

# Standard-setting Example #2 Enduring Educational Materials

Letter of Submission: [REDACTED], MD, FACEP  
CORD ACADEMY FOR SCHOLARSHIP "Distinguished Educator" Award  
Category: Development of Enduring Educational Materials

January 11, 2013

Dear CORD Academy for Scholarship:

It would be my honor to be considered for the CORD Academy for Scholarship in Emergency Medicine Education "Distinguished Educator Award."

My materials are submitted in the format provided in Example 1 (MD in an Emergency Department).

I have the support of the following individuals:

- [REDACTED], M.D., Ph.D.- Dean and Vice Chancellor for Academic Affairs, [REDACTED] School of Medicine
- [REDACTED], M.D. - Vice Dean for Medical Affairs and Interim Chair, Department of Surgery, [REDACTED] School of Medicine
- [REDACTED], M.D. - Chief, Division of Emergency, [REDACTED] Medical Center
- [REDACTED], M.D. - Professor and Vice Chair, Department of Emergency Medicine, [REDACTED] School of Medicine
- [REDACTED], M.D. - Professor and Chair, Department of Emergency Medicine, The [REDACTED] School of Medicine at [REDACTED]
- [REDACTED], M.D. - President and Senior Medical Editor, [REDACTED]
- [REDACTED], ELS - Editor, ACEP Educational Publications, Managing Editor, Critical Decisions in Emergency Medicine

I greatly appreciate the work of CORD to promote the educational endeavors of its members, and I look forward to the opportunity to serve the Academy if selected.

Sincerely,

[REDACTED], MD, FACEP  
Associate Professor  
Residency Program Director  
Division of Emergency Medicine  
[REDACTED] Medical Center

# Standard-setting Example #1 Educational Research

Match to Standard-Setting Examples: ██████████, MD, FACEP  
CORD ACADEMY FOR SCHOLARSHIP “Distinguished Educator” Award  
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**Match to standard-setting example(s):** In column 1 check 1 or 2 of the standard-setting examples (which are found on the introductory page of materials of this category). Determine which you believe best matches the type of enduring materials you do and have included in your mini-portfolio. In column 2, briefly identify major similarities and differences in the type of enduring materials between your mini-portfolio and the example(s)

Example 1 - MD in an Emergency Department

My portfolio and career goals are similar to those of ██████████, MD. Like Dr. ██████████, I became aware of gaps in emergency medicine education, have devoted my academic career to developing my own understanding in these areas, and in the process have shared what I have learned *and the process by which I learned it* with my colleagues in emergency medicine. Like Dr. ██████████, I have developed educational materials in a range of subjects, although in my case I have focused in more recent years more exclusively on emergency diagnostic imaging (a topic for which Dr. ██████████ is also well-known). My educational materials in this area represent a broad array of topics, including multiple imaging modalities, the clinical application of diagnostic imaging in a wide range of chief complaints involving every organ system and body region, the application of evidence-based medicine to clinical practice, and the appropriate consideration of radiation risks. Although resources have existed for emergency physicians in these areas in the past, I have made a goal of aggregating and distilling these for the unique needs of emergency physicians. My academic works are designed for learners at all levels of training, from medical students to residents and experienced attending physicians. I have also adapted to rapid technological changes, incorporating both traditional print and multimedia content. The evolution of diagnostic imaging during my career has made this both challenging and rewarding, and I intend to continue to educate myself and others throughout my career in this important area.

## Standard-setting Example #2 Enduring Educational Materials

Structured summary: [REDACTED], MD, FACEP  
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### Structured Summary (Personal Statement Summary)

<i>Personal Goals</i>	<ul style="list-style-type: none"> <li>• To bridge gaps in emergency medicine education by connecting diagnostic imaging to clinical presentations and therapeutic interventions.</li> <li>• To demystify diagnostic imaging, bringing it within the scope of practice of all emergency physicians, with the hope of empowering emergency physicians to interpret images and act more rapidly and correctly for the benefit of their patients</li> </ul>
<i>Personal Preparation in the Area of Educational Materials Development</i>	<ul style="list-style-type: none"> <li>• Spent thousands of hours reviewing diagnostic images and medical records to ensure that I understand the patient presentation, imaging findings, and patient outcomes</li> <li>• Performed primary research in emergency imaging, including educational research on head CT interpretation methods</li> <li>• Dedicated myself to CME on imaging topics, including attending the Radiologic Society of North America meeting and CME courses dedicated to CT, MRI, and ultrasound.</li> <li>• Studied evidence-based medicine and research methods, to enhance my understanding of limitations of existing research in diagnostic imaging</li> <li>• Attended the ACEP EMBRS (Emergency Medicine Basic Research Skills) course, a 2 week immersion course in research methods</li> <li>• Reviewed for Emergency Radiology, Journal of Emergency Medicine, Pediatrics, and Annals of Emergency Medicine.</li> </ul>
<i>Personal Reflection/ Process for Improvement</i>	<ul style="list-style-type: none"> <li>• I have sought and adapted to peer-review and user feedback throughout my career in order to improve.</li> <li>• Many of my enduring materials have been adapted from work I presented at national speaking engagements such as the ACEP Scientific Assembly. Feedback from those sessions allowed me to clarify my subsequent enduring materials.</li> </ul>

Evidence of Quality, Breadth, and Depth:  
 I've composed a multitude of educational materials, but am particularly proud of my 896 page textbook, **Diagnostic Imaging for the Emergency Physician**. This won the 2011 PROSE Award in Clinical Medicine from the American Publishers Association, and has been positively reviewed in Annals of Emergency Medicine, JAMA, and Emergency Medicine Journal. I have sought and adapted to peer-review and user feedback throughout my career in order to improve. My educational audience includes practicing board-certified emergency physicians, emergency medicine residents, and medical students with an interest in emergency medicine.

Personal Statement: [REDACTED], MD, FACEP

CORD ACADEMY FOR SCHOLARSHIP “Distinguished Educator” Award

Category: Development of Enduring Educational Materials

My training and clinical practice of emergency medicine have strongly influenced my aspirations as an educator. Emergency Medicine has a priceless and deep-rooted philosophy of sharing of knowledge, evidenced by the countless emergency physicians who make the effort to teach at 3am despite little sleep before the shift and hours to go before they will rest again. The emergency medicine community’s selflessness in teaching is also represented by the wealth of open educational forums, from peer-reviewed journals with their unpaid volunteer reviewers to blogs, list-serves, and Twitter feeds. From the emergency medicine core value of treating all-comers also arises the need to know anything that our patients require, not just the subjects that come most easily to us or are most interesting to learn. Emergency physicians are also critical thinkers, who constantly challenge paradigms to ask, “Is that really true? Is this really necessary? Do patients really benefit?” The time-challenges in emergency medicine require us to streamline our evaluation and treatment strategies, and also to develop clear, concise methods of teaching, since so much emergency medicine is taught in the heat of the moment of clinical care and with a multitude of distractions. Emergency physicians are by nature non-hierarchical and down-to-earth, willing to accept information from a knowledgeable and thoughtful source regardless of age or rank. Students in emergency medicine sometimes teach residents and attending physicians, and humility and conversational tones are common features of discussions among emergency physicians. Emergency physicians learn from their clinical experiences and mistakes, and messages are often conveyed most clearly through case examples. I have endeavored to include these principles in my teaching. While I value learning for learning’s sake, I always challenge myself to convey a point simply, with the goal that it will be implemented and change a patient’s outcome for the better. I hope my works help bridge the gap between the clinical practice of emergency medicine and diagnostic imaging, by emphasizing the connection between an imaging concept, clinical and physiologic events, a therapeutic intervention, and the patient’s fate. I have been fortunate also to learn clinical emergency medicine and clinical teaching from a master of those crafts, and at a unique time in his career when he was learning and developing his practice. As a second-year resident, I worked side-by-side with [REDACTED], now a household name in Emergency Medicine, but then a relatively new faculty member in a community affiliated hospital of an academic program. Dr. [REDACTED] absolutely inspired me to be the best physician and teacher I could become. Known now for his unparalleled teaching and expertise in electrocardiography, I recall watching him shuffle through stacks of ECGs at Mercy Medical Center, looking for interesting and challenging cases. I remember reading an abstract he’d selected for me during a busy overnight shift, and I vividly recollect his admonition to me to find a niche in emergency medicine where I could contribute. He invited me to find something that

fascinated me, and particularly counseled me to consider areas avoided by many for their perceived difficulty. At that time, this seemed an impossibility, but I watched with amazement as he demonstrated this himself in a period of just a few years, demystifying ECG interpretation for the emergency medicine community, developing his own expertise, and sharing his knowledge generously. I often think of his example when, late at night, I pore through CTs and other images, seeking to understand the findings and to identify the perfect example to convey an educational message. Dr. [REDACTED] has remained a humble teacher who continues to stress information that can save a life, a model for my own educational efforts. I have focused on emergency diagnostic imaging because it is central to so many emergency department evaluations, is a gateway to life-threatening and time-critical diagnoses, and sometimes seems cloaked in mystery. I will have achieved my goals if, at the end of my career, more emergency physicians use diagnostic imaging in a responsible and evidence-based fashion, recognize the limitations of a negative study, and use their own interpretation skills to initiate key interventions for their patients, rather than “waiting for the radiology read.” I hope my example and mentoring will inspire a future generation of emergency medicine educators, as Dr. [REDACTED] inspired me.

I believe a great educator must also be a dedicated student of his field. I’ve performed primary research in diagnostic imaging as well as dedicating countless hours to reviewing images and reading on emergency imaging topics. In addition to attending emergency medicine CME events, I’ve found myself the sole emergency physician in a roomful of radiologists on many occasions, attending the Radiologic Society of North America meeting and CME courses dedicated to CT, MRI, and ultrasound. I’ve made an associated study of evidence-based medicine and research methods, since I believe understanding these makes me a better critical thinker and educator, better able to explain the strengths and weaknesses of medical research in emergency diagnostic imaging to my audience. In this pursuit, I’ve attended the ACEP EMBRS (Emergency Medicine Basic Research Skills) course, and I’ve spent multiple years as a reviewer for Emergency Radiology, Journal of Emergency Medicine, Pediatrics, and Annals of Emergency Medicine. I was named a top reviewer by Annals of Emergency Medicine in 2010. I’ve also done something required in every field to achieve excellence: practice. I’ve composed a multitude of educational materials, some more successful than others, but am particularly proud of my textbook, **Diagnostic Imaging for the Emergency Physician**. This won the 2011 PROSE Award in Clinical Medicine from the American Publishers Association, and has been positively reviewed in Annals of Emergency Medicine, JAMA, and Emergency Medicine Journal. I have sought and adapted to peer-review and user feedback throughout my career in order to improve. I will forever remain a student of emergency medicine and education.

Structured abstracts: [REDACTED], MD, FACEP

CORD ACADEMY FOR SCHOLARSHIP “Distinguished Educator” Award

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## STRUCTURED ABSTRACT 1

**Title/Reference Citation:** [REDACTED], ed. Diagnostic Imaging for the Emergency Physician. 1st ed. Philadelphia: Elsevier. July 21, 2011. ISBN-10: 1416061134. ISBN-13: 978-1416061137.

**Format:** Textbook (print and electronic)

**Content area(s) covered:** Imaging of all body regions, organized head to foot and by chief complaint. Includes all major emergency imaging modalities, clinical decision rules, radiation risks of diagnostic imaging, limitations of diagnostic imaging, algorithms for rapid image interpretation by emergency physicians.

**Learner Population(s) for which material was developed:** practicing board-certified emergency physicians, emergency medicine residents, medical students interested in emergency medicine

**Size and/or Scope:** 896 pages. 16 chapters.

**My Roles:** In 2007, Elsevier approached me to consider editing a new textbook of emergency diagnostic imaging. I spent months developing the concept for the book and ultimately not only edited but was the sole author of 15 chapters and co-author of the remaining chapter. I personally selected and annotated all of the hundreds of images in this book. Although I didn't track this explicitly, I estimate that I spent thousands of hours over the next 3.5 years reading the primary radiology and emergency medicine literature to develop my own understanding; attending diagnostic imaging courses; selecting and annotating images; reviewing patient charts to understand the case presentation, imaging findings, and clinical outcomes; and writing and editing chapters. I worked closely with the editorial staff and art staff at Elsevier to ensure that the image quality was as good as possible. I personally re-read the entire book during the proofing process to minimize errors.

**Peer Review process employed to ensure adequacy of content:** Writing and editing a textbook runs the hazard of failing to recognize the educational inadequacies and errors of your own writing. During the

development of the book, I presented much of the content of the book in lecture format to the attending physicians, residents, and medical students of [REDACTED] Emergency Medicine. I also presented at the state and national level on diagnostic imaging topics during this time, and took feedback from those sessions to improve the book. Some chapters arose from other peer-reviewed publications, giving me feedback on medical content and educational delivery. I interacted with radiologists in my practice setting, in diagnostic imaging research, and in CME sessions to improve my understanding.

□ **Usage Statistics (e.g., number of users, copies sold).** The book was published July 21, 2011. By December 28, 2012, over 1500 copies of the book had been sold, about 45% of those being international sales. The book is also incorporated into the Elsevier Expert Consult Platform, allowing relevant segments to be accessed by electronic users performing a query. The number of uses through that platform has not yet been reported.

• **Ratings of peers, learners and/or others.**

• The book won the 2011 PROSE Award for Clinical Medicine 2011 (The American Publishers Awards for Professional and Scholarly Excellence) (<http://proseawards.com/current-winners.html>). It was positively reviewed in Annals of Emergency Medicine, JAMA, and Emergency Medicine Journal. See appendices for those complete reviews. It has a 5 star rating on Amazon.com.

• Selected comments from reviewers:

• *"I have no doubt that this text is destined to become one of our specialty's landmark textbooks, a classic that will be considered a must-have resource for all emergency physicians and emergency departments. My kudos go to Dr. Broder for his tremendous work. This textbook represents a valuable addition to the emergency medicine literature.. - [REDACTED], MD, FAAEM, FACEP, Director, Emergency Medicine Residency, Director, Faculty Development Fellowship, Professor of Emergency Medicine, Department of Emergency Medicine, [REDACTED] School of Medicine, [REDACTED]"*

• *"This is not 'radiology-lite'; it is truly rooted in the specialty and focuses on the selection and interpretation of diagnostic imaging across the spectrum of our practice. It spans the divide that sometimes seems to appear between specialties, and the reader is introduced to problems, solutions and interpretations from both radiological and emergency department (ED)"*

*perspectives. What I really enjoyed in this book is the clear demonstration that ED imaging extends beyond the plain x-ray. Much of the book is concerned with CT, MR and ultrasound scans which are increasingly a core of our practice and this text is the first I have seen that clearly reflects this. The content allows this with superb illustrations throughout, clearly labeled with clinical vignettes that chimed with my own experiences. When using the online version, you can magnify any image that appears to be a little small in the paper version, a real demonstration of a successful pairing of paper and e-publishing." - [REDACTED], Emergency Medicine Journal (2012;29:5 427-428)*

*• "Diagnostic Imaging for the Emergency Physician is truly an outstanding achievement by Dr. Broder. It is a book for emergency physicians, by an emergency physician. It is thorough, clear, evidence based, and clinically relevant. I would recommend it to any emergency intern as the only emergency radiology text he or she will ever need to buy. I don't think it will take long before it becomes the quintessential emergency radiology teaching text." - [REDACTED], MD, Annals of Emergency Medicine*

### STRUCTURED ABSTRACT 2

• **Title.** The Critical Image.

• **Reference Citation:** Published monthly in "Critical Decisions in Emergency Medicine," beginning in 2007.

• **Format and/or type of material (i.e., media used, organization).** Monthly column in Critical Decisions in Emergency Medicine, ACEP publication. Each column presents a brief clinical vignette, followed by one or more diagnostic images (x-ray, CT, ultrasound, MRI, etc.). The image findings are labeled and briefly discussed. Clinical pearls and pitfalls are highlighted, as is the case outcome, illustrating the importance of the images to patient care. Currently available in print and as pdf. Starting in 2013, a multimedia version including a monthly video will be introduced.

• **Goals and/or Learning Objectives of the material (i.e., needs addressed; expected learning outcomes).** Emergency physicians are presented with imaging findings important to patient care. Pertinent risks, such as false negative images, are emphasized. At the end of each case,



physicians should understand the importance of imaging modalities to diagnosis and treatment.
• <b>Content area(s) covered:</b> Clinical decision-making/indications for imaging, image interpretation, disease/injury affecting all body regions, diagnostic imaging modalities, evidence-based medicine, radiation safety
• <b>Learner Population(s) for which material was developed:</b> Practicing board-certified emergency physicians, emergency medicine residents.
• <b>Size and/or Scope (i.e., contact time, pages, number of components).</b> 1 issue per month since January 2007 (72 issues so far). Each issue is approximately one page in length.
• <b>My Roles:</b> Each month, I work with the Managing Editor of “Critical Decisions in Emergency Medicine” to develop a case. We consider other content in “Critical Decisions” to avoid unnecessary duplication, but also sometimes choose cases to complement other articles in each issue. We are guided by the Model of the Practice of Emergency Medicine and attempt to cover the full range of topics over a span of several years. I select a case, review the clinical presentation, images, and outcome. I perform a literature review and select key points for readers. I select and annotate one or a few key images.
• <b>Peer Review process employed to ensure adequacy of content.</b> Each year, “Critical Decisions in Emergency Medicine” conducts a reader survey, and feedback on the column is always carefully reviewed and incorporated. In addition, the editorial board discusses content and changes are made in response.
• <b>Usage Statistics (e.g., number of users, copies sold).</b> Critical Decisions in Emergency Medicine has about 1700 annual subscribers.
• <b>Ratings of peers, learners and/or others:</b> Based on annual surveys of readers over the past 6 years, the column is valuable and well-received (99% rate the column to be “most valuable” or “somewhat valuable”). ACEP feels the content is valuable enough that they will be publishing a compilation of the columns with CME questions, entitled “Critical Images” (in press).

### STRUCTURED ABSTRACT 3

- **Title.** Video Pearls in Emergency Radiology

<ul style="list-style-type: none"><li>• <b>Reference Citation</b> : published on <a href="http://www.emedhome.com">www.emedhome.com</a></li></ul>
<ul style="list-style-type: none"><li>• <b>Format and/or type of material (i.e., media used, organization):</b> video case presentation, highlighting imaging findings, evidence-based medicine, and clinical pearls and pitfalls.</li></ul>
<ul style="list-style-type: none"><li>• <b>Goals and/or Learning Objectives of the material:</b> Emergency physicians are presented with imaging findings important to patient care. Pertinent risks, such as false negative images, are emphasized. At the end of each case, physicians should understand the importance of imaging modalities to diagnosis and treatment.</li></ul>
<ul style="list-style-type: none"><li>• <b>Content area(s) covered:</b> Clinical decision-making/indications for imaging, image interpretation, disease/injury affecting all body regions, diagnostic imaging modalities, evidence-based medicine, radiation safety</li></ul>
<ul style="list-style-type: none"><li>• <b>Learner Population(s) for which material was developed:</b> Practicing board-certified emergency physicians, emergency medicine residents.</li></ul>
<ul style="list-style-type: none"><li>• <b>Size and/or Scope (i.e., contact time, pages, number of components):</b> Each video is approximately 5-15 minutes in length. The cases begin with a clinical presentation. Imaging findings are reviewed. Often, comparison with another imaging modality is made to highlight benefits and limitations of each modality. Evidence for the imaging strategy is described. A final clinical relevance is given.</li></ul>
<ul style="list-style-type: none"><li>• <b>My Roles:</b> Each month, I select a case, review the clinical presentation, select and annotate images, and produce the video. The entire process can take 4 to 6 hours, depending on the complexity of the images and editing.</li></ul>
<ul style="list-style-type: none"><li>• <b>Peer Review process employed to ensure adequacy of content.</b> I work closely with [REDACTED], the senior medical editor of Emedhome.com, to ensure that the content meets the educational needs of the sites users. Emedhome also has an editorial board of reviewers who peer-review content. Emedhome and ACEP-Emedhome.com are affiliated and provide category 1 CME to a large audience of emergency physicians.</li></ul>
<ul style="list-style-type: none"><li>• <b>Usage Statistics:</b> The video series premiered in January 2012 and includes one new video per month. On average, more than 1000 unique users view each month's video. In total, the videos had 12,973 unique views in 2012.</li></ul>

### STRUCTURED ABSTRACT 4

<ul style="list-style-type: none"><li>• <b>Title:</b> [REDACTED], [REDACTED]. An Evidence-Based Approach to Imaging of Acute Neurological Conditions. <i>Emergency Medicine Practice</i>. Volume 9, Number 12. December 2007.</li></ul>
<ul style="list-style-type: none"><li>• <b>Reference Citation :</b> <i>Emergency Medicine Practice</i>. Volume 9, Number 12. December 2007.</li></ul>
<ul style="list-style-type: none"><li>• <b>Format and/or type of material</b> (i.e., media used, organization): Print article. Evidence-based, referenced, peer-reviewed summary.</li></ul>
<ul style="list-style-type: none"><li>• <b>Goals and/or Learning Objectives of the material</b> (i.e., needs addressed; expected learning outcomes): This review discussed common clinical indications/clinical presentations for neuro-imaging, including a discussion of the evidence against the need for routine neuro-imaging in presentations such as syncope. In addition, the article presented annotated images and reviewed a systematic approach to interpretation of head CT, which I developed myself over the course of several years. Following the review of the material, readers should be able to identify indications for noncontrast head CT, improve their systematic interpretation of noncontrast head CT images, understand when IV contrast or CT angiography is indicated, and understand the indications for brain MRI. A secondary but important focus of this article (and the publication <i>Emergency Medicine Practice</i>) is to incorporate evidence-based medicine principles and to teach those principles to readers, allowing them to more critically appraise literature.</li></ul>
<ul style="list-style-type: none"><li>• <b>Content area(s) covered:</b> Brain imaging, stroke, trauma, seizure, syncope, evidence-based medicine</li></ul>
<ul style="list-style-type: none"><li>• <b>Learner Population(s) for which material was developed</b> (could include a primary and secondary population): board-certified emergency physicians, emergency medicine resident physicians.</li></ul>
<ul style="list-style-type: none"><li>• <b>Size and/or Scope</b> (i.e., contact time, pages, number of components). 28 pages. 15 tables, 28 figures.</li></ul>
<ul style="list-style-type: none"><li>• <b>My Roles:</b> I co-wrote this review with a resident physician. I was the lead author, although I take pride in the fact that I closely mentored the resident, who played a particularly important role in researching and writing the section on MRI for stroke. He has gone on to complete critical care fellowship and is an academic emergency physician. I determined the content, performed the literature search, wrote and edited the manuscript, and selected and annotated all of the images. I worked carefully with the editor in chief, Dr. [REDACTED], during the peer-review process.</li></ul>

- **Peer Review process employed to ensure adequacy of content.**

*Emergency Medicine Practice* employs a peer-review process. The publication requires that authors provide not only a simple bibliography of references, but a short analysis of the type of study and quality of evidence.

- **Usage Statistics.** The publisher and editor indicate that the journal has over 20,000 downloads per month (specific information about usage of my article were not provided.) Dr. [REDACTED] also indicated that he has been informed by several residencies that they now use the issue as core reading.

- **Impact on learners' knowledge, skills and/or attitudes/Ratings of peers, learners and/or others**

The publisher provided me with the following free-text feedback from readers:

- Excellent review. I will use the mnemonic ABBC when reading scans
- Thanks.
- Excellent review
- Excellent review thanks
- This was an excellent teaching article
- THANKS
- I particularly liked the images; they were excellent teaching tools.
- Excellent article. One of the best I have read from this journal
- Good pertinent article with to-the-point info
- Thanks
- One of the best presentations of this topic I've ever encountered
- Good CME liked the article made me think
- Great job.
- Excellent review. The topic was well topic and addressed the relevant material that I would encounter clinically.
- The CME questions were of better quality than usual.
- One of the best reviews yet.
- Outstanding series – what a Herculean effort!
- UP UNTIL NOW YOUR BEST ARTICLE
- This was one of the best reviews you have ever produced. The combination of succinct and well-chosen images produced an ideal teaching text. DISCLAIMER: I am not related to nor do I know any of the authors of this article.

- Excellent correlation between images and discussion

### STRUCTURED ABSTRACT 5

• **Title:** [REDACTED]. Musculoskeletal MRI in the Emergency Department: Using the Evidence to Maximize Resource Utilization. *Emergency Medicine Practice*. Volume 11, Number 3. March 2009.

• **Reference Citation :** *Emergency Medicine Practice*. Volume 11, Number 3. March 2009.

• **Format and/or type of material** (i.e., media used, organization): Print article. Evidence-based, referenced, peer-reviewed summary.

• **Goals and/or Learning Objectives of the material** (i.e., needs addressed; expected learning outcomes): This review discussed common clinical indications/clinical presentations for musculoskeletal MRI. The need for this review arose out the increasing use of MRI in the emergency department – a costly and time-consuming prospect. Because MRI has entered broader clinical use in emergency medicine only recently, many emergency physicians might have received little training in its indications, strengths, and weaknesses. I spent considerable time reviewing MRI myself, and made a great effort to avoid unnecessary discussions of physics or details not relevant to the clinical practice of emergency medicine, while endeavoring to provide focused information for sophisticated emergency physicians. I carefully reviewed the evidence for an against MRI in a number of clinical scenarios, with a particular emphasis on patient outcomes rather than disease-oriented outcomes. Along the way, I discuss a number of forms of bias that occur in studies, as these are frequently encountered in studies of MRI. I selected and annotated images, including MRI, x-ray, and CT for comparison. The learning objectives included gaining a better understanding of the indications for musculoskeletal MRI, the diagnostic limitations including possible false positive findings, and costs of MRI. A secondary but important focus of this article (and the publication *Emergency Medicine Practice*) is to incorporate evidence-based medicine principles and to teach those principles to readers, allowing them to more critically appraise literature.

• **Content area(s) covered:** basic principles of MRI and CT; interpretation

of x-ray, CT, and MRI; hip fracture, scaphoid fracture, spinal epidural abscess; cost-effectiveness; principles of evidence-based medicine
<ul style="list-style-type: none"><li>• <b>Learner Population(s) for which material was developed</b> (could include a primary and secondary population): board-certified emergency physicians, emergency medicine resident physicians.</li></ul>
<ul style="list-style-type: none"><li>• <b>Size and/or Scope</b> (i.e., contact time, pages, number of components). 24 pages. 5 tables, 14 figures.</li></ul>
<ul style="list-style-type: none"><li>• <b>My Roles:</b> I determined the content, performed the literature search, wrote and edited the manuscript, and selected and annotated all of the images. I worked carefully with the editor in chief, Dr. [REDACTED], during the peer-review process.</li></ul>
<ul style="list-style-type: none"><li>• <b>Peer Review process employed to ensure adequacy of content.</b> <i>Emergency Medicine Practice</i> employs a peer-review process. The publication requires that authors provide not only a simple bibliography of references, but a short analysis of the type of study and quality of evidence.</li></ul>
<ul style="list-style-type: none"><li>• <b>Usage Statistics.</b> The publisher and editor indicate that the journal has over 20,000 downloads per month (specific information about usage of my article were not provided.)</li></ul>
<ul style="list-style-type: none"><li>• <b>Impact on learners' knowledge, skills and/or attitudes/Ratings of peers, learners and/or others</b> The publisher provided me with the following free-text feedback from readers<ul style="list-style-type: none"><li>• Excellent</li><li>• Enjoyed the article and found it informative</li><li>• I didn't know ACR recommended MRI for scaphoid and hip in those unclear cases.</li><li>• Good job!</li><li>• Excellent issue! Great use of bias sampling especially for those of us who hate statistics and deep thinking about articles. Will keep this one with me at work and show to our radiologists.</li><li>• Good overview</li><li>• Good MRI basic info thanks</li><li>• Interesting article although we do not have MRI available on an emergency basis in my ED who knows what the future holds?</li><li>• Very informative</li><li>• Very nice article.</li></ul></li></ul>

- I really like how the review discusses the different types of BIAS
- As the information is presented in a straightforward manner that that gets quickly to the point regarding the most useful information needed to help guide diagnostic and treatment plans most beneficial to the patient in the ER

### STRUCTURED ABSTRACT 6

• **Title:** [REDACTED]. Head computed tomography interpretation in trauma: a primer. Psychiatr Clin North Am. 2010 Dec;33(4):821-54.

• **Reference Citation:** Psychiatr Clin North Am. 2010 Dec;33(4):821-54.

• **Format and/or type of material :** Print/pdf

• **Goals and/or Learning Objectives of the material (i.e., needs addressed; expected learning outcomes).** This review summarizes evidence-based indications for head CT following trauma. In addition, it provides a systematic approach for the interpretation of head CT in trauma, following the mnemonic I developed. Goals included reduction of unnecessary imaging by use of validated clinical decision rules, and improved interpretation of trauma head CT by emergency physicians.

• **Content area(s) covered:** trauma, CT, MRI, evidence-based medicine.

• **Learner Population(s) for which material was developed (could include a primary and secondary population):** emergency care providers including emergency physicians, residents, neurosurgeons, trauma surgeons.

• **Size and/or Scope :** 34 pages, 26 figures, 3 tables.

• **My Roles:** I searched the literature, wrote the manuscript, selected and annotated images, and edited the manuscript.

• **Peer Review process employed to ensure adequacy of content.** Psychiatric Clinics of North America is a peer-reviewed journal. I addressed all comments from reviewers during this process.

• **Usage Statistics:** This review has been cited by 3 other publications in PubMed.

## STRUCTURED ABSTRACT 7

- **Titles**

- [REDACTED], [REDACTED]. Increasing utilization of computed tomography in the adult emergency department, 2000-2005. *Emerg Radiol.* 2006 Oct;13(1):25-30. Epub 2006 Aug 10.
- [REDACTED], [REDACTED], [REDACTED]. Increasing utilization of computed tomography in the pediatric emergency department, 2000-2006. *Emerg Radiol.* 2007 Sep;14(4):227-32. Epub 2007 May 16.
- [REDACTED], et al. "Cumulative CT exposures in emergency department patients evaluated for suspected renal colic." *The Journal of emergency medicine* 33.2 (2007): 161-168.
- [REDACTED]. Pediatric CT Utilization: the Emergency Department Perspective. *Pediatric Radiology*. Volume 38 (Suppl 4): S664-S669. November 2008. Received: 25 January 2008 Accepted: 23 April 2008 Published online: 23 September 2008

- **Format and/or type of material (i.e., media used, organization):** Print/pdf.

- **Goals and/or Learning Objectives of the material:** While these publications are primarily observational studies of trends in CT utilization rather than educational pieces, in my discussion sections and in my editorial review (*Pediatric CT Utilization: the Emergency Department Perspective*), I describe radiation risks of CT. I consider these some of my most important contributions to the emergency medicine literature and emergency medicine education. Mine were some of the first publications to highlight radiation risks of CT in emergency medicine, and this has subsequently rapidly become an area of significant attention throughout medicine and for the general public.

- **Content area(s) covered:** Radiation, CT, cancer.

- **Learner Population(s) for which material was developed (could include a primary and secondary population):** Emergency physicians, radiologists.

- **Size and/or Scope (i.e., contact time, pages, number of components).** These publications summarize 6 years of data, and over 250,000 patient visits.

**My Roles:** Based on my own observation of rising CT utilization during my career, I planned retrospective studies and collaborated with co-authors,



including a board-certified radiologist. During this time, I familiarized myself with the radiation risks of CT. I analyzed the data for the studies and wrote and edited the manuscripts. I have subsequently spent considerable effort in educating the emergency medicine community about these risks. I presented my findings at 2 meetings of the Radiologic Society of North America. I was an invited speaker to a national conference on radiation safety, and on multiple occasions have presented on radiation risks of diagnostic imaging at the ACEP Scientific Assembly.

• **Peer Review process employed to ensure adequacy of content.** All of these publications underwent peer-review.

• **Usage Statistics (e.g., number of users, copies sold).** These 4 manuscripts have been cited by 242 others in PubMed. One, Increasing utilization of computed tomography in the adult emergency department, 2000–2005, has been cited 121 times in journals including JAMA and Annals of Emergency Medicine.

### STRUCTURED ABSTRACT 8

• **Titles:**

• [REDACTED]. The Computer as a Teaching Tool. In: [REDACTED], [REDACTED], [REDACTED], [REDACTED]. Practical Teaching in Emergency Medicine. Wiley-Blackwell. 2008.

• [REDACTED]. The Computer as a Teaching Tool. In: [REDACTED], [REDACTED], [REDACTED], [REDACTED]. Practical Teaching in Emergency Medicine. 2nd Ed. Wiley-Blackwell. 2012.

• **Format and/or type of material:** book chapter

• **Goals and/or Learning Objectives of the material (i.e., needs addressed; expected learning outcomes).** These chapters are designed to provide emergency medicine clinician educators case examples of strategies to teach using computers during an emergency department shift.

• **Content area(s) covered:** Computers, education theory, evidence-based education, multiple clinical topics including pharmacology, ECG, diagnostic imaging, stroke, pregnancy

• **Learner Population(s) for which material was developed (could include a primary and secondary population):** Emergency medicine faculty, residents

- **Size and/or Scope (i.e., contact time, pages, number of components).** 16 pages. I rewrote the chapter for the second edition.
- **My Roles:** I wrote and edited the content, based on both literature review and my own practice.
- **Peer Review process employed to ensure adequacy of content:** I worked closely with the editor, [REDACTED], in development of content. In fact, my first effort at this missed the editor's intent with a too-theoretical approach, and I completely rewrote the chapter to meet the goals of the publication – practical teaching. My rewrite was successful, and the editor invited me to author this chapter in a second edition. I wrote a thoroughly updated edition, given the rapid pace of change in both emergency medicine and computers. I solicited best practices from my colleagues. I also had presented on similar topics at the ACEP Scientific Assembly and used feedback from those sessions to improve my work.

Table of Appendices: Joshua S. Broder, MD, FACEP  
CORD ACADEMY FOR SCHOLARSHIP “Distinguished Educator” Award  
*Category:* Development of Enduring Educational Materials

1. In lieu of letter of support from [REDACTED], MD, Foreword from **Diagnostic Imaging for the Emergency Physician**, with his permission.
2. Letter of support, [REDACTED], MD.
3. Letter of support, [REDACTED], MD.
4. Letter of support, [REDACTED], MD.
5. Review of **Diagnostic Imaging for the Emergency Physician** from Annals of Emergency Medicine
6. Review of **Diagnostic Imaging for the Emergency Physician** from JAMA
7. Review of **Diagnostic Imaging for the Emergency Physician** from Emergency Medicine Journal
8. 2011 PROSE Award for Clinical Medicine from American Publishers, **Diagnostic Imaging for the Emergency Physician**