Polycystic ovary syndrome (PCOS) diagnosis and management

Considerations for rural and remote practice and Aboriginal health

A/Prof Jacqueline Boyle and Dr Katrina Lloyd

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Acknowledgement of Country

Jean Hailes acknowledges the Traditional Owners of Country throughout Australia and recognises their continuing connection to land, waters and culture. We pay respect to Elders past, present and emerging.

2

Managing PCOS in Indigenous Communities: a community-led approach

- Partnership between Jean Hailes and Alukura Women's Health Service
- Aimed to create accessible and culturally appropriate resources about PCOS for Aboriginal women and health professionals in Central Australia
- Health professional and community consultations
- Resources for health professionals and community launched October 2022

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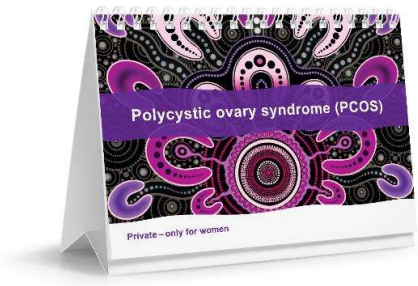
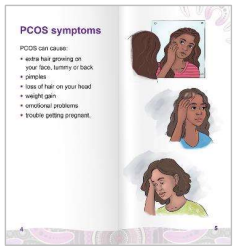
Managing PCOS in Indigenous communities: a community-led approach

- Resources developed include:
  - brochures and animations for community members
  - educational toolkit for health professionals to use when discussing periods and PCOS with Aboriginal women





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Educational toolkit

What's polycystic ovary syndrome (PCOS)?

Polycystic ovary syndrome (PCOS) is a condition that affects women.

It means your period:

- doesn't come every month
- doesn't come at the same time every month, or
- doesn't come at all.

1

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Page 1 (notes)

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Presenters:

- A/Prof Jacqueline Boyle
- Dr Katrina Lloyd

ALUKURA

CAAC

CENTRAL AUSTRALIAN ABORIGINAL CONGRESS ABORIGINAL CORPORATION

Jean Hailes FOR WOMEN'S HEALTH

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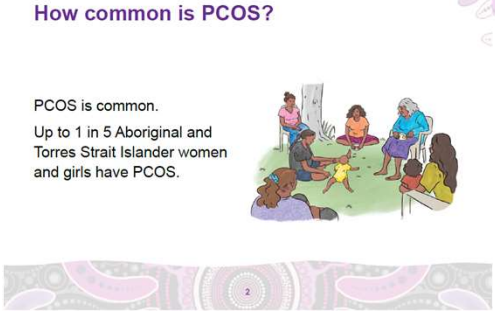
What is polycystic ovary syndrome (PCOS)?

- A hormonal problem in women, affecting 8-13% women of reproductive age
- Aboriginal and Torres Strait Islander women may be disproportionately impacted, up to 1 in 5 affected
- Testosterone and insulin



Jean Hailes, Polycystic ovary syndrome (PCOS) educational toolkit, 2022

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What symptoms or conditions are related to PCOS?

Reproductive

- irregular menstrual cycles, hirsutism, infertility, pregnancy complications

Metabolic

- insulin resistance, metabolic syndrome, obesity, prediabetes, type 2 diabetes, CVD risk factors

Psychological

- anxiety, depression, body image

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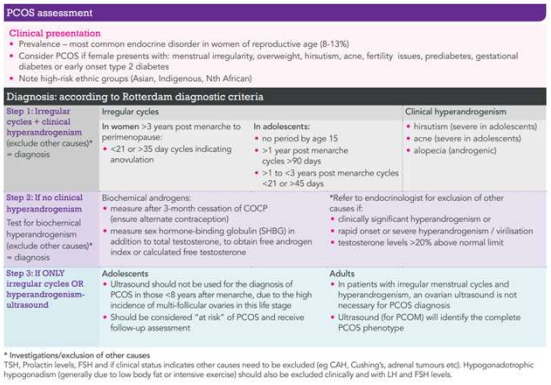
Diagnosis: two out of three

Rotterdam diagnostic criteria

Requires two of:

1. Oligo- or anovulation
2. Clinical and/or biochemical signs of hyperandrogenism
3. Polycystic ovaries



PCOS assessment

Clinical presentation
- Prevalence – most common endocrine disorder in women of reproductive age (8-13%)
- Consider PCOS if female presents with: menstrual irregularity, overweight, hirsutism, acne, fertility issues, prediabetes, gestational diabetes or early onset type 2 diabetes
- Note high-risk ethnic groups (Asian, Indigenous, Nth African)

Diagnosis: according to Rotterdam diagnostic criteria

Step 1: Irregular cycles + clinical hyperandrogenism (exclude other causes)* = diagnosis	**Irregular cycles** **In women** >3 years post menarche to perimenopause: • <21 or >35 day cycles indicating anovulation	**In adolescents:** • no period by age 15 • >1 year post menarche cycles >90 days • >1 to <3 years post menarche cycles <21 or >45 days	**Clinical hyperandrogenism** • hirsutism (severe in adolescents) • acne (severe in adolescents) • alopecia (androgenic)
Step 2: If no clinical hyperandrogenism Test for biochemical hyperandrogenism (exclude other causes)* = diagnosis	Biochemical androgens: • measure after 3-month cessation of COCP (ensure alternate contraception) • measure sex hormone-binding globulin (SHBG) in addition to total testosterone, to obtain free androgen index or calculated free testosterone	*Refer to endocrinologist for exclusion of other causes if: • clinically significant hyperandrogenism or • rapid onset or severe hyperandrogenism / virilisation • testosterone levels >20% above normal limit	
Step 3: If ONLY irregular cycles OR hyperandrogenism-ultrasound	**Adolescents** • Ultrasound should not be used for the diagnosis of PCOS in those <8 years after menarche, due to the high incidence of multi-follicular ovaries in this life stage • Should be considered "at risk" of PCOS and receive follow-up assessment	**Adults** • In patients with irregular menstrual cycles and hyperandrogenism, an ovarian ultrasound is not necessary for PCOS diagnosis • Ultrasound (for PCOM) will identify the complete PCOS phenotype	

* Investigations/exclusion of other causes
TSH, Prolactin levels, FSH and if clinical status indicates other causes need to be excluded (eg CAH, Cushing's, adrenal tumours etc). Hypogonadotrophic hypogonadism (generally due to low body fat or intensive exercise) should also be excluded clinically and with LH and FSH levels.

Jean Hailes, Polycystic ovary syndrome (PCOS) HP tool, 2018

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Oligo/anovulation

Irregular cycles : Adult women or women >3 years post menarche

- <21 or > 35 days
- < 8 cycles per year or >90 day cycle

Care needs to be taken in assessing young women

- Irregular cycles are normal the first year post menarche
- 1-3 post menarche still often not as regular
  - <21 or > 45 days
- > 1 year post menarche > 90 days for any one cycle
- Primary amenorrhea by age 15 or > 3 years post thelarche (breast development)

Note: Ovulatory dysfunction may occur with regular cycles and may need luteal serum progesterone

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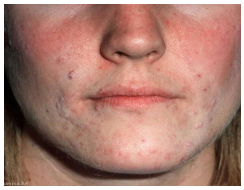
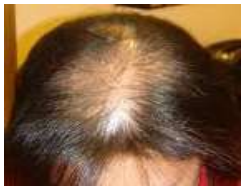
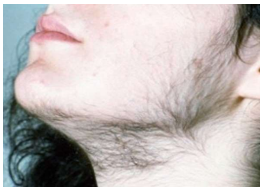
Clinical hyperandrogenism

Adults

- acne
- alopecia
- hirsutism

Adolescents

- severe acne
- hirsutism

  - Rapid onset may signal androgen secreting tumour
  - Assess with modified Ferriman-Gallwey Score (score >4-6)

Practice point: women are often treating any hair growth so difficult to assess clinically

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Biochemical hyperandrogenism

↑ Calculated free testosterone, free androgen index or calculated bioavailable testosterone

↓ SHBG

  - Not able to assess if on hormonal contraception
  - Very high levels may indicate an androgen secreting tumour

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Androgens – levels

Testosterone

- 5.2-6.9 nmol/L
  - Consider ovarian tumour

DHEAS

- >20µmol/L
  - Consider adrenal tumour
- 10.5-20 µmol/L
  - Consider congenital adrenal hyperplasia

Thomas J et al Exp Rev Dermatol 2013

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Ultrasound

- Transvaginal ultrasound: follicle number ≥20 or an ovarian volume ≥10ml
- Transabdominal ultrasound: ovarian volume ≥10ml

Note:

- There should not be corpus luteum, cysts or dominant follicles
- Not able to use ultrasound for diagnosis if less than 8 years since first period - ovaries commonly look multi-follicular or “polycystic” in these years in normal women

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Exclude secondary causes

- Of irregular periods:
  - thyroid disease, hyperprolactinaemia, premature menopause, Cushing's
- Of hyperandrogenism:
  - non-classical adrenal hyperplasia more common in Ashkenazi Jews, Hispanics, Italians
  - androgen secreting tumours – rapid progression/virilization
  - Cushing's syndrome
  - medication – valproate

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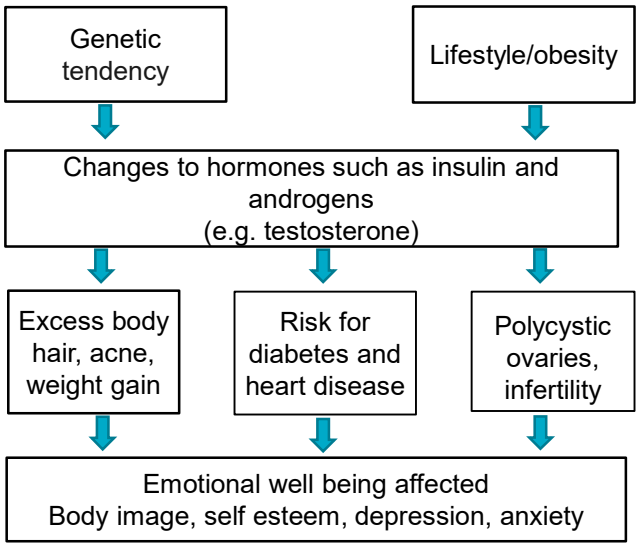
Pathogenesis of PCOS



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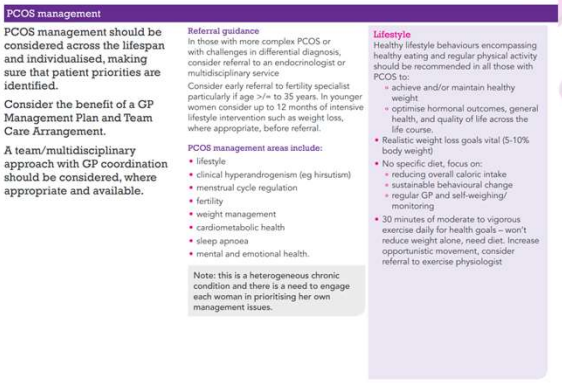
PCOS management areas

- Lifestyle – nutrition, physical activity, weight management
- Clinical hyperandrogenism
- Menstrual cycle regulation
  - Be aware of risk of endometrial hyperplasia
- Fertility
- Screen for and manage Metabolic Syndrome and diabetes
- Sleep apnoea
- Mental and emotional health



PCOS management

PCOS management should be considered across the lifespan and individualised, making sure that patient priorities are identified.

Consider the benefit of a GP Management Plan and Team Care Arrangement.

A team/multidisciplinary approach with GP coordination should be considered, where appropriate and available.

Referral guidance

In those with more complex PCOS or with challenges in differential diagnosis, consider referral to an endocrinologist or multidisciplinary service

Consider early referral to fertility specialist particularly if age >/= to 35 years. In younger women consider up to 12 months of intensive lifestyle intervention such as weight loss, where appropriate, before referral.

PCOS management areas include:

- lifestyle
- clinical hyperandrogenism (eg hirsutism)
- menstrual cycle regulation
- fertility
- weight management
- cardiometabolic health
- sleep apnoea
- mental and emotional health.

Note: this is a heterogeneous chronic condition and there is a need to engage each woman in prioritising her own management issues.

Lifestyle

Healthy lifestyle behaviours encompassing healthy eating and regular physical activity should be recommended in all those with PCOS to:

- achieve and/or maintain healthy weight
- optimise hormonal outcomes, general health, and quality of life across the life course.

- Realistic weight loss goals vital (5-10% body weight)
- No specific diet, focus on:
  - reducing overall caloric intake
  - sustainable behavioural change
  - regular GP and self-weighing/ monitoring
- 30 minutes of moderate to vigorous exercise daily for health goals – won't reduce weight alone, need diet. Increase opportunistic movement, consider referral to exercise physiologist

Jean Hailes, Polycystic ovary syndrome (PCOS) HP tool, 2018

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PCOS management – care team approach

- General practitioner
- Nurse
- Dietitian
- Aboriginal Health Worker/Practitioner
- Psychologist
- Endocrinologist
- Gynaecologist
- Exercise physiologist

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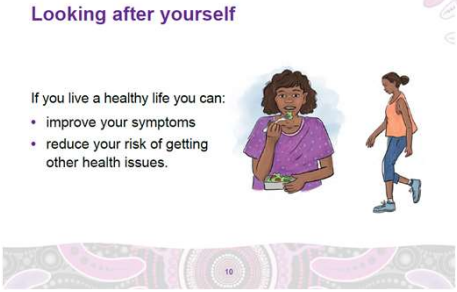
Lifestyle – primary management

1. Healthy eating
2. Regular physical activity
3. Weight management
   +/- reduction

Use of behavioural strategies:

- goal setting



L: International evidence based guideline for the assessment and management of polycystic ovary syndrome. 2018. Algorithm 3: Lifestyle.
R: Jean Hailes, Polycystic ovary syndrome (PCOS) educational toolkit, 2022

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Management of hirsutism

Physical removal

- Cosmetic treatments such as waxing, depilatory creams, shaving, threading
- Electrolysis
- Laser hair removal is recommended as a safe method to reduce excess hair growth

Topical Treatment

- Eflornithine cream (Vaniqa) – prescription only

Oral medication

- Oral combined contraceptive pill
- Metformin

Note: Anti-androgens – e.g. spironolactone (only used after 6 months of failed treatment, contraindicated in pregnancy)

OCP with RD0

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Slide 20

RD0 Jacqui - is there a word missing?
Rose Dupleix, 2022-10-27T06:16:30.900

Management of acne

- Standard dermatological acne treatment i.e. dual therapy (topical and oral antibiotics)
- Oral contraceptive pill
- Anti-androgens – e.g. spironolactone (contraindicated in pregnancy)

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Management of irregular periods

- Weight loss 5-10%
- Oral contraceptive pill
  - regular bleeding cycle and endometrial protection
  - contraception
  - positive effect on hirsutism and acne
  - 20-30 mcg E pill
- etonogestrel, ethinyl estradiol vaginal ring (Nuvaring)
- Metformin
  - improves ovulation and cycles
- Progestins
  - levonorgestrel intrauterine system (Mirena)
  - etonogestrel implant (Implanon)
  - drospirenone (Slinda)
  - intermittent progestogen to induce bleed four times a year

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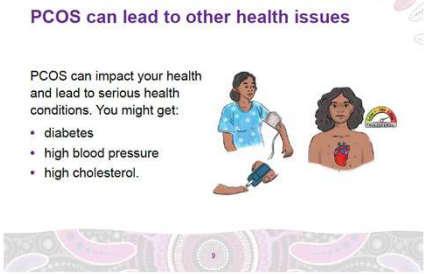
Screen for Metabolic Syndrome and diabetes

- Increased blood pressure
- High blood sugar
- Increased waist circumference (abdominal obesity)
- High triglyceride levels
- Low HDL
- Increases risk of diabetes and risk factors for heart disease and stroke



Jean Hailes, Polycystic ovary syndrome (PCOS) educational toolkit, 2022

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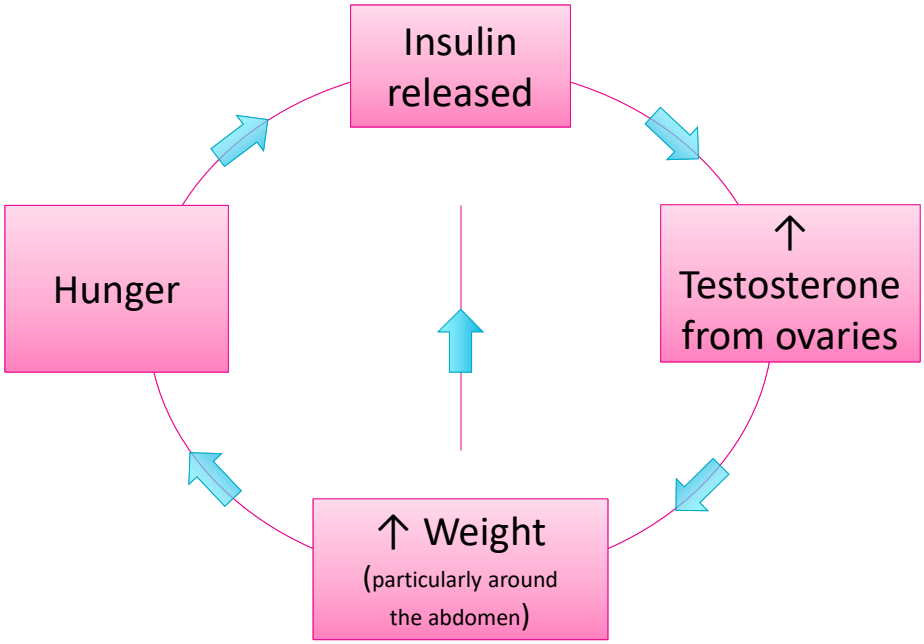

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Metformin

- Increases sensitivity to insulin in liver, skeletal muscle, fat and the ovaries
- May help regulate ovulation and menstrual cycles, and may help fertility
- In addition to lifestyle management, may assist in weight loss
- Helps prevent progression to diabetes
- Greater benefit in high metabolic risk groups
- Side-effects are mild – diarrhoea, nausea - short term dose related

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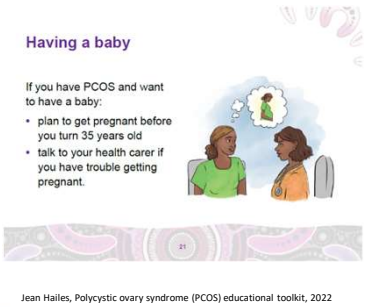
PCOS and fertility

- PCOS limits fertility, but can be treated
- Infertility risk increases for women over 35 years
- Advise early family initiation (<35 years) where practicable
- BMI >30 limits fertility
- Prevent weight gain and aim for weight loss if needed
- Increased risk of gestational diabetes, preterm birth, pre-eclampsia, miscarriage, stillbirth



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Fertility management

- If anovulatory – no need to wait for treatment
- Letrozole or clomiphene are 1st line pharmacological therapies for infertility
- Metformin can be started before fertility specialist referral or used as an alternative understanding limitations
- Laparoscopic ovarian drilling may be considered in some circumstances

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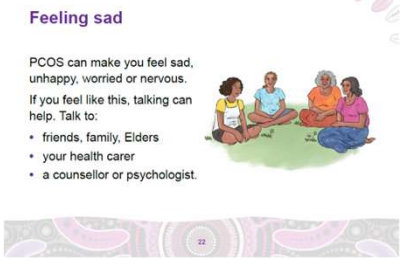
Mental and emotional wellbeing

- Research shows women with PCOS have higher levels of anxiety and depression
- Adverse impact of PCOS on
  - quality of life
  - depressive and anxiety symptoms
  - body image and self esteem issues
  - disordered eating
  - psychosexual issues
- Consider screening tool PCOSQ and offer appropriate support, care and referral
- Consider life stage, culture and preferred language



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Case study 1 – 34 yo female

- G1P0T1
- BMI 39.7
- Hb A1c 5.5% - no OGTT done – but have referred to dietitian, patient looking at weight loss options
- Irregular periods since she was a teenager and since stopping Implanon 12 months ago (Had been on Implanon for > 15 years prior)
- Planning pregnancy in 2023

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Case study 1 – assessments

- Androgen studies - ? time in cycle = unremarkable

		Calculated	
Testosterone (0.3 - 1.8) nmol/L	SHBG (25 - 120) nmol/L	Free Testo. (6 - 28) pmol/L	FAI
1.1	46	16	2.4

- FSH / LH / Prolactin = OK

FSH	9	IU/L	(see below)
LH	9	IU/L	(see below)
Progesterone	4	nmol/L	(see below)
Prolactin	220	mIU/L	(< 500)

- TSH = OK

	TSH (mIU/L) (0.40 - 4.00)	FT4 (pmol/L)	FT3 (pmol/L)
13/01/20	2.33		
30/11/21	3.86		
12/05/22	1.62		

- D24 progesterone = consistent with ovulation

HORMONES (Serum) DAY 24

Progesterone	29	nmol/L

- LFTs abnormal, USS = fatty liver

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Case study 1 – assessments

- Pelvic ultrasound: TA and TV scans performed
- Clinical details: irregular menses for investigation
- The uterus is anteverted and is normal in size with a volume of 34cc
  - No focal lesion
  - Mildly heterogeneous myometrium noted
  - Endometrial thickness is 2mm
  - Normal appearance

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Case study 1 – assessments

- Right ovary volume is 8.2cc
  - There is a 16 x 13mm simple parapelvic cyst
- Left ovary is normal with a volume of 4.9cc
- No adnexal masses or free fluid
  - There was non-specific moderate tenderness of both ovaries
- Conclusion
  - Simple right parapelvic cyst
  - Non-specific ovarian tenderness bilaterally

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Questions for case study 1

- Patient has risk factors for PCOS (raised BMI, fatty liver suggests metabolic syndrome) and has irregular periods
- But – USS / androgen studies don't confirm diagnosis of PCOS
- Are there management options (other than lifestyle advice and weight loss) given she doesn't fulfil criteria for PCOS but is at high risk?

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Case study 2 – 21 yo female

- BMI 23
- Periods regular
- Low abdominal pain with recurrence after PID treatment three months ago
  - ?hydrosalpinx or other abnormality
- USS done to investigate lower abdo pain – no PCOS concerns

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Case study 2 – assessments

- Pelvic ultrasound: TA and TV scans performed
  - The uterus is anteverted and normal in size with a volume of 62cc
  - Endometrial thickness is 12mm
  - No focal lesion
  - Both ovaries are normal measuring 10cc in volume on the right and 14cc on the left
  - Multiple small follicles noted bilaterally at the periphery
  - No free fluid or adnexal masses
- Conclusion
  - No evidence of hydrosalpinx or other focal pathology
  - There was non-specific tenderness on TV scanning of the ovaries

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Questions for case study 2

- Issue – incidental follicles on USS – are they consistent with PCOS? Should we do anything?
- Are the follicles as reported on the USS normal?

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Case study 3 – 20 yo female

- Oligomenorrhoea
- BMI 36
- HbA1c 4.6%
- Irregular periods and not conceived since Implanon removed 2018
- Not particularly hirsute
- Has missed appointments for pelvic USS

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Case study 3 – assessments

- Pathology
  - Low SHBG (testosterone and calculated free testosterone within normal limits)
  - Pathology comments “decreased SHBG may occur in obesity, PCOS, or hypothyroidism”
- Hormones (Serum)
  - FSH: 8 IU/L
  - LH: 9 IU/L
  - Progesterone: 1 nmol/L
  - Prolactin: 220 mIU/L (< 500)
- Cumulative thyroid function test (Serum)

	TSH (mIU/L) (0.40 - 4.00)	FT4 (pmol/L) (10 - 20)
12/09/20	3.07	18
07/12/21	3.23	17

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Question for case study 3

- Issue – interpreting androgen studies – should we diagnose PCOS on the information that we have below and commence metformin?

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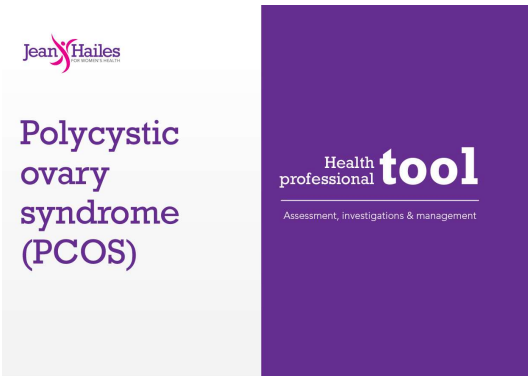
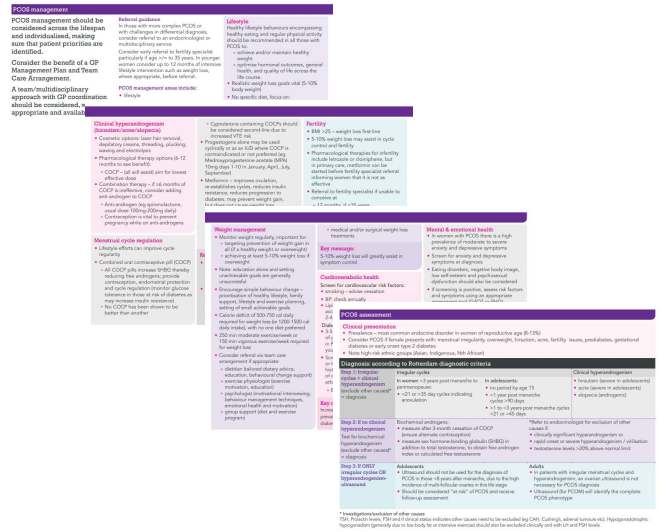
Jean Hailes health professional tool - PCOS





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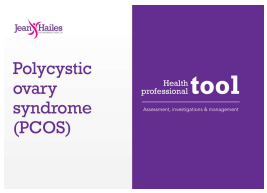
Health professional resources



Weight, obesity and women's health

Polycystic ovary syndrome (PCOS): the consultation

In this video, Dr Rosie Worsley discusses what might alert a clinician to undiagnosed PCOS and also some of the key points for consideration in a consultation, once a woman has a diagnosis of PCOS.

Watch now (video)

- Resource tools

  https://jeanhailes.org.au/health-professionals/tools
- Health professional learning activities
  - e-Learning courses
  - Webinars
  - Practice points

  https://jeanhailes.org.au/health-professionals

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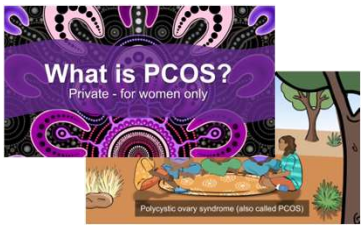
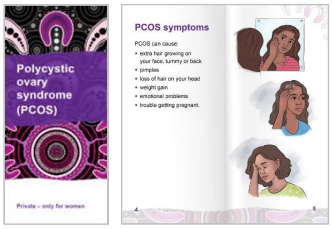
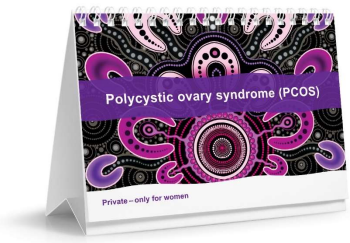
Resources for Aboriginal and Torres Strait Islander communities

Animations, booklets and educational toolkit available at:
jeanhailes.org.au/resources/aboriginal-and-torres-strait-islander-resources







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We want to hear from you!

What do you think about the resources developed to support diagnosis and management of PCOS among Aboriginal women in Mparntwe (Alice Springs) and surrounding communities?

The final phase of the project is to evaluate the process undertaken to develop the resources, as well as the usefulness and appropriateness of the resources – culturally and clinically. The evaluation includes an online survey of health care professionals.

This survey will take approximately 15 minutes.

The project has been approved by the Charles Darwin University Human Research Ethics Committee (approval number H22075).

Participant information sheet

Access the survey here, or scan the QR code

For questions please contact:
Emily.gilbert@cdu.edu.au

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Thank you

Go to **jeanhailes.org.au** for more resources, videos and articles

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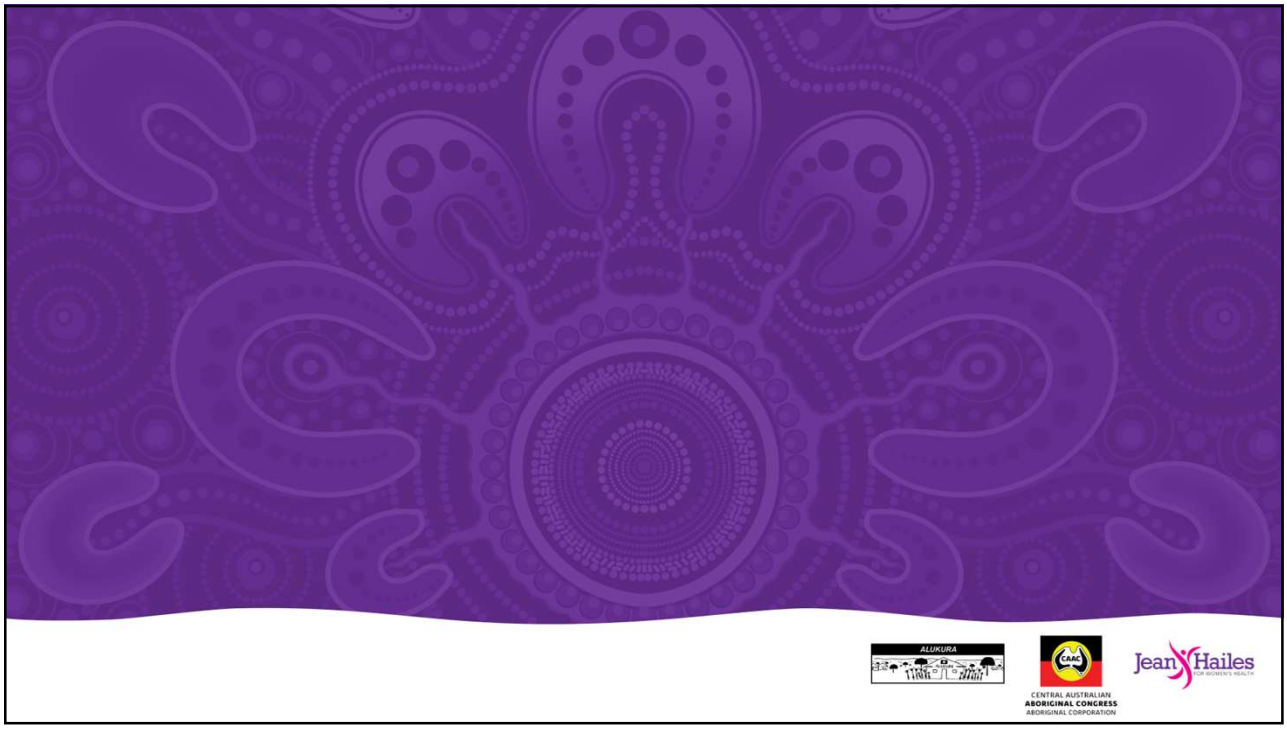
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