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Integrated Care for Complicated Patients: A Role for Combined Training and Practice

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ABSTRACT

Patients with chronic medical disease frequently have comorbid psychiatric illness, yet mental and physical healthcare is frequently siloed in the United States. Integrated behavioral healthcare models, such as medicine-psychiatry services, are feasible, improve patient outcomes, and reduce costs. The Duke University Hospital medicine-psychiatry service provides holistic patient care and serves as a model for those interested in developing combined services or training programs elsewhere. Combined residency training in psychiatry is a way to provide a workforce of physician-scientist educators adept at providing coordinated, integrated care for complex patients with comorbid illness. (Am J Geriatr Psychiatry 2023; 31:222–231)

Highlights

- **What is the primary question addressed by this study?**
  Patients with comorbid medical and psychiatric illness suffer poorer outcomes due to a siloed healthcare system in the United States and new models of care, but do integrated behavioral models, combined medicine-psychiatry services, or complexity intervention units better serve these patients?
- **What is the main finding of this study?**
  Integrated behavioral models of healthcare are designed to provide whole-patient care, addressing health disparities, and reducing barriers for patients with comorbid psychiatric illness. We describe integrated behavioral healthcare models with an emphasis on the combined medicine-psychiatry (med-psych) service

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at Duke University Hospital as well as detail the Duke University combined internal medicine-psychiatry residency training program.

- **What is the meaning of the finding?**
  The Duke University Hospital med-psych service and residency training program may serve as an archetype for those interested in developing combined services or training programs elsewhere as a means providing integrated care for complex patients with comorbid illness.

INTRODUCTION

Nearly 50% of patients with chronic medical disease have comorbid psychiatric illness, yet mental and physical healthcare is frequently siloed in the United States.[1–3] Older adults comprise a large proportion of patients with comorbid psychiatric illness.[9] Patients in need of behavioral health resources or psychiatric treatment face fragmented care, endure high costs from multiple encounters and must navigate this challenging system without accessible assistance. Only 50% of patients who present to a primary care provider with a behavioral complaint will see a behavioral specialist.[4] An estimated 80% of behavioral health conditions are under- or untreated in the current system of care.[1–8] Patients with psychiatric illness experience higher rates of disability and worse medical outcomes when compared to patients without psychiatric comorbidity.[10–13]

Patients' mental health needs are also often incompletely addressed during medical hospitalization. Many hospital systems do not have accessible psychiatric services.[14] When available, psychiatric consultants such as geriatric specialists have the expertise to address behavioral presentations in the general hospital setting. Most health systems, however, do not employ proactive consultation. Behavioral health consultations are frequently performed retrospectively and near the tail end of hospital stays, which may be associated with worse outcomes.[10,15–17] Furthermore, for older adults with psychiatric comorbidity, the geriatric mental health workforce faces growing shortages.[18,19] Overall, likely due to a combination of factors including health behaviors, stigma, resource scarcity, and poorer recognition of treatable medical issues, patients with comorbid psychiatric illnesses have a 10−30-year decrease in life expectancy compared to those without mental illness.[3,20,21]

Integrated behavioral healthcare is a broad term for models of care designed to provide whole-patient care and reduce barriers for patients with comorbid psychiatric illness. Integrated behavioral healthcare models, such as collaborative care, have been demonstrated to be feasible, improve patient outcomes, and reduce costs in a number of health systems.[22–25] Medicine-psychiatry (med-psych) services, which comprise medicine-psychiatry units (MPUs), complexity intervention units (CIUs), or other integrated inpatient models, provide medical and psychiatric care for patients in the hospital setting. Geriatric specialists, who frequently encounter patients with comorbid medical and psychiatric illness, may benefit from knowing about combined inpatient services as they consider treatment settings for their patients. In this article, we describe the med-psych service at Duke University Hospital as an example of an inpatient, integrated behavioral healthcare model. We also detail the Duke University combined internal medicine-psychiatry (IMP) training program, for which the med-psych service serves as a primary training site.

EXAMPLE CASES

Case 1: Mr. M is a 65-year-old man with severe melancholic depression who was admitted to the med-psych service because of poor oral intake, low mood, ruminative thoughts of death, and general functional decline. He consented to electroconvulsive therapy (ECT) as a treatment for melancholic depression, but he was unable to tolerate induction of anesthesia due to hypotension. The dual-trained IMP physician assessed symptoms of malaise, anergia, hypotension, and abdominal pain and diagnosed tertiary adrenal insufficiency. Corticosteroid therapy allowed Mr. M to proceed with ECT, which was associated with eventual resolution of his symptoms of

severe depression. In the end, the patient's ruminative suicidal thoughts were certainly related to his depression, but his severe neurovegetative symptoms were exacerbated by adrenal insufficiency.

Case 2: Mr. P is a nonagenarian admitted with kidney failure and altered mental status including visual hallucinations. One month prior to admission, he had been functionally independent, namely living alone and tending to his own activities of daily living. His functional decline began with a fall at home, after which he developed rhabdomyolysis and consequent kidney failure. He subsequently contracted SARS-CoV-2 (COVID-19) infection and developed altered mentation and hallucinations. He was admitted to the med-psych service and was thoroughly evaluated by the multidisciplinary team. His mentation improved with management of his viral infection and kidney failure.

COLLABORATIVE CARE & CIUS

Patients like Mr. M and Mr. P may be deemed "too difficult" or too complex for general medical or psychiatric services and benefit from a holistic approach to their care. Integrated care approaches recognize that behavioral symptoms take place in or even because of a medical context and that patients with higher behavioral health complexity will utilize more medical resources.[22] Outpatient models such as the collaborative care IMPACT model have been successfully implemented and have demonstrated improved patient outcomes, as well as decreased utilization of medical services in a number of health systems.[23,24] Evidence also exists for an integrated approach to acute and/or inpatient care.[25]

MPUs, also known as CIUs, provide hospitals with options for managing comorbid medical and psychiatric presentations. Over the last two decades, value-based health systems, especially in European countries such as the Netherlands, have increased development of high-acuity CIUs.[14] Increasing data and trends toward value-based or managed care systems in the United States have demonstrated benefit to proactive inclusion of behavioral healthcare.[21,26,27] Several health systems in the United States have implemented CIUs, though uptake has been gradual. The University of Rochester, with its *Inpatient Medicine in Psychiatry Unit*[27] complementing its outpatient *Medicine in Psychiatry* Service,[26] leads local and national efforts to expand the uptake of CIUs. Published data depict CIU-associated utilization benefits.[28] The Association of Medicine and Psychiatry (AMP) annual conference includes a yearly program to identify and highlight innovative programs in integrated care. Examples include fledgling programs which provide med-psych care for individuals with vaso-occlusive crises related to sickle cell disease and other innovative models designed to optimize whole-person inpatient care. From this initiative, the Association of Medicine and Psychiatry *Med-Psych Unit Consortium*[29] has become a lively collaboration of clinicians dedicated to developing and disseminating best practices regarding CIU and integrated service development.

THE DUKE UNIVERSITY HOSPITAL MEDICINE-PSYCHIATRY SERVICE

Duke University Hospital started a med-psych service in 2001, 5 years after establishing the institution's combined residency training program in IMP. Duke's med-psych service differs from a true MPU or CIU model in that our service does not have a consistent, dedicated staff or patient care unit. The service is instead housed on the medicine units, offering the same level and complexity of medical care as other general medicine services.

The service accepts patients referred through the general medicine admissions process by the emergency department, other medical/surgical providers, or the consultation-liaison psychiatry service. Patients may also be transferred from the psychiatry inpatient service with medical needs too complex—from a diagnostic, management, or nursing perspective—for the inpatient psychiatry service. Patients are considered eligible for the service if they have a primary medical diagnosis or condition that warrants medical admission as assessed by the general medicine admissions clinical lead. Thus, an essential first-pass criterion for admission is medical necessity. Patients may present for admission with pneumonia, heart failure, acute kidney injury, hyponatremia or any of a number of hospitalizable medical conditions. Furthermore, patients must also have a concomitant psychiatric and behavioral condition such as acute suicidality, psychosis, mania, delirium, or

complicated withdrawal, which would benefit from combined medical and psychiatric evaluation and management. When patients are admitted directly or transferred to the combined service, in keeping with good clinical practice and Accreditation Council for Graduate Medical Education (ACGME) requirements, the physicians and other members of the med-psych rounding team introduce themselves by level of training and specialty. This would include the information that the team specializes in caring for behavioral, as well as physical, health and "whole patient care."

While specific sociodemographic data are not available, older adults make up approximately one-quarter to one-third of the service census at any one time. Older adults who may benefit from integrated care on the med-psych service include patients with delirium from previously unelucidated etiologies, catatonia from primary medical vs. psychiatric causes, cognitive impairment from a variety of sources ranging from reversible to permanent, or behavioral disinhibition related to stroke or other cause. Other recent examples include a 70-year-old patient with severe antidepressant-related hyponatremia in need of alternate treatments of severe depression, a 73-year-old patient with lithium-induced nephrogenic diabetes insipidus, and an 85-year-old patient who developed a pulmonary embolism during an episode of catatonia. Younger adult patients admitted to the med-psych service also benefit from an integrated approach to care. It is not uncommon to encounter younger patients suffering neuropsychiatric manifestations of autoimmune encephalitis, malignancy, or rheumatologic disease. The med-psych service serves as a primary service caring for patients of all adult ages with health consequences related to suicide attempts.

Attending physicians on the combined service, or the most senior physician responsible for all clinical teaching and patient care, are trained in IMP and approach patient care in a holistic way. Clinicians integrate behavioral observations, collateral information, medical differential diagnostic approaches, and objective laboratory and imaging data to comprehensively assess and manage patients' illnesses. House staff officers, or physician trainees, include first-year psychiatry residents ("interns") and upper-level IMP residents. Initially, the team consisted of one IMP attending and one intern physician with a census cap of six patients. The number of rounding attendings has grown over time. There are currently nine IMP attendings who provide coverage for the med-psych service. The team now consists of one combined-trained attending, one psychiatry (or IMP) intern physician, and often an upper-level IMP resident physician. The patient cap is 8−10 patients, depending on whether there is an upper-level IMP resident, commensurate with the general medicine team cap of eight patients per intern. Attendings are contracted to round for 7 or 14 days at a time, 10 hours per day, on the service.

Even during transitions in leadership, the med-psych service medical director has been an IMP-trained physician who also serves as the psychiatry consultation-liaison medical director. The service director is thus positioned to collaborate with hospital leadership, medical and surgical service directors, and IMP rounding physicians. The service director can also recognize opportunities for improvement and help maintain clarity regarding which patients would be most appropriate for the service.

A range of consultation services are available to patients and providers on the med-psych service including those from neurology, rheumatology, and geriatric medicine specialists. While Duke University Hospital does not have an inpatient geriatric medical or psychiatric service, inpatient geriatric and palliative care medicine consultation services are available. Duke University Hospital also offers niche consultation services such as neuroimmunology, substance use specialists with expertise in inpatient buprenorphine prescribing, and plasmapheresis. Electroconvulsive therapy consultation is available, as is the input of a rounding clinical pharmacist with broad expertise. Patients also benefit from experienced case managers adept at navigating medical and psychiatric systems of care, along with the available resources in the community. Patients routinely require skilled nursing facility placement, home IV therapies, inpatient or intensive outpatient program referrals, community support teams, and/or routine outpatient follow-up care.

In the lead-up to implementation of the med-psych service, the founding faculty member and residents provided "lunch and learn" in-service trainings to nurses. Topics included policies and procedures regarding safety and monitoring for suicide risk; laws and procedures pertaining to involuntary commitment; pathophysiology, signs and symptoms of psychoactive substance intoxication and withdrawal; pathophysiology and etiologies of delirium; and optimizing boundaries and structure with patients in difficult circumstances. As the hospital general

medicine service has expanded to include multiple units, maintaining education and communication has been more challenging. In recent times, the addition of behavioral technicians, a behavioral emergency response team, and regular updates and communication from the combined service medical director have been useful in helping to standardize procedures and expectations across nursing units where med-psych patients may be housed. IMP physicians rounding on the combined service prioritize in-person communication and collaborative treatment planning with nurses and other members of the healthcare team.

The med-psych service has brought many benefits. Many combined-trained attendings who round on both the consult-liaison psychiatry and med-psych service observe a major benefit from efficiency in rounding and medical decision-making. As an example, the combined team may initiate psychiatric medications more expeditiously for patients who are hospitalized following suicide attempt, instead of having a primary team wait for consultative input and recommendations. Similarly, inpatient psychiatric referral can be initiated more quickly due to the ability of the primary combined team to medically "clear" the patient and anticipate barriers to psychiatric placement. Furthermore, physicians on the combined service provide psychotherapeutic interventions, such as cognitive-behaviorally framed and motivational interviewing strategies during the course of the patients' medical care. Members of the multidisciplinary care team, such as nurses, have voiced appreciation for the med-psych service when caring for behaviorally challenging patients. Resident physicians frequently cite the med-psych service as a major strength of the categorical psychiatry and IMP training programs. Hospital medicine team leaders have expressed appreciation for the availability of the service for patients with behavioral health needs that exceed their availability of time or expertise.

NUTS AND BOLTS: THINGS TO CONSIDER IN CONTEMPLATING A CIU

There are various logistical and practical aspects, along with anticipated consequences, to consider when planning an integrated service, such as a CIU. In the initial design of our institution's med-psych service, consultation was sought from Dr. Roger Kathol, who has published broadly on integrated systems of care.[3,11,30–32] His input was helpful to determine institutional needs and expectations, opportunities, and outcomes.

Practically, integrated services may be based within the clinical structure of an inpatient psychiatry service, on medical or surgical units, or in other specific settings. Our med-psych service is situated within the general medical floors, without a geographically clustered or locked physical unit. CIUs may be geographically clustered but unlocked, permitting free movement of patients from one medical service to the CIU. Still others may include geographically proximate rooms on a locked unit. Benefits of geographical clustering may include familiarity of nursing staff, comfort with and knowledge of various behavioral health techniques, efficiency of resources, and the ability to develop specialty expertise. Theoretical and observed drawbacks of geographical clustering can include a perception that patients with behavioral health needs should be sequestered in a special location. This can unintentionally perpetuate stigma or the implicit assumption that patients with behavioral health needs do not belong on medical units. Benefits of locking a unit include the ability to permit patients' freedom of movement while being able to observe and monitor behavior with fewer one-to-one staff members. This model also allows for group programming and recreational therapy, which have well-established therapeutic benefits.[33,34] Considerations in creating a locked unit include the need to explicitly inform patients of their hospitalization on a locked unit, as well as obtaining voluntary patient consent or filing for involuntary commitment prior to admission.

One important consideration in establishing a CIU is the up-front question of "to touch or not to touch" patients. In geriatric mental health, as in integrated care, recognizing the potential manifestations of medical problems as behavioral symptomatology may necessitate a more "hands-on"- approach to patient care than psychodynamicallyoriented psychiatric training would recommend. If the CIU is primarily a medical service with single dual-trained physicians, as the one we have described, physical examination will be a necessary component of holistic patient care. It will be important to consider individual patient needs to determine whether the patient will be best-served on the CIU or on the medical service with psychiatric consultation. If the CIU is considered a

psychiatric service with some medical capabilities, as in some other programs, there may be a medical provider assigned to all of the patients while their psychiatric care needs are met by a different individual.

An additional consideration in conceptualizing an integrated service is whether it attracts referrals from area hospitals seeking "specialty care." This may or may not be desirable from the perspective of payor mix, reimbursement, or the ability to meet the needs of patients already hospitalized at the institution. In the first few years of our med-psych service, the attending IMP physician would review and consider each individual patient referral. While that process permitted agency on the part of the attending physician, it was time-consuming and sometimes challenging to standardize criteria across a group of individual physicians. The method of admitting patients to our service has transitioned to one of inclusion and application of criteria for "appropriate" patients during the routine general medicine admissions procedures. A potential drawback to this approach is mission drift. General medicine clinicians triaging patients to the med-psych service may lose sight of which patients may benefit most from integrated behavioral healthcare. There have been times in its history when many of the patients on the med-psych service were solely in need of facility placement or awaiting guardianship hearings. At other times, mission drift has included scenarios in which most patients were referred for uncomplicated psychoactive substance withdrawal. Open dialogue between the medical director and general medicine admissions leadership helps to clarify ways in which the med-psych service optimizes patient care and relevant institutional outcomes.

Various other considerations are relevant to patient census, volume, and service scalability. Our lack of available patient sociodemographic data may limit replicability at other institutions. The Duke med-psych service is also relatively small as it is comparable in size to a standard, single intern general inpatient medicine service. Possible means of expanding service offerings might include geographical rounding or the addition of advanced practice providers. A major limitation to scalability in many institutions will be the availability of IMP-trained physicians. A significant beneficial change in the administrative model came with the contractual nature of the service, which is therefore not patient-billing-and-revenue dependent. Other institutions with different clinical practice models, patient diagnoses, and inpatient and outpatient services will necessarily have different parameters and considerations.

TRAINING FOR COLLABORATIVE CARE: COMBINED PSYCHIATRIC RESIDENCY PROGRAMS

At our institution, the med-psych service serves as an important inpatient training site for the combined IMP residency program. Combined residency programs have existed for over two decades and are designed to provide trainees with broad and deep exposure to a medical specialty (internal medicine, family practice, neurology, or pediatrics) and psychiatry. At the conclusion of training (5 years for IMP, family medicine-psychiatry, and the "triple board" of pediatrics-psychiatry-child and adolescent psychiatry; 6 years for neurology-psychiatry), physicians are eligible for board certification and practice in both disciplines—and in the areas in between. At present, there are 36 total combined training programs with 275 combined trainees in these specialties.[35,36]

Combined training and practice allows one physician dually trained in both medicine and psychiatry to provide comprehensive care and decrease barriers for patients caught between traditional medical and health service silos.[35,37] While it is not uncommon for applicants to apply to combined programs due to indecision about one specialty or the other, the most successful applicants (and, eventual residents) choose combined training due to a specific interest in holistic patient care. Individuals seeking training in combined programs may be in part motivated by an understanding that there is a greater need for physicians who are facile in managing patients with comorbid illness.[38,39] Medical students frequently cite career interests in caring for underserved populations, as well as subspecialty interests in geriatrics, hospice and palliative medicine, and/or addiction. Interested applicants apply to combined programs through the National Residency Matching Program,[40] as they would for either categorical specialty. Applicants commonly apply to combined programs, as well as one or both individual specialties as a "back up" given the limited number and geography of combined programs and positions. The Duke University

Hospital IMP program recruits for two residents per year through the National Residency Matching Program. We receive approximately 200 applications each year and have had a 100% fill rate for the last 10 years.

Combined training requires fulfillment of the ACGME requirements of both specialties individually. This is in addition to fulfillment of specific criteria put forth by the American Board of Psychiatry and Neurology[41] in consultation with the corresponding non-Psychiatry specialty board for that program. Specific guidelines dictate the duration of training in each specialty, minimum number of months for one specialty in the course of any postgraduate training year, and specific clinical experiences or competencies that are required.[42] The Duke IMP curriculum has been described in more detail elsewhere.[35] In brief, combined residents are considered full members of each department and rotate alongside categorical residents in both departments, splitting time between each over the course of 5 years. During all 5 years of training, residents have a continuity primary care clinic. During the last 3 years of training, residents have a continuity psychiatry clinic. The first year involves eight internal medicine intern rotations and four psychiatry rotations (which include a month of neurology and a month of combined med-psych service). The second year involves six internal medicine junior resident rotations and six psychiatry rotations (comprising inpatient, consultative, and addictions psychiatry rotations). During the third year, combined residents spend 8 months on internal medicine rotations (including intensive care, inpatient medicine, ambulatory medicine, and consultative services) and 4 months on psychiatry rotations (including emergency psychiatry, consultative psychiatry, and inpatient psychiatry). The fourth year consists of a 10-month outpatient psychiatry block (with inclusion of a half-day per week of continuity primary care clinic), during which residents learn to manage a psychiatric outpatient practice, participate in a community psychiatry experience, and engage in elective opportunities ranging from psychotherapy practicums to electroconvulsive therapy. The 2 months of medicine include a month on the combined med-psych service and a month of ambulatory or consultative medicine. During the fifth and final year of training, residents spend 6 months in ambulatory psychiatry experiences (which includes a mix of continuity and elective requirements) and 6 months in medicine experiences. Given the compressed nature of training, in which 7 years of residency training (three in medicine and four in psychiatry) are consolidated into a 5-year training sequence and need to meet training requirements, "protected time" for research or other opportunities is not feasible.

Future geriatrics specialists, or students interested in geriatrics or geriatric psychiatry, may be interested in combined training given the common overlap of medicine and psychiatry in geriatric medicine and/or psychiatric practice. With the 5-year training, residents lose some degree of pure elective flexibility, and there will not be a feasible option for the kind of protected time that is available in a traditional psychiatry research track. This is a specific and relevant consideration for medical students contemplating the choice between psychiatry and IMP training. Other than elective flexibility, IMP training retains American Board of Psychiatry and Neurology- and ACGME-required experiences, including geriatric psychiatry, psychotherapy, and continuity care, with the addition of training sufficient to result in board-eligibility not only in psychiatry but also in medicine.

Combined residents are uniquely a part of each department, but also create a separate identity as a cohort of combined trainees. Similarly, in practice, while trained to practice in each discipline separately, the opportunity to train in the area of overlap leads to unique practice patterns and identity. In the Duke IMP program, residents spend one month of each of the 5 years of training rotating on the med-psych service and working closely with IMP faculty. Other combined training programs incorporate various integrated care opportunities for their trainees.

Combined training poses specific challenges. Combined trainees experience a different trajectory of development in each specialty, which can be discomfiting to residents who observe that their skill in one specialty may not develop as quickly as the skill of their peers in categorical training programs. The end of the third year of residency can pose challenges, as colleagues are completing training in the nonpsychiatry specialty and the combined trainee has 2 or 3 more years of training remaining. Residents most likely to succeed in combined training programs will be aware, up-front, of the additional time in training (5 or 6 years as compared to 3 or 4 years for a corresponding categorical program). Training directors are intentional in seeking and selecting trainees who are

committed to the entire course of combined training. The most common and feared form of attrition is to one or the other categorical program, which can leave an already-small program at considerable risk of falling short of critical mass. Successful combined trainees also will necessarily be detail-oriented, as well as flexible. Coordination for combined trainees in the context of separate categorical programs invariably results in scheduling challenges. Open communication, accountability, and commitment to the ideals and goals of combined training will help residents make it through the challenging moments of training.

The majority of graduates from combined residency training programs remain in academics, working in either medicine or psychiatry, consultation-liaison psychiatry, or geriatric psychiatry.[38] The Duke IMP program has had 47 graduates. The majority of alumni work in integrated behavioral healthcare systems, providing both psychiatric, primary, and inpatient or consultative care. A smaller number of combined graduates who pursued fellowship training after residency subspecialize either in psychiatry or medicine. From graduates of the Duke IMP program, examples include one physician who completed an ethics fellowship, one who pursued a neuro-psychiatry fellowship, and eight others who completed graduate medical education-accredited fellowship training (one in infectious disease, one in hematology-oncology, two in combined pulmonology-critical care, and four in palliative and hospice medicine). While more recent data are not available, the majority of dually trained physicians from combined programs are able to find ways to remain active in both fields.[43,44]

CONCLUSION

Geriatric specialists witness the complicated overlap between medical and psychiatric comorbidities and may be interested in combined care or training as a means of providing wholistic care for their patients. Decades of health services research and cost effectiveness analyses demonstrate patient and cost benefits to integrating behavioral health services in the context of inpatient, as well as outpatient care.[11,45] Integrated behavioral healthcare models provide means to care for acutely ill and hospitalized patients with comorbid behavioral and medical considerations. The Duke University Hospital med-psych service is one model and may serve as an archetype for those interested in developing combined services or CIUs elsewhere. Other models and CIU development resources exist throughout the United States and Europe. Furthermore, combined training in psychiatry is a way to provide a workforce of physician-scientist-educators adept at providing coordinated, integrated care for complex patients with comorbid illness.[46,47]

AUTHOR CONTRIBUTIONS

Gregg Robbins-Welty is responsible for drafting and revising the work critically for important intellectual content. Dr. Robbins-Welty is responsible for final approval of the version to be published and agrees to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Jane Gagliardi is responsible for drafting and revising the work critically for important intellectual content.

DATA STATEMENT

The data have not been previously presented orally or by poster at scientific meetings.

DISCLOSURES

The authors report no conflicts with any product mentioned or concept discussed in this article.

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