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.

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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**.

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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.)

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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

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.

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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.

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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).

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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

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).

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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 yet 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 next-visit 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 **booking-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) ≥126 mg/dL B) ≥200 mg/dL C) **≥140 mg/dL** D) ≥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.

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.