4d. Antenatal care

(d) Antenatal Care (ANC): Objectives, Immunization, Examination, Investigations & Management (Contemporary National Protocol)

Learning goals

- State **objectives** of ANC and the **national schedule** of visits (with PMSMA).
- List maternal immunizations and micro-nutrient/chemoprophylaxis as per Indian public-health protocols.
- Write a complete ANC examination (history, general, obstetric) and investigation panel.
- Apply **screening/management algorithms** for anaemia, GDM, infections, Rh-negativity, and hypertension in pregnancy using current Indian guidance.

1) What ANC aims to achieve (exam starter)

Definition. Antenatal care is the **structured**, **evidence-based care** provided from confirmation of pregnancy until the onset of labour to ensure a **healthy mother and newborn**, detect risk early, prevent complications, and prepare for birth. India assures ANC through routine facility-based services and the **Pradhan Mantri Surakshit Matritva Abhiyan** (**PMSMA**)—fixed-day quality ANC on the **9th of every month** for women in 2nd/3rd trimester.

Objectives (write these verbatim in answers):

- 1. Early registration and minimum scheduled contacts.
- 2. Risk assessment (medical-obstetric-socio-demographic) and stratification.
- 3. Preventive package: immunization, IFA, calcium, deworming, counselling.
- 4. **Screening** for anaemia, GDM, infections (HIV, syphilis, hepatitis B), hypertension, Rh-isoimmunisation.
- 5. Birth preparedness & complication readiness (BPCR) with timely referral.

2) National schedule of ANC contacts

India's **minimum** schedule remains **four focused visits** after early registration:

- 1st: within 12 weeks (preferably as soon as pregnancy is suspected).
- 2nd: 14-26 weeks.
- 3rd: 28-34 weeks.
- 4th: ≥36 weeks to term.

Women should also utilise **PMSMA** services on the **9th** each month for enhanced clinical evaluation and specialist review where available.

(WHO recommends eight contacts globally; in India, programmatic minimum is four—quote the Indian schedule in exams and add PMSMA.)

3) Immunization in pregnancy (National program)

- 1. **Td (Tetanus-adult Diphtheria)** replaced TT in UIP:
 - Td-1: as early as possible in pregnancy
 - Td-2: 4 weeks after Td-1
 - Td-Booster: if the woman received 2 doses in a previous pregnancy within 3 years (give only one booster)
- 2. COVID-19 vaccine: MoHFW-approved for any trimester after counselling; advise Co-WIN registration/on-site

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registration as per local availability.

Note: Some professional bodies (e.g., FOGSI) advise **inactivated influenza** vaccine; however, this is **not** part of the universal national immunization schedule—quote if your college/State program follows it.

4) Routine supplementation & chemoprophylaxis

- Iron-Folic Acid (IFA): 1 tablet daily providing 60 mg elemental iron + 500 μg folic acid from 2nd trimester (≈14-16 w) for ≥180 days, and continue 180 days postpartum (Anemia Mukt Bharat / I-NIPI).
- Calcium: 1 g/day (e.g., 500 mg BID) from 14 weeks until 6 months postpartum; do not take at the same time as IFA (impairs absorption).
- Deworming: Albendazole 400 mg single dose after 1st trimester (preferably 2nd trimester), preferably DOT; encourage WASH.

5) How to write the ANC examination (history → general → obstetric)

5.1 History (structured)

- Identification & dating: LMP, EDD (Naegelé), cycle regularity; ultrasound dating if needed.
- Obstetric: Gravida/Para/Living/Abortions; prior LSCS, preterm, IUD/stillbirth, PIH, GDM, PPH, IUGR, Rh-negativity.
- Medical: HTN, DM, thyroid disease, TB, epilepsy, cardiac/renal, thromboembolism, autoimmune.
- Drugs/allergies; immunization status (Td, COVID).
- **Social:** age <18 or >35, short stature, heavy labour, domestic violence, addictions.
- Symptoms: vomiting, bleeding, leaking, fever, dysuria, headache/visual symptoms, decreased fetal movements.

5.2 General examination

- Vitals: pulse, BP, RR, temperature; weight, height (BMI at booking).
- Anaemia (pallor), oedema, icterus, thyroid, breast; systemic exam.
- **Urine dipstick** for **sugar/protein** at each visit; **Hb** estimation per trimester.

5.3 Obstetric exam

- Inspection (scars, striae), fundal height (McDonald's), symphyseal-fundal height correlating with GA after 20 w; Lie/Attitude/Presentation/Position in 3rd trimester; FHR (110–160/min). Vaginal examination only when indicated (bleeding, labour, suspected placenta previa excluded).
- High-risk stickers/flagging under PMSMA (e.g., severe anaemia, high BP, suspected GDM).

6) Investigations — what to order and when (national package)

6.1 Baseline at booking (1st visit)

- **Hb (CBC)**; **blood group & Rh** (consider ICT if Rh-negative as per local protocol);
- Urine R/M (sugar, protein);
- Blood sugar screening with 75-g oral glucose (non-fasting acceptable) and 2-hr plasma glucose; ≥140 mg/dL = GDM (MoHFW DIPSI protocol) if negative, repeat at 24-28 w.
- HIV, syphilis (rapid/POC RPR/VDRL), HBsAg; malaria RDT in endemic areas; TSH as per local policy.
- Ultrasound: Dating/viability early where available; anomaly scan at 18-20 w is standard; PMSMA encourages

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access to USG through public-private engagement.

6.2 Follow-up

- Hb at least once each trimester; urine dipstick each visit; blood sugar re-check at 24-28 w (if not already positive).
- ICT (Rh-negative) and anti-D prophylaxis per institutional/FOGSI protocol (see §7.3).

7) Management algorithms (public-health anchored, exam-friendly)

7.1 Anaemia in pregnancy (screen every visit; act early)

- **Prophylaxis**: IFA **60 mg Fe + 500 μg FA daily** from 2nd trimester for ≥**180 days** and extend postpartum (see §4).
- Therapy (programmatic):
 - Mild-moderate: 2 IFA tablets/day if Hb low and tolerating oral; retest in 4 weeks; add deworming if not vet given.
 - Intolerance/poor response/late gestation: IV iron (iron sucrose or ferric carboxymaltose) as per State protocol.
 - **Severe anaemia**: stabilize; consider parenteral iron/transfusion per obstetrician advice and gestation. (AMB notes urgent referral for very low Hb).

7.2 GDM (Gestational Diabetes Mellitus) — MoHFW one-step

- When: At booking and 24-28 w.
- How: 75-g oral glucose, 2-h plasma glucose; ≥140 mg/dL = GDM.
- **Then:** Diet/medical nutrition therapy, glucose monitoring; add **metformin/insulin** as per obstetric-diabetology advice; heightened fetal surveillance; plan delivery as per control/status.

7.3 Rh-negativity (at booking)

• Check **blood group & Rh**. If **Rh-negative**, document partner's blood group (if available), do **ICT** at 28 w where protocolised; give **anti-D** (300 μg) at 28 w and **within 72 h postpartum** if baby is Rh-positive; also after **sensitising events** (bleeding, ECV, procedures, trauma). (FOGSI practice guidance; cite local SOP in viva.)

7.4 Infections (screen & treat)

- **HIV:** Universal testing with counselling; link positives to **PPTCT** services; record on MCP card and ensure neonatal prophylaxis.
- Syphilis: Screen at first visit using RPR/POC test and treat immediately as per algorithm to prevent congenital syphilis.
- Hepatitis B: HBsAg at booking; if positive, plan birth-dose Hep-B + HBIG for newborn and maternal hepatology referral. (Screening listed in ANC package.)
- Malaria (endemic): RDT/microscopy for fever; treat per national malaria program.
- UTI/ASB: Urine testing each visit; treat bacteriuria to reduce pyelonephritis/preterm birth (institutional SOP).

7.5 Hypertension in pregnancy

- Measure BP at every visit; look for headache, visual symptoms, epigastric pain, oedema; test urine protein.
- PIH/Pre-eclampsia classification and danger-sign recognition form part of PMSMA high-risk list; manage/ refer as per facility capability.
- Low-dose aspirin (LDA): Many Indian institutions/professional bodies offer 75-150 mg daily from 12-16 w for women at high risk (previous pre-eclampsia, chronic HTN, CKD, autoimmune disease, multifetal gestation, etc.); confirm local SOP.
- Calcium (see §4) also helps reduce risk of hypertensive disorders in low-intake populations reinforce adherence.

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8) Counselling, BPCR & documentation (what examiners expect)

- Nutrition: energy-adequate, protein-rich diet; iron/calcium rich foods; safe food handling.
- Lifestyle: rest, avoidance of tobacco/alcohol; safe physical activity; sleep hygiene.
- **Warning signs:** vaginal bleeding, leaking, severe headache/visual disturbance, epigastric pain, fever with chills, decreased/absent fetal movements, swelling of face/hands, breathlessness—**seek care immediately**.
- **Birth preparedness:** place of delivery, transport, funds, screened blood donor, companion, newborn early initiation of breastfeeding (EIBF).
- Records: maintain MCP card meticulously; use PMSMA colour-coded stickers for high-risk flagging; share nextvisit date and referral plan.

9) Putting it together — ANC checklist you can reproduce

At first visit (≤12 w): Registration; dating; full history; BMI; vitals; complete exam; Hb, blood group/Rh, urine R/M, 75-g 2-hr glucose, HIV, syphilis, HBsAg, malaria (if endemic); USG when available; start IFA (from 14-16 w), calcium (from 14 w), Td-1, COVID-19 counselling; deworming plan (2nd trimester).

Second visit (14-26 w): Clinical review; urine dipstick; **Td-2**; anomaly scan at **18-20 w**; deworm (Albendazole 400 mg) if not already given; reinforce IFA-calcium adherence.

Third visit (28-34 w): Repeat glucose screen at 24-28 w if earlier negative; repeat Hb; consider ICT if Rh-negative and give anti-D per SOP; growth assessment, BP/protein surveillance.

Fourth visit (≥36 w): Identify lie/presentation, plan place/mode of delivery, BP/urine protein check, ensure all investigations complete, birth plan finalisation, counselling for danger signs and **PMSMA** follow-up if yet to attend.

10) Viva pearls & pitfalls

- Quote the Indian schedule (4 visits) and PMSMA (9th of each month); avoid writing only the WHO 8-contact model in national-protocol questions.
- Write exact Td schedule (Td-1 early; Td-2 after 4 weeks; Td-Booster if pregnancy within 3 years of prior two
 doses).
- GDM diagnosis is programmatically at 2 h after 75 g, threshold ≥140 mg/dL; non-fasting acceptable at booking clinics.
- IFA + Calcium: separate dosing times (absorption); Calcium from 14 w to 6 months postpartum.
- Universal HIV & syphilis screening at first visit; HBsAg too—don't miss.
- Flag high-risk using PMSMA colour stickers; ensure referral pathway is recorded on MCP card.

Assessment

A) Short Answer Questions (5 marks each)

- 1. Enumerate objectives of ANC and the national visit schedule; add PMSMA's unique features.
- 2. Write the maternal immunization protocol in India (Td schedule; add COVID-19 note).
- 3. List the ${\bf booking\text{-}visit}$ investigations and follow-up tests with timing.
- 4. Outline the **MoHFW one-step GDM** algorithm and thresholds.
- 5. Detail the **IFA-Calcium-Deworming** package (dose, start time, duration, counselling points).

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B) Long Answer Questions (10 marks)

- 1. Discuss **Antenatal Care in India** under headings: (i) objectives & visit schedule, (ii) immunization and supplementation, (iii) complete examination & investigations, (iv) screening/management for anaemia, GDM, infections, Rh-negativity, and hypertension, (v) BPCR and referral—quote national documents.
- 2. A 24-year-old primigravida at **10 weeks** attends ANC. Construct a **case-sheet** with history, examination, **investigation orders**, **immunization**, and **counselling**, mapping to national protocol.

C) MCQs (single best answer)

1. In India's national program, **Td-2** is administered:

A) At 28 weeks B) **Four weeks after Td-1** C) With influenza vaccine D) Only if Rh-negative **Ans:** B.

2. Under MoHFW GDM guidance, diagnosis is made when the 2-h plasma glucose after 75 g OG is:

A) \geq 126 mg/dL B) \geq 200 mg/dL C) \geq 140 mg/dL D) \geq 160 mg/dL

Ans: C

3. **Albendazole 400 mg** in pregnancy should be given:

A) In 1st trimester B) **After 1st trimester (preferably 2nd)** C) Only if anaemic D) Only in malaria-endemic areas

Ans: B.

4. **Calcium** supplementation in the national program is:

A) 500 mg OD from 36 weeks B) **1** g/day from **14 weeks to 6 months postpartum** C) 2 g/day throughout D) Only if anaemic

Ans: B.

5. Which **investigation set** is **not** part of routine booking tests in India?

A) Hb, Blood group/Rh, HBsAg, HIV, RPR B) **Rubella IgG** C) Urine sugar/protein D) 75-g 2-h glucose **Ans:** B (rubella IgG is not universally mandated in public program).

References

Indian national & program documents (primary)

- PMSMA official portal & guidelines: fixed-day quality ANC on 9th each month; high-risk flagging and logistics.
- Mother & Child Protection (MCP) Guidebook (2018) minimum 4 ANC visits; documentation & counselling checklist.
- RCH Portal v2.0 (2025) reiterates national visit schedule.
- Td Operational Guidelines / UIP note Td replaces TT; Td-1, Td-2 (4 weeks later); booster if pregnant within 3 years of prior two doses.
- Operational Guidance for COVID-19 Vaccination in Pregnancy (MoHFW, 2021).
- National Guidelines: Diagnosis & Management of GDM (MoHFW) one-step 75 g OG, 2-h ≥140 mg/dL at booking & 24-28 w.
- Syphilis Screening during Pregnancy MoHFW/NHSRC; HIV & Syphilis SOP (MoHFW/NACO); HBsAg in ANC panel.
- Anemia Mukt Bharat / I-NIPI IFA dosing and life-cycle strategy.
- Calcium Supplementation (MoHFW) 1 g/day from 14 w to 6 months postpartum; timing with meals; separate from IFA.
- National Deworming in Pregnancy Albendazole 400 mg after 1st trimester; DOT & WASH.

Professional/ adjunct guidance (quote as "institutional/ professional")

- FOGSI ANC checklist & Anti-D practice points (ICT at 28 w; 300 μg at 28 w & postpartum; sensitising events).
- WHO 8-contact model (context), calcium for prevention of hypertensive disorders.

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30-second recap

- Write the Indian schedule (4 visits) + PMSMA (9th day ANC);
- Immunize with Td (and COVID-19 per MoHFW);
- Screen early: Hb/CBC, blood group-Rh, urine, HIV-syphilis-HBsAg, 75-g 2-h glucose (booking & 24-28 w), USG with 18-20 w anomaly scan;
- **Supplement**: **IFA daily** (2nd trimester onward) + **Calcium 1 g/day** (start 14 w, continue 6 months postpartum) + **Albendazole 400 mg** in 2nd trimester;
- Manage anaemia, GDM, HTN, infections, and Rh-negativity per the national package, document on MCP card, and refer high-risk early.

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