



# Can clinical reasoning skills be enhanced by curricular design change?

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## Background

- Clinical reasoning skills are essential to the practice of medicine, but difficult to assess in learners.
- After a curriculum overhaul in 2018, this program's faculty hypothesized that the new clinical presentation-based approach would enhance acquisition of clinical reasoning skills.
- To assess learners' clinical reasoning, script concordance testing (SCT) was utilized.
- SCT has been developed and validated in several studies<sup>3,4,5,6</sup> and is based on the theory that clinical reasoning develops as pattern recognition (scripts) when learners are presented with clinical cases.
- The scripts are used to apply key features of a patient's clinical presentation to confirm or rule out hypothesis in the differential diagnosis.
- The learner's decision to increase or decrease the probability of a given diagnosis can then be quantified.

## Methods

- A 25-case SCT assessment tool was constructed with three assessment items per case.
- An expert panel of 12 clinicians completed the assessment tool, which created an SCT scoring rubric.
- The assessment tool was administered to the final cohort in the program's prior curriculum three months before program completion.
- The same assessment tool was administered to the first cohort of the new curriculum three months before program completion.
- Results from each cohort were then compared with the decision-making process of the expert panel, thereby providing a measure of the learner's clinical reasoning ability pre- and post- curricular change.

## Results

Cohort	n	Mean	Standard Deviation	95% CI
A	41	73.7	5.8	71.9, 75.5
B	36	74.4	4.7	72.8, 76
$t(73) = 0.23, p = 0.4$ (1-tail), $t$ critical = 1.66				

- The results of the SCT assessment of each cohort was analyzed using the University of Montreal Script Concordance Calculator to calculate a clinical reasoning score for each learner.
- The clinical reasoning scores of the two cohorts were analyzed using an independent t-test.
- There was not a significant difference in clinical reasoning abilities between the two cohorts.

The following is a sample assessment from the SCT assessment tool. The case is followed by a matrix that asks the assessment taker to consider a specific diagnosis and consider how an additional piece of information influences the likelihood of the diagnosis from very likely (+2) to very unlikely (-2).

Case 3: A 79 year old male presents to the ED with confusion for 2 days duration. He was transferred by his assisted care facility for evaluation.

If you were thinking:	And then you find:	This diagnosis becomes:
Cerebral vascular accident	He has had Type II diabetes for 2 years	-2 -1 0 +1 +2
Urinary tract infection	He is afebrile	-2 -1 0 +1 +2
Dementia	He has had no previous episodes of confusion	-2 -1 0 +1 +2
Acute psychoses	He has a history of depression	-2 -1 0 +1 +2

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## Conclusions

- This study demonstrates that differences in didactic physician assistant education may not enhance the clinical reasoning of learners.
- Other factors such as critical thinking skills, and supervised clinical experiences likely play a substantial role in clinical reasoning development.
- Limitations of this study include a small number of learners, and a larger sample size may detect differences.

## References

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