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Report from the Advanced-Level Clinical Practice Audit Task Force of the Commission on Dietetic Registration: Results of the 2013 Advanced-Level Clinical Practice Audit

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HISTORICALLY, THE COMMISSION on Dietetic Registration (CDR) and the Academy of Nutrition and Dietetics (Academy) have used consensus-based definitions of advanced-level practice (ALP) in nutrition and dietetics.[1-5] Prior research by Bradley and colleagues,[6] Skipper and Lewis,[7] and Brody and colleauges[8,9] defined attributes of ALP registered dietitian nutritionists (RDNs) in general, medical nutrition therapy, and clinical nutrition and dietetics practice. The Academy broadly defines the ALP RDN as one who "demonstrates a high level of skills, knowledge, and behaviors. The individual exhibits a set of characteristics that include leadership and vision and demonstrates effectiveness in planning, evaluating, and communicating targeted outcomes."[10] Yet, delineation of job functions representative of ALP has been difficult to elucidate, either generally or in focused areas of practice.

From 2005 through 2007, CDR conducted a practice audit to identify and delineate ALP in nutrition and dietetics and to examine the need for an advanced practice credential. A common core of advanced practice tasks representing all practice segments was indiscernible from these data.[5] Study conclusions suggested focused practice areas including clinical nutrition, community nutrition, management, business, or education/research were likely to have unique ALP characteristics and practice tasks, justifying the need for future studies to concentrate on only one practice area.

Thus, in 2011, the CDR commissioned a second Task Force, the Advanced-Level Clinical Practice Audit Task Force, to conduct a practice audit in clinical nutrition practice and, if feasible, develop an advanced practice credential for RDNs in clinical practice. Clinical nutrition was selected as the specific practice segment because it represents the segment in which the largest proportion of RDNs practice. In "Developing an Advanced Practice Credential for Registered Dietitian Nutritionists in Clinical Nutrition Practice,"[11] Brody and colleagues describe the charge of the Task Force, the definition of clinical nutrition and dietetics practice, and the process used to explore, define, and design the new certification program recognizing advanced clinical nutrition practice.

An important step in that process, once the basic concept and potential value of the certification program had been provisionally proven in the market, was to discover what work those currently practicing in clinical nutrition at an advanced level *actually do*—the work that sets them apart from entry-level and beyond-entry-level (BEL) RDNs. Defining the credential in terms of the tasks performed by actual ALP RDNs provides the fundamental justification for certification and credentialing, namely to protect the public by warranting that credentialed practitioners are able to perform their work in a safe and effective manner. Task identification is also a requirement for developing a valid, fair, and legally defensible credentialing exam. According to the National Commission for Certifying Agencies:

The certification program must analyze, define, and publish performance domains and tasks related to the purpose of the credential, and the knowledge and/or skill associated with the performance domains and tasks, and use them to develop specifications for the assessment instruments. The certification program must employ assessment instruments that are derived from the job/practice analysis …[12]

The approach used by CDR to meet these requirements in all its credentialing and certification efforts is to conduct *practice audits*. This article details the results of the 2013 Advanced-Level Clinical Practice Audit, commissioned and analyzed by the Task Force.

POPULATION

Previous efforts to define advanced clinical practice in nutrition have not been widely accepted in the profession, and no canonical roster of all current ALP RDNs is available.[11] The Task Force chose instead to use the results from this practice audit empirically to identify a study population that includes likely ALP RDNs. In order to find a study population of ALP RDNs in clinical practice, the Task Force needed to start with the population of all RDNs in the United States and progressively narrow the group. Initially, only those registered for more than 3 years, referred to as BEL RDNs, were included because experience is an important foundation for advanced practice. The focus was again tightened to include only clinical BEL RDNs, where "clinical" was defined by the Task Force as currently employed or self-employed in nutrition and dietetics, and spending at least 20% of

work time providing direct nutrition care to individuals and/or groups. This broad definition encompasses direct patient/client care work in traditional acute, ambulatory, and long-term care settings, as well as in community, private practice, home care, and other settings. From the subset of "clinical" BEL RDNs, the Task Force imposed initial criteria (based on theoretical considerations[6-8]) to further refine the focus to a group of possible ALP RDNs. These criteria included those registered for 8 or more years and with a master's degree or higher.

METHODS

To operationalize the narrowing of focus described, a two-stage survey protocol was employed. Stage 1 consisted of an exploratory web-based survey of all BEL RDNs to ascertain those in clinical practice, as defined, who were possibly ALP RDNs.

Stage 2 consisted of two parallel efforts. The first (Stage 2a) was a postal mail (plus web) survey of a sample of ALP RDNs to audit what they do in their clinical practice (tasks). An additional (Stage 2b) web survey of remaining possible ALP RDNs and all BEL RDNs able to be reached by e-mail was conducted, asking for the same information about their practice.

US BEL RDNs (n=70,040) with deliverable e-mail addresses on file were invited by e-mail with a link to the Stage 1 web-based screening survey, including two follow-up e-mails to nonrespondents. An additional 5,718 BEL RDNs with no or undeliverable e-mail addresses on file were mailed a postcard with the survey link. Thus all 75,758 BEL RDNs in the CDR directory of US RDNs were given the opportunity to participate in the Stage 1 survey, which was collected from January 3 through January 21, 2013. A third-party research firm handled invitation dissemination and data collection, though communications were all identified as originating with CDR and the Task Force.

A total of 29,175 BEL RDNs responded to the Stage 1 survey, for a response rate of 39%; 12,922 respondents (44%) indicated they were not currently working in clinical practice (as defined by the Task Force), and were thus excluded. The balance of 16,253 "clinical" respondents, representing 56% of all domestic BEL RDNs, was subdivided into

6,330 "possible ALP RDNs" (registered 8 or more years, with a master's degree or higher) and 9,923 BEL RDNs.

From the 6,330 "possible ALP RDNs," a stratified sample, of 2,400, based on focus area of practice, was invited to the Stage 2a mail survey (with web completion option). Significant effort was made to generate a high response rate, including use of an alert letter, reminder postcards and e-mails, follow-up mailings of the survey kit to nonrespondents, and multiple incentives to participate. Stage 2a data were collected from January 29 through March 18, 2013, resulting in 1,932 usable responses. This exceptional 81% response rate increases confidence that results from this audit sample are truly representative of the larger population from which the sample was selected.

The remaining 3,930 possible ALP RDNs and 9,728 BELs from Stage 1 able to be reached by e-mail were invited in Stage 2b to provide the same data as the Stage 2a postal mail survey via a web-based instrument. One hundred ninety-five Stage 1 respondents were unable to be contacted for Stage 2b participation. This protocol also offered a participation incentive to both stages and included multiple e-mail follow-ups with nonrespondents. Stage 2b data were collected from February 7 through 25, 2013, resulting in 5,880 usable responses (43% response rate).

Survey Instrument

Content development for the survey instrument began with a review of relevant literature,[4,5,7-9,13-23] and input from various stakeholder groups (CDR, the Council on Future Practice of the Academy, the Accreditation Council for Education in Nutrition and Dietetics, dietetic practice groups, and other experts). Screening questions for Stage 1 (to identify those in clinical practice and possible ALP RDNs) were adapted from prior CDR audits[24-26] and other research.[7,8] In Stage 1, the Task Force used a questioning approach they developed and tested to gauge aspects of practice autonomy.

The battery of questions for the Stage 2 audit included 70 general tasks believed to be definitive of general advanced clinical nutrition practice. The tasks were based on and grouped into seven domains: Nutrition Assessment, Diagnosis, Intervention, and Monitoring/Evaluation;

and Support Nutrition Care, Manage Systems of Nutrition Care, and Conduct Research and Design/Develop Systems of Nutrition Care. They were adapted from tasks defined by prior research[9] and consensus documents such as the Academy's Standards of Practice in clinically relevant focus areas.[13,14,16,18-22] Task performance, frequency of performance, and risk in terms of perceived risk if the task was performed poorly were measured. These metrics were similar (though not identical) to measures employed in CDR's periodic audits of entry-level RDN practice.[25,26]

Prior to collecting data, the autonomy and task questions were tested with 16 practitioners via a cognitive interviewing protocol attempting to uncover and remedy issues of item unreliability. Instruments for both stages were also pilot-tested among 192 "clinical" BEL RDNs.

RESULTS

Stage 2 results included a total of 7,822 BEL RDNs (including 10 who responded to the pilot test): 1,932 possible ALP RDNs from Stage 2a and 5,880 possible ALP RDNs from Stage 2b. Comparison of results from the two efforts revealed no statistical differences between the two groups (despite differences in data collection methodology and response rates), so they were analyzed jointly. Results from these 7,822 respondents represent a projected population of 42,200 clinical BEL RDNs and are subject to a margin of error of ±1.0% at the 95% confidence level.

The Task Force began an iterative process of identifying a study population of RDNs that most likely practiced at the advanced level, including those registered as RDNs for 8 or more years and holding a master's degree or higher. Survey results indicated that this group comprised 39% of all BEL RDNs—clearly greater than expected numbers of actual ALP RDNs, so additional refinement was necessary. The Task Force turned to theoretical models of advanced professional practice to ascertain criteria that could be used as additional filters to identify RDNs likely to practice at the advanced level. Based on these models,[6-8] variables considered for refining the study population definition included advanced training, additional credentials held, expertise in one or more focus areas, professional

achievement (presenting and/or publishing), and autonomy of practice.

Description of the ALP RDN

The Task Force examined audit results by various combinations and levels of these variables, finally converging on a working description of the study population of ALP RDNs. These variables are referred to as attributes in Table 1 and were used to determine differences between ALP and BEL RDNs. Eligibility criteria used to capture ALP RDNs included 8 years post-registration, an advanced degree, and presented or published (combined), as reflected by the 100% responses in Table 1. Longer time post-registration (20 years) and master's degree prior to registration were more common among ALP RDNs. Additional attributes most characteristic of ALP RDNs included presenting and/or publishing.

The goal was to identify a study population that most likely includes ALP RDNs, not to exhaustively define ALP. The first two requirements (8 or more years registered and master's degree or higher) are consistent with Bradley and colleagues[6] and Brody and colleagues[8] and recommendations from the Academy's Council on Future Practice.[4,27] Median years registered is 25 for the study population, 18 for all other clinical BELs. The proportion of other clinical BEL RDNs holding a master's or higher is 38%.

Presenting/publishing was operationally defined as indicating that respondents had, since registration, personally done one or more of the following: presented posters, research, and/or a practice topic at a professional conference; had a research

Table 1. Comparison of demographics and attributes of advanced-level practice (ALP) and beyond-entry-level (BEL) registered dietitian nutritionists (RDNs)

	ALP RDNs	BEL RDNs
Median age (y)	55	49
Location (US Census regions):	←————%————→	
Northeast	22	20
Midwest	25	28
South	32	32
West	19	19
% registered as RDNs 8 years or more[a]	100	78
% registered as RDNs 20 years or more	69	46
% holding a master's or higher[a]	100	38
% earning master's before registration	51	21
% holding one or more nutrition/dietetics-related credentials (BC-ADM[b]**, CDE**[c]**, CNSC**[d]**, CDR**[e] **Board Certified Specialists, FADA**[f]**)**	48	37
% participating in post-RDN formal supervised clinical practice experience (eg, traineeships, residencies, fellowships)	8	4
% who have presented or published combined[a]	100	33
% who have presented posters, research, and/or a practice topic at a professional conference	85	27
% who have published in a peer-reviewed professional journal, published a professional book or chapter, and/or have edited/reviewed a professional journal article or book	70	18
% indicating primary practice setting as:		
Acute-care community hospital	15	26
Long-term, extended care, or assisted living facility	11	16
Community or public health program	7	11
Acute-care teaching hospital	18	13
Ambulatory/outpatient care facility	26	20
Private practice	11	5

[a]100% of participants had these attributes because they were eligibility criteria for the audit.
[b]BC-ADM=Board Certified—Advanced Diabetes Management.
[c]CDE=Certified Diabetes Educator.
[d]CNSC=Certified Nutrition Support Clinician.
[e]CDR=Commission on Dietetic Registration.
[f]FADA=Fellow of the American Dietetic Association.

Table 2. Autonomy: Comparison of advanced-level practice (ALP) and beyond-entry-level (BEL) registered dietitian nutritionists (RDNs)

	ALP RDNs	BEL RDNs
	←——————%——————→	
% personally writing orders to:		
Initiate or change oral diets	50	31
Initiate or change vitamin, mineral, or other nutrition/dietary supplements	48	28
Initiate or change the enteral nutrition product, rate or concentration	38	28
Initiate or change the parenteral nutrition macronutrients, electrolytes, vitamins, and minerals	20	13
Initiate or change the dose of nutrition related medications	19	9
Initiate orders for laboratory or other tests	29	17
Initiate a consult to another professional to collaborate in managing a specific problem	37	19
% developing/directing independently		
Initiate or change a counseling or education program based on multiple data sets from the population served	66	33
Initiate or change contracts to provide nutrition programs	31	13
Initiate or change a program to measure and manage nutrition outcomes	55	25

or non−research article published in a peer-reviewed professional journal; published a professional book or book chapter; edited/reviewed a professional journal article or book; and/or had an abstract published. All (100%) of the study population has done one or more of these, compared with 33% of all other clinical BELs.

Autonomous practice was measured in two categories as illustrated in Table 2. In the first, respondents were asked to indicate the highest level at which they personally perform in their current clinical practice in seven areas of order-writing. Autonomy was operationalized by indication that the practitioner was personally able to write orders (co-signed by a physician, or not), as opposed to entering orders in the physician's order section, as specified by a facility-approved protocol, or making recommendations to a physician. The Task Force was sensitive to the fact that order-writing privileges are often constrained by facility policies, and a second part of the same question in fact indicated that many RDNs feel competent to write orders, but are not permitted in current circumstances. The second category measuring autonomy asked about level of performance for three managerial items. Autonomy was operationalized by indication that the practitioner personally develops and/or directs such programs,

as opposed to implementing programs developed by others, or assessing problems and needs, then recommending changes to a program.

Additional attributes surveyed are compared in Table 1. These findings are not absolute requirements for advanced practice, but the research suggests that those meeting these criteria are more likely to be ALP RDNs.

Of the 7,822 Stage 2 BEL RDNs, 1,330 (17%) attained all the attributes used in our definition (graduate degree, 8 years post-RDN, published and/or presented, and autonomy) and were therefore considered part of the study population

(ALP RDNs)—a proportion much reduced from the 39% initially considered to be possible ALP RDNs. The results for this group of 1,330 RDNs meeting the ALP criteria are the primary focus for the analysis of ALP tasks.

ALP Tasks

Autonomous practice is characteristic of advanced practice and encompasses the approach to practice that ALP RDNs apply to the 70 tasks within the 7 domains of practice explored in Stage 2 of the survey. As shown in Table 3, virtually all respondents are active in the

Table 3. Comparison of advanced-level practice (ALP) and beyond-entry-level (BEL) registered dietitian nutritionists (RDNs) in seven practice categories[a]

	ALP RDNs	BEL RDNs
	←——————%——————→	
Nutrition assessment (19 tasks)	100	99
Nutrition diagnosis (3 tasks)	97	94
Nutrition intervention (5 tasks)	99	99
Nutrition monitoring/evaluation (9 tasks)	99	98
Support nutrition care (5 tasks)	78	65
Manage systems of nutrition care (16 tasks)	95	89
Conduct research and design/develop systems of nutrition care (13 tasks)	88	74

[a]Percentages shown are those performing one or more tasks in the category.

Table 4. Stage 2 Task exam inclusion: Performance, frequency, and risk

Exam inclusion[a]	Task number	Task description	% Performing			Mean Frequency (days/month)			Mean Risk Rating (1=very low, 5=very high)		
			Total	ALP[b] RDNs[c]	BEL[d] RDNs	Total	ALP RDNs	BEL RDNs	Total	ALP RDNs	BEL RDNs
		Nutrition Assessment									
Yes	1	Interpret nutrition-related laboratory data in context with other clinical findings	96	97	95	14.7	14.4	14.7	3.4	3.5	3.3
Yes	2	Identify barriers to nutrient delivery	91	92	90	12.5	12.7	12.5	3.3	3.4	3.3
Yes	3	Determine micronutrient requirements of patients/clients	85	91	84	8.1	8.9	8.0	3.2	3.3	3.2
Yes	4	Use the laboratory data that are most relevant for nutrition assessment of individual patients/clients	95	97	95	14.5	14.1	14.6	3.3	3.5	3.3
Yes	5	Use those components of a diet history that are most critical for the development of a nutrition diagnosis	94	96	94	13.4	13.4	13.3	3.0	3.1	3.0
Yes	6	Use appropriate anthropometric and body composition measurements for a specific patient/client condition	91	94	90	14.0	13.4	14.1	3.1	3.1	3.0
Yes	7	Select nutrition screening and assessment tools that are most appropriate for specific patient/client populations	87	90	86	12.2	11.5	12.4	3.0	3.1	2.9
Yes	8	Interpret anthropometric and body composition measurements for a specific patient/client condition	91	94	90	13.9	13.3	14.1	3.0	3.1	3.0
Yes	9	Select most appropriate predictive method for estimating calorie and protein needs	93	95	93	13.5	12.7	13.6	3.1	3.1	3.1
Yes	10	Conduct a detailed health and social history of a patient/client, including procedures and treatments, with accuracy and efficiency (ie, prioritize questions to extract most relevant information)	90	94	89	11.5	11.6	11.4	3.1	3.2	3.0
Yes	11	Identify the diagnostic tests and procedures that are most relevant for the nutrition assessment of a patient/client	83	87	83	10.2	10.2	10.2	3.2	3.3	3.2
Yes	12	Evaluate a patient/client's medications and assess their potential impact on the patient/client's nutrition status and condition	94	96	93	12.6	12.8	12.6	3.6	3.7	3.5
Yes	13	Evaluate the patient/client's social environment and lifestyle and determine the resources and support mechanisms that are available	93	96	92	11.2	11.6	11.1	3.0	3.2	3.0
Yes	14	Evaluate the interactions among medications, botanicals, and nutrients and their potential impact on the patient/client's nutrition status and condition	91	93	91	9.6	10.2	9.5	3.5	3.7	3.5

Table 4. Stage 2 Task exam inclusion: Performance, frequency, and risk (*continued*)

Exam inclusion[a]	Task number	Task description	% Performing			Mean Frequency (days/month)			Mean Risk Rating (1=very low, 5=very high)		
			Total	ALP[b] RDNs[c]	BEL[d] RDNs	Total	ALP RDNs	BEL RDNs	Total	ALP RDNs	BEL RDNs
Yes	15	Conduct in-depth, nutrition-focused physical exams, using tools and equipment that are appropriate for the specific patient/client condition[e]	44	54	42	5.7	6.0	5.6	3.2	3.3	3.2
Yes	16	Interpret in-depth nutrition-focused physical examination findings and develop recommendations for nutrition interventions	59	67	58	7.3	7.2	7.3	3.3	3.4	3.3
Yes	17	Evaluate a patient/client's psychosocial condition and other sources of stress that may impact nutrition status	89	93	88	10.1	10.7	9.9	3.2	3.3	3.1
Yes	18	Adapt communication/interview style to optimize the effectiveness of interactions with a patient/client	95	97	95	14.1	14.5	14.1	3.2	3.3	3.2
Yes	19	Evaluate a patient's/client's feeding skills and abilities and determine the need for adaptive equipment	65	67	65	8.1	7.6	8.2	3.5	3.6	3.5
		Nutrition Diagnosis									
Yes	20	Utilize the most appropriate resources to collect the information required to diagnose patient/clients who have limited ability to communicate	83	84	83	8.3	8.2	8.3	3.5	3.6	3.4
Yes	21	Diagnose nutrition problems based on signs and symptoms in the patient/client history and nutrition-focused physical exam	85	88	84	11.5	11.1	11.6	3.5	3.6	3.4
Yes	22	Prioritize nutrition diagnoses to identify those requiring immediate intervention	89	92	88	13.4	12.7	13.5	3.6	3.8	3.6
		Nutrition Intervention									
Yes	23	Distinguish between the effects of the nutrition intervention and the effects of the disease process or the medical intervention	89	92	89	11.4	11.3	11.4	3.4	3.5	3.4
Yes	24	Design nutrition interventions that incorporate information about the patient/client's genetic profile[e]	45	52	44	7.6	7.6	7.6	3.2	3.3	3.2
Yes	25	Recommend or refer for adaptive equipment based on a patient/client's feeding skills	58	59	58	4.5	4.2	4.5	3.4	3.5	3.4
Yes	26	Use appropriate education/counseling models, strategies and techniques (eg, stages of change, social cognitive theory, motivational interviewing) to affect behavioral changes in patient/clients	92	94	91	10.8	11.8	10.6	3.2	3.3	3.1
Yes	27	Guide patient/client and their families in health care decision-making and setting goals	91	94	90	10.2	10.9	10.0	3.3	3.4	3.2

Table 4. Stage 2 Task exam inclusion: Performance, frequency, and risk (*continued*)

Exam inclusion[a]	Task number	Task description	% Performing Total	% Performing ALP[b] RDNs[c]	% Performing BEL[d] RDNs	Mean Frequency (days/month) Total	Mean Frequency ALP RDNs	Mean Frequency BEL RDNs	Mean Risk Rating (1=very low, 5=very high) Total	Mean Risk ALP RDNs	Mean Risk BEL RDNs
		Nutrition Monitoring and Evaluation									
Yes	28	Evaluate the nutrition implications of the patient/client's treatment plan and adjust as needed	94	96	94	12.1	12.1	12.1	3.4	3.5	3.4
Yes	29	Identify measurable outcome indicators for a nutrition intervention using an evidence-based approach	89	92	88	11.3	11.3	11.3	3.2	3.3	3.2
Yes	30	Coordinate continuity of care (eg, coordinating care with previous or future facilities)	75	79	74	5.8	6.2	5.7	3.3	3.5	3.3
Yes	31	Arrange referrals to external agencies (eg, home care agencies, community resources) as dictated by the patient/client's needs	58	65	57	4.3	4.4	4.3	3.2	3.4	3.2
Yes	32	Refer patient/client to appropriate nutrition/dietetics specialists	71	76	70	3.0	3.1	3.0	3.2	3.2	3.1
Yes	33	Refer patient/client to appropriate healthcare team members	92	94	91	6.3	6.9	6.2	3.3	3.4	3.3
Yes	34	Evaluate deviations from an expected outcome (or established guideline indicator) for a given nutrition intervention for a patient/client	85	91	84	7.6	8.2	7.5	3.3	3.4	3.2
Yes	35	Assess an intervention's potential for adverse effects	86	91	85	8.6	9.1	8.5	3.6	3.8	3.6
Yes	36	Lead discussions regarding end-of-life nutrition-related decisions with patient/client or surrogate decision maker[e]	41	41	41	2.1	2.6	2.0	3.6	3.6	3.6
		Support Nutrition Care									
No	37	Determine the most appropriate parameters to monitor and evaluate the impact of nutrition policiesand programs on a community	30	37	28	3.2	3.1	3.2	3.1	3.1	3.0
No	38	Identify at-risk population groups based on assessment of nutrition-related population surveillance data	26	33	25	3.7	3.3	3.9	3.1	3.2	3.1
Yes	39	Lead an interdisciplinary team in designing nutrition related services, programs or protocols[e]	47	59	45	2.9	3.3	2.8	3.3	3.4	3.2
Yes	40	Develop programs or systems of care (eg, support groups, educational programs) that address needs of target populations[e]	48	60	45	2.4	2.8	2.2	3.0	3.1	3.0
No	41	Benchmark patient/client data against local, regional, or national databases (eg, the National Nosocomial Infection Surveillance System)	23	33	21	2.1	2.7	1.9	2.9	3.1	2.9

(continued on next page)

Table 4. Stage 2 Task exam inclusion: Performance, frequency, and risk (*continued*)

Exam inclusion[a]	Task number	Task description	% Performing Total	ALP[b] RDNs[c]	BEL[d] RDNs	Mean Frequency (days/month) Total	ALP RDNs	BEL RDNs	Mean Risk Rating (1=very low, 5=very high) Total	ALP RDNs	BEL RDNs
		Manage Systems of Nutrition Care									
Yes	42	Develop standards for nutrition care (eg, protocols, guidelines, practice tools)	64	75	62	1.7	2.2	1.6	3.5	3.6	3.5
Yes	43	Direct the implementation of continuous quality improvement programs	57	65	55	2.4	3.0	2.2	3.2	3.3	3.2
Yes	44	Evaluate the effectiveness of continuous quality improvement programs	58	64	56	1.9	2.4	1.8	3.1	3.3	3.1
Yes	45	Evaluate the cost-effectiveness of policies and procedures for patient/client care[e]	35	44	33	1.7	2.1	1.6	3.1	3.2	3.1
Yes	46	Select available technologies (hardware and software) to improve nutrition care[e]	34	49	31	1.5	1.6	1.5	2.9	3.0	2.9
No	47	Design and develop informatics systems to support nutrition care practice	19	26	17	1.7	2.0	1.6	3.1	3.3	3.1
No	48	Manage the integration of informatics in nutrition practice	22	30	20	2.8	3.1	2.7	3.1	3.2	3.1
No	49	Participate in the development of clinical, operational and financial databases upon which nutrition care outcomes can be derived, reported and used for improvement	22	29	21	2.0	2.3	1.9	3.1	3.3	3.1
No	50	Create new programs and services to generate revenue	34	46	31	1.6	2.0	1.5	2.9	3.0	2.8
No	51	Identify and pursue public and private resources/funding for nutrition care (eg, educational materials, additional staff)	30	43	28	1.7	1.8	1.7	2.8	2.9	2.7
No	52	Obtain and implement grants and external funding	13	23	11	1.9	1.9	1.8	2.8	2.9	2.8
No	53	Develop medical nutrition formularies based on the needs of a given patient/client population	32	36	31	1.4	1.7	1.3	3.4	3.4	3.4
Yes	54	Analyze the safety aspects of practices and procedures in delivering nutrition services and products[e]	39	45	38	2.5	3.0	2.4	3.7	3.8	3.7
Yes	55	Evaluate new tools and techniques for nutrition care	54	67	52	1.3	1.5	1.2	3.0	3.1	3.0
Yes	56	Develop and implement new tools and techniques for nutrition care[e]	46	60	44	1.2	1.5	1.2	3.1	3.1	3.1
Yes	57	Ensure compliance with local, state, and national rules and regulations	72	76	71	10.1	9.3	10.2	3.9	3.9	3.9
		Conduct Research and Design/Develop Systems of Nutrition Care									
No	58	Design research studies related to nutrition care practice	12	24	10	1.4	1.5	1.3	3.1	3.1	3.1

Table 4. Stage 2 Task exam inclusion: Performance, frequency, and risk (*continued*)

Exam inclusion[a]	Task number	Task description	% Performing			Mean Frequency (days/month)			Mean Risk Rating (1=very low, 5=very high)		
			Total	ALP[b] RDNs[c]	BEL[d] RDNs	Total	ALP RDNs	BEL RDNs	Total	ALP RDNs	BEL RDNs
No	59	Lead research studies related to nutrition care practice	9	18	7	2.1	2.2	2.0	3.1	3.1	3.1
No	60	Participate as a member of a research team in studies related to nutrition care	19	33	16	2.2	2.3	2.2	3.0	3.1	3.0
Yes	61	Design and develop continuous quality improvement programs[e]	39	50	37	1.3	1.7	1.2	3.1	3.3	3.1
Yes	62	Analyze data from nutrition care research[e]	33	46	31	1.6	1.8	1.6	3.1	3.2	3.1
Yes	63	Communicate research findings[e]	33	49	30	2.0	2.4	1.9	3.1	3.2	3.1
Yes	64	Evaluate published research to determine applicability to a clinical practice setting[e]	50	67	46	2.0	2.4	1.9	3.1	3.2	3.1
Yes	65	Utilize systematic methods to obtain published evidence to answer clinical questions and inform decisions[e]	50	66	46	2.5	2.8	2.4	3.2	3.3	3.2
Yes	66	Develop strategic plans for nutrition care for an organization/institution[e]	35	45	33	1.5	1.6	1.4	3.3	3.3	3.3
No	67	Develop strategic plans for nutrition care for a community[e]	15	22	14	1.3	1.5	1.3	3.2	3.3	3.1
Yes	68	Develop operational plans for nutrition care for an organization/institution[e]	29	38	27	1.5	1.6	1.4	3.3	3.4	3.3
No	69	Develop operational plans for nutrition care for a community[e]	12	17	11	1.3	1.6	1.2	3.2	3.3	3.2
No	70	Develop disaster preparedness plans to assure adequate food, water, supplies and nutrition needs	27	32	26	0.9	1.0	0.9	4.0	3.9	4.0

[a]Tasks included marked "Yes."
[b]ALP=advanced-level practice.
[c]RDN=registered dietitian nutritionist.
[d]BEL=beyond-entry-level.
[e]Most characteristic of ALP RDNs.

four domains of tasks mirroring the steps in the Nutrition Care Process.[28] In contrast, ALP RDNs have higher levels of involvement within the three domains: Support Nutrition Care, Manage Systems of Nutrition Care, and Conduct Research and Design/Develop Systems of Nutrition Care.

Table 4 provides a complete report of the task analysis of the survey, listing the 70 tasks within the seven major categories, and reporting three statistics (major columns) for each: percent performing (performed task in the past 3 years), mean frequency of performance (if performing), and mean risk rating. Within each major column, results are shown for the total of 7,822 responding RDs, the 1,330 designated as ALP RDNs, and the balance of 6,492 designated as BELs. Tasks are also designated as being included or excluded in the credentialing examination specifications.

Of the 70 tasks, 16 tasks were rejected from inclusion in the credentialing examination on the basis of being performed at a lower percentage (less than 50%) by all respondents. In some cases, the Task Force made exceptions and included tasks performed by less than 50% of respondents because the task differentiated ALP RDNs' performance from all others by at least 10% (eg, tasks 63-65) and/or the risk score was relatively high (eg, task number 54). The remaining 54 tasks were judged to be included in the examination. Of these 54 tasks, 18 (noted in Table 4) were most associated with ALP RDNs. These tasks tended to show a 10% or larger difference in performance between ALP and BEL RDNs.

DISCUSSION

One of the most difficult issues of the Task Force to was to identify attributes

of likely ALP RDNs in addition to setting criteria for examination candidacy, which would be guided by findings from the survey. Prior research[6-8] indicated that an advanced degree, at least 8 years of registration status, and some degree of professional achievement (eg, published or presented) were attributes of ALP RDNs. These attributes were used to distinguish ALP RDNs prior to analyzing task performance to increase the likelihood of capturing ALP. Results from the survey indicated ALP RDNs have more post-registration years, were more likely to have obtained a master's degree before registration, and have achieved professional milestones. In contrast, the Task Force set criteria for the ALP credential eligibility (including passing an exam evaluating task performance at an advanced level) less stringently. The criteria are deliberately not as rigorous as the attribute results from the survey indicate; further detail can be found in Brody and colleagues.[11]

The eligibility requirements are: 1) be an RDN for a least 4 calendar years; 2) have a graduate degree from a US regionally-accredited college or university (except those from arts and humanities categories; and 3) document 8,000 hours of clinical nutrition practice within the past 15 years, 800 of which must be within the past 2 years. An alternate pathway for RDNs without a graduate degree has also been defined. The alternate pathway includes the same practice hour requirements in addition to meeting two of three eligibility criteria.

Practice autonomy is a significant attribute of ALP[7] that the Task Force wanted to quantify both to confirm the expectation that practice autonomy is characteristic of ALP and also to demonstrate the potential value of ALP RDNs to stakeholders and patients/clients. As indicated in Table 2, this was the case when ALP and BEL RDNs were compared on the critical task of writing nutrition orders. In addition, ALP RDNs were also more likely to independently initiate or change counseling or education programs, contracts to provide nutrition programs, and programs to measure and manage nutrition outcomes.

The critical job of identifying tasks unique to ALP RDNs and tasks common among ALP RDNs and all other RDNs informs both stakeholders and patients/clients of what ALP RDNs offer in the delivery of nutrition care to individuals and groups. The identification of unique ALP practice tasks (noted in Table 4) and common practice tasks performed by both BEL and ALP RDNs (tasks identified for examination inclusion in Table 4) also provides the basis for the credentialing examination. The primary goal of the exam is to create items that test for these unique skills as well as common practice skills, albeit at a higher level of practice than would be expected from BEL RDNs. In addition, those tasks performed with more frequency by ALP RDNs and with higher risk provide the basis for content emphasis on the examination.

CONCLUSION

The 2013 CDR Advanced-Level Clinical Practice Audit provides a wealth of data on what RDNs in clinical practice do across the spectrum of clinical nutrition practice from BEL to ALP, as well as on autonomy and other attributes. These data provide support for the ALP credential in the specific practice area of clinical nutrition. The results of the audit provide, for the first time, a distinction between what it is clinical ALP RDNs do in practice that distinguishes them from entry-level and BEL RDNs. Several of the attributes, specifically graduate degree, more years registered, and achievement of professional milestones, are supported by prior research. Practice tasks most unique to ALP RDNs were identified, as were tasks performed by both ALP and BEL RDNs. ALP RDNs practice with more autonomy than BEL RDNs based on the audit findings. The complexity of the ALP credentialing examination items will evaluate these practice differences; the frequency of performance and task risk will guide content emphasis. The findings may be useful to educators, credentialing bodies, and researchers who seek to teach, train, and credential ALP RDNs at the advanced level. The process used to define the population and develop the audit provides a model for CDR to use with future advanced-level task forces.

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