

# Approaches to stimulate clinical reasoning in continuing medical education during the coronavirus disease 2019 pandemic

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**Introduction** By March 2020, all European Union member states had reported coronavirus disease 2019 (COVID-19) cases. The number of cases has since continued to increase.<sup>1</sup> The pandemic has had a daunting influence on many sectors, including the educational environment. Due to introduced self-isolation, educational sector suffered severe disruption, present also in medical education, especially on the postgraduate level, simultaneously undertaking actions towards limiting the spread of the infection. The process of teaching-learning was forced into participants' houses through distant learning.

When considering a continuous program of medical education in emergency medicine, we have to strive to introduce new educational endeavors resulting in preparing competent medical professionals, equipped with the ability to think critically and to reflect upon experiences.<sup>2</sup> Even more, we ought to focus on assessment that would assist and support learning.<sup>3</sup> Therefore, we propose a formative assessment, so called assessment for learning or learning-oriented assessment (LOA).<sup>4</sup> It aims to provide task-stimulating learning, delivers opportunity to involve participants in the process, and provides timely feedback to become a scaffolding for further learning.<sup>4</sup>

Therefore, a quality formative assessment informs participants on how to excel and further develop in a given subject. LAO's aim is to supplement summative assessment (assessment of learning) to provide a meaningful teaching and learning experience.

This paper focuses on formative aspect of the assessment in the form of a Script Concordance Test (SCT).

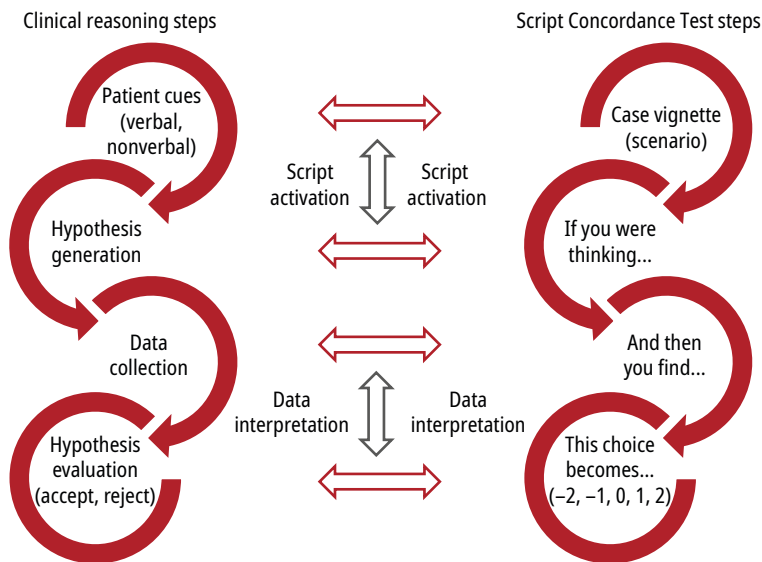
The SCT aims to bring more of the clinical "feel" to the decision-making process by encouraging graduate medical professionals in their first years of clinical practice to measure up their decision against the choices made by clinicians with experience,<sup>5</sup> which is invaluable in distant learning.

**Methods** The approval of an ethics committee was not required and no human participants were involved. The study is designed similarly to a scoping review. It includes research articles published from 2005 to 2020 in which the goal was to examine elements of the SCT. The chosen studies were assessed through Critical Appraisal Skills Programme (CASP) checklists.

The SCT is a written test. Participants are presented with a clinical vignette accompanied by questions concerning the possible diagnostic steps. Each of the questions is supplemented by a new piece of information regarding the considered health issue. Depending on the chosen option, the SCT employs a 5-point or 3-point Likert scale to assess whether and to what extent the new piece of information influences further evaluation. For the purpose of this considerations, the 5-point Likert scale is used as it was proven to be appropriate for nonnovice learners.<sup>6</sup> Questions in SCT include 3 types of judgment: investigation, treatment, and diagnosis (Supplementary material).

Our target group includes physicians in their first year of post-graduate internship and residents. The SCT would be employed as part of the course commencing an obligatory 2-day emergency medicine placement for graduate medical doctors (the placement lasts 3 weeks).<sup>7</sup>

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**FIGURE 1** Relationship between key steps in the clinical reasoning process and the format of the test items in the Script Concordance Test (adapted from Lubarsky et al)<sup>6</sup>

Additionally, we strive to employ the SCT during the modular training summarizing the uniform course for physicians specializing in modular specialization programs. The course constitutes of 20 hours of laboratories including crucial topics in emergency medicine run in a simulation setting, preceded by 10 hours of lectures. The laboratories are conducted in groups of 8 to 10 participants, and lectures in groups of 20.

The main goal is to revise key clinical aspects of emergency medicine. During the training, participants are to integrate their knowledge to implement complex diagnoses and treatments of the most common emergency situations. That is the reason behind selecting the SCT as one of the assessment tools.

The SCT, as a formative tool, is planned to conclude the theoretical part to implement acquired knowledge in “uncertain situations” mimicking emergency department conditions in the most common acute situations.

Prepared sample questions apply to the topic of chest pain (Supplementary material). They include short scenarios with stimulating situations from clinical practice concerning patients with chest pain. All items in 3 types of judgment employ anchoring proposed by Fournier et al.<sup>8</sup> They have been reviewed by 4 other senior faculty members to ensure validity. The next step was to engage the emergency consultants. Ten senior emergency specialists were involved in the process, as it was a required number for a lower stake examination.<sup>6</sup> Emergency consultants provided their judgment on 3 questions. Based on these, the scores were calculated (Supplementary material).

**Results and discussion** The constructed assessment format aims at measuring reasoning in ambiguous or uncertain clinical conditions

in the daily practice of the emergency department (FIGURE 1). The scoring system, as described beforehand, constitute a challenging process. The scores are based on the judgment of senior consultants due to their extensive experience in the area. The SCT does not concur with the common test rule of a “correct answer,” as scoring is concluded on the basis of answers given by participants compared with those stipulated by members of a panel including experienced practitioners.<sup>9</sup> The involvement of experts with wide clinical expertise in the field remains a challenging issue in continuing medical education.

The SCT demonstrates several advantages. Participants tackle a genuine clinical case, demonstrating the ability to incorporate new data into information on the case. They can compare their reasoning with that of an expert. Additionally, the SCT goes beyond pure fact check, requiring logical thinking and knowledge application.<sup>10</sup>

Disadvantages of the SCT include the difficult assessment of its educational impact due to its novelty. Additionally, gathering an appropriate number of panel members to analyze all 26 questions required to ensure SCT’s reliability might prove problematic.<sup>9</sup> Therefore its form of a formative assessment might be better suited as it requires a lower number of emergency medicine consultants to validate the questions.

The SCT format reflects cognitive tasks carried out by clinicians in acute situations. When considering the Miller’s pyramid, SCT measures the second level of competence, “knows how.”

There is no pass / fail decision or grading scheme. The SCT aims to stimulate clinical reasoning and provide feedback on participants’ ability to combine acquired knowledge before implementing it into simulation scenarios. The SCT tests an aspect of clinical intuition which can be delivered in the distant learning environment.

Although new technologies can cause difficulties, they also create new possibilities in the current situation. Enabling continuous medical education with appropriate tools and didactic methods facilitate uninterrupted process of learning among crucial employees during the COVID-19 pandemic.

#### SUPPLEMENTARY MATERIAL

Supplementary material is available at [www.mp.pl/kardiologiapolska](http://www.mp.pl/kardiologiapolska).

#### ARTICLE INFORMATION

**CONFLICT OF INTEREST** None declared.

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