This list of research studies and other references about the Siebens Domain Management Model (SDMM) is arranged chronologically starting with most recent ones. The studies that describe actual improved clinical outcomes are those by Dr. Kushner and colleagues in 2015. Links to websites and open access articles are included when available.

Brief comments address the significance of each reference. The earlier references reflect the dissemination of the concept among colleagues and pilot applications starting in 2001.

Readers are kindly reminded that permissions in writing may be required if they are interested in applying the SDMM to their own clinical settings. Among the goals of dissemination is maintaining fidelity to the model regardless of the context in which it is being applied. Please see SPCC SDMM Guidelines for Use under Resources at siebenspcc.com. (SPCC is Siebens Patient Care Communications.)

I wish to extend a sincere THANK YOU to the many, many collaborators who have made this body of work possible. This includes clinician and research colleagues, co-authors, reviewers, publishers, and, of course, family and friends. It is this supportive community that is allowing a simple idea - the Siebens Domain Management Model – to disseminate step-by-step, in clinician-friendly ways, to improve the clinical care of the persons we serve.

Please email any comments or questions about these references to info@siebenspcc.com. Thank you.

Hilary C Siebens MD

HIP FRACTURE - REHABILITATION RESEARCH
Setting: Inpatient rehabilitation hospitals and skilled nursing facilities


SIGNIFICANCE: In this descriptive study, the rehabilitation therapy activity treatments by physical therapy (PT) and occupational therapy (OT) were organized, side-by-side using the 4 SDMM domains (see Table 3). When this approach was initiated, feedback by therapists studying traumatic brain injury was positive about this table format as well. Those activities that were not domain-specific were categorized under Care Processes (e.g. assessment).
Siebens Domain Management Model (SDMM)

RESEARCH and REFERENCES

While the 4-domains have been used by clinical therapists (PT, OT) in rehabilitation hospital team conferences for several years, this is the first study to do this with research data. This application supports the interdisciplinary design of the SDMM.

Patients' characteristics at admission (Table 1) and discharge (Table 4) were also organized by the 4 domains as were the recommended discharge treatments (Table 4).

PARKINSON’S DISEASE – NURSE-LED CARE COORDINATION

Setting: Outpatient

Connor K, Cheng E, Siebens HC, Lee ML, Mittman BS, Ganz DA, Vickrey B. Study protocol of “CHAPS”: a randomized controlled trial of Care Coordination for Health Promotion and Activities in Parkinson’s Disease to improve the quality of care for individuals with Parkinson’s disease. BMC Neurology; 2015: 15:258 OPEN ACCESS

SIGNIFICANCE: This study is unique in that the SDMM concept is being used, as designed, with both providers and patients. In addition, this care coordination program is the first outpatient clinical program to use the SDMM to guide steps of care. A comprehensive patient assessment, the priority problem list, and nurse clinical manager documentation are organized consistently using the 4 domains. The domains are extended to patients through use of the Siebens Health Care Notebook, customized for each patient. An ongoing research study is evaluating outcomes. However, anecdotal feedback to date indicates that this approach has merit from several perspectives.

STROKE – SIEBENS DOMAIN MANAGEMENT MODEL IN TEAM CONFERENCE

Setting: inpatient rehabilitation facility

http://www.pmrjournal.org/article/S1934-1482%2814%2901465-8/references APRIL 2015

SIGNIFICANCE: This is the first study to show that use of the Siebens Domain Management Model leads to improved clinical outcomes using fewer resources. The SDMM was implemented as a guide to inpatient rehabilitation weekly team conference discussions. In addition, discussion had to focus on barriers to community discharge. Improved outcomes included better functional levels, shorter lengths of stay, and more patients discharged back home. Importantly, there were fewer discharges back to the acute hospital.
ALL DIAGNOSES – SDMM IN TEAM CONFERENCE

**Setting:** Inpatient rehabilitation facility


**JULY 2015**

**SIGNIFICANCE:** This second study by Dr. Kushner evaluated an especially vulnerable patient population – all inpatient rehabilitation patients who were 75 years of age or older. Over 420 patients were in both groups. Outcomes were better after the SDMM and the focus on barriers to discharge were instituted in team conferences. Patient function at discharge was significantly better; more patients were discharged back to their own homes in the community; and lengths of stay were shorter. There was no change however in the percentage of discharges back to the acute hospital.

GERIATRIC STROKE – SDMM IN TEAM CONFERENCE

**Setting:** Inpatient rehabilitation facility


**SIGNIFICANCE:** In this third study a subset of stroke patients, those 75 years of age and older, were evaluated. Even in this especially vulnerable group, outcomes were better after the change in team conference format using the SDMM and discussion focus on barriers to discharge.

CEREBRAL PALSY, POLIO, RHEUMATOID ARTHRITIS, STROKE – KEMP QUALITY OF LIFE MEASURE

**Setting:** Outpatient


**DECEMBER 2015**


**SIGNIFICANCE:** The Kemp Quality of Life Measure, the topic of this study, represents the life work of Bryan Kemp PhD. He spent his career studying individuals aging with disability caused by different conditions. His special expertise was addressing topics related to spinal cord injury. Here are links for
This study doesn’t address the Siebens Domain Management Model (SDMM) directly. However, the results provide support for more research on clinicians’ use of the Kemp Quality of Life (KQOL) measure, a one item quick QOL self-rated screening question, during busy clinical practice. When used, patients may cite issues relating to any one of the SDMM domains that are affecting their quality of life.

In my discussions with Dr. Kemp, leading to this study, we reviewed the SDMM framework. I shared that I thought his KQOL measure could help busy clinicians identify areas of concern, and potential clinical relevance, in any of the domains. He responded, “When we use it clinically, in addition to asking the person their current QOL, we then ask him/her what it would take to move them one unit higher (e.g., if a person scores a 4 on the raw scale, we then ask what would it take to move you to a 5). Responses are very revealing and should fit very well with your domain model.”

Additional research on this measure and its use in clinical care is required.

FAMILY CAREGIVING

SIGNIFICANCE: This book chapter describes newer approaches for helping families in their caregiving. The example of how the SDMM is of benefit, alone or in combination with the Siebens Health Care Notebook, is shared.

REHABILITATION DISCHARGE SUMMARIES
Setting: inpatient rehabilitation facility

MARCH 2013

SIGNIFICANCE: This is the first study to quantify improvements in discharge summary content when the SDMM was integrated into the discharge summary template. As a consultant to the project, I supplied a score sheet for discharge reports. Inter-rater reliability of the score sheet was established. Then whether items were addressed or not were scored as present, absent, or not applicable by the research physicians. The data clearly showed a statistically significant improvement in relevant information capture comparing reports before and after
SDMM use – from 34% of items present to 53%. This occurred for Domains I, II, and IV and a trend for increase in Domain III.

HIP FRACTURE REHABILITATION
www.pmrjournal.org/article/S1934-1482(12)00235-3/references
AUGUST 2012

SIGNIFICANCE: This is the first clinical research study to introduce the SDMM as an approach to organize numerous clinical variables systematically and in a way that any discipline could understand. “Patient-related characteristics and treatments, as well as environmentally related variables, were readily placed into 1 of these 4 domains (p. 551).”

MEDICAL EDUCATION TEXTBOOK

SIGNIFICANCE: This textbook is used in many medical schools. The editor of the chapter on older adults, on learning about the SDMM, chose to include it in a table for the format for Provider History and Physical Reports.

NURSING EDUCATION TEXTBOOK

SIGNIFICANCE: In this first edition of the Bates textbook adapter for nursing education, the table mentioned above using the SDMM was retained, indicating the applicability to nursing care.

OVERVIEW OF SDMM CONCEPTS

SIGNIFICANCE: This brief overview of the SDMM concepts was invited by the issue editor who himself used the SDMM in the inpatient rehabilitation care of patients with head trauma. The concepts and clinical examples originally published a few years earlier remain current.
PORTABLE PROFILES (PERSONAL HEALTH INFORMATION)
http://www.carf.org/PortableProfile/

SIGNIFICANCE: This article reviews the considerations about CARF’s portable profile standard. This standard, which was initiated around 2005 in the stroke rehabilitation standards, was designed to improve the partnering among persons served, their families, and the multiple health care providers. The overall principles, like adding value to the healthcare experience and putting the portable profile, that contains a person’s health information, into practice, remain current.

REHABILITATION MEDICINE TEXTBOOK

SIGNIFICANCE: The DeLisa textbook is one of the major rehabilitation medicine texts used. The SDMM is described briefly in this chapter as operationalizing the biopsychosocial model. The importance of each of the four domains is highlighted as especially important in the rehabilitation of older adults. The SDMM also appeared in the prior 4th edition in 2005.

HEALTH CARE NOTEBOOKS

SIGNIFICANCE: The patient care notebook concept was proven to be clinically helpful in two quality improvement studies listed below (2001 and 2005). Therefore, this new Notebook was designed using health care literacy considerations and the SDMM’s four domains. The plain English names for the domains are headings for four of the six Notebook sections. CARF International is the sole distributor. Two clinical programs, both also involved in research, now use these Notebooks.

COMMUNITY ASSESSMENT OF OLDER ADULTS

SIGNIFICANCE: This review chapter explains that the SDMM can apply to the assessment process of older adults living in the community.

GRADUATE MEDICAL EDUCATION
Bryant M, Alfano AP, Siebens H. Use of the Siebens Domain Management Model to Document Use of the Six ACGME Core Competencies in Graduate Medical Education. Arch Phys Med Rehabil 2007; 87:E50-60 (poster 177)
SIGNIFICANCE: The physician educators in this project identified that teaching the SDMM to their residents in physical medicine and rehabilitation (PM&R) helped address elements of all six core graduate medical education competencies – patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice.

GERIATRIC REHABILITATION RESEARCH

SIGNIFICANCE: The authors cite the SDMM as one empiric, practical model to guide rehabilitation planning and teamwork. They cite that errors in management of patients with disability can occur from lack of information in these domains.

OLDER ADULTS WITH MULTIPLE CONDITIONS
Setting: emergency departments


SIGNIFICANCE: This program incorporated the SDMM as one of four elements in an intervention designed to improve emergency care of at risk older adults. Preliminary outcome evaluation was suggestive of benefits to the program overall.

HEALTH CARE NOTEBOOKS
Setting: inpatient rehabilitation facility


SIGNIFICANCE: This quality improvement study showed that a patient care notebook, provided to patients on admission to a rehabilitation unit to organize their care and to take home, was able to expand from a 15-bed unit pilot study (see Siebens et al 2001) to an entire rehabilitation hospital (over 250 beds). This study, along with others, identified one tool, a patient-owned binder, to improve communication between clinical teams and patients and their families.
INTERNATIONAL CLASSIFICATION of FUNCTIONING, DISABILITY, and HEALTH (ICF) – TEXTBOOK CHAPTER

SIGNIFICANCE: These authors, involved with the development of the World Health Organization’s ICF, identify that among the ICF changes from the former ICIDH is the introduction of the environment of persons served. They note that this broadened focus is also present in the SDMM.

ACUTELY ILL OLDER ADULTS
Setting: emergency departments


SIGNIFICANCE: This article summarizes the SDMM’s possible applications to improving emergency department services for older adults. Specific case histories are provided to demonstrate the challenges. Examples of SDMM potential benefits suggested include: 1) improved communication using the standard domains; 2) education of health care staff; 3) facilitation of team care; 4) improving flow of relevant information; 5) improved decision-making, and 6) facilitation of more meaningful interactions with patients. The article was an invited Special Contributions based on a presentation to the geriatric Special Interest Group of the Society of Academic Emergency Medicine.

GRADUATE MEDICAL EDUCATION

SIGNIFICANCE: This study documented learning by PM&R residents through using a pocket guide in their direct inpatient care of patients. The guide was found to meet some criteria for effective continuing medical education – convenience, relevance, and individualization (i.e. it allows learners input into what is learned). While inpatient rehabilitation requires clinical information in all four of the SDMM domains, residents needed, and found, information primarily in the first two domains (I. Medical/Surgical Issues and II. Mental Status/Emotions/Coping).
GERIATRICS POCKET GUIDE

SIGNIFICANCE: This pocket guide identified key areas requiring assessment in older patients. I recommended these be re-ordered differently using the 4-domains for improved logic flow. I provided one editor with the first publication (2001) describing the SDMM. I was pleased to see that when I received the 2002 GAYF edition that the re-arrangement had been incorporated.

BRIDGING BETWEEN HEALTH CARE AND CARE IN THE COMMUNITY
Moscowitz B. Bridging to Family and Community Support for Older Adults and the Domain Management Model. Topics in Stroke Rehabilitation 2002;9:75-86

SIGNIFICANCE: Through clinical examples, a social worker with whom I worked for several years, describes the challenges in helping older adults with chronic illness and functional impairments. Among the tools to help is the SDMM as a way for efficiently organizing the key issues like patients’ coping capacities and their home environments. Looking at the entire situation, e.g. all SDMM domains, identifies when and to which community services referrals could be key. These appropriate referrals could prevent emergency department visits and help keep individuals living safely in their own home in the community.

STROKE REHABILITATION IN SKILLED NURSING FACILITIES

SIGNIFICANCE: The authors, all providers in skilled nursing facilities, review how the SDMM can help 1) organize rehabilitation care to be sure all relevant clinical problems are identified, 2) provide a standard structure for team conferences, 3) helps with problems management, and 4) structure brief discharge notes to ensure key issues are noted.

CLINICAL INFORMATION SYSTEMS

SIGNIFICANCE: The physician authors describe the evolving use of an electronic medical record in a primary care practice focused on older adults. The various benefits and challenges together yielded overall improved clinical care, especially for patients with multiple interacting problems. The SDMM was used by one provider in the group, was incorporated into her templates, and received positive feedback from chart auditors and some other colleagues.
STROKE REHABILITATION

SIGNIFICANCE: The challenges of communication among levels of care in a non-electronic medical record setting is described. The opportunity for improved communication through standardization is explored with some preliminary pilot data on information in discharge summaries. One suggestion is that the SDMM could be applied to inpatient rehabilitation physician summaries as well as for interdisciplinary patient summaries. One example is provided in an Appendix.

HEALTH CARE NETWORKS
O’Malley T, Storto DE. Integration of a Patient’s Care within a Health Care Network. *Topics in Stroke Rehabilitation* 2002;9:87-88

SIGNIFICANCE: The potential of networks to add value to patient care depends to some extent on shared information systems. The specific potential for the SDMM to provide a common framework for all staff and for information exchange is acknowledged.

STROKE REHABILITATION

SIGNIFICANCE: The SDMM concepts, including the four domains and their application over time, are explained with multiple references. Discussed are the historical antecedents, each domain’s sub-domains, examples of current applications as well as possible others and barriers to implementations with possible solutions.

HEALTH CARE NOTEBOOKS
Setting: inpatient rehabilitation facility

SIGNIFICANCE: This quality improvement project tested the benefits of proactively giving patients, on admission to a rehabilitation unit, a well-organized patient care notebook. During the rehabilitation stay, appropriate information was added. Patients took the Notebooks home with them. Results showed decreased calls back to the unit after discharge. Staff acknowledged that patient education was shifted to occur during the entire hospital stay rather than just at the end.

SIEBENS DOMAIN MANAGEMENT MODEL
SIGNIFICANCE: This article was an adaptation from an invited presentation at The Picker Institute’s Sixth Annual Symposium in July 2000. The SDMM is described as a systematic classification of patients’ clinical problems and their management. As such, it is a concise conceptual model – a “mental model” – that can guide care, help teach, standardize documentation, and serve as a basis for health services research and quality improvement efforts. The two organizing constructs are the four domains on an “x” axis and time, including identification of process factors (assessments and plans), outcomes and care settings on the “y” axis.

OTHER REFERENCES CITING THE SDMM

HOSPITAL READMISSIONS
Alper E, O’Malley T, Greewald J. Hospital Discharge and Readmission. UpToDate®
SDMM referenced as a model to help identify hospitalized patients’ needs in order to match those needs with the appropriate next care setting.

BIOPSYCHOSOCIAL MODEL AND SDMM
The Biopsychosocial Model of Medicine – a concept that comes easily to rehab professionals. CONSULT QD, Neurosciences, Cleveland Clinic, July 6, 2015
https://consultqd.clevelandclinic.org/2015/07/the-biopsychosocial-model-of-medicine/
Article on Noll Lecture given at the Cleveland Clinic, Department of PM&R on the SDMM and the Biopsychosocial Model.

TRAUMA

In this study’s Discussion, the SDMM is described as “(providing) a standard approach and language to the entire clinical care process consistent with the principles of evidence and culture-based medicine. The DMM is a practical application of the biopsychosocial approach first described by Engel…”

Ekblad S, Kastrup MC. Current research in transcultural psychiatry in the Nordic countries. Transcultural Psychiatry 2013;50:841-857

In the Discussion section, “The Siebens Domain Management Model (SDMM) is a proposal to include spiritual issues for a practical clinical model that may bridge the gap between the perspectives of health care providers
and individuals’ life worlds (Siebens, 2011). This theoretical model integrates biomedical and the holistic biopsychosocial models but does not give explicit attention to traumatic life events.”


This reference highlights the need for using the bio-psychosocial model as the most promising manner to “think about cause and effect and linking the latter to treatment” in this patient population.

**FALLS PREVENTION**

Falls can be caused by many factors that can be organized based on the SDMM. This literature review organized research articles based on the four domains with some interventions addressing multiple domains simultaneously.

**STROKE REHABILITATION**

Dr. Baseman (DrNP, APRN) reports: "These results support the concept that care for patients with chronic conditions like stroke should address all domains of the individual - physical, psychosocial, and environmental - and that care directed at a single domain (such as physical functioning) may be too limited to deal effectively and comprehensively with such patients (Siebens 2002) (p. 242)."