



Canadian Geriatrics Society

Camilla L. Wong
MD, MHSc, FRCPC

*Staff Physician, Division of Geriatric Medicine, St. Michael's Hospital
Project Investigator, Li Ka Shing Knowledge Institute
Assistant Professor, Faculty of Medicine, University of Toronto*

Maia von Maltzahn
MD, FRCPC

Resident, Division of Geriatric Medicine, University of Toronto

Amanda McFarlan
BA

Trauma Program Registry Manager, Division of Trauma, St. Michael's Hospital

Allen Huang
MDCM, FRCPC

*Head, Division of Geriatric Medicine, Ottawa Hospital
Associate Professor, Faculty of Medicine, University of Ottawa*

Linda Lee
MD, MCISc (FM)

*Schlegel Chair in Primary Care for Elders
Director, Centre for Family Medicine Memory Clinic
Associate Clinical Professor, Department of Family Medicine, McMaster University*

Barbara Haas
MD PhD, FRCSC

*Staff Physician, Division of Trauma, Sunnybrook Hospital
Scientist, Sunnybrook Research Institute
Assistant Professor, Faculty of Medicine, University of Toronto*

Corresponding Author:

Camilla Wong
wongcam@smh.ca

Key words:

cross-specialty,
collaboration, older person,
trauma, geriatric

LEADING BEST PRACTICES: EMERGING CROSS-SPECIALTY COLLABORATIVE CARE MODELS

Abstract

The intersection of multiple co-morbidities necessitates cross-specialty collaboration to achieve therapeutic harmonization. Using the geriatric trauma collaborative care model as an example, we illustrate the elements for developing and sustaining cross-specialty collaboration. We also introduce other examples of promising collaborative care models at earlier stages of development to make a case for cross-specialty collaboration as an essential competency within the Royal College Collaborator role for physicians.

This article has been peer reviewed.

Conflict of Interest: Dr. Camilla L. Wong is the clinical lead for the geriatric trauma consultation service at St. Michael's Hospital. Her related research in geriatric trauma has been funded by the Department of Medicine at the University of Toronto and through the AFP Innovation Funds from the Ontario Ministry of Health and Long Term Care.

This article was published in July 2017.

Key points

1. Comprehensive Geriatric Assessment has been shown to improve clinical outcomes including reduction in mortality, institutionalization and functional deterioration.
2. Proactive comprehensive geriatric assessment includes systematic case finding, early involvement, focus on prevention of geriatric syndromes and direct implementation of recommendations.
3. Multimorbidity and frailty necessitate cross-specialty collaboration to achieve therapeutic harmonization.
4. Elements in developing a cross-specialty collaborative care model include having a shared vision, partnership, symmetrical representation, engagement, consistency, trust, co-location setting, communication, and a policy and evaluation strategy.
5. Elements in sustaining a cross-specialty collaborative care model include policy revisions, workflow assessment, data collection and evaluation and knowledge dissemination.

Introduction

One of the cornerstones of modern geriatric care is the Comprehensive Geriatric Assessment (CGA). A CGA is a multidimensional interdisciplinary diagnostic process focused on determining a frail older person's medical, psychological and functional capabilities in order to develop a coordinated and integrated plan for treatment and long-term follow-up.¹

A Cochrane systematic review of 22 trials of 10,315 participants from six countries comparing CGA with usual medical care for hospitalized older adults demonstrated patients in receipt of CGA were more likely to be alive and in their own homes at up to six months (OR 1.25, 95 percent CI 1.11 to 1.42, P = 0.0002). This risk reduction equates to a number needed to treat (NNT) of 17 (95 percent CI 50 to 10) to avoid one unnecessary death or institutionalization. When considering the combined outcome of death or functional deterioration, patients in receipt of a CGA had a significantly reduced risk (OR 0.76, 95 percent CI 0.64 to 0.90, P = 0.001), resulting in a NNT of 17.² Together, these findings suggest that CGA is more effective than many interventions offered to older adults (see Table 1).³⁻⁷

Table 1. Number needed to treat of common interventions in older adults.

Study	Intervention	Comparator	Outcome	Risk Reduction	NNT
Ellis <i>et al.</i> 2011 ²	comprehensive geriatric assessment	general medical care	death or institutionalization at 6 months	OR 1.25 (95% CI 1.11 to 1.42)	17
Ellis <i>et al.</i> 2011 ²	comprehensive geriatric assessment	general medical care	death or deterioration	OR 0.76 (95% CI 0.64 to 0.90)	17
Ellis <i>et al.</i> 2011 ²	comprehensive geriatric assessment	general medical care	institutionalization	OR 0.79 (95% CI 0.69 to 0.88)	25
Afilalo <i>et al.</i> 2008 ³	statin (for an average of more than 5 years)	placebo	cardiovascular mortality in established coronary artery disease	RR 0.70 (95% CI 0.53 to 0.83)	34
Wells <i>et al.</i> 2008 ⁴	alendronate 10 mg daily	placebo	primary prevention of vertebral fracture	RR 0.55 (95% CI 0.38 to 0.80)	50
Gagliardi <i>et al.</i> 2016 ⁵	live attenuated varicella zoster virus vaccine	placebo	herpes zoster	RR 0.49 (95% CI 0.43 to 0.56)	50
Sardar <i>et al.</i> 2014 ⁶	apixaban	Warfarin	stroke or systemic embolism		51

Afilalo <i>et al.</i> 2008 ³	statin (for an average of more than 5 years)	placebo	stroke in established coronary artery disease	RR 0.75 (95% CI 0.56 to 0.94)	58
Wells <i>et al.</i> 2008 ⁴	alendronate 10 mg daily	placebo	secondary prevention of hip or wrist fracture		100
Avenell <i>et al.</i> 2014 ⁷	vitamin D plus calcium	placebo	hip fracture	RR 0.84 (95% CI 0.74 to 0.96)	457

In the traditional model of CGA, a consultation is requested by a referring service. Thus, the intervention is usually reactive (e.g. requested after the onset of delirium, a fall or loss of function) and passive (suggestions are made but not directly implemented). As the traditional model relies on referrals from services with variable comfort in and knowledge of geriatric principles, the intervention may be late and opportunities to decrease *hospital-acquired disability* and reduce length of stay may be missed (see [Geriatric Assessment Units](#)).⁸

Proactive CGA on the other hand, embraces four additional principles:

1. Systematic case finding,
2. Early involvement,
3. Focus on evidence-based strategies to prevent geriatric syndromes including delirium, falls, functional decline, incontinence) and
4. Direct implementation of recommendations.

The overarching objective of *proactive* CGA is to attain therapeutic harmonization – the alignment of prognosis and goals with care. Therefore, CGA is both a diagnostic and therapeutic process, leading some organizations such as the Regional Geriatric Programs of Ontario to adopt the term ‘CGA PLUS’ to emphasize the therapeutic component.

Frailty is a multidimensional syndrome characterized by decreased reserve and diminished resistance to stressors; frailty represents a state of extreme vulnerability where minimal stress may cause functional impairment.⁹ Frailty can be defined as the cumulative effect of individual deficits – “the more individuals have wrong with them, the more likely they are to be frail”.¹⁰ The likelihood of multiple overlapping health deficits (see the fourth “M” in the [GERIATRIC 5Ms](#) core competencies of geriatrics¹¹ and a dominant co-morbidity inherently necessitates collaborative assessment across several domains and therefore should be multidisciplinary and cross-specialty.

The principles and processes of CGA are increasingly integrated into the care of subspecialty conditions such as hip fracture, cancer and vascular surgery. These cross-specialty collaborative team models have demonstrated reduction in in-hospital mortality (relative risk 0.60; 95 percent CI: 0.43-0.84)¹², improvement in original chemotherapy completion rates (odds ratio 4.14; 95 percent CI: 1.50-11.42)¹³ and decrease in length of stay (5.53 vs. 3.32 days P <.001)¹⁴, respectively.

The Royal College of Physicians and Surgeons CanMEDS framework identifies and describes the abilities physicians require to effectively meet the health care needs of the people they serve. As Collaborators, physicians work effectively with other health care professionals to provide safe, high-quality, patient-centred care.¹⁵ The importance of cross-specialty collaboration has also been highlighted by national societies and guidelines.^{16,17} In cross-specialty collaboration, the investment from both teams is deeper than cooperation – the act of working together. In collaboration, the partnership between the teams is symmetrical and bi-directional with a shared common goal. Herein we describe Canada’s first geriatric trauma collaborative care model, outline the steps to developing a cross-specialty collaborative care model and identify strategies for sustainability.

Example of a Cross-specialty Collaborative Care Model

Geriatric Trauma Statistics from the National Trauma Registry Minimum Dataset (NTR-MDS) between fiscal 2002 and 2009 reported 38.5 percent of trauma cases requiring hospitalization in Canada were aged 65 years or older, and in these, 78.5 percent were due to falls.¹⁸ Pre-trauma frailty status (see [trauma frailty article](#) and the [Clinical Frailty Scale](#)) predicts in-hospital complications and adverse discharge destination better than age.^{19,20} Thus, the management of the complexity of trauma needs to account for the complexity of frailty.

St. Michael's Hospital is a tertiary, academic, Level 1 trauma hospital in which all older trauma patients receive a CGA within 72 hours of admission from the Geriatric Trauma Consultation Service (GTCS). This collaborative care model was started in 2007 after informal discussions between frontline staff from the trauma team (surgeon, nursing) and geriatrics team (geriatrician, nursing) uncovered a shared common goal—to be a leader in improving the care of older adults after traumatic injury. Input from allied health from both the trauma program and the geriatrics program was sought. This feedback informed the development of a hospital policy to facilitate the operationalization of this model of care as well as a process to align roles of the team members. The GTCS team consists of a rotating geriatrician, an advanced practice nurse and medical trainees; the trauma team consists of a rotating trauma surgeon, two nurse practitioners, medical trainees and a multidisciplinary team. The most responsible physician is the trauma surgeon. The trauma registry office screens patients daily for eligibility for collaborative care. All trauma patients are co-located on a trauma ward or trauma-neurosurgical intensive care unit.

The CGA is informed by the patient and collateral information from the family doctor, outpatient pharmacy, caregivers and/or community services. The GTCS consultation note is transcribed onto the hospital electronic medical record and is also distributed to the primary care physician and any other specialist physicians involved. Verbal communication between the GTCS and trauma team takes place immediately after the CGA. The frequency and length of follow-up by the GTCS is individualized per case. The GTCS may participate once weekly in the multidisciplinary trauma team rounds to discuss cases or facilitate knowledge exchange.

Data is prospectively collected in a trauma registry database, which has internal and external validators. To reflect not only traditional trauma parameters, geriatric elements including frailty were later added to the registry (see examples of [geriatric quality indicators](#).)²¹ Alongside the clinical teams, there are research personnel from both the trauma and geriatrics services who worked together on an evaluation strategy for this model of care.

The evidence collected demonstrates that this geriatric trauma collaborative care model reduces delirium (51 percent usual care vs. 41 percent GTCS care, $p=.05$) and discharge to long-term care (6.5 percent usual care vs. 1.7 percent GTCS care, $p=.03$). The rate of adherence to recommendations made by the GTCS was 93.2 percent.²²

Ten required elements for developing a cross-specialty Collaborative Care Model

The early stages of collaborative care model development should encompass at least the first eight elements. The latter two can be added later in the evolution, sustainability and scalability stages.

1. Shared vision. The teams must be working together towards shared clinical, educational and/or research goals. The shared vision should be explicitly stated.
2. Partnership. While there is only one most responsible physician, true partnership includes clear delineation that each team can implement management plans that pertain to each respective area of expertise.
3. Symmetrical representation. Shared investment, that is, similar team composition, promotes balance in the roles between teams.
4. Engagement. Meaningful collaboration is not an administrative exercise and thus should be driven by engagement from front line team members. With a genuine eagerness to learn from the other team, capacity building will follow.

5. Consistency. As individuals on a team may change over time, there should be a point-person from each team to provide stability and continuity for the collaborative care model.
6. Trust. The need for more than one specialty's involvement inherently implies that there needs to be trust for the other team's competence, reliability and professionalism.
7. Setting. The target patient group should be centralized/co-located to increase opportunities for informal discussions between the teams.
8. Communication. Communication between the teams should be timely, multimodal (verbal, written) and both informal and formal (cross-specialty multidisciplinary rounds).
9. A policy outlining the model facilitates the operationalization of the care model including the setting, target population and roles of team members.
10. Evaluation strategy. Strategies to measure process and outcome metrics should be established. Evaluative data can identify opportunities to refine the model further.

Strategies to sustain a cross-specialty Collaborative Care Model

Implementation is the initial process of embedding interventions within a setting; sustainability is the process by which interventions can continue to be delivered over time with the necessary elements built to support their delivery. Measurement of outcomes over time to determine continued benefit has been shown to support sustainability of a practice.²³ Thus, after six years since starting the geriatric trauma collaborative we used a third-party workflow assessment to identify areas and strategies for optimization of the model of care. This process increased the proportion of eligible patients (89.9 percent vs. 59.4 percent, $p < .001$) receiving collaborative geriatric trauma care (see <http://canjsurg.ca/60-1-14/>).²⁴ After reviewing the data, a collaborative decision across the teams was made to revise the policy eligibility age criteria from 60 to 65 years or older. Continuous data collection confirmed the sustainability of the model in terms of service volumes, recommendation adherence rates and outcomes.²⁴ Academic cross pollination has been central to the original shared vision and partnership – to be a leader in improving the care of older adults after traumatic injury. The trauma world has embraced geriatrics expertise and incorporated this collaboration into national guidelines (see ACS TQIP [Geriatric Trauma Management Guidelines](#))²⁵ and interest groups (e.g. Trauma Association of Canada). Similarly, the geriatrics world has embraced the relevance of trauma care for older adults (e.g. the Regional Geriatric Programs of Ontario annual [Geriatric Emergency Management conference and resources](#)) This cross-specialty collaborative care model has been adopted at other Level 1 trauma centres including Sunnybrook Hospital and the Royal Columbian Hospital. In general, the following strategies are needed to sustain a cross-specialty collaborative care model:

1. Establishing and revising a policy may lend ongoing support for resourcing and may serve as a resource for external agents to adopt the collaborative care model.
2. A third-party workflow assessment may identify areas and strategies for optimization of the model of care.
3. Ongoing data collection of process and outcome metrics highlight the benefit of collaboration.
4. Knowledge dissemination of positive outcomes reinforces the shared vision.

Table 2. The geriatric trauma model to illustrate the elements of a cross-specialty collaborative care model

Development phase	
1. Shared vision	To be a leader in improving the care of older adults after traumatic injury.
2. Partnership	At the very outset, from brainstorming about the collaborative model through to implementation, the input on design, clinical scope and evaluation occurred across teams.
3. Symmetrical representation	There is paired representation: Trauma: surgeon, two nurse practitioners, quality assurance specialist Geriatrics: geriatrician, clinical nurse specialist, research trainees
4. Engagement	Policy designed, reviewed and revised by frontline team members from both programs.

5. Consistency	Trauma: nurse practitioners Geriatrics: clinical nurse specialist
6. Trust	High adherence rates to recommendations.
7. Setting	Co-location of patients onto the trauma ward and trauma-neurosurgical intensive care unit.
8. Communication	Written assessment shared in the electronic medical record, informal daily interactions and weekly cross-specialty, multidisciplinary meetings.
9. Policy	Policy defines target population, roles and responsibilities of team members and screening tools.
10. Evaluation strategy	Incorporated geriatric data elements into the trauma registry to reflect process and outcome metrics.
Sustainability phase	
1. Policy revision	Collaborative decision across teams to revise age criteria to 65 years or older, with discretion for referral of younger patients by nurse practitioners.
2. Workflow assessment	Third-party workflow assessment was performed in year six to improve efficiencies.
3. Evaluation	Evidence for the model includes decrease in delirium, discharge to long-term care and subspecialty consultations.
4. Knowledge dissemination and academic cross pollination	Publication of outcomes, incorporation into national guidelines, participation in national interest groups, presentations to trauma and geriatrics audiences and scalability to other trauma centres.

Other examples of cross-specialty collaborative care models that are at an earlier stage of development but are already showing promising signs as leading best practices:

TAVI Cross-specialty Collaborative

Advanced cardiac interventions, such as trans-catheter aortic valve implantation (TAVI) have created a natural ecosystem for collaboration. This ultra-specialized procedure is only available in tertiary care centres and is almost exclusively performed in older patients. As this nascent intervention matured from an experimental intervention in extremely high-risk patients to mainstream in moderately high operative risk cases, the potential for selection expansion to more older patients is being considered in light of the results of the PARTNER 2 trial.²⁶ Even though TAVI guidelines highlight the importance of involvement of geriatric medicine in case management teams, the implementation of those guidelines has been variable.²⁷ At the Ottawa Heart Institute, the TAVI collaborative care model is a partnership involving physicians from different disciplines (interventional cardiologists, cardiac surgeons, radiologists, geriatrician, anesthesiologists), nursing and managers (TAVI program, operating room, cardiac catheterization). The members engage in weekly meetings to review cases together with the shared vision to determine and optimize the clinical care plan for each patient. Formal geriatric medicine consultation may be one of the recommended interventions following the meeting. This cross-specialty collaborative has resulted in clinical outcomes superior to other Canadian centres. Further research is needed to identify the conditions for success and value added by this cross-specialty collaboration.

Primary Care Collaborative Memory Clinics

Primary Care Collaborative Memory Clinics (PCCMCs) are an evolving cross-specialty collaborative care model involving family medicine and geriatric medicine, geriatric psychiatry and, in the future, cognitive neurology. The aim of the PCCMC is to enable family physician-led interprofessional teams to better diagnose and manage persons with cognitive difficulties within the primary care setting and to streamline referrals to specialists for the more complex cases, thus building capacity within primary care and specialist care to better manage the increasing numbers of older adults with cognitive difficulties.²⁸

There are more than 100 PCCMCs throughout Ontario involving more than 250 family physicians and 28 specialists, primarily in geriatric medicine. The PCCMC incorporates many of the listed elements necessary for developing a cross-specialty collaborative care model.²⁹ Ongoing work includes the development of the terms of engagement between teams and delineation of responsibilities between the different specialties. The PCCMC is an example of a model where cross-specialty collaboration has been integral to building capacity within the family practice setting.

Conclusion

We outlined the elements necessary to develop and sustain a cross-specialty collaboration model. The intersection of multiple co-morbidities necessitates cross-specialty collaboration to achieve therapeutic harmonization. We propose that in the era of modern medicine characterized by multiple co-existing chronic diseases and with the demographic imperative of a rapidly aging population, that cross-specialty collaboration be an essential competency within the Canadian Royal College Collaborator role for physicians.

REFERENCES:

1. Rubenstein LZ, Stuck AE, Siu AL, et al. Impacts of geriatric evaluation and management programs on defined outcomes: overview of the evidence. *J Am Geriatr Soc.* 1991 Sep;39:8S-16S.
2. Ellis G, Whitehead MA, O'Neill D, et al. Comprehensive geriatric assessment for older adults admitted to hospital. *Cochrane Database of Systematic Reviews* 2011, Issue 7. Art. No.: CD006211. DOI: 10.1002/14651858.CD006211.pub2.
3. Afilalo J, Duque G, Steele R, et al. Statins for secondary prevention in elderly patients: a hierarchical bayesian meta-analysis. *J Am Coll Cardiol.* 2008 Jan 1;51(1):37-45.
4. Wells GA, Cranney A, Peterson J, et al. Alendronate for the primary and secondary prevention of osteoporotic fractures in postmenopausal women. *Cochrane Database Syst Rev.* 2008 Jan 23;(1):CD001155.
5. Gagliardi AM, Andriolo BN, Torloni MR, et al. Vaccines for preventing herpes zoster in older adults. *Cochrane Database Syst Rev.* 2016 Mar 3;3:CD008858.
6. Sardar P, Chatterjee S, Chaudhari S, et al. New oral anticoagulants in elderly adults: evidence from a meta-analysis of randomized trials. *J Am Geriatr Soc.* 2014 May;62(5):857-64.
7. Avenell A, Mak JC, O'Connell D. *Cochrane Database Syst Rev.* 2014 Apr 14;(4):CD000227. Vitamin D and vitamin D analogues for preventing fractures in post-menopausal women and older men.
8. St. John P. Geriatric assessment units (GAUs): optimizing evidence-based inpatient care in the modern hospital. *CGS Journal of CME* 2016;6(1).
9. Rodríguez-Mañas L, Féart C, Mann G et al. Searching for an operational definition of frailty: a Delphi method based consensus statement: the frailty operative definition-consensus conference project. *J Gerontol A Biol Sci Med Sci.* 2013 Jan;68(1):62-7.
10. Clegg A, Young J, Iliffe S, et al. Frailty in elderly people. *Lancet.* 2013 Mar 2;381(9868):752-62.
11. Molnar F. Editor's response – Update: The Public Launch of the Geriatric 5Ms. *CGS Journal of CME* 2017;April.
12. Grigoryan KV, Javedan H, Rudolph JL. Orthogeriatric care models and outcomes in hip fracture patients: a systematic review and meta-analysis. *J Orthop Trauma.* 2014 Mar;28(3):e49-55.

13. Kalsi T, Babic-Illman G, Ross PJ, et al. The impact of comprehensive geriatric assessment interventions on tolerance to chemotherapy in older people. *Br J Cancer*. 2015 Apr 28;112(9):1435-44.
14. Partridge JS, Harari D, Martin FC, et al. Randomized clinical trial of comprehensive geriatric assessment and optimization in vascular surgery. *Br J Surg*. 2017 Feb 15. [Epub ahead of print].
15. Frank JR, Snell L, Sherbino J, editors. *CanMEDS 2015 Physician Competency Framework*. Ottawa: Royal College of Physicians and Surgeons of Canada; 2015.
16. Wildiers H, Heeren P, Puts M, et al. International Society of Geriatric Oncology consensus on geriatric assessment in older patients with cancer. *J Clin Oncol*. 2014 Aug 20;32(24):2595-603.
17. Colburn JL, Mohanty S, Burton JR. Surgical Guidelines for Perioperative Management of Older Adults: What Geriatricians Need to Know. *J Am Geriatr Soc*. 2017 Mar 21.
18. Hill AD, Pinto R, Nathens AB, et al. Age-related trends in severe injury hospitalization in Canada. *J Trauma Acute Care Surg*. 2014 Oct;77(4):608-13.
19. Joseph B, Pandit V, Zangbar B, et al. Superiority of frailty over age in predicting outcomes among geriatric trauma patients: a prospective analysis. *JAMA Surg*. 2014 Aug;149(8):766-72.
20. Cheung A, Haas B, Ringer T, et al. The predictive value of the Canadian Study of Health and Aging Clinical Frailty Scale on adverse outcomes among geriatric trauma patients. *Canadian Geriatrics Journal*. 2016;19(3):134.
21. Min L, Cryer H, Chan CL, et al. Quality of Care Delivered Before vs After a Quality-Improvement Intervention for Acute Geriatric Trauma. *J Am Coll Surg*. 2015 May;220(5):820-30.
22. Lenartowicz M, Parkovnick M, McFarlan A, et al. An evaluation of a proactive geriatric trauma consultation service. *Ann Surg* 2012;256:1098-101.
23. Dückers ML, Wagner C, Vos L, et al. Understanding organisational development, sustainability, and diffusion of innovations within hospitals participating in a multilevel quality collaborative. *Implement Sci* 2011;6:18.
24. Wong CL, Al Atia R, McFarlan A, et al. Sustainability of a proactive geriatric trauma consultation service. *Can J Surg* 2017;60(1):14-18.
25. ACS TQIP Geriatric Trauma Management Guidelines 2012.
26. Leon MB, Smith CR, Mack MJ, et al. Transcatheter or Surgical Aortic-Valve Replacement in Intermediate-Risk Patients. *N Engl J Med*. 2016 Apr 28;374(17):1609-20.
27. Asgar AW, Lauck S, Ko D, et al. Quality of Care for Transcatheter Aortic Valve Implantation: Development of Canadian Cardiovascular Society Quality Indicators. *Can J Cardiol*. 2016 Aug;32(8):1038.e1-4.
28. Lee L, Hillier LM, Molnar F, et al. Primary Care Collaborative Memory Clinics: Building capacity for optimized dementia care. *Healthcare Quarterly*. 2017;19(4):55-62.
29. Lee L, Hillier LM, Stolee P, et al. Enhancing dementia care: A Primary care based memory clinic. *Journal of the American Geriatrics Society*. 2010; 58 (11): 2197-2204.

The publisher and the Canadian Geriatrics Society shall not be liable for any of the views expressed by the authors published in Canadian Geriatrics Society Journal of CME, nor shall these opinions necessarily reflect those of the publisher.

Every effort has been made to ensure the information provided herein is accurate and in accord with standards accepted at the time of printing. However, readers are advised to check the most current product information provided by the manufacturer of each drug to verify the recommended dose, the method and duration of administration, and contraindications. It is the responsibility of the licensed prescriber to determine the dosages and the best treatment for each patient. Neither the publisher nor the editor assumes any liability for any injury and/or damage to persons or property arising from this publication.