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Guided ChatGPT use and clinical reasoning retention in emergency medicine students

Submission date
02/08/2026

Recruitment status
No longer recruiting

Registration date
03/08/2026

Overall study status
Completed

Last Edited
04/08/2026

Condition category
Other

[_] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[_] Results
[_] Individual participant data
[X] Record updated in last year

Plain English summary of protocol
Background and study aims
Clinical reasoning is a core skill for emergency medicine doctors, but it is difficult to teach and assess. ChatGPT, an artificial intelligence chatbot, could help students structure their reasoning, but it is not known whether this help still benefits them once the tool is no longer available. This study aims to find out whether guided use of ChatGPT improves how well medical students document their clinical reasoning immediately afterwards and whether this benefit lasts 1 month later without the tool.

Who can participate?
Fifth- and sixth-year medical students undertaking a clinical rotation in emergency medicine or intensive care at Mohammed VI University Hospital of Marrakech

What does the study involve?
Participants are randomly assigned to one of two groups. Both groups attend a 30-minute session solving two simulated emergency medicine cases. One group receives guided assistance from ChatGPT while working through the cases, under supervision; the other group solves the same cases without any digital assistance. Immediately afterwards, all participants write up two new cases without help, and their reasoning is scored by assessors who do not know which group each participant belonged to. One month later, all participants complete the same exercise again, still without ChatGPT, to see whether any benefit from the tool has lasted.

What are the possible benefits and risks of participating?
There is no direct health risk, as the study uses only simulated clinical cases and does not involve real patients. Participants may benefit from additional practice with structured clinical reasoning, and participation has no effect on academic progression. For fairness, participants in the control group are offered access to a ChatGPT-assisted session after the end of the study.

Where is the study run from?
The Emergency Department of Ar-Razi Hospital, Mohammed VI University Hospital of Marrakech, Faculty of Medicine and Pharmacy, Cadi Ayyad University, Marrakech (Morocco)

When is the study starting and how long is it expected to run for?
April 2026 to May 2026

Who is funding the study?
Investigator initiated and funded

Who is the main contact?
Dr Hayate Errifaiy, h.errifaiy@uca.ac.ma

Contact information

Type(s)
Public, Scientific, Principal investigator

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Additional identifiers

Study information

Scientific Title
Effect of guided ChatGPT use on documented clinical reasoning and its retention among emergency medicine students compared to standard teaching: a randomized controlled trial

Acronym
GRACE (Guided Reasoning with AI in Clinical Emergency [education])

Study objectives
1. To ascertain whether guided ChatGPT use improves the quality of documented clinical reasoning (assessed using the Revised-IDEA score) among emergency medicine students immediately after a structured clinical reasoning exercise, compared with no assistance.
2. To ascertain whether this improvement, if present, persists one month later when clinical reasoning is reassessed under unassisted conditions.

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 09/03/2026, Marrakech University Hospital Ethics Committee (Marrakech University Hospital Center, Marrakech, 40080, Morocco; +212 (0)58362246; aitbatahar@yahoo.fr), ref: 046 /2026

Primary study design
Interventional

Allocation
Randomized controlled trial

Masking
Open (masking not used)

Control
Active

Assignment
Parallel

Purpose
Educational/training

Study type(s)

Health condition(s) or problem(s) studied
Medical education — clinical reasoning skills (emergency medicine)

Interventions
Participants are randomised 1:1 to one of two parallel groups (30 participants per group), using a simple, unrestricted allocation sequence with no stratification or blocking. The sequence is generated and held by an independent investigator not otherwise involved in enrolment, intervention delivery, or outcome assessment and concealed using sequentially numbered, opaque, sealed envelopes opened by the enrolling investigator only at the time of each participant's inclusion.

Both groups complete a single 30-minute session solving two simulated emergency medicine clinical cases (chest pain and respiratory distress) of intermediate complexity, identical for both arms. In the intervention group, participants have guided access to ChatGPT (GPT-4o, OpenAI) during the session to help structure their clinical reasoning, generate diagnostic hypotheses, and prioritise clinical elements, with standardised instructions not to copy the tool's answers but to formulate their own reasoning; investigators provide no pedagogical input beyond ensuring protocol adherence. In the control group, participants solve the same cases without any digital assistance.

Immediately after the session (T0), all participants individually solve, in writing and without assistance, two further standardised cases distinct from those used in the session. One month later (T1), a retention assessment is performed under the same unassisted conditions, using two new cases of comparable complexity, with no access to ChatGPT for either group. Participants in

the intervention group additionally complete a 13-item satisfaction questionnaire at the end of the session. Total participation lasts approximately 1 month per participant, from the intervention session to the final follow-up assessment.

Intervention Type
Behavioural

Primary outcome(s)
1. Documented clinical reasoning quality measured using the total Revised-IDEA (R-IDEA) score, scored independently by two blinded raters at T0 (immediately after the intervention session) and T1 (1 month after the intervention session, under unassisted conditions)

2. Retention of documented clinical reasoning measured using the total R-IDEA score, rated by the same two blinded assessors at T0 (immediately after the intervention session) and T1 (1 month after the intervention session, under unassisted conditions)

Key secondary outcome(s)
1. Participants' perceived usefulness, decisional confidence and motivation regarding ChatGPT use (intervention group only) measured using 13-item, 5-point Likert-type satisfaction questionnaire at T0 (immediately after the intervention session)

Completion date
30/05/2026

Eligibility

Key inclusion criteria
1. Fifth- or sixth-year medical students
2. Undertaking a clinical rotation in emergency medicine or intensive care
3. Provided written, free and informed consent

Healthy volunteers allowed
Yes

Age group
Adult

Lower age limit
18 Years

Upper age limit
60 Years

Sex
All

Total final enrolment
60

Key exclusion criteria

1. Refusal to participate
2. Prior participation in the pilot study

Date of first enrolment
12/04/2026

Date of final enrolment
22/04/2026

Locations

Countries of recruitment
Morocco

Sponsor information

Organisation
Cadi Ayyad University

ROR
https://ror.org/04xf6nm78

Funder(s)

Funder type

Funder Name
Investigator initiated and funded

Results and Publications

Individual participant data (IPD) sharing plan
The anonymised datasets generated and/or analysed during this study, the study protocol, the R-IDEA scoring guide (adapted and translated version), and the simulated clinical case vignettes are available from the corresponding author (h.errifaiy@uca.ac.ma) on reasonable request.

IPD sharing plan summary
Available on request