BIRTH OF A NEW PROFESSION:
DEVELOPING WRITTEN &
PERFORMANCE-BASED EXAMINATIONS

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The Pharmacy Examining Board of Canada

Goal: Share Experiences & Insights

- Developing certification examinations for an emerging or new profession
  
  - What were the greatest challenges that you encountered & what did you do?
  OR
  - What challenges would you expect to encounter?

The Pharmacy Examining Board of Canada (PEBC)

The national certification body for the pharmacy profession in Canada

Purpose or Mandate:

- assess the qualifications and competence of candidates seeking to become licensed by PRAs
- award certificates of qualification to pharmacists and pharmacy technicians who demonstrate that they have the necessary knowledge, skills and abilities (KSAs) to practise safely
Canadain Pharmacy Regulatory Framework

NAPRA

PRAs

PEBC

Roles & Responsibilities

• NAPRA
  Vision: enhanced pharmacy services & scopes of practice for pharmacists & pharmacy technicians
  Competency profiles & model practice standards

• PRAs
  - Regulate practitioners & practice settings
  - Provincial standards

• PEBC
  - National certification processes & exams

Rationale for Pharmacy Technician Certification & Licensure

• Health Care landscape
  - Costs mounting, shortage of primary care providers
  - Shifting and shared scopes of practice

• Pharmacy landscape
  - Changes in clinical practice
  - New roles for pharmacists and pharmacy technicians

• Pharmacy technicians assume new responsibilities & accountabilities
  - To support practice changes
  - To minimize errors in medication distribution
Issue 1: Role Delineation, Competencies, Practice Standards

- Some PhTs already practising the expanded roles
  - under supervision, e.g. ‘tech check’
- Varying standards of practice
  - province to province, workplace to workplace
- Competencies not fully elucidated
  - performance indicators?
  - knowledge specifications?
- Overlapping roles & responsibilities
  - same standard?

Issue 2: Competency Development at Entry to Practice

- Diverse training programs and quality
  - Inconsistent education and training
  - Variable educational outcomes
- Learning needs of unregulated pharmacy technicians undefined
- ‘Grand-parenting’ question

Issue 3: Adversity to Change

- Turf: fear of taking jobs away
- Trust: reluctance to delegate/let go
- Relationships: subordinate to peer
- Responsibilities: acceptance then pushback
- Liability
Issue 4: Feasibility Considerations

- No incumbents (registered PhTs / reference group) - proxy group?
- No estimate of number of candidates
- Limited communication network
- Cost-benefit / value of certification and performance-based testing - not yet determined

Aims & Challenges

Develop an examination blueprint and content for entry into a newly regulated profession with an expanded scope of practice

- Base exam on the national competency profile
- Develop 2-part exam:
  - MCQ
  - Performance-based OSPE

Strategies

1. Form national Pilot Steering Committee to:
   - Oversee exam development
   - Determine eligibility criteria and policies
   - Guide communications with stakeholders
2. Coordinate these activities with other stakeholders' strategies and actions, e.g.
   - determining the required competencies through a national job analysis (NAPRA) and
   - development of the required competencies through
     - Training program accreditation
     - Bridging programs
Steps to Develop & Pilot Entry-to-Practice Examination for Pharmacy Technicians

1. Develop the examination blueprint
2. Select test format(s) best used to test each part of the blueprint
   - MCQ: test breadth of knowledge
   - Objective Structured Performance Assessment (OSPE): communication and technical skills
3. Develop pilot research plan
4. Develop, pretest and revise test items/stations
5. Develop scoring protocol (OSPE)

Steps

6. Construct test form(s)
7. Recruit participants and administer pilot
8. Determine pass-fail standard
9. Analyze results and conduct quality assurance
10. Report results

Steps to Develop Examination Blueprint

1. Conduct Job analysis (NAPRA): Professional Competencies for Canadian Pharmacy Technicians at Entry to Practice
2. Weight competencies by importance
3. Identify best format to test competencies (MCQ and/or OSPE)
4. Determine competency weights for each part
NAPRA Competencies

1. Legal, Ethical, & Professional Responsibilities
2. Professional Collaboration & Team Work
3. Drug Distribution: Prescription and Patient Information
4. Drug Distribution: Product Preparation
5. Drug Distribution: Product Release
6. Drug Distribution: System & Inventory Controls
7. Communication & Education
8. Management Knowledge & Skills
9. Quality Assurance

Blueprint Methodology

• Focus group process
  - Representative group (16)
  - Selected systematically to represent key stakeholders and multiple perspectives
• Research supports small groups for new professions
  - Opportunity for fruitful discussion (Raymond, 2001)
  - Opportunity to discuss ratings

1. Rate the competencies according to criticality and frequency
2. Analyze the ratings to determine the relative importance of the competencies
3. Assign weights of importance to the competencies
4. Determine which competencies will be tested in each examination format, i.e. multiple choice or performance examination
Blueprint Rating Scales - Criticality

• How serious are the consequences if the pharmacy technician beginning-to-practice failed to perform the competency elements accurately?
  1. No harm to patient (Not serious)
  2. Causes inconvenience (Minimally serious)
  3. Hinders therapeutic progress (Moderately serious)
  4. Worsen condition (Highly serious)
  5. Life threatening (Critically serious)

Blueprint Rating Scales - Frequency

• How often, on average, would the pharmacy technician beginning-to-practice be expected to perform this competency element?
  1. Once or less per month
  2. About once per week
  3. About once per day
  4. More than once per day
  5. At least once per hour

Derive Competency Weights

• Combine average CRITICALITY and FREQUENCY > index of IMPORTANCE
  - Is a matter of judgment how or when to combine CRITICALITY and FREQUENCY
• Convert importance index values to WEIGHTS
Summary of Competency Weights

<table>
<thead>
<tr>
<th>Competency</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comp 1: Legal, Ethical, &amp; Prof. Responsibilities</td>
<td>8</td>
</tr>
<tr>
<td>Comp 2: Prof. Collaboration &amp; Team Work</td>
<td>8</td>
</tr>
<tr>
<td>Comp 3: Rx: Prescription &amp; Patient Information</td>
<td>18</td>
</tr>
<tr>
<td>Comp 4: Rx: Product Preparation</td>
<td>16</td>
</tr>
<tr>
<td>Comp 5: Rx: Product Release</td>
<td>16</td>
</tr>
<tr>
<td>Comp 6: Rx: System &amp; Inventory Controls</td>
<td>9</td>
</tr>
<tr>
<td>Comp 7: Communication &amp; Education</td>
<td>9</td>
</tr>
<tr>
<td>Comp 8: Management Knowledge &amp; Skills</td>
<td>7</td>
</tr>
<tr>
<td>Comp 9: Quality Assurance</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

Conclusions

- Focus group method - helped clarify competencies, competency elements and rating scales
- No differences of importance between panelists
- Consistency of ratings was very high
- Most important - drug distribution competencies (3, 4, 5)
- 18/72 competency elements deemed non-critical and/or unable to test in either format
- MCQ and OSPE formats needed to test important competencies

Examination Structure

<table>
<thead>
<tr>
<th>Part I - MCQ</th>
<th>Part II - OSPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written Multiple Choice Questions</td>
<td>Objective, Structured Performance Exam</td>
</tr>
<tr>
<td>4-choice, one-best-answer questions</td>
<td>7-minute ‘stations’ based on common/critical practice situations</td>
</tr>
<tr>
<td>Tests</td>
<td>Tests</td>
</tr>
<tr>
<td>- breadth of knowledge</td>
<td>- ability to communicate</td>
</tr>
<tr>
<td>- understanding and application of knowledge</td>
<td>- ability to perform professional functions in simulated practice contexts</td>
</tr>
<tr>
<td>- ability to make judgments in situations relevant to practice</td>
<td>- technical and communication skills</td>
</tr>
<tr>
<td></td>
<td>- ability to problem-solve &amp; make judgments</td>
</tr>
</tbody>
</table>
What is an OSPE?

- Objective Structured Performance Examination
- Series of stations through which all candidates rotate
- Interactions with standardized clients (patients, care givers, health care professionals), e.g.
  - interview to gather information
  - refer to pharmacist or other health professional
  - teach client to use a device
- Non-interactive tasks
  - sterile compounding (video)
  - non-sterile compounding (technique)
  - ‘tech check’ (prescription, product or records)

Part II (OSPE)- Station Types

Interactive
- standardized patient
- trained examiner
- standardized assessment criteria
- communication, ethical and problem-solving skills

Non-interactive
- respond in writing
- marked using standardized criteria
- e.g., drug information request, checking prescriptions

Scoring the OSPE

- Station-specific checklist - response record
  - Critical items (key features) reflect Station Objectives
  - Non-critical items - reflect good practice
- Holistic rating scales - used for scoring
  - Communication (generic)
  - Outcome (station specific)
  - Overall performance (global)
- Misinformation, Risk and Unique Responses documented / considered if pertinent
- Comments recorded (to support low ratings)
Sample Video

Developmental Steps

1. Create MCQ test questions and OSPE stations
   2008 Item/Station Writing Workshops (10 participants, 2 days each)

2. Review & revise MCQ questions and OSPE stations
   2008 Item/Station Writing Workshops (10 participants, 2 days each)

Developmental Steps

3. Conduct a Pre-test of Performance Stations
   **Purpose:**
   - to determine the functionality of the stations and appropriateness of scoring criteria
     - Pre-tested 51 stations using two tracks, with am and pm sessions
     - Utilized pharmacists (26) and pharmacy students (37) in the pretest in March 2009
     - Refined stations based on data and feedback collected
Developmental Steps

4. Create Part I (1 form) and Part II (2 forms) for the pilot

5. Conduct Pilot: August 2009

**Purpose:**
- for certification purposes in Ontario
- to obtain research data on the pilot

Pilot Examination Format

**Part I - MCQ**
- One form
- Two 2.5 hour sittings, consecutive days
- 150 scored questions
- + 50 pretest questions

**Part II - OSPE**
- Two forms
- 3.5 hour sitting (AM or PM)
- plus 2 - 2.5 hrs pre- and post-exam processes
- 12 stations (7 core* stations)
  - 4 interactive (1 core)
  - 8 non-interactive (6 core)
    (1 technique, 2 video, 5 other)

Developmental Steps

5. Set Criterion-referenced Minimum / Passing Standards - October 2009
   - MCQ - modified Angoff methodology
   - OSPE - ‘Competence Standard Setting’ methodology (adapted Angoff)

6. Report Candidate Results
   - November 30, 2009
Developmental Steps

   - statistical data analysis and results
   - recommendations
     - revisions to assessment process for written and performance components
     - Shorter test length for both
8. Modify examinations for implementation

Steering Committee Recommendations
- based on research findings

- Require both Part I (MCQ) and Part II (OSPE)
- Part I (MCQ) format: 130 to 140 scored questions (plus 40 to 50 pretest questions), in one 4-hour sitting
- Part II (PT-OSPE) format: 8 stations, scored holistically
  - 4 interactive stations, 1 assessor per station
  - 5 non-interactive stations, machine-scored
    - 1 video, sterile compounding
    - 1 technique, non-sterile compounding
    - 2 non-interactive, tech check stations

Current Examination Format

<table>
<thead>
<tr>
<th>Part I - MCQ</th>
<th>Part II - OSPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-hour sitting</td>
<td>3.5 hour sitting</td>
</tr>
<tr>
<td>120 scored questions</td>
<td>9 scored stations</td>
</tr>
<tr>
<td>30 pretest questions</td>
<td>4 interactive</td>
</tr>
<tr>
<td>Standard set by equating, Rasch model</td>
<td>3 non-interactive (tech-check)</td>
</tr>
<tr>
<td></td>
<td>1 nonsterile compound</td>
</tr>
<tr>
<td></td>
<td>1 video, sterile compounding</td>
</tr>
<tr>
<td></td>
<td>2-3 pretest stations</td>
</tr>
<tr>
<td></td>
<td>Standard set each form - Competence Standard Setting Method</td>
</tr>
</tbody>
</table>
What Have We Learned?

• Partner and collaborate; identify and address/incorporate stakeholders’ needs and interests
• Communicate clearly and uniformly, repeatedly; use all available networks
• Though uptake has been slow, pharmacy technicians are eager to be registered and take full professional responsibility

What Did You Learn?

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