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***NBEO Examination Restructure Task Force***

**April 22, 2006 - April 24, 2006**

**National Board of Examiners in Optometry  
Charlotte, North Carolina**

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Founded by: Association of Regulatory Boards of Optometry ♦ Association of Schools and Colleges of Optometry

May 25, 2006

## MEMORANDUM

TO: Board of Directors, National Board of Examiners in Optometry

FROM: Thomas L. Lewis, O.D., Ph.D., Chair

SUBJ: Task Force on Examination Restructure

DIST: Task Force Members, National Board Staff

This is the report of the Task Force on Examination Restructure. The Task Force members (Attachment A) received the following charge:

*Create a new Part I Content Outline, merging the current content of Part I and much of the current Part II into a clinically-relevant, entry-level, conditions-based examination that audits the knowledge deemed necessary for competence to begin the general practice of optometry. Additionally, draft a conditions-based Content Outline that is applicable and consistent across all 3 examination Parts.*

The National Board has created numerous Task Forces over the years, and has found this mechanism to be a productive and meaningful method of bringing together various opinion-makers and subject-matter experts to provide advice and guidance to the Board on select issues. The Board's decision to form the current Task Force is representative of an ongoing commitment to assuring that the sequence of examinations known as the "National Boards" continues to meet the needs of the state boards of optometry for licensure purposes.

Prior to the meeting, all Task Force members communicated personally with Dr. Jack Terry, Executive Director of the National Board, regarding the purpose of the Task Force. I visited with Dr. Terry on April 10-11, 2006 in Charlotte to discuss the goals of the upcoming meeting and to review the workbook materials. Each Task Force member received a meeting outline and supportive background material ten days before the meeting. The background material included the following documents:

1. Report of the Task Force on Examination Structure, September 1998
2. Task Force on Examination Structure #2, April 1999
3. Restructuring Optometry's "National Boards": A Plan for Renewal, March 2001
4. Report of August 2004 Administration: Item Re-engineering
5. 2006 Content Outlines for Parts I, II, and III
6. BS-CRBS-PAM Continuum Table
7. Examination Restructure Transition Considerations
8. Schedule of Current & Restructured Examinations for Transition Classes
9. Domain of Conditions Study

## **MEETING OVERVIEW**

The meeting of the NBEO Examination Restructure Task Force began at 1:00 PM on Saturday, April 22, 2006, in the conference room of the National Board of Examiners in Optometry, Charlotte, NC. It continued all day on Sunday at the Charlotte Hilton Hotel and concluded on Monday morning in the National Board office.

During the opening Saturday afternoon session, Dr. Terry provided a PowerPoint overview of the findings of the previous Task Forces on Examination Structure including the more recent Item Re-Engineering and the Domain of Conditions studies. A general discussion was held to assure that everyone on the Task Force had the same understanding of the current structure of the examinations, the recommendations made by the previous examination-structure Task Forces, and the actions already taken so that the members had a clearer understanding of the foundation that had been established by these earlier activities, and where the efforts of this Task Force were to begin. The Task Force then discussed general issues that evolved, including reviewing the recent reactions of some academic institutions to the potential restructured integration of Parts I and II.

With the background information and prior discussion as context, the Task Force reviewed a staff-developed draft of a restructured Parts I, II, and III Content Outline that was both conditions-based and consistent across all three Parts of the National Boards. Using skill level #2 (application of knowledge) items from the December 2005 Basic Science test and skill levels #1 and 2 (Epidemiology, History, Symptoms; and Clinical Signs, Techniques, and Skills) items from the Clinical Science test, the Task Force reviewed a brief, simulated exam (approximately 20 items) to verify compatibility of the selected items with the draft Content Outline. This exercise allowed the members an opportunity to determine the types of items that have high clinicality and conform to the proposed Content Outline, and to identify the types of items and content that may no longer fit within the restructured examinations. The Task Force proceeded to spend considerable time in discussing and further modifying the proposed Content Outline which evolved into a row-by-column matrix configuration, subsequently referred to as the Content Matrix. Once the Matrix had been developed more fully, the Task Force members were asked to rate each cell for a recommended exam item emphasis for test development using the following 3-point rating scale: 1. Light, 2. Moderate, or 3. Heavy. The values for each cell were

summed across the discipline columns as well as the condition rows. A percentage was calculated for each discipline and condition to describe their relative emphasis.

By Monday morning, the Task Force focused on developing consensus so that the final recommendations were supported fully by every Task Force member. These recommendations for the Parts I, II, and III Content Matrix also included an approach for developing the number of items within each major content area based on the findings of the Domain of Conditions study and other methodologies. Also, the Task Force provided recommendations as to the inclusion of additional clinically-related Basic Science content areas (e.g., anatomy, pharmacology) for the proposed Part II portion of the Content Matrix beyond the pathophysiology that is included in the current PAM exam. This is significant in the restructured examination as PAM will shift from being a section within Part III to comprising all of Part II.

## **TASK FORCE RECOMMENDATIONS AND CONCLUSIONS**

The specific recommendations and conclusions of the NBEO Examination Restructure Task Force are as follows:

1. The Examination Restructure Task Force expresses its full support for all of the recommendations from the first two Task Forces on Examination Structure as related to the specific charge of the Task Force. Specifically, we fully endorse the concept that the goal of the National Board should be “to develop examinations, which measure in a reliable and valid manner, the competencies which are accepted in determining that the candidate is qualified to begin the general practice of optometry in a safe and effective manner.”
2. The Task Force feels that the “National Boards” should continue to be a 3-part examination. We recommend that the current Part I examination and much of the current Part II examination be restructured into a conditions-based, clinically-relevant, entry-level examination that audits the knowledge deemed necessary for competence to begin the general practice of optometry in a safe and effective manner. Other components of the current Part II examination should be incorporated into an expanded Patient Assessment and Management (PAM) examination, which will comprise the new Part II exam.
3. The Task Force recommends adoption of the condition-related examination Content Matrix (Attachment B) that was developed during the meeting. The Task Force recommends that this Matrix be utilized in the initial and ongoing development of the three restructured examinations.
4. The Task Force recommends that for an item to be eligible for inclusion on an examination, it **must** comply with the requirements of the new Content Matrix; that is, an item initially must meet two criteria:
  - 1) related to a normal or abnormal condition contained on the Matrix, and
  - 2) identifiable within a discipline in the Matrix.

5. The Task Force recommends that disciplines defined in Part II include not only diagnosis and treatment but also the basic science issues necessary to understand the underlying condition (e.g., anatomy, pharmacology, pathophysiology, optics).
6. The Task Force recommends that the targeted administration of the restructured Part I be offered as late as possible in the third academic year (e.g., late May), with implementation in Spring 2009, and that the second administration be scheduled for early September so that candidates will have attained the requisite “clinical thinking” skills appropriate for this level of examination. In addition, Part II should be targeted for December of the fourth academic year and Part III for April of the fourth academic year. This examination schedule allows candidates three opportunities to sit for Part I prior to graduation, two of which occur before having to “double up.” Also, this schedule provides two times to take Part II prior to graduation. The Task Force believes that these scheduling characteristics are important to provide opportunity for candidates to successfully complete the National Boards prior to entry into the profession.
7. The Task Force discussed at length, and emphasizes the importance of, the ultimate distribution of examination items within the Examination Content Matrix. This included an informal poll of the Task Force members regarding recommended exam item quantity (“light,” “moderate,” or “heavy” emphasis) in each Matrix cell to be used as a resource for examination development (Attachment B). These values were converted to percentages to describe the relative emphasis of the disciplines and conditions within the Part I portion of the Matrix. When ready for implementation, the Matrix will include a breakdown of approximate relative emphasis for each cell, with corresponding information for the Part II and Part III portions as well.
8. The Task Force acknowledges that merging the current Part I and some of the Part II examinations (currently covered in six sessions) likely will need to be covered in four sessions. To reduce the overall level of fatigue resulting from a full 2-day exam, it is recommended that the sessions be reduced from the current 3.75 hours sessions to 3-hour sessions. Based on this pro-rated time formula, the total number of items would increase from 435 (over three sessions) to 480 (over four sessions), or 120 items per session. These estimates are subject to adjustment based on item grouping, difficulty, and length.
9. The Task Force recommends the formation of a carefully selected Study Group that would be charged with determining the quantification of examination items within each Matrix cell. This Study Group should be comprised PRIMARILY of practitioners actively engaged in the general practice of optometry. However, the Study Group should also include representation of practitioners with specialty expertise in binocular vision/pediatrics, low vision, contact lenses, and ocular disease. The Task Force also felt it would be valuable to include new practitioners on this Study Group to provide an important perspective on entry-level considerations. The Task Force recommends that the distribution of test items take into consideration data from the Domain of Conditions study pertaining to condition frequency. The established distribution of items across the current Parts I and II Content Outlines could be utilized as a resource, as appropriate. Condition criticality also needs to be carefully considered.

10. The Task Force STRONGLY recommends modifications to the new Part I examination development process to more closely resemble the current PAM and ACMO examination development process. This represents a significant shift from the current in which both item writing and item selection is being done primarily by content specialists. The model **strongly** recommended by the Task Force creates a more even balance between item writing and item selection, with the item writing process becoming more structured and formal. The Task Force envisions content specialists, primarily from academia, serving as item authors during formal *item* content development meetings. The content specialists would validate the accuracy and, along with staff, the psychometric soundness of all potential questions available in the pool for selection. Item selection for *examination* development would remain the responsibility of examination committees. However, the committees would be comprised of **practitioners**, primarily generalists but some specialists, whose backgrounds reflect broad content expertise. Criteria for selecting these practitioners, as well as formal job descriptions, should be developed further by the Board and staff. The Task Force emphasizes the importance of communication with item authors to guide them regarding examination content.

11. The Task Force recommends that the Board carefully consider the appropriate resources needed for effective exam item development if the Content Matrix is to have its full positive impact.

12. The Task Force recommends that a significantly higher percentage of the items have visuals for the restructured Part I examination.

13. The Task Force recommends thorough communication about the restructured examinations with appropriate constituencies, including ARBO, ASCO, AOA, AOSA, the individual state boards, the individual schools and colleges of optometry, and the other stakeholders within the profession.

14. The Task Force firmly believes that what is taught and assessed in the schools and colleges of optometry reflects the academic curricula of the programs, some of which extends beyond the core of essential, general entry-level content. The existence of these content niches is beneficial to the profession. The function of the NBEO, however, is to assess competence for entry into the general practice of optometry; the Task Force stresses that the NBEO exams are not intended to serve as exit examinations from optometric educational programs.

15. The Task Force recommends that the NBEO adopt processes that provide for valid periodic review of the Content Matrix to ensure that it continues to reflect contemporary general optometric practice.

16. The Task Force recommends that the National Board prepare a structured method to receive the input of the Examination Committee members during the annual round of fall meetings. The input should include, but is not limited to, a review of the criticality of the conditions that fall within the cells of the Content Matrix as well as the frequency of the conditions as determined by the Domain of Conditions Study.

## CONCLUSION

These recommendations are made by the NBEO Examination Restructure Task Force as part of the continuing evaluation by the Board of Directors of the various examinations being provided by the NBEO. The Task Force firmly supports the need to continually monitor the clinical relevance of all of the examinations and to develop the best possible systems that will support this objective.

The Task Force expressed its strong support for the current activities of the National Board of Examiners in Optometry. While feeling very positive about these current efforts and activities of the National Board, the Task Force concurred with the other two prior Task Forces on Examination Structure recommendations to continue to strive to increase the integration between Basic and Clinical Science examinations, and to achieve the highest level of clinical relevance, especially in the Part I (Basic Science) examination.

To that end, the current Task Force developed the following basic principles for increasing the clinical relevance of the Parts I, II, and III examinations of the National Board:

1. A new Examination Content Matrix is recommended which merges the current content of Part I and much of the current Part II into a clinically-relevant, entry-level, conditions-based examination that audits the knowledge deemed necessary for competence to begin the general practice of optometry. This new Matrix will increase the integration between the Basic and Clinical Science examinations.
2. The new Content Matrix is conditions-based and applicable and consistent across all three examination Parts.
3. The Task Force recommends modifications to the Part I examination development processes to more closely resemble the current PAM and ACMO examination development processes.

It is our unanimous belief that by implementing this newly structured conditions-based Content Matrix that is consistent across all three Parts of the National Boards, and by utilizing an item development and selection process which emphasizes testing of the **most clinically relevant concepts**, the National Board will neither dilute the scope of the examination nor alter its degree of difficulty. We believe that the implementation of our recommendations will result in examinations that will fairly and effectively measure the entry-level competencies necessary to safely and effectively enter the general practice of optometry.

The Task Force wishes to thank the staff of the National Board for all of its assistance in making our job pleasant and constructive. We wish to thank the Board of Directors for sharing Drs. Steven Eyler and Donovan Crouch with the Task Force as liaisons. Their collective insights and perspectives were of great value in achieving our mission.



## Attachment A

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## Examination Content Matrix (Attachment B)



Conditions tested across all 3 parts, related to:

		Part I - Applied Basic Science								Part II - Patient Assessment and Management				Part III - Clinical Skills			
		1. ANATOMY (gross, histologic, developmental)	2. BIOCHEMISTRY, PHYSIOLOGY	3. PHARMACOLOGY	4. PATHOPHYSIOLOGY (incl. microbiology, immunology, genetics)	5. OPTICS (geometrical, physical, physiological, visual, and optometric incl. contact lenses and low vision, )	6. EPIDEMIOLOGY CLINICAL PRESENTATION (outcomes of major studies, history, signs, symptoms)	7. DIAGNOSTIC METHODOLOGY (general principles of diagnostic measurement, diagnostic tests, general medical tests)	8. LEGAL ISSUES, ETHICS, AND PUBLIC HEALTH (incl. health care policy, environmental)	9. CLINICAL PRESENTATION (history, signs, symptoms)	10. CLINICAL CORRELATION OF BASIC SCIENCE PRINCIPLES	11. DIAGNOSIS	12. TREATMENT/ MANAGEMENT	13. COMMUNICATION SKILLS	14. AFFECTIVE SKILLS	15. PSYCHOMOTOR SKILLS	16. CLINICAL DATA INTERPRETATION SKILLS
A. Refractive Status	10%																
B. Sensory Processes (monocular, binocular, amblyopia, strabismus, color vision, perceptual)	8%																
C. Oculomotor Processes (accommodation, vergence)	9%																
D. Orbit, Ocular Adnexa (lids, lacrimal system)	9%																
E. Cornea, Conjunctiva	13%																
F. Aqueous, Lens	9%																
G. Episclera, Sclera, Uvea	8%																
H. Vitreous, Retina	12%																
I. Optic Nerve, Neuro-Ophthalmic Pathways (includes glaucoma)	13%																
J. Systemic Health	9%																
		12%	14%	13%	13%	10%	14%	13%	11%								

Note: The relative emphasis values for each matrix cell (light, moderate, and heavy) were converted to percentages to describe the relative emphasis of the disciplines and conditions within the Part I portion of the Matrix. When ready for implementation, the Matrix will include a breakdown of approximate relative emphasis for each cell, with corresponding information for the Part II and Part III portions as well.