

2022

It's So Complex! Active Learning Strategy for Teaching the Autonomic Nervous System and Referred Pain

Jessica Immonen
jessica.immonen@unlv.edu

Follow this and additional works at: https://digitalscholarship.unlv.edu/btp_expo



Part of the [Scholarship of Teaching and Learning Commons](#)

Recommended Citation

Immonen, Jessica, "It's So Complex! Active Learning Strategy for Teaching the Autonomic Nervous System and Referred Pain" (2022). *UNLV Best Teaching Practices Expo*. 164.
https://digitalscholarship.unlv.edu/btp_expo/164

This Poster is protected by copyright and/or related rights. It has been brought to you by Digital Scholarship@UNLV with permission from the rights-holder(s). You are free to use this Poster in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you need to obtain permission from the rights-holder(s) directly, unless additional rights are indicated by a Creative Commons license in the record and/or on the work itself.

This Poster has been accepted for inclusion in UNLV Best Teaching Practices Expo by an authorized administrator of Digital Scholarship@UNLV. For more information, please contact digitalscholarship@unlv.edu.

It's So Complex! Active Learning Strategy for Teaching the Autonomic Nervous System and Referred Pain.

Jessica Immonen Ph.D., M.S.
School of Dental Medicine
Biomedical Sciences Department

Teaching Practice & the Need it Addresses

- The autonomic nervous system (ANS) represents some of the most complicated anatomy in the human body and some of the most challenging anatomy to teach and deliver successfully.
- Breaking the sites of ANS innervation down into three components -the periphery, the viscera and the head- allows learners to simplify the enormous topic and draw out the nerve pathways on novel diagrams.
- This technique has been endorsed by students as a means to produce content retention and experts in the field have endorsed the novel content breakdown and diagrams as a powerful way to simplify the topic.

Utilizing a novel breakdown of ANS targets allows students to synthesize a complex neuroscience topic more easily.

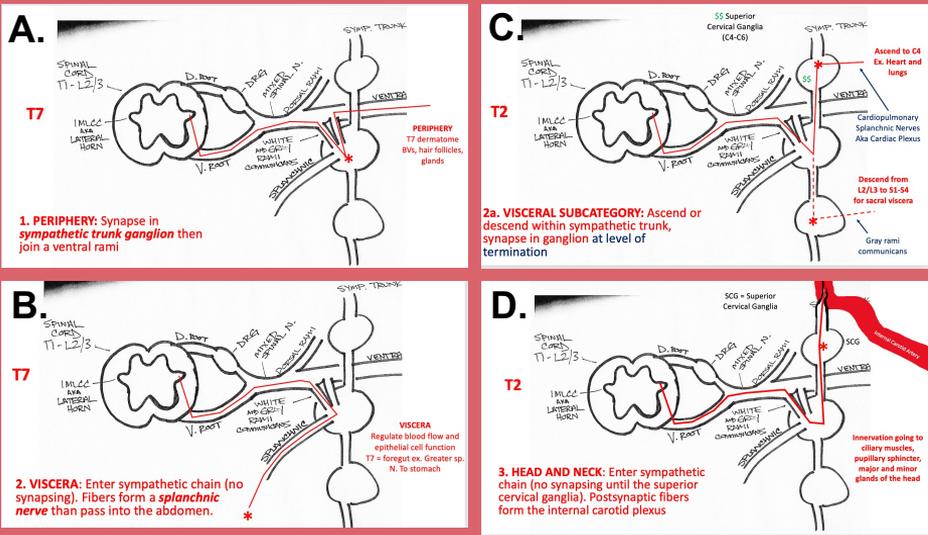


Figure 1 A-D. Images represent example student drawings with notes from an active learning, in-class session. The drawings represent 3 distinct situations for autonomic nervous system innervation: innervation to the periphery (A), the viscera (B) and the head (D). The viscera category requires an address of the cardiorespiratory splanchnic nerves on a separate (C).

How Others Can Adopt This Practice

- All professions in the health sciences have an obligation to understand the autonomic nervous system and its applications to physiology and pathophysiology for the benefit of patients
- After completion of this active learning exercise, students are prepared for higher level learning related to referred pain and the clinical exam.

Evidence it Benefits Students

- This exercise has been piloted in several health professional.
- Head and Neck Anatomy and Neuroscience exams from 2019, 2020 and 2021 in the School of Dental Medicine were appraised for exam questions on the ANS. Item psychometrics from assessment questions on the ANS were collected and a single factor ANOVA was used to statistically compare the difficulty indices from the three years. There was no statistical difference in item performance, showing the activity did not hinder learning.
- This technique was beneficial because it created the time and foundation to have higher level learning discussions on referred pain. Referred pain was not covered in 2019, demonstrating a missed opportunity to make the curriculum clinically relevant.
- The average difficulty index for higher order thinking questions on referred pain was impressive in 2020/2021 when the active learning technique was utilized (average difficulty index = .95).

UNLV
Best Teaching Practices Expo 2021

Resources & Where to Find Them
This activity was developed by the presenter. With appropriate citation and credit to the author, the worksheets can be acquired from the author directly. Active learning classroom exercises on referred pain can be modeled from the poster images.