



**International  
Credentialing  
Associates**

**ICA eBRIEF #1  
MINIMUM NUMBER OF SUBJECT MATTER  
EXPERTS REQUIRED ACROSS THE  
TEST DEVELOPMENT LIFE CYCLE**

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**November 2014**

**Disclaimer.** These guidelines are generalizations that are supported with evidence and do not represent an exhaustive list of supporting literature. Credentialing organizations should consult with a measurement professional since unique situations may require other acceptable evidenced based approaches and/or industry best practices. ICA believes this is a working document and any feedback is highly encouraged. Please send your feedback to manny@intlcred.com.

<b>Credentialing</b>		
<b>Activity</b>	<b>Number of SMEs</b>	<b>Supporting Literature</b>
Focus Groups for Job Analysis	<p><b>Minimum 5; Maximum 12 per focus group</b>            1) <b>10 to 12</b>             2) <b>5 to 10</b> but can be <b>4 to 12</b> (Krueger &amp; Casey, 2008)</p>	<p>1) ICA recommendation based on common industry practices since the literature shows this is ideal for representation and facilitation factors when working with a focus group.             2) Krueger, R.A., &amp; Casey, M.A. (2008) <i>Focus groups: A practical guide for applied research</i> (4th ed.). New York: Sage.             Note: Often one focus group is necessary for identifying the initial content and another for finalizing the content that should be tested on (blueprint/specifications). There are variations on the use of focus groups after identifying the initial content.</p>
Surveys for Job Analysis	<p>1) <b>Survey Sampling Plan or Confidence Intervals (e.g., stratification)</b></p>	<p>1) <a href="http://measurementstatistics.wikispaces.com/Sample+Size">http://measurementstatistics.wikispaces.com/Sample+Size</a></p>
Feasibility / Needs Assessments	<p>Or</p>	<p>2) Raymond, M. (2005). An NCME instructional module on developing and administering practice analysis questionnaires. <i>Educational Measurement: Issues and Practice</i>, 24(2), 29-42</p>
Marketing	<p>2) <b>Survey 200 responses</b> (Raymond, 2005)</p>	<p>2) Raymond, M. (2005). An NCME instructional module on developing and administering practice analysis questionnaires. <i>Educational Measurement: Issues and Practice</i>, 24(2), 29-42</p>
Item Writing and Item Writing Reviews	<p>1) Recall MCQ items: <b>Write 2</b> items at minimum per hour per SME             2) Recall MCQ items: <b>Review 10</b> items at minimum per hour per SME             Using charts, tables, and other graphical stimuli may require longer time to write an item</p>	<p>Based on ICA expert opinion</p>

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<b>Credentialing Activity</b>	<b>Number of SMEs</b>	<b>Supporting Literature</b>
Item Analysis	Minimum number of candidates taking an exam for an item analysis to be conducted.	
	1) <b>50 responses</b> (Nunnally & Bernstein, 1994)	1) Nunnally, J., & Bernstein, I. (1994). <i>Psychometric Theory</i> (3rd ed.). New York: McGraw-Hill.
	2) <b>50 responses</b> (Jones, Smith, & Talley, 2006)	2) Jones, P., Smith, R., & Talley, D. M. (2006). Developing test forms for small-scale achievement testing systems. In S. M. Downing & T. M. Haladyna (Eds.), <i>Handbook of test development</i> (pp. 487-525). Mahwah, NJ: Lawrence Erlbaum.
	3) <b>20 responses</b> (Chinn, Hertz, & Showers, 2002)	3) Chinn, R.N., Hertz, N.R., & Showers, B.A. (2002). Presented at the 2002 Annual Meeting of Council on Licensure, Enforcement, and Regulation <a href="http://www.clearhq.org/resources/RB_SmallExamPrgs.pdf">http://www.clearhq.org/resources/RB_SmallExamPrgs.pdf</a>
	4) <b>100 responses</b> (Millman & Green, 1989)	4) Millman, J., & Green, J. (1989). The specification and development of tests of achievement and ability. In R. L. Linn (Ed.), <i>Educational measurement</i> (3rd ed.) (pp. 335-366). New York: MacMillan

<b>Credentialing Activity</b>	<b>Number of SMEs</b>	<b>Supporting Literature</b>
Standard Setting	<b>SME Minimum 5;</b> <b>SME Maximum 30</b>	
	1) As many as resources that permit (Cizek, 1996)	1) Cizek, G. J. (1996). Setting passing scores. <i>Educational Measurement: Issues and Practice</i> , 15, 20-31)
	2) <b>10</b> (Fowell, Fetrell, & McLaughlin, 2006)	2) Fowell, S. L, Fewtrell, R., & McLaughlin, P. J. (2006). Estimating the minimum number of judges required for test-centered standard setting on written assessments: Do discussion and iteration have an influence? <i>Advance Health Sciences Education: Theory and Practice</i> , 13(1), 11-24)
	3) <b>5 to 10</b> (Norcini & Shea, 1997)	3) Norcini, J. J., & Shea, J. A. (1997). The credibility and comparability of standards. <i>American Measurement in Education</i> , 10, 39-59.
	4) <b>10 to 15</b> (Hurtz & Hertz, 1999)	4) Hurtz, G., & Hertz, N. (1999). How many raters should be used for establishing cut-off scores for the Angoff method: A generalizability theory study. <i>Education and Psychological Measurement</i> , 59, 885-897.
	5) <b>5 to 30</b> (Zieky & Livingston, 1977)	5. Zieky, M. J. & Livingston, S. A. (1977). <i>Manual for setting standards on basic skills assessment tests</i> . Princeton, NJ: Education Testing Service
	*Typically, these standard settings are completed with the same SMEs in one or multiple sessions.	

\* In selecting SMEs, the most important guideline is recruiting a representative sample.

**Thank you.** ICA would like to thank the individuals who provided feedback on this document, especially ICA's Technical Advisory Board ([www.intlcred.com/advisory.html](http://www.intlcred.com/advisory.html)).