

AIMED AT ITCHEDD: A proof-of-concept study to evaluate a mnemonic-based approach to clinical reasoning in the emergency medical care educational setting

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Background. Mnemonics are used as memory aids for teaching, learning and practice in a variety of educational contexts and domains. Mnemonics are commonly used to assist in the recall of critical components of complex or important clinical processes. The AIMED AT ITCHEDD mnemonic was designed to assist students to recall and apply steps associated with a structured clinical decision-making process.

Objective. To obtain the views and opinions of a sample of educators and students regarding the perceived value of AIMED AT ITCHEDD.

Method. A prospective, purposive design was followed, making use of an online questionnaire that consisted of 18 Likert-type questions, together with areas allowing for open, written comments. A total of 47 responses were received. Quantitative data from the closed questions were descriptively analysed. Thematic analysis was conducted on the narratives provided to determine emerging themes.

Results. Despite concerns being raised relating to its length, AIMED AT ITCHEDD was seen as a valuable tool for clinical teaching, learning and practice by the majority of respondents.

Conclusion. As a process mnemonic, AIMED AT ITCHEDD is perceived as having the potential to guide both students and practitioners with the critical thinking and decision-making processes associated with patient assessment, diagnosis and management. Further research is required to assess and quantify the extent to which the application of AIMED AT ITCHEDD improves clinical performance.

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Mnemonic teaching and learning strategies have been described as systematic procedures aimed at enhancing memory and making information more meaningful.^[1] A mnemonic is an acronym created by taking the first letters of a list of words and using these to form a memorable phrase. It is thought that the use of mnemonics may develop and improve ways in which information is encoded, thereby making it easier to retrieve at a later stage.^[1]

Two basic types of mnemonics exist: those focused on remembering facts (fact mnemonics) and those focused on remembering rules and procedures (process mnemonics).^[2] Examples of medical mnemonics include history-taking and handover mnemonics, such as AMPLE, DeMIST,^[3] ASHICE,^[4] SBAR^[5] and CUBAN.^[3] Similarly, the DISSECT mnemonic represents a classification system that has been described as easy to assimilate and a memorable method of accounting for the critically important factors that influence contemporary decision-making for the management of aortic dissection.^[6] Clinical assessment and decision-making remain arguably two of the most important skills for all clinicians, and both involve complex abstract processes. This poses a challenge for health professions educators to teach and for students to master. The objective of the AIMED AT ITCHEDD mnemonic is to guide the student towards gathering, analysing, interpreting and acting on appropriate clinical information in a logical fashion.

Development of AIMED AT ITCHEDD

Development of the mnemonic followed a process of careful consideration and inclusion of the desirable characteristics of an ideal mnemonic: ease of memorisation, logical progression through steps or stages, guidance of decision-making to ensure completion of process and ease of assimilation. AIMED AT ITCHEDD requires envisaging a chief complaint as an 'itch'

that needs to be alleviated. Interventions are therefore aimed at adequately managing the chief complaint (an itch), leading to the complaint being resolved. Hence, the itch becomes 'itched'. The mnemonic has been designed to create novel and logical links that the student or practitioner can associate with and apply during the management of a clinical case. The AIMED AT ITCHEDD mnemonic is summarised in Table 1.

The AIMED component focuses on initiating a process of clinical reasoning, which has been described as gathering and comprehending data while recalling knowledge, skills and attitudes about situations as they unfold.^[7] The AT and ITCHEDD components of the mnemonic expand upon the initial phase of clinical reasoning. After analysis, information is put into a meaningful whole and applied to the new situation presented by the patient and their response to the treatment that is administered.^[7] The mnemonic was introduced in the first year of the Bachelor of Health Sciences in Emergency Medical Care programme at the University of Johannesburg, South Africa, in 2014.

Method

Study design

A cross-sectional, purposive design made use of an online questionnaire to gather data. A total of 47 responses were received, comprising 26 emergency medical care educators and 21 students.

Ethical approval

Ethical approval for the study was obtained from the University of Johannesburg's Faculty of Health Sciences Research Ethics Committee (ref. no. REC-01-125-2014).

Table 1. Summary of the AIMED AT ITCHEDD mnemonic

Letter	Definition	Explanation
A	Assess	Assess the patient and system/organ related to the chief complaint
I	Identify	Identify the potential cause for the chief complaint
M	Make sure	Confirm your provisional diagnosis using other tests
E	Evaluate	Evaluate all potential therapeutic and adverse effects of available options
D	Decide	Decide on the most appropriate treatment and rule out contraindications
A	Appropriate equipment	Ensure that you have all the appropriate equipment for the intervention
T	Time to prepare	Take time to prepare and set out all equipment for the intervention
I	Intervention performed	Carry out the intervention in a 'best practice' manner
T	Time to work	Give the intervention/treatment appropriate time to work
C	Check result	Perform an appropriate test to determine whether or not your intervention is having the desired effect
H	Happy or not	Are you satisfied that the intervention/treatment has had the desired effect?
E	Explore other options	If the result is unsatisfactory, what other options are available?
D	Decide	Decide which option is the most appropriate and start again
D	Don't forget	Don't forget to consider other potential causes or incorrect technique

Instrument

Data were collected using a purpose-compiled questionnaire that used the SoGoSurvey (SoGoSurvey Inc., USA; www.sogosurvey.com) online platform. It consisted of 18 Likert-type, restricted-response questions. The survey also afforded respondents an opportunity to provide additional information at the conclusion of the structured question responses.

Data analysis

Quantitative data were analysed and reported descriptively. Open-ended questions were read and reread by the investigators to familiarise themselves with the content. Thematic analysis formed the cornerstone of the analysis and specific attention was given to patterns and emerging themes.

Results

Educator responses

Opinions of the educators who took part in the survey were generally positive with regard to AIMED AT ITCHEDD. Almost all respondents (96%; $n=25$) considered a mnemonic to be a useful memory aid and indicated that a process mnemonic could be of assistance in the practical environment (92%; $n=24$). Most respondents (92%; $n=24$) considered the mnemonic logical and 62% ($n=16$) felt that it was easily remembered, while 84% ($n=19$) believed that the mnemonic was easy to learn and apply. The mnemonic was perceived as having the potential to improve the structure of task performance in both the simulated (84%; $n=22$) and clinical (81%; $n=21$) domains. The mnemonic was also perceived as having the potential to provide a foundation for adaption by the individual (92%; $n=24$), as well as being able to be used in the clinical environment by qualified practitioners to improve their practice (92%; $n=24$).

Analysis of the comments from the open-ended questions indicated two main themes. The first focused on the length of the mnemonic, with a number of respondents who felt that it was quite lengthy:

'... too many letters ...'
'... it is a long mnemonic ...'

We agree that AIMED AT ITCHEDD is longer than mnemonics that focus on specific components or associated steps in the patient management process. Its length reflects the difference from simple process mnemonics, as it encompasses multiple components of the entire patient management process.

The second theme focused on the potential value of AIMED AT ITCHEDD. A number of respondents provided positive comments on its potential:

'... I am keen to give this one a go ...'
'... the system really looks good ...'

Student responses

Similar to the educators' responses mentioned above, those of the students were generally positive regarding AIMED AT ITCHEDD. All respondents (100%; $n=21$) considered a mnemonic a useful memory aid and felt that a process mnemonic could be of assistance in the practical environment (100%; $n=21$). The mnemonic was considered logical by most respondents (95%; $n=20$), 86% ($n=15$) felt that it was easily remembered, and 86% ($n=15$) believed that it was easy to learn and apply. The mnemonic was seen as having potential to improve the structure of task performance in both the simulation (100%; $n=21$) and clinical (95%; $n=20$) learning environments. It was also perceived as having the potential to provide a foundation for adaption by the individual (100%; $n=21$), as well as being able to be used in the clinical environment by qualified practitioners to improve their practice (100%; $n=21$). It was interesting that 48% ($n=10$) indicated that the mnemonic might be difficult to remember.

Analysis of the comments from the open-ended questions heralded two themes that were identical to those of the educators' respondents. These were its usefulness and length, and included:

'... very helpful and logical but somewhat long ...'
'... this mnemonic is a great tool [to assist me] in a simulation assessment ...'
'... the mnemonic has helped me develop my own structure ...'

Discussion

Many of the respondents in this study felt that mnemonics were useful aids within the clinical practice domain. As a process mnemonic, AIMED AT ITCHEDD was seen as having the potential to guide both student and practitioner through critical thinking and decision-making processes associated with patient assessment, diagnosis and management.

AIMED AT ITCHEDD was acknowledged as being valuable and useful in guiding students through the critical thinking and decision-making processes. However, it was perceived as being relatively lengthy. The length of a mnemonic is often indicative of the complexity of the processes that

it aims to guide. Some mnemonics advocated in other domains are also considered lengthy; examples include FASTHUG-MAIDENS^[8] and A-A-B-B-C-C-D-D-E-E.^[9] We argue that AIMED AT ITCHEDD, although perceived as lengthy, is comprised of three words – each representing a ‘bite-sized chunk’.

We concede that there remain a number of factors that have the potential to influence clinical decision-making. These include the individual’s previous experiences, problem-solving, critical thinking and clinical reasoning abilities.^[7] The intention is that the maturing practitioner will not robotically follow AIMED AT ITCHEDD *ad infinitum*, but will over time adapt the mnemonic to best suit their own context and practice.

Study limitations and future research

The online survey evinced 47 responses from the emergency medical care domain, and as such the generalisability of these results and findings to the wider health science educator and population cannot be determined. The importance of clinical reasoning in the healthcare education sphere must not be under-emphasised. It is important to ascertain whether this method has the potential to develop critical thinking across other healthcare disciplines. The questionnaire did not assess whether use of AIMED AT ITCHEDD improved performance during simulated or actual patient assessment and management. This remains an area for future research, where the effectiveness of the mnemonic can be tested.

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