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INTRODUCTION

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Welcome to the first attempt in the history of geriatrics to develop a research agenda specifically aimed at enhancing the quality of care of the elderly patients who are cared for by specialists in surgical disciplines and related medical fields. We hope this volume will be useful to the many specialists who are interested in helping to create an up-to-date base of evidence in support of geriatrics aspects of clinical practice in their respective disciplines.

To a certain extent, it is presumptuous to put forth a research agenda. Doing so could be interpreted as claiming to know all there is to know about what research most needs to be done. We therefore hasten to clarify that what is presented here is just *one* research agenda. A different team would probably come up with a different agenda. Our only assertion is that the agenda we propose has behind it substantial reviews of the existing state of knowledge in each of the disciplines and that therefore it is firmly based on three objectives: to fill obvious gaps in knowledge in each specialty area covered, to clarify inconsistencies in the existing literature, and to point to possible resolutions of ongoing controversies.

THE SCOPE OF THIS RESEARCH AGENDA

The ten specialties addressed in this volume include five surgical specialties: general surgery, orthopedic surgery, otolaryngology, thoracic surgery, and urology. Two other specialties are included that are predominantly surgical but have a significant element of medical practice: gynecology and ophthalmology. In addition, three related medical specialties are included: anesthesiology, emergency medicine, and physical medicine and rehabilitation (physiatry). Altogether, these ten specialties encompass the full course of most surgical patients. An elderly patient with an acute illness might well present to the emergency department of a hospital where an emergency medicine physician would stabilize the patient, make at least a tentative diagnosis, and refer the patient, if indicated, to one of the surgical specialties for treatment. The anesthesiologist would then join with the surgeon in preoperative assessment and management and in carrying out intraoperative and immediate postoperative care. The surgeon would perform the operation and be responsible for postoperative care and discharge planning. In many circumstances, such as cardiac, abdominal, and orthopedic surgery, crucial assistance in recovery would be provided by the physiatrist.

Each chapter presents research agenda items focused on clinical research in selected topics in the specialty; the agenda items in each topic are based on the descriptions of the status of relevant clinical research concerning current practice in caring for the elderly

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patient. The text is based on extensive, systematic reviews of the literature summarizing the findings of recent research. In some instances, research has begun to fill in the gaps, but usually much more work remains to be done. Eleven chapters report the literature reviews and propose research agenda items in the ten specialties. The eleventh chapter emerged when it became clear that the literature base for cardiac surgery and that for general thoracic surgery are so divergent as to require splitting the coverage of thoracic surgery into two separate chapters. A twelfth chapter deals with the literature and research agenda for cross-cutting issues that are important to the practice of most specialties.

THE AGS–HARTFORD FOUNDATION PROJECT

OVERVIEW

How did this book happen? To answer that question, we need to recount a bit of history. In the early 1990s, Dr. Dennis Jahnigen, Chief of Geriatrics at the University of Colorado School of Medicine and a widely respected leader in academic geriatrics, advanced the then revolutionary idea that the next frontier for improving health care for older adults would lie in the subspecialties of internal medicine and in surgery and certain related medical specialties. Geriatrics, first named and identified as a special field of knowledge in 1909, had lain dormant through most of the twentieth century. A renaissance began in the mid-1970s and gained strength throughout the late 1970s and the next decade. This renaissance, however, was limited to the care of older patients within internal medicine, family medicine, psychiatry, and neurology.

Dr. Jahnigen sought to spark a similar change in other specialties that accounted for a large, crucial segment of the care of older patients. Spurred by Dr. Jahnigen, the American Geriatrics Society (AGS) and the John A. Hartford Foundation joined forces to create the project entitled Increasing Geriatrics Expertise in the Non-Primary Care Specialties, later changed to Increasing Geriatrics Expertise in Surgical and Related Medical Specialties and often shortened to simply the Geriatrics for Specialists project.

The project began in 1992 with a planning grant. The Phase 1 grant ran from 1994 to 1997. It was renewed for Phase 2 from 1997 to 2001 and again for Phase 3 from 2001 to 2005. In Phase 3, the annual budget rose to almost $1.5 million, and several new programs were introduced. Leadership of the project has changed.* When Dr. Jahnigen developed a fatal illness, Dr. David H. Solomon was appointed as co-director of the project, and when Dr. Jahnigen died, Dr. Solomon became the director. A year later, Dr. John R. Burton became co-director. Recently, Dr. Solomon retired as co-director and Dr. Burton became the sole director.

The mission of the Hartford-funded Geriatrics for Specialists project is to improve the health care of elderly Americans by enhancing specialists' knowledge of geriatrics. Its specific objectives are to improve the amount and quality of geriatrics education received by residents in the surgical and related medical specialties, to identify and support specialty faculty in promoting geriatrics training and research within their own professional disciplines, and to assist certifying bodies and professional societies in improving the ability of their constituencies to care for elderly patients.

* Hereinafter, individuals who have participated in the project are identified at first mention by name alone; their titles and affiliations are given in the list of participants in the Acknowledgments.

PROJECT ACCOMPLISHMENTS

The project has accomplished a great deal in the 10 years since its inception. The following list describes the high spots and indicates the breadth of its reach:

- It established working relationships with leaders in all ten of the selected specialties.
- It funded new educational efforts in the geriatrics aspects of all specialties. These have included symposia at national meetings of societies, associations, and academies; the formation of committees, task forces, and special interest groups on aging; the publication of teaching articles in journals; the development of lecture slides, lecture outlines, or other educational tools; the creation of model curricula for residency training in most of the specialties; the establishment of mini-fellowships for research or visits to geriatrics centers; and awards for research presented at national meetings of the societies.
- It organized an Interdisciplinary Leadership Group (ILG) in 1998, which has met annually. It was originally made up of one, and later two, leaders in each specialty, along with Drs. Burton and Solomon and six additional geriatricians who were appointed as deputy directors of the project: Drs. Paul R. Katz, Douglas K. Miller, Myron Miller, Joseph G. Ouslander, Peter Pompei, and Jane F. Potter. Dr. Ouslander retired from this position in 2001 and was replaced by Dr. Evelyn C. Granieri.
- It responded to ideas advanced by members of the ILG at its 1999 meeting by incorporating them into an ambitious, markedly expanded project that began at the onset of Phase 3 in 2001.
- It published a Statement of Principles promoting the development of studies in and the practice of geriatrics in the specialties in the *Journal of the American Geriatrics Society* and in a variety of specialty journals. The Statement often was accompanied by an editorial.
- At the behest of the ILG and with the concurrence of the AGS, it created a Section for Surgical and Related Medical Specialties in the AGS. The Section meets annually as part of the AGS annual meeting. Concomitantly, the ILG was transformed into the governing Council of the Section. Subsequently, all ten of the specialties became official participants in the Council and the Section, and the component societies contribute to meet the costs of maintaining the Section and the movement for geriatrics for specialists.
- Official relationships have been cemented between the AGS, the John A. Hartford Foundation, and the following specialty societies (listed in alphabetical order): American Academy of Ophthalmology (AAO), American Academy of Orthopaedic Surgeons (AAOS), American Academy of Otolaryngology–Head and Neck Surgery (AAO–H&NS), American Academy of Physical Medicine and Rehabilitation (AAPM&R), American College of Emergency Medicine (ACEP), American College of Obstetricians and Gynecologists (ACOG), American Society of Anesthesiologists (ASA), American Urological Association (AUA), Association of Program Directors in Surgery (APDS), Society for Academic Emergency Medicine (SAEM), Society for the Advancement of Geriatric Anesthesia (SAGA), Society of Thoracic Surgeons

(STS), Society of University Urologists (SUU), and Thoracic Surgery Directors Associations (TSDA).

- It is currently negotiating with the American College of Surgeons (ACS), which in 2001 established an Office of Evidence-Based Surgery. The ACS is in a liaison relationship with the AGS-Hartford project and is exploring ways in which it may participate actively in the Section for Surgical and Related Medical Specialties.
- It offered the Jahnigen Career Development Awards of $100,000 per year for 2 years to support junior faculty in the specialties while they undertake research training and geriatrics education under joint mentorship of a faculty member in the specialty and one in geriatrics. The first cohort of Jahnigen Award recipients began their studies in July 2002. A second cohort began work in July 2003, and ten Jahnigen Award recipients will be appointed each year for the next several years. The Jahnigen Career Development Award program is funded by The John A. Hartford Foundation and The Atlantic Philanthropies.
- It offered grants to support experiments in geriatrics education for specialty residents in training sites all over the country. From 1998 to 2001, representatives of 21 programs in 19 institutions participated in the Faculty Development and Residency Training Outreach Program, a precursor to the Geriatrics Education for Specialty Residents (GESR) program. The GESR has provided grants for 29 programs, awards that were based on competitive applications.
- It has published a concise, groundbreaking *Geriatrics Syllabus for Specialists* (2002), which has been favorably reviewed.
- And, pertinent to this volume, it has carried out a research agenda–setting process that has culminated in the publication of this book.

THE RESEARCH AGENDA–SETTING PROJECT

MISSION

The mission of the Research Agenda–Setting Project (RASP) is to help develop the area of clinical science that would lead to improved care and outcomes for older patients receiving specialty care. The first step was to review the current state of knowledge—or ignorance—in each discipline and in the cross-cutting issues. The focus of the review was on the ways that the diagnosis and treatment of older patients may differ from that of younger patients, on the geriatric syndromes as they occur in the course of surgery and postoperatively, and on the clinical picture that older patients present to anesthesiologists, emergency medicine physicians, and physiatrists. In developing a research agenda that highlights the importance of geriatric syndromes in complicating the surgical care of older patients, we hope to point researchers in the specialties in directions that ultimately produce better results for specialists and better outcomes for their older patients.

We hope that the publication of this book will lead to increased research activity; attract new researchers to study the unique requirements of the older patient in the surgical and related medical specialties; increase the number of grant applications for such research,

thereby leading to increased funding by the National Institutes of Health, the Department of Veterans Affairs, and other agencies; and ensure greater attention to the well-being of older patients in specialty care.

This book may also provide a framework for developing an evidence base for the practice of geriatric surgery. In turn, this may assist the quality-improvement work of the Office of Evidence-Based Surgery of the American College of Surgeons, described recently by Jones and Richards. [1]

HISTORY OF THE PROJECT

The RASP began in 2001 with selection of faculty members, one in each specialty, to serve as content experts. Their assignment was to review the present state of research on the geriatrics aspects of each specialty. A Senior Writing Group (SWG), consisting of one senior leader in each of the ten specialties, was also appointed. The senior writer in each field was charged with assisting and guiding the content expert in conducting the literature review. The SWG also was responsible for identifying the cross-cutting issues and writing a first draft of that chapter.

The content experts met at the RAND Corporation in Santa Monica in February of 2001 to receive instruction in how to conduct a systematic literature review and how to classify research by type of study design. They developed preliminary search strategies, assisted by RAND librarians Roberta Shanman and Amy Atchison. During this process, many of the content experts, in consultation with the librarians, revised their search strategy and created new lists of titles, abstracts, and full papers. In a few instances, the content experts expanded their search independently. In all cases, reference lists from papers were searched for additional relevant earlier publications.

Content experts submitted drafts of literature reviews to the editors, who guided them in making revisions. These revised chapters formed the basis for a working conference in Potomac, MD, in November 2001, which was cosponsored by the Agency for Healthcare Research and Quality (AHRQ). We invited five-person teams in each specialty to attend; each team was made up of the content expert, the senior writer, two at-large leaders in the specialty, and one geriatrician. Each content expert presented the major findings of the literature search, and Dr. Joseph LoCicero presented an early version of the chapter on cross-cutting issues. The specialty teams then met to critique the literature review and start to create the research agenda. Preliminary research agendas were presented to the conference in plenary session, and considerable time was spent reorganizing the topics being covered in the cross-cutting issues chapter. There were no face-to-face meetings after November of 2001. Since then, project participants and leaders have been occupied by some updating of research reviews, further refinement of the chapters, and refinement and coordination of the research agenda items, followed by the final editing and production of this book.

USING THIS BOOK

CHAPTER STRUCTURE

The text in each chapter presents the key elements of the literature review for that specialty or for the cross-cutting issues. The reports discussed are listed in the references

section at the end of each chapter (in Chapter 13, they are listed at the ends of sections). Chapters are organized in sections, each on a major clinical topic. Each section ends with the pertinent research agenda items; each item has a unique number to facilitate cross-referencing and citation. Each specialty chapter ends with a discussion of the issues of greatest concern in the care of older patients by practitioners in the discipline. Three key research questions are identified, that is, those having the highest priority in the opinion of the experts participating in the project, and examples of hypothesis-generating and hypothesis-testing research needed to address each key question are provided.

THE LITERATURE REVIEWS

The basic approach for all the literature reviews is described here. Unique features of individual literature reviews are presented in a methods section in each specialty chapter.

Because the objective was to define the current knowledge base, the focus was on recent literature. The general plan was to conduct an English-language search, limited to the human, using MEDLINE (through PubMed or DIALOG). All searches included the terms *65 or older* or *aged* or *geriatric*, followed by a list of content topics of importance in each specialty. The earliest year searched varied, from 1980 to 1994. Searches ended in the first half of 2001, although more recent papers of special significance were often selected and added. The full list of titles of papers resulting from the initial search was sent to the content expert, who selected titles meeting relevance criteria and then obtained abstracts of them. Following this, the content experts chose the papers to examine in full. In general, case reports and letters were excluded at this stage.

In addition, the research consultant maintained a full list of titles from each literature search in an EndNote database. The project director and the research consultant reviewed theses titles (and abstracts, where necessary) for relevance to cross-cutting issue categories. The research consultant obtained full-text copies of the papers selected either from content experts or her local medical library and forwarded these papers to the teams from the Senior Writing Group assigned to each cross-cutting issue category. In some cases, abstracts were substituted for full-text papers. As each chapter was completed, the research consultant added new references to the EndNote database and verified the accuracy of the final list of citations before producing each chapter's citations and references list.

AGENDA ITEMS

The number of agenda items for individual topics varies. Each agenda item is tagged with an abbreviation that indicates the specialty field (eg, "Ophth" for ophthalmology, "GenSurg" for general surgery) and a number, starting with the Arabic 1 in each chapter. The number is *not* meant to indicate importance or priority; it is provided simply to allow for easy cross-reference and citation.

Immediately following its identifying tag, each agenda item is also labeled with a letter from A to D, designating the type of research design and the clinical priority or importance of the proposed study. The word *level* is decidedly not intended to imply degrees of quality. The definitions for A-level through D-level studies are as follows:

- **Level A** identifies important studies with hypothesis-testing intent, using such designs as randomized controlled trials, certain nonrandomized controlled trials, or those cohort studies that focus on a single hypothesis.
- **Level B** identifies important studies with hypothesis-generating intent. Designs would include exploratory, multi-targeted cohort and case-control studies; retrospective or prospective analysis of large databases; cross-sectional observational studies; time series; outcome studies; retrospective case series; or post hoc analyses of randomized controlled trials.
- **Level C** identifies hypothesis-testing studies judged by the content experts to be of lesser importance and priority than those labeled A.
- **Level D** identifies hypothesis-generating studies judged to be of lesser importance than studies labeled B.

Proposed A (or C) studies generally must be preceded by B (or D) studies since research literature on geriatrics aspects of the specialties is today generally deficient in information that would allow for construction of the most efficient and cost-effective controlled trials. Thus, although A studies rank higher in terms of the quality of the evidence they would provide, B studies often have sequence priority over A studies. Therefore, in the chapters that follow, we generally list B studies before the resultant A studies.

The research agenda items are almost entirely focused on clinical research. Where basic science investigations are critically needed to precede any clinical investigation, we have indicated that, classifying such research as level B studies, but we have not suggested details regarding the design and execution of such studies.

The key questions at the end of each chapter are numbered separately from the series of agenda items within the chapter. The hypothesis-generating studies described with each key question are equivalent to level-B designations used elsewhere in the text, and the hypothesis-testing studies are equivalent to level A.

A listing of all research agenda items will be available at the following Web site: <http://www.americangeriatrics.org>.

SPECIALTY DATABASES

Many of the research items call for examination or use of databases maintained by the U.S. Department of Health and Human Services and by various specialty societies. To assist the reader, we have therefore included links to health-related databases used by the authors in their own research, which may be found at <http://www.americangeriatrics.org>. This list does not contain all the relevant databases that are available, but it does include those used most often by the authors. We are not responsible for errors that may exist in the list of links, but we will try to keep it correct and current.

INDEX

All elements in the book are thoroughly indexed by topic: discussions of the literature in all the specialty fields and for each cross-cutting issue, specific studies by name, tables and figures, the agenda items and key questions, descriptions of research design, project history and methods, and more. Wherever the reference in the index is to an agenda item,

the page number is bolded, which allows readers to look up a specific topic of particular interest (eg, postoperative delirium) and find all the agenda items in the book that relate to that topic. Index references to tables are signaled by the letter *t* after the page number; figures are likewise referenced with the letter *f* after the page number. When a topic might be referred to by any one of several synonyms, we index it under all the various terms.

REFERENCES

1. Jones RS, Richards K. Office of Evidence-Based Surgery charts course for improved system of care. Bull Am Coll Surg 2003;88(4):11-21.