and group process.)**
- Provides evidence of helping the wider scenario group to better understand the relevant learning issues, their interrelationships, and how various learning activities contributed to this enhanced understanding. Uses an appropriate method to gather this evidence. **(1.5.3 Analyses and evaluates own roles and contributions to group work using own observations and feedback from others.)**

In addition to the focus capabilities listed above, the generic capabilities (Effective Communication; Self-Directed Learning and Critical Evaluation; and Teamwork) will be assessed using the generic criteria for group projects listed in the Program Guide, this course guide and on the medicine program website.

Please ensure that you refer to the generic capability criteria and address these criteria which include providing documentation of team meetings, evaluation of group process and reflection on features that enhanced or impeded group process.

References

Teamwork
- Glynn, L., Macfarlane, A., Kelly, M., Cantillon P. and Murphy, A. (2006). Helping each other to learn – a process evaluation of peer assisted learning. *BMC Medical Education, 6*, 18.
doi: 10.1186/1472-6920-6-18
- Marks, M.A., Mathieu, J.E. and Zaccaro, S.J. (2001). A temporally based framework and taxonomy of team processes. *The Academy of Management Review, 26*, 356-76.
https://doi.org/10.2307/259182
- World Health Organization (2010). Topic 4: Being an effective team player. WHO Patient Safety Curriculum Guide. http://www.who.int/patientsafety/education/curriculum/who_mc_topic-4.pdf

Teamwork for Group projects - Please refer to this webpage for resources to help you meet the requirements for the generic Teamwork capability: https://medprogram.med.unsw.edu.au/teamwork-group-projects

Concept maps

- Laight, D. W. (2006). Attitudes to concept maps as a teaching/learning activity in undergraduate health professional education: influence of preferred approach to learning. *Medical Teacher*, *28*(2), e64-e67. DOI: [10.1080/01421590420001920](https://doi.org/10.1080/0142159042000192064)64
- Novak, J. D., & Cañas, A. J. (2008). The Theory Underlying Concept Maps and How to Construct and Use Them. Technical Report IHMC CmapTools 2006-01 Rev 01-2008, Florida Institute for Human and Machine Cognition. Available at: http://cmap.ihmc.us/publications/researchpapers/TheoryUnderlyingConceptMaps.pdf

Contact:

Please post any questions regarding this project in the discussion board available in Moodle.

Project 3: Three biological parents

This project is suitable for 4-6 students.

Graduate capabilities assessed in this project

- Using Basic and Clinical Sciences
- Ethics and Legal Responsibilities

The report will also be assessed for each of the generic capabilities for projects (Effective Communication; Self-Directed Learning and Critical Evaluation; and Teamwork).

Background

A controversial procedure that allows the creation of embryos with genetic material of three people for in vitro fertilisation (IVF) was legally approved in the UK in 2015 and Australia in 2022. A New Scientist article (dated 27/09/2016) describes the 'world's first baby born with three biological parents' (https://www.newscientist.com/article/2107219-exclusive-worlds-first-baby-born-with-new-3-parent-technique/). The "three-parent" procedure takes the nucleus from a donor egg (DNA of parent 1) and implants it into a donor egg that has had its nucleus removed but has retained the donor's healthy mitochondrial DNA (DNA from parent 2), which is then fertilised with a sperm cell from the father (DNA from parent 3). This procedure has generated much debate internationally.

Aims

- To understand the process of fertilisation and the methods used for in vitro fertilisation.
- To understand mitochondrial disease.
- To explain how IVF can be used to create genetically modified embryos like '3 parent embryos'.
- To discuss ethical issues related to IVF and more specifically mitochondrial replacement therapy (MRT).

Course themes and related learning activities:

This project relates to the Beginnings, Growth and Development course theme: Conception, pregnancy and birth.

Task description:

In your report you should:
1. Briefly provide an overview of fertilisation and implantation.
2. Discuss methods of in vitro fertilisation, how embryos are created and/or stored and their fate.
3. Discuss mitochondrial disease and how it can be prevented using a '3 parent embryo'.
4. Discuss ethical issues including arguments for and against this procedure raised by MRT and the '3 parent embryo'. Based on the differing viewpoints of the members in the group regarding these ethical issues, frame them with reference to at least two theories from the Ethics Cube. Please note that principle-based ethics consists of six ethical principles. These six principles are not individual ethical theories in and of themselves. However, individual principles can be associated with, or be integral to, other ethical perspectives.

Time allocation guide:

Weeks 1-3 Carry out research for Tasks 1, 2 and 3 and draft this section of the report.
Weeks 3-4 Identify and discuss ethical issues. Draft responses to address Task 4.
Week 5 Prepare group presentation and edit report.
Week 6 Group presentation and final edit of your report, considering any feedback from your presentation (have you answered the assessment criteria?).
Week 7 Proof-read and submit your group project with no track changes into eMed and Turnitin in Moodle by the due date.

Report requirements:

The report should be a maximum of 2500 words. In addition to responding to the task questions, you should also reflect on your teamwork and any issues encountered.

Reports should be formatted in accordance with the specification on the Medicine program website and include a word count on the title page (refer to word count guidelines). Ensure that you carefully reference your work using the UNSW Medicine referencing style ([APA 7th edition](#)). Please refer to the Medicine program website for penalties that will be applied to reports that exceed the maximum length:
https://medprogram.med.unsw.edu.au/penalties (login required).
Further details at: http://medprogram.med.unsw.edu.au/assignments-and-projects-phase-1.

Assessment criteria:

For a **P** grade, the written report should meet the following criteria:

Focus Capability 1: Using Basic and Clinical Sciences
- Provides a well-researched discussion on the process of fertilisation and implantation.
- Provides a clear description of IVF procedures.
- Provides a clear description of mitochondrial disease.

(**1.1.3 Describes the patho-physiological process of health problems and can explain their basis at the whole person, organ system, cellular and molecular levels.**)

Focus Capability 2: Ethics and Legal Responsibilities
- Provides a well-articulated discussion on the ethical issues raised by MRT, including arguments for and against this procedure. **(1.7.4 Identifies and discusses the ethical aspects of scenarios and other experiences.)**
- Articulates individual opinions and describes the ethical perspective framing them**. (1.7.1 Explores the psychological, social and cultural determinants of one's own values, and can discuss the relevance and appropriateness of personal values in clinical medicine.)**
- Explores differences of opinion between group members in relation to the ethical issues, and describes the different ethical perspectives framing any differences in view. **(1.7.3 Identifies and discusses ethical issues interactions between fellow students, with staff and with patients; 1.7.1 Explores the psychological, social and cultural determinants of one's own values, and can discuss the relevance and appropriateness of personal values in clinical medicine.)**

In addition to the focus capabilities listed above, the generic capabilities (Effective Communication, Self-Directed Learning and Critical Evaluation; and Teamwork) will be assessed using the generic criteria for group projects listed in the Program guide, in this course guide and on the Medicine Program website.
https://medprogram.med.unsw.edu.au/grading

In meeting the generic Teamwork capability, you must include an analysis and reflection on your teamwork of approximately 300 to 500 words. The reflection must involve the application of an accepted model of teamwork (Select from: https://medprogram.med.unsw.edu.au/teamwork-group-projects).

You should provide an appendix (not included in the word count) that shows a record of the interactions between your group members, whether by email or online group meetings.

References
- Craven, L., Murphy, J., Turnbull, D.M., Taylor, R.W., Gorman, G.S., and McFarland, R. (2018). Scientific and Ethical Issues in Mitochondrial Donation. *New Bioeth*, *24*(1), 57–73. doi:10.1080/20502877.2018.1440725 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5890307/
- Dimond, R. (2015). Social and ethical issues in mitochondrial donation. *Br Med Bull*, *115* (1), 173-182. doi: 10.1093/bmb/ldv037 https://academic.oup.com/bmb/article/115/1/173/260760/Social-and-ethical-issues-in-mitochondrial

- Ethics cube: https://ethics.med.unsw.edu.au/Loike, J.D., and Raeme, N. (2017). Ethical consideration of three person babies. *The Scientist*, January 2017 Issue http://www.the-scientist.com/?articles.view/articleNo/47725/title/Opinion--Ethical-Considerations-of--Three-Parent--Babies/
- Hamilton, H. A. (2019). Three-Parent Babies and FDA Jurisdiction: The Case for Regulating Three-Party in Vitro Fertilization as a Drug and Biologic. *Creighton L. Rev.*, 53, 427.
- **Teamwork for Group projects** – Please refer to this webpage for resources to help you meet the requirements for the generic Teamwork capability: https://medprogram.med.unsw.edu.au/teamwork-group-projects

Contact:

Please post any questions regarding this project in the discussion board available in Moodle.

Project 4: Surrogacy: an ethical conundrum

This project is suitable for 4-6 students.

Graduate capabilities assessed in this project

- Using Basic and Clinical Sciences
- Ethics and Legal Responsibilities

The report will also be assessed for each of the generic capabilities for group projects (Effective Communication, Self-Directed Learning and Critical Evaluation, and Teamwork).

Aims

Develop an understanding of the:
1. Various reasons for surrogacy including, but not limited to, certain causes of female infertility.
2. In vitro fertilisation (IVF) procedures that are associated with surrogacy.
3. Medical risks that are associated with surrogacy for the child, egg donor and surrogate.
4. Legal and ethical issues that are related to surrogacy.

A surrogacy arrangement may be considered for various reasons including an abnormality of the female reproductive tract. Currently in Australia, only altruistic surrogacy is legal. This means that surrogates do not receive financial compensation for their services, but they can be reimbursed for reasonable expenses related to the surrogacy process. When contemplating surrogacy, there are numerous medical, emotional, financial, and legal implications to consider. In most Australian states, surrogacy is regulated by specific legislation. In cases where no legislation exists, states and territories are obligated to adhere to national ethical guidelines issued by the National Health and Medical Research Council (NHMRC).

Course themes and related learning activities:

This project relates to the course theme: Conception, pregnancy and birth.

Task description:

In your report you should:
1. Discuss various situations in which a surrogacy arrangement may be considered including, but not limited to, causes of female infertility.
2. Explore the step-by-step procedures of in vitro fertilisation for surrogacy, from superovulation to embryo implantation.
3. Discuss the medical risks associated with surrogacy for the child, egg donor and surrogate.
4. Compare the legal framework and requirements for surrogacy in Australia with those of at least one other country.
5. Discuss the specific laws in Australia concerning international surrogacy and evaluate the pros and cons of these laws.
6. Critically discuss ethical issues surrounding surrogacy, considering the varying viewpoints of the group members. Use the Ethics Cube (and the relevant literature) to help inform your knowledge of these.

Time allocation guide:

Weeks 1-2	Conduct research for tasks 1, 2 and 3 and draft this section of the report.
Weeks 3-4	Conduct research on the legal aspects of surrogacy in Australia and overseas. Identify and discuss ethical issues. Draft responses to address Tasks 4, 5 and 6.
Week 5	Prepare group presentation and edit the report.
Week 6	Give the group presentation and edit the final report, considering any feedback from your presentation. (Have you answered the assessment criteria?).
Week 7	Proof-read and submit your group project with no track changes into eMed and Turnitin in Moodle by the due date.

Report requirements:

The report should be a maximum of 2,500 words. In addition to completing the tasks, you should also reflect on your teamwork and any issues encountered.

Reports should be formatted in accordance with the specification on the Medicine program website and include a word count on the title page (refer to word count guidelines). Ensure that you carefully reference your work using the UNSW Medicine referencing style (APA 7th edition). Please refer to the Medicine program website for penalties that will be applied to reports that exceed the maximum length:
https://medprogram.med.unsw.edu.au/penalties (login required).
Further details at: http://medprogram.med.unsw.edu.au/assignments-and-projects-phase-1.

Assessment criteria:

For a **P** grade, the written report should meet the following criteria:

Focus Capability 1: Using Basic and Clinical Sciences
- Provides a clear overview of some of the situations in which a surrogacy arrangement may be considered including, but not limited to, certain causes of female infertility. **(1.1.2 Recognises health problems and relates normal structure and function to abnormalities; 1.1.3 Describes the pathophysiological process of health problems and can explain their basis at the whole person, organ system, cellular and molecular levels.)**
- Provides a well-researched description of IVF procedures associated with surrogacy, from superovulation to implantation. **(1.1.3 Describes the pathophysiological process of health problems and can explain their basis at the whole person, organ system, cellular and molecular levels.)**
- Provides a critical evaluation of the medical risks associated with surrogacy for the child, egg donor and surrogate. **(1.1.3 Describes the pathophysiological process of health problems and can explain their basis at the whole person, organ system, cellular and molecular levels.)**

Focus Capability 2: Ethics and Legal Responsibilities
- Demonstrates a clear understanding of the legislation and ethical guidelines relating to surrogacy and international surrogacy in Australia and compares these to the legal framework and requirements of at least one other country. Discusses the pros and cons of Australian laws relating to international surrogacy. **(1.7.5 Understands the need for patient autonomy, informed consent, confidentiality and privacy; 1.7.7 Understands the legal responsibilities of health professionals in relation to duty of care.)**
- Provides a well-articulated discussion on the ethical issues raised by surrogacy. (**1.7.4 Identifies and discusses the ethical aspects of scenarios and other experiences.**)
- Articulates individual opinions and describes the ethical perspectives framing them. **(1.7.1 Explores the psychological, social and cultural determinants of one's own values, and can discuss the relevance and appropriateness of personal values in clinical medicine.**)
- Explores differences of opinion between group members in relation to ethical issues and describes the different ethical perspectives framing any differences in view. **(1.7.3 Identifies and discusses ethical issues in interactions between fellow students, with staff and with patients)**

In addition to the focus capabilities listed above, the generic capabilities (Effective Communication, Self-Directed Learning and Critical Evaluation; and Teamwork) will be assessed using the generic criteria for group projects listed in the Program guide, in this course guide and on the Medicine Program website.
https://medprogram.med.unsw.edu.au/grading

In meeting the generic Teamwork capability, you must include an analysis and reflection on your teamwork of approximately 300 to 500 words. The reflection must involve the application of an accepted model of teamwork (select from http://medprogram.med.unsw.edu.au/teamwork-group-projects).
You should provide an appendix (not included in the word count) that shows a record of the interactions between your group members, whether by email or group meetings.

References:

These listed references should be used for background reading on the topic. Students should also carry out their own research of published literature.

- Cabra, R., Alduncin, A., Cabra, J. R., Ek, L. H., Briceño, M., & Mendoza, P. B. (2018). Gestational surrogacy. Medical, psychological and legal aspects: 9 years of experience in Mexico. , *Human Reproduction Open*, *2018*(1)., hox029.
  https://doi.org/10.1093/hropen/hox029
- Centre for Bioethics and Culture provides a summary of US surrogacy laws by state: https://thecbc-network.com/wp-content/uploads/2022/02/State-by-State_Surrogacy_Sum_CBC.pdf
- Dickenson, D., and van Beers, B. (2020). Surrogacy: New Challenges to Law and Ethics. *New Bioethics*, *26*(4), 293–297. doi: 10.1080/20502877.2020.1835205.
  https://doi.org/10.1080/20502877.2020.1835205
- Ethics cube. https://ethics.med.unsw.edu.au/
- Jadva, V., Murray, C., Lycett, E., MacCallum, F., & Golombok, S. (2003). Surrogacy: the experiences of surrogate mothers. *Human Reproduction*, *18*(10), 2196–2204. https://doi.org/10.1093/humrep/deg397
- Kerridge, I., Lowe, M., & Stewart, C. (2013). Ethics and Law for the Health Professions. (4th ed.) Federation Press
- NSW Department of Justice. Statutory Review of Surrogacy Act 2010
  Review of Surrogacy Act 2010.pdf (nsw.gov.au)
- Patel, N. H., Jadeja, Y. D., Bhadarka, H. K., Patel, M. N., Patel, N. H., & Sodagar, N. R. (2018). Insight into Different Aspects of Surrogacy Practices. *Journal of Human Reproductive Sciences*, *11*(3), 212-218.
  https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6262674/
- Teamwork for Group projects - Please refer to this webpage for resources to help you meet the requirements for the generic Teamwork capability:
  https://medprogram.med.unsw.edu.au/teamwork-group-projects
- Victorian Better health website provides a summary of Victorian legal framework:
  https://www.betterhealth.vic.gov.au/health/healthyliving/surrogacy

Contacts:

Please post any questions regarding this project in the discussion board available in Moodle.