# CALIFORNIA ACUPUNCTURE BOARD

# REVIEW OF THE NATIONAL CERTIFICATION COMMISSION FOR ACUPUNCTURE AND ORIENTAL MEDICINE EXAMINATIONS

OFFICE OF PROFESSIONAL EXAMINATION SERVICES

STATE OF CALIFORNIA

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DEPARTMENT OF CONSUMER AFFAIRS

# CALIFORNIA ACUPUNCTURE BOARD

# REVIEW OF THE NATIONAL CERTIFICATION COMMISSION FOR ACUPUNCTURE AND ORIENTAL MEDICINE EXAMINATIONS

This report was prepared and written by the
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PROFESSIONAL EXAMINATION SERVICES

# EXECUTIVE SUMMARY

Licensing boards and bureaus within the California Department of Consumer Affairs (DCA) are required to ensure that examination programs being used in the California licensure process comply with psychometric and legal standards. The California Acupuncture Board (Board) requested that DCA's Office of Professional Examination Services (OPES) complete a comprehensive review of the National Certification Commission for Acupuncture and Oriental Medicine's (NCCAOM) examination program. The NCCAOM examinations consist of four tests: Foundations of Oriental Medicine (FOM), Biomedicine (BIO), Acupuncture with Point Location (ACPL), and Chinese Herbology (CH). The purpose of the OPES review was to evaluate the suitability of the NCCAOM examinations as part of the requirements for licensure as an acupuncturist in California. This review was conducted jointly by OPES staff and two psychometric experts working as independent consultants (OPES Team).

OPES and its consultants reviewed documents provided by NCCAOM. Follow-up communications were held to clarify the procedures and practices used to validate and develop the NCCAOM examinations. A comprehensive evaluation of the documents was made to determine whether (a) occupational analysis, (b) examination development, (c) passing scores, (d) test administration, (e) examination performance, and (f) test security procedures met professional guidelines and technical standards. The OPES Team found that the procedures used to establish and support the validity and defensibility of the NCCAOM examination program components listed above meet professional guidelines and technical standards outlined in the *Standards for Educational and Psychological Testing (Standards)* and the California Business and Professions Code section 139.

OPES convened a panel of licensed California acupuncturists to serve as subject matter experts (SMEs) to review the content of each of the four NCCAOM examinations and to compare this content with the test plan for the California Acupuncture Licensure Examination (CALE), as based on the 2015 California Acupuncture Occupational Analysis (OA) performed by OPES. The SMEs were selected by OPES based on their experience, practice specialty, and geographic location of their practice

The SMEs reviewed the test plans and 60-70 sample items from each of the NCCAOM examinations to become familiar with the content of each exam. Once familiar with the content, the SMEs performed a comparison between the content of each of the four NCCAOM examinations and the job task and knowledge statements that make up the test plan for the CALE.

The results of the review by the SMEs indicate that:

1. The NCCAOM examinations are congruent with assessing many of the general areas of entry-level California acupuncture practice, e.g., acupuncture treatment, herbal therapy, diagnostic impressions, etc.

2. The NCCAOM examinations do not assess 100% of the general areas of entry-level California acupuncture practice identified in the 2015 California Acupuncture OA.

3. The NCCAOM examinations do not assess California-specific areas of entry-level acupuncture practice, including content related to the laws, regulations, and practice requirements specific to California.

Table 5 summarizes the results of the linkage study. The listed percentages describe the percent of content overlap between the NCCAOM exam content and the content of the CALE.

The content areas for each of the four NCCAOM examinations are provided in Appendices A through F, respectively. The CALE test plan (Table 6) specifies the job tasks and related knowledge tested by the CALE which a California acupuncturist is expected to have mastered at the time of licensure.

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# CHAPTER 1. INTRODUCTION

## PURPOSE OF THE COMPREHENSIVE REVIEW

Licensing boards and bureaus within the California Department of Consumer Affairs (DCA) are required to ensure that examination programs being used in the California licensure process comply with psychometric and legal standards. The public must be reasonably confident that an individual passing a licensing examination has the requisite knowledge and skills to competently and safely practice in the respective profession.

The California Acupuncture Board (Board) requested that DCA's Office of Professional Examination Services (OPES) complete a comprehensive review of the National Certification Commission for Acupuncture and Oriental Medicine's (NCCAOM) examination program. The NCCAOM examinations consist of four tests: Fundamentals of Oriental Medicine (FOM), Biomedicine (BIO), Acupuncture with Point Location (ACPL), and Chinese Herbology (CH).

The purpose of this review is to determine whether the NCCAOM examinations meet the professional guidelines and technical standards outlined in the *Standards for Educational and Psychological Testing (Standards)*[1] and California Business and Professions (B&P) Code section 139. This review was conducted jointly by OPES staff and two psychometric experts working as independent consultants. The consultants were selected by OPES based on their depth and breadth of experience, recommendations from professionals in licensure testing, and positive reports from their previous clients. In conjunction with this review, OPES conducted a linkage study to identify the areas of California acupuncture practice covered by the NCCAOM examinations.[2]

OPES, in collaboration with the Board, requested documentation from NCCAOM to determine whether the (a) occupational analysis,[3] (b) examination development, (c) passing scores,[4] (d) test administration, (e) examination performance, and (f) test security procedures met professional guidelines and technical standards outlined in the *Standards* and B&P Code section 139.

## CALIFORNIA LAW AND POLICY

Section 139 of the California B&P Code states:

> §139. (a) The Legislature finds and declares that occupational analyses and examination validation studies are fundamental components of licensure programs.

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[1] Unless otherwise stated, *Standards* references information taken from: American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (2014). *Standards for Educational and Psychological Testing*. Washington, DC: American Educational Research Association.

[2] The OPES staff conducting the review and linkage study do not participate in the development of the CALE examination.

[3] An occupational analysis is also known as a job analysis, practice analysis, or task analysis.

[4] A passing score is also known as a pass point or cut score.

It further requires that DCA develop a policy to address the minimum requirements for "psychometrically sound examination validation, examination development, and occupational analyses," including standards for the review of state and national examinations.

DCA policy, OPES 12-01, specifies the *Standards for Educational and Psychological Testing* (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 2014) and the *Principles for the Validation and Use of Personnel Selection Procedures*[5] (Society for Industrial and Occupational Psychology, 2003) as the technical and professional standards that should be followed to ensure that examinations used for licensure testing in California are psychometrically sound, job-related, and legally defensible.

The *Standards* includes a focus on professional credentialing[6] while, in general, the *Principles* are geared more towards personnel selection. As such, the *Standards* holds a more prominent place in this report.

## CONDUCTING THE REVIEW

The review of the NCCAOM examination program was conducted by two independent consultants hired by OPES and under the direction of OPES. One consultant performed an evaluation of the Acupuncture Occupational Analysis (OA) completed by NCCAOM and the application of the OA to the development of the NCCAOM examination plans, item content, and test forms. The other consultant performed an evaluation of the application of Computer Adaptive Testing (CAT) to the test development, test administration, and scoring of the NCCAOM examinations.

On February 27, 2015, OPES provided NCCAOM with the initial areas of inquiry for the review. A teleconference was held on March 9, 2015, between NCCAOM staff and OPES to discuss the review and to outline the procedures for OPES to receive the necessary documents and data. By May 13, 2015, attorneys for NCCAOM and DCA had agreed upon language for the nondisclosure agreement (NDA) between NCCAOM, OPES, and the California Acupuncture Board (the two consultants working with OPES were also parties to the NDA).

NCCAOM developed a secure SharePoint site to act as the secure repository and means of exchange of documents between OPES and NCCAOM. By June 10, 2015, secure credentials and log-ins had been established for OPES, NCCAOM had provided training in the use of the site, and the preliminary documents were posted and made available for OPES review.

Thereafter, areas of clarification or of further inquiry were provided to NCCAOM as needed. Teleconferences were scheduled for NCCAOM to respond to the inquiries, and opportunities were provided for NCCAOM to submit additional documents. The linkage

[5] Hereafter referred to as *Principles*, unless otherwise stated.

[6] For the purposes of this report, the term "Credentialing" as used in the *Standards* and "Licensure" are used interchangeably and carry the same meaning.

study comparing the content of the California Acupuncture Licensure Examination (CALE) and the NCCAOM test plans was then held September 23-25, 2015.

In total, NCCAOM provided access to over 50 documents and reports in responding to OPES requests for information. OPES and its consultants also held two teleconferences with NCCAOM staff and its consultants to clarify document content and/or to address areas not included in the documents.

## FORMAT OF THE REPORT

The review of the NCCAOM examinations focuses on six areas: (a) occupational analysis, (b) examination development, (c) passing scores, (d) test administration, (e) examination performance, and (f) test security procedures. Each area is presented separately in this report, introduced by the related standards, and followed by the results of the review.

The related standards are quoted in an abbreviated manner that focuses on the standard's relevance to licensure examinations. The page number in the *Standards* for where the full text may be found is included with each standard being quoted.

In specific areas, OPES and its consultants had recommendations for the NCCAOM examination program based on the findings of the review. These recommendations are included as part of the report.

Following the body of the report are found several appendices. Included in the appendices are the expanded examination outlines (including task and knowledge-based competencies) for each of the four NCCAOM examinations, the detailed results of the linkage study, and the reports submitted by each of the consultants working with OPES.

# CHAPTER 2. OCCUPATIONAL ANALYSIS

## STANDARDS

The most relevant standard relating to occupational analyses, as applied by the *Standards* to credentialing or licensing examinations, is:

> **Standard 11.13**
> The content domain to be covered by a credentialing test should be defined clearly and justified in terms of the importance of the content for credential-worthy performance in an occupation or profession. A rationale and evidence should be provided to support the claim that the knowledge or skills being assessed are required for credential-worthy performance in that occupation and are consistent with the purpose for which the credentialing program was instituted. (p. 181-182)

The comment following Standard 11.13 emphasizes its relevance:

> *Comment:* Typically, some form of job or practice analysis provides the primary basis for defining the content domain. If the same examination is used in the credentialing of people employed in a variety of settings and specialties, a number of different job settings may need to be analyzed. Although the job analysis techniques may be similar to those used in employment testing, the emphasis for credentialing is limited appropriately to knowledge and skills necessary for effective practice. (p. 182)

Following are additional standards that reflect on the mechanism and procedures used to conduct an occupational analysis:

> **Standard 11.2**
> Evidence of validity based on test content requires a thorough and explicit definition of the content domain of interest. (p. 178)
>
> **Standard 11.3**
> When test content is a primary source of validity evidence in support of the interpretation for the use of a test for … credentialing, a close link between test content and the job or professional/occupational requirements should be demonstrated. (p. 178)
>
> **Standard 1.11**
> When the rationale for test score interpretation for a given use rests in part on the appropriateness of test content, the procedures followed in specifying and generating test content should be described and justified with reference to the intended population to be tested and the construct the test is intended to measure or the domain it is intended to represent. (p. 26)

> **Standard 1.9**
> When a validation rests in part on the opinions or decisions of expert judges … procedures for selecting such experts and for eliciting judgments or ratings should be fully described. (p. 25)

California B&P Code section 139 requires that each California licensure board, bureau, commission, and program report annually on the status of its occupational analysis and the validation and development of its examinations. DCA's Examination Validation Policy[7] states:

> Occupational analyses and/or validations should be conducted every three to seven years, with a recommended standard of five years, unless the board, program, bureau, or division can provide verifiable evidence through subject matter experts or similar procedure that the existing occupational analysis continues to represent current practice standards, tasks, and technology.

## EVIDENCE FOR VALIDITY BASED ON CONTENT

Validity should be viewed as a process rather than as a single quality or measure. As noted in the *Standards*, "Validity refers to the degree to which evidence and theory support the interpretations of test scores for proposed uses of tests."[8] When evidence for validity is based on the content of the examination, there should be "a close link between test content and the job or professional/occupational requirements".[9]

An occupational analysis (OA) is commonly used to define the content domain for a credentialing exam. Often delivered as a survey or questionnaire, the primary focus of an OA is to identify the critical tasks related to entry-level practice in an occupation and the knowledge required to perform those critical tasks successfully.[10]

Moreover, "An Occupational Analysis of a licensed profession should include only content that is pertinent to the protection of public health, safety, and welfare. Content included should not pertain to a practitioner's business success. In addition, an Occupational Analysis must focus on what is necessary for minimally competent individuals within the practice of the profession, rather than on general business and recordkeeping skills or general communication skills. All activities in the analysis should be observable and have an impact on public health, safety and welfare."[11]

Evidence of validity based on content requires the use of practitioners to participate as subject matter experts (SMEs) in the design of the OA. SMEs typically participate in the development of the task and knowledge statements included in the OA questionnaire that are used to identify the work tasks and knowledge related to competent entry-level practice.

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[7] DCA Departmental Policy. OPES 12-01, p. 4.
[8] *Standards*. p. 11.
[9] Ibid. p. 178.
[10] Ibid. p. 175.
[11] Council on Licensure, Enforcement and Regulation. (2010). *Job Analysis: A Guide for Credentialing Organizations* (Resource Brief). Lexington: Chinn, R.N. & Hertz, N.R.

They also participate in the analysis of the OA results, which includes identifying the knowledge required to successfully perform the work tasks related to competent entry-level practice. This relationship, or *linkage*, provides a direct connection between the tasks related to competent entry-level practice, the knowledge required to perform those tasks successfully, and the knowledge being tested by the licensure examination.

## FINDINGS

The OA for the NCCAOM examinations was conducted by NCCAOM with assistance from Schroeder Measurement Technologies (SMT). The results of the study are documented in NCCAOM's report, *Foundations of Oriental Medicine, Biomedicine, Acupuncture with Point Location, Chinese Herbology Job Analysis Report 2013* (2013).

The review of NCCAOM's OA primarily focused on:

- Mechanism and procedures used for conducting the study
- Subject matter experts
- Development of the survey/questionnaire
- Development of sampling plan/final sample
- Survey analysis and results.

NCCAOM employed a survey approach for its 2013 OA. The survey was based, in part, on NCCAOM's 2008 OA. SMEs participated in developing and refining the task statements used in the 2008 OA. They also participated in the development of the rating scales and demographic items used with the survey. Knowledge statements were not included as part of the 2013 OA. [redacted] While this post-OA approach is not typical, the OA consultant felt that the overall process and results sufficiently met the *Standards*.[12]

SME input was used to develop lists of clinical conditions, pharmaceuticals and dietary supplements, and herbal formulas. As noted by the OA consultant, "Certain subsections of the survey were not directly translated to the content outline. These included frequency and/or importance ratings related to lists of pharmaceuticals, supplements, and herbal formulas. Respondents' ratings on these items were considered by the OA panel in reviewing survey results and estimating the density of the competencies in order to designate content area weights. Items listed in these categories are included in appendices to the content outlines to aid candidates in studying for the exams."[13]

The sampling plan sampled NCCAOM diplomate[14] practitioners from all 50 states. A follow-up sample was developed based on initial low response rates. The final respondent sample consisted of 1,571 NCCAOM diplomate practitioners for a response rate of 15.5%.

[12] Witt, E., Ph.D. [Summary Report]. Appendix H of this report, p. 7.
[13] Ibid. p. 7.
[14] NCCAOM candidates who have successfully passed the required examination(s) and received approval of their final school transcript by NCCAOM.

A statistical analysis of the OA results was performed by SMT. Groups of SMEs reviewed and interpreted the results. The knowledge identified in the 2008 OA was used as the basis for SMEs performing the task and knowledge linkage. These groups of SMEs reviewed and refined the preliminary linkage and developed/refined competency statements which were linked back to the list of tasks.

## CONCLUSIONS

Overall, the procedures used to conduct the OA were in keeping with the *Standards*. The OPES consultants noted that any problems identified were either inconsequential or mitigated by the SME groups reviewing, interpreting, and applying the survey results. The primary goal of the OA, which was to obtain information for updating the examination plans for the NCCAOM exams, was met through the methods applied to conducting the OA and the application of the OA results by the OA panels of SMEs.

The following recommendations are provided to NCCAOM for future OAs:

1. [redacted] For future OA surveys, [redacted], the NCCAOM may wish to consider the feasibility of administering separate, smaller surveys targeting specialty practitioners as appropriate.

2. NCCAOM might consider returning to the subject-predicate format for developing the task statements used in rating tasks and/or rating KSAs directly.

3. Since the lists of pharmaceuticals, supplements, and herbology formulas are used differently in developing the exam content outlines, these might be surveyed as separate sections with specialized instructions.

4. The rating scales would benefit from a clearer focus as to what the respondent is being asked to rate. For example, the Importance scale used to evaluate the pharmaceuticals and supplements asked the respondents to consider all of the following elements in making their rating of importance:

   - *How important is it to recognize the classification for each supplement?*
   - *How important is it to know/understand the mechanism of action for each supplement?*
   - *How important is it to identify the potential adverse effects/interactions for each supplement?*

   While the above areas are related, allowing respondents to consider them separately would have permitted differentiating drugs/supplements where class of drug or mode of action is secondary to potential adverse effects and vice versa. This information could more fully inform development of the test plan and the relevant content for items.

5. OA panel membership should include broader participation from practitioners outside of those who participate as NCCAOM commissioners, item writers, and/or Examination Development Committee members.

# CHAPTER 3. EXAMINATION DEVELOPMENT

## STANDARDS

Examination development includes many steps within an examination program, from the evaluation and application of the results of the OA to scoring and analyzing items following the administration of an examination. Specific areas evaluated in this section include the test specifications,[15] item writing, linking items to the test plan, the scoring specifications, and the specifications for constructing new examination forms.

The standards most relevant to examination development, as applied by the *Standards* to credentialing or licensing examinations, are:

> **Standard 4.1**
> Test specifications should describe the purpose(s) of the test, the definition of the construct or domain measured, the intended examinee population, and interpretations for intended uses. (p. 85)
>
> **Standard 4.2**
> In addition to describing the intended uses of the test, the test specifications should define the content of the test, the proposed test length, the item formats, the desired psychometric properties of the test items and the test, and the ordering of items and sections. (p. 85)
>
> **Standard 4.7**
> The procedures used to develop, review, and try out items and to select items from the item pool should be documented. (p. 87)
>
> **Standard 4.8**
> The test review process should include empirical analyses and/or the use of expert judges to review items and scoring criteria. When expert judges are used, their qualifications, relevant experiences, and demographic characteristics should be documented, along with the instructions and training in the item review process that the judges receive. (p. 88)
>
> **Standard 4.10**
> When a test developer evaluates the psychometric properties of items, the model used for that purpose (e.g., CTT, IRT, or another model) should be documented. (p. 88)
>
> **Standard 1.9**
> When a validation rests in part on the opinions or decisions of expert judges … procedures for selecting such experts and for eliciting judgments or ratings should be fully described. (p. 25)

[15] "Test Specifications" are also referred to as a test plan, content outline, or examination outline. The term "test plan" is used throughout this report.

The following standards also contribute to the review of the procedures used to develop the NCCAOM examinations:

> **Standard 11.2**
> Evidence of validity based on test content requires a thorough and explicit definition of the content domain of interest. (p. 178)
>
> **Standard 11.3**
> When test content is a primary source of validity evidence in support of the interpretation for the use of a test for … credentialing, a close link between test content and the job or professional/occupational requirements should be demonstrated. (p. 178)
>
> **Standard 11.13**
> The content domain to be covered by a credentialing test should be defined clearly and justified in terms of the importance of the content for credential-worthy performance in an occupation or profession. (p. 181)

## SPECIFYING THE CONTENT OF THE EXAM

The test plan describes the content of the test. It specifies the knowledge to be tested in relation to other work-related knowledge and the relative proportion it is tested in relation to the other knowledge contained in the test plan. Evidence for validity based on content is related to the extent to which the results of the OA are reflected in the content being tested as well as the relative proportion of the knowledge being tested in the examination.

As previously described, SMEs establish the task-knowledge linkage as part of the analysis of the OA results. This linkage provides a direct connection between the tasks related to competent entry-level practice, the knowledge required to perform those tasks successfully, and the knowledge tested on the examination. In other words, the knowledge being tested on the examination should reflect the task-knowledge linkage identified by the SMEs. Furthermore, the relative proportion that any knowledge holds in the total content of the examination should bear some relation to the ratings assigned by the OA respondents, i.e., most commonly, the ratings of frequency and importance for tasks and ratings of importance for knowledge (weighting).

Test plans are generally organized into content areas that represent major areas of work. The tasks and knowledge related to accomplishing each major area of work are then grouped under each content area. For example, the content areas of the NCCAOM Fundamentals of Oriental Medicine (FOM) examination are:

| Content Area | Weight |
|---|---|
| Clinical Examination Methods | 10% |
| Assessment, Analysis and Differential Diagnosis Based on OM/TCM – Differentiation and Diagnosis | 45% |
| Treatment Principle and Strategy | 45% |

The percentages indicate the relative proportion of the overall test content of the FOM examination based on the tasks and knowledge linked to each content area, i.e., test items reflecting the tasks and knowledge related to Clinical Examination Methods make up 10% of the test items on the FOM examination. The total percentages add to 100%.

A common approach to weighting is to compute the average of the product of the task frequency and task knowledge ratings for each respondent. This average, often referred to as the Task Critical Value, is used to rank order tasks or as a common value to compute the relative weight or proportion each content area should have relative to the tasks contained in the other content areas. Groups of SMEs can also review these initial results and adjust the weights to better represent the relative importance of the tasks and knowledge in each content area.

The relative weights of the content areas should reflect the relative importance of the tasks and knowledge making up each content area to entry-level practice as reflected by the results of the OA and SME knowledge.

## ITEM CONTENT

Just as with the test plan, evidence for validity based on content is related to the extent to which the results of the OA are reflected in the content being tested in the given examination. As such, the content of each test item should reflect the tasks related to competent entry-level practice and the knowledge required to perform those tasks successfully as identified through the OA and the SME linkage.

Item writers should either have access to the test plan or be given writing assignments that are directly related to a specific area of the test plan. In this way, the item writer and the item reviewer can verify that the content of the new items indeed reflects the intended task and knowledge the item is intended to convey. The linkage between the item content and the tasks and knowledge from the test plan should be documented and serves as evidence of the validity based on content for the examination.

## SCORING SPECIFICATIONS

The scoring specifications describe how individual items will be scored and how item scores will be combined to yield the overall test score.[16]

A common item type found in licensure examinations is the multiple-choice item. The multiple-choice item typically presents task-related information (item stem) followed by a question (stem question). With a four-choice multiple-choice item, there will be four response options that include the key, which is the correct choice, and three incorrect responses, or distractors.

The decision to employ 100 four-choice multiple-choice items with only one correct response option determines part of the scoring criteria for the examination. The keyed

[16] *Standards*. p. 79.

response will be scored as one correct response. Choosing a distractor will yield no correct response. The total possible number of correct responses on such an exam would be 100. The candidate's total test score represents the total number of items answered correctly.

## ITEM TRYOUT

In addition to the content linkage, item development should include multiple reviews to ensure that the item key is correct, that the content reflects entry-level practice, and that the distractors are plausible. Items with implausible distractors create item scoring situations where correct responses by guessing become more likely.

New items should be pretested (item tryout) to ensure that they perform as intended before being included as scoreable items on an examination. Item pretesting usually occurs by administering a set of new items along with the scored items on the test. Candidates respond to the new items as they would for the scored items. In this way, item performance can be evaluated without poorly performing items impacting a candidate's score.

The evaluation of pretest items should be based on a statistical analysis of their performance including: item difficulty, item discrimination, and an analysis of distractor performance. Based on this analysis, items can be promoted to operational status as scoreable items, retired due to poor performance, or flagged for further review due to marginal performance. The statistical parameters for evaluating item performance should be previously established, applied equally to all items, and be related to the specifications for examination construction.

## EXAMINATION CONSTRUCTION SPECIFICATIONS

Alternate forms[17] refer to examinations that have been constructed to the same content and statistical specifications. The use of alternate forms is critical for examination programs where groups of examinees will take the "same exam" over the course of multiple administrations. In this situation, different forms of the same exam are needed to avoid item overexposure and cheating. Just as important, the examinees have a reasonable expectation that each examinee group will take an exam covering the same or similar content and be of the same difficulty. The examination construction specifications are key in developing examinations that meet these requirements.

The content specifications (based on the test plan) delineate the number of items from each content area that must be included in the examination to meet the test plan. The statistical parameters for evaluating item performance determine the statistical properties of the items available for inclusion on the examination. For examinations constructed using Item Response Theory (IRT), the process of item calibration is used to determine whether the items exhibit a good model fit.

The examination construction specifications also include the requirements of the test form. These include overall difficulty and total number of items. When IRT is used, the

[17] "Alternate forms" are also referred to as parallel forms and equivalent forms.

specifications would include the average IRT difficulty measure, test characteristic curves, reliability, test-level information (e.g., estimated internal consistency, standard error, variance, test information function), and equated cut score.

Finally, examination construction should include a process by which SMEs will either select the items for the test or, in situations where the test developers first select the items based on statistics, a process for reviewing the items on the test to ensure the content is still current and the keys are still correct. In the latter case, alternate items should be made available to replace items flagged by SMEs.

## FINDINGS

The NCCAOM test plans were developed using groups of SMEs who reviewed the OA results. Because knowledge statements were not included in the OA, the 2008 competency statements were reviewed and revised as SMEs linked them to the tasks from the 2013 OA. In addition to working with the results of the 2008 OA, SMT psychometric staff provided the SMEs with the frequency and importance ratings for task elements in each section of the survey, including preliminary content area weights based on the ratings of the OA respondents.

Linkage to the respective test plan is performed by ensuring that item writers have access to the “examination blueprint” and that they consult it before specifying what the content of the item will be. Verification of the item-content area linkage is performed as a routine part of the item review for every item. All items go through a final review by the respective NCCAOM EDC before being considered for pretesting.

All item writers are bound to a confidentiality and conflict of interest policy. All item writing and reviewing is done through a secure portal. Access to the portal is limited to the item writing homework timeframes.

All scored test items are first pretested as part of the regular test administrations. Following each administration cycle, SMT and the respective EDC for each NCCAOM examination meet to review examination and item performance. Pretest items are reviewed based on Classical Item Statistics (mean, p-value, point-biserials), and those items meeting performance criteria are further evaluated for adequate fit to the Rasch model. OPES review of the item banks indicated the need for continued item development to increase the size of the item banks.

Examination forms are constructed by applying IRT, specifically, the Rasch model. The exams are administered using Computer Adaptive Testing (CAT). CAT is a form of computer-administered testing where the computer program adjusts the difficulty of questions throughout the examination based on the test taker’s response. The statistical procedures for employing the Rasch model to examination development and for employing CAT to examination administration are well documented and supported in the psychometric literature. Appendix I contains the evaluation of NCCAOM and SMT’s application of IRT and CAT to developing the NCCAOM examinations.

## CONCLUSIONS

Overall, the development of the test plans, item writing, linking items to the test plan, the scoring specifications, and the specifications for constructing new examination forms by NCCAOM and SMT meet professional guidelines and technical standards.

Two areas of deficiency in examination development were noted by the OPES consultant evaluating the application of Computer Adaptive Testing (CAT) to the NCCAOM examination program.

1. The consultant notes, "Prior to applying IRT, several assumptions are necessary to verify. One assumption of the *unidimensional* IRT model (including the Rasch model), is that the test items measure a single latent trait or attribute. Unidimensionality facilitates CAT, because it supports the indexing of items as harder and easier, and examinees as more and less able, regardless of which items are compared with which examinees."[18]

   Standard 1.13 (p. 26) suggests that if a test is believed to be unidimensional, evidence to that effect concerning the internal structure of the test should be provided.[19]

   The consultant continues, "No evidence was provided verifying that the invariance property or assumption holds specific to (a) person ability and (b) item parameters exists [sic] for the NCCAOM testing program."[20]

2. The consultant further notes, "The NCCAOM provides no information or results on DIF analyses. Therefore, the NCCAOM does not meet the recommended guidelines according to the Standards for Educational and Psychological Testing (2014) and research published in the psychometric community."[21]

The consultant does point out elsewhere in his report that, "Given the methodology and results reported in the documents provided, there is adequate evidence that the test development and delivery process is working well."[22] Also, both consultants point to the application of fit statistics to determine whether new items should be moved to scoreable status or maintained as pretest items. This process supports the applicability of the assumptions regarding use of the Rasch model for examination development.[23]

The following recommendations are provided to NCCAOM for future examination development:

1. The consultant notes, "IRT-based test development protocols often employ Monte Carlo simulation studies of the algorithms, parameters and possible constraints to be employed in the actual testing environment. The NCCAOM does not report

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[18] Price, L.R., PhD, PStat. *Psychometric Methods: Theory into Practice.* New York, NY: The Guilford Press, (in-press).
[19] *Standards.* p. 26.
[20] Price, L.R. PhD, PStat. [Summary Report], Appendix I of this report, p. 9.
[21] Ibid. p. 15.
[22] Ibid. p. 14.
[23] Price, L.R., PhD, PStat. [Summary Report], Appendix I of this report, p. 9 and Witt, E., Ph.D., [Summary Report], Appendix H of this report, p. 25).

conducting any simulation studies in relation to their examination development and delivery program. Simulation studies may be useful in the future as the testing program evolves and matures. For example, studies *examining person misfit in a systematic manner in the Rasch model* would be useful in improving test performance. Simulation studies are highly recommended as part of the evolution of any CAT-based testing program."[24].

2. "Conducting regular DIF studies are highly recommended and the Rasch IRT model provides a natural framework for conducting such studies as a systematic part of item calibration and pool maintenance."[25]

3. NCCAOM is recommended to increase the size of the item banks for all examinations, especially as CAT is used to deliver the examination forms.

[24] Price, L.R., PhD, PStat. [Summary Report], Appendix I of this report, p. 14.
[25] Ibid. p. 15.

# CHAPTER 4. PASSING SCORES

## STANDARDS

The passing score of an examination, also known as a cut point or cut score, is the score that represents the level of performance that divides those candidates for licensure who are minimally competent from those who are not competent.

The standards most relevant to passing scores, cut points, or cut scores, as applied by the *Standards* to credentialing or licensing examinations, are:

> **Standard 2.14**
> Where cut scores are specified for selection or classification, the standard error of measurement should be reported in the vicinity of each cut score. (p. 46)
>
> **Standard 5.21**
> The rationale and procedures used for establishing cut scores should be documented clearly. (p. 107)
>
> **Standard 5.22**
> When cut scores defining pass-fail or proficiency levels are based on direct judgments about the adequacy of item or test performances, the judgment process should be designed so that the participants providing the judgments can bring their knowledge and experience to bear in a reasonable way. (p. 108)
>
> **Standard 11.16**
> The level of performance required for passing a credentialing test should depend on the knowledge and skills necessary for credential-worthy performance … (p. 182)
>
> **Standard 11.14**
> Estimates of the consistency of test-based credentialing decisions should be provided in addition to other sources of reliability evidence. (p. 182)

The supporting commentary on passing or cut scores for Chapter 5 of the *Standards*, "Scores, Scales, Norms, Score Linking and Cut Scores," states that the standard-setting process used should be clearly documented and defensible. The qualifications and the process of selection of the judges involved should be part of the documentation. A sufficiently large and representative group of judges should be involved, and care must be taken to ensure that judges understand the process and procedures they are to follow. (p. 101)

In addition, the supporting commentary for Chapter 11 of the *Standards*, "Workplace Testing and Credentialing," states that the focus of credentialing is "on the standards of competence needed for effective performance (e.g., in licensure this refers to safe and effective performance in practice)" (p. 175). It further states, "The standards may be strict, but not so stringent as to unduly restrain the right of qualified individuals to offer their services to the public." (p. 175)

## PURPOSE OF PASSING SCORES

The passing score, also known as a cut score or pass point, is the minimum score a candidate must achieve on the test to "pass" the test. In licensure, the passing score should bear a relation to the minimum level of competency required for safe and effective practice, i.e., passing the test demonstrates the candidate at least having the minimum level of competence to practice safely, and failing the test indicates the candidate not having demonstrated at least the minimum level of competence for safe and effective practice.

## USE OF SUBJECT MATTER EXPERTS AND METHODOLOGY

A common method for developing the passing score for licensure examinations is the Angoff method. This method is based on subject matter experts (raters) making informed judgments (ratings) about the proportion of minimally competent candidates who will answer each test item correctly. Their ratings are summed across items and averaged across raters to arrive at a recommended passing score. The successful application of the Angoff method rests on the SME's knowledge of the content being tested, the definition of minimum competence, the SME's ability to apply the definition of minimum competence to making judgments about item difficulty, and the extent to which the individual SMEs can uniformly apply the minimum standards as a panel (inter-rater reliability).

The make-up of the SME panel is critical to employing the Angoff method. The SMEs must be knowledgeable about the content being evaluated on the test. They must be familiar with the examinee population in regards to the training, education, and experience they bring to the examination. The SMEs must be familiar with, and able to make judgments about, the level of content mastery a candidate must possess to demonstrate the minimum level of competence to practice safely. Finally, the SMEs should represent a cross-section of mainstream practice, such that all or most of the principle practice areas or types associated with the profession are represented by the panel participants.

The definition of minimum competence should relate to familiar areas of practice and to levels of performance for which the SMEs can form "clear conceptions of adequacy or quality."[26] The process of SME training and orientation typically includes a discussion by the SMEs about what defines minimum competence in all of the content areas being tested, including arriving at examples of behavior that typify inadequate performance, minimum competence, and highly effective performance.

During training, the SMEs should also receive practice in applying the standards to making decisions about samples of items representative of the content and types of items included in the test. This process, known as anchoring the panel, evaluates the extent to which the panel of SMEs is making similar decisions about each item. Included in the practice are modified consensus discussions where the SMEs discuss broad differences in ratings (e.g., the ratings for a given test item are more than 20 points of each other) and a predetermined level of agreement or consensus is arrived at.

[26] *Standards*. p. 108.

## APPLICATION OF RASCH MODEL (IRT) TO THE PASSING SCORE

All sample items used in the passing score study should be pretested, demonstrate appropriate performance, and be calibrated to the IRT model being used. It is during pretesting and calibration that the IRT difficulty value (B-value) and the corresponding ability (theta) distribution are computed for each item.

During the Angoff method, SMEs provide estimates of the proportion of candidates at the minimum level of competence who will answer each item correctly. Application of the Rasch Model to the passing score involves conversion of the probability estimates derived using the Angoff method into IRT ability values (thetas). The theta values describe the level of ability candidates must possess to answer an item of given difficulty at the estimated level of probability. Using the theta distribution related to the array of items on the test, the passing score is represented as the minimum level of candidate ability (minimum theta) required to pass the items on the test.

## FINDINGS

The process of establishing passing scores for licensure exams relies upon the expertise and judgment of SMEs.

The passing scores for each of the NCCAOM examinations are based on standards of minimum competence developed by the passing score panels and incorporated into the passing score setting process for each examination. The minimum competence standards are determined by subject matter experts and reflect standards of professional behavior and performance in relation to professional practice and the content assessed by each examination.

Standard 5.21 requires that "procedures used for establishing cut scores should be documented clearly."[27] The NCCAOM report, "Cut Score Study Report FOM, BIO, ACPL, CH Examinations,"[28] only partially described the procedures used by SMT to establish the passing scores for each of the NCCAOM examinations. The procedures described in this report were therefore supplemented by a teleconference with NCCAOM and SMT. Discussed in the teleconference were the procedures used and the methods used to employ them, specifically the criteria for selecting the items used in setting the passing score, the application of IRT to establish the passing score for the CAT examinations, and the procedures used to set the passing score for the foreign language examinations.

Following the demonstrations and explanations provided during the teleconference, the procedures used to establish the pass scores were found to be appropriate. Additional inquiries were made regarding the application of the passing scores to the rubrics for applying the pass scores to NCCAOM's use of Computer Adaptive Testing (CAT). The methodology used by SMT and applied by NCCAOM's test administrator, Pearson VUE, was found to be consistent with the *Standards* and professional practice.

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[27] *Standards*. p. 107.

[28] Schroeder Measurement Technologies. (2013), "Cut Score Study Report FOM, BIO, ACPL, CH Examinations."

## CONCLUSIONS

Given the findings, the passing score studies conducted by NCCAOM and SMT demonstrate a sufficient degree of validity meeting professional guidelines and technical standards.

Two areas of recommendations were identified by the OPES consultant evaluating the application of IRT and CAT to the NCCAOM examinations:

1. The consultant notes, “The NCCAOM might consider conducting a cut score study employing an external criterion. Two suggested evaluative questions to guide a cut score evaluation study include: (a) what is the overall objective of using the cut score? And (b) how does the NCCAOM know whether or not the objective has been met?

   For example, it is arguable that the most important issue specific to using cut scores is the correlation between test taker’s exam performance and other external sources of information (e.g., actual safe and effective practice post-examination). To their credit, NCCAOM conducts decision consistency analyses as standard practice. In addition to the decision consistency analysis, conducting a cut-score study using an external criterion is recommended.”[29]

2. The consultant further notes, “The minimum acceptable competency criteria (MAC) and the definition/computation of ability cut-offs links [sic] probability values (set by SMEs participating in the cut score exercise) captured in a variation of the modified Angoff method to the IRT ability scale. Although the approach is viable, the NCCAOM (or SMT) should include standard errors of theta values (e.g., see Table 2 in "Cut Score Study Report)"…”[30]

In addition, a recommendation is provided regarding documentation of the passing score study:

3. The methods and procedures used to conduct the passing score study should be written in such a way that they accurately and clearly describe all relevant areas of the process, including:

   - the criteria for selecting SMEs to participate in the study,
   - a description of the SME participants, including relevant experience and demographic variables,
   - the procedures used for training the participants, including instructions or outcomes as relevant,
   - the criteria used to select items for training and for the passing score study
   - the methods and procedures used to apply IRT to the results of the passing score study,
   - application of the passing score results to the CAT, and
   - application of the passing score to the foreign-language examinations.

[29] Price, L.R., PhD, PStat. [Summary Report], Appendix I of this report, p. 6.
[30] Ibid. p. 13-14.

# CHAPTER 5. TEST ADMINISTRATION

## STANDARDS

The standards most relevant to test administration, as applied by the *Standards* to credentialing or licensing examinations, are:

> **Standard 6.1**
> Test administrators should follow carefully the standardized procedures for administration and scoring ... (p. 114)
>
> **Standard 6.2**
> When formal procedures have been established for requesting and receiving accommodations, test takers should be informed of these procedures in advance of testing. (p. 115)
>
> **Standard 6.7**
> Test users have the responsibility of protecting the security of test materials at all times. (p. 117)
>
> **Standard 8.9**
> Test takers should be made aware of [their responsibility for test security] … (p. 136)

## FINDINGS

The NCCAOM examinations are administered by Pearson VUE at its test sites throughout the United States. Administration of the tests is accompanied by scripted instructions and protocols to ensure standardized administration of the tests. NCCAOM also provides a wide variety of information concerning its examinations to candidates and prospective candidates through its Web site at www.NCCAOM.org.

<u>Test Administration – Test Centers</u>
All Pearson VUE test centers have trained test site proctors. Pearson VUE authorized test sites have multiple layers of test security, including digital cameras and candidate signature pads. The testing environment is carefully controlled to ensure uniform and secure exam administration conditions.

<u>Test Administration – Registration of Candidates</u>
NCCAOM has a detailed registration process that can be found on its Web site at www.NCCAOM.org. There is also a candidate handbook that provides information on registration and test administration. Candidates are able to obtain the required registration forms directly through the Web site or by contacting NCCAOM. When registering, candidates have the option of establishing an online NCCAOM account, which provides a means of documenting candidate identification as well as providing a service to facilitate processing of the candidate's application.

Test Administration – Special Accommodations and Arrangements

NCCAOM requires that requests for special accommodations be made to and approved by NCCAOM. Candidates requesting special accommodations must request the accommodation directly from NCCAOM using a specific form when submitting the test application. The request for accommodation must be accompanied by supporting documentation from a "licensed professional appropriately qualified for evaluating the disability."[31] Candidates may contact NCCAOM by phone or by email if they have questions.

Test Administration – Exam Security

Pearson VUE, through its internal test administration and security protocols, provides a robust framework of test site and exam security policies and procedures.[32]

In addition, NCCAOM's candidate handbook and the Pearson VUE Web site at www.http://home.pearsonvue.com/test-taker.aspx outline what constitutes improper acts and unethical conduct on the part of candidates and the consequences of such actions.

## CONCLUSIONS

Given the findings, the test administration protocols put in place by NCCAOM and Pearson VUE appear to meet professional guidelines and technical standards.

[31] NCCAOM. (2015) *2015 Candidate Handbook.*

[32] Pearson VUE. "Secure Testing Framework." Confidential proprietary publication.

# CHAPTER 6. EXAMINATION SCORING AND PERFORMANCE

## STANDARDS

The most relevant standards relating to the scoring and performance of credentialing or licensing examinations, as applied by the *Standards*, are:

> **Standard 2.3**
> For each total score, subscore, or combination of scores that is to be interpreted, estimates of relevant indices of reliability/precision should be reported. (p. 43)
>
> **Standard 4.10**
> When a test developer evaluates the psychometric properties of items, the model used for that purpose (e.g., classical test theory, item response theory, or another model) should be documented. The sample used for estimating item properties should be described and should be of adequate size and diversity for the procedure. The process by which items are screened and the data used for screening, such as item difficulty, item discrimination, or differential item functioning (DIF) for major examinee groups, should also be documented. When model-based methods (e.g., IRT) are used to estimate item parameters in test development, the item response model, estimation procedures, and evidence of model fit should be documented. (pp. 88-89)

## FINDINGS

Scoring of NCCAOM Examinations

Candidate performance on each of the NCCAOM examinations is scored by Pearson VUE and reported to NCCAOM and SMT. The testing staff of SMT review the performance of each examination and its items. Raw scores, descriptive statistics, reliability estimates, Classical Test Theory (CTT) item analysis, and IRT item analysis are computed, evaluated, and reported to the respective EDC following each form's administration.

All of the NCCAOM examinations consist of multiple choice items. Multiple choice items are scored as either correct or incorrect. The final pass-fail decision for each examination is based on the pass score for each examination, i.e., the candidate having answered a sufficient number of items correct to demonstrate the required level of ability across the items being administered on the fixed-length CAT examination.

NCCAOM Examination Performance

Descriptive test statistics (e.g., mean, standard deviation, standard error of measurement, test reliability, and decision consistency reliability about the cut score) are routinely calculated. The resulting statistics indicate adequate performance for licensure examinations. The Livingston-Lewis method is used to evaluate decision accuracy and consistency. The overall IRT model-based reliability for each examination is obtained by averaging the reliabilities across all candidates. For each of the NCCAOM examinations, both values indicate adequate performance for licensure examinations. The application of the Rasch IRT model is appropriate based on the candidate numbers (sample sizes) for which it is used.

Following each administration cycle, SMT and the respective EDC for each NCCAOM examination meet to review examination and item performance. Pretest items are reviewed as based on CTT (mean, p-value, point-biserials) and those items meeting performance criteria are further evaluated for adequate fit to the Rasch model.

Application of CAT

Computer Adaptive Tests (CAT), or adaptive tests, are comprised of items selected from an item bank whose items have been pre-calibrated based on content and difficulty. The items are chosen to match the estimated ability level of the test taker. The test usually starts with an item of medium difficulty. If the test taker succeeds on an item, a slightly more challenging item is presented next. If the test taker fails the item, a slightly less challenging item is presented next. This process continues until either one of three events occur: the maximum number of items has been reached, the test time has run out, or the test taker's ability has been determined. The score from an adaptive test reflects the level of ability demonstrated by the candidate's performance in relation to the level of ability (theta) corresponding to the pass score. Appendix I contains the evaluation of SMT's and Pearson VUE's application of IRT and CAT to the scoring of the NCCAOM examinations.

## CONCLUSIONS

The steps taken by NCCAOM, SMT, and Pearson VUE to score the examinations provide for a fair and objective evaluation of candidate performance. The steps taken by NCCAOM and SMT to evaluate examination performance meet professional guidelines and technical standards.

Recommendations #1 and #2 provided in Chapter 3 of this report are also applicable to this chapter in that they involve psychometric measures that contribute to the maintenance of a CAT program.

# CHAPTER 7. INFORMATION AVAILABLE TO CANDIDATES

## STANDARDS

The most relevant standards relating to the information communicated to candidates by a test developer, as applied by the *Standards* to credentialing or licensing examinations, are:

> **Standard 4.16**
> The instructions presented to test takers should contain sufficient detail so that test takers can respond to a task in the manner that the test developer intended. (p. 90)
>
> **Standard 6.5**
> Test takers should be provided appropriate instructions, practice, and other support necessary to reduce construct-irrelevant variance. (p.116)
>
> **Standard 8.9**
> Test takers should be made aware of [their responsibility for test security] … (p. 136)

## FINDINGS

The NCCAOM Web site at www.NCCAOM.org provides information related to the policies and procedures of the NCCAOM examinations. Candidates have the opportunity to download all required documents directly from the Web site or to request them from NCCAOM. Candidates are also provided with an online account to track the progress of the application and fulfillment of requirements through the NCCAOM portal at http://mx.nccaom.org/MyProfile.aspx.

On the NCCAOM Web site, candidates can locate extensive information about the examinations for online reading or downloading.

The following links are available from the applicant home page:

Applicant – Quick Finds

- Acupuncture with Point Location Exam Administration Changes
- Foreign Language Exams Information
- Fees
- Certification Program Fact Sheets
- NCCAOM Certification Brochure
- Benefits of NCCAOM Certification
- Exam Content
- General - Frequently Asked Questions
- Approved Candidate
- Contact us

Applicant - Forms

- NCCAOM Certification Handbooks and Applications
- NCCAOM Certification Handbook Order Form
- Agent Designation Form
- School Code Assigned by NCCAOM
- ADA Accommodations

Applicant - Links

- Practice Tests
- International CNT Courses
- Education in a U.S. School
    - ACAOM
- Education in an International School
    - NCCAOM Route 2 Formal Education International Applicants
    - AACRAO
    - WES
    - ABT Exam Discontinuation

In addition, NCCAOM makes available informational publications that can be downloaded from their Web site. These publications include links to information about the NCCAOM examinations.

In addition to the information available to candidates on the NCCAOM Web site, the Pearson VUE Web site at www.pearsonvue.com contains videos of test taker tips and a demonstration video for assisting test takers to "familiarize [themselves] with the look, feel and navigation of a Pearson VUE computer-based test."[33]

The following links are also available from Pearson VUE's *Test Taker* home page:

- Finding a test center
- Requesting Test Accommodations
- Pearson VUE testing tutorial and practice exam
- Take an online tour of a Pearson Professional Center
- What to expect in a Pearson VUE test center
- Create an account (to schedule, reschedule or cancel an exam)
- Customer service for test takers (to locate "chat, phone and/or email contact information for *your program* will be displayed by region around the world")[34]

## CONCLUSIONS

Given the findings, the information provided to candidates about the NCCAOM examination program is comprehensive and meets professional guidelines.

[33] Pearson VUE. "For Test Takers." [Web page]. Retrieved from http://www.pearsonvue.com.
[34] Ibid.

# CHAPTER 8. TEST SECURITY

## STANDARDS

The most relevant standards relating to the test security of credentialing or licensing examinations, as applied by the *Standards*, are:

> **Standard 6.7**
> Test users have the responsibility of protecting the security of test materials at all times. (p. 117)
>
> **Standard 10.18**
> Professionals and others who have access to test materials . . . should maintain the confidentiality of the . . . testing materials . . . (p. 168)

## FINDINGS

Pearson VUE, through its internal test administration and security protocols, provides a robust framework of test site and exam security policies and procedures. NCCAOM and Pearson VUE require candidates to provide current and valid identification to sit for the exams. Acceptable forms of identification include a valid driver's license, a valid passport, or a valid school ID with photo and signature imbedded into the card. Candidates are also required to submit a fingertip swipe as part of the Pearson VUE identity verification process. Candidates are prohibited from bringing reference materials, books or notes, electronic devices, food, or purses into the testing rooms.

Pearson VUE's "Secure Testing Framework"[35] addresses the following areas regarding security:

- Secure candidate registration and payments
- Secure examination delivery and storage of examination results
- Test center hiring and training practices
- Test center access
- Administration surveillance
- Procedures for security breaches

In addition, NCCAOM outlines for candidates what constitutes improper and unethical conduct on the part of candidates and the consequences of such actions in their candidate handbooks and guides and the NCCAOM Web site.

Finally, SMEs participating in the examination development process (item writing, item review, pass score setting, etc.) are required to sign a confidentiality agreement and to adhere to all requirements for maintaining examination security.

[35] Pearson VUE, "Secure Testing Framework", Confidential proprietary publication.

## CONCLUSIONS

Given the findings, Pearson VUE's policies and procedures as outlined in their "Secure Testing Framework" and NCCAOM's candidate and SME requirements meet professional guidelines and technical standards.

# CHAPTER 9. COMPARISON OF NCCAOM EXAMINATION CONTENT AND THE CALIFORNIA ACUPUNCTURE EXAMINATION PLAN

## UTILIZATION OF EXPERTS

A meeting was convened by OPES on September 23-25, 2015, to critically compare and evaluate the content of the NCCAOM examinations with the 2015 California Acupuncture Licensure Examination (CALE) test plan. The nine California acupuncture licensees participating in the linkage study were recruited by OPES.

The SMEs represented both northern and southern California as well as rural and urban areas. Three participants had been licensed between 0-5 years, two were licensed between 6-10 years, and four had been licensed between 11-20 years. In the areas of practice type, five SMEs were in general practice, two focused on treatment and management of pain, one focused on pain and spinal issues, and one worked in the internal medicine section of a hospital treating patients with pain issues. The SMEs represented both part-time and full-time practice in various settings (corporate, private practice, hospital, etc.).

All of the SMEs were familiar to some extent with examination development (item writing, item review, exam construction, and/or passing score setting) having participated in previous CALE workshops with OPES. A minimum level of exam development experience was desired as this would facilitate the participants' understanding of the tasks they were required to perform.

An orientation provided by OPES explained the purpose of the meeting, the role of the SMEs, and the principle tasks they were required to perform. As part of their orientation, the SMEs completed security agreements and personal data forms, which are on file with OPES and document additional SME information. Once the SMEs understood the purpose of the meeting, they independently reviewed the content of each of the NCCAOM examinations one at a time.

The content review consisted of a review of both the content outline and expanded content outline of each NCCAOM examination followed by a review of between 61-72 representative items from the respective examination (selected by NCCAOM for the review). The latter was done to ensure that the SMEs had a concrete idea of the content being tested in the examination. For each task and knowledge of the CALE test plan, each SME independently rated whether it was reflected in the content of the given NCCAOM exam.

After completing this review, the OPES facilitator led a focused discussion with the SMEs regarding the similarities and differences between the content of the specific NCCAOM examination under review and the tasks and knowledge identified by the 2015 California Acupuncture OA. The resulting ratings were used to identify the extent to which the content of each of the NCCAOM examinations reflected the tasks and knowledge tested by the CALE for entry-level acupuncture practice in California.

## QUANTIFYING THE LEVEL OF AGREEMENT

The content validity ratio (CVR) is a statistical/psychometric technique for establishing evidence of content validity from a quantitative perspective.[36] In simple terms, the CVR is a means of quantifying the level of agreement among a group of panel members and of setting the lower bounds of agreement. As applied to the linkage study, the lower bound of agreement is based on the critical value for a panel of nine SMEs, which is 77.8% or agreement by 7 of nine participants.

During the linkage study, each SME performed the linkage evaluations independently, i.e., the decisions from each SME were not shared with the group until all SMEs had finished their individual evaluations. Following the individual evaluations, the SMEs were asked for their individual determination regarding the NCCAOM examination content and whether it reflected each task and knowledge from the CA Acupuncture OA. OPES staff collected and documented the determinations by CALE content area, first tasks and then knowledge. In order to maintain the group's focus on the linkage, none of the results of the determinations, including the required minimum level of agreement, were shared with the group. A discussion of the group's observations was conducted following the completion of the linkage for each exam. This was done to monitor the approach and methods used by the group and to gather additional information about the group's findings.

Following the workshop, OPES staff summed the endorsements for each task and knowledge statement in each content area. The tasks and knowledge statements receiving at least 7 of 9 endorsements may be described as indicating that the content of the given NCCAOM examination is congruent with measuring that specific task or knowledge. The results of the linkage study are outlined below.

## FINDINGS

The results of the linkage study are presented for each of the NCCAOM examinations in turn. The percent overlap between the content of the NCCAOM examination and the content areas of the CALE is presented first. This is followed by a brief discussion regarding the specific CALE content covered and not covered by the NCCAOM examination. Finally, any observations made by the SMEs about the NCCAOM examination content being reviewed are provided for informational purposes.

<u>Fundamentals of Oriental Medicine (FOM)</u>
The comparison between the content measured by the FOM and the tasks and knowledge measured by the CALE began with the SMEs reviewing the content and expanded content outlines of the FOM. After a brief orientation to the content measured by the FOM, the SMEs reviewed 61 representative items from the FOM exam. The items were accompanied by the FOM content area they were written to measure (as provided by NCCAOM) and their keyed responses.

The results of the FOM linkage are summarized in Table 1. The number of task and knowledge statements found in each CALE content area is provided below the content area title. The number in the table cells indicates the number of task or knowledge

[36] Lawshe, C.H. (1975). A Quantitative Approach To Content Validity. *Personnel Psychology*, 28, 563-575.

statements that meet the cut-off for agreement (7 of 9 SMEs) and the percent in the table cells indicates the percent of the total CALE tasks or knowledge that represents. The FOM content was found to be related to 28 of 41 tasks (68%) in CALE Content Area I (Patient Assessment); the FOM content was also found to be related to 29 of 85 (34%) knowledge statements in CALE Content Area I.

TABLE 1 – RESULTS OF FOM LINKAGE

| | **I. Patient Assessment** 41 Ts; 85 Ks | **II. Diagnostic Impression** 14 Ts; 39 Ks | **III. Acupuncture Treatment** 50 Ts; 85 Ks | **IV. Herbal Therapy** 14 Ts; 20 Ks | **V. CA Regs. Public Hth. / Safety** 14 Ts; 24 Ks |
|---|---|---|---|---|---|
| Task | 28<br>68% | 13<br>93% | 0<br>- | 0<br>- | 0<br>- |
| Knowledge | 30<br>35% | 26<br>67% | 2<br>2% | 0<br>- | 0<br>- |

T=Tasks, K=Knowledge

The content measured by the FOM examination was found to be primarily related to Content Areas I (Patient Assessment) and II (Diagnostic Impression) of the CALE test plan. Specifically, it was very related to the tasks in Content Area I (68%) but only somewhat related to the knowledge measured in Content Area I (35%). The FOM content was also found to be highly related to the tasks in Content Area II (93%) and very related to the knowledge measured in Content Area II (67%). The SMEs noted little to no overlap between the content measured by the FOM and the remaining three content areas of the CALE test plan.

Listed below are examples of CALE test plan content [Tasks (T) and Knowledge (K)] **covered** by the FOM examination:

| | |
|---|---|
| T9. | Interview patient to determine dietary habits (e.g., type, quantity, frequency, time of day) that contribute to symptom severity and development. |
| T28. | Evaluate patient phlegm characteristics to determine nature of imbalance. |
| K8. | Knowledge of the patterns of sleep associated with pathology. |
| K33. | Knowledge of the theory of Qi. |
| K41. | Knowledge of phlegm characteristics and pathology. |
| K4. | Knowledge of patient history (e.g., health, trauma, emotional, family) that impact current health status. |

Below are examples of CALE test plan content [Tasks (T)] **not covered** by the FOM examination:

| | |
|---|---|
| T7. | Interview patient regarding environmental factors (e.g., work stress, pollutants, noise, climate) that contribute to present complaint. |
| T111. | Educate patient regarding differences between Traditional Chinese Medicine and Western medicine to clarify terminology and procedures. |

Below are examples of CALE test plan content [Knowledge (K)] **not covered** by the FOM examination:

| | |
|---|---|
| K23. | Knowledge of patterns of disharmony associated with pregnancy and childbirth. |
| K32. | Knowledge of pain characteristics resulting from pathological influences. |
| K49. | Knowledge of conditions associated with abnormal localized temperature. |

The SMEs thought that the content covered by the FOM was broad in nature and the items were written in a manner that would be intelligible to candidates from a variety of training backgrounds. In regard to the item content, they thought that some of the item content was more reflective of an academic (student) versus practitioner level of application. Several SMEs expressed that the CALE item content reflected a stronger emphasis on integrating Eastern and Western medicine and public safety.

Biomedicine (BIO)

The comparison between the content measured by the BIO and the tasks and knowledge measured by the CALE began with the SMEs reviewing the content and expanded content outlines of the BIO. After a brief orientation to the content measured by the BIO, the SMEs reviewed 69 representative items from the BIO exam. The items were accompanied by the BIO content area they were written to measure (as provided by NCCAOM) and their keyed responses. The results of the linkage study are summarized below.

TABLE 2 – RESULTS OF BIO LINKAGE

| | **I. Patient Assessment** 41 Ts; 85 Ks | **II. Diagnostic Impression** 14 Ts; 39 Ks | **III. Acupuncture Treatment** 50 Ts; 85 Ks | **IV. Herbal Therapy** 14 Ts; 20 Ks | **V. CA Regs. Public Hth. / Safety** 14 Ts; 24 Ks |
|---|---|---|---|---|---|
| Task | 15<br>37% | 0<br>- | 0<br>- | 0<br>- | 2<br>14% |
| Knowledge | 41<br>48% | 2<br>5% | 0<br>- | 0<br>- | 8<br>33% |

T=Tasks, K=Knowledge

The content measured by the BIO examination was found to be primarily related to Content Area I (Patient Assessment) of the CALE Test Plan. Specifically, it was somewhat related to the tasks in Content Area I (37%) and moderately related to the knowledge measured in Content Area I (48%). The SMEs noted little to no overlap between the content measured by the BIO and the remaining four content areas of the CALE test plan.

Examples of CALE test plan content [Tasks (T)] **covered** by the BIO examination:

| | |
|---|---|
| T30. | Perform neurological examination (e.g., sensation, strength) on patient to determine health condition. |
| T36. | Review patient diagnostic report (e.g., blood, X-ray, MRI) to gather additional information regarding patient complaint. |
| T39. | Determine patient conditions (e.g., blood in urine, chronic cough, unexplained weight loss) that require referral to other providers. |

Examples of CALE test plan content [Knowledge (K)] **covered** by the BIO examination:

| | |
|---|---|
| K6. | Knowledge of the roles of other health care providers and commonly used treatment methods. |
| K56. | Knowledge of the classification of commonly prescribed Western medications. |

Below are examples of CALE test plan content [Tasks (T) and Knowledge (K)] **not covered** by the BIO examination:

| | |
|---|---|
| T57. | Translate Traditional Chinese Medicine diagnostic concepts into common Western terminology for health care providers. |
| K99. | Knowledge of the relationship between Western disease diagnoses and Traditional Chinese Medicine patterns. |
| K100. | Knowledge of Western medical diagnoses and physiological processes involved with disease progression. |

The SMEs thought that the content covered by the BIO examination sometimes reflected academic-level knowledge versus a practitioner level of application. They noted a strong emphasis on Western medicine in the BIO content and that the BIO item content is very clear and precise. While the BIO emphasized Western medicine, the SMEs thought that the CALE item content attempted to integrate Eastern and Western medicine more fully than the BIO. Finally, they noted that item content integrating Eastern and Western medicine appears to be challenging for both BIO and CALE item writers.

Acupuncture with Point Location (ACPL)

The comparison between the content measured by the ACPL and the tasks and knowledge measured by the CALE began with the SMEs reviewing the content and expanded content outlines of the ACPL. After a brief orientation to the content measured by the ACPL, the SMEs reviewed 72 representative items from the ACPL exam. The items were accompanied by the ACPL content area they were written to measure (as provided by NCCAOM) and their keyed responses. The results of the linkage study are summarized below.

TABLE 3 – RESULTS OF ACPL LINKAGE

| | **I. Patient Assessment** 41 Ts; 85 Ks | **II. Diagnostic Impression** 14 Ts; 39 Ks | **III. Acupuncture Treatment** 50 Ts; 85 Ks | **IV. Herbal Therapy** 14 Ts; 20 Ks | **V. CA Regs. Public Hth. / Safety** 14 Ts; 24 Ks |
|---|---|---|---|---|---|
| Task | 0<br>- | 2<br>14% | 41<br>82% | 0<br>- | 0<br>- |
| Knowledge | 0<br>- | 6<br>15% | 80<br>94% | 0<br>- | 0<br>- |

T=Tasks, K=Knowledge

The content measured by the ACPL examination was found to be primarily related to Content Area III (Acupuncture Treatment) of the CALE test plan. Specifically, it was highly related to the tasks in Content Area III (82%) and highly related to the knowledge measured in Content Area III (94%). The SMEs noted little to no overlap between the

content measured by the ACPL and the remaining four content areas of the CALE test plan.

Below are examples of CALE test plan content [Tasks (T) and Knowledge (K)] **covered** by the ACPL examination:

| | |
|---|---|
| T58. | Develop a point prescription for patient based on treatment principles to restore balance. |
| T109. | Evaluate patient condition during follow-up visit by examining changes in function, signs, and symptoms to determine adjustments to treatment plan. |
| K135. | Knowledge of the efficacy of using particular points during progressive phases of treatment. |
| K154. | Knowledge of patient positions for locating and needling acupuncture points. |
| K155. | Knowledge of recommended needling depths and angles. |

Below are examples of CALE test plan content [Tasks (T) and Knowledge (K)] **not covered** by the ACPL examination:

| | |
|---|---|
| T112. | Provide patient with information regarding physiological systems to explain how the body functions. |
| K160. | Knowledge of the application of adjunct therapies (e.g., ear seeds, plaster, exercises). |

The SMEs thought that the content covered by the ACPL examination was broad and applied. They thought that the use of graphics and narratives for point identification and location was strong and well done. The CALE does not use graphics and they thought this was an important strength of the ACPL. There were also areas of terminology that, while not seen as problematic, are not typical of what is used in the CALE. All in all, the SMEs found the ACPL to be a strong exam.

<u>Chinese Herbology (CH)</u>
The comparison between the content measured by the CH and the tasks and knowledge measured by the CALE began with the SMEs reviewing the content and expanded content outlines of the CH. After a brief orientation to the content measured by the CH, the SMEs reviewed 67 representative items from the CH exam. The items were accompanied by the CH content area they were written to measure (as provided by NCCAOM) and their keyed responses. The results of the linkage study are summarized below.

TABLE 4 – RESULTS OF CH LINKAGE

| | **I. Patient Assessment** 41 Ts; 85 Ks | **II. Diagnostic Impression** 14 Ts; 39 Ks | **III. Acupuncture Treatment** 50 Ts; 85 Ks | **IV. Herbal Therapy** 14 Ts; 20 Ks | **V. CA Regs. Public Hth. / Safety** 14 Ts; 24 Ks |
|---|---|---|---|---|---|
| Task | 1<br>2% | 0<br>- | 1<br>2% | 11<br>79% | 0<br>- |
| Knowledge | 3<br>4% | 0<br>- | 1<br>1% | 19<br>95% | 0<br>- |

T=Tasks, K=Knowledge

The content measured by the CH examination was found to be primarily related to Content Area IV (Herbal Therapy) of the CALE test plan. Specifically, it was highly related to the tasks in Content Area IV (79%) and highly related to the knowledge measured in Content Area IV (95%). The SMEs noted little to no overlap between the content measured by the CH and the remaining four content areas of the CALE test plan.

Listed below are examples of CALE test plan content [Tasks (T) and Knowledge (K)] **covered** by the CH examination:

| | |
|---|---|
| T121. | Identify patient conditions that are contraindicated for recommending herbs. |
| T122. | Recommend herbs and herbal formulas adjusted for patient constitution to provide effective treatment. |
| T123. | Determine effective dosage of herbal therapy by evaluating patient condition. |
| K190. | Knowledge of combinations of herbs that are toxic or produce undesired side effects. |
| K192. | Knowledge of methods for modifying herbal formulas to treat changes in patient condition. |

Below are examples of CALE test plan content [Tasks (T) and Knowledge (K)] **not covered** by the CH examination:

| | |
|---|---|
| T127. | Collaborate with other professionals and herb specialists to determine herbal therapy (e.g., formula, dosage, patent) for treating patient conditions. |
| K182. | Knowledge of the association between therapeutic effects of points and herbal therapy. |

The SMEs thought that the content covered by the CH examination contained more content, herbal formulas, and herbs than the CALE. They noted that this was a strength of the CH exam. They identified an herb covered in the CH exam that is prohibited in California and felt a review of content to coincide with California law may be needed. They also thought that the level of application was related to practice versus education. The SMEs also noted that the item content relating to the toxicity of herbs, animal products, endangered species, formulations, and pharmacology was well done and another strength of the CH exam.

CALE Test Plan Content Not Covered by NCCAOM Exams

In addition to the areas noted above, Content Area V of the CALE test plan was found to be underrepresented by the content of the NCCAOM exams. Content Area V of the CALE test plan concerns laws and regulations related to California Acupuncture practice. Of the 14 tasks and 24 knowledge statements in this content area, only 2 tasks and 8 knowledge statements were linked to NCCAOM examination content (BIO).

Listed below are examples of CALE test plan Content Area V tasks **not covered** by the NCCAOM examinations:

| | |
|---|---|
| T129. | Develop advertisements in accordance with legal guidelines regarding services provided. |
| T130. | Maintain patient records in accordance with State and federal regulations. |
| T131. | Maintain patient confidentiality in accordance with State and federal regulations. |
| T132. | Report known or suspected abuse of patients by contacting protective services in accordance with State and federal regulations. |
| T134. | Prevent contamination and spread of pathogens by maintaining a clinical environment that adheres to State and federal laws and guidelines. |
| T135. | Dispose of needles, contaminated material, and containers in accordance with California Occupational Safety and Health Administration guidelines. |
| T136. | Utilize clean needle technique to prevent contamination and spread of pathogens in accordance with California Occupational Safety and Health Administration guidelines. |

Below are examples of CALE test plan Content Area V knowledge **not covered** by the NCCAOM examinations:

| | |
|---|---|
| K203. | Knowledge of methods for using Western medical diagnostic codes. |
| K204. | Knowledge of legal requirements for written consent to disclose patient records or share patient information. |
| K211. | Knowledge of Centers for Disease Control guidelines for reporting incidents of infectious and other diseases. |
| K212. | Knowledge of California Department of Public Health regulations for reporting incidents of infectious and other diseases. |
| K213. | Knowledge of the impact of inserting needles into skin that is inflamed, irritated, diseased, or broken. |
| K215. | Knowledge of standards and procedures for the Clean Needle Technique. |
| K216. | Knowledge of the methods for isolating used needles. |
| K217. | Knowledge of California Occupational Safety and Health Administration requirements for disposal of contaminated materials. |
| K218. | Knowledge of laws regulating practice techniques for California-licensed acupuncturists. |
| K219. | Knowledge of ethical standards for professional conduct in an acupuncture practice setting. |

## SUMMARY

The SMEs performed a comparison between the content of the NCCAOM examinations and the tasks and knowledge identified in the 2015 California Acupuncture OA. This review was conducted to identify the extent to which the content of each of the NCCAOM examinations reflected the tasks and knowledge tested by the CALE for entry-level acupuncture practice in California.

The results of the review by the SMEs indicate that:

1. The NCCAOM examinations are congruent with assessing many of the general areas of entry-level California acupuncture practice, e.g., acupuncture treatment, herbal therapy, diagnostic impressions, etc.

2. The NCCAOM examinations do not assess 100% of the general areas of entry-level California acupuncture practice identified in the 2015 Acupuncture OA, which are part of the CA Acupuncture test plan.

3. The NCCAOM examinations do not assess California-specific areas of entry-level acupuncture practice, including content related to the laws, regulations, and practice requirements specific to California.

Table 5, on the following page, summarizes the linkage between each NCCAOM examination and the tasks and knowledge of the CALE test plan.

Options for applying the results of the linkage study to the licensure examination program of the California Acupuncture Board are provided on page 52 of this report.

TABLE 5 – SUMMARY OF RESULTS OF LINKAGE STUDY

| Content Areas of Test Plan Based on CA OA[37] | FOM | | BIO | | APL | | CH | |
|---|---|---|---|---|---|---|---|---|
| | T | K | T | K | T | K | T | K |
| **I. Patient Assessment**<br>41 Ts; 85 Ks (17 appear twice) | 28<br>68% | 30<br>35% | 15<br>37% | 41<br>48% | 0<br>- | 0<br>- | 1<br>2% | 3<br>4% |
| **II. Diagnostic Impression and Treatment Plan**<br>14 Ts; 39 Ks | 13<br>93% | 26<br>67% | 0<br>- | 2<br>5% | 2<br>14% | 6<br>15% | 0<br>- | 0<br>- |
| **III. Providing Acupuncture Treatment**<br>50 Ts; 85 Ks (26 appear twice) | 0<br>- | 2<br>2% | 0<br>- | 0<br>- | 41<br>82% | 80<br>94% | 1<br>2% | 1<br>1% |
| **IV. Herbal Therapy**<br>14 Ts; 20 Ks | 0<br>- | 0<br>- | 0<br>- | 0<br>- | 0<br>- | 0<br>- | 11<br>79% | 19<br>95% |
| **V. Regulations for Public Health and Safety**<br>14 Ts; 24 Ks | 0<br>- | 0<br>- | 2<br>14% | 8<br>33% | 0<br>- | 0<br>- | 0<br>- | 0<br>- |

Note: T=Task; K=Knowledge

A detailed linkage summary showing the linkage of the NCCAOM exams to the specific tasks and knowledge of the CALE test plan is included as Appendix G.

The CALE test plan as based on the results of the 2015 CA Acupuncture OA is included as Table 6 of this report.

[37] The CALE test plan completely reflects the CA test plan as based on the results of the 2015 CA Acupuncture OA. As such, the two are identical.

TABLE 6 – TEST PLAN FOR CALIFORNIA ACUPUNCTURE LICENSURE EXAMINATION (CALE)

**I. Patient Assessment (31%)** The practitioner obtains patient's history and performs a physical examination to determine presenting complaint and interrelationship among symptoms. The practitioner understands general indications, pharmacological properties, and potential interactions of herbs, supplements, and Western medications. The practitioner uses diagnostic testing procedures to augment Oriental Medicine assessment methods.

| **IA. Obtain Patient's History (16.5%)** - Assess patient's presenting complaints by gathering patient health and treatment history. | |
|---|---|
| Task Statements | Knowledge Statements |
| 1 Assess chief complaint of patient by obtaining information regarding symptoms (e.g., onset, duration, location, severity, cause) to determine focus of examination.<br>2 Interview patient regarding general health history (e.g., substance abuse, family health, traumatic events, surgery) to determine effect on chief complaint.<br>3 Gather information regarding the history of present illness as it relates to chief complaint of patient.<br>4 Interview patient regarding prior treatments provided for chief complaint.<br>5 Interview patient regarding emotional state and life events that contribute to present complaint.<br>6 Interview patient regarding sleep patterns that contribute to present complaint.<br>7 Interview patient regarding environmental factors (e.g., work stress, pollutants, noise, climate) that contribute to present complaint.<br>8 Interview patient regarding lifestyle (e.g., exercise, recreation, social activities, work schedule) to determine effect on symptom severity and development.<br>9 Interview patient to determine dietary habits (e.g., type, quantity, frequency, time of day) that contribute to symptom severity and development.<br>10 Interview patient regarding preferences or aversions to food and fluid flavors and temperatures to determine nature of imbalance.<br>11 Interview patient regarding fluid intake (e.g., thirst, type, quantity, frequency, time of day) to determine contribution to condition.<br>12 Interview patient regarding gastrointestinal symptoms (e.g., bloating, pain, appetite) to determine nature of imbalance. | 1 Knowledge of physical examination techniques and evaluation of findings.<br>2 Knowledge of techniques for obtaining vital signs.<br>3 Knowledge of interview techniques for obtaining health history.<br>4 Knowledge of patient history (e.g., health, trauma, emotional, family) that impact current health status.<br>5 Knowledge of the impact of patient genetics and heredity on symptom development.<br>6 Knowledge of the roles of other health care providers and commonly used treatment methods.<br>7 Knowledge of the impact of emotions on pathology.<br>8 Knowledge of the patterns of sleep associated with pathology.<br>9 Knowledge of external and internal influences that impact current health status.<br>10 Knowledge of the impact of dietary habits on pathology or imbalance.<br>11 Knowledge of the effects of environmental factors (e.g., work stress, pollutants, noise, climate) on pathology or imbalance.<br>12 Knowledge of the gastrointestinal system.<br>14 Knowledge of the relationship between appetite and dietary habits and resulting digestive disharmony or pathology.<br>16 Knowledge of the effect of herbal and food flavors and temperatures on pathology.<br>17 Knowledge of the association between food and fluid flavor preferences and pathology.<br>18 Knowledge of the relationship between food and fluid temperature preferences and pathology.<br>19 Knowledge of the association between characteristics of thirst and patterns of disharmony. |

| **IA. Obtain Patient's History** continued | |
|---|---|
| Task Statements | Knowledge Statements |
| 13 Interview patient regarding gynecological symptoms to determine nature of imbalance.<br>14 Interview patient regarding urogenital symptoms to determine nature of imbalance.<br>15 Interview patient regarding urinary characteristics (e.g., color, clarity, odor) to determine nature of imbalance.<br>16 Interview patient regarding bowel characteristics (e.g., frequency, consistency, color, odor) to determine nature of imbalance.<br>17 Evaluate patient for the presence of fever and/or chills to determine present health condition.<br>18 Evaluate patient patterns of perspiration to determine nature of imbalance.<br>19 Interview patient regarding eye symptoms (e.g., irritation, dryness, visual changes) to determine nature of imbalance.<br>20 Interview patient regarding auditory function to determine nature of imbalance.<br>21 Interview patient regarding pain characteristics (e.g., location, onset, severity, quality, duration) to determine nature of imbalance.<br>27 Interview patient regarding mucus characteristics (e.g., color, viscosity, quantity) to determine nature of imbalance. | 20 Knowledge of the anatomy and physiology of human body systems.<br>21 Knowledge of patterns of disharmony associated with menstruation.<br>22 Knowledge of the female reproductive system.<br>23 Knowledge of patterns of disharmony associated with pregnancy and childbirth.<br>24 Knowledge of patterns of disharmony associated with menopause.<br>25 Knowledge of patterns of disharmony associated with the male reproductive system.<br>26 Knowledge of pathologies associated with patterns of urine elimination and urine characteristics.<br>27 Knowledge of pathologies associated with patterns of bowel elimination and stool characteristics.<br>28 Knowledge of the association between fever and/or chills and pathogenic influences.<br>29 Knowledge of abnormal perspiration characteristics associated with interior and exterior patterns.<br>30 Knowledge of the relationship between ocular symptoms and pathology.<br>31 Knowledge of the relationship between auricular symptoms and pathology.<br>32 Knowledge of pain characteristics resulting from pathological influences.<br>36 Knowledge of physical characteristics (e.g., face, eyes, abdomen, nails) that aid in pattern differentiation.<br>39 Knowledge of the theory of Jin Ye characteristics.<br>42 Knowledge of mucus characteristics and pathology.<br>52 Knowledge of methodology for assessment of nature and quality of pain.<br>54 Knowledge of the relationship between Organs and the Five senses (e.g., liver to eyes, kidney to ear). |

| **IB. Perform Physical Examination (12%)** - Assess patient's condition using Western and Oriental medical examination techniques. | |
|---|---|
| Task Statements | Knowledge Statements |
| 22 Observe patient (e.g., vitality, demeanor) to determine level and quality of energy/Qi.<br>23 Observe patient (e.g., presence, affect) to determine spirit/Shen.<br>24 Observe patient physical characteristics (e.g., face, eyes, abdomen, nails) that aid in pattern differentiation.<br>25 Observe patient physical characteristics (e.g., face, eyes, abdomen, nails) to determine Five Element associations.<br>26 Listen to sounds, voice quality, and vocal strength of patient to determine nature of disharmony.<br>28 Evaluate patient phlegm characteristics to determine nature of imbalance.<br>29 Evaluate patient respiratory system to determine nature of imbalance.<br>30 Perform neurological examination (e.g., sensation, strength) on patient to determine health condition.<br>31 Perform orthopedic examination (e.g., range of motion) on patient to determine health condition.<br>32 Observe patient tongue body and coating to determine nature of imbalance.<br>33 Assess patient radial pulse to determine nature of imbalance.<br>34 Palpate areas of body (e.g., abdomen, muscles, joints, channels) to gather additional information regarding patient complaint.<br>37 Listen to internal systems (e.g., lungs, heart, abdomen) of patient to gather additional information regarding patient complaint.<br>38 Evaluate patient skin conditions (e.g., shingles, hives, psoriasis) to determine nature of imbalance.<br>40 Determine any life-threatening conditions (e.g., stroke, heart attack, seizure) occurring in patient that require immediate action.<br>41 Perform physical exam on patient to determine present health condition. | 1 Knowledge of physical examination techniques and evaluation of findings.<br>2 Knowledge of techniques for obtaining vital signs.<br>3 Knowledge of interview techniques for obtaining health history.<br>7 Knowledge of the impact of emotions on pathology.<br>12 Knowledge of the gastrointestinal system.<br>13 Knowledge of methods for palpating the abdomen.<br>20 Knowledge of the anatomy and physiology of human body systems.<br>22 Knowledge of the female reproductive system.<br>33 Knowledge of the theory of Qi.<br>34 Knowledge of Shen characteristics and clinical indicators of impaired Shen.<br>35 Knowledge of facial indicators associated with pathology or disharmony.<br>36 Knowledge of physical characteristics (e.g., face, eyes, abdomen, nails) that aid in pattern differeniation.<br>39 Knowledge of the theory of Jin Ye characteristics.<br>40 Knowledge of the relationship between quality and strength of voice and patterns of disharmony.<br>41 Knowledge of phlegm characteristics and pathology.<br>43 Knowledge of signs and symptoms of impaired respiratory function.<br>44 Knowledge of skin characteristics associated with pathology.<br>45 Knowledge of methods of assessing neuromusculoskeletal function and integrity.<br>46 Knowledge of neuromusculoskeletal conditions.<br>47 Knowledge of pathogenic factors that affect joints and surrounding areas.<br>48 Knowledge of causes of joint pathology.<br>49 Knowledge of conditions associated with abnormal localized temperature.<br>50 Knowledge of tongue characteristics associated with pathology and health. |

| **IB. Perform Physical Examination** continued | |
|---|---|
| Task Statements | Knowledge Statements |
| | 51 Knowledge of methods for obtaining pulse information from various locations on the body.<br>52 Knowledge of methodology for assessment of nature and quality of pain.<br>53 Knowledge of the theory of interconnection of Organs and tissues (e.g., liver to tendon, spleen to muscle).<br>54 Knowledge of the relationship between Organs and the Five senses (e.g., liver to eyes, kidney to ear).<br>55 Knowledge of Western medical terminology and definitions.<br>62 Knowledge of clinical significance of laboratory tests used for diagnostic purposes.<br>64 Knowledge of vital sign values as clinical indicators of pathology.<br>65 Knowledge of clinical indications of cardiopulmonary dysfunction.<br>66 Knowledge of palpation techniques for determination of pathology.<br>67 Knowledge of the effects of pathways and functions of cranial nerves on the determination of pathology.<br>68 Knowledge of signs and symptoms of emergency conditions (e.g., shock, heart attack, seizure).<br>69 Knowledge of methods for administering cardiopulmonary resuscitation.<br>70 Knowledge of methods for providing first aid treatment.<br>72 Knowledge of the methods for listening to internal systems (e.g., lungs, heart, abdomen). |

| **IC. Evaluate for Supplements and Western Pharmacology (1%)** - Assess patient's use of herbs, supplements, and Western medications to determine impact on patient's condition. | |
|---|---|
| 35 Interview patient to identify any supplements, herbs, or pharmaceuticals influencing health status. | 3 Knowledge of interview techniques for obtaining health history.<br>56 Knowledge of the classification of commonly prescribed Western medications.<br>57 Knowledge of the clinical indications of commonly prescribed Western medications.<br>59 Knowledge of clinical indications of commonly prescribed herbs and supplements.<br>60 Knowledge of side effects of commonly used herbs and supplements.<br>61 Knowledge of interactions between commonly used supplements, herbs, and Western medications. |
| **ID. Implement Diagnostic Testing (1.5%)** - Assess patient's condition by using results from Western diagnostic tests. | |
| 36 Review patient diagnostic report (e.g., blood, X-ray, MRI) to gather additional information regarding patient complaint.<br>39 Determine patient conditions (e.g., blood in urine, chronic cough, unexplained weight loss) that require referral to other providers. | 6 Knowledge of the roles of other health care providers and commonly used treatment methods.<br>55 Knowledge of Western medical terminology and definitions.<br>58 Knowledge of side effects of commonly prescribed Western medications.<br>62 Knowledge of clinical significance of laboratory tests used for diagnostic purposes.<br>63 Knowledge of clinical significance of diagnostic imaging reports (e.g., X-ray, ultrasound, computed tomography).<br>64 Knowledge of vital sign values as clinical indicators of pathology.<br>70 Knowledge of methods for providing first aid treatment.<br>73 Knowledge of the environmental factors (e.g., work stress, pollutants, noise, climate) that cause disease. |

**II. Diagnostic Impression and Treatment Plan (10.5%)** The practitioner evaluates clinical manifestations to determine the relative strength and progression of disease. The practitioner evaluates patterns of disharmony according to theories of Oriental medicine to establish a diagnosis and treatment plan. The practitioner demonstrates knowledge of how pathology in Western medicine relates to disease in traditional Oriental Medicine.

| Task Statements | Knowledge Statements |
|---|---|
| 42 Integrate assessment findings (e.g., pulse, tongue, history, channel) to form differential diagnosis. | 74 Knowledge of methods for integrating assessment information to develop a diagnosis. |
| 43 Identify affected channel by evaluating information gathered from patient. | 75 Knowledge of the association between radial pulse findings and pathology. |
| 44 Differentiate between root and branch of condition to focus patient treatment. | 76 Knowledge of the association between tongue characteristics and pathology. |
| 45 Prioritize findings regarding patient to develop treatment strategy. | 77 Knowledge of methods for integrating tongue and pulse characteristics to identify pathology. |
| 46 Utilize differential diagnosis to develop treatment principles (e.g., tonify, sedate, harmonize) for patient. | 78 Knowledge of the relationship between the Organs and channels in disease progression and transformation. |
| 47 Apply treatment principle (e.g., tonify, sedate, harmonize) to develop treatment plan for patient. | 79 Knowledge of the relationships, patterns, and changes of Yin and Yang. |
| 48 Identify Yin and Yang imbalance by patient evaluation to develop a differential diagnosis. | 80 Knowledge of the relationship between the Zang Fu and vital substances (i.e., the liver stores the blood). |
| 49 Identify Five Element disharmony by patient evaluation to develop a differential diagnosis. | 81 Knowledge of disease progression from superficial to deep levels of the human body. |
| 50 Identify Zang Fu disharmony by patient evaluation to develop a differential diagnosis. | 82 Knowledge of clinical indicators associated with disease of the channels. |
| 51 Identify Eight Principles categorization by patient evaluation to develop a differential diagnosis. | 83 Knowledge of the distribution, functions, and clinical significance of the channels. |
| 52 Identify relative strength of Qi and Blood by patient evaluation to develop a differential diagnosis. | 84 Knowledge of principles for treating root symptoms versus branch symptoms of pathology or disharmony. |
| 53 Utilize Four Level differentiation to determine progression of pathogen. | 85 Knowledge of methods for prioritizing pathology or disharmony symptoms. |
| 54 Utilize Six Stage differentiation to determine progression of pathogen. | 86 Knowledge of the interrelationships of the Five Elements and clinical indications of disharmony. |
| 57 Translate Traditional Chinese Medicine diagnostic concepts into common Western terminology for health care providers. | 87 Knowledge of the functions of and relationship between the Zang Fu and the channels. |
| | 88 Knowledge of the clinical indications associated with Zang Fu pathology. |
| | 89 Knowledge of methods for identifying simultaneous Zang Fu disharmonies. |
| | 90 Knowledge of methods for differentiating patterns of Hot and Cold conditions. |

| **II. Diagnostic Impression and Treatment Plan** continued | |
|---|---|
| Task Statements | Knowledge Statements |
| | 91 Knowledge of methods for differentiating Empty and Full patterns.<br>92 Knowledge of the functions associated with the types of Qi.<br>93 Knowledge of the characteristics and functions associated with Blood.<br>94 Knowledge of the disharmonies associated with Qi and Blood.<br>95 Knowledge of patterns of disharmony associated with the Six Stages.<br>96 Knowledge of patterns of disharmony associated with the Four Levels.<br>97 Knowledge of patterns of disharmony associated with the San Jiao.<br>98 Knowledge of theories, relationships, and disharmonies of Qi, Blood, and body fluid.<br>99 Knowledge of the relationship between Western disease diagnoses and Traditional Chinese Medicine patterns.<br>100 Knowledge of Western medical diagnoses and physiological processes involved with disease progression.<br>101 Knowledge of patient conditions (e.g., blood in urine, chronic cough, unexplained weight loss) that require patient referral.<br>102 Knowledge of Traditional Chinese Medicine pattern differentiation to determine treatment principles.<br>103 Knowledge of the effectiveness of combining treatment strategies in developing a treatment plan.<br>104 Knowledge of how Qi is dispersed to the Zang Fu Organs via the Yuan-Source points.<br>105 Knowledge of treatment strategies for using tonification and/or sedation points.<br>106 Knowledge of the association between stimulation techniques and treatment principles.<br>107 Knowledge of therapeutic uses for moxibustion.<br>109 Knowledge of therapeutic uses for external herbs.<br>110 Knowledge of therapeutic uses for electroacupuncture.<br>111 Knowledge of therapeutic uses for cupping.<br>112 Knowledge of therapeutic uses for soft tissue massage techniques.<br>113 Knowledge of therapeutic uses for adjunctive therapies. |

**III. Providing Acupuncture Treatment (35%)** The practitioner implements knowledge of the actions, indications, and categories of points to create a point protocol which balances and treats disharmonies. The practitioner uses anatomical landmarks and proportional measurements to locate and needle points on the body. The practitioner identifies clinical indications and contraindications for the use of acupuncture microsystems and adjunct modalities. The practitioner evaluates patient response at follow-up visit and modifies treatment plan.

**IIIA. Point Selection Principles and Categories (17.5%)** – Select acupuncture points and combinations, including microsystems (e.g., auricular, scalp), to provide therapeutic treatment for disharmonies.

| Task Statements | Knowledge Statements |
|---|---|
| 58 Develop a point prescription for patient based on treatment principles to restore balance.<br>59 Select distal and/or proximal points on patient to treat affected channels and conditions.<br>60 Select local points on patient by evaluating clinical indications to treat condition.<br>61 Select points from different channels on patient to combine treatment of root and branch.<br>62 Select points on patient opposite to area of patient complaint to treat condition.<br>63 Select points on patient (e.g., above and below, right and left) that balance point distribution to harmonize treatment.<br>64 Select points from Yin and Yang channels to balance the treatment prescription for patient.<br>65 Select front and back points on patient to enhance treatment effect.<br>67 Select points on the extremities of patient to treat conditions occurring in the center.<br>68 Select Ashi points on patient to enhance treatment effect.<br>69 Select points along the Muscle channels of patient to enhance treatment effect.<br>70 Select Front-Mu (Alarm) points on patient to address acute imbalances.<br>71 Select Back-Shu (Transport) points on patient to address chronic imbalances.<br>72 Select Lower He-Sea points on patient to connect channels with respective Fu Organs.<br>73 Select Five Shu (Five-Transporting) points on patient to treat imbalances of the Five Elements. | 117 Knowledge of the function and clinical indications of points.<br>118 Knowledge of the classification of acupuncture points.<br>119 Knowledge of the association between points and internal Organs and channels.<br>120 Knowledge of methods for combining distal and proximal points.<br>121 Knowledge of therapeutic effects of using local points in acupuncture treatment.<br>122 Knowledge of principles for combining points from different channels.<br>123 Knowledge of therapeutic effects of needling points on the opposite side of the body from the location of the condition.<br>124 Knowledge of the method for balancing the points on the upper part of the body with those of the lower part.<br>125 Knowledge of the effects of using points on the front and back to regulate internal Organs.<br>126 Knowledge of treatment strategies that use centrally located points that relate to the extremities.<br>127 Knowledge of treatment strategies that use points in the extremities that relate to the center.<br>128 Knowledge of the therapeutic use of Ashi points.<br>129 Knowledge of the therapeutic use of points along the Muscle channels.<br>130 Knowledge of the effects of using Front-Mu points in treatment.<br>131 Knowledge of the effects of using Back-Shu points in treatment.<br>132 Knowledge of methods for combining Front-Mu points and Back-Shu points to balance treatment.<br>133 Knowledge of treatment principles for using Lower He-Sea points.<br>134 Knowledge of techniques for choosing points according to channel theory. |

| **IIIA. Point Selection Principles and Categories** continued | |
|---|---|
| Task Statements | Knowledge Statements |
| 74 Select Confluent points of the Eight Extraordinary Channels on patient based on clinical indications to treat condition.<br>75 Select Extra points on patient based on clinical indications to treat condition.<br>76 Select Intersecting/Crossing points on patient to treat conditions manifesting in multiple channels.<br>77 Select Luo-Connecting points on patient to treat internally and externally related channels.<br>78 Select Yuan-Source points on patient to access fundamental Qi for the channel.<br>79 Select Xi-Cleft points on patient to treat acute conditions of the related channel or corresponding Organs.<br>80 Select Eight Influential points on patient to treat condition.<br>106 Select scalp points based on clinical indications to treat patient condition.<br>107 Select auricular points based on clinical indications to treat patient condition.<br>109 Evaluate patient condition during follow-up visit by examining changes in function, signs, and symptoms to determine adjustments to treatment plan. | 135 Knowledge of the efficacy of using particular points during progressive phases of treatment.<br>136 Knowledge of significance of selecting points based upon specific time of day.<br>137 Knowledge of therapeutic use of Five Shu (Five Transporting) points.<br>138 Knowledge of therapeutic use of Confluent points of the Eight Extraordinary channels.<br>139 Knowledge of therapeutic use of Extraordinary points.<br>140 Knowledge of therapeutic use of Intersecting/Crossing points of the channel.<br>141 Knowledge of therapeutic use of Luo-Connecting points.<br>142 Knowledge of the relationships between the Luo-Connecting points and the Twelve Primary channels.<br>143 Knowledge of therapeutic use of Yuan-Source points.<br>144 Knowledge of therapeutic use of Xi-Cleft points.<br>145 Knowledge of therapeutic use of tonification and/or sedation techniques.<br>146 Knowledge of therapeutic use of Four Seas points.<br>147 Knowledge of therapeutic use of Influential points.<br>148 Knowledge of therapeutic use of Mother/Son points (Four Needle Technique).<br>149 Knowledge of the theory of the Five Elements.<br>150 Knowledge of the anatomical landmarks and proportional measurements used in point location.<br>151 Knowledge of needle manipulation techniques.<br>152 Knowledge of the needle retention methods for pathological conditions.<br>153 Knowledge of the impact of patient constitution and condition on duration of needle retention.<br>154 Knowledge of patient positions for locating and needling acupuncture points.<br>155 Knowledge of recommended needling depths and angles.<br>156 Knowledge of the application of moxibustion techniques.<br>157 Knowledge of the application of electroacupuncture techniques. |

| **IIIA. Point Selection Principles and Categories** continued | |
|---|---|
| Task Statements | Knowledge Statements |
| | 158 Knowledge of the application of cupping techniques.<br>159 Knowledge of the application of soft tissue massage techniques.<br>160 Knowledge of the application of adjunct therapies (e.g., ear seeds, plaster, exercises).<br>162 Knowledge of lifestyle changes and stress reduction techniques that improve health condition.<br>163 Knowledge of nutritional concepts and dietary modifications specific to patient condition.<br>164 Knowledge of the techniques of scalp acupuncture.<br>165 Knowledge of the techniques of auricular acupuncture.<br>166 Knowledge of signs and symptoms of patient distress.<br>167 Knowledge of patient symptoms that indicate need for treatment modification.<br>168 Knowledge of contraindications for needling. |
| **IIIB. Point Location and Needling Techniques (5.5%)** - Locate acupuncture points, insert needles, and apply needling techniques. | |
| 85 Locate points for needle insertion on patient by utilizing anatomical landmarks and proportional measurements.<br>86 Evaluate patient condition to determine needle retention time for optimal treatment effects.<br>87 Place patient into recommended position for needle insertion.<br>88 Insert needle within standard depth range to stimulate point on patient.<br>89 Manipulate needle to produce therapeutic effect in patient.<br>90 Identify contraindications for needling by evaluating patient condition to avoid injury and/or complications.<br>91 Identify points that require needling with caution (e.g., locations near arteries) to avoid complications.<br>108 Evaluate patient stress response to treatment by monitoring vital signs. | 116 Knowledge of safe needle placement techniques to prevent damage (e.g., Organs, arteries, nerves).<br>117 Knowledge of the function and clinical indications of points.<br>118 Knowledge of the classification of acupuncture points.<br>119 Knowledge of the association between points and internal Organs and channels.<br>150 Knowledge of the anatomical landmarks and proportional measurements used in point location.<br>151 Knowledge of needle manipulation techniques.<br>152 Knowledge of the needle retention methods for pathological conditions.<br>154 Knowledge of patient positions for locating and needling acupuncture points.<br>155 Knowledge of recommended needling depths and angles.<br>165 Knowledge of the techniques of auricular acupuncture.<br>166 Knowledge of signs and symptoms of patient distress.<br>168 Knowledge of contraindications for needling.<br>169 Knowledge of points and conditions that should be needled with caution. |

| **IIIC. Implement Adjunct Modalities (7%)** – Enhance treatment effectiveness by utilizing supportive treatments and recognizing contraindications. | |
|---|---|
| Task Statements | Knowledge Statements |
| 92 Apply moxibustion techniques on patient to treat indicated conditions.<br>93 Identify contraindications for moxibustion by evaluating patient condition to avoid injury and/or complications.<br>94 Perform electroacupuncture on patient to enhance effectiveness of treatment for select conditions.<br>95 Identify contraindications for electroacupuncture to avoid injury and/or complications.<br>96 Perform cupping techniques on patient to treat condition.<br>97 Identify contraindications for cupping to avoid injury and/or complications.<br>99 Identify contraindications for Gua-sha techniques to avoid injury and/or complications<br>100 Perform massage techniques (e.g., Tui Na, acupressure) on patient to treat condition.<br>101 Identify contraindications for massage techniques to avoid injury and/or complications.<br>103 Identify contraindications for supportive therapies (e.g., ear seeds, moxa, plaster, exercises) to avoid injury and/or complications. | 156 Knowledge of the application of moxibustion techniques.<br>157 Knowledge of the application of electroacupuncture techniques.<br>158 Knowledge of the application of cupping techniques.<br>159 Knowledge of the application of soft tissue massage techniques.<br>160 Knowledge of the application of adjunct therapies (e.g., ear seeds, plaster, exercises).<br>170 Knowledge of contraindications for electroacupuncture.<br>171 Knowledge of contraindications for cupping.<br>172 Knowledge of contraindications for moxibustion.<br>173 Knowledge of contraindications for soft tissue massage.<br>174 Knowledge of contraindications for adjunctive therapies.<br>175 Knowledge of contraindications for Gua Sha techniques. |

| **IIID. Patient Education (5%)** – Provide Oriental Medicine education to patient regarding lifestyle, diet, and self-care. | |
|---|---|
| Task Statements | Knowledge Statements |
| 102 Instruct patient on use of supportive therapies (e.g., ear seeds, moxa, plaster, exercises) for implementation in clinic or at home.<br>104 Recommend dietary changes for patient by identifying specific foods to add or remove from daily meals to support treatment.<br>105 Recommend lifestyle changes for patient (e.g., exercise, ergonomics, meditation) to improve health condition.<br>110 Provide patients with information (e.g., instructions, pamphlets, exercise routines, meditation methods) that promotes living a healthy lifestyle.<br>111 Educate patient regarding differences between Traditional Chinese Medicine and Western medicine to clarify terminology and procedures.<br>112 Provide patient with information regarding physiological systems to explain how the body functions.<br>113 Inform patient of Traditional Chinese Medicine diagnosis by comparing it to Western medicine and explaining how the methods differ. | 117 Knowledge of the function and clinical indications of points.<br>121 Knowledge of therapeutic effects of using local points in acupuncture treatment.<br>150 Knowledge of the anatomical landmarks and proportional measurements used in point location.<br>156 Knowledge of the application of moxibustion techniques.<br>160 Knowledge of the application of adjunct therapies (e.g., ear seeds, plaster, exercises).<br>162 Knowledge of lifestyle changes and stress reduction techniques that improve health condition.<br>163 Knowledge of nutritional concepts and dietary modifications specific to patient condition.<br>165 Knowledge of the techniques of auricular acupuncture.<br>166 Knowledge of signs and symptoms of patient distress.<br>167 Knowledge of patient symptoms that indicate need for treatment modification. |

**IV. Herbal Therapy (10.5%)** The practitioner selects herbal formulas based on diagnostic criteria, and then modifies herbs and dosages according to patient's condition. The practitioner identifies situations and conditions where herbs and herbal formulas would produce undesired effects.

| Task Statements | Knowledge Statements |
|---|---|
| 114 Develop herbal formula for patient based on treatment principle (e.g., tonify, sedate, harmonize) to restore balance.<br>115 Distinguish between herbs and formulas from the same categories to select the most therapeutic application.<br>116 Select herbal formula by identifying hierarchy of herbs (e.g., chief, deputy, envoy, assistant) for therapeutic application.<br>117 Identify complementary herb qualities and point functions to provide integrated treatment.<br>118 Identify similarities (e.g., analogs) between herbal therapy and Western medications to optimize treatment.<br>119 Identify contraindications for herbs when combined with Western medications to avoid adverse interactions.<br>120 Monitor effects of herbs when combined with Western medications to determine interactions.<br>121 Identify patient conditions that are contraindicated for recommending herbs.<br>122 Recommend herbs and herbal formulas adjusted for patient constitution to provide effective treatment.<br>123 Determine effective dosage of herbal therapy by evaluating patient condition.<br>124 Evaluate patient response to herbal therapy to determine if modifications are indicated.<br>125 Monitor patient response to herbal therapy for side effects.<br>126 Instruct patient on usage of herbs (e.g., dosage, cooking, application) to produce intended therapeutic effect.<br>127 Collaborate with other professionals and herb specialists to determine herbal therapy (e.g., formula, dosage, patent) for treating patient conditions. | 177 Knowledge of the categories of herbs and herbal formulas according to therapeutic properties.<br>178 Knowledge of the effects of herbs and herbal formulas on channels and Organs<br>176 Knowledge of therapeutic uses for herbs and herbal formulas.<br>179 Knowledge of modifications of herbal formulas.<br>180 Knowledge of the synergistic and antagonist relationships of ingredients in herbal formulas.<br>181 Knowledge of the hierarchical principles governing herbal formulas.<br>182 Knowledge of the association between therapeutic effects of points and herbal therapy.<br>183 Knowledge of interactions between herbal therapies and Western medications.<br>184 Knowledge of cautions and contraindications regarding the recommendation of herbs and herbal formulas.<br>185 Knowledge of the interactions between diet and herbal therapies.<br>186 Knowledge of the effect of dosage on the therapeutic effectiveness of herbs and herbal formulas.<br>187 Knowledge of the practice of herbal formula preparation.<br>188 Knowledge of the relationships between herbal formulas and treatment principles.<br>189 Knowledge of strategies for combining herb ingredients to form an herbal formula.<br>190 Knowledge of combinations of herbs that are toxic or produce undesired side effects.<br>191 Knowledge of the techniques for external application of herbs (e.g., plasters, poultices, soaks).<br>192 Knowledge of methods for modifying herbal formulas to treat changes in patient condition.<br>193 Knowledge of the effects of processing herbs on efficacy and toxicity.<br>194 Knowledge of forms (e.g., raw, granules, pill) used for administration of herbs.<br>195 Knowledge of herbal formula recommendations based upon patient constitution. |

**V. Regulations for Public Health and Safety (13%)** The practitioner adheres to professional, ethical, and legal requirements regarding business practices, informed consent, and collaboration with other health care providers. The practitioner understands and complies with laws and regulations governing infection control measures. The practitioner adheres to legal requirements for reporting known or suspected abuse.

| Task Statements | Knowledge Statements |
|---|---|
| 128 Document initial assessment and treatments (i.e., Subjective/Objective/Assessment/Plan or SOAP) to maintain patient records.<br>129 Develop advertisements in accordance with legal guidelines regarding services provided.<br>130 Maintain patient records in accordance with State and federal regulations.<br>131 Maintain patient confidentiality in accordance with State and federal regulations.<br>132 Report known or suspected abuse of patients by contacting protective services in accordance with State and federal regulations.<br>133 Obtain informed patient consent for treatment by providing information regarding benefits, risks, and side effects.<br>134 Prevent contamination and spread of pathogens by maintaining a clinical environment that adheres to State and federal laws and guidelines.<br>135 Dispose of needles, contaminated material, and containers in accordance with California Occupational Safety and Health Administration guidelines.<br>136 Utilize clean needle technique to prevent contamination and spread of pathogens in accordance with California Occupational Safety and Health Administration guideline.<br>137 Adhere to ethical standards and professional boundaries while interacting with patients.<br>138 Adhere to professional standards regarding substance use within the treatment environment.<br>139 Adhere to business practice standards (i.e., preventing insurance fraud, abiding with labor laws, complying with local ordinances) for health care professionals.<br>140 Prepare reports regarding patient condition by translating Traditional Chinese Medicine diagnosis into common medical terminology to communicate with other health care providers. | 196 Knowledge of legal requirements pertaining to the maintenance and retention of records.<br>197 Knowledge of laws regarding advertisement and dissemination of information about professional qualifications and services.<br>198 Knowledge of laws that define scope of practice and professional competence for acupuncturists.<br>199 Knowledge of legal requirements for protecting patient confidentiality.<br>200 Knowledge of indicators of child, elder, and dependent adult abuse.<br>201 Knowledge of legal requirements for reporting known or suspected abuse of children, elders, and dependent adults.<br>202 Knowledge of guidelines for writing medical records and reports.<br>203 Knowledge of methods for using Western medical diagnostic codes.<br>204 Knowledge of legal requirements for written consent to disclose patient records or share patient information.<br>205 Knowledge of conditions and requirements (e.g., subpoena) for disclosing confidential material to other individuals, agencies, or authorities.<br>206 Knowledge of the characteristics of infectious diseases and mechanisms of disease transmission.<br>207 Knowledge of sterilization procedures for treatment of instruments and equipment.<br>208 Knowledge of procedures and standards for storage of equipment after sterilization.<br>209 Knowledge of Centers for Disease Control guidelines for treating patients with communicable diseases.<br>210 Knowledge of Centers for Disease Control guidelines for preventing cross-contamination or spread of pathogens.<br>211 Knowledge of Centers for Disease Control guidelines for reporting incidents of infectious and other diseases.<br>212 Knowledge of California Department of Public Health regulations for reporting incidents of infectious and other diseases. |

| **V. Regulations for Public Health and Safety** continued | |
|---|---|
| Task Statements | Knowledge Statements |
| 141 Determine the need to collaborate with primary physician and/or other health care providers to identify the most effective treatment for patient. | 213 Knowledge of the impact of inserting needles into skin that is inflamed, irritated, diseased, or broken.<br>214 Knowledge of the risks of infectious diseases in the practitioner and patient environment.<br>215 Knowledge of standards and procedures for the Clean Needle Technique.<br>216 Knowledge of the methods for isolating used needles.<br>217 Knowledge of California Occupational Safety and Health Administration requirements for disposal of contaminated materials.<br>218 Knowledge of laws regulating practice techniques for California-licensed acupuncturists.<br>219 Knowledge of ethical standards for professional conduct in an acupuncture practice setting. |

# CHAPTER 10. CONCLUSIONS

## COMPREHENSIVE REVIEW OF NCCAOM'S EXAMINATION PROGRAM

OPES completed a comprehensive analysis and evaluation of the documents provided by NCCAOM, SMT, and Pearson VUE. The procedures used to establish and support the validity and defensibility of the NCCAOM examinations (i.e., practice analysis, examination development, passing scores, test administration, examination performance, and test security) were found to meet professional guidelines and technical standards outlined in the *Standards for Educational and Psychological Testing* and Business & Professions Code section 139.

Given the findings regarding the NCCAOM examinations, the California Acupuncture Board may consider the following options for applying the results of the linkage study to the requirements for acupuncture licensure in California.

## OPTIONS FOR APPLYING THE LINKAGE STUDY RESULTS

Option 1: Require the CALE Only
Use of the CALE is supported by the 2015 California Acupuncture Occupational Analysis. The test plan covers the general areas of acupuncture practice relevant to entry-level licensure in California as well as the areas of entry-level California acupuncture practice related to California-specific laws, rules, and regulations.

Consideration of requiring only the CALE should be moderated by the findings that the NCCAOM exams measure many of the general areas of entry-level California acupuncture practice.

Option 2: Require NCCAOM Exams Only
Given the findings, the content of the NCCAOM examinations are congruent with testing many of the general areas of entry-level California acupuncture practice.

Consideration of replacing the CALE with the NCCAOM exams should be moderated by the findings that:

1. The general areas of entry-level California acupuncture practice not covered by the NCCAOM exams will not be tested, and

2. Areas of entry-level California acupuncture practice related to California-specific laws, rules, regulations, and practice will no longer be tested.

Option 3: Require Either the CALE or the NCCAOM Exams
Allowing candidates to pass either the CALE or the NCCAOM exams to meet CA licensure requirements will result in disparate requirements for California acupuncture licensure. This is because there are content differences between the CALE and the NCCAOM exams. The linkage study results point to the differences in the general

areas of entry-level practice tested by the CALE and NCCAOM exam content. Also, candidates taking the CALE would have to demonstrate a minimum level of competency in regard to their knowledge of California-specific laws, rules, regulations, and practice. The candidates opting to take the NCCAOM exams instead of the CALE would not have to demonstrate a minimum level of competency in regard to their knowledge of California-specific laws, rules, regulations, and practice.

Option 4: Require NCCAOM Exams and a CA Supplement

If the NCCAOM examinations are used as partial fulfillment of the requirements for California acupuncture licensure, consideration should be given to include a California supplemental exam covering the laws, regulations, and practice requirements specific to California.

In determining whether to allow all NCCAOM exams to meet partial fulfillment of California licensure requirements or only specific NCCAOM exams, consideration should be given to the extent to which each NCCAOM exam provides coverage of the general areas of entry-level acupuncture practice relevant to California licensure. For example, the content of the ACPL exam was found to adequately cover Content Area III (Acupuncture Treatment) of the CALE test plan, which is 35% of the CALE test plan content. Conversely, the CH exam provides adequate coverage of Content Area IV (Herbal Therapy) of the CALE test plan, but this represents only 10% of the CALE test plan content.

The CALE test plan will require refining to minimize testing candidates twice on the same material. Developing the test plan for a California supplemental exam will also require inclusion of the tasks and knowledge related to the laws, regulations, and practice requirements specific to California. Next, consideration should be given to the tasks and knowledge related to general acupuncture practice but not measured by the NCCAOM exams. Finally, consideration could be given to including the tasks and knowledge that may be measured in part by the NCCAOM exams, but still require further testing on the CALE because of their importance to newly-licensed acupuncture practice in California.

Final Note

Whichever option is chosen, care should be taken to ensure that the CA acupuncture licensing examination program consists of an examination, or examinations, whose content reflects the CALE test plan as fully as possible.

Options 1 and 4 above are the only two options that provide complete coverage of the 2015 OA Acupuncture test plan.

# APPENDIX A. FOUNDATIONS OF ORIENTAL MEDICINE (FOM) EXPANDED CONTENT OUTLINE WITH KSA/COMPETENCY STATEMENTS

**Foundations of Oriental Medicine Expanded Content Outline with KSA/Competency Statements**

**DOMAIN I: Clinical Examination Methods (10% of Total Exam)**
Collect and recognize clinically significant signs and symptoms

A. Looking (Wang)
1. Spirit (Shen) appearance (including color)
- Observe outward manifestation of Shen (Spirit) (e.g., complexion, expression, demeanor, and general behavior)
- Identify and relate Shen (Spirit) to pattern/syndrome differentiation*

2. Face, eyes, nose, ears, mouth, lips, teeth, and throat
- Observe normal and abnormal conditions and changes of the face and complexion (including color, moisture, texture, and organ-indicative locations), eyes, nose, ear, mouth, lips, teeth and throat
- Identify and relate facial features to pattern/syndrome differentiation*
- Recognize pathological manifestations of the face, including color, moisture, texture, and organ-indicative locations

3. Tongue (body and coating)
- Observe normal and abnormal manifestations, patterns, conditions, and changes of the tongue and sub-lingual area
- Identify and relate features of the tongue to pattern/syndrome differentiation*
- Recognize pathological manifestations of the tongue and tongue coating, including color, size, moisture, texture, shape, position, movement, organ-indicative locations

4. Physical characteristics of the body
- Observe form, movement, and physical characteristics (e.g., head, hair, neck, back, chest, abdomen, extremities, nails)
- Identify and relate form, movement, and physical characteristics to pattern/syndrome differentiation*
- Recognize pathological significance of form, movement, and physical characteristics
- Observe conditions and changes of the skin
- Identify and relate conditions and changes of the skin to pattern/syndrome differentiation*
- Recognize pathological significance of conditions and changes of the skin
- Observe normal and abnormal excretions (e.g., phlegm, sputum, saliva, sweat, discharge, stool, urine)
- Identify and relate conditions and changes of excretions to pattern/syndrome differentiation*
- Recognize pathological significance of excretions

B. Listening and Smelling (Wen)
1. Sounds
- Listen to respiratory sounds
- Identify and relate respiratory sounds to pattern/syndrome differentiation*
- Recognize pathological significance of respiratory sounds
- Listen to tonal qualities, voice, and speech
- Identify and relate tonal qualities, voice, and speech to pattern/syndrome differentiation*
- Recognize pathological significance of tonal qualities, voice, and speech
- Listen to abdominal sounds
- Identify and relate abdominal sounds to pattern/syndrome differentiation*
- Recognize pathological significance of abdominal sounds

2. Odors

- Smell body odors
- Identify and relate body odors to pattern/syndrome differentiation*
- Recognize pathological significance of body odors
- Smell breath and mouth odors
- Identify and relate breath and mouth odors to pattern/syndrome differentiation*
- Recognize pathological significance of breath and mouth odors
- Smell excretions (e.g., sweat, urine, feces, leukorrhea, flatulence, wound exudates)
- Identify and relate excretions to pattern/syndrome differentiation*
- Recognize pathological significance of excretions

C. Asking (Wen)

1. Chief complaint

- Inquire about presenting complaint (onset, duration, location, nature, alleviation, aggravation)
- Inquire about the history and development of chief complaint
- Identify and relate chief complaint to pattern/syndrome differentiation*
- Identify appropriate additional questions based on examination findings and patients' response to inquiries

2. Current health conditions

- Conduct a review of systems, including the "Ten Questions" (Shi Wen)
- Identify and relate current health conditions to pattern/syndrome differentiation*
- Identify appropriate additional questions based on examination findings and patients' response to inquiries

3. Health history

- Inquire about personal health history, including previous symptoms, diagnoses, and treatments
- Inquire about familial history
- Identify and relate health history to pattern/syndrome differentiation*
- Identify appropriate additional questions based on examination findings and patients' response to inquiries

D. Touching (palpation) (Qie)

1. Radial pulses (including the 28 Qualities)

- Identify the location of radial pulses
- Identify qualities of radial pulses (including rate, depth, strength, and shape) as indicators of patterns of disharmony and of normal and abnormal states of organ and meridian function
- Identify and relate radial pulses to pattern/syndrome differentiation*

2. Abdomen

- Identify, through palpation, normal and abnormal conditions of the abdomen (e.g., temperature, texture, shape, and pain)
- Identify abdominal regions representing organs and meridians
- Identify and relate abdominal palpation findings to pattern/syndrome differentiation*

3. Meridians

- Identify, through palpation, findings along the meridians (e.g., nodules, tenderness, numbness, temperature, sensitivity)
- Identify and relate meridian palpation findings to pattern/syndrome differentiation*

4. Other body areas

- Identify, through palpation, pain, body sensations (e.g., numbness, tingling, sensitivity), temperature changes, and quality of tissue (e.g., edema, hardness/softness, tension/flaccidity)
- Identify and relate palpation findings to pattern/syndrome differentiation*

*Pattern/Syndrome Differentiation:

- Eight Principles (Ba Geng)
- Organs (Zang Fu)
- Meridian/Channel (Jing Luo)
- Six Stages (Liu Jing)
- Four Levels (Wei Qi Ying Ye)
- Five Elements (Wu Xing)
- Qi, Blood, Body Fluids (Qi, Xue, Jin Ye)
- Triple Burner (San Jiao)

**DOMAIN II: Assessment, Analysis, and Differential Diagnosis based upon Traditional Chinese Medicine (TCM) theory (45% of Total Exam)**

Formulate a differential diagnosis (Bian Zheng)

A. Knowledge and Application of Fundamental theory of TCM physiology (Sheng Li), etiology (Bing Yin), and pathogenesis (Bing Ji)

1. Yin/Yang theory (e.g., Interior/Exterior, Cold/Heat, Deficient/ Excess)
   - Describe Yin/Yang theory
   - Evaluate symptoms according to Yin/Yang theory
   - Identify pathologies according to Yin/Yang theory
   - Apply Yin/Yang theory to clinical assessment

2. Five Elements (Five Phases/Wu Xing) theory
   - Describe Five Elements theory
   - Evaluate symptoms according to Five Elements theory
   - Identify pathologies according to Five Elements theory
   - Apply Five Elements theory to clinical assessment

3. Organ (Zang Fu) theory
   - Describe Organ theory
   - Evaluate symptoms according to Organ theory
   - Identify pathologies according to Organ theory
   - Apply Organ theory to clinical assessment

4. Channel theory (Jing Luo) (including regular channels, Extraordinary channels, Luo-connecting channels, divergent channels, muscle channels, and skin regions)
   - Describe Channel theory
   - Evaluate symptoms according to Channel theory
   - Identify pathologies according to Channel theory
   - Apply Channel theory to clinical assessment

5. Essential Substances theory [Qi, Blood (Xue), Fluids (Jin Ye), Essence (Jing), Spirit (Shen)]
   - Describe Qi, Blood (Xue), Body Fluids (Jin Ye), Essence (Jing), Spirit (Shen)
   - Evaluate symptoms according to Qi, Blood (Xue), Body Fluids (Jin Ye), Essence (Jing), Spirit (Shen)
   - Identify pathologies according to Qi, Blood (Xue), Body Fluids (Jin Ye), Essence (Jing), Spirit (Shen)
   - Apply Qi, Blood (Xue), Body Fluids (Jin Ye), Essence (Jing), Spirit (Shen) to clinical assessment

6. Causes of Disease: External (Six Excesses [Liu Yin]), Internal (Seven Emotions), and Miscellaneous (diet, excessive sexual activity, excessive physical work or lack of exercise, trauma, bites, parasites, Phlegm, Blood stasis)
   - Describe Causes of Disease

- Evaluate symptoms according to Causes of Disease
- Identify pathologies according to Causes of Disease
- Apply Causes of Disease to clinical assessment

B. Formulation of a differential diagnosis based on chief complaint (Zhu Su), prioritization of major symptoms (Zhu Zheng), knowledge of TCM diseases (Bian Bing), and pattern identification (Bian Zheng)

1. Eight Principles (Ba Gang) differentiation (i.e., Yin/Yang, Interior/Exterior, Cold/Heat, Deficient/ Excess)
    - Describe Eight Principles differentiation
    - Assess and analyze signs and symptoms according to Eight Principles differentiation
    - Formulate a diagnosis based on the analysis of Eight Principles differentiation

2. Organ (Zang Fu) differentiation
    - Describe Organ pattern differentiation
    - Assess and analyze signs and symptoms according to Organ differentiation
    - Formulate a diagnosis based on the analysis of Organ differentiation

3. Channel theory (Jing Luo) (including regular channels, Extraordinary channels, Luo-connecting channels, divergent channels, muscle channels, and skin regions)
    - Describe Channel theory
    - Assess and analyze signs and symptoms according to Channel theory
    - Formulate a diagnosis based on the analysis of Channel theory

4. Six Stages differentiation (Tai Yang, Yang Ming, Shao Yang, Tai Yin, Shao Yin, Jue Yin)
    - Describe the Six Stages differentiation
    - Assess and analyze signs and symptoms according to Six Stages differentiation
    - Formulate a diagnosis based on the analysis of Six Stages differentiation

5. Four Levels differentiation (Wei, Qi, Ying, Xue)
    - Describe the Four Levels differentiation
    - Assess and analyze signs and symptoms according to Four Levels differentiation
    - Formulate a diagnosis based on the analysis of Four Levels differentiation

6. Five Elements (Five Phases/Wu Xing)
    - Describe Five Elements differentiation
    - Assess and analyze signs and symptoms according to Five Elements differentiation
    - Formulate a diagnosis based on the analysis of Five Elements differentiation

7. Qi, Blood, Body Fluids (Qi, Xue, Jin Ye) differentiation
    - Describe Qi, Blood, Body Fluids differentiation
    - Assess and analyze signs and symptoms according to Qi, Blood, Body Fluids differentiation
    - Formulate a diagnosis based on the analysis of Qi, Blood, Body Fluids differentiation

8. Triple Burner (San Jiao) differentiation
    - Describe Triple Burner differentiation
    - Assess and analyze signs and symptoms according to Triple Burner differentiation
    - Formulate a diagnosis based on the analysis of Triple Burner differentiation

9. Six Excesses (Liu Yin)
    - Describe Six Excesses
    - Assess and analyze signs and symptoms according to Six Excesses
    - Formulate a diagnosis based on the analysis of Six Excesses

**DOMAIN III: Treatment Principle (Zhi Ze) and Strategy (Zhi Fa) (45% of Total Exam)**
Formulate treatment principle and strategy based upon differential diagnosis (Bian Zheng)

A. Treatment principle based on differential diagnosis
1. Eight Principles (Ba Gang)
2. Organs (Zang Fu)
3. Meridian/Channel (Jing Luo)
4. Six Stages (Liu Jing)
5. Four Levels (Wei Qi Ying Ye)
6. Five Elements (Wu Xing)
7. Qi, Blood, Body Fluids (Qi, Xue, Jin Ye)
8. Triple Burner (San Jiao)
9. Causes of Disease: External (Six Excesses [Liu Yin]), Internal (Seven Emotions), and Miscellaneous (diet, excessive sexual activity, excessive physical work or lack of exercise, trauma, bites, parasites, Phlegm, Blood stasis)
   - Select appropriate treatment principle based on pattern/syndrome differential diagnosis

B. Treatment strategy to accomplish treatment principle
- Select appropriate treatment strategy (e.g., disperse, tonify, cool, warm) to accomplish treatment principle
- Prioritize treatment focus [e.g., Root and Branch (Biao Ben), acute/chronic, external/internal, Pathogenic Factors, constitutional, seasonal]
- Adjust treatment principle and/or strategy based on patient's response, disease progression, and lifestyle (e.g., substance use, smoking, exercise, diet)

# APPENDIX B. BIOMEDICINE (BIO) EXPANDED CONTENT OUTLINE WITH KSA/COMPETENCY STATEMENTS

**Biomedicine Expanded Content Outline with KSA/Competency Statements**

**DOMAIN I: Biomedical Model (90% of Total Exam)**

A. Clinical Application of Biomedical Sciences (including anatomy, physiology, pathology, pathophysiology, etc.), Pharmacology, and Nutrients and Supplements **(30%)**

1. Biomedical Sciences
   - Differentiate normal and abnormal structures and functions of the body systems from the conventional biomedical perspective
   - Recognize signs, symptoms, and morbidities associated with common medical conditions
   - Demonstrate knowledge of medical terminology

2. Pharmacology
   - Recognize functional classifications, mechanisms, side and adverse effects related to commonly used pharmaceuticals (see Appendix A Pharmaceuticals)
   - Recognize routes of administration (e.g., intravenous, oral, subcutaneous)
   - Demonstrate knowledge of the effects of the use of tobacco, alcohol, and drugs of abuse
   - Recognize common, known pharmaceutical-supplement interactions

3. Nutrients and Supplements
   - Recognize major classifications, known actions, and potential adverse effects related to commonly used nutrients and supplements (see Appendix B Nutrients and Supplements)
   - Recognize signs and symptoms associated with abnormal levels of commonly used nutrients and supplements

B. Patient History and Physical Examination **(25%)**

Understand clinically relevant information gathered through history taking and physical examination. *Candidates are expected to understand all aspects of the physical examination process. They are not expected to be able to perform all aspects of the physical examination themselves.*

1. Patient History*
   - Conduct a medical interview to obtain patient history
   - Organize information obtained during interview into appropriate sections of the patient history
   - Distinguish the relevant findings obtained during history taking

*Patient History includes: chief complaint, history of present illness, allergies, past medical history, past surgical history, personal and social history, family history, current medications (prescription and non-prescription), herbs and supplements, review of systems

2. Physical Examination
   - Identify the components of the physical examination
   - Recognize how each portion of the physical examination is performed
   - Distinguish the relevant findings obtained from the physical examination

   a. General systems examination (e.g., vital signs, pulmonary, cardiovascular, gastrointestinal, integumentary, etc.)
   - Understand relevant examination techniques such as observation, auscultation, and palpation as applied to each system
   - Recognize how each portion of the general systems examination is performed
   - Distinguish the relevant findings obtained from the general systems examination

   b. Musculoskeletal examination

- Understand relevant examination techniques including, but not limited to, range of motion, muscle strength testing, deep tendon reflexes, dermatomal testing, and special tests including orthopedic tests
- Recognize how each portion of the musculoskeletal examination is performed
- Distinguish the relevant findings obtained from the musculoskeletal examination

c. Neurological examination
- Understand relevant examination techniques including, but not limited to, assessment of cognitive function, evaluation of cranial nerves, sensory and motor function, and reflexes
- Recognize how each portion of the neurological examination is performed
- Distinguish the relevant findings obtained from the neurological examination

3. Imaging, Laboratory Tests, and Other Medical Studies

a. Imaging
- Understand commonly used medical imaging studies (e.g., x-ray, MRI, CT, PET, colonoscopy, cystoscopy, bronchoscopy, etc.)
- Recognize the significance of information gathered from imaging studies

b. Laboratory Tests
- Understand commonly used medical laboratory tests** (e.g., complete blood count, basic metabolic panel, urinalysis, liver panel, cardiac panel, thyroid panel, pregnancy test, and reproductive hormones, etc.) ***normal ranges will not be tested*
- Recognize the significance of information gathered from laboratory tests

c. Other Medical Studies
- Understand other commonly used medical studies (e.g., EMG, EKG, etc.)
- Recognize the significance of information gathered from these studies

C. Clinical Assessment Process **(30%)** Interpret clinically significant information gathered during history taking and physical examination to recognize pathological conditions (see Appendix C Medical Conditions)
- Recognize abnormalities in the function of the body systems including, but not limited to, respiratory, cardiovascular, urogenital, reproductive, nervous, integumentary, musculoskeletal, and gastrointestinal systems
- Distinguish between relevant and non-relevant findings
- Recognize typical presentations of commonly encountered medical conditions
- Recognize commonly encountered ominous signs including, but not limited to, medical red flags, mental health red flags, and signs of abuse and trauma

D. Clinical Decision-Making and Standard of Care **(5%)**

Analyze information to determine appropriate patient management
- Recognize medical conditions that may be treated without referral
- Recognize medical conditions that require co-management
- Recognize medical conditions that require a referral
- Differentiate the most appropriate type of referral*** (emergent, urgent, or routine), i.e., the timeframe within which the patient should be seen
- Recognize the conventional biomedical prognoses, management, and/or standard of care for common medical conditions (see Appendix C Medical Conditions)

***emergent (immediate) referral; urgent (24 - 48 hours) referral; routine (48 hours - 7 days) referral

**DOMAIN II: Office Safety and Professional Responsibilities (10% of Total Exam)**
Recognize and implement appropriate office safety standards and demonstrate knowledge of professional responsibilities

A. Risk Management and Office Safety

- Recognize situations that require special care or emergency management (e.g., burns, seizures, falls, anaphylaxis)
- Implement emergency office protocols including contacting emergency services as appropriate

B. Infection Control

- Identify commonly encountered communicable diseases (e.g., hepatitis, HIV, tuberculosis)
- Identify modes of transmission (e.g., airborne, fecal-oral, vector) and appropriate preventive measurements for common communicable diseases
- Recognize the appropriate office management of commonly encountered communicable diseases and hazardous situations
- Recognize and apply universal precautions

C. Federal Regulations

- Demonstrate knowledge of applicable Occupational Safety and Health Administration (OSHA) and other federal health agencies' requirements
- Demonstrate knowledge of applicable Health Insurance Portability and Accountability Act (HIPAA) requirements

D. Reporting and Record-Keeping

- Demonstrate knowledge of the required contents and maintenance of medical records
- Demonstrate knowledge of mandated reportable conditions (e.g., elder and child abuse, infectious diseases, bioterrorism)
- Demonstrate knowledge of the definition and purpose of ICD, CPT, E&M codes
- Demonstrate knowledge of insurance types and requirements (e.g., general liability, malpractice insurance)

E. Ethics and Professionalism

- Demonstrate knowledge of *NCCAOM® Code of Ethics* and other ethical principles (e.g., informed consent, conflict of interest, negligence, boundary violations)
- Communicate effectively and professionally with patients, the public, and other healthcare providers

# APPENDIX C. BIOMEDICINE (BIO) CONTENT OUTLINE: CLINICAL ASSESSMENT PROCESS

**Pharmaceuticals Appendix**
This appendix is a list of commonly used pharmaceutical categories. The exam will focus on but may not be exclusively limited to the list below.

| | |
|---|---|
| • allergy/sinus medications<br>• angina medications<br>• antiasthmatic medications<br>• antibacterial medications<br>• anticancer medications<br>• anticoagulant medications<br>• antidepressants<br>• antidiabetic medications<br>• antidiarrheal medications<br>• antifungal medications<br>• antihyperlipidemic medications<br>• antihypertension medications<br>• antinausea medications<br>• anti-Parkinson medications<br>• antiprotozoal medications<br>• antipsychotics<br>• antiseizure medications<br>• antiviral medications<br>• appetite control/weight management medications<br>• cardiac medications | • central nervous system (CNS) stimulants/attention deficit medications<br>• cough medications<br>• drugs of abuse<br>• gastrointestinal medications<br>• hormonal replacement therapy<br>• immune modulators<br>• mood stabilizer medications<br>• non-steroidal anti-inflammatory drugs (NSAIDs)<br>• opioids<br>• osteoporosis medications<br>• sedatives, anxiolytic and sleep medications<br>• sexual dysfunction medications<br>• smoking cessation medications<br>• steroids<br>• stool softeners/laxatives<br>• thyroid medications<br>• topical skin medications |

**Nutrients and Supplements**
This appendix is is a list of commonly used nutrients and supplements. The exam will focus on but may not be exclusively limited to the list below.

| | |
|---|---|
| amino acids (e.g., L-glutamine, lysine, choline)<br>antioxidants (e.g., coenzyme Q10, selenium)<br>bone health (e.g., glucosamine sulfate, chondroitin sulfate)<br>digestive support (e.g., enzymes, fiber, probiotics)<br>hormones (e.g., melatonin, wild yams, DHEA) | minerals (e.g., calcium, magnesium, potassium)<br>mood support (e.g., St. John's Wort, Sam E, 5 HTP)<br>vitamins (e.g., A, B1-B12, C, D, E, K)<br>Western herbs (e.g., saw palmetto, milk thistle) |

**Clinical Assessment Process Appendix**

| **Conditions: Category 1 Frequently Seen Conditions** | **Red Flag** |
|---|---|
| MSK: Upper extremities | |
| MSK: Lower extremities | |
| Headache (e.g., cluster, tension, migraine, sinus, trauma) | |
| Blood pressure disorders (hypertension and hypotension) | X |
| MSK: Axial (e.g., whiplash, disc herniation, spinal stenosis, spondylolisthesis, TMJ) | |
| Anxiety | |
| Osteoarthritis | |
| Allergies | |
| Menstrual | |
| Sleep disorders (narcolepsy, sleep apnea, insomnia) | |
| Food sensitivity/allergies (e.g., Celiac disease, lactose intolerance) | |
| Menopause | |
| Obesity | |
| Gastroesophageal Reflux Disease | |
| Radiculopathies (e.g., nerve root, sciatica) | X |
| Mood disorders (depression, bi-polar) | X |
| Respiratory Tract Infections (e.g., sinusitis, viral infection, strep throat, bronchitis, pneumonia) | |
| Atherosclerosis (e.g., coronary artery disease, peripheral vascular disease) | |
| Irritable Bowel Syndrome | |
| Osteoporosis | |
| Arrhythmia (e.g., atrial fibrillation, premature ventricular contraction, tachycardia, bradycardia) | X |
| Female infertility (e.g., polycystic ovarian syndrome, endometriosis) | |
| Thyroid disorders (e.g., Hashimoto's thyroiditis, Graves' disease) | |
| Multi-system conditions (Lyme disease, Chronic fatigue, Fibromyalgia, Temporal Arteritis) | |
| Hyperlipidemia | |
| Inflammatory Bowel Disease (e.g., Crohn's disease, ulcerative colitis) | |
| Diabetes | |
| Peripheral neuropathy | |
| Gastritis | |
| Asthma | |
| Stroke | X |
| Pneumothorax | X |

| **Category 2 Moderately Seen Conditions** | **Red Flag** |
|---|---|
| Myocardial Infarction | X |
| Angina Pectoris | X |
| Raynaud's disease | |
| Noncontagious skin conditions (cellulitis, shingles, acne, eczema, psoriasis, alopecia) | |
| Heart failure | X |
| Autoimmune disorders (Systemic Lupus Erythematosus (SLE), Rheumatoid Arthritis (RA)) | |
| Deep Vein Thrombosis | X |
| Uterine (Fibroids and bleeding) | |
| Post-traumatic stress disorder (PTSD) | |
| Vertigo | X |
| Hemorrhoids | |
| Viral infections (e.g., infectious mono, influenza, meningitis, conjunctivitis) | X |
| Attention Deficit Disorder (ADD)/Attention deficit hyperactivity disorder (ADHD) | |
| Aneurysms | X |
| Anemia | |
| Gall bladder conditions (e.g., cholelithiasis, cholecystitis) | |
| Peptic Ulcer (e.g., H. Pylori, Campylobacter) | |
| Diverticular disease (e.g., diverticulosis, diverticulitis) | X |
| Trigeminal neuralgia | |
| Bell's Palsy | |
| Chronic Obstructive Pulmonary Disease | |
| Sexually Transmitted Infections | |
| Concussion and traumatic brain injury (TBI) | X |
| Bleeding disorders | |
| Transient Ischemic Attack (TIA) | X |
| Parkinson's disease | |
| Tuberculosis | |

| **Category 3** Least Frequently Seen Conditions | **Red Flag** |
|---|---|
| Adrenal disorders (e.g., Cushing's, Addison's) | |
| Infections (UTI, cystitis, pyelonephritis) | X |
| Incontinence | |
| Complications related to pregnancy | X |
| Prostate conditions (benign prostatic hyperplasia, prostatitis) | |
| Breast conditions (e.g., mass, mastitis) | |
| Hepatitis | X |
| Oncology (Lung, Stomach, Colon, Pancreas, Breast, Prostate, Uterine, Bone, Liver, Cervical) | X |
| Bacterial infections (e.g., staph, MRSA, impetigo, meningitis) | X |
| Eating Disorders (anorexia nervosa, bulimia nervosa) | X |
| Ophthalmology/ENT | |
| Foodborne illness | |
| Erectile Dysfunction (ED) | |
| Multiple Sclerosis (MS) | |
| Skin cancers (e.g., basal cell, squamous cell, melanoma) | X |
| Male infertility | |
| Cirrhosis | |
| Appendicitis | X |
| Contagious skin conditions (lice, fungal infections, scabies) | X |
| Parasitic infections | |
| Pancreatitis | X |
| Kidney stones | X |
| Dementia (e.g., Alzheimer’s disease) | |
| Childhood infectious conditions (measles, mumps, rubella, pertussis) | |
| Autism spectrum | |
| Leukemia/lymphoma | |
| Suicidality | X |
| Epilepsy | |
| Burns | |
| Hemochromatosis | |

# APPENDIX D. ACUPUNCTURE WITH POINT LOCATION (ACPL) EXPANDED CONTENT OUTLINE

**Acupuncture Expanded Content Outline**

**DOMAIN I: Safety and Professional Responsibilities (10% of Total Exam)**
Apply Standards of Safe Practice and Professional Conduct
A. Management of Acupuncture Office Emergencies

- Recognize and manage acupuncture office emergencies [e.g., moxa burns, heat lamp burns, needle shock, organ puncture, fainting, stuck needle(s)]
- Recognize the signs and or symptoms of internal hemorrhage or clotting disorders
- Recognize risk factors for individual patients (e.g., patients taking blood thinners, diabetes)

B. Infection Control/Precautions

- Recognize and apply knowledge of infection control and precautions (e.g., bloodborne pathogens, communicable diseases, universal precautions, needle stick)

C. Patient Education and Communication

- Communicate and discuss risks and benefits concerning acupuncture treatment with individual patient
- Communicate and discuss findings with individual patient
- Obtain legal informed consent
- Inform patient of initial treatment/procedure done
- Inform patient when there is a change in condition or treatment that may require a new plan of action

**DOMAIN II: Treatment Plan (70% of Total Exam)**
Develop a comprehensive treatment plan using acupuncture points based on patient presentation and initial assessment
A. Treatment Plan: Develop an initial treatment plan
1. Point Selection Based on Differentiation and/or Symptoms **(35%)**

- Identify pattern and develop treatment plan based on differentiation (e.g., syndrome/pattern, meridian/channel pathology, circadian rhythm)

a. Cautions and contraindications

- Recognize cautions and contraindications (e.g., pregnancy, organ damage)
- Determine appropriate points, needling methods and modalities for safe treatment

b. Point category

- Demonstrate knowledge and use of Antique/Five Transporting (Shu) points (e.g., Jing-Well, Ying-Spring, Shu-Stream, Jing-River, He-Sea)
- Demonstrate knowledge of theories and applications of source (yuan) and connecting (luo) points

Demonstrate knowledge of theories and applications of Front-Mu (Alarm) points, Back-Shu (Associated) points and their combination(s) (e.g., excess/deficient, systemic imbalances)
c. Channel theory

- Demonstrate application of channel theory

d. Function and/or indication of points and point combinations

- Demonstrate knowledge of functions, indications and application of points and point combinations (e.g., distal/local, Window of the Sky, Five Elements, circadian rhythms, Six Stages, Four Levels)

e. Ashi points

- Demonstrate application or the use of Ashi points (including trigger points and motor points)

f. Extra points (Refer to Appendix of Extra Points)

- Demonstrate the knowledge of indications and application of Extra points

g. Auricular points

- Demonstrate knowledge of functions, indications, applications, precautions and contraindications of auricular acupuncture points and anatomical areas

h. Scalp areas

- Demonstrate knowledge of functions, indications, applications, precautions and contraindications of scalp acupuncture

2. Treatment Techniques and Mode of Administration **(25%)**

- Demonstrate knowledge of treatment techniques and modes of administration

a. Cautions and contraindications

- Recognize cautions and contraindications for individual patient
- Recognize cautions based on anatomy

b. Patient position

- Demonstrate knowledge of appropriate patient position

c. Point locating techniques

- Demonstrate knowledge of point location (e.g., anatomical landmarks, Cun measurement, palpation)

d. Needle selection

- Recognize and demonstrate knowledge of appropriate needle selection (e.g., filiform, three-edged, plum-blossom, press tack, intradermal)
- Recognize and demonstrate knowledge and appropriate use of needles (e.g., length, gauge, filiform, three-edged, plum-blossom, press tack, intradermal)

e. Needling technique

- Demonstrate knowledge of needling techniques (e.g., insertion, angle, depth, stretching skin)
- Demonstrate knowledge of needle manipulation (e.g., arrival of Qi, reinforcing, reducing, lifting and thrusting, plucking, rotating, twirling)
- Demonstrate knowledge of appropriate needle retention
- Demonstrate knowledge of safe and appropriate needle removal

f. Moxibustion

1.) Direct

- Demonstrate knowledge of functions, indications, contraindications and application of direct moxibustion (e.g., thread, cone, rice grain)

2.) Indirect

- Demonstrate knowledge of functions, indications, contraindications and application of indirect moxibustion (e.g., stick/pole, on ginger, box)

3.) On needle handle

- Demonstrate knowledge of functions, indications, contraindications and application of moxibustion on needle handle

g. Additional acupuncture modalities

- Demonstrate knowledge of functions, indications, contraindications and application of other acupuncture modalities

1.) Cupping

- Demonstrate knowledge of functions, indications, contraindications and application of cupping

2.) Guasha

- Demonstrate knowledge of functions, indications, contraindications and application of Guasha

3.) Bleeding

- Demonstrate knowledge of functions, indications, contraindications and application of bleeding

4.) Intradermal needles, ear balls, seeds, pellets, tacks

- Demonstrate knowledge of functions, indications, contraindications and application of intradermal needles

5.) Electro acupuncture

- Demonstrate knowledge of functions, indications, contraindications and application of electro acupuncture

6.) Heat

- Demonstrate knowledge of functions, indications, contraindications and application of heat (e.g., TDP/heat lamp)

7.) Topical applications

- Demonstrate knowledge of functions, indications, contraindications and application of topical applications (e.g., liniment, plaster)

h. Related Modalities

1.) Asian bodywork therapy and other manual therapies

- Demonstrate knowledge of indications and contraindications of Asian bodywork therapy and other manual therapies

2.) Exercise/breathing therapy

- Demonstrate knowledge of exercise/breathing therapy (e.g., Qi Gong, Tai Ji)

3.) Dietary recommendations according to Traditional Chinese Medicine theory

- Demonstrate knowledge of dietary recommendations according to Traditional Chinese Medicine theory

B. Patient Management **(10%)**

1. Re-assessment and modification of treatment plan

- Reevaluate and modify treatment plan (e.g., diagnostic assessment, point selection, needling technique, other modalities, treatment frequency)

2. Referral and/or discharge of patient as appropriate

- Recognize and evaluate the need for referral
- Demonstrate the knowledge of referral to other healthcare providers
- Recognize and evaluate appropriate discharge of patient

**DOMAIN III: Point Identification/Location (20% of total exam)**
A. Identification of Points by Images (10%)

- Identify by cun and anatomical landmarks

B. Identification of Points by Description (10%)
Identify by cun and anatomical landmarks

**Appendix: Extra Points**

*(Please Note: Additional Extra Points not listed in the Appendix may appear on the exam as distractors to the correct answer)*

| | |
|---|---|
| Anmian | Pigen |
| Bafeng | Qianzheng |
| Baichongwo | Qiduan |
| Bailao | Qipang |
| Baxie | Qiuhou |
| Bitong | Sanjiaojiu |
| Bizhong | Shanglianquan |
| Dagukong | Shangyingxiang |
| Dangyang | Shiqizhuixue/Shiqizhuixia |
| Dannangxue | Shixuan |
| Dingchuan | Sifeng |
| Erbai | Sishencong |
| Erjian | Taiyang |
| Haiquan | Tituo |
| Heding | Waihuaijian |
| Huanzhong | Wailaogong |
| Huatuojiaji | Weiguanxiashu |
| Jiachengjiang | Xiaogukong |
| Jianqian/Jianneilling | Xiyan/Neixiyan |
| Jingbailao | Yaotongxue |
| Jinjin and Yuye | Yaoyan |
| Juquan | Yiming |
| Kuangu | Yintang |
| Lanweixue | Yuyao |
| Luozhen | Zhongkui |
| Neihuaijian | Zhoujian |
| Neiyingxiang | Zigongxue |

# APPENDIX E. CHINESE HERBOLOGY (CH) EXPANDED CONTENT OUTLINE

**The Chinese Herbology Expanded Content Outline**

**DOMAIN I: Safety and Quality (10% of Total Exam)**

A. Herbs and Herbal Formulas

1. Cautions and contraindications (e.g., condition-dependent, incompatibility)
   - Identify cautions and contraindications for herbs and herbal formulas (e.g., condition dependent, incompatibility)
2. Herb/drug interactions
   - Recognize potential herb/drug interactions
   - Describe strategies to avoid herb/drug interactions
3. Toxicity
   - Identify potential toxicity of Chinese herbs and herbal formulas
   - Describe strategies to prevent toxicity of Chinese herbs and herbal formulas
4. Potential adverse effects
   - Identify potential adverse effects of Chinese herbs and herbal formulas
   - Prevent and resolve the adverse effects of Chinese herbs and herbal formulas

B. Herbal Purchasing and Dispensing

1. Identification of raw herbs by appearance, smell, and taste
   - Recognize the appearance of raw Chinese herbs
   - Identify the quality of raw Chinese herbs by appearance, smell, and taste
2. Identification of products containing endangered species, animal products, and potential allergens, (e.g., wheat, soy, sulfa)
   - Recognize Chinese herbs, herbal formulas and herbal products containing endangered species, animal products, and potential allergens (e.g., wheat, soy, sulfa)
   - Identify patient allergies to prevent potential allergic reactions to Chinese herbs, herbal formulas and herbal products
   - Apply substitutions for individual endangered species, animal products, and potential allergens (e.g., wheat, soy, sulfa) in Chinese herbs and herbal formulas
3. Recognition of potential contamination of stored herbs
   - Identify signs of contamination of stored Chinese herbs and herbal products
   - Identify substitutions for contaminated Chinese herbs and herbal products
4. Identification of product manufacturers in compliance with current Good Manufacturing Practice standards
   - Monitor Chinese herbs and herbal products for expiration dates
   - Assess the quality of Chinese herbs and herbal products according to current Good Manufacturing Practice (cGMP) standards

**DOMAIN II: Treatment Plan: Develop a Comprehensive Treatment Plan Using Principles of Chinese Herbology Based Upon Patient's Presentation and Diagnosis (60% of Total Exam)**

A. Recommend Chinese herbs for Individual Patients Based on Assessment

1. Treatment strategies/methods of Chinese herbal medicine (e.g., purging, harmonizing, sweating)
   - Identify treatment strategies/methods of Chinese herbs and herbal formulas
   - Apply/prescribe Chinese herbs and herbal formulas based on the treatment strategies/methods of Chinese herbs and herbal formulas

2. Individual herbs
   a.) Functions and indications
      - Identify the functions and indications of individual Chinese herbs
      - Identify the functions and indications of processed forms of Chinese herbs [e.g.,
      - honey- processed (mi zhi), vinegar-processed (cu zhi), dry-fried (chao), etc.]

- Apply/prescribe individual Chinese herbs for patients based on presenting signs
- and symptoms

b.) Combinations of Chinese herbs (Dui Yao)
- Identify the functions and indications of combinations of Chinese herbs
- Apply/prescribe combinations of Chinese herbs for patients based on presenting
- signs and symptoms

c.) Tastes, properties, direction, and channels entered
- Identify characteristics (tastes, properties, directions, and channels entered) of Individual Chinese herbs
- Apply/prescribe herbs for individual patients based on Chinese herb characteristics (tastes, properties, directions, and channels entered)

3. Chinese herbal formulas (Refer to Appendix of Chinese Herbal Formulas- Appendix E)

a.) Functions and indications
- Identify the functions and indications of Chinese herbal formulas
- Apply/prescribe Chinese herbal formulas for individual patients based on presenting signs and symptoms

b.) Ingredients
- Identify the ingredients of Chinese herbal formulas
- Apply/prescribe Chinese herbal formulas for individual patients
- Identify potential substitutions for individual ingredients in Chinese herbal formulas

c.) Structure (e.g., chief (Jun); deputy (Chen); guiding herbs)
- Identify and analyze the structure of Chinese herbal formulas [e.g., chief (Jun); deputy (Chen); guiding herbs]
- Apply/prescribe Chinese herbs based on the theory of Chinese herbal formula structure

d.) Modifications
- Modify Chinese herbal formulas based on a patient's presenting signs, symptoms, and medical history

B. Formulate and Administer Herbal Recommendation

1. Form of administration (e.g., decoction, granules, topical)
- Differentiate between forms of administration of Chinese herbs
- Apply/prescribe Chinese herbs, herbal formulas, and herbal products for individual patients based on forms of administration
- Advise individual patients on the use of Chinese herbs, herbal formulas and herbal products based on forms of administration

2. Preparation of herbs and herbal formulas
- Demonstrate knowledge of preparation methods for individual Chinese herbs and herbal formulas
- Advise individual patients on the preparation methods for individual Chinese herbs and herbal formulas

3. Dosage of herbs and formulas
- Demonstrate knowledge of common dosages of individual Chinese herbs and herbal formulas
- Apply/prescribe appropriate dosages of Chinese herbs and herbal formulas based on a patient's presenting signs, symptoms and medical history

C. Chinese Dietary Therapy
- Identify the characteristics, actions, and indications of foods based on TCM principles
- Advise individual patients on the use of foods and dietary therapy in accordance with TCM principles

**DOMAIN III: Patient Management: Patient Education and Treatment Evaluation (30% of Total Exam)**

A. Patient Education

- Advise individual patients of the benefits and expectations of Chinese herbal therapy
- Advise individual patients of the potential side-effect(s) and risks of Chinese herbal therapy, including informed consent.

B. Treatment Evaluation and Modification

- Recognize and anticipate Chinese herbal therapy clinical outcomes for individual patients
- Assess effectiveness of Chinese herbal therapy in individual patients, based on presenting signs and symptoms
- Modify treatment plans for individual patients based on effectiveness of Chinese herbal therapy
- Assess the condition of individual patients for appropriate medical referral and Intervention

# APPENDIX F. CHINESE HERBOLOGY (CH) CONTENT OUTLINE: FORMULA APPENDIX

**Chinese Herbology (CH) Content Outline: Formula Appendix**

| | |
|---|---|
| 1. | Ba Zhen Tang (Eight-Treasure Decoction) |
| 2. | Ba Zheng San (Eight-Herb Powder for Rectification) |
| 3. | Bai He Gu Jin Tang (Lily Bulb Decoction to Preserve the Metal) |
| 4. | Bai Hu Tang (White Tiger Decoction) |
| 5. | Bai Tou Weng Tang (Pulsatilla Decoction) |
| 6. | Ban Xia Bai Zhu Tian Ma Tang (Pinellia, Atractylodis Macrocephalae, and Gastrodia Decoction) |
| 7. | Ban Xia Hou Po Tang (Pinellia and Magnolia Bark) |
| 8. | Ban Xia Xie Xin Tang (Pinellia Decoction to Drain the Epigastrium) |
| 9. | Bao He Wan (Preserve Harmony Pill) |
| 10. | Bei Mu Gua Lou San (Fritillaria and Trichosanthes Fruit Powder) |
| 11. | Bei Xie Fen Qing Yin (Dioscorea Hypoglauca Decoction to Separate the Clear) |
| 12. | Bu Yang Huan Wu Tang (Tonify the Yang to Restore Five (Tenths) Decoction) |
| 13. | Bu Zhong Yi Qi Tang (Tonify the Middle and Augment the Qi Decoction) |
| 14. | Cang Er Zi San (Xanthium Powder) |
| 15. | Chai Ge Jie Ji Tang (Bupleurum and Kudzu Decoction) |
| 16. | Chai Hu Shu Gan San (Bupleurum Powder to Spread the Liver) |
| 17. | Chuan Xiong Cha Tiao San (Ligusticum Chuanxiong Powder to be Taken with Green Tea) |
| 18. | Da Bu Yin Wan (Great Tonify the Yin Pill) |
| 19. | Da Chai Hu Tang (Major Bupleurum Decoction) |
| 20. | Da Cheng Qi Tang (Major Order the Qi Decoction) |
| 21. | Da Jian Zhong Tang (Major Construct the Middle) |
| 22. | Dan Shen Yin (Salvia Drink) |
| 23. | Dang Gui Bu Xue Tang (Tangkuei Decoction to Tonify the Blood) |
| 24. | Dang Gui Liu Huang Tang (Tangkuei and Six-Yellow Decoction) |
| 25. | Dao Chi San (Guide Out the Red Powder) |
| 26. | Ding Chuan Tang (Arrest Wheezing Decoction) |
| 27. | Ding Xiang Shi Di Tang (Clove and Persimmon Calyx Decoction) |
| 28. | Du Huo Ji Sheng Tang (Angelica Pubescens and Sangjisheng Decoction) |
| 29. | Du Qi Wan (Capital Qi Pill) |
| 30. | Er Chen Tang (Two-Cured Decoction) |
| 31. | Er Miao San (Two-Marvel Powder) |
| 32. | Er Xian Tang (Two-Immortal Decoction) |
| 33. | Er Zhi Wan (Two-Ultimate Pill) |
| 34. | Fu Yuan Huo Xue Tang (Revive Health by Invigorating the Blood Decoction) |
| 35. | Gan Cao Xie Xin Tang (Licorice Decoction to Drain the Epigastrium) |
| 36. | Gan Mai Da Zao Tang (Licorice, Wheat, and Jujube Decoction) |
| 37. | Ge Gen Huang Lian Huang Qin Tang (Kudzu, Coptis, and Scutellaria Decoction) |
| 38. | Ge Gen Tang (Kudzu Decoction) |
| 39. | Ge Xia Zhu Yu Tang (Drive Out Blood Stasis Below the Diaphragm Decoction) |
| 40. | Gu Jing Wan (Stabilize the Menses Pill) |
| 41. | Gui Pi Tang (Restore the Spleen Decoction) |
| 42. | Gui Zhi Fu Ling Wan (Cinnamon Twig and Poria Pill) |
| 43. | Gui Zhi Shao Yao Zhi Mu Tang (Cinnamon Twig, Peony, and Anemarrhena Decoction) |
| 44. | Gui Zhi Tang (Cinnamon Twig Decoction) |
| 45. | Huai Hua San (Sophora Japonica Flower Powder) |
| 46. | Huang Lian E Jiao Tang (Coptis and Ass-Hide Gelatin Decoction) |
| 47. | Huang Lian Jie Du Tang (Coptis Decoction to Relieve Toxicity) |
| 48. | Huo Xiang Zheng Qi San (Agastache Powder to Rectify the Qi) |
| 49. | Ji Chuan Jian (Benefit the River (Flow) Decoction) |

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| 50. | Jia Jian Wei Rui Tang (Modified Polygonatum Odoratum) |
| 51. | Jian Bi Tang (Remove Painful Obstruction Decoction from Medical Revelations) |
| 52. | Jiao Ai Tang (Ass-Hide Gelatin and Mugwort Decoction) |
| 53. | Jin Gui Shen Qi Wan (Kidney Qi Pill from the Golden Cabinet) |
| 54. | Jin Ling Zi San (Melia Toosendan Powder) |
| 55. | Jin Suo Gu Jing Wan (Metal Lock Pill to Stabilize the Essence) |
| 56. | Ju Pi Zhu Ru Tang (Tangerine Peel and Bamboo Shaving Decoction |
| 57. | Li Zhong Wan (Regulate the Middle Pill) |
| 58. | Liang Fu Wan (Galangal and Cyprus Pill) |
| 59. | Liang Ge San (Cool the Diaphragm Powder) |
| 60. | Ling Gui Zhu Gan Tang (Poria, Cinnamon Twig, Atractylodis Macrocephalae and Licorice Decoction) |
| 61. | Ling Jiao Gou Teng Tang (Antelope Horn and Uncaria Decoction) |
| 62. | Liu Wei Di Huang Wan (Six-Ingredient Pill with Rehmannia) |
| 63. | Liu Yi San (Six-to-One Powder) |
| 64. | Long Dan Xie Gan Tang (Gentiana Longdancao Decoction to Drain the Liver) |
| 65. | Ma Huang Tang (Ephedra Decoction) |
| 66. | Ma Xing Shi Gan Tang (Ephedra, Apricot Kernel, Gypsum and Licorice Decoction) |
| 67. | Ma Zi Ren Wan (Hemp Seed Pill) |
| 68. | Mai Men Dong Tang (Ophiopogonis Decoction) |
| 69. | Mu Li San (Oyster Shell Powder) |
| 70. | Nuan Gan Jian (Warm the Liver Decoction) |
| 71. | Ping Wei San (Calm the Stomach Powder) |
| 72. | Pu Ji Xiao Du Yin (Universal Benefit Decoction to Eliminate Toxin) |
| 73. | Qi Ju Di Huang Wan (Lycium Fruit, Chrysanthemum and Rehmannia Pill) |
| 74. | Qiang Huo Sheng Shi Tang (Notopterygium Decoction to Overcome Dampness) |
| 75. | Qing Wei San (Clear the Stomach Powder) |
| 76. | Qing Gu San (Cool the Bones Powder) |
| 77. | Qing Hao Bie Jia Tang (Artemisia Annua and Soft-Shelled Turtle Shell Decoction) |
| 78. | Qing Qi Hua Tan Wan (Clear the Qi and Transform Phlegm Pill) |
| 79. | Qing Wen Bai Du San (Clear Epidemics and Overcome Toxin Decoction) |
| 80. | Qing Ying Tang (Clear the Nutritive Level Decoction) |
| 81. | Qing Zao Jiu Fei Tang (Eliminate Dryness and Rescue the Lungs Decoction) |
| 82. | Ren Shen Bai Du San (Ginseng Powder to Overcome Pathogenic Influences) |
| 83. | Run Chang Wan (Moisten the Intestines Pill) |
| 84. | San Zi Yang Qing Tang (Three-Seed Decoction to Nourish One's Parents) |
| 85. | Sang Ju Yin (Mulberry Leaf and Chrysanthemum Decoction) |
| 86. | Sang Piao Xiao San (Mantis Egg-Case Powder) |
| 87. | Sang Xing Tang (Mulberry Leaf and Apricot Kernel Decoction) |
| 88. | Shao Fu Zhu Yu Tang (Drive-Out Blood Stasis in the Lower Abdomen Decoction) |
| 89. | Shao Yao Gan Cao Tang (Peony and Licorice Decoction) |
| 90. | Shao Yao Tang (Peony Decoction) |
| 91. | Shen Ling Bai Zhu San (Ginseng, Poria and Atractylodes Macrocephala Powder) |
| 92. | Shen Tong Zhu Yu Tang (Drive Out Blood Stasis from a Painful Body Decoction) |
| 93. | Sheng Hua Tang (Generation and Transformation Decoction) |
| 94. | Sheng Jiang Xie Xin Tang (Fresh Ginger Decoction to Drain the Epigastrium) |
| 95. | Sheng Ma Ge Gen Tang (Cimicifuga and Kudzu Decoction) |
| 96. | Sheng Mai San (Generate the Pulse Powder) |
| 97. | Shi Hui San (Ten Partially-Charred Substance Powder) |
| 98. | Shi Pi Yin (Bolster the Spleen Decoction) |
| 99. | Shi Quan Da Bu Tang (All Inclusive Great Tonifying Decoction) |
| 100. | Shi Xiao San (Sudden Smile Powder) |

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| 101. | Shou Tai Wan (Fetus Longevity Pill) |
| 102. | Si Jun Zi Tang (Four-Gentleman Decoction) |
| 103. | Si Ni San (Frigid Extremities Powder) |
| 104. | Si Ni Tang (Frigid Extremities Decoction) |
| 105. | Si Shen Wan (Four-Miracle Pill) |
| 106. | Si Wu Tang (Four-Substance Decoction) |
| 107. | Su Zi Jiang Qi Tang (Perilla Fruit Decoction for Directing Qi Downward) |
| 108. | Suan Zao Ren Tang (Sour Jujube Decoction) |
| 109. | Tai Shan Pan Shi San (Powder that Gives the Stability of Mount Tai) |
| 110. | Tao He Cheng Qi Tang (Peach Pit Decoction to order the Qi) |
| 111. | Tian Ma Gou Teng Yin (Gastrodia and Uncaria Decoction) |
| 112. | Tian Tai Wu Yao San (Top-quality Lindera Powder) |
| 113. | Tian Wang Bu Xin Dan (Emperor of Heaven's Special Pill to Tonify the Heart) |
| 114. | Tiao Wei Cheng Qi Tang (Regulate the Stomach and Order the Qi Decoction) |
| 115. | Tong Xie Yao Fang (Important Formula for Painful Diarrhea) |
| 116. | Wan Dai Tang (End Discharge Decoction) |
| 117. | Wei Jing Tang (Reed Decoction) |
| 118. | Wen Dan Tang (Warm the Gallbladder Decoction) |
| 119. | Wen Jing Tang (Warm the Menses Decoction) |
| 120. | Wu Ling San (Five-Ingredient Powder with Poria) |
| 121. | Wu Pi San (Five-Peel Powder) |
| 122. | Wu Wei Xiao Du Yin (Five-Ingredient Decoction to Eliminate Toxin) |
| 123. | Wu Zhu Yu Tang (Evodia Decoction) |
| 124. | Xi Jiao Di Huang Tang (Rhinoceros Horn and Rehmannia Decoction) |
| 125. | Xiang Ru San (Elsholtzia Powder) |
| 126. | Xiang Su San (Cyprus and Perilla Lead Powder) |
| 127. | Xiao Chai Hu Tang (Minor Bupleurum Decoction) |
| 128. | Xian Cheng Qi Tang (Minor Order the Qi Decoction) |
| 129. | Xiao Feng San (Eliminate Wind Powder from True Lineage) |
| 130. | Xiao Huo Lou Dan (Minor Invigorate the Collaterals Special Pill) |
| 131. | Xiao Ji Yin Zi (Cephalanoplos Decoction) |
| 132. | Xiao Jian Zhong Tang (Minor Construct the Middle) |
| 133. | Xiao Qing Long Tang (Minor Blue-Green Dragon Decoction) |
| 134. | Xiao Yao San (Rambling Powder) |
| 135. | Xie Bai San (Drain the White Powder) |
| 136. | Xie Huang San (Drain the Yellow Powder) |
| 137. | Xie Xin Tang (Drain the Epigastrium Decoction) |
| 138. | Xing Su San (Apricot Kernel and Perilla Leaf Powder) |
| 139. | Xuan Fu Dai Zhe Tang (Inula and Hermatite Decoction) |
| 140. | Xue Fu Zhu Yu Tang (Drive Out Stasis in the Mansion of Blood Decoction) |
| 141. | Yang He Tang (Yang-Heartening Decoction) |
| 142. | Yi Guan Jian (Linking Decoction) |
| 143. | Yin Chen Hao Tang (Artemisia Yinchenhao Decoction) |
| 144. | Yin Qiao San (Honeysuckle and Forsythia Powder) |
| 145. | You Gui Wan (Restore the Right (Kidney) Pill) |
| 146. | You Gui Yin (Restore the Right (Kidney) Decoction) |
| 147. | Yu Nu Jian (Jade Woman Decoction) |
| 148. | Yu Ping Feng San (Jade Windscreen Powder) |
| 149. | Yue Ju Wan (Escape Restraint Pill) |
| 150. | Zhen Gan Xi Feng Tang (Sedate the Liver and Extinguish Wind Decoction) |
| 151. | Zhen Ren Yang Zang Tang (True Man's Decoction to Nourish the Organs) |
| 152. | Zhen Wu Tang (True Warrior Decoction) |

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| 153. | Zhi Bai Di Huang Wan (Anemarrhena Phellodendron and Rehmannia Pill) |
| 154. | Zhi Gan Cao Tang (Honey-Fried Licorice Decoction) |
| 155. | Zhi Sou San (Stop Coughing Powder) |
| 156. | Zhu Ling Tang (Polyporus Decoction) |
| 157. | Zhu Ye Shi Gao Tang (Lophatherus and Gypsum) |
| 158. | Zuo Gui Wan (Restore the Left (Kidney) Pill) |
| 159. | Zuo Gui Yin (Restore the Left (Kidney) Decoction) |
| 160. | Zuo Jing Wan (Left Metal Pill) |

# APPENDIX G. LINKAGE SUMMARY BETWEEN EACH NCCAOM EXAMINATION AND THE TASKS AND KNOWLEDGE OF THE CALE TEST PLAN

| IA. Patient Assessment – Pt., History TASKS | NCCAOM EXAM | Knowledge Statement | NCCAOM EXAM |
|---|---|---|---|
| 1. Assess chief complaint of patient by obtaining information regarding symptoms (e.g., onset, duration, location, severity, cause) to determine focus of examination. | F B | 1. K. of physical examination techniques and evaluation of findings. | F B |
| 2. Interview patient regarding general health history (e.g., substance abuse, family health, traumatic events, surgery) to determine effect on chief complaint. | F B | 2. K. of techniques for obtaining vital signs. | B |
| 3. Gather information regarding the history of present illness as it relates to chief complaint of patient. | F | 3. K. of interview techniques for obtaining health history. | F B |
| 4. Interview patient regarding prior treatments provided for chief complaint. | F | 4. K. of patient history (e.g., health, trauma, emotional, family) that impact current health status. | F |
| 5. Interview patient regarding emotional state and life events that contribute to present complaint. | F B | 5. K. of the impact of patient genetics and heredity on symptom development. | B |
| 6. Interview patient regarding sleep patterns that contribute to present complaint. | F | 6. K. of the roles of other health care providers and commonly used treatment methods. | B |
| 7. Interview patient regarding environmental factors (e.g., work stress, pollutants, noise, climate) that contribute to present complaint. | | 7. K. of the impact of emotions on pathology. | |
| 8. Interview patient regarding lifestyle (e.g., exercise, recreation, social activities, work schedule) to determine effect on symptom severity and development. | B | 8. K. of the patterns of sleep associated with pathology. | F |
| 9. Interview patient to determine dietary habits (e.g., type, quantity, frequency, time of day) that contribute to symptom severity and development. | F | 9. K. of external and internal influences that impact current health status. | F |
| 10. Interview patient regarding preferences or aversions to food and fluid flavors and temperatures to determine nature of imbalance. | | 10. K. of the impact of dietary habits on pathology or imbalance. | F |
| 11. Interview patient regarding fluid intake (e.g., thirst, type, quantity, frequency, time of day) to determine contribution to condition. | | 11. K. of the effects of environmental factors (e.g., work stress, pollutants, noise, climate) on pathology or imbalance. | |
| 12. Interview patient regarding gastrointestinal symptoms (e.g., bloating, pain, appetite) to determine nature of imbalance. | F B | 12. K. of the gastrointestinal system. | F |
| 13. Interview patient regarding gynecological symptoms to determine nature of imbalance. | | 14. K. of the relationship between appetite and dietary habits and resulting digestive disharmony or pathology. | F |
| 14. Interview patient regarding urogenital symptoms to determine nature of imbalance. | F B | 16. K. of the effect of herbal and food flavors and temperatures on pathology. | |

| IA. Patient Assessment – Pt., History TASKS | NCCAOM EXAM | Knowledge Statement | NCCAOM EXAM |
|---|---|---|---|
| 15. Interview patient regarding urinary characteristics (e.g., color, clarity, odor) to determine nature of imbalance. | F | 17. K. of the association between food and fluid flavor preferences and pathology. | |
| 16. Interview patient regarding bowel characteristics (e.g., frequency, consistency, color, odor) to determine nature of imbalance. | F | 18. K. of the relationship between food and fluid temperature preferences and pathology. | |
| 17. Evaluate patient for the presence of fever and/or chills to determine present health condition. | F | 19. K. of the association between characteristics of thirst and patterns of disharmony. | |
| 18. Evaluate patient patterns of perspiration to determine nature of imbalance. | F | 20. K. of the anatomy and physiology of human body systems. | B |
| 19. Interview patient regarding eye symptoms (e.g., irritation, dryness, visual changes) to determine nature of imbalance. | F | 21. K. of patterns of disharmony associated with menstruation. | F |
| 20. Interview patient regarding auditory function to determine nature of imbalance. | | 22. K. of the female reproductive system. | B |
| 21. Interview patient regarding pain characteristics (e.g., location, onset, severity, quality, duration) to determine nature of imbalance. | | 23. K. of patterns of disharmony associated with pregnancy and childbirth. | |
| 27. Interview patient regarding mucus characteristics (e.g., color, viscosity, quantity) to determine nature of imbalance. | F | 24. K. of patterns of disharmony associated with menopause. | |
| | | 25. K. of patterns of disharmony associated with the male reproductive system. | |
| | | 26. K. of pathologies associated with patterns of urine elimination and urine characteristics. | F |
| | | 27. K. of pathologies associated with patterns of bowel elimination and stool characteristics. | F |
| | | 28. K. of the association between fever and/or chills and pathogenic influences. | F |
| | | 29. K. of abnormal perspiration characteristics associated with interior and exterior patterns. | F B |
| | | 30. K. of the relationship between ocular symptoms and pathology. | |
| | | 31. K. of the relationship between auricular symptoms and pathology. | |
| | | 32. K. of pain characteristics resulting from pathological influences. | |
| | | 36. K. of physical characteristics (e.g., face, eyes, abdomen, nails) that aid in pattern differentiation. | F B |
| | | 39. K. of the theory of Jin Ye characteristics. | F B |

| IA. Patient Assessment – Pt., History TASKS | NCCAOM EXAM | Knowledge Statement | NCCAOM EXAM |
|---|---|---|---|
| | | 42. K. of mucus characteristics and pathology. | F |
| | | 52. K. of methodology for assessment of nature and quality of pain. | |
| | | 54. K. of the relationship between Organs and the Five senses (e.g., liver to eyes, kidney to ear). | F |
| | | | |
| **IB. Patient Assessment – Physical Exam** | **NCCAOM EXAM** | **Knowledge Statement** | **NCCAOM EXAM** |
| 22. Observe patient (e.g., vitality, demeanor) to determine level and quality of energy/Qi. | F | 1. K. of physical examination techniques and evaluation of findings. | B |
| 23. Observe patient (e.g., presence, affect) to determine spirit/Shen. | F | 2. K. of techniques for obtaining vital signs. | B |
| 24. Observe patient physical characteristics (e.g., face, eyes, abdomen, nails) that aid in pattern differentiation. | F | 3. K. of interview techniques for obtaining health history. | B |
| 25. Observe patient physical characteristics (e.g., face, eyes, abdomen, nails) to determine Five Element associations. | F | 7. K. of the impact of emotions on pathology. | |
| 26. Listen to sounds, voice quality, and vocal strength of patient to determine nature of disharmony. | F | 12. K. of the gastrointestinal system. | F B |
| 28. Evaluate patient phlegm characteristics to determine nature of imbalance. | F | 13. K. of methods for palpating the abdomen. | F |
| 29. Evaluate patient respiratory system to determine nature of imbalance. | F | 20. K. of the anatomy and physiology of human body systems. | B |
| 30. Perform neurological examination (e.g., sensation, strength) on patient to determine health condition. | B | 22. K. of the female reproductive system. | B |
| 31. Perform orthopedic examination (e.g., range of motion) on patient to determine health condition. | B | 33. K. of the theory of Qi. | F |
| 32. Observe patient tongue body and coating to determine nature of imbalance. | F | 34. K. of Shen characteristics and clinical indicators of impaired Shen. | F |
| 33. Assess patient radial pulse to determine nature of imbalance. | F | 35. K. of facial indicators associated with pathology or disharmony. | F |
| 34. Palpate areas of body (e.g., abdomen, muscles, joints, channels) to gather additional information regarding patient complaint. | F B | 36. K. of physical characteristics (e.g., face, eyes, abdomen, nails) that aid in pattern differentiation. | F B |

| IB. Patient Assessment – Physical Exam TASKS | NCCAOM EXAM | Knowledge Statement | NCCAOM EXAM |
|---|---|---|---|
| 37. Listen to internal systems (e.g., lungs, heart, abdomen) of patient to gather additional information regarding patient complaint. | F B | 39. K. of the theory of Jin Ye characteristics. | F |
| 38. Evaluate patient skin conditions (e.g., shingles, hives, psoriasis) to determine nature of imbalance. | F | 40. K. of the relationship between quality and strength of voice and patterns of disharmony. | F |
| 40. Determine any life-threatening conditions (e.g., stroke, heart attack, seizure) occurring in patient that require immediate action. | B | 41. K. of phlegm characteristics and pathology. | F |
| 41. Perform physical exam on patient to determine present health condition. | F B | 43. K. of signs and symptoms of impaired respiratory function. | B |
| | | 44. K. of skin characteristics associated with pathology. | F |
| | | 45. K. of methods of assessing neuromusculoskeletal function and integrity. | B |
| | | 46. K. of neuromusculoskeletal conditions. | B |
| | | 47. K. of pathogenic factors that affect joints and surrounding areas. | B |
| | | 48. K. of causes of joint pathology. | B |
| | | 49. K. of conditions associated with abnormal localized temperature. | |
| | | 50. K. of tongue characteristics associated with pathology and health. | F B |
| | | 51. K. of methods for obtaining pulse information from various locations on the body. | |
| | | 52. K. of methodology for assessment of nature and quality of pain. | |
| | | 53. K. of the theory of interconnection of Organs and tissues (e.g., liver to tendon, spleen to muscle). | |
| | | 54. K. of the relationship between Organs and the Five senses (e.g., liver to eyes, kidney to ear). | F |
| | | 55. K. of Western medical terminology and definitions. | B |
| | | 62. K. of clinical significance of laboratory tests used for diagnostic purposes. | B |

| IB. Patient Assessment – Physical Exam TASKS | NCCAOM EXAM | Knowledge Statement | NCCAOM EXAM |
|---|---|---|---|
| | | 64. K. of vital sign values as clinical indicators of pathology. | B |
| | | 65. K. of clinical indications of cardiopulmonary dysfunction. | B |
| | | 67. K. of the effects of pathways and functions of cranial nerves on the determination of pathology. | B |
| | | 68. K. of signs and symptoms of emergency conditions (e.g., shock, heart attack, seizure). | B |
| | | 69. K. of methods for administering cardiopulmonary resuscitation. | |
| | | 70. K. of methods for providing first aid treatment. | |
| | | 72. K. of the methods for listening to internal systems (e.g., lungs, heart, abdomen). | B |
| | | | |
| **IC. Patient Assessment – Evaluate for herbs, Supplements, Western Pharmacology** | | **Knowledge Statement** | |
| | | 3. K. of interview techniques for obtaining health history. | B |
| 35. Interview patient to identify any supplements, herbs, or pharmaceuticals influencing health status. | B H | 56. K. of the classification of commonly prescribed Western medications. | B |
| | | 57. K. of the clinical indications of commonly prescribed Western medications. | B |
| | | 59. K. of clinical indications of commonly prescribed herbs and supplements. | H |
| | | 60. K. of side effects of commonly used herbs and supplements. | H |
| | | 61. K. of interactions between commonly used supplements, herbs, and Western medications. | B H |
| | | | |
| **ID. Patient Assessment – Diagnostic Testing** | | **Knowledge Statement** | |
| 36. Review patient diagnostic report (e.g., blood, X-ray, MRI) to gather additional information regarding patient complaint. | B | 6. K. of the roles of other health care providers and commonly used treatment methods. | B |
| 39. Determine patient conditions (e.g., blood in urine, chronic cough, unexplained weight loss) that require referral to other providers. | B | 55. K. of Western medical terminology and definitions. | B |

| ID. Patient Assessment – Diagnostic Testing TASKS | NCCAOM EXAM | Knowledge Statement | NCCAOM EXAM |
|---|---|---|---|
| | | 58. K. of side effects of commonly prescribed Western medications. | B |
| | | 62. K. of clinical significance of laboratory tests used for diagnostic purposes. | B |
| | | 63. K. of clinical significance of diagnostic imaging reports (e.g., X-ray, ultrasound, computed tomography). | B |
| | | 64. K. of vital sign values as clinical indicators of pathology. | B |
| | | 70. K. of methods for providing first aid treatment. | |
| | | 73. K. of the environmental factors (e.g., work stress, pollutants, noise, climate) that cause disease. | |

| II. Develop Diagnostic Impression TASKS | NCCAOM EXAM | Knowledge Statement | NCCAOM EXAM |
|---|---|---|---|
| 42. Integrate assessment findings (e.g., pulse, tongue, history, channel) to form differential diagnosis. | F | 74. K. of the environmental factors (e.g., work stress, pollutants, noise, climate) that cause disease. | |
| 43. Identify affected channel by evaluating information gathered from patient. | F A | 75. K. of the association between radial pulse findings and pathology. | F |
| 44. Differentiate between root and branch of condition to focus patient treatment. | F | 76. K. of the association between tongue characteristics and pathology. | F |
| 45. Prioritize findings regarding patient to develop treatment strategy. | F | 77. K. of methods for integrating tongue and pulse characteristics to identify pathology. | F |
| 46. Utilize differential diagnosis to develop treatment principles (e.g., tonify, sedate, harmonize) for patient. | F | 78. K. of the relationship between the Organs and channels in disease progression and transformation. | F |
| 47. Apply treatment principle (e.g., tonify, sedate, harmonize) to develop treatment plan for patient. | F A | 79. K. of the relationships, patterns, and changes of Yin and Yang. | F |
| 48. Identify Yin and Yang imbalance by patient evaluation to develop a differential diagnosis. | F | 80. K. of the relationship between the Zang Fu and vital substances (i.e., the liver stores the blood). | F |
| 49. Identify Five Element disharmony by patient evaluation to develop a differential diagnosis. | F | 81. K. of disease progression from superficial to deep levels of the human body. | F |
| 50. Identify Zang Fu disharmony by patient evaluation to develop a differential diagnosis. | F | 82. K. of clinical indicators associated with disease of the channels. | F |
| 51. Identify Eight Principles categorization by patient evaluation to develop a differential diagnosis. | F | 83. K. of the distribution, functions, and clinical significance of the channels. | F |
| 52. Identify relative strength of Qi and Blood by patient evaluation to develop a differential diagnosis. | F | 84. K. of principles for treating root symptoms versus branch symptoms of pathology or disharmony. | F |
| 53. Utilize Four Level differentiation to determine progression of pathogen. | F | 85. K. of methods for prioritizing pathology or disharmony symptom. | F |
| 54. Utilize Six Stage differentiation to determine progression of pathogen. | F | 86. K. of the interrelationships of the Five Elements and clinical indications of disharmony. | F |
| 57. Translate Traditional Chinese Medicine diagnostic concepts into common Western terminology for health care providers. | | 87. K. of the functions of and relationship between the Zang Fu and the channels. | F |
| | | 88. K. of the clinical indications associated with Zang Fu pathology. | F |
| | | 89. K. of methods for identifying simultaneous Zang Fu disharmonies. | F |
| | | 90. K. of methods for differentiating patterns of Hot and Cold conditions. | F |
| | | 91. K. of methods for differentiating Empty and Full patterns. | F |
| | | 92. K. of the functions associated with the types of Qi. | F |

| II. Develop Diagnostic Impression TASKS | NCCAOM EXAM | Knowledge Statement | NCCAOM EXAM |
|---|---|---|---|
| | | 93. K. of the characteristics and functions associated with Blood. | F |
| | | 94. K. of the disharmonies associated with Qi and Blood. | F |
| | | 95. K. of patterns of disharmony associated with the Six Stages. | F |
| | | 96. K. of patterns of disharmony associated with the Four Levels. | F |
| | | 97. K. of patterns of disharmony associated with the San Jiao. | F |
| | | 98. K. of theories, relationships, and disharmonies of Qi, Blood, and body fluid. | F |
| | | 99. K. of the relationship between Western disease diagnoses and Traditional Chinese Medicine patterns. | |
| | | 100. K. of Western medical diagnoses and physiological processes involved with disease progression. | |
| | | 101. K. of patient conditions (e.g., blood in urine, chronic cough, unexplained weight loss) that require patient referral. | B |
| | | 102. K. of Traditional Chinese Medicine pattern differentiation to determine treatment principles. | F |
| | | 103. K. of the effectiveness of combining treatment strategies in developing a treatment plan. | |
| | | 104. K. of how Qi is dispersed to the Zang Fu Organs via the Yuan-Source points. | |
| | | 105. K. of treatment strategies for using tonification and/or sedation points. | A |
| | | 106. K. of the association between stimulation techniques and treatment principles. | A |
| | | 107. K. of therapeutic uses for moxibustion. | |
| | | 109. K. of therapeutic uses for external herbs. | |
| | | 110. K. of therapeutic uses for electroacupuncture. | A |
| | | 111. K. of therapeutic uses for cupping. | F B A |

| II. Develop Diagnostic Impression TASKS | NCCAOM EXAM | Knowledge Statement | NCCAOM EXAM |
|---|---|---|---|
| | | 112. K. of therapeutic uses for soft tissue massage techniques. | A |
| | | 113. K. of therapeutic uses for adjunctive therapies. | A |
| | | | |

| IIIA. Provide TX – Point Selection TASKS | NCCAOM EXAM | Knowledge Statement | NCCAOM EXAM |
|---|---|---|---|
| 58. Develop a point prescription for patient based on treatment principles to restore balance. | A | 117. K. of the function and clinical indications of points. | A |
| 59. Select distal and/or proximal points on patient to treat affected channels and conditions. | A | 118. K. of the classification of acupuncture points. | A |
| 60. Select local points on patient by evaluating clinical indications to treat condition. | A | 119. K. of the association between points and internal Organs and channels. | A |
| 61. Select points from different channels on patient to combine treatment of root and branch. | A | 120. K. of methods for combining distal and proximal points. | A |
| 62. Select points on patient opposite to area of patient complaint to treat condition. | A | 121. K. of therapeutic effects of using local points in acupuncture treatment. | A |
| 63. Select points on patient (e.g., above and below, right and left) that balance point distribution to harmonize treatment. | A | 122. K. of principles for combining points from different channels. | A |
| 64. Select points from Yin and Yang channels to balance the treatment prescription for patient. | A | 123. K. of therapeutic effects of needling points on the opposite side of the body from the location of the condition. | A |
| 65. Select front and back points on patient to enhance treatment effect. | A | 124. K. of the method for balancing the points on the upper part of the body with those of the lower part. | A |
| 67. Select points on the extremities of patient to treat conditions occurring in the center. | A | 125. K. of the effects of using points on the front and back to regulate internal Organs. | A |
| 68. Select Ashi points on patient to enhance treatment effect. | A | 126. K. of treatment strategies that use centrally located points that relate to the extremities. | A |
| 69. Select points along the Muscle channels of patient to enhance treatment effect. | | 127. K. of treatment strategies that use points in the extremities that relate to the center. | A |
| 70. Select Front-Mu (Alarm) points on patient to address acute imbalances. | A | 128. K. of the therapeutic use of Ashi points. | A |
| 71. Select Back-Shu (Transport) points on patient to address chronic imbalances. | A | 129. K. of the therapeutic use of points along the Muscle channels. | A |
| 72. Select Lower He-Sea points on patient to connect channels with respective Fu Organs. | A | 130. K. of the effects of using Front-Mu points in treatment. | A |
| 73. Select Five Shu (Five-Transporting) points on patient to treat imbalances of the Five Elements. | A | 131. K. of the effects of using Back-Shu points in treatment. | A |
| 74. Select Confluent points of the Eight Extraordinary Channels on patient based on clinical indications to treat condition. | A | 132. K. of methods for combining Front-Mu points and Back-Shu points to balance treatment. | A |
| 75. Select Extra points on patient based on clinical indications to treat condition. | A | 133. K. of treatment principles for using Lower He-Sea points. | A |

| IIIA. Provide TX – Point Selection TASKS | NCCAOM EXAM | Knowledge Statement | NCCAOM EXAM |
|---|---|---|---|
| 76. Select Intersecting/Crossing points on patient to treat conditions manifesting in multiple channels. | | 134. K. of techniques for choosing points according to channel theory. | A |
| 77. Select Luo-Connecting points on patient to treat internally and externally related channels. | A | 135. K. of the efficacy of using particular points during progressive phases of treatment. | A |
| 78. Select Yuan-Source points on patient to access fundamental Qi for the channel. | A | 136. K. of significance of selecting points based upon specific time of day. | |
| 79. Select Xi-Cleft points on patient to treat acute conditions of the related channel or corresponding Organs. | A | 137. K. of therapeutic use of Five Shu (Five Transporting) points. | A |
| 80. Select Eight Influential points on patient to treat condition. | A | 138. K. of therapeutic use of Confluent points of the Eight Extraordinary channels. | A |
| 106. Select scalp points based on clinical indications to treat patient condition. | A | 139. K. of therapeutic use of Extraordinary points. | A |
| 107. Select auricular points based on clinical indications to treat patient condition. | A | 140. K. of therapeutic use of Intersecting/Crossing points of the channel. | |
| 109. Evaluate patient condition during follow-up visit by examining changes in function, signs, and symptoms to determine adjustments to treatment plan. | A | 141. K. of therapeutic use of Luo-Connecting points. | A |
| | | 142. K. of the relationships between the Luo-Connecting points and the Twelve Primary channels. | A |
| | | 143. K. of therapeutic use of Yuan-Source points. | A |
| | | 144. K. of therapeutic use of Xi-Cleft points. | A |
| | | 145. K. of therapeutic use of tonification and/or sedation techniques. | A |
| | | 146. K. of therapeutic use of Four Seas points. | A |
| | | 147. K. of therapeutic use of Influential points. | A |
| | | 148. K. of therapeutic use of Mother/Son points (Four Needle Technique). | |
| | | 149. K. of the theory of the Five Elements. | F A |
| | | 150. K. of the anatomical landmarks and proportional measurements used in point location. | A |

| IIIA. Provide TX – Point Selection TASKS | NCCAOM EXAM | Knowledge Statement | NCCAOM EXAM |
|---|---|---|---|
| | | 151. K. of needle manipulation techniques. | A |
| | | 152. K. of the needle retention methods for pathological conditions. | A |
| | | 153. K. of the impact of patient constitution and condition on duration of needle retention. | A |
| | | 154. K. of patient positions for locating and needling acupuncture points. | A |
| | | 155. K. of recommended needling depths and angles. | A |
| | | 156. K. of the application of moxibustion techniques. | A |
| | | 157. K. of the application of electroacupuncture techniques. | A |
| | | 158. K. of the application of cupping techniques. | A |
| | | 159. K. of the application of soft tissue massage techniques. | A |
| | | 160. K. of the application of adjunct therapies (e.g., ear seeds, plaster, exercises). | A |
| | | 162, K. of lifestyle changes and stress reduction techniques that improve health condition. | F |
| | | 163. K. of nutritional concepts and dietary modifications specific to patient condition. | A |
| | | 164. K. of the techniques of scalp acupuncture. | A |
| | | 165. K. of the techniques of auricular acupuncture. | A |
| | | 166. K. of signs and symptoms of patient distress. | A |
| | | 167. K. of patient symptoms that indicate need for treatment modification. | A |
| | | 168. K. of contraindications for needling. | A |
| | | | |

| IIIB. Provide TX – Point Location/Needling TASKS | NCCAOM EXAM | Knowledge Statement | NCCAOM EXAM |
|---|---|---|---|
| 85. Locate points for needle insertion on patient by utilizing anatomical landmarks and proportional measurements. | A | 116. K. of safe needle placement techniques to prevent damage (e.g., Organs, arteries, nerves). | A |
| 86. Evaluate patient condition to determine needle retention time for optimal treatment effects. | A | 117. K. of the function and clinical indications of points. | A |
| 87. Place patient into recommended position for needle insertion. | A | 118. K. of the classification of acupuncture points. | A |
| 88. Insert needle within standard depth range to stimulate point on patient. | A | 119. K. of the association between points and internal Organs and channels. | A |
| 89. Manipulate needle to produce therapeutic effect in patient. | A | 150. K. of the anatomical landmarks and proportional measurements used in point location. | A |
| 90. Identify contraindications for needling by evaluating patient condition to avoid injury and/or complications. | A | 151. K. of needle manipulation techniques. | A |
| 91. Identify points that require needling with caution (e.g., locations near arteries) to avoid complications. | A | 152. K. of the needle retention methods for pathological conditions. | A |
| 108. Evaluate patient stress response to treatment by monitoring vital signs. | A | 154. K. of patient positions for locating and needling acupuncture points. | A |
| | | 155. K. of recommended needling depths and angles. | A |
| | | 165. K. of the techniques of auricular acupuncture. | A |
| | | 166. K. of signs and symptoms of patient distress. | A |
| | | 168. K. of contraindications for needling. | A |
| | | 169. K. of points and conditions that should be needled with caution. | A |
| **IIIC. Provide TX – Adjunct Modalities** | **NCCAOM EXAM** | **Knowledge Statement** | **NCCAOM EXAM** |
| 92. Apply moxibustion techniques on patient to treat indicated conditions. | A | 156. K. of the application of moxibustion techniques. | A |
| 93. Identify contraindications for moxibustion by evaluating patient condition to avoid injury and/or complications. | A | 157. K. of the application of electroacupuncture techniques. | A |
| 94. Perform electroacupuncture on patient to enhance effectiveness of treatment for select conditions. | A | 158. K. of the application of cupping techniques. | A |
| 95. Identify contraindications for electroacupuncture to avoid injury and/or complications. | A | 159. K. of the application of soft tissue massage techniques. | A |

| IIIC. Provide TX – Adjunct Modalities TASKS | NCCAOM EXAM | Knowledge Statement | NCCAOM EXAM |
|---|---|---|---|
| 96. Perform cupping techniques on patient to treat condition. | A | 160. K. of the application of adjunct therapies (e.g., ear seeds, plaster, exercises). | |
| 97. Identify contraindications for cupping to avoid injury and/or complications. | A | 170. K. of contraindications for electroacupuncture. | A |
| 99. Identify contraindications for Gua Sha techniques to avoid injury and/or complications | A | 171. K. of contraindications for cupping. | A |
| 100. Perform massage techniques (e.g., Tui Na, acupressure) on patient to treat condition. | A | 172. K. of contraindications for moxibustion. | A |
| 101. Identify contraindications for massage techniques to avoid injury and/or complications. | A | 173. K. of contraindications for soft tissue massage. | A |
| 103. Identify contraindications for supportive therapies (e.g., ear seeds, moxa, plaster, exercises) to avoid injury and/or complications. | A | 174. K. of contraindications for adjunctive therapies. | A |
| | | 175. K. of contraindications for Gua Sha techniques. | A |
| | | | |
| **IIID. Provide TX – Patient Education** | **NCCAOM EXAM** | **Knowledge Statement** | **NCCAOM EXAM** |
| 102. Instruct patient on use of supportive therapies (e.g., ear seeds, moxa, plaster, exercises) for implementation in clinic or at home. | | 117. K. of the function and clinical indications of points. | A |
| 104. Recommend dietary changes for patient by identifying specific foods to add or remove from daily meals to support treatment | H | 121. K. of therapeutic effects of using local points in acupuncture treatment. | A |
| 105. Recommend lifestyle changes for patient (e.g., exercise, ergonomics, meditation) to improve health condition | | 150. K. of the anatomical landmarks and proportional measurements used in point location. | A |
| 110. Provide patients with information (e.g., instructions, pamphlets, exercise routines, meditation methods) that promotes living a healthy lifestyle. | | 156. K. of the application of moxibustion techniques. | A |
| 111. Educate patient regarding differences between Traditional Chinese Medicine and Western medicine to clarify terminology and procedures. | | 160. K. of the application of adjunct therapies (e.g., ear seeds, plaster, exercises). | A |
| 112. Provide patient with information regarding physiological systems to explain how the body functions. | | 162, K. of lifestyle changes and stress reduction techniques that improve health condition. | |
| 113. Inform patient of Traditional Chinese Medicine diagnosis by comparing it to Western medicine and explaining how the methods differ. | | 163. K. of nutritional concepts and dietary modifications specific to patient condition. | H |

| IIID. Provide TX – Patient Education TASKS | NCCAOM EXAM | Knowledge Statement | NCCAOM EXAM |
|---|---|---|---|
| | | 165. K. of the techniques of auricular acupuncture. | A |
| | | 166. K. of signs and symptoms of patient distress. | A |
| | | 167. K. of patient symptoms that indicate need for treatment modification. | A |
| | | | |

| IV. Herbal Therapy TASKS | NCCAOM EXAM | Knowledge Statement | NCCAOM EXAM |
|---|---|---|---|
| 114. Develop herbal formula for patient based on treatment principle (e.g., tonify, sedate, harmonize) to restore balance. | H | 177. K. of the categories of herbs and herbal formulas according to therapeutic properties. | H |
| 115. Distinguish between herbs and formulas from the same categories to select the most therapeutic application. | H | 178. K. of the effects of herbs and herbal formulas on channels and Organs | H |
| 116. Select herbal formula by identifying hierarchy of herbs (e.g., chief, deputy, envoy, assistant) for therapeutic application. | H | 176. K. of therapeutic uses for herbs and herbal formulas. | H |
| 117. Identify complementary herb qualities and point functions to provide integrated treatment. | | 179. K. of modifications of herbal formulas. | H |
| 118. Identify similarities (e.g., analogs) between herbal therapy and Western medications to optimize treatment. | | 180. K. of the synergistic and antagonist relationships of ingredients in herbal formulas. | H |
| 119. Identify contraindications for herbs when combined with Western medications to avoid adverse interactions. | H | 181. K. of the hierarchical principles governing herbal formulas. | H |
| 120. Monitor effects of herbs when combined with Western medications to determine interactions. | H | 182. K. of the association between therapeutic effects of points and herbal therapy. | |
| 121. Identify patient conditions that are contraindicated for recommending herbs. | H | 183. K. of interactions between herbal therapies and Western medications. | H |
| 122. Recommend herbs and herbal formulas adjusted for patient constitution to provide effective treatment. | H | 184. K. of cautions and contraindications regarding the recommendation of herbs and herbal formulas. | H |
| 123. Determine effective dosage of herbal therapy by evaluating patient condition. | H | 185. K. of the interactions between diet and herbal therapies. | H |
| 124. Evaluate patient response to herbal therapy to determine if modifications are indicated. | H | 186. K. of the effect of dosage on the therapeutic effectiveness of herbs and herbal formulas. | H |
| 125. Monitor patient response to herbal therapy for side effects. | H | 187. K. of the practice of herbal formula preparation. | H |
| 126. Instruct patient on usage of herbs (e.g., dosage, cooking, application) to produce intended therapeutic effect. | H | 188. K. of the relationships between herbal formulas and treatment principles. | H |
| 127. Collaborate with other professionals and herb specialists to determine herbal therapy (e.g., formula, dosage, patent) for treating patient conditions. | | 189. K. of strategies for combining herb ingredients to form an herbal formula. | H |
| | | 190. K. of combinations of herbs that are toxic or produce undesired side effects. | H |
| | | 191. K. of the techniques for external application of herbs (e.g., plasters, poultices, soaks). | H |
| | | 192. K. of methods for modifying herbal formulas to treat changes in patient condition. | H |

| IV. Herbal Therapy TASKS | NCCAOM EXAM | Knowledge Statement | NCCAOM EXAM |
|---|---|---|---|
| | | 193. K. of the effects of processing herbs on efficacy and toxicity. | H |
| | | 194. K. of forms (e.g., raw, granules, pill) used for administration of herbs. | H |
| | | 195. K. of herbal formula recommendations based upon patient constitution. | H |

| V. Regs for Public Health & Safety TASKS | NCCAOM EXAM | Knowledge Statement | NCCAOM EXAM |
|---|---|---|---|
| 128. Document initial assessment and treatments (i.e., Subjective/Objective/Assessment/Plan or SOAP) to maintain patient records. | | 196. K. of legal requirements pertaining to the maintenance and retention of records. | B |
| 129. Develop advertisements in accordance with legal guidelines regarding services provided. | | 197. K. of laws regarding advertisement and dissemination of information about professional qualifications and services. | |
| 130. Maintain patient records in accordance with State and federal regulations. | | 198. K. of laws that define scope of practice and professional competence for acupuncturists. | |
| 131. Maintain patient confidentiality in accordance with State and federal regulations. | | 199. K. of legal requirements for protecting patient confidentiality. | B |
| 132. Report known or suspected abuse of patients by contacting protective services in accordance with State and federal regulations. | | 200. K. of indicators of child, elder, and dependent adult abuse. | B |
| 133. Obtain informed patient consent for treatment by providing information regarding benefits, risks, and side effects. | B | 201. K. of legal requirements for reporting known or suspected abuse of children, elders, and dependent adults. | B |
| 134. Prevent contamination and spread of pathogens by maintaining a clinical environment that adheres to State and federal laws and guidelines. | | 202. K. of guidelines for writing medical records and reports. | |
| 135. Dispose of needles, contaminated material, and containers in accordance with California Occupational Safety and Health Administration guidelines. | | 203. K. of methods for using Western medical diagnostic codes. | |
| 136. Utilize clean needle technique to prevent contamination and spread of pathogens in accordance with California Occupational Safety and Health Administration guideline. | | 204. K. of legal requirements for written consent to disclose patient records or share patient information. | |
| 137. Adhere to ethical standards and professional boundaries while interacting with patients. | B | 205. K. of conditions and requirements (e.g., subpoena) for disclosing confidential material to other individuals, agencies, or authorities. | |
| 138. Adhere to professional standards regarding substance use within the treatment environment. | | 206. K. of the characteristics of infectious diseases and mechanisms of disease transmission. | B |
| 139. Adhere to business practice standards (i.e., preventing insurance fraud, abiding with labor laws, complying with local ordinances) for health care professionals. | | 207. K. of sterilization procedures for treatment of instruments and equipment. | |

| V. Regs for Public Health & Safety TASKS | NCCAOM EXAM | Knowledge Statement | NCCAOM EXAM |
|---|---|---|---|
| 140. Prepare reports regarding patient condition by translating Traditional Chinese Medicine diagnosis into common medical terminology to communicate with other health care providers. | | 208. K. of procedures and standards for storage of equipment after sterilization. | |
| 141. Determine the need to collaborate with primary physician and/or other health care providers to identify the most effective treatment for patient. | | 209. K. of Centers for Disease Control guidelines for treating patients with communicable diseases. | B |
| | | 210. K. of Centers for Disease Control guidelines for preventing cross-contamination or spread of pathogens. | B |
| | | 211. K. of Centers for Disease Control guidelines for reporting incidents of infectious and other diseases. | |
| | | 212. K. of California Department of Public Health regulations for reporting incidents of infectious and other diseases. | |
| | | 213. K. of the impact of inserting needles into skin that is inflamed, irritated, diseased, or broken. | |
| | | 214. K. of the risks of infectious diseases in the practitioner and patient environment. | B |
| | | 215. K. of standards and procedures for the Clean Needle Technique. | |
| | | 216. K. of the methods for isolating used needles. | |
| | | 217. K. of California Occupational Safety and Health Administration requirements for disposal of contaminated materials. | |
| | | 218. K. of laws regulating practice techniques for California-licensed acupuncturists. | |
| | | 219. K. of ethical standards for professional conduct in an acupuncture practice setting. | |

# APPENDIX H. OPES CONSULTANT REPORT: NCCAOM OA AND APPLICATION OF OA TO EXAM DEVELOPMENT

**NOTE:** THE CONSULTANT REPORT WITHIN THIS APPENDIX CONTAINS PRIVILEGED INFORMATION AND IS, THEREFORE, CONFIDENTIAL. IF THIS IS A PUBLIC VERSION OF THE "REVIEW OF THE NATIONAL CERTIFICATION COMMISSION FOR ACUPUNCTURE AND ORIENTAL MEDICINE EXAMINATIONS" REPORT, THE CONSULTANT REPORT HAS BEEN REMOVED.

# APPENDIX I. OPES CONSULTANT REPORT: APPLICATION OF IRT AND CAT TO NCCAOM EXAMINATIONS

**NOTE:** THE CONSULTANT REPORT WITHIN THIS APPENDIX CONTAINS PRIVILEGED INFORMATION AND IS, THEREFORE, CONFIDENTIAL. IF THIS IS A PUBLIC VERSION OF THE "REVIEW OF THE NATIONAL CERTIFICATION COMMISSION FOR ACUPUNCTURE AND ORIENTAL MEDICINE EXAMINATIONS" REPORT, THE CONSULTANT REPORT HAS BEEN REMOVED.