Building Electronic Health Record Infrastructure to Optimize Antenatal Anesthesia Planning Consults Across a Safety-Net Hospital System: A Quality Improvement Initiative

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Background

- **Antenatal anesthesia planning consults (AAPCs)** present an opportunity for early multidisciplinary evaluation and individualized management of high-risk patients.
- The American Society of Anesthesiologists emphasizes the importance of a formal antenatal anesthesiology consult system, but many institutions lack the necessary infrastructure for such a system (1,2).
- Maternal mortality rates in the United States exceed those of other similarly high-resourced countries (3), especially among Black, Indigenous, and People of Color (BIPOC).
- Shifts in parturient demographics contribute to a higher number of high-risk pregnancies, making peripartum anesthetic management increasingly complex (4).
- The Center for Disease Control's Maternal Mortality Review Committee has concluded that over 80% of U.S. pregnancy-related deaths are preventable (5,6).

- This quality improvement (QI) initiative **leveraged** the municipal hospital system's robust investment in electronic health records (EHR) to upgrade an informal approach to AAPCs that resulted in inconsistent or inappropriate referrals and ineffective interdisciplinary communication for the maternity care of a largely BIPOC population.

AIM: To build the electronic health record infrastructure necessary to standardize AAPCs across the New York City safety-net hospital system.

Methods

- A multidisciplinary, interprofessional team completed literature reviews and driver diagrams to identify the elements necessary to **standardize the AAPC workflow and build the supporting EHR**.
- We obtained approval for the AAPC EHR build from several system-wide governing bodies including the Obstetric Anesthesiology Subcommittee (OAS), which has representatives from all **11 H+H hospitals with maternity units**.
    - This lengthy approval process unintentionally served to recruit stakeholders from other institutions within our system, leading to **system-wide investment in and adoption of the initiative.**
    - Additional **driver diagrams** were completed with OAS members to refine the workflow and EHR build and ensure they could be utilized system-wide, regardless of a hospital's particular practice model.

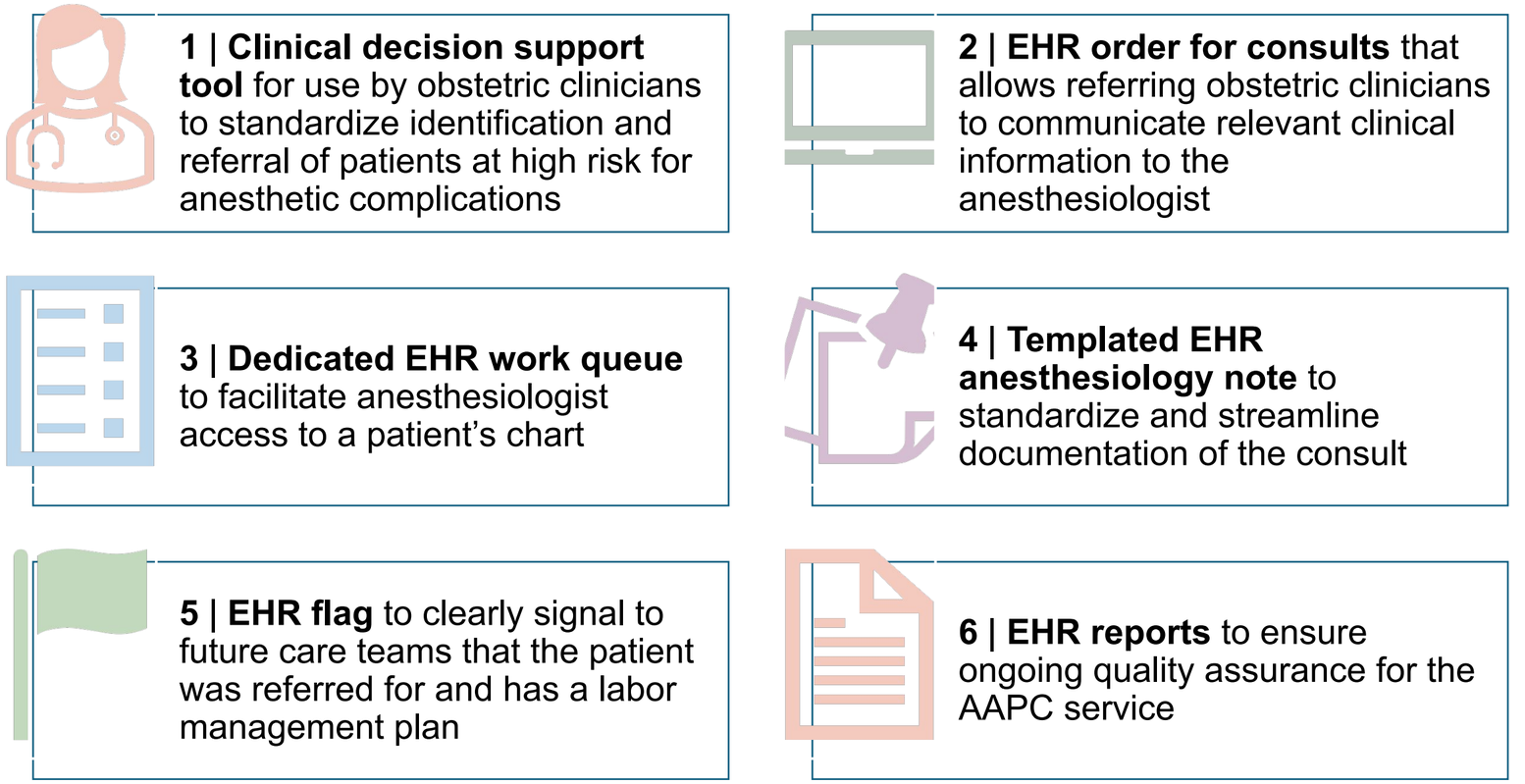


Figure 1 | Multidisciplinary stakeholder-identified EHR components for AAPCs.

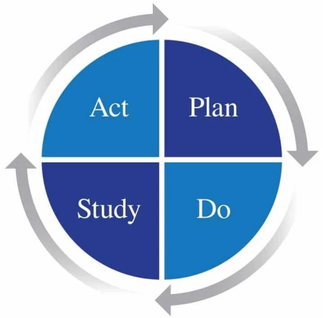
EHR – electronic health record
AAPC – antenatal anesthesia planning consult

Results

1. During a routine prenatal visit (usually after 27 weeks gestation), the obstetric clinician uses the clinician support tool to determine whether the patient would benefit from an AAPC.
2. The obstetric clinician pages the anesthesiologist to discuss the potential consult. If the consult is accepted, the obstetric clinician places an order in the EHR for an AAPC.
3. The Prenatal Clinic Clerk books the patient for an AAPC appointment, usually on the same day as another prenatal visit.
4. The anesthesiologist uses the AAPC work queue in the EHR to identify scheduled patients, review the patient charts, and conduct in-person consultations.
5. Following the consultation, the anesthesiologist documents findings and recommendations using the templated EHR AAPC note.
6. The patient record is flagged in the EHR with a **green dot** next to their name to signal to future providers that a multidisciplinary labor management plan exists.

Figure 2 | Standardized workflow for ordering and completing AAPCs (piloted in June 2024 at an ACOG level II maternal care community hospital with approximately 975 deliveries per year).

AAPC – Antenatal Anesthesia Planning Consult
EHR – Electronic health record



- Ten post-pilot implementation PDSA cycles occurred to resolve workflow defects and EHR glitches.
- To date, all AAPC orders have a corresponding note from an anesthesiologist (n=17).

Discussion and Conclusion

Via the AAPC initiative, labor and delivery (L&D) patients are poised to receive the following benefits:

- **Early assessment** of patients at risk for peripartum complications and increased morbidity and mortality.
- **Early recommendations** for labor and Cesarean analgesia and anesthesia and evaluation of risk for general anesthesia and intensive care.
- **Collaborative management** of coexisting diseases, optimization of patients' clinical status, and creation of a management plan far in advance of the patient's expected due date.
- **Expedited and standardized communication** between clinicians.
- An additional setting for **patient engagement and education** (7,8).

This QI initiative started in a small, ACOG level II maternal care community hospital.

As we sought approvals from H+H oversight bodies, we incidentally obtained publicity, recruited additional key stakeholders, and ultimately procured support for **system-wide adoption of the QI project**.

- The AAPC initiative grew to include representatives from all 11 system hospitals with L&D units.

The exponential growth of the project highlights **widespread recognition of a need for a formal antenatal anesthesia consult system** in 11 H+H hospitals.

We hope that our work can serve as a model for other medical centers seeking to develop similar EHR infrastructure and workflow.

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