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The American College of Radiology will periodically define new practice guidelines and technical standards for radiologic practice to help advance the science of radiology and to improve the quality of service to patients throughout the United States. Existing practice guidelines and technical standards will be reviewed for revision or renewal, as appropriate, on their fifth anniversary or sooner, if indicated.

Each practice guideline and technical standard, representing a policy statement by the College, has undergone a thorough consensus process in which it has been subjected to extensive review, requiring the approval of the Commission on Quality and Safety as well as the ACR Board of Chancellors, the ACR Council Steering Committee, and the ACR Council. The practice guidelines and technical standards recognize that the safe and effective use of diagnostic and therapeutic radiology requires specific training, skills, and techniques, as described in each document. Reproduction or modification of the published practice guideline and technical standard by those entities not providing these services is not authorized.

Revised 2006 (Res. 49,16g,17,34,35)*

ACR PRACTICE GUIDELINE FOR THE PERFORMANCE OF HYSTEOSALPINGOGRAPHY

PREAMBLE

These guidelines are an educational tool designed to assist practitioners in providing appropriate radiologic care for patients. They are not inflexible rules or requirements of practice and are not intended, nor should they be used, to establish a legal standard of care. For these reasons and those set forth below, the American College of Radiology cautions against the use of these guidelines in litigation in which the clinical decisions of a practitioner are called into question.

The ultimate judgment regarding the propriety of any specific procedure or course of action must be made by the physician or medical physicist in light of all the circumstances presented. Thus, an approach that differs from the guidelines, standing alone, does not necessarily imply that the approach was below the standard of care. To the contrary, a conscientious practitioner may responsibly adopt a course of action different from that set forth in the guidelines when, in the reasonable judgment of the practitioner, such course of action is indicated by the condition of the patient, limitations on available resources, or advances in knowledge or technology subsequent to publication of the guidelines. However, a practitioner who employs an approach substantially different from these guidelines is advised to document in the patient record information sufficient to explain the approach taken.

The practice of medicine involves not only the science, but also the art of dealing with the prevention, diagnosis, alleviation, and treatment of disease. The variety and complexity of human conditions make it impossible to always reach the most appropriate diagnosis or to predict with certainty a particular response to treatment. Therefore, it should be recognized that adherence to these guidelines will not assure an accurate diagnosis or a

successful outcome. All that should be expected is that the practitioner will follow a reasonable course of action based on current knowledge, available resources, and the needs of the patient to deliver effective and safe medical care. The sole purpose of these guidelines is to assist practitioners in achieving this objective.

I. INTRODUCTION

Hysterosalpingography (HSG) consists of radiographic imaging of the cervical canal, uterine cavity, fallopian tubes, and peritoneal cavity during injection of contrast medium with fluoroscopic visualization. It should be done with the minimum radiation exposure necessary to provide sufficient anatomic detail for diagnosis of normal or abnormal findings. Adherence to the following guidelines will maximize the diagnostic benefit of HSG. Additional diagnostic studies may be necessary for complete diagnosis.

II. INDICATIONS

The most common indication for HSG is infertility; other indications include, but are not limited to, the evaluation of:

1. Pelvic pain.
2. Irregular menstrual cycles.
3. Irregular vaginal bleeding.
4. Congenital abnormalities and/or anatomic variants.
5. Patients' prior to or after tubal surgery, selective salpingography and tubal recanalization or other intervention.
6. Postoperative uterine cavity.
7. Patients prior to assisted reproductive technologies.

An experience-based understanding of the relative merits of other imaging examinations such as sonography, hysterosonography, computed tomography (CT), nuclear medicine, and magnetic resonance imaging (MRI) will result in the selection of the most appropriate test. In each case, the expected gain in information from the diagnostic study should outweigh any potential risk to the patient.

III. QUALIFICATIONS AND RESPONSIBILITIES OF PERSONNEL

A. Physician

The examination must be performed under the supervision of and interpreted by a licensed physician with the following qualifications:

1. Certification in Radiology or Diagnostic Radiology by the American Board of Radiology, the American Osteopathic Board of Radiology, the Royal College of Physicians and Surgeons of Canada, or Le College des Medecins du Quebec.
or
2. Completion of an Accreditation Council for Graduate Medical Education (ACGME) approved residency program or an American Osteopathic Association (AOA) approved residency program and shall have spent a minimum of 3 months in documented formal training in the performance, interpretation, and reporting of exams of the gynecologic system, including HSG. Additionally, the physician should supervise and interpret exams of the gynecologic system, including HSG, on a regular basis.
and
3. Radiation physics: The supervising physician shall have documented training and understanding of the physics of diagnostic radiology and the equipment needed to produce the images. This should include conventional and digital radiography, fluoroscopy, screen-film combinations, and image processing. In addition, the supervising physician must demonstrate training in the principles of radiation protection, the hazards of radiation exposure to both patient and radiographic personnel, and the monitoring requirements.
and
4. Disease processes: The supervising physician must be familiar with the disease processes for which the patient is being evaluated and must understand the many manifestations of these diseases, as well as variants of normal anatomy and congenital anomalies.
and
5. Consultative role: To fulfill a consultative role and be able to interpret the examination, the

supervising physician should have training or experience in alternative imaging techniques such as sonography, CT, nuclear medicine, MRI, and vascular imaging.

and

6. Technique: The supervising physician must have an understanding of and experience in proper imaging technique, imaging sequencing, and the volume and concentration of appropriate contrast material. The physician should be familiar with the various contrast agents available and the indications for the use of each. The physician should also be familiar with timing of the exam with reference to the menstrual cycle.
7. Adverse reactions: The supervising physician must have training in the recognition and treatment of adverse reactions to contrast material (see the [ACR Manual on Contrast Media](#)).

Maintenance of Competence

All physicians performing HSG procedures who have met the above criteria should perform a sufficient number of these procedures to maintain their skills.

Continuing Medical Education

The physician's continuing medical education should be in accordance with the [ACR Practice Guideline for Continuing Medical Education \(CME\)](#).

B. Qualified Medical Physicist

The radiographic equipment used for HSG should be evaluated on a regular basis by a Qualified Medical Physicist.

A Qualified Medical Physicist is an individual who is competent to practice independently one or more subfields in medical physics. The ACR considers certification and continuing education and experience in the appropriate subfield(s) to demonstrate that an individual is competent to practice in one or more subfields in medical physics, and to be a Qualified Medical Physicist. The ACR recommends that the individual be certified in the appropriate subfield(s) by the American Board of Radiology (ABR), the Canadian College of Physics in Medicine, or for MRI, by the American Board of Medical Physics (ABMP) in magnetic resonance imaging physics.

The appropriate subfields of medical physics for this guideline are Radiological Physics and Diagnostic Radiological Physics.

A Qualified Medical Physicist should meet the [ACR Practice Guideline for Continuing Medical Education \(CME\)](#). (ACR Resolution 17, 1996 – revised 2008, Resolution 7)

C. Registered Radiologist Assistant

A registered radiologist assistant is an advanced level radiographer who is certified and registered as a radiologist assistant by the American Registry of Radiologic Technologists (ARRT) after having successfully completed an advanced academic program encompassing an ACR/ASRT (American Society of Radiologic Technologists) radiologist assistant curriculum and a radiologist-directed clinical preceptorship. Under radiologist supervision, the radiologist assistant may perform patient assessment, patient management and selected examinations as delineated in the Joint Policy Statement of the ACR and the ASRT titled “Radiologist Assistant: Roles and Responsibilities” and as allowed by state law. The radiologist assistant transmits to the supervising radiologists those observations that have a bearing on diagnosis. Performance of diagnostic interpretations remains outside the scope of practice of the radiologist assistant. (ACR Resolution 34, adopted in 2006)

D. Radiologic Technologist

Certification by the American Registry of Radiologic Technologists (ARRT) or unrestricted state licensure is required.

Qualifications and performance of technologists should comply with procedure manuals at the imaging facility. Continuing medical education (CME) programs and on-the-job training under the supervision of a qualified physician should be available.

IV. SPECIFICATIONS OF THE EXAMINATION

The written or electronic request for HSG should provide sufficient information to demonstrate the medical necessity of the examination and allow for its proper performance and interpretation.

Documentation that satisfies medical necessity includes 1) signs and symptoms and/or 2) relevant history (including known diagnoses). Additional information regarding the specific reason for the examination or a provisional diagnosis would be helpful and may at times be needed to allow for the proper performance and interpretation of the examination.

The request for the examination must be originated by a physician or other appropriately licensed health care provider. The accompanying clinical information should

be provided by a physician or other appropriately licensed health care provider familiar with the patient’s clinical problem or question and consistent with the state’s scope of practice requirements. (ACR Resolution 35, adopted in 2006)

A. Contraindications

HSG should not be performed on a woman who is pregnant or who could be pregnant. This is usually avoided by scheduling the examination in the follicular phase of the menstrual cycle, after menstrual flow has ceased but before the patient has ovulated, usually day 7-10 of the menstrual cycle. HSG should not be performed in someone with an ongoing pelvic infection or active vaginal bleeding.

Patient Preparation

The referring physician may elect to prescribe prophylactic antibiotics. If dilated and/or obstructed fallopian tubes are diagnosed, and the patient is not taking prophylactic antibiotics, consideration should be given to administering antibiotics at the time of the examination.

B. Procedure

The cervical canal or endometrial cavity should be accessed using aseptic technique and an appropriate volume of contrast agent administered under intermittent fluoroscopic observation to demonstrate the anatomic structures to be studied.

D. Contrast Agent

Oil-based and various water-soluble contrast agents can be used for HSG, and the relative advantages and disadvantages of the contrast agent used should be understood. If an oil-based contrast agent is used, injection should be halted immediately if myometrial or venous intravasation is observed.

E. Images

Appropriate images should be produced to demonstrate normal and abnormal findings. Supine frontal views are routinely obtained, and oblique and prone views may be obtained as indicated. The endometrial cavity and fallopian tubes are opacified as fully as necessary for diagnostic evaluation. Post-drainage films may be obtained if endometrial pathology is suspected. If a balloon catheter is employed for the examination, images should be obtained at the end of the procedure with the balloon deflated to fully evaluate the endometrial cavity and cervical canal.

V. DOCUMENTATION

Reporting should be in accordance with the [ACR Practice Guideline for Communication of Diagnostic Imaging Findings](#).

VI. RADIATION SAFETY IN IMAGING

Radiologists, medical physicists, radiologic technologists, and all supervising physicians have a responsibility to minimize radiation dose to individual patients, to staff, and to society as a whole, while maintaining the necessary diagnostic image quality. This concept is known as “as low as reasonably achievable (ALARA).”

Facilities, in consultation with the medical physicist, should have in place and should adhere to policies and procedures, in accordance with ALARA, to vary examination protocols to take into account patient body habitus, such as height and/or weight, body mass index or lateral width. The dose reduction devices that are available on imaging equipment should be active or manual techniques should be used to moderate the exposure while maintaining the necessary diagnostic image quality. Patient radiation doses should be periodically measured by a medical physicist in accordance with the appropriate ACR Technical Standard. (ACR Resolution 17, adopted in 2006)

VII. QUALITY CONTROL AND IMPROVEMENT, SAFETY, INFECTION CONTROL, AND PATIENT EDUCATION CONCERNS

Policies and procedures related to quality, patient, education, infection control, and safety should be developed and implemented in accordance with the ACR Policy on Quality Control and Improvement, Safety, Infection Control, and Patient Education Concerns appearing elsewhere in the ACR Practice Guidelines and Technical Standards book.

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REFERENCES

1. ACR ASRT joint statement. Radiologist assistant roles and responsibilities. In: *Digest of Council Actions*. Reston, Va: American College of Radiology; 2008:147.
2. al-Badawi IA, Fluker MR, Bebbington MW. Diagnostic laparoscopy in infertile women with normal hysterosalpingograms. *J Reprod Med* 1999;44:953-957.
3. Hurd WW, Wyckoff ET, Reynolds DB, et al. Patient rotation and resolution of unilateral cornual obstruction during hysterosalpingography. *Obstet Gynecol* 2003;101:1275-1278.
4. Maubon AJ, De Graef M, Boncoeur-Martel MP, et al. Interventional radiology in female infertility: technique and role. *Eur Radiol* 2001;11:771-778.
5. Perisinakis K, Damilakis J, Grammatikakis J, et al. Radiogenic risks from hysterosalpingography. *Eur Radiol* 2003;13:1522-1528.
6. Roma Dalfo A, Ubada B, Ubada A, et al. Diagnostic value of hysterosalpingography in the detection of intrauterine abnormalities: a comparison with hysteroscopy. *AJR* 2004;183:1405-1409
7. Spring DB, Barkan HE, Pruyn SC. Potential therapeutic effects of contrast materials in hysterosalpingography: a prospective randomized clinical trial. Kaiser Permanente Infertility Work Group. *Radiology* 2000;214:53-57.
8. Thurmond AS. Procedures for diagnosis and treatment of infertility. In: Thurmond AS, Jones MK, Cohen DL, eds. *Gynecologic, Obstetric and Breast Radiology*. Cambridge, Mass: Blackwell Science; 1996:14-134.
9. Vandekerckhove P, Watson A, Lilford R, et al. Oil-soluble versus water-soluble media for assessing tubal patency with hysterosalpingography or laparoscopy in subfertile women. *The Cochrane Library*, issue 1; 2001.

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