Update on the National Board Dental Examinations (Part I and Part II)

Dr. David M. Waldschmidt
Joint Commission on National Dental Examinations

ADEA 2013 Annual Session
Seattle, WA
Overview and Agenda

This is an informational session intended to provide an update on the National Board Dental Examinations.

• Introduction
• Joint Commission on National Dental Examinations (JCNDE) policy updates
• The Integrated National Board Dental Examination (INBDE) and the Committee for an Integrated Examination (CIE)
• Additional information and resources
“The JCNDE develops and conducts highly reliable, state of the art cognitive examinations that assist regulatory agencies in making valid decisions regarding licensure of oral health care professionals, develops and implements policy for the orderly, secure, and fair administration of its examinations, and is a leader and resource in assessment for the oral health care profession.”
## Composition of the JCNDE

| Appointing Organizations and Current Appointees | AADB (6) | | | ADEA (3) | | | ADA (3) | | | ADHA (1) | | | ASDA (1) | | | Public (1) | | | Liaisons & Observers | | |
|-----------------------------------------------|---------|---------|-------|---------|---------|-------|---------|---------|-------|---------|---------|-------|---------|---------|-------|---------|---------|
|                                               | Guy Shampaine, DDS, Chair | Jerri Ann Donahue, DDS | Conrad P. McVea, III, DDS | LeeAnn Podruch, DDS, JD | Michael Reggie VanderVeen, DDS | Open | Connie Drisko, DDS | Birgit J. Glass DDS, MS | Marc E. Levitan, DDS | Lorin D. Peterson, DDS, Vice-Chair | Robert A. Hersh, DDS | Peter S. Trager, DDS | Mary Lou Gerosky, RDH, MEd | Ian R. Murray, BS | Ms. Kelley Shannon |Kenneth J. Versman, DDS, MS (ADA Board Liaison) | Jiwon Lee (ASDA Observer) | Liaisons and observers do not participate in voting |
JCNDE Committees

• Committees of the JCNDE
  ▪ Committee on Administration
  ▪ Committee on Dental Hygiene
  ▪ Committee on Examination Development
  ▪ Committee on Research and Development
  ▪ Committee for an Integrated Examination (CIE) (ad Hoc)

• Test Construction Committees (TCCs)
  – NBDE Part I (6)
  – NBDE Part II (12)
  – National Board Dental Hygiene Examination (6)
  – More than half of the individuals on TCCs are dental educators
  – Criteria for TCC membership are published in the JCNDE Standing Rules
Department of Testing Services

- Test Development
- Test Administration
- Research and Development/Psychometrics
- Client Services and Special Projects
Examination Programs

– Joint Commission on National Dental Examinations (JCNDE)
  • National Board Dental Examinations Part I
  • National Board Dental Examinations Part II
  • National Board Dental Hygiene Examination (NBDHE)

– Council on Dental Education and Licensure (CDEL)
  • Dental Admission Test (DAT)

– Association of Schools and Colleges of Optometry (ASCO)
  • Optometry Admission Test (OAT)
Annual Department Activities

- Administer 40,000+ examinations
- 75,000+ phone calls plus email and fax correspondence
- DENTPIN requests/updates
- Examination guides, website updates
- Examination/test applications including fee waiver requests and testing accommodations
- Score reporting
- Fulfill additional score report requests (30,000+)
- Fulfill orders for NBDHE released item sets, National Board certificates, and the DAT practice test.
- Resolve issues/problems with testing (emergencies, ID problems, testing conditions)
Annual Department Activities

- Conduct 40+ test construction committee meetings
- Scoring and research services for contracted clients
- JCNDE and DAT publication and web site updates
- R&D staff research publications and presentations
- Activities conducted by professionally trained staff (currently 24 full-time employees)
JCNDE Software Infrastructure Upgrade

- **Background**
  - Five testing programs, each operating completely independently.
  - Difficult to maintain systems and implement new policies programmatically; data was also formatted differently.
  - The JCNDE wanted to serve communities of interest more effectively, reduce costs, improve efficiency.
  - The goal was to unify those programs—including all historical data—into a single system.
  - No off-the shelf solution existed, needed to customize an existing product to meet JCNDE needs.
  - In 2005, DTS submitted a request to initiate a project to address the above issues.
Service interruption scheduled through April 3rd, affecting the following services:

- Updates/retrievals/requests involving personal information/DENTPIN®
- Application processing
- Score report requests
- Score processing

Communication regarding the interruption provided in December of 2012, follow-up communication in February of 2013.
JCNDE Software Infrastructure Upgrade

- A long, and arduous process ...
- Our existing systems are incredibly complex to program. The Joint Commission in its history has never undertaken a data/program conversion effort of this magnitude.
- A large number of issues (over 340) were identified and required substantial effort to address.
- Staff resources are limited.
- The Aptify conversion effort impacted our regular release cycle:
  - Forms containing new endodontic terminology and new item types.
  - The new terms and item types will be deployed in 2013; please check the Joint Commission’s website for updates and a release date.
JCNDE Software Infrastructure Upgrade

- A long, and arduous process …
- Accuracy of information and decisions is of paramount importance.
- We are trying to minimize the negative impact on communities of interest as much as possible.
- Staff are doing everything they can to mitigate delays and are working to restore services as soon as possible.
JCNDE Policy Updates: Reminders

- Application eligibility period is now 6 months.
- Score reports now include a history of scores for all examination attempts.
- As of January 1, 2012, candidates are limited to successful completion of an examination within five years of testing or five examination attempts, whichever comes first.
  - Administrations prior to 2012 do not count as part of the five.
- Candidates are prohibited from taking the examination to practice or to obtain an advance review of the content.
Examination results may be withheld or reported when forensic analyses provide compelling information indicating the presence of an irregularity.

Adopted the findings of the 2011 practice analysis. These findings resulted in very slight modifications to existing NBDE Part II test specifications (results were highly consistent with the previous practice analysis).

At its 2013 meeting, the Joint Commission will be reviewing the criteria for selecting dental hygiene test constructors.
The goal of the IDEA Grant Program is to enhance the Joint Commission’s testing program with respect to the evaluation of those seeking licensure to practice dentistry or dental hygiene.

The Joint Commission adopted new procedures and timeframes for reviewing and approving proposals (e.g., letter of intent to precede formal submission), in hopes of receiving proposals that are more closely aligned with the goals of the Joint Commission and its IDEA Grant Program.
National Board examination fees are currently as follows:

- NBDE Part I: $355
- NBDE Part II: $400
- NBDHE: $390

Score report request fees are currently $32.50.
Trends in Administration Volume and Candidate Performance
The following slides present information concerning examinee volume and performance for the 10 year period between 2003 and 2012.

Examinee volume data include all individuals (first time, repeaters, accredited, non-accredited) completing the National Board Dental Exams Part I and Part II.

Performance trend data include candidates enrolled in accredited schools in the U.S and Canada who took the examination for the first time.
NBDE Part I Administrations (2003-2012)
Exam Administration Trends


- 2008
- 2009
- 2010
- 2011
- 2012

January February March April May June July August September October November December
** A new standard was introduced this year, based on updated standard setting activities.
Exam Administration Trends

NBDE Part II Monthly Volumes (2008—2012)
* A new standard was introduced this year, based on updated standard setting activities.
The Integrated National Board Dental Examination (INBDE) and the Committee for an Integrated Examination (CIE)
What is the INBDE?

• In 2009, the JCNDE appointed a Committee for an Integrated Examination (CIE) to develop and validate a new examination instrument for dentistry that integrates basic, behavioral and clinical sciences to assess entry level competency in dental practice to supplant Part I and Part II.
• The integrated examination retains the same fundamental examination purpose; to assist state boards of dentistry in making licensure decisions.
How did the INBDE and CIE come about?

• A convergence of factors led to the INBDE, all intent upon finding better ways of serving communities of interest.

• Specific opportunities were seen to:
  – Increase the appropriateness of test content and align content with contemporary dental education
  – Improve processes and the experience of candidates (scheduling, efficiency, security)
  – Better assist regulatory agencies (one, summative assessment)

• There was also recognition of examination content trends and a zeitgeist directed towards integration.
How did the CIE and INBDE come about?

• ADEA Commission on Change and Innovation (CCI) in Dental Education (May 2005) examined dental education and recommended changes ranging from curriculum and instruction to assessment and evaluation.
• The JCNDE formed an ad hoc Committee on Strategic Planning to consider the future and investigate potential changes to TCC structure in light of findings from the CCI and the recommendations of a former Joint Commission chair.
• By the end of 2009 the committee was appointed and in 2010 the CIE began work on an integrated NBDE.
Committee for an Integrated Examination

Members of the CIE are all well acquainted with the mission and workings of the Joint Commission.

Mark Christensen, DDS (Chair) (AADB 2006-2009)
Vice-Chair – JCNDE 2009
Chair - Administration (2008)
Chair – Dental Hygiene (2006 & 2007)

Bruce D. Horn, DDS (AADB 2007-2010)
Chair – JCNDE (2010)
Chair – Administration (2009)
Chair – Dental Hygiene (2008)

B. Ellen Byrne, DDS, Ph.D. (ADEA 2009-2012)
Chair – Research & Development (2012)
Chair – Administration – (2011)

Andrew Spielman, DMD, MS, Ph.D. (ADEA 2008-2011)
Chair – JCNDE (2011)
Chair – Examination Development (2009)

Ron J. Seeley, DDS (ADA 2007-2010)
Chair – JCNDE (2009)
Chair - Examination Development (2008)

Stephen T. Radack, III, DMD (ADA 2008-2011)
Chair – Research & Development (2010 & 2011)
Vice-Chair - JCNDE (2010)

Guy Shampaine, DDS (AADB 2010-2013)*
Chair – JCNDE 2013
* The current JCNDE chair is always an ex-officio CIE member.

Joint Commission 2013 Standing Committee Chairs:
Jerri Ann Donahue, DDS; Connie Drisko, DDS; Lorin D. Peterson, DDS
### Twelve Steps for Test Development
(Downing, 2006)

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1. Planning</td>
<td>7. Test Administration</td>
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<td>2. Content Definition</td>
<td>8. Test Scoring</td>
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<td>4. Item Development</td>
<td>10. Reporting Test Results</td>
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<tr>
<td>5. Test Design and Assembly</td>
<td>11. Item Banking</td>
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<tr>
<td>6. Test Production</td>
<td>12. Technical Reports/Validation</td>
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</tbody>
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*Bolded steps indicate areas of current focus for the CIE.*
An Important Note

The following slides provide additional details concerning the preceding test development steps. Some slides include details on topics where decisions have already been made. These details are included in order to provide a more comprehensive picture of the test development process.
Step One: Planning

- Identify test purpose
- Deciding what you want to measure
- Desired test score interpretations and inferences
- Administration mode (paper/computer)
- Validity evidence to support test usage
  - Specific studies
- Psychometric model
- Timelines and schedule
- Security and quality control
Step Two: Content Definition

• Defining/delineating the content domain
• Sampling from the content domain and methods of doing so
  – Practice analysis/job analysis
  – Subject matter expert judgments
Step Three: Test Specifications

- Testing format (selected vs. constructed response)
- Number of items
- Cognitive levels
- Visual stimuli
- Test results interpretation (norm-referenced vs criterion-referenced)
- Item scoring rules
- Time limit
Step Four: Item Development

- Item types
- Specifying item writer qualifications
- Specifying test construction committee process
- Developing item writing training materials
- Selecting item writers
- Training item writers
- Editing/evaluating item content against test specifications
Step Five: Test Design and Assembly

- Method and process of assembling test forms
  - Manual form assembly
  - Automated form assembly
  - Combination
  - Computer adaptive testing
- Formatting of item presentation
- Key balancing, randomization, anchor items, pretesting, etc.
Step Six: Test Production

- Test administration vendor identification
- Packaging the test for delivery (paper vs. computer)
- Quality control
- Security considerations
- Finalization of visual materials
Step Seven: Test Administration

- Standardized testing conditions
  - Time limits, permissible materials
- Security
- Testing windows
- Examination regulations
- Irregularities
- Accommodations
Step Seven: Test Administration: Common Items
Step Seven: Test Administration: Security
Step Seven: Test Administration: Security
Step Eight: Test Scoring

- Application of scoring procedures
- Quality control
- Item analysis
- Validating/verifying the answer key
- Finalizing the key
- Scaling and equating
Step Nine: Standard Setting (Pass/Fail)

- Relative/normative methods vs. absolute methods
- Identify specific standard setting method to employ
- Use of performance data
- Identification of subject matter experts
- Standard setting materials and training
Step Ten: Reporting Test Results

- Accurate reporting
- Precision of results
- Retake policy
- Reporting for failing candidates
  - Subscale information
  - How to present this information
- Avoidance of misinterpretation of results

Note: Much of the above is simplified by the Joint Commission’s decision to move to pass/fail reporting.
Step Eleven: Item Banking

- Store, retrieve, sort test items
- Security concerns
- Store information on item performance, exposure, etc.
- Store information concerning item classifications (cognitive levels, content classification)
- Item social order (friends, enemies)
Step Twelve: Technical Reports/Validation

- Documentation of all validity evidence
  - Content validity
  - Construct validity
  - Criterion-related validity
- Test specifications
- Specific studies conducted and samples utilized
## INBDE Project Phases

<table>
<thead>
<tr>
<th>Stakeholders and Communities of Interest</th>
<th>(I) Design and Build</th>
<th>(II) Transition Period</th>
<th>(III) Full Implementation</th>
<th>(IV) Monitoring and Refinement</th>
</tr>
</thead>
<tbody>
<tr>
<td>State boards</td>
<td>Understand, Prepare, Participate</td>
<td>Acclimate</td>
<td>Business as Usual (only better)</td>
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<td>Educators</td>
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<td>Students</td>
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<tr>
<td>Dental professionals</td>
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<tr>
<td>The Public</td>
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<td>Wait and See</td>
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<td>Joint Commission</td>
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<td>- CIE (ad hoc)</td>
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<tr>
<td>- JCNDE Staff</td>
<td>Support NBDE and INBDE</td>
<td>Support INBDE</td>
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</tbody>
</table>

- **Understanding, Prepare, Participate**: Understand, Participate
- **Acclimate**: Business as Usual (only better)
- **Align**: Transition Out, Back to Day Job
Why do a stakeholder and community of interest analysis?

• Identify groups that have an impact on project success
• Understand concerns
  – How does the project affect members of each group?
  – How can each group affect the project?
  – Identify risks and manage them.
• Understand opportunities
Stakeholder and Community of Interest Analysis

• Distinction: Stakeholder vs. Community of Interest

• Highlights
  – 5 primary groups identified, each with multiple subgroups to consider
    • State boards
    • Educational community
    • Joint Commission
    • ADA
    • Vendors
  – 13 additional groups (current dentists, specialty groups, associations, clinical testing agencies, the public, etc.)
Stakeholder Analysis: The Education Community

- School faculty
  - Deans, Associate Deans, Faculty, etc.

- Students
  - Students who expect to graduate in 2013, 2014, 2015, etc.
  - Past students who have not yet passed.

- ASDA

- ADEA
  - Leadership, CCI, COS, COSRF, etc.
Stakeholder Analysis: Education Community

Identified concerns (preliminary):

- Alignment between school curriculum and INBDE.
- Faculty need to prepare students for success in dentistry and success on the examination.
- Students need to know how to prepare for the INBDE.
- Timing of exam administration relative to school requirements is an issue (e.g., graduation may depend upon successful completion of the exam).
- Transition period (length, policies, etc.).
- Cost of examination (especially for disadvantaged students and under-represented minorities).
Stakeholder Analysis: Education Community

Identified concerns (preliminary):

- Failure rate and exam difficulty
  - 1st year, 2nd year, 3rd year, etc.
- Availability of examination (times, locations)
- Preparation materials
  - Practice exam
  - Sample items
- Uncertainty
- Anxiety
The INBDE and the Cone of Uncertainty*
Stakeholder Analysis: Education Community

- Deliverables that will help to address concerns:
  - Information concerning test content and specifications
  - Information concerning the transition plan
  - Practice test (sample items)
  - Technical reports
  - Communication
    - Message to previous students who have not yet passed; plan accordingly for the new test.
The Joint Commission intends to give communities of interest 4 years advance notice before the INBDE is fully implemented and the NBDE discontinued. The 2017 target date is no longer in effect.
Model of the Domain of Dentistry

Foundation Knowledge for The General Dentist

FK1 Apply knowledge of molecular, biochemical, cellular, and systems-level development, structure and function to the prevention, diagnosis, and management of oral disease and the promotion and maintenance of oral health.

FK2 Apply knowledge of physics and chemistry to explain normal biology and pathobiology in the prevention, diagnosis, and management of oral disease and the promotion and maintenance of oral health.

FK3 Apply knowledge of physics and chemistry to explain the characteristics and use of technologies and materials used in the prevention, diagnosis, and management of oral disease and the promotion and maintenance of oral health.

Domain of Dentistry: Component Sections

Diagnosis and Treatment Planning

1. Obtain and interpret patient/medical data, including a thorough intra/extra oral examination, and use these findings to accurately assess and manage all patients.
2. Identify patient's chief complaints.
3. Obtain medical, dental, psychosocial, and behavioral histories.
4. Perform head and neck and intraoral examinations.
5. Obtain medical and dental consultations when appropriate.
6. Use clinical and epidemiological data to diagnose and establish a prognosis for dental abnormalities and pathology.
7. Recognize the normal range of clinical findings and significant deviations that require monitoring, treatment, or management.
8. Select, obtain and interpret diagnostic images for the individual patient.
9. Recognize the manifestations of systemic disease and how the disease and its management may affect the delivery of dental care.
10. Formulate a comprehensive diagnosis, treatment and/or referral plan for the management of patients.
11. Discuss etiologies, treatment alternatives, and prognoses with patients and educate them so they can participate in the management of their own care.

Clinical Competencies
## Oral Health Management

1. Manage patients in a hospital setting.
2. Manage the unique needs relating to the oral health care of infants.
3. Manage the unique needs relating to the oral health care of children.
4. Manage the unique needs relating to the oral health care of adolescents.
5. Manage the oral health care of adults, including the unique needs of women.
6. Manage the unique needs relating to the oral health care of geriatric patients.
7. Manage the unique needs relating to the oral health care of special needs patients.
8. Select and administer or prescribe pharmacological agents in the treatment of dental patients.
9. Anticipate, prevent, and manage complications arising from the use of therapeutic and pharmacological agents employed in patient care.
11. Prevent, diagnose and manage temporomandibular disorders.
12. Diagnose and manage periodontal diseases.
14. Maintain function and promote soft and hard tissue health.
15. Manage patients with oral esthetic needs.
16. Diagnose and manage developmental or acquired occlusal abnormalities.
17. Manage the replacement of teeth for the partially or totally edentulous patient.
18. Restore partial or complete edentulism with uncomplicated fixed or removable prosthetic restorations.
19. Manage the restoration of partial or complete edentulism using implant procedures.
20. Diagnose and manage pulpal and periradicular diseases.
22. Diagnose and manage oral surgical treatment needs.
23. Perform uncomplicated oral surgical procedures.
24. Manage patients requiring modification of oral tissues to optimize restoration of form, function and esthetics.
25. Prevent, recognize and manage medical and dental emergencies.
26. Perform basic cardiac life support.
27. Recognize and manage acute pain, hemorrhage, trauma, and infection of the orofacial complex.
28. Recognize and manage patient abuse and/or neglect.
29. Recognize and manage substance abuse.
30. Evaluate outcomes of comprehensive dental care.
31. Diagnose and manage oral mucosal and osseous diseases.
Model of the Domain of Dentistry

Practice and Profession

1. Evaluate emerging trends in health care and integrate new medical knowledge and therapies relevant to oral health care.
2. Evaluate social and economic trends and their impacts on oral health care.
3. Utilize critical thinking and problem-solving skills.
4. Evaluate scientific literature and integrate best research outcomes with patient values and other sources of information to make decisions about dental treatment.
5. Apply advances in modern biology to clinical practice.
6. Apply principles of ethics and jurisprudence to the practice of dentistry.
7. Practice within one’s scope of competence and consult with or refer to professional colleagues when indicated.
8. Apply appropriate interpersonal and communication skills.
9. Apply psychosocial and behavioral principles in patient-centered care.
10. Communicate effectively with individuals from diverse populations.
11. Apply prevention, intervention and educational strategies to maximize oral health.
12. Participate with dental team members and other health care professionals in health promotion and disease management for individuals and communities.
13. Evaluate and apply contemporary clinical, laboratory and information technology resources in patient care, practice management and professional development.
14. Evaluate different models of oral health care management and delivery.
15. Apply principles of risk management, including informed consent and appropriate record-keeping in patient care.
16. Use effective business and financial management skills.
17. Use effective human resource management skills to coordinate and supervise the activity of allied dental health personnel.
18. Apply quality assurance, assessment and improvement concepts.
19. Assess one’s personal level of skills and knowledge relative to dental practice.
20. Understand and apply local, state and federal laws and regulations pertaining to dentistry and healthcare, including OSHA and HIPPA.
21. Develop a catastrophe preparedness plan for the dental practice.
22. Utilize universal infection control guidelines for all clinical procedures.
23. Communicate case design with laboratory technicians and evaluate the resultant restoration/prosthesis.

FK7 Apply knowledge of the biology of microorganisms in physiology and pathology in the prevention, diagnosis, and management of oral disease and the promotion and maintenance of oral health.

FK8 Apply knowledge of pharmacology in the prevention, diagnosis, and management of oral disease and the promotion and maintenance of oral health.

FK9 Apply knowledge of sociology, psychology, ethics and other behavioral sciences in the prevention, diagnosis, and management of oral disease and the promotion and maintenance of oral health.

FK10 Apply quantitative knowledge, critical thinking, and informatics tools in the prevention, diagnosis, and management of oral disease and the promotion and maintenance of oral health.
Current Conversations

- Test content framework and test specifications
- Developing model items
- Specifying test construction committee structure
- Test length and number of items
- Psychometric scoring models
- Communication
- Alignment
- State boards and legislation/rules involving the National Board Dental Examinations
- Project management
- Budgeting and resources
The Joint Commission continues to work to improve the National Boards, to better serve the purpose of the examinations.

These efforts are focused in multiple areas such as the following:

- Program monitoring
- Updating policies
- Updating procedures

A major effort underway involves the development of an integrated examination.
Summary

• The impetus for the INBDE was environmental change and the need to find a better way of serving communities of interest.
• The INBDE emerged through a carefully planned process that reflected the needs of those communities.
• The Joint Commission recognizes that the development of the INBDE affects and must actively involve numerous communities of interest.
• While much has been done, much work also remains.
• Communication, participation, and feedback are critical to the success of the effort.
• On behalf of the Joint Commission and the CIE, thank you for this opportunity to provide an update.
Additional Information and Resources

Joint Commission on National Dental Examinations
http://www.ada.org/JCNDE.aspx

Integrated National Board Dental Examination
http://www.ada.org/5553.aspx

National Boards (Examination Guides, FAQ’s, DENTPIN® Information, Score Report Requests)
  Part I: http://www.ada.org/2667.aspx
  Part II: http://www.ada.org/2665.aspx
  Dental Hygiene: http://www.ada.org/2662.aspx

Test Construction Committee Information
http://www.ada.org/2291.aspx

Technical Reports, ADEA Presentations, Item Development Guides
http://www.ada.org/2287.aspx
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Questions and Discussion
Thank You