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Informing the Content and Composition of the CCM Certification Examination

A National Study From the Commission for Case Manager Certification: Part 2

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ABSTRACT

Purpose: The purpose of this national role and function study was to identify the essential activities and necessary knowledge areas of case management practice, meaning the work performed by case managers in various care settings and across diverse professional disciplines.

Primary Practice Setting(s): The national study covered case management practices and work settings across the full continuum of health care.

Methodology and Sample: This cross-sectional descriptive study used the practice analysis method and online survey research design. The study employed a purposive sample of case managers, in which 52,370 individuals received an invitation to volunteer to participate. Data collection completed over a 4-week period resulted in 7,668 useable survey responses (nearly a 15% response rate).

Results: The study identified the common activities and knowledge areas necessary for competent and effective performance of case managers, as was highlighted in Part I of the two-part article series on the role and function study. The results of the study informed the needed update of the test specifications for the Certified Case Manager (CCM) certification examination. This work assures the CCM continues to be substantiated in current practice. Of special note are the emergence of specific activity and knowledge domains in the area of case management ethical, legal, and practice standards, and an increase in the number of employers requiring certified case managers to fill vacant positions and compensating them financially for such qualifications.

Implications for Case Management Practice: The role and function study keeps the CCM credentialing examination evidence-based and maintains its validity for evaluating competency of case managers. Findings can be used to develop programs and curricula for the training and education of case managers. The study instrument also can be used for further research of case management practice.

Key words: *activity, care coordination, case management, certification test specifications, factor analysis, function, index of agreement, knowledge, practice analysis, role, transitions of care*

Across the spectrum of health and human services, professional case managers on transdisciplinary health care teams are responsible for care management, care coordination, and transitions of care activities. These responsibilities have raised the expectations that professional case managers undertake quality measurement and evaluation of the systems of care delivery and their impact on patient care outcomes and experience of care. The ability of the case manager to fulfill these demands underscores the importance of acquired credentials: educational background, certification, competency, and experience. To provide that assurance of advanced competency, which is vital for the protection of consumers, the Commission for Case Manager Certification (CCMC) offers the Certified Case Manager (CCM) credential. The credential is backed by a rigorous scientific research process conducted every 5 years, known as the role and function study.

As described previously in Part I of this two-part series (Tahan, Watson, & Sminkey, 2015), the CCMC conducts a role and function study on a regular basis to ensure that the CCM certification process and

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CCMC conducts a role and function study on a regular basis to ensure that the CCM certification process and the content of the certification examination remain relevant to and substantiated by current practice, recognizing the increasing complexity of patients' needs across the health care continuum and the expanding dimensions of the transdisciplinary health care team.

the content of the certification examination remain relevant to and substantiated by current practice, recognizing the increasing complexity of patients' needs across the health care continuum and the expanding dimensions of the transdisciplinary health care team. In this article, the results of the study are applied to the creation of the content and composition of the CCM certification examination.

The role and function study conducted in 2014 used the practice analysis survey method to describe case management practice in diverse settings and from the perspective of various professional disciplines involved. This was consistent with prior role and function studies conducted in 1994, 1999, 2004, and 2009. The practice analysis research method was used to analyze case management practice and delineate both (1) the general roles and functions of the case manager and (2) the related and necessary knowledge areas. On the basis of an extensive literature review, evaluation of prior survey instruments, input from subject matter experts representative of the current practice (professional background, practice setting, and geography), and input from a pilot survey review, a final study instrument was completed (Tahan et al., 2015).

Over a 4-week period of data collection in mid-2014, the survey was sent to a purposive sample of 52,370 potential participants, including both certified and noncertified case managers, from which 7,723 responses were received, and 7,668 responses were deemed appropriate for inclusion in the analyses. The 14.64% response rate was deemed sufficient as a representative sample of practicing case managers and to generalize the findings with a high degree of confidence and precision (99% confidence level and a 1.36 confidence interval). Table 1 includes some high-level characteristics of the study sample; for more details, refer to Part I of the two-part article series. The role and functions study addressed three main research questions (identical with prior years):

1. What are the essential activities/domains of practice of case managers?
2. What are the knowledge areas necessary for effective case management practice?
3. Is there a need to revise the blueprint of the CCM certification examination? And if so, what modifications are warranted?

Responses related to the first two questions are detailed in Part I (Tahan et al., 2015). This article addresses the third question.

Test Specifications of the CCM Certification Examination

At the conclusion of the 2014 role and function study, a final report of results was produced by the researchers, with additional information to guide the development activities for the CCM certification examination blueprint. The report provided in-depth information including sample/characteristics/demographics, mean importance and frequency ratings by item, subgroup analyses using index of agreement (IOA) and factor analysis. It also included pertinent information about the case managers who participated in the survey and their responses about essential activities and knowledge areas related to the practice of case management (Tahan et al., 2015).

Experts refer to the process of developing a certification examination blueprint as *test specification*. Usually a team of subject matter experts meets and reviews the findings of the practice analysis under the guidance of the researchers and carefully decides on the content areas to guide the certification examination. The researchers selected 11 members for the

TABLE 1
Characteristics of the Study Sample

Characteristic	Percentage (%)
Hold the title case/care manager	54
White	80
Female	95
Spend >70% time in provision of direct case management services	45
Work in either health insurance plan or hospital	52
Have been in case management >10 years	58
Is a registered nurse	89
Earned a baccalaureate degree	44.50
Hold the CCM certification	89
Practice in the South Atlantic Region	22
Practice in the state of Texas	15.50

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The role and functions study addressed three main research questions (identical with prior years):
1. What are the essential activities/ domains of practice of case managers?
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test specification committee in consultation with the CCMC, using a set of criteria similar to that applied in the selection of the subject matter experts convened for the study instrument development. Selection criteria emphasized relevant diversity, including practice settings, years holding the CCM certification, noncertified case managers, practicing case managers, work settings, practice specialization, professional backgrounds, and geographic location. The subject matter experts consisted of case managers with nursing, social work, vocational rehabilitation, disability management, professional counseling, or workers' compensation backgrounds. They came from various geographic locations across the United States, and worked in settings across the continuum of health and human services delivery (e.g., preacute, acute, and postacute), health insurance plans, workers' compensation, and private/independent practice. Some of the subject matter experts from the instrument development taskforce also participated in the test specification committee. This was important to maintain continuity of the work, while also seeking input from new experts who had not contributed to any aspect of the role and function study before the test specification meeting.

To develop test specifications for the CCM certification examination, the researchers facilitated a meeting of the 11 subject matter experts in August 2014. They met in-person over a 2-day period to finalize which essential activity and knowledge statements would be accepted for inclusion in the test specification and to determine the weights of the knowledge content domains in the certification examination. The subject matter experts reviewed the following:

- The report of the study findings that included details about the mean importance and frequency ratings and standard deviations of each of the 125 essential activity and 94 knowledge statements.
- The study participants' ratings of the comprehensiveness of the study instrument in each of the essential activity and knowledge domains.
- The results of the subgroup analyses demonstrated by the reported IOAs.

These reviews were necessary for the subject matter experts to confidently determine whether a statement should be included in the test specifications and why. The subject matter experts reviewed the results related to each item, determining that statements with mean importance ratings at or above 2.5 were appropriate for inclusion in the test specifications. However, for those with lower than 2.5 ratings (i.e., those rated "slightly below important" or "of no importance"), the subject matter experts needed to deliberate to reach consensus whether to include in the test specifications or reject completely. The use of a cut-point value for accepting or rejecting a statement set at 2.50, which is the midpoint between moderately important and important ratings, was consistent with past studies and conformed to practice analysis research standards (Tahan, Huber, & Downey, 2006). See Part I of this two-part article series (Tahan et al., 2015; see Tables 2 and 3) for the detailed designations of "pass" and "fail" for each item.

Table 2 in this article summarizes the results of the test specification review. Out of a total of 125 essential activity statements, 115 were included in the test specifications. Of these, 106 statements passed the mean importance rating test and 9 failing statements were deemed necessary for inclusion on the test specifications by the subject matter experts. Of these 9, two statements pertained to involvement in activities of denials, appeals, and collaboration with physician advisors. These two statements reflected a main importance rating of 2.37 and 2.48, which are close to the required 2.5 rating. Five statements belonged in the vocational and rehabilitation services domain, covering activities such as arranging assessment for rehabilitation services, identification of services to achieve wellness and optimal functioning, recommendation for interventions on the basis of workers' compensation and disability management guidelines, and coordination of specialized rehabilitation services such as assistive devices. The mean importance ratings of these statements were 2.47, 2.40, 2.44, 1.99 and 2.14, respectively. The remaining two statements were in the outcomes evaluation and case closure domain and focused on collection of health care organization-related outcomes data and analysis of client and health care organization outcomes data. Their demonstrated mean importance ratings were 2.40 and 2.32, respectively.

Of the total 94 knowledge statements, 81 were included in the test specifications, of which 68 statements passed the mean importance rating test and

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TABLE 2
Number of Statements Included in the CCM Test Specification Review

Essential Activity or Knowledge Domain	Number of Passing Statements (≥2.50)	Number of Failing Statements (<2.50)	Total Number of Statements	Number of Passing Statements After Test Specification Meeting[a]
Essential activity domains				
1. Case finding and intake	14	0	14	14
2. Provision of case management services	48	0	48	48
3. Psychosocial and economic issues	18	0	18	18
4. Utilization management activities	12	3	15	14
5. Vocational and rehabilitation services	1	12	13	6
6. Outcomes evaluation and case closure	13	4	17	15
Total	*106 (84.80%)*	*19 (15.20%)*	*125 (100.00%)*	*115*
Knowledge domains				
1. Case management concepts and strategies	32	3	35	34
2. Health care management and delivery	13	7	20	16
3. Health care reimbursement	8	3	11	11
4. Rehabilitation and vocational concepts and strategies	1	13	14	6
5. Psychosocial and support systems	14	0	14	14
Total	*68 (72.30%)*	*26 (27.70%)*	*94 (100.00%)*	*81*

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[a]Indicates inclusion in the CCM test specifications.

13 failing statements were deemed necessary for inclusion in the test specifications by the subject matter experts. Of those included despite their low mean importance ratings, two belonged to the case management concepts and strategies domain and addressed case load calculation and program evaluation and research methods. Their demonstrated mean importance ratings were 2.37 and 2.44, respectively, which were close to the desirable 2.5. Another two statements pertained to the health care management and delivery domain, focused on health care analytics such as risk assessment and stratification, and new models of care such as patient-centered medical home and accountable care organizations. These statements revealed mean importance ratings of 2.24 and 2.47, respectively. In the health care reimbursement domain, three items were deemed important by the test specification committee despite having mean importance ratings being below 2.5. These statements addressed the areas of financial resources, military benefit programs, and new reimbursement and payment methodologies such as bundled payment and value-based purchasing; their mean importance ratings were above the moderately important rating of 2.0 at 2.14, 2.02, and 2.20, respectively.

Finally, five failed statements still deemed important by the test specification committee belonged to the rehabilitation and vocational concepts and strategies domain. These statements focused on knowledge of assistive devices, functional capacity evaluation, physical functioning and behavioral health assessment, rehabilitation postinjury or acute hospitalization, and vocational aspects of chronic illness and disability. Mean importance ratings were 2.24, 2.08, 2.48, 2.33, and 1.95, respectively. With the exception of the last statement, all rated above the moderately important rating of 2.0.

Essential activities and knowledge areas related to the vocational and rehabilitation services have been reviewed and analyzed on an ongoing basis since the 2009 role and function study. At that time, after careful examination and consideration, it was determined that the general practice of case management includes rehabilitation, not necessarily limited to vocational rehabilitation and counseling case managers/professionals or settings. It was also recognized that

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the degree of involvement in rehabilitation-type activities and use of rehabilitation-related knowledge varied on the basis of the professional background, specialization, and work setting of the case manager. As a result, after the 2009 study, the test specification committee updated the vocational rehabilitation domain to reflect the broader rehabilitation services and agreed to continue to carefully examine this domain going forward (Tahan & Campagna, 2010). In the 2014 role and function study, the subject matter experts who participated in the survey instrument development and were also practicing case managers debated the inclusion of survey items pertaining to vocational and medical rehabilitation. They concluded that it was important to have these areas covered on the survey.

In addition, during the test specification committee sessions, subject matter experts, who also were practicing case managers, carefully and thoughtfully reviewed the results of the activity and knowledge statements. They debated the below-2.5 mean importance ratings issue and agreed unanimously that case managers are involved in rehabilitation-related activities and that they apply knowledge of rehabilitation (vocational, medical, and physical functioning) in their practice. In fact, they noted that case managers regardless of practice setting must have general knowledge of rehabilitation to be able to identify the client who would benefit from rehabilitation services, and to assure that referrals are completed in a timely fashion and recommendations for rehabilitation services are incorporated into the client's plan of care. This was necessary for protecting clients' safety and to ensure quality care.

As summarized in Part I of this two-part article series, the researchers shared with the test specification committee the findings of the subgroup analyses using the IOA test statistic. The use of the IOA was essential to determine how similar or different the perceptions of the various participants (subgroups) were relevant to their importance ratings of the essential activities and knowledge areas. Mean importance ratings of items at or above 2.50 indicated an agreement that the content is important; in contrast those rated less than 2.50 indicated an agreement that the content was less important. Any differences in mean importance ratings among subgroups indicated that there was disagreement as to whether the content is important. The IOA computed scores usually range between 0 and 1, with 1 being perfect agreement and 0 being perfect disagreement. IOAs greater than or equal to 0.80 but less than 1.00 meant high agreement; less than 0.80 but greater than or equal to 0.70 indicated moderate agreement; and IOAs less than 0.70 meant disagreement existed among the subgroups' perceptions. A summary of the IOA ranges for essential activities by participant subgroups is as follows (detailed results are included in Part I [Tahan et al., 2015]):

- Job title: 0.20–0.97
- Percentage of time in direct case management services: 0.22–1.00
- Work/practice setting: 0.12–0.96
- Years of experience in case management: 0.84–0.99
- Requirement of work on weekends: 0.95–0.97
- Professional background/discipline: 0.63–0.97
- Presence of CCM certification: 0.93
- Geographic region: 0.93–1.00
- Highest academic degree achieved: 0.93–0.99
- Age: 0.84–1.00
- Sex: 0.95
- Ethnicity: 0.92–1.00

Because test specifications focus more on the knowledge areas than on the essential activities, it was important for members of the test specification committee to critically review the results of the subgroup IOAs for the knowledge areas before final decisions were made about the new blueprint for the CCM. This is because certification examinations usually test for knowledge of practice rather than the frequency (quantity) of the activities of practice. The IOA ranges for knowledge areas (see Table 3) by participant subgroups were as follows:

- Job title: 0.34–0.98
- Percentage of time in direct case management services: 0.46–0.99
- Work/practice setting: 0.36–0.97
- Years of experience in case management: 0.67–1.00
- Requirement of work on weekends: 0.87–0.91
- Professional background/discipline: 0.50–0.90
- Presence of CCM certification: 0.89
- Geographic region: 0.85–0.98
- Highest academic degree achieved: 0.85–0.97
- Age: 0.84–0.98
- Sex: 0.91
- Ethnicity: 0.86–0.99

As was stated in Part I (Tahan et al., 2015), the subgroup IOA analyses that did not show high agreements among the subgroups in both activities and knowledge areas included job titles, practice settings, and professional background. Two other subgroups in the knowledge areas analyses also showed IOAs less than 0.80; they were years of experience and percentage of time spent in direct case management. These subgroups demonstrated some varied degrees of agreement and disagreement. The takeaways from this analysis here will focus on those related to the knowledge areas.

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TABLE 3
Index of Agreement in Knowledge Areas Among Various Subgroups

Subgroup (*n* = Sample Size)	SG 1	SG 2	SG 3	SG 4	SG 5	SG 6	SG 7	SG 8	SG 9	SG 10	SG 11	SG 12	SG 13	SG 14	SG 15	SG 16
Job title																
SG 1: care/case manager/discharge planner/intake coordinator (*n* = 4,219)	–	0.83	0.88	0.6	0.48	0.66	0.44	0.57	0.88	0.82	0.82	0.91	0.83	0.45	0.98	0.9
SG 2: Disease manager (*n* = 61)	–	–	0.76	0.72	0.54	0.66	0.5	0.62	0.8	0.9	0.86	0.79	0.81	0.6	0.81	0.78
SG 3: Administrator/director of case management/care management (*n* = 502)	–	–	–	0.5	0.43	0.56	0.32	0.54	0.81	0.77	0.7	0.97	0.76	0.41	0.9	0.98
SG 4: Consultant (*n* = 203)	–	–	–	–	0.76	0.68	0.69	0.83	0.61	0.69	0.69	0.53	0.72	0.81	0.57	0.52
SG 5: Admissions liaison/bill auditor (*n* = 50)	–	–	–	–	–	0.52	0.62	0.84	0.51	0.57	0.57	0.46	0.61	0.8	0.48	0.45
SG 6: Workers' compensation specialist (*n* = 238)	–	–	–	–	–	–	0.76	0.6	0.61	0.61	0.67	0.6	0.68	0.53	0.64	0.59
SG 7: Disability specialist/rehabilitation counselor/vocational evaluator/work adjustment specialist (*n* = 82)	–	–	–	–	–	–	–	0.54	0.47	0.49	0.51	0.35	0.52	0.61	0.41	0.34
SG 8: Insurance benefits manager/utilization reviewer manager (*n* = 358)	–	–	–	–	–	–	–	–	0.59	0.63	0.63	0.57	0.68	0.81	0.6	0.56
SG 9: Social worker (*n* = 172)	–	–	–	–	–	–	–	–	–	0.81	0.79	0.84	0.76	0.46	0.88	0.81
SG 10: Health coach/health navigator (*n* = 56)	–	–	–	–	–	–	–	–	–	–	0.81	0.8	0.82	0.56	0.82	0.79
SG 11: Staff/clinical nurse (*n* = 142)	–	–	–	–	–	–	–	–	–	–	–	0.73	0.8	0.54	0.8	0.72
SG 12: Transitional care nurse/transition of care nurse (*n* = 43)	–	–	–	–	–	–	–	–	–	–	–	–	0.79	0.45	0.94	0.97
S 13: Case management educator (*n* = 52)	–	–	–	–	–	–	–	–	–	–	–	–	–	0.6	0.83	0.78
SG 14: Quality specialist (*n* = 73)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.47	0.44
SG 15: Care/case coordinator (*n* = 421)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.93
SG 16: Director, other/manager/supervisor (*n* = 824)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Primary work/practice setting																
SG 1: Ambulatory/outpatient care/mental health center (*n* = 410)	–	0.93	0.88	0.93	0.96	0.93	0.78	0.79	0.39	0.79	0.95	0.91	0.91	0.89	0.8	
SG 2: Disease management agency/program (*n* = 138)	–	–	0.89	0.94	0.88	0.85	0.74	0.76	0.38	0.73	0.89	0.84	0.97	0.82	0.77	
SG 3: Government agency/military treatment facility/Veterans Health Administration Agency (*n* = 346)	–	–	–	0.83	0.86	0.85	0.77	0.78	0.47	0.76	0.87	0.8	0.86	0.8	0.81	
SG 4: Health insurance company/reinsurance/telephonic (*n* = 2,157)	–	–	–	–	0.88	0.89	0.77	0.78	0.36	0.78	0.91	0.9	0.95	0.84	0.72	
SG 5: Home care agency (*n* = 169)	–	–	–	–	–	0.93	0.78	0.79	0.39	0.79	0.93	0.91	0.87	0.91	0.76	
SG 6: Hospital (*n* = 1,647)	–	–	–	–	–	–	0.74	0.8	0.4	0.82	0.94	0.93	0.86	0.93	0.72	
SG 7: Independent care/case management (*n* = 538)	–	–	–	–	–	–	–	0.93	0.53	0.78	0.77	0.76	0.78	0.76	0.72	
SG 8: Independent rehabilitation company/insurance affiliate/ rehabilitation facility acute/subacute (*n* = 293)	–	–	–	–	–	–	–	–	0.52	0.83	0.78	0.79	0.77	0.81	0.71	

(*continues*)

TABLE 3
Index of Agreement in Knowledge Areas Among Various Subgroups (*Continued*)

Subgroup (*n* = Sample Size)	SG 1	SG 2	SG 3	SG 4	SG 5	SG 6	SG 7	SG 8	SG 9	SG 10	SG 11	SG 12	SG 13	SG 14	SG 15	SG 16
SG 9: Liability insurer/life/disability insurer (*n* = 99)	–	–	–	–	–	–	–	–	–	0.56	0.36	0.39	0.39	0.48	0.53	
SG 10: Third-party administrator (*n* = 194)	–	–	–	–	–	–	–	–	–	–	0.76	0.81	0.72	0.81	0.78	
SG 11: Hospice (*n* = 28)	–	–	–	–	–	–	–	–	–	–	–	0.9	0.88	0.86	0.74	
SG 12: Long-term acute care/adult daycare/community residential program (*n* = 84)	–	–	–	–	–	–	–	–	–	–	–	–	0.85	0.91	0.73	
SG 13: Medical home/health home (*n* = 67)	–	–	–	–	–	–	–	–	–	–	–	–	–	0.83	0.76	
SG 14: Skilled nursing facility/long-term care facility (*n* = 76)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.71	
SG 15: Wellness organization (*n* = 34)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Percentage of time spent in provision of direct case management services																
SG 1: 0% (not involved in direct case management services at all) (*n* = 903)	–	0.61	0.57	0.53	0.54	0.52	0.52	0.55	0.51	0.49	0.46					
SG 2: 1% to 10% (*n* = 796)	–	–	0.88	0.86	0.87	0.87	0.85	0.84	0.82	0.82	0.85					
SG 3: 11%–20% (*n* = 406)	–	–	–	0.96	0.97	0.95	0.93	0.94	0.91	0.91	0.88					
SG 4: 21%–30% (*n* = 409)	–	–	–	–	0.99	0.99	0.97	0.96	0.96	0.96	0.93					
SG 5: 31%–40% (*n* = 313)	–	–	–	–	–	0.98	0.96	0.95	0.95	0.95	0.91					
SG 6: 41%–50% (*n* = 441)	–	–	–	–	–	–	0.98	0.95	0.95	0.95	0.94					
SG 7: 51%–60% (*n* = 483)	–	–	–	–	–	–	–	0.95	0.97	0.95	0.94					
SG 8: 61%–70% (*n* = 488)	–	–	–	–	–	–	–	–	0.96	0.94	0.88					
SG 9: 71%–80% (*n* = 810)	–	–	–	–	–	–	–	–	–	0.98	0.9					
SG 10: 81%–90% (*n* = 833)	–	–	–	–	–	–	–	–	–	–	0.93					
SG 11: 91%–100% (*n* = 1,785)	–	–	–	–	–	–	–	–	–	–	–					
Years of experience in case management																
SG 1: <1 (*n* = 36)	–	0.67	0.88	0.87	0.88	0.87	0.86	0.86	0.79	0.87						
SG 2: 1–2 (*n* = 362)	–	–	0.97	0.96	0.95	0.91	0.9	0.9	0.83	0.85						
SG 3: 3–5 (*n* = 1,060)	–	–	–	0.99	0.98	0.95	0.91	0.91	0.84	0.86						
SG 4: 6–10 (*n* = 1,758)	–	–	–	–	0.99	0.96	0.9	0.9	0.83	0.85						
SG 5: 11–15 (*n* = 1,614)	–	–	–	–	–	0.97	0.91	0.91	0.84	0.86						
SG 6: 16–20 (*n* = 1,326)	–	–	–	–	–	–	0.95	0.95	0.87	0.89						
SG 7: 21–25 (*n* = 834)	–	–	–	–	–	–	–	1	0.93	0.93						

(*continues*)

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TABLE 3
Index of Agreement in Knowledge Areas Among Various Subgroups (*Continued*)

Subgroup (*n* = Sample Size)	SG 1	SG 2	SG 3	SG 4	SG 5	SG 6	SG 7	SG 8	SG 9	SG 10	SG 11	SG 12	SG 13	SG 14	SG 15	SG 16
SG 8: 26–30 (*n* = 413)	–	–	–	–	–	–	–	–	0.93	0.93						
SG 9: 31–35 (*n* = 196)	–	–	–	–	–	–	–	–	–	0.89						
SG 10: ≥36 (*n* = 69)	–	–	–	–	–	–	–	–	–	–						
Professional background/discipline																
SG 1: Licensed/clinical/ masters social worker (*n* = 447)	–	0.9	0.89	0.5												
SG 2: Licensed professional clinical counselor/licensed professional counselor (*n* = 87)	–	–	0.9	0.57												
SG 3: Registered nurse (*n* = 6,772)	–	–	–	0.5												
SG 4: Occupational therapist registered/disability manager/vocational rehabilitation counselor/specialist (*n* = 200)	–	–	–	–												
Employer requires case managers to work on weekend																
SG 1: Yes (*n* = 2,871)	–	0.87	0.91													
SG 2: No (*n* = 3,765)	–	–	0.91													
SG 3: On call only (*n* = 1,031)	–	–	–													
CCM certification status																
SG 1: No (*n* = 844)	–	0.89														
SG 2: Yes (*n* = 6,824)	–	–														
Geographical region																
SG 1: New England (*n* = 484)	–	0.96	0.96	0.87	0.93	0.89	0.94	0.94	0.97							
SG 2: Middle Atlantic (*n* = 1,151)	–	–	0.96	0.85	0.95	0.89	0.96	0.98	0.95							
SG 3: East North Central (*n* = 1,218)	–	–	–	0.87	0.97	0.91	0.98	0.96	0.97							
SG 4: West North Central (*n* = 437)	–	–	–	–	0.88	0.91	0.87	0.83	0.9							
SG 5: South Atlantic (*n* = 1,700)	–	–	–	–	–	0.93	0.97	0.95	0.96							
SG 6: East South Central (*n* = 559)	–	–	–	–	–	–	0.91	0.87	0.93							
SG 7: West South Central (*n* = 935)	–	–	–	–	–	–	–	0.96	0.95							
SG 8: Mountain (*n* = 483)	–	–	–	–	–	–	–	–	0.93							
SG 9: Pacific (*n* = 692)	–	–	–	–	–	–	–	–	–							
Highest educational degree																
SG 1: Associate's degree (*n* = 1,590)	–	0.96	0.96	0.93	0.85											
SG 2: Nursing diploma (*n* = 689)	–	–	0.94	0.95	0.87											
SG 3: Bachelor's degree (*n* = 3,405)	–	–	–	0.97	0.89											

(*continues*)

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TABLE 3
Index of Agreement in Knowledge Areas Among Various Subgroups (*Continued*)

Subgroup (*n* = Sample Size)	SG 1	SG 2	SG 3	SG 4	SG 5	SG 6	SG 7	SG 8	SG 9	SG 10	SG 11	SG 12	SG 13	SG 14	SG 15	SG 16
SG 4: Master's degree (*n* = 1,900)	–	–	–	–	0.93											
SG 5: Doctoral degree (*n* = 84)	–	–	–	–	–											
Age																
SG 1: ≤30 (*n* = 94)	–	0.96	0.94	0.96	0.94	0.91	0.89	0.85	0.84	0.85						
SG 2: 31–35 (*n* = 244)	–	–	0.96	0.98	0.96	0.94	0.91	0.87	0.84	0.85						
SG 3: 36–40 (*n* = 431)	–	–	–	0.98	0.98	0.96	0.94	0.89	0.84	0.85						
SG 4: 41–45 (*n* = 786)	–	–	–	–	0.98	0.96	0.94	0.89	0.84	0.85						
SG 5: 46–50 (*n* = 1,052)	–	–	–	–	–	0.98	0.96	0.91	0.86	0.87						
SG 6: 51–55 (*n* = 1,701)	–	–	–	–	–	–	0.98	0.94	0.88	0.89						
SG 7: 56–60 (*n* = 1,890)	–	–	–	–	–	–	–	0.96	0.9	0.89						
SG 8: 61–65 (*n* = 1,097)	–	–	–	–	–	–	–	–	0.95	0.94						
SG 9: 66–70 (*n* = 292)	–	–	–	–	–	–	–	–	–	0.95						
SG 10: >70 (*n* = 68)	–	–	–	–	–	–	–	–	–	–						
Sex																
SG 1: Female (*n* = 7,251)	–	0.91														
SG 2: Male (*n* = 327)	–	–														
Ethnicity																
SG 1: American Indian or Alaska Native (*n* = 41)	–	0.86	0.87	0.88	0.9	0.89										
SG 2: Asian (*n* = 214)	–	–	0.99	0.98	0.96	0.86										
SG 3: Black or African American (*n* = 648)	–	–	–	0.99	0.97	0.87										
SG 4: Hispanic or Latino (*n* = 245)	–	–	–	–	0.98	0.88										
SG 5: Two or more ethnicities or multiethnic (*n* = 108)	–	–	–	–	–	0.9										
SG 6: White–non-Hispanic (*n* = 6,148)	–	–	–	–	–	–										

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Note. SG = subgroup.

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When comparing the central job title subgroup of case/care manager against the other 15 job title subgroups (see Table 3), varied levels of disagreement are noted to exist with consultant, admission liaison, disability manager, insurance benefit manager, workers' compensation, and quality specialist titles. The lower levels of agreement observed may be attributed to small subgroup size, highly specialized practice, or being removed from direct case management service provision, such as with quality specialist and insurance benefit manager titles.

Concerning the primary work/practice settings, if the health insurance subgroup is considered as the central subgroup for the comparative analysis (it being the largest of the subgroups), among the 15 subgroups the vast majority of the IOAs in the knowledge areas analyses were above 0.80, except for the liability and disability insurer subgroup, which showed an IOA of 0.36. Other low IOAs were for the wellness subgroup at 0.72, the independent case management subgroup at IOA 0.77, and independent rehabilitation company and third-party administrator subgroups at 0.78 each.

Upon examination of the professional background subgroups, the disagreements were prominent in the subgroup with rehabilitation backgrounds (i.e., physical therapy, disability manager, and vocational rehabilitation). The IOAs for knowledge areas ranged between 0.50 and 0.90. This is no surprise; it is likely related to the below-acceptable mean importance ratings noted in the vocational and rehabilitation domains of survey knowledge statements. For percentage of time spent in provision of direct case management services, the subgroup that demonstrated disagreement was the no (or 0%) direct involvement subgroup, with IOAs ranging between 0.46 and 0.61 for the knowledge areas. Interestingly, however, eight IOAs were above 0.50, implying a about 50–50 agreement/disagreement between the 0% direct care subgroup and the others. This demonstrates that despite the lack of involvement in provision of direct case management services, this subgroup still agreed 50% of the time with the other subgroups on what knowledge areas were important for the practice.

Subgroup analyses on the basis of years of experience demonstrated acceptable to perfect IOAs in knowledge areas (0.67–1.00), except for the subgroup of less than 1 year of experience. This subgroup had an IOA of 0.67 when compared against the subgroup with 1–2 years of experience. This is likely attributable to being new to case management practice.

Factor/Principal Component Analysis

Analyses of the 2014 role and function study findings also included a factor analysis performed by the researchers to examine the validity and appropriateness of the theoretical domains that composed the case manager role and function study instrument. This analysis is an integral step in the test specification work to inform the content and construct of the CCM certification examination. Factor analysis, also referred to as domain analysis or principal component analysis, is a statistical method designed to reduce data or categorize variables (data) into thematic components (e.g., domains, subject areas, and content areas). This analysis applies the mean importance ratings results into a mathematical test to produce clusters of statements that, when examined carefully, possess similar characteristics and allow higher-level abstractions. This involves clustering micro and unique case management activities and knowledge topics into higher-order functions or knowledge areas.

The researchers tested the appropriateness of the six theoretical activity and six theoretical knowledge domains used in the study instrument development. This process is known as theoretical or forced factor analysis. However, the results were not favorable. Therefore, the researchers then pursued the exploratory factor analysis method whereby all activity statements were combined as one single section and the knowledge statements as another single section, and based on statistical analyses the system then mathematically clustered the statements into groups.

To complete the exploratory factor analysis, the researchers tested a number of different factor solutions (two, three, four, five, and six components). This test ultimately produced an acceptable six-factor solution for the essential activity domains (see Table 4) and five-factor solution for the knowledge domains (see Table 5). Table 6 summarizes the results of the factor analysis and the number of statements included in each factor with their associated Cronbach α computations. Specification of where each of the statements belonged in the factors was based on the exploratory factor analysis results. Notably, statements that were rejected from inclusion in the test specification process because of their being of low or no importance were excluded from the factor analysis as they should have.

Once the factor analysis was completed, the researchers conducted a reliability analysis using Cronbach α (see Table 6), which is a measure of internal consistency and homogeneity of the factor. Internal consistency determines whether several variables are measuring the same construct. The higher Cronbach α is, the more likely the variables are measuring the same construct. Experts have stated that Cronbach α values greater than 0.70 are desirable.

Cronbach α computations ranged between 0.79 and 0.99 for the essential activity domains (factors based on the exploratory factor analysis) and 0.86

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TABLE 4
Exploratory Factor Analysis Results—Essential Activities

Delivering case management services
Use information from analytic tools (e.g., screening tools, readmission information, length of stay, predictive modeling, and high-dollar reporting) in the case finding process
Identify cases that meet eligibility criteria for case management services (e.g., multiple chronic illnesses and polypharmacy)
Review information gathered about the client (e.g., diagnosis, comorbidity, history, language, prognosis, medications, prior services, and health insurance status)
Perform a client assessment using established case management processes and standards
Validate information gathered with the client/health care team
Assess client's current physical, emotional, cognitive, psychosocial, and vocational functioning compared with client's baseline function
Assess client's understanding, readiness, and willingness to engage in case management services
Identify barriers that affect client's engagement in case management services
Assess client's relationship with key stakeholders (e.g., referral source, care providers, payors, and employers)
Conduct a comprehensive intake interview
Verify client's health history and condition (e.g., medical, psychosocial, vocational, and financial) with client, family, and health care team
Identify client's needs and concerns (e.g., gaps in care and problem list)
Prioritize client's needs and concerns
Establish comprehensive case management plan, including goals, objectives, interventions, outcomes, and timeframes, in collaboration with client and key stakeholders (e.g., providers, payors, and employers)
Consider both behavioral and nonbehavioral health issues and concerns when developing the case management plan of care
Coordinate care with key providers (e.g., attending physician, specialist, primary care practitioner, therapist, and authorized treating physician)
Develop interventions that address barriers to goal achievement
Educate client regarding care choices and resources
Counsel client on health condition and care interventions/options
Engage client's active participation in the development of their short- and long-term health goals
Establish working relationships with referral sources and multidisciplinary care team
Develop goals that identify the client's health care and safety needs while considering the referral source requirements
Advocate for clients (e.g., address health care needs and negotiate extracontractual benefits)
Coordinate services for the client's safe transition along the continuum of care/health and human services
Document case management assessment findings and plan of care (e.g., goals, objectives, interventions, outcomes, and timeframes)
Communicate case management assessment findings and plan of care to client and key stakeholders (e.g., providers, payors, and employers)
Implement the case management plan
Facilitate client's empowerment through the development of self-management skills
Coordinate delivery of health care services (e.g., home health and durable medical equipment)
Maintain ongoing communication with the client and key stakeholders (e.g., providers, payors, and employers)
Communicate client's summary of care to providers (e.g., physician, case managers, social worker, and nurse) at the time of transition to the next level of care
Communicate client's progress in achieving the goals, objectives, and outcomes of the case management plan to the client and key stakeholders (e.g., providers, payors, and employers)
Document client's progress with the case management plan (e.g., goals, objectives, outcomes, and necessary modifications)
Modify plan to deliver health care services (e.g., home health, durable medical equipment, and community resources) to meet client's changing needs and condition
Facilitate the completion of the client's transition of care summary
Follow up on the client postepisode of care (e.g., hospitalization, clinic visit, and telephonic triage call)
Develop plan for the client's transition to the next level of care, provider, or setting
Discuss with client and health care team potential costs of treatment options, including cost comparisons and alternative services
Evaluate client's understanding of care instructions (e.g., verbalize, demonstrate, and teach back)
Clarify client's care instructions
Reinforce care instructions given by involved providers
Assess client's language needs

(*continues*)

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TABLE 4
Exploratory Factor Analysis Results—Essential Activities (*Continued*)

Assess client's health literacy
Assess client's social, educational, psychological, and financial/economic status (e.g., income, living situation, insurance, benefits, employment, and health literacy)
Assess client's social, emotional, and financial support systems (e.g., family, friends, significant others, and community groups)
Identify multicultural, spiritual, and religious factors that may affect the client's health status
Incorporate the effects of the client's multicultural, spiritual, and religious factors in the development of the plan of care and service delivery
Evaluate capability and availability of the client's caregiver to provide the needed services
Assess respite needs of client's caregiver (e.g., fatigue and burnout)
Assess client's level of readiness for change and involvement in lifestyle behavior changes
Use client engagement techniques (e.g., motivational interviewing, counseling, coaching, and behavioral change)
Incorporate client's health insurance benefits (e.g., covered treatments and carve outs) into the development of the case management plan
Identify when case management services are no longer indicated for the client
Discuss the need to conclude case management services with the client and stakeholders
Conclude case management services
Document case closure (e.g., rationale, discharge summary, transfer summary, and cost savings)
Accessing financial and community resources
Identify cases that would benefit from additional types of services (e.g., community resources, disease management, physical therapy, durable medical equipment, vocational services, evaluations, counseling, and assistive technology)
Coordinate client's social service needs (e.g., housing, transportation, food/meals, and financial)
Consult with other professionals (e.g., medical, vocational, rehabilitation, and life care planning)
Research community resources applicable to the client's situation
Coordinate community resources applicable to the client's situation
Initiate referrals to service providers as identified in the case management plan
Research alternate treatment programs (e.g., pain management clinic, home health agencies, and community-based services/resources)
Coordinate language interpreter services
Coordinate resources that meet the respite needs of client's caregiver
Identify the potential need/eligibility for private- and public-sector funding sources for services (e.g., Medicaid, charitable funds, State Waiver Programs, Affordable Care Act subsidies, and Veterans Administration benefits)
Identify formal and informal community resources and support programs
Refer clients to formal and informal community resources and support programs
Educate the client on private- and public-sector funding sources and limitations of services
Facilitate client access to programs, services, and funding (e.g., SSI, SSDI, Medicare, Medicaid, Affordable Care Act subsidies, and Veterans Administration benefits)
Delivering rehabilitation services
Facilitate achievement of optimal wellness, functioning, or productivity (e.g., return to work, return to school, and other activities)
Arrange for rehabilitation assessment and services
Collaborate with health care providers to clarify restrictions and limitations related to client's physical or vocational functioning
Identify the need for specialized services to facilitate achievement of optimal level of wellness or functioning (e.g., work hardening, ergonomics, and therapies)
Assess the need for environmental modifications to address accessibility barriers (e.g., worksite and home)
Recommend case management interventions or services on the basis of workers' compensation or disability management treatment guidelines
Coordinate specialized rehabilitative services or assistive devices (e.g., prosthetics, text telephone device, teletypewriter, telecommunication device for the deaf, orientation, and mobility services)
Managing utilization of health care services
Identify cases with potential for under-/overutilization of health care services (e.g., avoidable encounters to health care services such as readmissions to the hospital or emergency department)
Assess the client for needed interventions and level of care (e.g., observation status, acute, and rehabilitation)
Analyze the case management plan for cost-effectiveness including feasibility of implementation
Use cost-effective case management strategies

(*continues*)

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TABLE 4
Exploratory Factor Analysis Results—Essential Activities (*Continued*)

Review documentation for determination of medical necessity and benefit coverage (e.g., coverage, exclusions, and extracontractual provisions)
Identify clients who would benefit from alternate levels of care (e.g., subacute, skilled nursing, and homecare), applying specified eligibility criteria including availability of health insurance benefits for that level
Discuss appropriateness of level of care with the health care team
Educate the health care team about utilization of resources in accordance with established criteria (e.g., clinical and financial) and regulatory requirements
Obtain required preauthorization or notification of services on the basis of payor requirements
Perform utilization management activities (e.g., authorization or denial for services, termination of benefits, precertification for services, and concurrent/retrospective review) using recognized criteria, guidelines, and benefit plan language
Monitor utilization management activities (e.g., authorization or denial of services, termination of benefits, precertification for services, and concurrent/retrospective review) using recognized criteria, guidelines, and benefit plan language
Identify actual and potential delays in service and care progression
Mitigate identified delays in service and care progression
Advocate for the provision of health care services in the least restrictive setting
Perform service denial appeal (not certified/not authorized) or assist in the appeal process
Collaborate with the physician advisor in mitigating service denials
Evaluate the cost-effectiveness of treatments and services
Evaluating and measuring quality and outcomes
Use evidence-based practice guidelines in the development of the case management plan
Monitor client's progress in achieving the goals, objectives, and outcomes of the case management plan at specified timeframes (e.g., direct observation, interviews, and record reviews)
Evaluate health care services received (e.g., home health, durable medical equipment, and community resources)
Collect client-related outcomes data (e.g., clinical, financial, utilization, quality, and client experience)
Collect health care organization/agency-related outcomes data (e.g., clinical, financial, productivity, utilization, quality, and client experience)
Analyze client and health care organization/agency-related outcomes data
Document client's response to case management interventions
Evaluate the availability and timeliness of delivered treatments and services (e.g., variances, delays in care, and avoidable days)
Evaluate the quality of treatments, interventions, and services
Evaluate the effectiveness of the case management plan (e.g., goals, objectives, interventions, outcomes, timeframes, and cost-effectiveness)
Evaluate actual client outcomes in relation to expected outcomes
Coordinate referrals for potential quality of care and risk management issues, or client's complaints/grievances
Refer appropriate cases for clinical peer review (e.g., physician review and quality review)
Adhering to ethical, legal, and practice standards
Comply with legal, regulatory, and accreditation requirements pertinent to the case (e.g., informed consent, Health Insurance Portability and Accountability Act, and Americans With Disabilities Act)
Coordinate accommodations for persons with disabilities by adhering to the Americans With Disability Act
Protect client's privacy and confidentiality
Adhere to ethical standards that govern case management practice and other professional licensure or certification
Adhere to legal, regulatory, and accreditation standards that govern case management practice and professional licensure or certification
Document case management (e.g., notes) with accuracy and in a timely manner to comply with state, federal, and payor/contractual regulations
Facilitate the completion of legal documents (e.g., advance directive, health care proxy, financial power of attorney, advance, and guardianship)
Educate clients regarding their rights to appeal service denials

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Note. SSDI = Social Security Disability Insurance; SSI = Supplemental Security Income.

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TABLE 5
Exploratory Factor Analysis Results—Knowledge Areas

Care delivery and reimbursement methods
Adherence to care regimen
Case management process and tools
Cost-containment principles
Factors used to identify client's acuity or severity levels
Goals and objectives of case management practice
Management of clients with multiple chronic illnesses
Negotiation techniques
Transitions of care/transitional care
Alternative care facilities (e.g., assisted living, group homes, and residential treatment facilities)
Continuum of care/continuum of health and human services
Health care delivery systems
Health care providers including behavioral health and community vendors
Hospice, palliative, and end-of-life care
Interdisciplinary care team
Levels of care and care settings
Management of acute and chronic illness and disability
Medication therapy management and reconciliation
Models of care (e.g., patient-centered medical home, accountable care organization, health home, special needs plan, and chronic care model)
Roles and functions of case managers in various settings
Roles and functions of other providers in various settings
Coding methodologies (e.g., diagnosis-related group, Diagnostic and Statistical Manual of Mental Disorders, International Classification of Diseases, and Current Procedural Terminology)
Financial resources (e.g., waiver programs, special needs trusts, and viatical settlements)
Insurance principles (e.g., health, disability, workers compensation, and long-term care)
Managed care concepts
Military benefit programs (e.g., TRICARE, VA, CHAMPVA, and TRICARE for Life)
Private benefit programs (e.g., pharmacy benefits management, indemnity, employer-sponsored health coverage, individual-purchased insurance, home care benefits, and COBRA)
Public benefit programs (e.g., SSI, SSDI, Medicare, and Medicaid)
Reimbursement and payment methodologies (e.g., bundled, case rate, prospective payment systems, and value-based purchasing)
Utilization management principles and guidelines
Physical functioning and behavioral health assessment
Psychosocial concepts and support systems
Behavioral change theories and stages
Client activation
Client empowerment
Client engagement
Conflict resolution strategies
Health coaching
Interpersonal communication (e.g., group dynamics and relationship building)
Interview techniques
Resources for the uninsured or underinsured
Abuse and neglect (e.g., emotional, psychological, physical, and financial)
Behavioral health concepts (e.g., dual diagnoses; substance use, abuse, and addiction)
Client self-care management (e.g., self-advocacy, self-directed care, informed decision making, shared decision making, and health education)

(*continues*)

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TABLE 5
Exploratory Factor Analysis Results—Knowledge Areas (*Continued*)

Community resources (e.g., elder care services, fraternal/religious organizations, government programs, meal delivery services, and pharmacy assistance programs)
Crisis intervention strategies
End-of-life issues (e.g., hospice, palliative care, withdrawal of care, and do not resuscitate)
Family dynamics
Health literacy assessment
Multicultural, spiritual, and religious factors that may affect the client's health status
Psychological and neuropsychological assessment
Psychosocial aspects of chronic illness and disability
Spirituality as it relates to health behavior
Support programs (e.g., support groups, pastoral counseling, disease-based organizations, and bereavement counseling)
Wellness and illness prevention programs, concepts, and strategies
Rehabilitation concepts and strategies
Vocational and rehabilitation service delivery systems
Assistive devices (e.g., prosthetics, text telephone device, teletypewriter, telecommunication device for the deaf, orientation, and mobility services)
Functional capacity evaluation
Rehabilitation postinjury, including work-related
Rehabilitation posthospitalization or acute health condition
Vocational aspects of chronic illness and disability
Quality and outcomes evaluation and measurement
Accreditation standards and requirements
Case load calculation
Cost–benefit analysis
Data interpretation and reporting
Program evaluation and research methods
Quality and performance improvement concepts
Quality indicator techniques and applications
Sources of quality indicators (e.g., Centers for Medicare and Medicaid Services, Utilization Review Accreditation Commission, National Committee for Quality Assurance, National Quality Forum, and Agency for Healthcare Research and Quality)
Types of quality indicators (e.g., clinical, financial, productivity, utilization, quality, and client experience)
Health care analytics (e.g., health risk assessment, predictive modeling, Adjusted Clinical Group)
Ethical, legal, and practice standards
Case recording and documentation
Ethics related to care delivery (e.g., advocacy, experimental treatments and protocols, end of life, and refusal of treatment/services)
Ethics related to professional practice (e.g., code of conduct and veracity)
Health care and disability-related legislation (e.g., Americans With Disabilities Act, Occupational Safety and Health Administration regulations, Health Insurance Portability and Accountability Act)
Legal and regulatory requirements
Privacy and confidentiality
Risk management
Self-care and well-being as a professional
Standards of practice
Critical pathways, standards of care, practice guidelines, and treatment guidelines
Meaningful use (e.g., electronic exchanges of summary of care, reporting specific cases to specialized client registries, structured electronic transmission of laboratory test results, and use of electronic discharge prescriptions)
Affordable Care Act

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Note. CHAMPVA = Civilian Health and Medical Program of the Department of Veterans Affairs; COBRA, Consolidated Omnibus Budget Reconciliation Act; SSDI = Social Security Disability Insurance; SSI = Supplemental Security Income; VA = Veterans Affairs.

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TABLE 6
Results of Final Factor Analysis and Associated Reliability Coefficients

Factor	Cronbach α	Number of Items
Essential activities—six-factor solution		
1. Delivering case management services	0.99	55
2. Managing utilization of health care services	0.95	17
3. Accessing financial and community resources	0.96	15
4. Evaluating and measuring quality and outcomes	0.94	13
5. Delivering rehabilitation services	0.93	7
6. Adhering to ethical, legal, and practice standards	0.79	8
Overall	0.99	115
Knowledge areas—five-factor solution		
1. Psychosocial concepts and support systems	0.97	23
2. Care delivery and reimbursement methods	0.96	30
3. Quality and outcomes evaluation and measurements	0.91	10
4. Ethical, legal, and practice standards	0.86	12
5. Rehabilitation concepts and strategies	0.90	6
Overall	0.98	81

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and 0.97 for the knowledge domains. Overall, Cronbach α values for activity and knowledge domains were 0.99 and 0.98, respectively—highly acceptable results. The test specification committee then reviewed the results and accepted the domains. Each domain was then named on the basis of the themes covered by the statements included in the domain, as follows:

New Essential Activities Domains

1. Delivering case management services
2. Accessing financial and community resources
3. Delivering rehabilitation services
4. Managing utilization of health care services
5. Evaluating and measuring quality and outcomes
6. Adhering to ethical, legal, and practice standards

New Knowledge Domains

1. Care delivery and reimbursement methods
2. Psychosocial concepts and support systems
3. Rehabilitation concepts and strategies
4. Quality and outcomes evaluation and measurements
5. Ethical, legal, and practice standards

Test Specifications of the CCM Certification Examination

After inclusion decisions and factor analysis results were finalized, each subject matter expert on the test specification committee was asked to complete an anonymous weighting sheet to assign a percentage (out of 100) for each of the five new knowledge domains. The new domains would become the CCM certification examination content domains. This step in the process focused on knowledge domains only because, as previously stated, certification examinations test knowledge necessary for effective and competent performance in one's role rather than the frequency and type of activities one engages in. Researchers collected the weighting sheets and computed descriptive statistics including measures of central tendency. These consisted of mean, median, standard deviation, mode, and minimum and maximum weights given by domain. The subject matter experts reviewed the results and unanimously agreed on the final recommended test weights for each knowledge domain. Results are shown in Table 7.

A significant finding in the role and function study was the elevation of the importance of two domains: quality management and ethical and legal practice. Previously, following the 2009 role and function study, ethics and quality management were embedded in other domains in the form of subdomains or major knowledge topics. On the basis of the results of the 2014 role and function study, they

A significant finding in the role and function study was the elevation of the importance of two domains: quality management and ethical and legal practice. Previously, following the 2009 role and function study, ethics and quality management were embedded in other domains in the form of subdomains or major knowledge topics. On the basis of the results of the 2014 role and function study, they have been designated as separate domains. The growing prominence of these two areas represents a major shift for case managers in the importance of these knowledge requirements and their associated activities.

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TABLE 7
CCM Test Specification Summary

Domain	Number of Knowledge Statements	Number of Examination Items	Examination Items (%)
1. Care delivery and reimbursement methods	30	47	31
2. Psychosocial concepts and support systems	23	40	27
3. Quality and outcomes evaluation and measurements	10	27	18
4. Rehabilitation concepts and strategies	6	13	9
5. Ethical, legal, and practice standards	12	23	15
Total	81	150	100

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have been designated as separate domains. The growing prominence of these two areas represents a major shift for case managers in the importance of these knowledge requirements and their associated activities. Case managers are expected to ensure that their activities and interventions adhere to ethical and legal standards at all times. This expectation further attests to the high-functioning scrutiny and analysis required to address the complexity of case management practice and the matters that case managers deal with daily. To set standards guiding the ethical practice of case management, the CCMC first adopted a Code of Professional Conduct in 1996 to assure quality and protect the public interest. Adherence to the Code is mandatory for every board-certified case manager holding the CCM credential. CCMC recently revised the Code and subsequently published it on its website in early 2015 (Commission for Case Manager Certification, 2015).

Preparing for the Case Management Role

The demographic information gathered in the survey on educational background revealed that 70.3% of those surveyed held a bachelor's degree or higher (44.4% bachelor's degree, 24.8% master's degree, and 1.1% doctorate), a 5 percentage point gain from 2009. In addition, 20.7% held associate degrees and 9.0% a nursing diploma. Despite the increase in demand for case managers who are prepared at the bachelor's degree or higher, training of those who assume the role remains a challenge.

Table 8 shows the diversity of the approaches case managers pursued to prepare themselves for the case management role. This is an area of great opportunity for the profession. Despite the increasing demand for case managers and the demonstrated value they offer as evident in hours of work, credentials, and employer's compensation for certifications (Tahan et al., 2015), there is a continued lack of academic programs with special focus on the practice of case management. Table 8 shows that the vast majority (89%) of survey participants said on-the-job training was the primary method used to learn the practice of case management; 6.35% reported to use conferences and seminars, 0.40% used both of these modalities, and 0.81% were self-directed or self-taught. Participants reported to use formal academic programs or a combination of formal and on-the-job training, 1.37% and 0.16%, respectively. This indicates that only 117 of the 7,668 participants completed formal academic training in case management. Despite the recent increase in popularity and acceptance of the value of case management by employers, academicians have yet to fully realize the value of offering formal academic programs in case management. The lack of formal academic preparation of case managers for their roles is primarily related to the limited school or university-based degree granting programs. Treiger and Fink-Samnick (2015, p. 37) reported the availability of only six such programs in the United States, two of which are offered online.

Observations Based on Open-Ended Questions

To gather further input about current case management practice, as well as practitioners' views on how

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TABLE 8
Methods Case Managers Used to Learn Case Management Practice

Primary Method	*n*	Percentage (%)
Conferences and seminars	486	6.35
Conferences and seminars, plus on-the-job training	31	0.40
Formal degree granting program	105	1.37
Formal degree granting program, plus on-the-job training	12	0.16
On-the-job training	6,817	89.04
Postgraduate certificate program	123	1.61
Self-directed/self-taught	62	0.81
Other	20	0.26
Total	7,656	100.00
Missing	12	
Grand total	7,668	

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the field continues to evolve, survey participants were asked two open-ended questions:

1. "What professional development and/or continuing education offerings could you use to improve your performance in your current role?"
2. "How do you expect your role as a case management professional to change over the next few years? What essential activities will be performed and what knowledge will be needed to meet changing job demands?"

Researchers analyzed these responses qualitatively on the basis of the most common themes evident in the comments. In the area of professional development or educational offerings, participants expressed interest in topics related to health insurance, reimbursement methods, regulations, and preferred learning approaches.

- Keeping up-to-date with constantly changing rules and regulations, a case manager must be aware of all policy changes to be effective in their positions.
- Keeping up-to-date with insurance and reimbursement policies and knowing the possible reimbursement strategies for various situations.
- Education on new Medicare/Medicaid policies is crucial because of the growing importance and prevalence of these plans.
- Accessibility and generalization of possible continuing education opportunities such as online or 1-day workshops.

As for the changes in the case manager role expected to occur in few years, participants seemed to focus on reimbursement, Medicare and Medicaid benefit programs, relationships among health care providers, and case management across diverse practice or care settings.

- The expansion of cost-effective reimbursement strategies to deal with current reimbursement policies.
- A higher focus on the complex relationships among health care providers from different professional or educational backgrounds and across the diverse care settings.
- Case management solutions for specialized and nontraditional providers.
- Region-based health care systems, policies, and procedures.
- Case management in the home setting and increased role autonomy of health care advisors.

Conclusion

The role and function study highlights two highly important and interconnected reasons for conducting a case management practice analysis every 5 years. The first is to ascertain the current state of case management practice by surveying broadly among certified and noncertified practitioners in a variety of practice settings across the spectrum of health and human services. The research findings, and in particular the detailed descriptions and weightings of the essential activities and knowledge domains, inform the content and composition of the CCM certification examination. Such assurance is essential not only to the case management professional, but also to the many and varied stakeholders in the health care system, especially the public served by case managers. Certification examinations based on current evidence assure that those involved in the role possess advanced competence that ultimately contributes to safeguarding the public's interest.

The role and function study is also valuable in providing a way to understand how the practice continues to evolve, as well as in what ways it responds to the changing dynamics of health care delivery as a result of socioeconomic and political factors. For example, the results of this study show that case management practice has been positively affected by the Patient Protection and Affordable Care Act of 2010, as well as by value-based purchasing and hospital reduction of avoidable readmission programs.

A frequently-conducted role and function study of case management also contributes an in-depth understanding of the practice to incorporate into both formal and informal professional development activities for case managers (e.g., training, education, and academic programs), which must aim at ongoing advancement of competencies, skills, and knowledge of those involved in the practice.

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