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How different ways of assigning responsibility affect doctors when using artificial intelligence to make diagnoses

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Registration date 20/06/2026	**Overall study status** Completed	[_] Statistical analysis plan [_] Results
Last Edited 19/06/2026	**Condition category** Other	[_] Individual participant data [X] Record updated in last year

Plain English summary of protocol

Background and study aims

Doctors are starting to use artificial intelligence, often called AI, to help make medical diagnoses. Even when AI is used, doctors still have to decide how much responsibility they personally feel for the final decision. This study looks at whether different ways of assigning responsibility between doctors and AI change how accurate doctors are and how well they judge their own confidence. The aim is to find out which approach may lead to safer and higher quality diagnoses when AI is used.

Who can participate?

The study is open to hospital doctors who are currently practising or have recent clinical experience. Participants must be aged 18 years or older, able to read and understand the study materials, and able to complete an online study on their own.

What does the study involve?

Participants take part in an online study session. They are asked to review a series of short patient case descriptions, known as clinical vignettes, and make diagnostic decisions with the help of an AI tool. Doctors are randomly assigned to one of four groups, each given different information about who is responsible for the final diagnosis. After each case, participants also rate how confident they are in their decision. The study takes place in a single session and does not involve real patients.

What are the possible benefits and risks of participating?

There are no direct medical benefits to participants. However, the study may help improve how AI is safely used in healthcare in the future. The risks are minimal and mainly involve the time spent completing the study and possible mild frustration when working through the tasks. No clinical decisions about real patients are involved.

Where is the study run from?

The study is run by researchers at the School of Business, Sun Yat-sen University in Guangzhou, China, and is conducted online.

When is the study starting and how long is it expected to run for?
December 2025 to January 2026.

Who is funding the study?
Investigator initiated and funded.

Who is the main contact?
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Contact information

Type(s)
Public, Scientific, Principal investigator

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Study information

Scientific Title
Impact of responsibility allocation structures on diagnostic quality in AI-assisted diagnosis: an individually randomised four-arm parallel-group controlled experiment

Study objectives
This study aims to examine how different responsibility allocation structures between doctors and artificial intelligence affect diagnostic quality in AI-assisted diagnosis. Specifically, it compares the effects of dynamic responsibility, full responsibility, shared responsibility, and a control condition on doctors' diagnostic accuracy and confidence calibration during clinical vignette-based diagnostic tasks.

Ethics approval required
Ethics approval required

Ethics approval(s)
approved 27/12/2025, Medical Ethics Committee of the School of Business, Sun Yat-sen University (School of Business, South Campus, Guangzhou Campus, Sun Yat-sen University, 135

Xingang West Road, Guangzhou, 510275, China; +86 020-31061569; glxy@mail.sysu.edu.cn), ref: BS20251227

Primary study design
Interventional

Allocation
Randomized controlled trial

Masking
Open (masking not used)

Control
Active

Assignment
Parallel

Purpose
Diagnostic

Study type(s)

Health condition(s) or problem(s) studied
Diagnostic decision-making quality in AI-assisted diagnosis, with a focus on how different responsibility allocation structures affect doctors' diagnostic accuracy and confidence calibration.

Interventions
Participants are practising hospital doctors randomly assigned to one of four parallel groups: dynamic responsibility, full responsibility, shared responsibility, or control. All participants complete the same set of AI-assisted clinical vignette diagnostic tasks using the same artificial intelligence tool. The intervention differs only in the responsibility framing provided to participants.

In the dynamic responsibility group, responsibility cues are embedded at key decision points where the doctor's judgement diverges from the artificial intelligence recommendation, prompting active verification and reconsideration before a final decision is made. In the full responsibility group, participants are informed that they bear sole responsibility for the final diagnostic decision and its consequences. In the shared responsibility group, participants are informed that responsibility is shared equally between the doctor and the artificial intelligence system. In the control group, no specific responsibility framing is provided.

The study uses an individually randomised, four-arm, parallel-group controlled experimental design. The main purpose is to assess whether responsibility allocation functions as a behavioural intervention that changes diagnostic performance in artificial intelligence-assisted decision-making.

The study involved a single online experimental session. The total duration of the intervention was approximately 10 minutes for participants in all study arms. Participants completed the clinical decision-making tasks and the post-task questionnaire during the same session. There

was no subsequent follow-up period.
Participants were randomly assigned in a 1:1:1:1 ratio to one of four study arms: the dynamic responsibility allocation group, the full human responsibility group, the equal responsibility group, or the control group. Randomisation was implemented automatically through the Credamo online research platform using a computer-generated random allocation procedure. Neither the participants nor the researchers responsible for recruitment could manually select or alter the group allocation.

Intervention Type
Behavioural

Primary outcome(s)
1. Diagnostic accuracy of final clinical diagnosis measured using Proportion of correct final diagnoses across AI-assisted clinical vignette diagnostic tasks, derived from comparison of each participant's final diagnosis with a predefined reference diagnosis in the study vignette dataset at Immediately after completion of the AI-assisted clinical vignette diagnostic tasks during the study session

2. Confidence calibration in diagnostic decision making measured using Calibration between participant-reported confidence ratings following each clinical vignette and diagnostic correctness, calculated using confidence ratings collected via a study-specific post-vignette confidence question and compared with final diagnostic accuracy across all tasks at Confidence ratings collected immediately after each final diagnostic decision; calibration calculated after completion of all AI-assisted clinical vignette diagnostic tasks during the study session

Key secondary outcome(s)

Completion date
31/01/2026

Eligibility

Key inclusion criteria
1. Verified hospital doctors with current or recent clinical practice experience
2. Aged 18 years or above
3. Able to read and understand the study materials and provide informed consent
4. Able to complete the online experimental tasks independently
5. Willing to participate in an AI-assisted diagnostic decision-making study

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
18 years

Upper age limit
65 years

Sex
All

Total final enrolment
96

Key exclusion criteria
1. Individuals who are not licensed hospital doctors or practising physicians
2. Individuals younger than 18 years of age
3. Inability to read or understand the study materials or provide informed consent
4. Inability to complete the online experimental tasks independently
5. Previous participation in the same experiment
6. Failure to complete the assigned diagnostic vignette tasks or provision of unusable data

Date of first enrolment
01/12/2025

Date of final enrolment
30/01/2026

Locations

Countries of recruitment
China

Sponsor information

Organisation
School of Business, Sun Yat-sen University

Funder(s)

Funder type

Funder Name
Investigator initiated and funded

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary

Not expected to be made available

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Protocol file			22/04/2026	No	No