



Complete Summary

GUIDELINE TITLE

Critical care in pregnancy.

BIBLIOGRAPHIC SOURCE(S)

American College of Obstetricians and Gynecologists (ACOG). Critical care in pregnancy. Washington (DC): American College of Obstetricians and Gynecologists (ACOG); 2009 Feb. 8 p. (ACOG practice bulletin; no. 100). [44 references]

GUIDELINE STATUS

This is the current release of the guideline.

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SCOPE

DISEASE/CONDITION(S)

- Pregnancy
- Diseases or conditions during pregnancy or postpartum that require admission to the intensive care unit (ICU)

GUIDELINE CATEGORY

Evaluation
Management
Treatment

CLINICAL SPECIALTY

Anesthesiology
Critical Care
Obstetrics and Gynecology
Surgery

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

- To aid practitioners in making decisions about appropriate obstetric and gynecologic care
- To review the available evidence on obstetric critical care, propose strategies for care, and highlight the need for additional research

TARGET POPULATION

Obstetric patients requiring critical care

INTERVENTIONS AND PRACTICES CONSIDERED

1. Use of facility with obstetric adult intensive care unit (ICU) and neonatal ICU capability
2. Careful monitoring during transport to ICU
3. Admission to the ICU based on patient need of:
 - Respiratory support
 - Treatment of pneumothorax
 - Cardiovascular support
 - Pulmonary artery catheterization
 - Abnormal electrocardiographic findings requiring intervention
4. Multidisciplinary approach to critical care
5. Discussion of ICU admission with patient and family
6. Determine optimal setting of care for laboring patient, considering advantages and disadvantages of ICU
7. Fetal considerations in the ICU, including:
 - Establishment of gestational age
 - Use of obstetric medications
 - Fetal surveillance
 - Intraoperative fetal monitoring
8. Perimortem caesarean delivery

MAJOR OUTCOMES CONSIDERED

- Mortality rates
- Length of hospital stay
- Health care associated infection
- Drug-related side effects

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The MEDLINE database, the Cochrane Library, and the American College of Obstetricians and Gynecologists' (ACOG's) own internal resources and documents were used to conduct a literature search to locate relevant articles published between January 1985 and January 2008. The search was restricted to articles published in the English language. Priority was given to articles reporting results of original research, although review articles and commentaries also were consulted. Abstracts of research presented at symposia and scientific conferences were not considered adequate for inclusion in this document. Guidelines published by organizations or institutions such as the National Institutes of Health and the American College of Obstetricians and Gynecologists were reviewed, and additional studies were located by reviewing bibliographies of identified articles.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Studies were reviewed and evaluated for quality according to the method outlined by the U.S. Preventive Services Task Force:

I: Evidence obtained from at least one properly designed randomized controlled trial.

II-1: Evidence obtained from well-designed controlled trials without randomization.

II-2: Evidence obtained from well-designed cohort or case-control analytic studies, preferably from more than one center or research group.

II-3: Evidence obtained from multiple time series with or without the intervention. Dramatic results in uncontrolled experiments also could be regarded as this type of evidence.

III: Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees.

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Analysis of available evidence was given priority in formulating recommendations. When reliable research was not available, expert opinions from obstetrician-gynecologists were used. See also the "Rating Scheme for the Strength of Recommendations" field regarding Grade C recommendations.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Based on the highest level of evidence found in the data, recommendations are provided and graded according to the following categories:

Level A — Recommendations are based on good and consistent scientific evidence.

Level B — Recommendations are based on limited or inconsistent scientific evidence.

Level C — Recommendations are based primarily on consensus and expert opinion.

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Practice Bulletins are validated by two internal clinical review panels composed of practicing obstetrician-gynecologists generalists and sub-specialists. The final

guidelines are also reviewed and approved by the American College of Obstetricians and Gynecologists (ACOG) Executive Board.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The grades of evidence (I-III) and levels of recommendation (A-C) are defined at the end of the "Major Recommendations" field.

The following conclusions are based on good and consistent scientific evidence (Level A):

- Pregnancy changes normal laboratory values and physiologic parameters.
- Approximately 75% of obstetric intensive care unit (ICU) patients are admitted to the unit postpartum.
- Hemorrhage and hypertension are the most common causes of admission from obstetric services to intensive care.

The following recommendations are based on limited or inconsistent scientific evidence (Level B):

- Cesarean delivery in the ICU should be restricted to cases in which transport to the operating room or delivery room cannot be achieved safely or expeditiously, or to a perimortem procedure.
- Treatment of sepsis should not await admission to an ICU but should begin as soon as septic shock is diagnosed.

The following recommendations and conclusions are based primarily on consensus and expert opinion (Level C):

- High-intensity ICU physician staffing is associated with lower ICU mortality rates, lower hospital mortality rates, and decreased length of stay in both the ICU and a hospital, compared with models in which intensivist consultation is optional.
- Decisions about care for a pregnant patient in the ICU should be made collaboratively with the intensivist, obstetrician, specialty nurses, and neonatologist.
- The care of any pregnant woman requiring ICU services should be managed in a facility with obstetric adult ICU and neonatal ICU capability.
- Necessary medications should not be withheld from a pregnant woman because of fetal concerns.
- Necessary imaging studies should not be withheld out of potential concern for fetal status, although attempts should be made to limit fetal radiation exposure during diagnostic testing.

Definitions:

Grades of Evidence

I: Evidence obtained from at least one properly designed randomized controlled trial.

II-1: Evidence obtained from well-designed controlled trials without randomization.

II-2: Evidence obtained from well-designed cohort or case-control analytic studies, preferably from more than one center or research group.

II-3: Evidence obtained from multiple time series with or without the intervention. Dramatic results in uncontrolled experiments also could be regarded as this type of evidence.

III: Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees.

Levels of Recommendations

Level A — Recommendations are based on good and consistent scientific evidence.

Level B — Recommendations are based on limited or inconsistent scientific evidence.

Level C — Recommendations are based primarily on consensus and expert opinion.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate critical care in pregnancy

POTENTIAL HARMS

- Cesarean delivery in the intensive care unit (ICU) is complex and has significant disadvantages compared with procedures performed in a traditional operating room. These disadvantages include inadequate space for

- anesthetic, surgical, and neonatal resuscitation equipment and attendant personnel unfamiliar with the operation.
- ICUs have the highest rates of health care associated infections in a hospital, so the risk of nosocomial infection with drug-resistant organisms is increased.
 - Use of obstetric medications may pose particular challenges in the critically ill patient; known side effects must be carefully monitored and risk-benefit ratios should be assessed in each individual situation. Examples of common drug-related side effects include tachycardia and decreased blood pressure with beta-agonists, effects on platelet function, and renal perfusion with indomethacin and negative inotropic effects on cardiac function with magnesium.
 - Pregnancy often modifies drug effects or serum levels. Drugs that cross the placenta may have fetal effects; for example, sedative or parasympatholytic drugs can affect the fetal heart rate tracing.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

These guidelines should not be construed as dictating an exclusive course of treatment or procedure. Variations in practice may be warranted based on the needs of the individual patient, resources, and limitations unique to the institution or type of practice.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Audit Criteria/Indicators

For information about [availability](#), see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness
Patient-centeredness
Safety
Timeliness

IDENTIFYING INFORMATION AND AVAILABILITY

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ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2009 Feb

GUIDELINE DEVELOPER(S)

American College of Obstetricians and Gynecologists - Medical Specialty Society

SOURCE(S) OF FUNDING

American College of Obstetricians and Gynecologists (ACOG)

GUIDELINE COMMITTEE

American College of Obstetricians and Gynecologists (ACOG) Committee on Practice Bulletins - Obstetrics

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

American College of Obstetricians and Gynecologists (ACOG) committees are created or abolished and their overall function defined by the Executive Board. Appointments are made for one year, with the understanding that such appointment may be continued for a total of three years. The majority of committee members are Fellows, but Junior Fellows also are eligible for appointment. Some committees may have representatives from other organizations when this is particularly appropriate to committee activities. The president elect appoints committee members annually.

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: None available

Print copies: Available for purchase from the American College of Obstetricians and Gynecologists (ACOG) Distribution Center, PO Box 4500, Kearneysville, WV 25430-4500; telephone, 800-762-2264, ext. 192; e-mail: sales@acog.org. The ACOG Bookstore is available online at the [ACOG Web site](#).

AVAILABILITY OF COMPANION DOCUMENTS

Proposed performance measures are included in the original guideline document.

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI Institute on June 17, 2009. The information was verified by the guideline developer on June 29, 2009.

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