Proceedings from the First Global Summit on Radiological Quality and Safety

Eric J. Stern, MD[a], E. Jane Adam, MD[b], Michael A. Bettman, MD[c], James A. Brink, MD[d], Keith J. Dreyer, DO, PhD[d], Guy Frija, MD[e], Raina Keefer, BA[f], Peter Mildenberger, MD[g], Denis Remedios, MD[h], Peter Vock, MD[i]

The ACR, the European Society of Radiology, and the International Society of Radiology held the first joint Global Summit on Radiological Quality and Safety in May 2013. The program was divided into 3 day-long themes: appropriateness of imaging, radiation protection/infrastructure, and quality and safety. Participants came from global organizations, including the International Atomic Energy Agency, the World Health Organization, and other institutions; industry and patient advocacy groups with an interest in imaging were also represented. The goal was to exchange ideas and solutions and share concerns to arrive at a better and more uniform approach to quality and safety. Participants were asked to use the information presented to develop strategies and tactics to harmonize and promote best practices worldwide. These strategies were summarized at the conclusion of the meeting.

Key Words: Quality, safety, appropriateness, clinical imaging guidelines

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INTRODUCTION

The global challenge of radiology quality and safety extends beyond the capacity of any one partner or sector to address. Economically disadvantaged (under-resourced) countries lack the financial resources to implement optimal radiology quality and safety programs. As a result, such clinical imaging guidelines from economically privileged regions such as North America and Western Europe have limited utility in resource-constrained countries. Instead, these countries need to implement quality and safety programs appropriate for their particular resources and health care needs, taking into account regional differences in disease patterns, expertise, and equipment. Evidence-based imaging guidelines can define strategies by which economically practical incremental improvements can be introduced within the context of resource constraints to create measurable improvements in health care administration and patient outcome.

Our goal was to convene a biannual summit to create an innovative alliance and network of individuals as well as national, regional, and world health organizations, in partnership with governmental and nongovernmental agencies and organizations that share a dedication to quality and safety in radiology.

APPROPRIATENESS OF IMAGING

Basic Components and Requirements for Clinical Imaging Guidelines

Guidelines for the clinical use of imaging go by several names: appropriateness criteria, appropriate use criteria, clinical imaging guidelines, referral guidelines, practice guidelines, and justification guidelines. All have the same basic intent: to optimize the clinical use of imaging studies while minimizing risk to individuals and society. Ideally, guidelines should be produced by imaging experts, with input from other health care stakeholders. They should be based as much as possible on high-quality clinical evidence supplemented by expert opinion, with consistent and transparent methodology. Guidelines should be updated regularly, widely accepted, and readily available (eg, as an online database), preferably as part of a clinical imaging decision support system (DSS).

[a]University of Washington, Seattle, Washington.
[b]St. George's Hospital, London, United Kingdom.
[c]Wake Forest University School of Medicine, Hanover, New Hampshire.
[d]Massachusetts General Hospital, Boston, Massachusetts.
[e]European Society of Radiology, Vienna, Austria.
[f]The American College of Radiology, Reston, Virginia.
[g]University Medical Center, Mainz, Germany.
[h]Northwick Park Hospital, Harrow, United Kingdom.
[i]University Hospital of Bern, Bern, Switzerland.

Corresponding author and reprints: Eric J. Stern, MD, University of Washington, 1959 NE Pacific, Box 357115, Seattle, WA 98195; e-mail: estern@u.washington.edu.

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Imaging referral guidelines and appropriateness criteria are a societal imperative if we are to avoid the inappropriate use of imaging and the associated waste of health care resources, and minimize individual and societal radiation exposure. Interest in the use of guidelines and the concept of "meaningful use" is increasing, with an emerging regulatory mandate. Moreover, patients are increasingly aware of and concerned about the risks of ionizing radiation, particularly from CT scans, nuclear medicine studies, and interventional and other image-guided procedures.

The continued development and deployment of high-quality, widely accepted, mandatory clinical imaging guidelines is a clear and urgent need. Guidelines will be useful only if they meet these criteria. Although such guidelines are available, they remain difficult, time-consuming, and expensive to create, maintain, and deploy. Additionally, contradictions between current and future guidelines should be resolved to the fullest extent possible [1].

Methodologic Considerations and Needs

The development, wide scale implementation, and adoption of guidelines present a challenge. In the European Union, imaging referral guidelines are required by legislation [2]. However, many countries have not achieved a standard guideline development process; competing methodologies and guidelines have created a global lack of uniformity. Advocating a uniform methodology for developing guidelines can help facilitate more rapid and comprehensive guideline adoption that is acceptable to all stakeholders, including health care providers, policymakers, educators, and patients.

The Appraisal of Guidelines for Research and Evaluation (AGREE) instrument [3], which is used internationally, evaluates the process of practice guideline development. The instrument has 23 criteria, which focus on 6 factors, detailed below. The critical elements to address are test efficacy, radiation safety, and cost effectiveness, as well as factors that will increase acceptance from clinicians. Any process that is used for guideline development should take into account the following:

- Scope and purpose, which are determined by the clinical situations for which guidelines are written;
- Stakeholder involvement; regional differences in diseases and clinical practice patterns, differences in expertise and equipment, and interests of various patient groups;
- Rigor of development; very little imaging evidence is considered to be of high quality;
- Clarity and presentation; the clearer the guidelines, the more likely they are to be used, and grading the recommendations is essential for acceptance from clinicians;
- Applicability; barriers and solutions must be addressed, along with availability of human, financial, language, and other resources;
- Editorial independence; conflict of interest, although difficult to define in regard to imaging referral guidelines, must be managed in a well-defined and uniform fashion, particularly to gain the confidence of and adoption by end users.

Organizations that have developed imaging referral guidelines include the following:

- ACR (ACR Appropriateness Criteria®);
- United Kingdom Royal College of Radiologists (iRefer);
- French Society of Radiology (Guide du Bon Usage des Examens d'Imagerie Médicale);
- Austrian Society of Radiology (Austrian Referral Guidelines);
- Health Department of Western Australia (Diagnostic Imaging Pathways);
- European Commission (Radiation Protection 118);
- Canadian Association of Radiologists.

All of the currently used approaches to grading levels of evidence and the strength of recommendations have important shortcomings [4] relating to evidence gaps; for many common clinical conditions, only a paucity of high-quality studies based on patient outcome or therapeutic impact are available. Many recommendations are still based on expert opinion, and evidence levels for imaging studies are frequently low. In fact, few randomized controlled trials are available or even feasible. Finally, the process of rating evidence is variable and can become complicated given the number of systems available.

Of the systems available for grading recommendations, the Oxford Grades of Recommendation and the Grades of Recommendation Assessment, Development, and Evaluation (GRADE) are the 2 most commonly used [4]. An evaluation of grading systems and available evidence yields a clear issue: one scheme has 4 categories of quality of evidence (very low, low, moderate, and high quality), and another has 2 grades (weak and strong). Organizations can work together to adopt a single grading system.

Suggestions for future developments in referral guideline methodology include international collaboration related to a global platform for guideline development methodology (based on, as suggested by recent International Atomic Energy Agency workshops, the AGREE instrument); shared collaborative literature reviews and rating of evidence; and a uniform system for grading imaging recommendations.

Radiation Risk

In any medical situation, the benefits and risks to the individual and society of diagnostic tests and therapeutic measures must be carefully weighed. One major concern regarding risk in imaging is exposure to ionizing radiation. This risk must be addressed in guidelines, but as with the utility of specific imaging techniques, the data and conclusions surrounding such risks are incomplete and sometimes controversial.

Radiation risks are now addressed in similar ways in guidelines from the United States, Canada, Austria, France,