Advancing Maternal Nursing Care: Evidence-Based Strategies for High-Risk Pregnancy Management

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ABSTRACT

High-risk pregnancy refers to a pregnancy in which maternal, fetal or placental conditions increase the probability of adverse outcomes and require care beyond routine antenatal services. The conditions may be present before conception, arise during pregnancy or become apparent as pregnancy progresses. Hypertensive disorders, diabetes, anaemia, cardiac and renal disease, infections, multiple gestation, previous adverse obstetric outcomes and social determinants of health are important contributors. Advances in maternal nursing care increasingly emphasise early risk recognition, individualized surveillance, evidence-based prevention, coordinated multidisciplinary management and respectful, woman-centred communication. Nurses and midwives are central to this model because they provide repeated assessment, recognize clinical deterioration, support adherence to treatment, facilitate referral and prepare women and families for birth and the postnatal period. This narrative study discusses risk assessment, common high-risk conditions, maternal and fetal monitoring, nursing interventions, digital and diagnostic developments, intrapartum care, postpartum follow-up and implementation challenges. Particular attention is given to the interpretation of warning signs, continuity of care and the need to adapt evidence-based recommendations to local resources. The review highlights that technology can strengthen, but cannot replace, skilled clinical assessment and timely escalation. A safe high-risk maternity service requires clear protocols, reliable communication, adequate staffing, access to emergency obstetric and neonatal services, and meaningful involvement of the pregnant woman in decisions.

Keywords: High-risk pregnancy; Maternal nursing; Antenatal care; Maternal-fetal monitoring; Obstetric complications; Patient safety; Midwifery

1.INTRODUCTION

Pregnancy is a physiological process, but it can be complicated by maternal disease, obstetric history, placental dysfunction, fetal conditions or social circumstances that increase the likelihood of morbidity. A high-risk designation is not a diagnosis in itself. It is a dynamic assessment that identifies the need for closer observation, specialist input or a planned pathway of care. Risk may change during pregnancy; a woman initially assessed as low risk can develop hypertension, bleeding, fetal growth restriction or another complication, while effective treatment may reduce some previously identified risks.

The consequences of inadequate recognition include severe maternal morbidity, preterm birth, fetal growth restriction, stillbirth, neonatal complications and avoidable admission. Antenatal care therefore needs to combine prevention and screening with prompt response to emerging problems

The World Health Organization (WHO) frames antenatal care as a platform for health promotion, prevention, detection and support, with a positive pregnancy experience as an important outcome [1]. Its model recommends at least eight antenatal contacts for routine care, while women with complications require additional, individualised contact and specialist review. Maternal nurses work across community, primary, secondary and tertiary settings. Their responsibilities include comprehensive assessment, measurement and interpretation of observations, medication safety, patient education, emotional support, coordination of referrals and continuity during transitions. This study considers how these responsibilities can be strengthened through evidence-based protocols, improved surveillance, communication systems and family-centred care [1,2].

2. REVIEW APPROACH

This article is a narrative study of authoritative clinical guidance and selected literature relevant to high-risk pregnancy and maternal nursing. The discussion draws on WHO antenatal-care recommendations, guidance from the National Institute for Health and Care Excellence (NICE), and professional guidance from the American College of Obstetricians and Gynecologists (ACOG), alongside established principles of maternal and newborn care. The purpose is to synthesise practical implications for nursing rather than provide a systematic review or pooled estimate of treatment effects. Recommendations should be interpreted alongside current national and institutional protocols, the woman's clinical condition and the judgement of the responsible obstetric team.

3. DEFINITION AND CLASSIFICATION OF HIGH-RISK PREGNANCY

A high-risk pregnancy is one in which a maternal, fetal, placental or contextual factor increases the probability of an adverse outcome compared with an uncomplicated pregnancy. There is no single universally applicable scoring system. Classification should therefore be based on clinical history, current findings, gestational age, available services and the likely consequences of deterioration. Risk categories are useful for organising care but should not create false reassurance: a woman's status must be reassessed at every clinically relevant contact.

Risk can be considered in five overlapping domains: (1) pre-existing maternal medical conditions, such as hypertension, diabetes, cardiac disease, renal disease, epilepsy or autoimmune disorders; (2) obstetric and reproductive history, including previous pre-eclampsia, preterm birth, stillbirth, recurrent pregnancy loss, uterine surgery or postpartum haemorrhage; (3) conditions arising in the current pregnancy, such as gestational diabetes, hypertensive disorders, antepartum bleeding, multiple gestation or suspected fetal growth restriction; (4) fetal and placental factors, including congenital anomaly, abnormal placentation and placental insufficiency; and (5) psychosocial and structural factors, including intimate partner violence, substance use, food insecurity, limited transport, language barriers and delayed access to care.

Risk assessment must be non-stigmatising and culturally safe. Age, body mass index or social circumstances should not be used in isolation to define an outcome. Instead, they should inform a broader assessment and appropriate support. The care plan should specify the lead clinician, referral pathway, surveillance schedule, emergency contacts and planned place of birth. The major risk domains and corresponding nursing priorities are summarised in Table 1.

Table: 1 Major risk factors associated with high-risk pregnancy.

Risk domain	Examples	Nursing assessment priorities
Maternal medical	Chronic hypertension, diabetes, cardiac or renal disease, epilepsy, autoimmune disease	History, medication review, observations, symptoms, specialist follow-up
Obstetric history	Previous pre-eclampsia, preterm birth, stillbirth, haemorrhage or caesarean birth	Review records, identify recurrence risks, confirm birth plan

Current pregnancy	Gestational hypertension, pre-eclampsia, gestational diabetes, anaemia, infection	Condition-specific monitoring, investigations, treatment adherence
Fetal / placental	Multiple gestation, growth restriction, abnormal placentation, fetal anomaly	Ultrasound plan, fetal movement advice, timely review of results
Psychosocial / access	Violence, substance use, poor transport, food insecurity, language barriers	Confidential assessment, safeguarding, social support and referral

4. MAJOR RISK FACTORS AND ASSOCIATED CONDITIONS

4.1 Hypertensive disorders of pregnancy

Hypertensive disorders include chronic hypertension, gestational hypertension, pre-eclampsia and eclampsia. They can affect maternal organs and placental function and are associated with fetal growth restriction, medically indicated preterm birth, placental abruption, stroke and maternal morbidity. Blood pressure should be measured with an appropriately sized cuff and a device validated for pregnancy. A new blood pressure of 140/90 mmHg or higher after 20 weeks requires assessment for gestational hypertension and pre-eclampsia; severe-range pressure, generally 160 systolic or 110 diastolic mmHg or higher, requires urgent clinical action [3,4].

Nursing assessment includes headache, visual disturbance, epigastric or right upper-quadrant pain, nausea or vomiting, sudden swelling, breathlessness, reduced urine output and changes in fetal movement. These symptoms should be taken seriously even when a previous blood pressure reading was normal. Assessment may include repeat blood pressure, urine protein evaluation, platelet count, liver and renal function tests and fetal assessment, as directed by the clinical team. Nurses should ensure that abnormal findings are communicated promptly and documented with the time of escalation and response. [5]

4.2 Diabetes mellitus and gestational diabetes

Pregestational type 1 or type 2 diabetes and gestational diabetes can increase the risk of hypertensive disorders, excessive fetal growth, shoulder dystocia, birth injury, neonatal hypoglycaemia and operative birth. The degree of risk is influenced by glycaemic control, vascular or renal complications, coexisting conditions and fetal growth. Risk assessment should begin early, with testing and follow-up according to national guidance. NICE recommends risk-based oral glucose tolerance testing between 24 and 28 weeks for women meeting its criteria [6]. Nursing care includes education on glucose monitoring, nutrition, physical activity where appropriate, medication administration, recognition and treatment of hypoglycaemia, and attendance at joint diabetes and antenatal services. Insulin and other prescribed therapies must be administered and monitored according to the individual plan. Nurses should avoid giving generic dietary instructions that conflict with a woman's cultural food practices or nutritional needs. Fetal growth surveillance and timing of birth should be individualized by the obstetric and diabetes teams [6].

4.3 Maternal anaemia and nutritional disorders

Anaemia is common in pregnancy and may result from iron deficiency, folate or vitamin B12 deficiency, haemoglobin disorders, infection, chronic inflammation or blood loss. Severe anaemia reduces maternal physiological reserve and can worsen the consequences of haemorrhage or infection. Nursing responsibilities include checking that recommended blood tests are completed, identifying symptoms such as fatigue, dizziness, palpitations and breathlessness, supporting adherence to prescribed supplementation and arranging study of abnormal results. Dietary advice should be practical and culturally appropriate. Women with severe anaemia, poor response to treatment or suspected haemoglobinopathy need clinical assessment rather than repeated empirical supplementation [7].

4.4 Cardiac, renal, respiratory and autoimmune disease

Pre-existing cardiac disease can decompensate as blood volume and cardiac workload rise. Renal disease may increase the risk of hypertension, pre-eclampsia, impaired fetal growth and altered medication handling. Asthma, epilepsy, thyroid disease, lupus and other autoimmune conditions also require pregnancy-specific review. Nurses should obtain an accurate medication history, identify drugs that require preconception or antenatal study , monitor symptoms and reinforce attendance at specialist appointments.

Medication should never be stopped or changed independently by the patient or nurse without an authorised treatment plan.

4.5 Multiple pregnancy and previous adverse obstetric history

Twin and higher-order pregnancies have increased risks of preterm birth, fetal growth discordance, hypertensive disorders, anaemia and postpartum haemorrhage. Previous pre-eclampsia, stillbirth, preterm birth, placental abruption, caesarean birth or severe haemorrhage may also influence surveillance and birth planning. Nurses should ensure that prior records are reviewed where available and that women understand why additional scans, appointments or specialist consultations have been recommended.

4.6 Infection and thromboembolic risk

Urinary, sexually transmitted, respiratory and systemic infections can affect maternal and fetal outcomes. Screening and treatment should follow local protocols, with attention to fever, dysuria, flank pain, abnormal discharge, respiratory symptoms and systemic deterioration. Pregnancy and the postpartum period also increase venous thromboembolism risk. NICE recommends assessment at booking and reassessment after hospital admission or a significant health event [7]. Nurses contribute by identifying immobility, previous thrombosis, thrombophilia, obesity, infection, dehydration and other risk factors, and by supporting prescribed prophylaxis and mobilisation.

5. ADVANCES IN MATERNAL ASSESSMENT AND RISK IDENTIFICATION

A structured booking assessment provides the foundation for safe care. It should include obstetric and medical history, medication and allergy study , previous surgery, family history where relevant, mental health, social support, safeguarding concerns, substance use, nutritional status and barriers to accessing care. Baseline investigations are selected according to national guidance and individual risk. The assessment should also establish gestational age as accurately as possible and identify whether specialist referral is required. At each contact, nurses should use a consistent approach: ask about new symptoms and fetal movement when appropriate; measure and record relevant observations; study investigations and treatment; assess adherence and adverse effects; confirm the next appointment; and explain when and how to seek urgent help. Standardised early-warning tools can support recognition of deterioration, but they do not replace clinical judgement. Abnormal observations, a concerning symptom or a nurse's serious concern should trigger escalation even if a score is not elevated [8].

5.1 Communication, documentation and escalation

A reliable escalation system should define who must be contacted, how quickly a response is expected and what action is required if the first contact is unavailable. Nurses should use structured communication such as situation-background-assessment-recommendation (SBAR) while retaining the flexibility to describe an urgent concern in plain language. The woman's own report of feeling unwell should be included in the assessment rather than discounted because observations appear reassuring. Where a concern is not addressed, the nurse should re-escalate through the agreed chain of command. Documentation should record objective findings, symptoms and preferences, the time of notification, the person contacted, advice received and subsequent reassessment. Risk assessment is most effective when it is repeated. New hypertension, bleeding, reduced fetal movement, fever, severe vomiting, breathlessness or a change in maternal wellbeing may alter the level of care. Documentation should be contemporaneous, legible and sufficiently detailed to support continuity between facilities and teams [5-7]. Table 2 summarises the principal assessment domains, while Figure 1 presents the overall risk-assessment pathway.

Table: 2 Maternal nursing assessment and monitoring.

Assessment area	Examples of monitoring	Action when abnormal
Maternal vital signs	Blood pressure, pulse, respiratory rate, temperature, oxygen saturation	Repeat using correct technique; compare with baseline; escalate according to protocol
Symptoms	Headache, visual changes, epigastric pain, bleeding, dyspnoea, fever, reduced fetal movement	Urgent clinical assessment; do not defer because a previous observation was normal

Laboratory tests	Full blood count, platelets, renal and liver function, urine testing, glucose	Check result review and communication; arrange clinician-directed follow-up
Fetal wellbeing	Fetal heart assessment, ultrasound growth and fluid, Doppler, CTG when indicated	Ensure qualified interpretation and documented plan; escalate concerning findings
Treatment safety	Medication reconciliation, allergies, glucose response, adverse effects, fluid balance	Follow prescribing protocol; document and report adverse effects or deterioration
Psychosocial needs	Distress, safety, support, ability to attend appointments and obtain medicines	Offer confidential support, referral and practical access planning

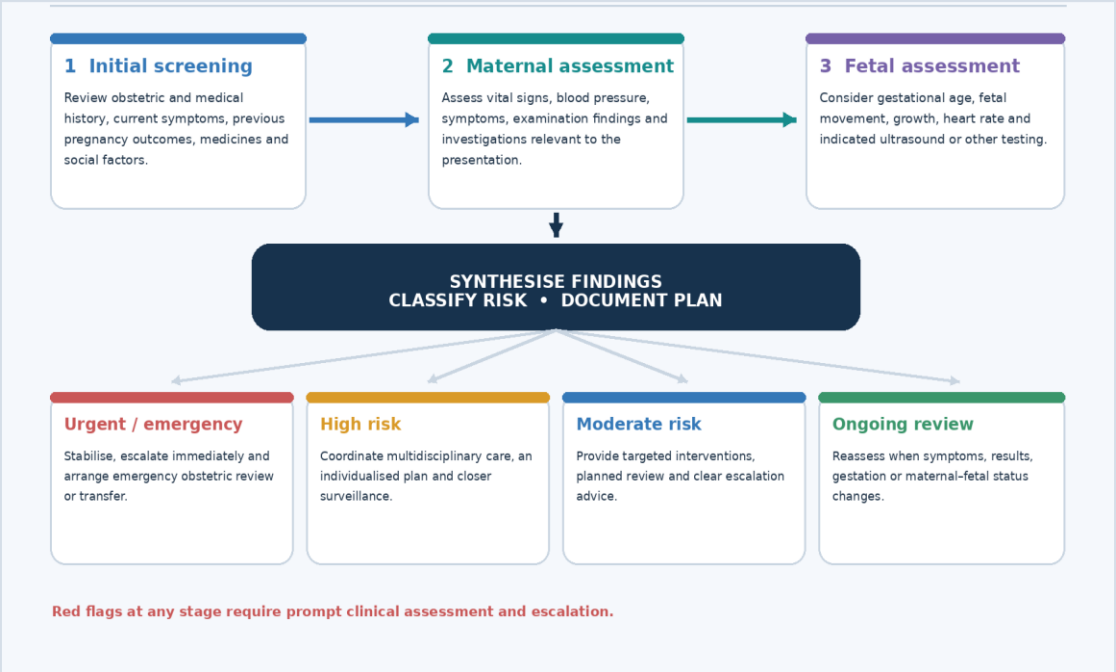

Figure: 1 Risk assessment pathway for high-risk pregnancy.

6. EVIDENCE-BASED MANAGEMENT AND NURSING INTERVENTIONS

6.1 Individualised care planning

A written care plan should translate risk assessment into clear actions. It should identify the responsible obstetric or medical team, the frequency and purpose of follow-up, required investigations, medication plan, fetal surveillance, thresholds for urgent study , anticipated place of birth and contingency arrangements. The plan should be explained in accessible language and updated when the clinical situation changes. Shared decision-making is essential, including discussion of benefits, limitations and uncertainties associated with proposed interventions. The principal nursing interventions are summarised in Table 3.

6.2 Maternal monitoring

Monitoring is condition-specific. Depending on the diagnosis, it may include blood pressure, pulse, respiratory rate, oxygen saturation, temperature, weight trends, urine output, capillary glucose and laboratory tests. The nurse should understand the reason for each measurement and the threshold for action. For example, repeated blood pressure measurement should use an appropriate technique, and severe hypertension must not be left for routine follow-up. In women with suspected pre-eclampsia, symptoms and laboratory trends are as important as a single reading.

6.3 Fetal surveillance

Fetal assessment may include ultrasound for growth, amniotic fluid volume and placental or Doppler assessment, fetal heart-rate assessment and cardiotocography (CTG) when clinically indicated. The choice and frequency depend on the maternal condition, gestational age, fetal findings and local protocol. NICE recommends a documented plan for fetal monitoring in pre-eclampsia or severe gestational hypertension, including fetal indications for birth and coordination with neonatal and anaesthetic teams [4]. ACOG also advises that antenatal surveillance be individualised according to the condition and severity [6-7].

Nurses should explain the purpose and limitations of tests, support the woman during procedures and ensure results are reviewed by an appropriately qualified clinician. A reassuring test is a finding at a particular time, not a guarantee that deterioration cannot occur later. Women should receive clear advice about reporting reduced or altered fetal movement and other warning signs without delay. Important maternal and fetal warning signs requiring urgent assessment are listed in Table 4.

6.4 Medication safety

6.4.1 Safe administration and monitoring of high-alert medicines

High-alert medicines require additional safeguards because errors can cause serious harm. Before administration, the nurse should verify the current prescription, patient identity, indication, dose, route, timing, relevant laboratory results and required infusion or monitoring parameters. For medicines such as insulin, magnesium sulphate and anticoagulants, local policies may require independent double-checks, standard concentrations, infusion pumps or specific observation schedules. The nurse should explain the purpose of treatment and likely adverse effects in terms the woman can understand. If a dose is delayed, omitted or associated with a suspected adverse reaction, the event should be communicated promptly and managed according to the institutional medication-safety pathway.

Medication management in high-risk pregnancy requires accurate reconciliation, study of allergies, confirmation of dose and route, monitoring for adverse effects and clear documentation. Nurses should use pregnancy-specific prescribing references and local protocols, verify high-alert medicines through required double-check procedures and communicate concerns about possible fetal or maternal effects. Magnesium sulphate, antihypertensives, insulin, anticoagulants, corticosteroids and anticonvulsants may be used in selected circumstances and require condition-specific monitoring. Nurses must not initiate, discontinue or alter these medicines outside their authorised scope [7-8].

6.5 Nutrition, rest and self-management

Nutrition advice should reflect the woman's diagnosis, cultural preferences, food availability and economic circumstances. Anaemia, diabetes, obesity, undernutrition and hyperemesis require different approaches. Physical activity may be beneficial in many pregnancies but should be tailored to clinical advice and contraindications. Advice about rest should avoid unnecessary restriction of mobility, which can contribute to deconditioning and thromboembolic risk. Nurses can support self-management by using teach-back, written action plans and practical demonstrations, such as glucose monitoring or home blood pressure measurement when prescribed.

6.6 Psychological and social support

A high-risk label can produce fear, uncertainty, guilt and loss of control. Hospital admissions, repeated scans and uncertainty about birth may increase distress. Nurses should invite women to express concerns, provide consistent explanations, assess for anxiety, depression and intimate partner violence in a safe and confidential manner, and facilitate referral when needed. Family involvement should occur with the woman's consent. Respectful care includes privacy, informed consent, non-discrimination and attention to language and disability-related needs. Figure 2 summarizes the assess–plan–implement–evaluate–coordinate framework.

Table: 3 Evidence-informed nursing interventions.

Clinical concern	Nursing intervention	Expected care contribution
Hypertensive disorders	Accurate BP measurement, symptom screening, prompt escalation, prescribed medication monitoring	Earlier recognition of severe disease and safer coordination

Diabetes	Support glucose monitoring, nutrition plan, medication safety and specialist appointments	Improved self-management and continuity of glycaemic care
Anaemia	Check investigations, support prescribed therapy, assess symptoms and response	Improved detection of persistent or severe anaemia
Fetal growth concern	Support scheduled ultrasound/Doppler, explain fetal movement advice, communicate results	Timely study of possible placental or fetal compromise
Thromboembolism risk	Risk reassessment, mobility support and prescribed prophylaxis	Reduced missed opportunities for prevention
Psychological distress	Listen, provide clear information, assess safety and refer appropriately	Improved engagement, autonomy and emotional support



Figure: 2 Nursing management framework

7. ADVANCES IN TECHNOLOGY AND SERVICE DELIVERY

7.1 Remote monitoring: opportunities and safeguards

Remote monitoring may be useful for selected women with stable conditions when the care team has agreed on the device, measurement frequency, reporting method and thresholds for review. A home blood pressure programme, for example, should include training on seated rest, cuff placement, repeat measurement and recording results. The woman must know which symptoms require immediate in-person assessment regardless of the home reading. Services should specify who study s incoming measurements on weekends and outside routine hours, how missed readings are followed up and how urgent results are escalated. Without these safeguards, remote monitoring can create false reassurance or transfer an unreasonable clinical burden to the woman and her family.

Technological developments have expanded the ability to identify and monitor risk. High-resolution ultrasound, Doppler velocimetry, CTG, laboratory automation and point-of-care testing can support timely decisions when used for appropriate indications. Home blood pressure devices and glucose meters may help selected women participate in monitoring, provided that devices are validated, training is adequate and there is a defined pathway for reporting abnormal results. Remote consultations can reduce travel burden for some

follow-up appointments, but they are not suitable substitutes for examination when symptoms or findings require face-to-face assessment.

Electronic maternity records can improve access to longitudinal information, flag allergies and risk factors, and support communication across services. Digital reminders may improve appointment attendance and treatment adherence. However, digital systems can introduce privacy risks, alert fatigue, incomplete data and inequity for women without reliable phones, connectivity or literacy. Services should provide non-digital alternatives and ensure that responsibility for reviewing alerts is explicit. Emerging approaches such as artificial intelligence-assisted interpretation of imaging or risk prediction may eventually support clinical decision-making. Their use requires external validation, transparency, bias assessment, appropriate regulation and human oversight. A prediction score should never be treated as a diagnosis or used to deny care. Technology is most valuable when integrated into a well-staffed service with reliable referral and emergency response [8-9].

8. NURSING MANAGEMENT DURING LABOUR AND DELIVERY

8.1 Preparation for obstetric emergencies

Emergency preparedness should be anticipatory rather than improvised after deterioration occurs. The team should know the location of emergency equipment, blood products, medicines and referral contacts. Women with substantial risk of haemorrhage, severe hypertension, cardiac decompensation or preterm birth may require a birth setting with appropriate anaesthetic, transfusion, critical-care and neonatal capacity. Nurses can contribute by checking equipment, confirming that required investigations and blood grouping have been completed, reviewing the escalation plan and ensuring that the woman and her support person understand the proposed arrangements. Regular multidisciplinary simulation exercises help teams practise role allocation, closed-loop communication and safe transfer during time-critical events.

The intrapartum plan should be agreed before labour whenever possible. It should specify the intended place of birth, monitoring requirements, analgesia considerations, blood availability where relevant, neonatal support and indications for escalation or operative delivery. On admission, the nurse should confirm gestational age, diagnosis, current medications, allergies, recent investigations and the woman's preferences. A structured handover reduces the risk that critical information is lost.

During labour, maternal observations and fetal monitoring should match the underlying risk and clinical status. Nurses should recognise severe hypertension, seizure, haemorrhage, sepsis, respiratory compromise, hypoglycaemia, thromboembolism and fetal compromise. Emergency responses require clear role allocation, immediate communication and adherence to institutional protocols. In women receiving magnesium sulphate, for example, monitoring for respiratory depression, reduced reflexes and urine output should follow the prescribed protocol. High-risk status does not automatically require caesarean birth. The mode and timing of birth should be determined by maternal and fetal indications, gestational age, clinical progress and informed discussion. Continuous emotional support, privacy, consent and respectful communication remain essential during emergency as well as planned care [10].

Table: 4 Maternal and fetal warning signs requiring urgent assessment.

Warning sign	Nursing response
Severe headache, visual disturbance, severe upper abdominal pain or seizure	Activate urgent obstetric assessment/emergency response; assess observations and follow local protocol
Severe-range blood pressure or rapidly worsening blood pressure	Prompt repeat/confirmation without delaying escalation; urgent clinician notification
Vaginal bleeding, severe abdominal pain or collapse	Immediate emergency assessment for haemorrhage, abruption or other acute cause
Breathlessness, chest pain, cyanosis or unilateral leg swelling with pain	Urgent assessment for cardiopulmonary compromise or thromboembolism
Fever with rigors, confusion or marked deterioration	Urgent sepsis assessment and escalation under local pathway
Reduced or changed fetal movement	Prompt maternity assessment according to gestational age and local fetal-movement pathway

9. POSTPARTUM CARE AND PREVENTION OF COMPLICATIONS

Risk does not end with delivery. Women with hypertensive disorders may develop worsening

hypertension or postpartum pre-eclampsia; those with diabetes may require changes in glucose monitoring and medication; and women with anaemia or major blood loss may need treatment and follow-up. Nurses should monitor bleeding, uterine tone, vital signs, pain, temperature, wound condition, mobility, urine output and emotional wellbeing according to the individual plan. Early recognition of postpartum haemorrhage, infection, hypertensive emergency, thromboembolism and sepsis is critical. [11]

9.1 Individualised discharge and safety-netting

Discharge should be based on clinical stability, the woman's ability to manage the agreed plan and the availability of follow-up, rather than on a fixed number of hours after birth. Before discharge, nurses should confirm that the woman can identify the medicines she needs, understands dose changes and knows whom to contact for concerns. Written instructions should use clear language and distinguish emergency symptoms from issues that can be discussed at a routine appointment. Safety-netting is particularly important after hypertensive disorders, postpartum haemorrhage, infection, operative birth and diabetes. Where follow-up depends on travel, telephone access or payment, these practical barriers should be addressed before the woman leaves the facility. Discharge planning should include medication reconciliation, warning signs, follow-up appointments, blood pressure or glucose review where indicated, breastfeeding support and contraception counselling.

Women with gestational diabetes should be informed about recommended postpartum glucose testing and future diabetes risk according to national guidance. Those with hypertensive disorders should receive advice about blood pressure follow-up and long-term cardiovascular health. A clear written discharge summary should be shared with primary care and relevant specialist services [10]. Postpartum mental health assessment is important, particularly after traumatic birth, neonatal admission, pregnancy loss or prolonged hospitalisation. Nurses should normalise help-seeking, identify urgent mental health concerns and connect women with appropriate services. The postnatal period should be viewed as part of the continuum of maternal care, not simply the endpoint of obstetric treatment. Figure 3 summarises the continuum of care from early pregnancy through the postnatal period.

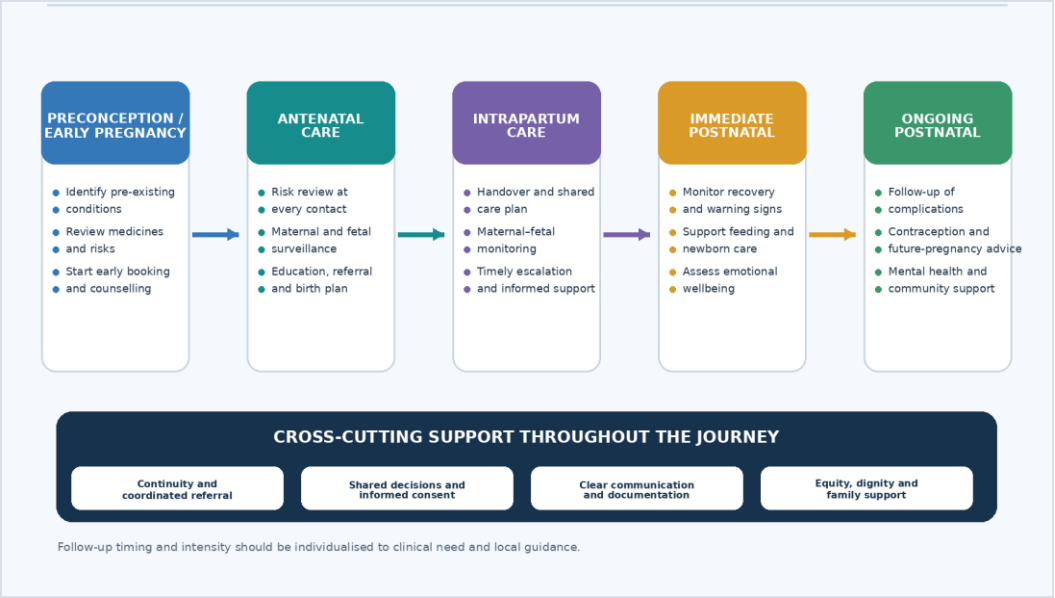

Figure: 3 Continuum of high-risk maternity care

10. PATIENT EDUCATION AND FAMILY-CENTRED CARE

Education should be repeated, practical and adapted to the woman's language, health literacy and readiness to learn. Key topics include the nature of the identified risk, the purpose of medicines and tests, appointment schedules, fetal movement awareness, nutrition, activity, birth planning, postpartum warning signs and where to seek help. Teach-back can confirm understanding: the woman is invited to explain the plan in her own words rather than being asked only whether she understands. Family members may provide transport, emotional support and help with treatment, but the pregnant woman remains the primary decision-maker. Nurses should ask whom she wants involved and should provide opportunities for private

discussion. Shared decisions should acknowledge uncertainty and respect the woman's values, preferences and right to decline an intervention after receiving appropriate information [11].

11. CHALLENGES IN HIGH-RISK MATERNAL NURSING

Important barriers include shortages of skilled staff, limited access to ultrasound and laboratory services, delayed referral, transport difficulties, fragmented records, out-of-pocket costs, language differences and inconsistent availability of emergency obstetric and neonatal care. Rural and underserved populations may face multiple barriers simultaneously. Overcrowding and high workload can also reduce the time available for education, psychosocial support and careful documentation.

Another challenge is variation in protocols and inconsistent interpretation of monitoring results. Institutions should establish standard operating procedures, escalation pathways, referral agreements and regular multidisciplinary study . Simulation training can improve team readiness for rare but time-critical emergencies. Audit should examine response times, severe maternal outcomes, near misses, unplanned transfers, patient experience and disparities between population groups. Nursing scope and staffing models differ across health systems. Local implementation should therefore clarify which tasks can be performed independently, which require standing orders and which require immediate clinician study. Competency-based training and supportive supervision are essential when responsibilities are expanded[12].

12. DISCUSSION

The evidence and guidance discussed in this study indicate that safe management of high-risk pregnancy depends on more than identifying a diagnosis or assigning a risk category. Outcomes are influenced by how early a concern is recognised, whether the woman can access the recommended service, how reliably information is transferred and whether the receiving team can respond. Maternal nurses connect these elements through repeated assessment, education, coordination and escalation. Their contribution is particularly important when symptoms evolve between scheduled appointments or when women move between community, hospital and specialist services. A consistent approach should combine condition-specific protocols with individualised care. Standardised observations, escalation thresholds and structured handovers can reduce avoidable variation, while shared decision-making and culturally safe communication help ensure that care remains responsive to the woman's priorities.

Digital tools and remote monitoring may improve access for selected patients, but their value depends on clear accountability, validated devices, timely study and an accessible route to face-to-face assessment. Services should therefore evaluate both clinical outcomes and women's experiences, including whether barriers related to transport, cost, language, disability or connectivity have been addressed. This study is narrative and does not provide a systematic search, formal risk-of-bias assessment or quantitative synthesis. The recommendations summarised here are drawn from selected authoritative guidance and should be interpreted in the context of current national protocols and local resources. Further research is needed to determine which nursing-led models, monitoring pathways and digital interventions produce sustained improvements in maternal and neonatal outcomes, particularly in low-resource and rural settings.

12.1 Referral pathways and continuity between levels of care

Referral is a clinical intervention in its own right. A referral is effective only when the receiving service has the information, capacity and opportunity to act. Nurses should communicate the reason for referral, gestational age, relevant history, current observations, symptoms, investigation results, medicines already administered and the urgency of review. Where transfer is required, the sending team should confirm acceptance, stabilise the woman within its capacity, arrange an appropriate escort and communicate any change during transit. A written or electronic referral should not replace direct verbal handover for time-critical conditions. After assessment at a higher-level facility, the plan should be returned to the referring team so that follow-up can continue safely.

12.2 Respectful maternity care, consent and health equity

High-risk care can involve frequent examinations, monitoring, admission and interventions that may feel intrusive or frightening. Nurses should explain what will happen, why it is recommended, what alternatives exist and what the woman may experience. Consent should be ongoing, not treated as a one-time signature. Privacy, confidentiality, dignity and freedom from discrimination are essential components of safe care. Women who face language barriers should be offered appropriate interpretation rather than relying automatically on family members. Services should also consider disability access, transport, out-of-

pocket costs and the availability of culturally acceptable food and support. Equity requires more than offering the same appointment schedule to everyone; it requires adapting care so that women with greater barriers can access the level of support their clinical needs demand.

12.3 Quality improvement and nursing-sensitive indicators

Quality improvement can translate recommendations into measurable practice. Units may monitor the proportion of women with documented risk assessment at booking, completion of indicated follow-up, time from recognition of severe hypertension to escalation, availability of a documented fetal surveillance plan, completeness of postpartum counselling and attendance at recommended follow-up. Maternal near-miss reviews and structured case discussions can identify delays in recognition, communication or transfer. Audit findings should be fed back to frontline staff and used to revise protocols, staffing and training. Indicators should be interpreted alongside patient-reported experience and equity measures; a high rate of completed observations is not sufficient if abnormal results are not acted upon. A practical safety strategy is to use standardised handover formats and closed-loop communication. The receiving clinician should acknowledge the message, repeat back critical information when appropriate and state the agreed action. Nurses should document whom they contacted, when contact occurred, the advice received and whether the recommended action was completed. This creates a traceable record and reduces the risk that urgent findings remain unaddressed.

13. FUTURE PERSPECTIVES

Future improvements are likely to depend less on a single new device than on integrating early risk identification, continuity, reliable communication and equitable access. Potential priorities include interoperable maternity records, validated remote monitoring pathways, decision-support tools that explain their recommendations, stronger midwifery-led continuity models and improved links between community services and referral hospitals. Research should evaluate whether innovations improve maternal and neonatal outcomes, reduce delays and are acceptable to women and staff.

Maternal nursing education should include advanced assessment, interpretation of maternal observations, fetal surveillance principles, medication safety, emergency drills, trauma-informed communication and quality improvement. Workforce planning must recognise the time required for counselling, coordination and follow-up, not only direct clinical procedures. Women and families should be involved in designing educational materials and service pathways. In settings with limited resources, high-impact improvements may include early booking, reliable blood pressure measurement, recognition of danger signs, access to essential medicines, timely referral, transport planning and effective postpartum follow-up. Digital innovation should complement these foundations rather than divert resources from them.

14. CONCLUSION

High-risk pregnancy requires dynamic assessment and coordinated care that responds to maternal, fetal and social needs throughout pregnancy, birth and the postpartum period. Nurses and midwives are central to this process through early recognition, systematic monitoring, medication safety, education, psychosocial support and timely escalation. Advances in imaging, point-of-care testing, remote monitoring and digital records can strengthen care when implemented with adequate training, clinical oversight and equitable access. The most effective nursing approach combines evidence-based protocols with individualized, respectful and woman-centered practice. Clear communication, multidisciplinary collaboration and continuity across care settings remain essential to preventing avoidable complications and improving maternal and newborn outcomes.

15. DECLARATIONS

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The first author and the corresponding author's supervisor wrote the initial drafts of the manuscript. All authors contributed to data collection and editing, designed the tables, and approved the final version submitted to the journal.

Author contributions

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REFERENCES

1. World Health Organization. WHO recommendations on antenatal care for a positive pregnancy experience. Geneva: World Health Organization; 2016.
2. World Health Organization. WHO recommendations on antenatal care for a positive pregnancy experience: highlights and key messages. Geneva: World Health Organization; 2018.
3. American College of Obstetricians and Gynecologists. Gestational hypertension and preeclampsia. ACOG Practice Bulletin No. 222. Obstet Gynecol. 2020;135(6):e237-e260.
4. National Institute for Health and Care Excellence. Hypertension in pregnancy: diagnosis and management. NICE guideline NG133. London: NICE; 2019 (updated 2023).
5. World Health Organization. WHO recommendations for prevention and treatment of pre-eclampsia and eclampsia. Geneva: World Health Organization; 2011.
6. National Institute for Health and Care Excellence. Diabetes in pregnancy: management from preconception to the postnatal period. NICE guideline NG3. London: NICE; 2015 (updated 2020).
7. Royal College of Obstetricians and Gynaecologists. Reducing the risk of venous thromboembolism during pregnancy and the puerperium. Green-top Guideline No. 37a. London: RCOG; 2015 (amended 2023).
8. National Institute for Health and Care Excellence. Antenatal care. NICE guideline NG201. London: NICE; 2021.
9. World Health Organization. WHO recommendations on maternal health: guidelines approved by the WHO Guidelines Review Committee. 2nd ed. Geneva: WHO; 2025. ISBN: 978-92-4-008059-1.
10. American College of Obstetricians and Gynecologists. Indications for outpatient antenatal fetal surveillance. ACOG Committee Opinion No. 828. Obstet Gynecol. 2021;137(6):e177-e197.
11. World Health Organization. WHO recommendations on maternal and newborn care for a positive postnatal experience. Geneva: World Health Organization; 2022.
12. World Health Organization. Standards for improving quality of maternal and newborn care in health facilities. Geneva: World Health Organization; 2016.