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The Evolving Role of the Professional Case Manager

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

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ABSTRACT

Purpose: The purpose of the national role and function study was to identify the essential activities and necessary knowledge areas for effective professional case management practice from the perspective of those directly involved. The study also aimed to inform the relevance and currency of the blueprint for the case management certification examination.

Primary Practice Settings: The national study covered the diverse case management practices and/or work settings across the full continuum of health and human services and numerous professional disciplines.

Methodology and Sample: This cross-sectional descriptive study used the practice analysis method and online survey research design. It employed a purposive sample of 2,810 certified and not yet certified case managers who responded to an open participation link made available as an online survey. The final study sample supported the conduct of meaningful statistical analyses including multiple subgroup comparisons.

Results: The study identified the common activities (6 domains) and knowledge areas (5 domains) necessary for effective performance by professional case managers. Part I of this 2-part article series described the background of the participants and their perspectives of the practice and the knowledge applied by those responsible for the case manager's role. Part II, as shared in this article, reports on the factor/principal component analysis and how such activity informed the needed update of the test specifications for the Certified Case Manager (CCM) certification examination. The update reflects the continued evolution of the professional case management practice and ensures that the examination remains current and relevant. Of special note is the maturation of the case management practice; for example, greater emphasis on quality, safety, and outcomes; baccalaureate or higher education; and recognition of the value of certification. In addition, the 2019 role and function study has revealed that utilization review/management is evolving potentially as a function that is separate from that of the case manager.

Implications for Case Management Practice: The study has identified the essential activities and knowledge areas of case management practice at both the micro and macro levels. These findings represent the substantive evidence of practice, keeping the CCM credentialing examination evidence-based and maintaining its validity for evaluating the competency of professional case managers. They have also documented the evolution of the practice over the past 5 years. Moreover, the findings may inform the development of programs and curricula for the training and advancement of case managers. The study instrument also is beneficial for use in further research into professional case management practice.

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

The health care industry remains a dynamic environment, shaped by sociopolitical, regulatory, legislative, and economic forces. A growing trend toward value-based care and reimbursement continues to put a greater emphasis on quality and safety to enhance the patient care experience and maintain the utilization of cost-conscious health and human services. As Gentry and Badrinath (2017) observed, value-based health care must focus primarily on what is most valued by patients and their support systems. Thus, far more than patient satisfaction or engagement alone, there has been a revolution in the patient experience of care by optimizing quality, safety, and the provision of timely care. At the same time, within the health care industry, providing value-based care carries financial risk, particularly

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Professional case management also spans a broad array of job titles and practice (care) settings across the continuum of health and human services. Thus, certification provides a common ground of competency and knowledge, which is vital for consumer protection and the professional stature of those who achieve it.

in terms of pay for performance (pay for value) and reimbursement for the necessary services provided, often coordinated by case managers. The need to meet these escalating demands is contributing to an ongoing evolution in the role of the professional case manager. Essential changes in this role are occurring for it to remain current and receptive to the important dynamics of the healthcare environment.

Across the spectrum of health and human services, professional case managers are on the front lines of ensuring quality, safety, cost consciousness, and other goals of value-based care delivery. This occurs as professional case managers assume accountability and undertake responsibility for impactful care management, care coordination, and transitions of care roles to achieve desired outcomes for all stakeholders—most importantly the consumers of these services, the providers of these services, and the payers for such services. Care coordination, which is linked to professional case management as an essential function, is key to better integration of care delivery and managing costs (Joo & Huber, 2018). The responsibilities of the professional case manager extend beyond the case management process; they also include measurement and evaluation of the outcomes achieved by the entire care team and the healthcare organization (Tahan, Watson, & Sminkey, 2015). These mounting responsibilities call for case managers to provide assurance of up-to-date competency, knowledge, abilities, and skills; these are best accomplished through the achievement of certification in the specialty practice of case management.

Professional case managers come from a variety of professional backgrounds; in addition to nursing, which remains the dominant discipline, these include: social work; vocational rehabilitation; disability management; counseling; occupational, physical, and respiratory therapy; pharmacy; and others. Professional case management also spans a broad array of job titles and practice (care) settings across the continuum of health and human services. Thus, certification provides a common ground of competency and knowledge, which is vital for consumer protection and the professional stature of those who achieve it. To meet this need, 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 CCM role and function study (described in Part I of this two-part article; Tahan, Kurland, & Baker, 2020). The CCMC is one of a few case management certification organizations to undertake a statistically relevant study of its certificants and to use that study data to inform the content of its certification examination. By meticulously and systematically exploring the day-to-day responsibilities of professional case managers—the knowledge they consider to be important and the activities they engage in frequently—the role and function study provides:

- Statistically relevant data about how the field of professional case management is changing over time;
- Specifics about the knowledge, skills, and activities that case managers are performing in the field;
- Assurance of the relevance of the CCM certification examination, that is, what is being tested reflects the reality of the practice; and
- Demonstration of the specifics of case management practice to those within the profession, to accreditation bodies, and to stakeholders across the health care spectrum.

Moreover, a practice analysis such as the role and function study is critical for developing a psychometrically sound and legally defensible blueprint for a national certification examination. Relevance is assured by providing a link between test content and real-world practice; thus, the CCM credential is substantiated by current practice as defined by case management experts and verified by practitioners through a rigorous practice/job/task analysis research study. In addition, the study findings inform the conceptual framework of the CCMC's online Case Management Body of Knowledge, which is a regularly updated and expanded portal and a knowledge resource on case management practice for both certified and noncertified case managers.

Given the dynamic healthcare environment and the ongoing evolution of the professional case management role, it is important that the role and function study be conducted regularly. As Part I of this article series stated, the CCMC conducts a nationwide practice survey every 5 years to determine the current roles and functions of professional case managers (Tahan et al., 2020). As this second part of the series explains, the study results are applied to the

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creation of the content and composition of the CCM certification examination.

Consistent with prior role and function studies conducted since 1994, the 2019 study used the practice analysis survey method, engaging a national cross-sectional sample of case management professionals, to describe case management practice in diverse care settings and from the perspective of various professional health and human services disciplines involved. As explained in Part I (Tahan et al., 2020), the 2019 study defined the current and continuously evolving demands placed on professional case managers, the magnitude of which underscores the importance of credentials: educational background, certification, and experience. Professional case managers must demonstrate their competence and relevant/current knowledge in executing the essential activities of their roles and in the application of key knowledge areas for practice. In doing so, professional case managers assure various healthcare stakeholders, especially consumers (i.e., patients or clients and their support systems), that they are well qualified for their roles. To clarify, activities in the context of the role and function study refer to the day-to-day tasks or interventions case managers engage in when providing care for patients (also known as "clients," "residents," or "beneficiaries" in some practice settings). Knowledge areas refer to what case managers must know and the skills they must demonstrate to competently and effectively perform these day-to-day tasks.

Based on a relevant 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., 2020). The study instrument was then disseminated via e-mail with an online link and through CCMC social media outlets, seeking the potential study participants. Over a 4-week period of data collection, which concluded in mid-2019, the survey was sent to a purposive sample of nearly 60,000 case managers, both certified and not yet certified. A total of 5,416 responses were received, of which 2,810 were found to be acceptable (with a minimum of 55% survey completion) for consideration in the study. A representative group of individuals engaged in case management completed the survey in sufficient numbers to meet the requirements for conducting meaningful statistical analysis including subgroup comparisons. Table 1 includes some high-level characteristics of the study sample; for more details, refer to Part I of the two-part article series (Tahan et al., 2020).

As in prior years, the current study addressed the following three main research questions:

1. What are the essential activities/domains of practice of professional 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?

The first article in this two-part series (Tahan et al., 2020) addressed research Questions 1 and 2; this article (the second part) answers research Question 3 in addition to sharing other key conclusions that impact the continued evolution of the case management practice.

Test Specifications for the CCM Certification Examination

The process of developing a certification examination blueprint is described as *test specifications*. This phase of the practice analysis for the purpose of certification examination development began with a report of the 2019 role and function study results

TABLE 1
Characteristics of the Study Sample (N = 2,810)

Characteristic	%
Hold the title case/care manager	47.24
White	80.00
Female	94.82
51–65 years old	54.31
Spend >70% of time in provision of direct case management services	46.02
Work 8 hr per day	65.77
Work in either health insurance plan or hospital	51.50
Have been in case management for >10 years	56.69
Is a registered nurse	82.23
Earned a baccalaureate degree or higher	80.62
Practice in the South Atlantic or East North Central Regions	40.34
On-the-job training	43.45

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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 survey item, subgroup analyses using index of agreement (IOA) statistical method, factor/principal component analysis, and other pertinent information about the case managers who participated in the study, including their responses about essential activities and knowledge areas related to the practice of case management (Tahan et al., 2020).

Usually, a team of subject matter experts 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 blueprint development. The researchers selected 12 members to participate in the test specifications committee in consultation with the CCMC, using a set of criteria similar to those applied in the selection of the subject matter experts convened for the study instrument development workshop. In keeping with past role and function studies, selection criteria emphasized relevant diversity, including practice/care settings, years holding the CCM certification, noncertified case managers, practicing case managers' degree of involvement in direct care provision to clients/support systems, work settings, practice specialization, professional backgrounds/disciplines, and geographic location of practice. The subject matter experts consisted of case managers with nursing, social work, vocational rehabilitation, disability management, professional counseling, and workers' compensation backgrounds. They came from various geographic locations across the United States and practiced in diverse settings across the continuum of health and human services delivery (e.g., pre-acute, acute, and post-acute, health insurance plans, workers' compensation, and private/independent practice). As with previous role and function studies, a select group of subject matter experts from the instrument development workshop also participated in the test specifications committee. This helped maintain continuity of the work, while also gathering input from additional experts who had not contributed to any aspect of the role and function study prior to the test specifications meeting. Engaging new subject matter experts is an important strategy that aims to prevent bias, enhance objectivity, and avoid premature closure on decisions made about the findings and their relevance for the certification examination blueprint.

To develop test specifications for the CCM certification examination, the researchers facilitated an in-person, 2-day meeting of the 12 subject matter experts to finalize, based on the study findings as informed by the relevant statistical analyses, which essential activities and knowledge statements would be accepted for inclusion in the test specifications. The subject matter experts also determined the weights of the knowledge content domains in the certification examination. They reviewed the following:

- The report of the study findings, which included details about the mean importance and frequency ratings and standard deviations of each of the 138 essential activities and 90 knowledge statements. These statements and their related findings reflective of these statistical analyses are shared in Part I of this two-part article series (Tahan et al., 2020).
- The study participants' ratings of the comprehensiveness of the survey instrument in each of the essential activities and knowledge domains.
- The results of the subgroup analyses demonstrated by the reported IOAs.

As subject matter experts reviewed the results related to each survey item, it was evident that statements with mean importance ratings (MIRs) at or above 2.5 were to be deemed appropriate for inclusion in the test specifications. However, for those with ratings lower than 2.5 (i.e., rated "slightly below important" or "of no importance"), subject matter experts needed to deliberate to reach consensus on whether to include them in the test specifications or exclude them completely. The cut point value for accepting or rejecting a statement was set at MIR = 2.50, which is the midpoint between moderately important and important ratings; this was consistent with past studies and conformed to practice analysis research standards (Tahan & Campagna, 2010; Tahan, Huber, & Downey, 2006). See Part I of the two-part article series (see Tables 3 and 4 in Tahan et al., 2020) for the detailed designations of "pass" and "fail" for each item according to the results of the statistical analyses of mean importance and frequency ratings. The final decisions by the subject matter experts who participated in the test specifications committee are reported in this article.

Table 2 summarizes the results of the test specifications review. Of 138 essential activities statements, 128 passed the MIR test and 10 failed. Upon their review, subject matter experts determined that nine of the failed statements (rated below 2.5 on mean importance) were deemed necessary for inclusion in the test specifications. These comprised one item in the *managing utilization of health care services* domain, two items in the *evaluating and measuring quality and outcomes* domain, and seven items in the *delivering rehabilitation services* domain. Within utilization of health care services, the item related to the task of "negotiating services to optimize the utilization of available resources and/or benefits to meet the client's health care needs" demonstrated a moderate

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

Domains	Number of Passing Statements (≥2.50)	Number of Failing Statements (<2.50)	Total Number of Statements	Number of Passing Statements After Test Specifications Meeting[a]
Essential activities domains				
1. Delivering case management services	61	0	61	61
2. Managing utilization of health care services	20	1	21	21
3. Accessing financial and community resources	14	0	14	14
4. Evaluating and measuring quality and outcomes	14	2	16	16
5. Delivering rehabilitation services	6	7	13	12
6. Adhering to Ethical, Legal, and practice standards	13	0	13	13
Total	128	10	138	137
	93%	7%	100%	
Knowledge domains				
1. Care delivery and reimbursement methods	34	3	37	37
2. Psychosocial concepts and support systems	23	0	23	23
3. Quality and outcomes evaluation and measurements	10	1	11	10
4. Rehabilitation concepts and strategies	4	6	10	6
5. Ethical, legal, and practice standards	9	0	9	9
Total	80	10	90	85
	89%	11%	100%	

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[a]Indicates inclusion in the CCM test specifications.

MIR = 2.26, with 53.34% of the participants rating its importance as either 3 (important) or 4 (very important) and 31.8% of the participants reporting that they engage in this task either often (rating of 3) or very often (rating of 4).

The two items from the evaluating and measuring quality and outcomes domain pertained to the "preparation of outcome reports in compliance with regulatory, accreditation, and organizational requirements" and the "participation in the creation and dissemination of reports about key outcomes measures (e.g., clinical, financial, productivity, care experience) to relevant stakeholders." Both items demonstrated an MIR of 2.49 compared with the 2.50 acceptable rating. In addition, 60.2% of the participants rated the first item as either "important" or "very important" whereas 59.4% rated the second item as such. Moreover, nearly 40% of the participants rated the frequency of executing these activities in their roles as either "often" or "very often."

As for the remaining seven items from the rehabilitation services domain, these were as follows:

1. "Coordinate the client's adaptive technologies (e.g., text telephone device, teletypewriter, telecommunication device for the deaf, orientation and mobility services"; MIR = 2.47, with 59% of the participants indicating a rating of "important" or "very important" and 32.2% reporting a frequency of performing this activity "often" or "very often");
2. "Arrange for vocational assessment" (MIR = 2.16, with nearly 51% of the participants indicating a rating of "important" or "very important" and 25.3% reporting a frequency of performing this activity "often" or "very often");
3. "Coordinate job analysis for the client" (MIR = 1.95, with 45.23% of the participants indicating a rating of "important" or "very important" and nearly 23% reporting a frequency of performing this activity "often" or "very often");
4. "Implement job modification and accommodation needs based on assessment findings" (MIR = 1.99, with 46.26% of the participants indicating a rating of "important" or "very important" and nearly 25% reporting a frequency of performing this activity "often" or "very often");
5. "Collaborate with legal representative, disability management company, or other agencies representing the rehabilitation client" (MIR = 2.13, with 49.39% of the participants indicating a rating of "important" or "very important" and 29.25% reporting a frequency of performing this activity "often" or "very often");

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6. "Facilitate implementation of the plan of care for achieving rehabilitation goals and outcomes" (MIR = 2.40, with 58.36% of the participants indicating a rating of "important" or "very important" and 40.25% reporting a frequency of performing this activity "often" or "very often"); and
7. "Coordinate rehabilitation plans with the client, employer, and other stakeholders" (MIR = 2.35, with nearly 57% of the participants indicating a rating of "important" or "very important" and 38.58% reporting a frequency of performing this activity "often" or "very often").

After deliberating these findings and their relevance to the practice of professional case management as indicated by the importance rating being close to the desired 2.5 and frequency of performance of the tasks by at least a third of the participants, the subject matter experts agreed by consensus that all these activities except for two were part of current case management practice. The two deemed unacceptable were in the rehabilitation services domain; the "implementation of job modification and accommodation needs based on assessment findings" was rejected, whereas the "coordinate job analysis for the client" was merged with the "arrange for vocational assessment." The resulting statement was "arrange for vocational assessment and job analysis." The main explanation for the need to include these rehabilitation items was case managers address the client's rehabilitation needs when developing the client's case management plan of care, even though they may not be directly involved in the actual implementation of these care interventions.

The results stated in Part I (Tahan et al., 2020) were consistent with past role and function studies. Specifically, these were mixed for the items comprising the "delivering rehabilitation services" domain, with only six of 13 statements achieving a 2.5 or higher MIR, one statement was "borderline" (MIR = 2.40–2.49), and six failed (MIR <2.40). As noted in the previous role and function study analyses (Tahan et al., 2015), the reason may be that professional case managers typically spend less of their time on vocational and rehabilitation activities, and such care may be necessary only for a small percentage of the client population served by these case managers. In addition, this might be an effect of sample size of the subgroups; only 1.56% of survey respondents reported having a rehabilitation-related professional background, and only 2.15% reported working in a rehabilitation facility. Nonetheless, experts would agree that professional case managers must be able to perform basic/general activities of rehabilitation such as identifying a client's need for rehabilitation services, whether medical or vocational in nature, and making the appropriate referral for in-depth assessment of needs and delivery of such services for these clients. Specialized involvement in the comprehensive performance of the tasks/activities comprising the "delivering rehabilitation services" domain might be the role responsibility of case managers practicing in such care settings and with specialized client populations (i.e., medical and/or vocational rehabilitation; Tahan et al., 2020).

Of the total 90 knowledge statements, 80 passed the MIR whereas 10 failed on the basis of their MIR being less than the desirable 2.5. Three statements belonged to the *care delivery and reimbursement methods* domain, one to the *quality and outcomes evaluation and measurement*, and six to the *rehabilitation concepts and strategies*. The items from the care delivery and reimbursement domain spoke to the following knowledge topics:

1. "Military and veteran benefit programs (e.g., TRICARE and Veterans Health Administration)." This item demonstrated an MIR of 2.41, with 56.44% of the participants rating it as either "important" or "very important" and nearly 34% indicating they apply this knowledge topic in their practice "often" or "very often."
2. "Negotiation techniques." This item demonstrated an MIR of 2.49, with 57.20% of the participants rating it as either "important" or "very important" and nearly 41% indicating they apply this knowledge topic in their practice "often" or "very often."
3. "Reimbursement and payment methodologies (e.g., bundled payment, case rate, prospective payment systems, value-based care, financial risk models)." This item demonstrated an MIR of 2.48, with nearly 58% of the participants rating it as either "important" or "very important" and 42.36% indicating they apply this knowledge topic in their practice "often" or "very often."

Because the MIRs of these three items of care delivery and reimbursement methods were very close to the acceptable MIR of 2.5, and more than a third of the participants indicated they often apply this knowledge in their practice, the subject matter experts decided after careful deliberation to include these items in the test specifications of the CCM certification examination.

The "triple aim/quadruple aim" item was the sole knowledge topic in the quality and outcomes evaluation and measurement domain to not meet the desired importance rating. This was surprising, given the impact of the Patient Protection and Affordable Care Act of 2010 on the practice of case management and the continued focus on value-based care and reimbursement. Yet, participants rated this knowledge topic at an MIR of 1.94, which is considerably below the acceptable MIR of 2.5; however, 43.2% of the study participants rated this topic as either

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"important" or "very important" whereas 29.37% indicated they apply this knowledge in their practice "often" or "very often." The subject matter experts decided to exclude this item from the test specifications due to the finding that less than a third of participants apply this knowledge in their practice and that some of the remaining items address this knowledge topic, albeit indirectly. For example, knowledge of "quality indicators and applications, sources of quality indicators, and types of quality indicators" extends to knowledge of the "triple/quadruple aim" because some of the quality indicators applied in the evaluation of case management models and programs have been identified on the basis of this aim and role it played in setting the National Quality Strategy.

The remaining six items were from the rehabilitation concepts and strategies domain. These were as follows:

1. "Vocational and rehabilitative service delivery" (MIR = 2.38, with 56.14% of the participants indicating a rating of "important" or "very important" and nearly 34% reporting a frequency of performing this activity of "often" or "very often");
2. "Vocational aspects of chronic illness(es)" (MIR = 2.27, with nearly 52.5% of the participants indicating a rating of "important" or "very important" and almost 31% reporting a frequency of performing this activity of "often" or "very often");
3. "Vocational aspects of disability(ies)" (MIR = 2.31, with nearly 54% of the participants indicating a rating of "important" or "very important" and almost 32% reporting a frequency of performing this activity of "often" or "very often");
4. "Job analysis, job accommodation, and job modification" (MIR = 2.19, with about 51% of the participants indicating a rating of "important" or "very important" and nearly 30% reporting a frequency of performing this activity of "often" or "very often");
5. "Life care planning" (MIR = 2.35, with nearly 55% of the participants indicating a rating of "important" or "very important" and about 30% reporting a frequency of performing this activity of "often" or "very often"); and
6. "Work adjustment, transitional employment, and work hardening" (MIR = 2.2; with 51% of the participants indicating a rating of "important" or "very important" and nearly 31% reporting a frequency of performing this activity of "often" or "very often").

The subject matter experts deliberated these findings and decided to include the knowledge topic "vocational and rehabilitation services" in the test specifications. They unanimously believed that this knowledge remained essential to the case manager's role, the practice of professional case management, and the provision of holistic client services. For similar reasons and to effectively address the special needs of the ill and/or injured client, the subject matter experts agreed not to reject the knowledge of "rehabilitation concepts" despite its MIR below the acceptable level of 2.5. However, they decided to exclude the item "work adjustment, transitional employment, and work hardening" because one may see these topics as integral aspects of vocational rehabilitation and return-to-work strategies, which are components of another existing item, "rehabilitation concepts (e.g., medical rehabilitation, substance use rehabilitation, vocational rehabilitation, return-to-work strategies)." This item had been accepted for inclusion in the test specifications based on its MIR being 2.54, with nearly 61% of participants indicating a rating of "important" or "very important" whereas 41% reported a frequency of performing this activity of "often" or "very often." Therefore, by including "work adjustment, transitional employment, and work hardening" in the "vocational rehabilitation and return-to-work strategies" knowledge topic, one avoids the risk of duplication or emphasizing an aspect of vocational rehabilitation more than other components.

Similarly, the subject matter experts indicated that because "job analysis, job modification, and job accommodation" were key care activities within the "vocational aspects of disability," they decided it was best to include these knowledge topics in the "vocational aspects of disability" item, which rated higher on the MIR. In addition, they emphasized the need to modify this item to reflect the inclusion of "vocational aspects of chronic illness" because of its similar focus on vocational rehabilitation and thus eliminating the need for a separate item, especially one that had rated below the acceptable MIR. Moreover, the subject matter experts identified "life care planning" as another knowledge topic that is integral to vocational aspects of disability but did not warrant being retained as a separate knowledge item for case management practice. Therefore, after thoughtful deliberation and unanimous agreement, the subject matter experts revised the "vocational aspects of disability" knowledge item to be an inclusive item of three knowledge topics; it became the "vocational aspects of disability(ies) and illness(es) (e.g., job analysis and accommodation, life care planning)" knowledge topic. Ultimately, the subject matter experts determined that four of the six failed statements were still necessary for inclusion in the test specifications, however, not to the same magnitude of the remaining independent items.

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As also discussed in Part I (Tahan et al., 2020) of this article series, consistent with the findings in vocational and rehabilitation essential activities and tasks domain, only four of 10 knowledge statements passed with an MIR of 2.5 or greater whereas six failed. The four statements that passed related to "adaptive technologies, functional capacity evaluation, rehabilitation posthospitalization or acute health condition, and rehabilitation concepts." These recognize the importance of the case manager's general knowledge in identifying the client's need for specialized rehabilitation services and acting to secure these services as part of the client's case management plan of care, inclusive of implementation of the plan, coordination of services, and evaluation of these services in meeting the client's care goals and needs. In addition, because these rehabilitation-related tasks (medical and/or vocational) are essential to the role of the professional case manager, it was necessary for the subject matter experts to carefully consider the knowledge required for the effective execution of these tasks. Therefore, the appropriate knowledge topics were considered acceptable despite not meeting the target MIR of 2.5 or greater. Ultimately, the *rehabilitation concepts and strategies* knowledge domain ended up encompassing six essential items/topics that contribute to the case manager's role effectiveness and performance.

As summarized in Part I of this two-part article series (Tahan et al., 2020), the researchers shared with members of the test specifications 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 various participants (subgroups) were relevant to their importance ratings in the essential activities and knowledge areas. The MIRs at or above 2.50 indicated an agreement that an item's content is important; in contrast, those rated less than 2.50 indicated an agreement that the content was less important. Any differences in MIRs among subgroups indicated that there was disagreement as to whether the content is important. The IOA computed scores ranging between 0 and 1, with 1 being perfect agreement and 0 being perfect disagreement. The 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 that disagreement existed among the subgroups' perceptions (Tahan et al., 2015).

The results of the IOA analyses for the essential activities by each participant subgroup were detailed in Part 1 of this article series (Tahan et al., 2020). Following is a summary of the results of the IOA analyses for the knowledge domains by subgroup, the details of which are shared in Table 3:

- *Job title*: 0.52–0.96, with the lowest being in the utilization manager/reviewer subgroup (0.52–0.74)
- *Percentage of time in direct case management*: 0.74–0.99, with the lowest being in the 0% direct involvement subgroup (0.74–0.86)
- *Primary work/practice setting*: 0.70–0.98, with the lowest being in the workers' compensation insurer/agency subgroup (0.70–0.87)
- *Years of experience in case management*: 0.87–0.99
- *Primary method of learning case management practice*: 0.86–0.99
- *Holding the CCM certification in case management*: 0.89, whereas the IOA for the employer's requirement of certification was 0.91
- *Number of daily hours worked*: 0.88–0.96
- *Primary professional background/disciplines*: 0.66–0.90, with the lowest being in the occupational therapy, vocational rehabilitation counselor, and disability manager subgroup (0.66–0.67)
- *Region of case management practice*: 0.92–0.99 and 0.93 for the single versus multiple states/territories of practice
- *Academic degree background*: 0.88–0.98
- *Age*: 0.88–0.99
- *Gender*: 0.93
- *Ethnicity*: 0.90–1.00

The IOAs for the knowledge domains computed for the 11 primary job title subgroups were below the desired 0.80 in three subgroups: quality specialist (0.71–0.91); utilization reviewer/manager (0.52–0.74); and rehabilitation counselor, vocational rehabilitation, disability specialist, therapists, and workers' compensation (0.56–0.77). The quality specialist subgroup demonstrated high agreement with the manager/supervisor subgroup (0.91), which may be indicative of the nature of the role responsibilities in case management practice. Both these subgroups usually focus on monitoring the outcomes of case management services and the impact of these services on the client's health and well-being. One may also attribute the lower IOAs in the quality specialist subgroup to the reality that those who are responsible for this role do not usually provide direct case management services to clients/support systems. Moreover, the quality specialist subgroup demonstrated an IOA of 0.74 with the utilization review/manager. What is common among these subgroups is that they do not provide direct case management services to clients; however, they are involved in the assessment of performance and outcomes. The IOAs of the quality specialist with the rest of the subgroups were below 0.80, except for the consultant subgroup (0.80), which signifies that the perception of case

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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
Job title											
SG 1: Care/case coordinator, disease manager (*N* = 150)	–	–	–	–	–	–	–	–	–	–	–
SG 2: Care/case manager (*N* = 1,277)	0.96	–	–	–	–	–	–	–	–	–	–
SG 3: Case management educator, university educator (*N* = 35)	0.92	0.94	–	–	–	–	–	–	–	–	–
SG 4: Consultant (*N* = 59)	0.84	0.87	0.83	–	–	–	–	–	–	–	–
SG 5: Director of case management/care management/care coordination (*N* = 131)	0.93	0.96	0.94	0.84	–	–	–	–	–	–	–
SG 6: Manager/supervisor (*N* = 259)	0.96	0.96	0.94	0.87	0.96	–	–	–	–	–	–
SG 7: Nurse advocate, nurse navigator, clinical nurse/staff nurse (*N* = 72)	0.93	0.91	0.90	0.82	0.87	0.91	–	–	–	–	–
SG 8: Quality specialist (*N* = 35)	0.76	0.73	0.72	0.80	0.71	0.91	0.78	–	–	–	–
SG 9: Social worker (*N* = 124)	0.89	0.84	0.86	0.76	0.84	0.87	0.91	0.69	–	–	–
SG 10: Utilization reviewer/manager (*N* = 117)	0.57	0.54	0.53	0.66	0.52	0.57	0.59	0.74	0.52	–	–
SG 11: Rehabilitation counselor, vocational evaluator, disability specialist, physical therapist, workers' compensation specialist (*N* = 49)	0.72	0.77	0.73	0.70	0.72	0.72	0.72	0.68	0.70	0.56	–
	SG 1	**SG 2**	**SG 3**	**SG 4**	**SG 5**	**SG 6**	**SG 7**	**SG 8**	**SG 9**	**SG 10**	**SG 11**
Primary work/practice setting											
SG 1: Ambulatory clinic/outpatient care/primary care/urgent care clinic, federally qualified health care center, medical home/health home/patient-centered medical home, mental health center, mental health outpatient (*N* = 197)	–	–	–	–	–	–	–	–	–	–	–
SG 2: Disease management agency/program (*N* = 38)	0.96	–	–	–	–	–	–	–	–	–	–
SG 3: Government agency, military treatment facility, Veterans Health Administration agency (*N* = 101)	0.86	0.88	–	–	–	–	–	–	–	–	–
SG 4: Health plan/health insurance company, liability insurer, life/disability insurer, reinsurance (*N* = 825)	0.93	0.98	0.90	–	–	–	–	–	–	–	–
SG 5: Home care agency (*N* = 43)	0.97	0.94	0.87	0.92	–	–	–	–	–	–	–
SG 6: Hospital/acute care/hospital system, mental health/psychiatric inpatient center (*N* = 614)	0.97	0.94	0.89	0.97	0.96	–	–	–	–	–	–
SG 7: Independent/private case or care management company, independent rehabilitation company/insurance affiliate (*N* = 182)	0.83	0.86	0.82	0.83	0.87	0.82	–	–	–	–	–
SG 8: Rehabilitation facility (acute), rehabilitation facility (subacute) (*N* = 58)	0.91	0.89	0.83	0.91	0.90	0.82	0.88	–	–	–	–
SG 9: Third-party administrator (*N* = 56)	0.82	0.87	0.79	0.87	0.83	0.83	0.90	0.87	–	–	–
SG 10: Workers' compensation insurer/agency (*N* = 240)	0.70	0.72	0.71	0.72	0.73	0.71	0.87	0.77	0.83	–	–

(*continues*)

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

SG 11: Skilled nursing facility/long-term care facility, community residential program, long-term acute care (N = 51)	0.82	0.82	0.79	0.84	0.86	0.86	0.79	0.82	0.78	0.77	–
	SG 1	**SG 2**	**SG 3**	**SG 4**	**SG 5**	**SG 6**	**SG 7**	**SG 8**	**SG 9**	**SG 10**	**SG 11**
% of time spent in provision of direct case management services											
SG 1: 0% (not involved in direct case management services at all) (N = 370)	–	–	–	–	–	–	–	–	–	–	–
SG 2: 1%–10% (N = 309)	0.86	–	–	–	–	–	–	–	–	–	–
SG 3: 11%–20% (N = 130)	0.84	0.99	–	–	–	–	–	–	–	–	–
SG 4: 21%–30% (N = 128)	0.76	0.90	0.91	–	–	–	–	–	–	–	–
SG 5: 31%–40% (N = 104)	0.79	0.89	0.90	0.92	–	–	–	–	–	–	–
SG 6: 41%–50% (N = 137)	0.83	0.96	0.97	0.90	0.93	–	–	–	–	–	–
SG 7: 51%–60% (N = 133)	0.79	0.93	0.94	0.97	0.91	0.91	–	–	–	–	–
SG 8: 61%–70% (N = 147)	0.81	0.93	0.94	0.90	0.93	0.91	0.91	–	–	–	–
SG 9: 71%–80% (N = 296)	0.74	0.87	0.88	0.97	0.91	0.89	0.93	0.89	–	–	–
SG 10: 81%–90% (N = 289)	0.77	0.91	0.92	0.99	0.91	0.91	0.96	0.91	0.96	–	–
SG 11: 91%–100% (N = 658)	0.78	0.90	0.91	0.98	0.94	0.92	0.97	0.92	0.97	0.97	–
	SG 1	**SG 2**	**SG 3**	**SG 4**	**SG 5**	**SG 6**	**SG 7**	**SG 8**	**SG 9**		
Years of experience in case management											
SG 1: 0–2 (N = 109)	–	–	–	–	–	–	–	–	–		
SG 2: 6–10 (N = 628)	0.94	–	–	–	–	–	–	–	–		
SG 3: 11–15 (N =443)	0.96	0.97	–	–	–	–	–	–	–		
SG 4: 16–20 (N = 427)	0.98	0.97	0.98	–	–	–	–	–	–		
SG 5: 21–25 (N = 337)	0.98	0.94	0.98	0.98	–	–	–	–	–		
SG 6: 26–30 (N = 195)	0.94	0.91	0.92	0.94	0.94	–	–	–	–		
SG 7: 3–5 (N = 434)	0.97	0.98	0.99	0.99	0.97	0.93	–	–	–		
SG 8: 31–35 (N = 87)	0.96	0.92	0.93	0.96	0.96	0.93	0.94	–	–		
SG 9: ≥36 (N = 44)	0.92	0.87	0.90	0.90	0.92	0.89	0.89	0.92	–		
	SG 1	**SG 2**	**SG 3**	**SG 4**							
Professional background/discipline											
SG 1: Licensed professional clinical counselor, licensed professional counselor, psychologist (N = 34)	–	–	–	–							
SG 2: Registered nurse (N = 2,216)	0.90	–	–	–							

(*continues*)

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

SG 3: Social worker (*N* = 301)	0.90	0.89	–	–					
SG 4: Occupational therapist, vocational rehabilitation counselor/specialist, disability manager (*N* = 47)	0.67	0.66	0.66	–					
	SG 1	**SG 2**	**SG 3**	**SG 4**					
Formal/official daily work schedule									
SG 1: <8 hr (*N* = 153)	–	–	–	–					
SG 2: 8 hr (*N* = 2,183)	0.88	–	–	–					
SG 3: 10 hr (*N* = 291)	0.90	0.93	–	–					
SG 4: ≥12 hr (*N* = 81)	0.88	0.96	0.96	–					
	SG 1	**SG 2**							
Employer requires certification in case management									
SG 1: Yes (*N* = 1,047)	–	–							
SG 2: No (*N* = 1,639)	0.91	–							
	SG 1	**SG 2**							
CCM certification status									
SG 1: Yes (*N* = 2,600)	–	–							
SG 2: No (*N* = 82)	0.89	–							
	SG 1	**SG 2**	**SG 3**	**SG 4**	**SG 5**	**SG 6**			
Number of years with CCM credential									
SG 1: <5 (*N* = 1,094)	–	–	–	–	–	–			
SG 2: 5–10 (*N* = 575)	0.99	–	–	–	–	–			
SG 3: 11–15 (*N* = 296)	0.96	0.94	–	–	–	–			
SG 4: 16–20 (*N* = 273)	0.97	0.96	0.94	–	–	–			
SG 5: 21–25 (*N* = 131)	0.89	0.88	0.87	0.92	–	–			
SG 6: ≥26 (*N* = 86)	0.81	0.82	0.79	0.84	0.92	–			
	SG 1	**SG 2**							
Number of states/territories of case management practice									
SG 1: Single state or territory (*N* = 1,832)	–	–							
SG 2: Multiple states and/or territories (*N* = 838)	0.93	–							
	SG 1	**SG 2**	**SG 3**	**SG 4**	**SG 5**	**SG 6**	**SG 7**	**SG 8**	**SG 9**
Region or territory of case management practice									

(*continues*)

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

SG 1: New England (*N* = 159)	–	–	–	–	–	–	–	–	–	
SG 2: Middle Atlantic (*N* = 373)	0.93	–	–	–	–	–	–	–	–	
	SG 1	**SG 2**	**SG 3**	**SG 4**	**SG 5**	**SG 6**	**SG 7**	**SG 8**	**SG 9**	
SG 3: East North Central (*N* = 472)	0.94	0.94	–	–	–	–	–	–	–	
SG 4: West North Central (*N* = 146)	0.93	0.96	0.99	–	–	–	–	–	–	
SG 5: South Atlantic (*N* = 605)	0.93	0.93	0.97	0.98	–	–	–	–	–	
SG 6: East South Central (*N* = 192)	0.92	0.99	0.96	0.97	0.94	–	–	–	–	
SG 7: West South Central (*N* = 284)	0.94	0.97	0.98	0.97	0.94	0.98	–	–	–	
SG 8: Mountain (*N* = 168)	0.94	0.99	0.96	0.97	0.94	0.98	0.98	–	–	
SG 9: Pacific (*N* = 271)	0.96	0.96	0.97	0.96	0.93	0.94	0.97	0.97	–	
	SG 1	**SG 2**	**SG 3**	**SG 4**	**SG 5**					
Highest educational degree										
SG 1: Nursing diploma (*N* = 131)	–	–	–	–	–					
SG 2: Associate degree (*N* = 394)	0.92	–	–	–	–					
SG 3: Bachelor's degree (*N* = 1,267)	0.92	0.93	–	–	–					
SG 4: Master's degree (*N* = 873)	0.90	0.98	0.91	–	–					
SG 5: Doctoral degree (*N* = 43)	0.88	0.96	0.89	0.98	–					
	SG 1	**SG 2**	**SG 3**	**SG 4**	**SG 5**	**SG 6**				
Method used to learn to practice case management										
SG 1: Conferences and seminars (*N* = 148)	–	–	–	–	–	–				
SG 2: Conferences and seminars, plus on-the-job training (*N* = 909)	0.91	–	–	–	–	–				
SG 3: Formal degree-granting program, plus on-the-job training (*N* = 118)	0.84	0.93	–	–	–	–				
SG 4: On-the-job training only (*N* = 1,175)	0.88	0.97	0.97	–	–	–				
SG 5: Self-directed/self-taught (*N* = 268)	0.88	0.94	0.94	0.96	–	–				
SG 6: Formal degree-granting program, postgraduate certificate-granting program (*N* = 30)	0.99	0.90	0.86	0.89	0.89	–				
	SG 1	**SG 2**	**SG 3**	**SG 4**	**SG 5**	**SG 6**	**SG 7**	**SG 8**	**SG 9**	**SG 10**
Age (years)										
SG 1: ≤30 (*N* = 42)	–	–	–	–	–	–	–	–	–	–
SG 2: 31–35 (*N* = 163)	0.93	–	–	–	–	–	–	–	–	–

(*continues*)

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

SG 3: 36–40 (*N* = 225)	0.91	0.96	–	–	–	–	–	–	–	–
SG 4: 41–45 (*N* = 248)	0.94	0.97	0.97	–	–	–	–	–	–	–
SG 5: 46–50 (*N* = 372)	0.88	0.90	0.94	0.93	–	–	–	–	–	–
SG 6: 51–55 (*N* = 448)	0.93	0.96	0.96	0.97	0.92	–	–	–	–	–
SG 7: 56–60 (*N* = 569)	0.93	0.96	0.98	0.99	0.94	0.98	–	–	–	–
SG 8: 61–65 (*N* = 452)	0.97	0.97	0.94	0.98	0.91	0.98	0.97	–	–	–
SG 9: 66–70 (*N* = 138)	0.93	0.96	0.96	0.97	0.94	0.98	0.98	0.97	–	–
SG 10: <70 (*N* = 48)	0.92	0.97	0.97	0.96	0.93	0.97	0.97	0.96	0.99	–
	SG 1	**SG 2**								
Gender										
SG 1: Female (*N* = 2,564)	–	–								
SG 2: Male (*N* = 116)	0.93	–								
	SG 1	**SG 2**	**SG 3**	**SG 4**	**SG 5**	**SG 6**				
Ethnicity										
SG 1: American Indian or Alaska Native, Native Hawaiian or other Pacific Islander, prefer not to answer (*N* = 85)	–	–	–	–	–	–				
SG 2: Asian (*N* = 101)	0.97	–	–	–	–	–				
SG 3: Black or African American (*N* = 224)	0.96	0.99	–	–	–	–				
SG 4: Hispanic or Latino (*N* = 92)	0.96	0.99	1.00	–	–	–				
SG 5: Two or more ethnicities or multiethnic (*N* = 39)	0.96	0.94	0.96	0.96	–	–				
SG 6: White non-Hispanic (*N* = 2,166)	0.97	–	–	–	–	–				

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management practice within the quality specialist subgroup is different from the others.

The utilization manager/reviewer subgroup tends to focus more on the financial and reimbursement aspects of care rather than actual direct care provision of health and human services; this may have contributed to lower IOAs than the findings of other subgroups. The IOAs were in the 0.50 range, except when assessed against the consultant subgroup (0.66) and the quality specialist subgroup (0.72). The utilization manager/reviewer subgroup also is known not to perform many of the other case management activities such as care coordination, discharge/transitional planning, health education, and psychosocial counseling and engagement. Having a primary focus on resource utilization and reimbursement, rather than on more typical role responsibilities of case managers, may explain why this subgroup's IOAs came in below acceptable IOA targets. In addition, such deviation from other subgroups may be attributed to the recent trend, especially in the hospital/acute care settings, of separating the utilization management functions from the case manager's role responsibilities and into an independent role within the health care team for the purpose of reducing financial risks that result from the pressures of value-based reimbursement methods.

The below-acceptable target IOAs evident in the rehabilitation counselor, vocational evaluator, disability specialist, therapist, and workers' compensation subgroup may be related to the heterogeneous nature of this subgroup's participants, as well as the effect of a lower sample size. Despite these potential concerns, the IOAs of this subgroup demonstrated moderate agreements (0.70–0.79) with the other subgroups, except for the quality specialist (0.68) and utilization reviewer/manager (0.56) subgroups, which showed more disagreement rather than agreement. A possible reason for the moderate agreements is that participants in these subgroups lack involvement in the provision of direct case management services.

The IOAs for the percentage of time spent in providing direct case management services to clients showed a uniformly high agreement among all the subgroups except for those who indicated having no (0%) direct contact with clients. It is not a surprise that this subgroup demonstrated IOAs of mostly moderate agreement with the others because it is known that participants in this subgroup function in roles that do not comprise direct interaction with clients; therefore, they may not have the opportunity to apply their knowledge of case management practice in their role responsibilities or in caring directly for clients/support systems. As for the primary work setting subgroups, the workers' compensation subgroup showed the lowest IOAs, however, with moderate agreement with the other subgroups (0.70–0.77). The exceptions here are the independent/private case management/independent rehabilitation and third-party administrator subgroups, which demonstrated IOAs of 0.87 and 0.83, respectively, indicating agreement on knowledge within these two groups. This may potentially be explained by the common role responsibilities and utilization of similar knowledge topics in the practice of case management relevant to disability management and vocational rehabilitation.

The skilled nursing/long-term care facilities subgroup demonstrated modest agreement with the workers' compensation (IOA = 0.77) and third-party administrator (IOA = 0.78) subgroups. It also showed near-acceptable agreement with the independent/private case management (IOA = 0.79) and government-based (IOA = 0.79) subgroups. The IOAs for the remaining work/practice settings showed agreement of 0.80 or more. Years of practicing case management subgroups demonstrated high agreement on the knowledge topics across the board.

The IOAs for the knowledge domains for the case management certification requirement by employers of professional case managers also demonstrated high agreement (IOA = 0.91); similarly, the IOAs of the CCM and non-CCM subgroups showed high agreement irrespective of whether certification was required (IOA = 0.89). Such high agreement extended to monetary reward for case management certification, regardless of whether the employer offered any monetary compensation (IOA = 0.97). In the subgroups analyses based on daily work schedule (daily hours of work/operations), there was high to nearly perfect agreement among all ranges of work hours (IOAs = 0.88–0.96), with the lowest being among the less than 8 hours per day subgroup (IOA = 0.88). These findings demonstrated that the practice of professional case management and utilization of essential knowledge in practice did not vary on the basis of the presence of certification nor the number of work hours, as long as the case manager maintained direct contact with the client in care provision.

The IOAs for the subgroups based on primary professional background/discipline demonstrated high agreement among the nursing, social work, and licensed professional clinical counselor and psychologist subgroups (IOAs = 0.89–0.90) compared with the occupational therapy/disability manager/vocational rehabilitation counseling subgroup, which observed low agreement (IOAs = 0.66–0.67); the latter was indicative of more disagreement with the other subgroups. Comparative analyses based on whether the participants held the CCM credential and the number of years since becoming certified showed high agreement on the knowledge domain ratings irrespective of the year the CCM credential was acquired,

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except for the 26 years or greater subgroup, which showed a moderate agreement IOA (0.79) with the 11–15 years subgroup. As for the primary method to learn case management, subgroup analyses resulted in IOAs reflective of high agreement across the subgroups regardless of the method applied in learning case management practice (IOAs = 0.84–0.99). The lowest, although still indicating high agreement, was between learning at conferences and seminars and the formal degree-granting programs plus on-the-job training subgroups. Similarly, the IOAs for the subgroups based on states, territories, or regions of practice (IOAs = 0.92–0.99), age (IOAs = 0.88–0.99), gender (IOAs = 0.93), ethnicity (IOAs = 0.90–1.00), and academic degrees (IOAs = 0.88–0.98) demonstrated high to near-perfect agreement among the various subgroups, therefore denoting that the application of necessary knowledge in the practice of case management by professional case managers is consistent regardless of these demographic variables.

Factor/Principal Component Analysis

The researchers performed a factor analysis to examine the reliability and appropriateness of the theoretical domains that composed the 2019 case manager role and function study instrument and ultimately the test specifications of the CCM certification examination. This analysis is an integral step in the test specifications work to inform the content and construct of the CCM certification examination—the examination blueprint. Factor analysis (i.e., domain analysis or principal component analysis) is a statistical method designed to reduce data or to categorize variables (data) into thematic components (e.g., domains, subject areas, content areas). This analysis applies the results of the MIRs of the detailed essential activities (137 statements) and knowledge topics (85 statements) 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 tasks/activities and knowledge topics into higher order functions or knowledge areas.

The researchers tested the appropriateness of the six theoretical activity and five theoretical knowledge domains used in the study instrument development. This process is known as theoretical, confirmatory, or forced analysis, whereby the original clustering by domain is undertaken by the researchers and subject matter experts. During the subject matter experts workshop, for the design of the role and function survey instrument, the confirmatory analysis was applied in the study's data collection procedures and was tested for acceptability (being of reliable composition) as the domains of professional case management practice. The researchers also conducted an exploratory factor/principal component analysis; the best solutions produced consisted of three factors for each of the essential activities and knowledge areas. In this study, the confirmatory factor analysis produced better (more acceptable) results and therefore was used for adoption of the domains of case management practice. The researchers arrived at this conclusion based on a cross-validation of the exploratory and confirmatory solutions. They applied the goodness-of-fit test and assessed the comparative fit index (CFI), Tucker–Lewis Index (TLI), and root mean square error of approximation (RMSEA). The results were as follows:

- The CFIs for activity importance for the exploratory and confirmatory solutions were 0.689 and 0.737, respectively; the TLIs were 0.684 and 0.733, respectively; and the RMSEAs were 0.079 and 0.072, respectively.
- The CFIs for activity frequency for the exploratory and confirmatory solutions were 0.685 and 0.745, respectively; the TLIs were 0.680 and 0.740, respectively; and the RMSEAs were 0.079 and 0.072, respectively.
- The CFIs for knowledge importance for the exploratory and confirmatory solutions were 0.703 and 0.758, respectively; the TLIs were 0.696 and 0.752, respectively; and the RMSEAs were 0.083 and 0.075, respectively.
- The CFIs for knowledge importance for the exploratory and confirmatory solutions were 0.681 and 0.746, respectively; the TLIs were 0.673 and 0.739, respectively; and the RMSEAs were 0.082 and 0.074, respectively.

Table 4 summarizes the results of the factor analysis and the number of statements included in each factor with their associated reliability Cronbach α measures. Confirmatory factor analysis results were used to specify where each of the statements belonged in the factors. Notably, statements that were rejected from inclusion in the test specifications process, due to their being of low or no importance, were excluded from the factor analysis, as they should have been. Tables 5 and 6 present the details of statements within each of the domains of the essential activities and knowledge areas.

Once the factor analysis was completed, the researchers conducted a reliability analysis using the Cronbach α (see Table 4), which is a measure of internal consistency and homogeneity of the factor. Internal consistency determines whether multiple variables are measuring the same construct. The higher the Cronbach α is, the more likely the variables are measuring the same construct. Researchers have stated that Cronbach αs greater than 0.70 are

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TABLE 4
Results of the Confirmatory Factor Analysis and Associated Reliability Coefficients

	Cronbach α	Number of Items
Essential activities—Six-factor solution		
1. Delivering case management services	0.99	61
2. Managing utilization of health care services	0.97	21
3. Accessing financial and community resources	0.97	14
4. Evaluating and measuring quality and outcomes	0.96	16
5. Delivering rehabilitation services	0.97	12
6. Adhering to ethical, legal, and practice standards	0.92	13
Overall	0.99	137
Knowledge areas—Five-factor solution		
1. Care delivery and reimbursement methods	0.97	37
2. Psychosocial concepts and support systems	0.98	23
3. Quality and outcomes evaluation and measurements	0.95	10
4. Rehabilitation concepts and strategies	0.94	6
5. Ethical, legal, and practice standards	0.91	9
Overall	0.99	85

desirable. In this study, Cronbach αs ranged between 0.92 and 0.99 for the six essential activities domains and 0.91 and 0.98 for the knowledge domains, whereas the overall Cronbach αs were 0.99 for both the essential activities and knowledge domains. These results are considered highly acceptable.

The test specifications committee then reviewed the results of the confirmatory factor analysis and accepted the domains. The names of each domain remained the same as during the theoretical work of the instrument development by the subject matter experts. Because these were based on the results of the 2014 role and function study of case management practice (Tahan, Watson, & Sminkey, 2016), the domain names remained the same; however, the composition of each domain was updated to reflect the new findings from the 2019 study. These were as follows:

Essential activities domains

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

Knowledge domains

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

Test Specifications of the CCM Certification Examination

As with prior role and function studies, participants in the test specifications committee allocated the weights for each of the knowledge domains. The weights would indicate the extent to which the knowledge areas covered in each of the domains should be represented on the certification examination. This activity resulted in the new test specifications, which made the new blueprint for the CCM certification examination. After inclusion decisions and factor analysis results were finalized, each of the 11 subject matter experts on the test specifications committee was asked to complete an anonymous weighting sheet to assign a percentage (out of 100) for each of the five new knowledge domains, based on their individual perception of the extent each domain should be reflected in the certification examination. The new allocations by domain would become the CCM certification examination content domains. This step in the process focused on knowledge domains only because certification examinations test the knowledge necessary for effective and competent performance of one's role rather than the type and frequency of activities in which one engages. 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 based on participants' perceptions of the degree of importance of each domain to the certification examination. The subject matter experts reviewed the results and unanimously agreed on the final recommended test weights for each knowledge domain. The results are shown in Table 7.

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TABLE 5
Confirmatory Factor Analysis Results—Essential Activities

1. Delivering case management services
Identify cases that meet criteria for case management services (e.g., acute or chronic medical and behavioral health conditions, polypharmacy, social determinants of health issues)
In the case finding process, use information from analytic tools (e.g., screening tools, readmission information, length of stay, predictive modeling, high-dollar reporting, risk stratification)
Review information from various sources about the client (e.g., diagnosis, history, language, medications, health insurance status, social determinants of health)
Conduct a comprehensive intake interview
Perform a client assessment using established case management processes and standards
Use client engagement techniques (e.g., motivational interviewing, counseling, coaching, behavioral change) in the delivery of health care/case management service
Assess the client's understanding, readiness, and willingness to engage in case management services
Assess the client's social, educational, psychological, and financial/economic status (e.g., income, living situation, insurance, benefits, employment)
Assess the client's social, emotional, and financial support systems (e.g., family, friends, significant others, community groups)
Assess the client's language and communication needs
Assess the client's current use of community resources
Assess the client's health and language literacy, especially relevant to health status
Assess the client's current and past physical, medical, emotional, cognitive, psychosocial, and vocational functioning compared with the client's baseline function
Assess the client's health education needs
Assess the client's relationships with key stakeholders (e.g., client support system, referral source, care providers, payers, employers)
Verify the client's health history and condition (e.g., medical, psychosocial, vocational, financial, medications) with the client and other stakeholders
Assess the client's level of readiness for change and involvement in lifestyle behavior changes
Assess respite and support needs of the client's caregiver(s) (e.g., fatigue, burnout)
Identify multicultural, spiritual, and religious factors that may affect the client's health status
Identify the client's care needs and concerns (e.g., gaps in care, problem list)
Prioritize the client's care needs and concerns
Engage the client's active participation in the development of their short- and long-term health goals
Consider both of the client's behavioral and nonbehavioral health issues and concerns in the provision of case management services
Identify barriers that affect the client's engagement throughout the provision of case management services
Incorporate the influence of the client's multicultural, spiritual, and religious factors in the development of the plan of care and service delivery
Establish comprehensive case management plan of care, including goals, objectives, interventions, outcomes, and their associated time frames, in collaboration with the client and key stakeholders
Consider referral source requests and the client's health benefit limitations in the development of the client's case management plan of care
Develop goals that identify the client's safety needs in the case management plan
Develop interventions that address barriers to goal achievement
Document case management assessment findings and plan of care (e.g., goals, objectives, interventions, outcomes, and their associated time frames)
Communicate case management assessment findings and plan of care to the client and key stakeholders (e.g., providers, payers, employers)
Implement the case management plan of care
Establish working relationships with the client's referral sources and the interdisciplinary care team
Coordinate care with key health care providers
Discuss with the client and the health care team potential costs of treatment options, including cost comparisons and alternative services
Educate the client regarding health condition, care choices, and resources
Counsel the client on coping with health condition and care intervention options
Coordinate health and human/social services for the client's safe transition along the continuum of care
Advocate for clients (e.g., address health care needs, negotiate extracontractual benefits)
Notify the client/decision maker and/or the authorized client representative of the conclusion of case management services
Integrate the delivery of care interventions to meet the client's diverse needs (e.g., behavioral and mental health, medical care, social services)

(*continues*)

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TABLE 5
Confirmatory Factor Analysis Results—Essential Activities (*Continued*)

Communicate the client's progress in achieving the goals, objectives, and outcomes of the case management plan of care to the client and key stakeholders (e.g., providers, payers, employers)
Document the client's progress with the case management plan of care (e.g., goals, objectives, outcomes, necessary modifications)
Modify the client's case management plan of care and services (e.g., home health) to meet the client's changing needs and condition
Maintain ongoing communication with the client and key stakeholders (e.g., providers, payers, employers)
Evaluate the client's understanding of care and health instructions (e.g., verbalize, demonstrate, teach back)
Clarify the client's care and health instructions
Reinforce care and health instructions given by involved providers
Facilitate the client's empowerment through the development of self-management and health engagement skills
Develop a plan for the client's transition to the next level of care, provider, or setting
Evaluate capability and availability of the client's caregiver(s) to provide the needed services postencounter/episode of care
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
Notify the client/decision maker and/or the authorized client representative of the conclusion of case management services
Conclude case management services
Document case closure (e.g., rationale, discharge summary, transfer summary, cost savings)
Facilitate the completion of the client's transition of care summary
Communicate the client's summary of care to providers (e.g., physician, case managers, social worker, nurse, counselor) at the time of transition to the next level of care
Follow up on the client post-episode of care (e.g., hospitalization, clinic visit, telephonic triage call)
Follow up with the client to ensure the availability and delivery of services arranged prior to the transition from a care encounter
Respond to posttransition inquiries from stakeholders at the next level of care, especially regarding the client's condition and case management plan of care
2. Managing utilization of health care services
Review documentation in the client's health/medical record for determination of medical necessity and benefit coverage (e.g., coverage, exclusions, extracontractual provisions)
Analyze the client's case management plan of care for cost-effectiveness including feasibility of implementation
Perform utilization management activities using recognized criteria, guidelines, and health benefit plan language
Obtain required preauthorization or notification of services based upon payer requirements
Coordinate the client's health insurance benefits
Monitor utilization management activities using recognized criteria, guidelines, and health benefit plan language
Participate in appeals of service denials or adverse determinations
Collaborate with the physician advisor or medical director in mitigating service denials and adverse determinations
Identify clients who would benefit from alternate levels of care (e.g., subacute, skilled nursing, home care) including availability of health insurance benefits for that level
Determine when an extracontractual or exception benefit is indicated for the client
Discuss appropriateness of level of care with the health care team
Advocate for the provision of health and human/social services in the least restrictive and most appropriate setting
Identify client cases with potential for under/overutilization of health care services (e.g., avoidable encounters with health care services such as readmissions to the hospital or emergency department)
Educate the client about utilization of resources in accordance with established criteria (e.g., clinical, financial) and regulatory requirements (e.g., discharge notice)
Educate the health care team about utilization of resources in accordance with established criteria (e.g., clinical, financial) and regulatory requirements
Assess the client for needed interventions and level of care (e.g., observation status, acute, rehabilitation)
Identify actual and potential delays in service and care progression
Mitigate identified delays in service and care progression
Evaluate the cost-effectiveness of treatments and services
Use cost-effective strategies in the delivery of case management services
Negotiate services to optimize the utilization of available resources and/or benefits to meet the client's health care needs

(*continues*)

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TABLE 5
Confirmatory Factor Analysis Results—Essential Activities (*Continued*)

3. Accessing financial and community resources
Incorporate the client's health insurance benefits (e.g., covered treatments, carve-outs) into the development of the case management plan
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, Veterans Health Administration benefits)
Educate the client on private and public sector funding sources and limitations of services
Facilitate the client access to programs, services, and funding (e.g., SSI, SSDI, Medicare, Medicaid, Affordable Care Act, Veterans Health Administration benefits)
Coordinate language interpreter services
Coordinate the client's social services needs (e.g., housing, transportation, food/meals, financial support, charitable resources, assistance with medication expenses)
Coordinate resources that meet the respite and support needs of the client's caregiver(s)
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, assistive technology)
Identify formal and informal community resources and support programs
Research community resources applicable to the client's situation
Research alternate treatment programs (e.g., pain management clinic, homeopathic, community-based services/resources) based on the client's situation
Consult with other health care professionals (e.g., medical, vocational, rehabilitation, life care planning) based on the client's case management plan of care
Refer the client to formal or informal community resources and support programs based on the client's needs and situation
Coordinate community resources, including the services of community health workers or public health advocates, to support client adherence to care regimen and engagement in their own health
4. Evaluating and measuring quality and outcomes
Use evidence-based practice guidelines in the development of the case management plan
Document the client's response to case management interventions
Monitor the client's progress in achieving the goals, objectives, and outcomes of the case management plan at specified time frames (e.g., direct observation, interviews, record reviews)
Evaluate the effectiveness of the case management plan of care (e.g., goals, objectives, interventions, outcomes, and their associated time frames; cost-effectiveness)
Evaluate the availability and timeliness of delivered treatments and services (e.g., variances, delays in care, avoidable days)
Collect client-related outcomes data (e.g., clinical, financial, utilization, quality, client experience)
Collect health care organization/agency-related outcomes data (e.g., clinical, financial, productivity, utilization, quality, client experience)
Analyze client and health care organization/entity-related outcomes data
Evaluate the quality of treatments, interventions, and services
Evaluate effectiveness of health and human/social services received (e.g., home health, durable medical equipment, community resources)
Evaluate actual client outcomes in relation to expected outcomes
Refer appropriate cases for peer review (e.g., physician review, quality review, outliers, unusual significant occurrences)
Take appropriate action on client complaints or grievances
Prepare outcome reports in compliance with regulatory (federal, state, and local), accreditation, and organization requirements
Participate in corrective action planning as indicated by outcome reports
Participate in creation and dissemination of reports about key outcome measures (e.g., clinical, financial, productivity, utilization, quality, client experience) to relevant stakeholders
5. Delivering rehabilitation services
Identify the need for specialized services to facilitate achievement of optimal level of wellness or functioning
Coordinate rehabilitation assessments and services
Assess the need for environmental (e.g., worksite, home) modifications to address accessibility barriers
Collaborate with other health care providers to clarify restrictions and limitations related to the client's physical or vocational functioning
Recommend case management interventions or services based on medical or behavioral health need, workers' compensation, or disability management treatment guidelines
Facilitate achievement of optimal wellness, functioning, or productivity (e.g., return to work, return to school, other activities)

(*continues*)

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TABLE 5
Confirmatory Factor Analysis Results—Essential Activities (*Continued*)

Coordinate the client's adaptive technologies (e.g., text telephone device, teletypewriter, telecommunication device for the deaf, orientation and mobility services)
Arrange for vocational assessment and job analysis
Implement job modification and accommodation needs based on assessment findings
Collaborate with legal representative, disability management company, or other agencies representing the rehabilitation client
Facilitate implementation of the plan of care for achieving rehabilitation goals and outcomes
Coordinate rehabilitation plans with the client, the employer, and other stakeholders
6. Adhering to ethical, legal, and practice standards
Protect the client's privacy and confidentiality
Adhere to established resources of accountability (e.g., ethical standards, codes of professional conduct) that govern case management practice and other professional licensure or certification
Identify the client's need for ethics consult/review
Refer ethical concerns to appropriate body for examination
Document actions taken by the case manager relative to an ethical concern
Practice based on legal and regulatory standards (e.g., informed consent, Health Insurance Portability and Accountability Act, Americans with Disabilities Act) that govern case management practice and professional licensure or certification
Adhere to accreditation standards relevant to case management practice and professional licensure or certification
Educate clients regarding patient bill of rights
Document case management services and interventions with accuracy and in a timely manner to comply with state, federal, and payer/contractual obligations
Facilitate the completion of legal documents (e.g., advance directive, health care proxy, financial Power of Attorney, guardianship)
Coordinate accommodations for persons with disabilities by adhering to the Americans with Disabilities Act
Apply available case management standards of practice in the provision of care to the case management client
Apply available evidence-based care guidelines in the provision of care to the case management client

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When comparing the new, final allocations of the number of questions on the CCM certification examination by knowledge domain, it was evident that although the domains themselves did not change, the weights by domain had changed compared with allocations made during the 2014 role and function study. The change was reasonable and expected because the number of statements within each domain had changed. Of most importance was the increase in weighting for the *ethical, legal, and practice standards* and the *rehabilitation concepts and strategies* domains, which increased to 17% and 11%, respectively, compared with the 2014 study allocations of 15% and 9%. In contrast, the allocations to the *care delivery and reimbursement methods* and *psychosocial concepts and support systems* domains decreased from 31% and 27%, respectively, to 28% and 25% when compared with the 2014 study results. However, the quality and outcomes evaluation and measurement domain almost remained the same at 19% compared with 18% (Tahan et al., 2016). These changes reflect the ongoing evolution of case management practice, most importantly the continued emphasis on the provision of ethical and legal practice based on evidence-based standards and informed by value-based care and reimbursement.

Preparing for the Case Management Role

As the demographic information gathered in the role and function study on educational background revealed (Tahan et al., 2020), 80.62% held a bachelor's degree or higher (46.79% bachelor's degree, 32.24% master's degree, and 1.59% doctoral degree), a nearly 10-percentage point gain from the 2014 study. In addition, 14.55% held an associate degree (down from 20.7% in 2014) and 4.84% a nursing diploma (down from 9% in 2014). The increase in advanced degrees reflects changing qualifications for those serving in professional case management roles today. This advancement supports the continued drive toward professionalization of case management practice and its value being amplified within the health care industry. These education statistics also add to the evidence that case management is an advanced specialty rather than an entry-level practice, as reflected by 33.84% of participants holding a master's degree or higher in the latest study compared with 25.88% in 2014.

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TABLE 6
Confirmatory Factor Analysis Results—Knowledge Areas

1. Care delivery and reimbursement models

Accountable care organizations

Adherence to care regimen

Differences in and application of age-specific care

Life span considerations

Alternative care facilities (e.g., assisted living, group homes, residential treatment facilities)

Case management models, processes, and tools

Coding methodologies (e.g., Diagnosis-Related Group, *Diagnostic and Statistical Manual of Mental Disorders*, *International Classification of Diseases*, *Current Procedural Terminology*)

Continuum of care/continuum of health and human/social services

Cost-containment principles

Factors used to identify client's acuity or severity levels

Financial resources (e.g., waiver programs, special needs trusts, viatical settlements)

Goals and objectives of case management practice

Health care delivery systems

Hospice, palliative, and end-of-life care

Insurance principles (e.g., health, disability, workers' compensation, long-term care)

Interdisciplinary/interprofessional care team

Levels of care and care settings

Managed care insurance concepts

Management of clients with acute and chronic illness(es)

Management of clients with disability(ies)

Medication safety assessment, reconciliation, and management

Military and veteran benefit programs (e.g., TRICARE and Veterans Health Administration)

Models of care delivery (e.g., patient-centered medical home, health home, chronic care, care coordination)

Population health

Negotiation techniques

Physical functioning and behavioral health assessment

Private benefit programs (e.g., pharmacy benefits management, indemnity, employer-sponsored health coverage, individually purchased insurance, home care benefits, COBRA)

Public benefit programs (e.g., SSI, SSDI, Medicare, Medicaid)

Employer-based health and wellness programs

Reimbursement and payment methodologies (e.g., bundled payment, case rate, prospective payment systems, value-based care, financial risk models)

Roles and functions of case managers in various care/practice settings

Roles and functions of other health care providers in various care/practice settings

Transitions of care/transitional care

Utilization management principles and guidelines

Collaborative/comprehensive/integrated/holistic case management services

(*continues*)

TABLE 6
Confirmatory Factor Analysis Results—Knowledge Areas (*Continued*)

Caseload considerations

Alternative care sites (e.g., nontraditional sites of care, telehealth, virtual care)

2. Psychosocial concepts and support systems

Abuse and neglect (e.g., emotional, psychological, physical, financial)

Behavioral change theories and stages

Behavioral health concepts and symptoms (e.g., diagnosis, dual diagnoses, co-occurring disorders, substance use)

Client activation and readiness to change

Client empowerment

Client engagement

Client self-care management (e.g., self-advocacy, self-directed care, informed decision-making, shared decision-making, health education)

Community resources (e.g., elder care services, transportation, fraternal/religious organizations, meal delivery services, pharmacy assistance programs)

Conflict resolution strategies

Crisis intervention strategies

Client support system dynamics

Health coaching and counseling

Health literacy

Interpersonal communication (e.g., group dynamics, relationship building)

Interview tools and techniques (e.g., motivational interviewing)

Multicultural, spiritual, and religious factors that may affect the client's health

Psychological and neuropsychological assessment

Psychosocial aspects of chronic illness and disability

Resources for the uninsured or underinsured

Supportive care programs (e.g., support groups, pastoral counseling, disease-based organizations, bereavement counseling)

Wellness and illness prevention programs, concepts, and strategies

Social determinants of health

Gender health (e.g., sexual orientation, gender expression, gender identity)

3. Quality and outcomes evaluation and measurement

Accreditation standards and requirements

Cost–benefit analysis

Data interpretation and reporting

Health care analytics (e.g., health risk assessment, predictive modeling, Adjusted Clinical Group)

Program evaluation methods

Quality and performance improvement concepts

Quality indicators and applications

Sources of quality indicators (e.g., Centers for Medicare & Medicaid Services, URAC, National Committee for Quality Assurance, National Quality Forum, Agency for Healthcare Research and Quality, National Quality Strategy)

Types of quality indicators (e.g., clinical, financial, productivity, utilization, client experience of care)

Evidence-based care guidelines related to case management

(*continues*)

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TABLE 6
Confirmatory Factor Analysis Results—Knowledge Areas (*Continued*)

4. Rehabilitation concepts and strategies
Adaptive technologies (e.g., text telephone device, teletypewriter, telecommunication device for the deaf, orientation and mobility services)
Functional capacity evaluation
Rehabilitation posthospitalization or acute health condition
Vocational and rehabilitation service delivery systems
Vocational aspects of disability(ies) and illness (e.g., job analysis and accommodation, life care planning)
Rehabilitation concepts (e.g., medical rehabilitation, substance use rehabilitation, vocational rehabilitation, return-to-work strategies)
5. Ethical, legal, and practice standards
Case recording and documentation
Ethics related to care delivery (e.g., principles, advocacy, experimental treatments, end of life, advance directives, refusal of treatment/services)
Ethics related to professional practice (e.g., cultural and linguistic sensitivity, code of professional conduct, 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, Affordable Care Act, HITECH Act)
Legal and regulatory requirements applicable to case management practice
Privacy and confidentiality
Risk management
Self-care, safety, and well-being as a professional
Standards of practice (e.g., Case Management Society of America Standards of Practice for Case Management, National Association of Social Work Standards for Case Management)

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TABLE 7
CCM Test Specifications Summary

Domain	Number of Knowledge Statements	Number of Examination Items	Percentage of Examination Items
1. Care delivery and reimbursement methods	37	42	28
2. Psychosocial concepts and support systems	23	38	25
3. Quality and outcomes evaluation and measurement	10	29	19
4. Rehabilitation concepts and strategies	6	16	11
5. Ethical, legal, and practice standards	9	25	17
Total	85	150	100

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Table 8 shows how case managers prepared themselves for the case management role. Consistent with prior years, the study respondents reported that case management is largely learned on-the-job (43.45% of respondents), with another 9.91% describing their training as self-directed/self-taught. However, one third (33.62%) noted their learning about the practice was via conferences and seminars, plus on-the-job training; this reflects a growing number of offerings to help support the professional development of case managers today in diverse ways other than on-the-job training. In addition, 5.47% reported learning based on an academic degree or certificate-granting formal education programs. Despite the increase from 3.14% in 2014, this rise in preparation based on academic programs continues to be insufficient to address the workforce challenges (Tahan et al., 2016) of turnover and retirement due to the aging of the workforce. In addition, the advanced academic degrees were largely reflective of the educational backgrounds of the case managers in their requisite health discipline, which qualify them for a professional case management role. This shift may also be reflective of CCM examination eligibility guideline changes that occurred 6 years ago, allowing individuals with a bachelor's degree or higher and with qualifying work experience to apply for certification.

The lack of formal academic preparation of case managers for their roles is primarily related to the limited college or university-based degree-granting programs. Treiger and Fink-Samnick (2016, p. 37) reported the availability of only six such programs in the United States, two of which are offered online. Such concern

TABLE 8
Methods Case Managers Used to Learn Case Management Practice

Primary Method	*n* (%)
Conferences and seminars	148 (5.47)
Conferences and seminars, plus on-the-job training	909 (33.62)
Formal degree-granting program	12 (0.44)
Formal degree-granting program, plus on-the-job training	118 (4.36)
On-the-job training only	1,175 (43.45)
Postgraduate certificate program	18 (0.67)
Self-directed/self-taught	268 (9.91)
Other	56 (2.07)
Total	2,704 (100.00)
Missing	106
Grand total	2,810

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Over the conduct of four role and function studies spanning 15 years (2004–2019), trends can be observed that speak to the specifics of the evolution of case management practice.

is also evident in the findings of this study in which only 5.47% reported having learned the practice of case management in a formal academic program; the 2.33-percentage point increase from the 2014 study remains insufficient to meet the challenges of workforce management and succession planning in case management.

Case Management Practice Changes: 2004–2019

Over the conduct of four role and function studies spanning 15 years (2004–2019), trends can be observed that speak to the specifics of the evolution of case management practice. As noted in Part I (Tahan et al., 2020), there is greater diversity in the health and human services discipline backgrounds among professional case managers. Although nursing remains the dominant background among case managers, there has been a significant increase in social workers in case management practice, accounting for 3.4% of survey participants in 2004, 1.7% in 2009, 5.8% in 2014, and 11.2% in 2019. Since 2009, there has been a small, but significant, population of vocational rehabilitation/disability management professionals among the case management survey participants: 1.6% in 2009, 2.3% in 2014, and 2.6% in 2019. In addition, since the 2014 role and function study, the population of case managers with a counseling background has increased slightly, from 1.1% of survey participants in 2014 to 1.26% in 2019. Similarly, occupational, physical, and respiratory therapists accounted for 0.6% in both 2014 and 2019.

Although nursing remains the dominant background among case managers, there has been a significant increase in social workers in case management practice, accounting for 3.4% of survey participants in 2004, 1.7% in 2009, 5.8% in 2014, and 11.2% in 2019.

Also informative is the trend among job titles in the 2004–2019 period. Although the most common title continues to be care/case manager, the percentage among survey participants has declined: from 82% in 2004 to 65.6% in 2009, 59.5% in 2014, and 52.7% in 2019. A significant increase has been logged in the job title of manager/director: from 2.4% in 2004 to 13.4% in 2009, 16.4% in 2014, and 14.4% in 2019. The increase in those occupying a leadership role is further evidence of the maturation of professional case management practice and the perceived value this practice brings to healthcare organizations and executives, especially because of the recent emphasis on value-based care and reimbursement. Further evidence can also be found in the fact that professional case management practice is not defined by a 5-day-a-week, 8-hour-a-day work schedule. The current study findings show the hours of operations of case management programs/departments have extended to 7 days a week and often to 12 hours or more per day.

Further insights can be gleaned from practice settings over the 2004–2019 period. The most common settings over the 15-year period are health plan/insurance/reinsurance, at approximately 29%, and hospital/acute care, which ranged from 18.8% to 22.8% over that period. These practice settings continue to be at the center of case management, underscoring the importance of the professional case manager to help improve outcomes and mitigate financial risks, such as to reduce readmission penalties and other outcomes that are directly associated with financial reimbursement risk to the provider. In addition, the increased presence of professional case managers in these practice settings affirms that these professionals are invaluable health care team members for both providers and payers of care.

Practice setting changes over the 2004–2019 period include the emergence of ambulatory care, which increased from 2.8% for survey participants in 2009 to 5.2% in 2014 and 5.4% in 2019. The continued rise of case managers practicing in these care settings is possibly a direct result of the recent dynamics of the healthcare industry, with a greater focus on primary care, health/medical homes, and population health management. Case managers in these settings are able to help reduce financial reimbursement risk by avoiding the penalties that healthcare providers potentially incur through adoption of value-based care and reimbursement initiatives (e.g., hospital readmission reduction program and pay based on value-based care). At the same time, independent/private case or care management as a care setting decreased, from 18.2% of survey participants in 2004 and 14.4% in 2009 to 2.1% in 2014 and 6.2% in 2019. Private case management tends to serve clients with highly

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complex, catastrophic, and disability management needs, requiring long-term case management services. The decrease is unexplainable, except perhaps fewer professionals from this practice setting volunteered to participate in this study. The demand for independent/private case managers continues, especially as contracted case managers for the management of workers' compensation clients and those with disabilities requiring intensive resources and services.

Finally, the 2019 role and function study revealed that utilization review/utilization management is evolving yet again, as a separate function from the case manager's role responsibilities. This is perhaps due to an increased focus on the necessary and appropriate allocation of resources and revenue cycle-based practices. As discussed earlier in this article, IOAs computed for job title subgroups were lowest for respondents with quality specialist and utilization reviewer/manager titles; this is evidence of the differentiation as case management practice involves provision of direct care to clients/support systems whereas utilization management and quality specialist roles do not. This trend will bear monitoring as the current sociopolitical and economic environment puts more emphasis on outcomes measurement in case management, as well as demonstrative value measured in a financial manner.

Conclusion

The professional case management practice has continued to evolve, especially to meet the demands imposed on the health care industry by the various stakeholders including the clients/support systems, regulators, payers, providers, and others. As articulated in the two-part article series based on the 2019 role and function study of case managers, the impact on the practice reflects the consequences of health care's broader socioeconomic and political dynamics. These influences also necessitate the update of the blueprint of the CCM certification examination through the regular conduct of the role and functions study in order to ensure the examination remains relevant and substantiated through evidence of the current practice of case management. The study findings described in this article have contributed to the necessary and important goal set by the CCMC: a CCM certification examination that continues to be current, valid, reliable, and substantiated in practice.

Another value of the 2019 study is its comprehensive documentation of case management practice through clear descriptions of the roles and functions of professional case managers, inclusive of the identification of the key knowledge areas, skills, and abilities required for impactful and competent performance. These findings are invaluable in the design of training and educational programs for the ongoing professional development of case managers whether in formal academic programs or in continuing education activities. In addition, the rigor of the instrument development process, which resulted in a comprehensive survey for use in this study, presents an opportunity for further research, such as to examine the roles of case managers and their impact on key provider/organizational and client-based outcomes.

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