An Approach to Aid Faculty in Developing Teaching Approaches and Testing Methods That Focus on 'Essential' Concepts in a Human Anatomy Course

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BACKGROUND

The purpose of this preliminary study was to evaluate a system for aiding faculty in determining whether students learned "essential" concepts as defined by the faculty in a regional block of instruction in an anatomy course. Our hypothesis was that if faculty place appropriate emphasis on "essential" material during teaching sessions, making clear what is considered essential and why it is considered so, then performance on questions related to this content should be better than performance on questions dealing with material presented, but not identified as essential.

METHODS

We asked our anatomy teaching faculty (N=5) to identify and list the sixty (60) most important (essential) structures from over 150 laboratory structures/relationships related to the anatomy of the thorax that are listed in our Anatomy Guide & Workbook. This student workbook includes both instructions for anatomy activities and includes a list of bolded and non-bolded terms; the bolded terms representing testable content for the End of Block summative examination.

Using a modified Delphi approach, we reduced the number of structures initially identified by the faculty to 74. A second round by the faculty resulted in fifty (50) structures agreed upon by all as essential structures (Table 1) for students to identify and be familiar with in this Block on the thoracic cavity and its contents. We then reviewed our 51 question End of Block summative examination and identified 42 questions that focused specifically on the defined "essential" structures.

Using our exam software we determined the percentage of students answering each of the "essential" questions correctly and the percentage of students answering each of the remaining questions correctly.

Table 1: Agreed Upon Essential Structures

anterior scalene	papillary muscles
aorta	parietal pleura
aortic valve	pectinate muscles
azygos vein	pectoralis minor
brachiocephalic trunk	phrenic nerve
brachiocephalic vein	pulmonary arteries, veins, trunk, valve
carina	recurrent laryngeal nerve
carotid sheath	right lung (inferior lobe, superior lobe, midel
chordae tendinae	septomarginal trabeculae (moderator band)
circumflex branches of left coronary artery	serous pericardium
common carotid artery	sternokyoid
coronary sinus	sternothyroid
costodiaphragmatic recess	subclavian artery
cricothyroid membrane	subclavian vein
esophageal hiatus	superior vena cava
esophagus	suprasternal notch
fibrous pericardium	sympathetic chain
hilum	thoracic duct
hyoid	thyroid gland
inferior thyroid artery	trachea
inferior vena cava	sternocleidomastoid
internal jugular vein	tricuspid valve
laryngeal prominence	vagus nerve
left lung (inferior lobe, superior lobe, lingula,	vena caval hiatus
ligamentum arteriosum	ventricle
main stem bronchi	vertebral artery
mitral valve (atrioventricular valve)	

RESULTS

Using a modified Delphi approach, we identified 50 anatomical structures that students were expected to become familiar with during the eight week Block on the thoracic cavity and its contents. We found on review of our End of Block summative examination that these structures were the focus of 42/51 questions. Mean student score on the 42 "essential" questions was 91.3% (range 58%-100%). The mean score on the remaining 9 questions was 71.3% (range 40%-100%).

DISCUSSION

Learning effectiveness and student satisfaction are both increased when student efforts and faculty efforts are closely aligned. We use a modified Delphi process to help faculty identify "essential " anatomical structures and relationships in the thorax. We then reviewed the questions on our thorax examination to determine the number of questions that directly assessed knowledge regarding these structures and the number of questions that focused on other important, but not "essential" material. We found that the majority of questions addressed "essential" content and that the students performed better on those questions than on the remaining questions.

Based on these observations, we recommend that faculty identify "essential" content within a course and focus their teaching and assessment activities primarily on that content. Both faculty effort and student effort, and success, is likely to be increased as a result.

This study is a preliminary sample of a larger study that will include each of the four Blocks of anatomy content: musculoskeletal, cardiothoracic, abdominopelvic and nervous system anatomy.

CONCLUSION

Our results suggest that efforts on the part of the faculty to identify and teach in the classroom and dissecting laboratory were related to content defined as "essential" and were successful. We conclude that it is important for faculty to define what is important for students to learn to develop instructional and assessment activities that are closely linked to that content. Such efforts will also provide students with reliable and direct guidance in their study.

SELECTED REFERENCES

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