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Reducing errors made by clinicians when making a diagnosis with an electronic decision support

Submission date	Recruitment status	[ ] Prospectively registered
09/11/2020	No longer recruiting	[ ] Protocol
Registration date	**Overall study status**	[ ] Statistical analysis plan
13/11/2020	Completed	[ ] Results
Last Edited	**Condition category**	[ ] Individual participant data
12/11/2020	Other	[ ] Record updated in last year

Plain English summary of protocol

Background and study aims
This study will investigate an electronic decision support system (ISABEL) and its ability to reduce diagnostic errors made by clinicians. These systems use data on the symptoms that patients may present to a clinician with, and short keywords, to suggest possible diagnoses to clinicians. The ability of an electronic decision support (EDS) to reduce diagnostic error is likely to depend on the stage in the diagnostic process at which it is used, the degree of expertise of the clinician using the EDS, and its acceptability to the user.

This study aims to identify whether the use of electronic differential support will improve the diagnostic accuracy of clinicians, whether improvements will be most marked among students compared with residents and practicing physicians, and whether improvements will be most marked when the electronic differential support is used early in the diagnostic process.

Who can participate?
This study will recruit medical students, residents, and practicing physicians.

What does the study involve?
Participants will be invited to complete 16 cases on an online platform providing a list of possible diagnoses at three timepoints during the case presentation as more information is provided. Participants will be randomly allocated to either use the EDS early or late in the diagnostic process for each case.

What are the possible benefits and risks of participating?
There is minimal risk to participants anticipated.

Where is the study run from?
McMaster University (Canada)

When is the study starting and how long is it expected to run for?
From December 2017 to June 2020

Who is funding the study?
The PSI Foundation (Canada)

Who is the main contact?
Dr Matthew Sibbald
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Contact information

Type(s)
Scientific

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Additional identifiers

EudraCT/CTIS number
Nil known

IRAS number

ClinicalTrials.gov number
Nil known

Secondary identifying numbers
Nil known

Study information

Scientific Title
Enhancing Clinicians' diagnostic Hypotheses with Electronic Differential Diagnosis support (ECH-EDS)

Acronym
ECH-EDS

Study objectives

1. Use of electronic differential support will improve the diagnostic accuracy of clinicians
2. Improvements will be most marked among students compared with residents and practicing physicians
3. Improvements will be most marked when the electronic differential support is used early in the diagnostic process

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 06/05/2019, Hamilton Integrated Research Ethics Board (293 Wellington Street North, Suite 102, Hamilton, ON Canada L8L 8E7; +1 905.521.2100; no email address available), ref: 4945

Study design
Multicenter interventional randomized controlled trial

Primary study design
Interventional

Secondary study design
Randomised controlled trial

Study setting(s)
Internet/virtual

Study type(s)
Diagnostic

Participant information sheet
No participant information sheet available

Health condition(s) or problem(s) studied
Medical diagnosis

Interventions
Students, residents, and practicing physicians will be recruited. Each group will be randomized in a 1:1 ratio to receive access to electronic differential diagnosis support early (after the chief complaint) or late (after all information is available) while solving 16 medical cases on an online platform.

Intervention Type
Behavioural

Primary outcome measure
1. Correct diagnosis present is measured as either present or absent (1 or 0) within the differential diagnosis, before and after use of the electronic differential support

Secondary outcome measures
1. Number of diagnostic suggestions before and after use of the electronic differential support
2. Priority of the correct diagnosis on the list before and after use of the electronic differential support

Overall study start date
22/12/2017

Completion date
22/06/2020

Eligibility

Key inclusion criteria
Medical students, residents, or practicing physicians

Participant type(s)
Health professional

Age group
All

Sex
Both

Target number of participants
180

Total final enrolment
190

Key exclusion criteria
Does not meet inclusion criteria

Date of first enrolment
01/05/2020

Date of final enrolment
22/06/2020

Locations

Countries of recruitment
Canada

Study participating centre
McMaster University
1200 Main St West
Hamilton
Canada
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Sponsor information

Organisation
McMaster University

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Sponsor type
University/education

Website
http://www.mcmaster.ca/

ROR
https://ror.org/02fa3aq29

Funder(s)

Funder type
Charity

Funder Name
Physicians' Services Incorporated Foundation

Alternative Name(s)
PSI Foundation, PSI

Funding Body Type
Private sector organisation

Funding Body Subtype
Trusts, charities, foundations (both public and private)

Location
Canada

Results and Publications

Publication and dissemination plan
Planned publication in a high impact peer reviewed journal.

Intention to publish date
22/06/2021

Individual participant data (IPD) sharing plan
The datasets generated and/or analysed during the current study during this study will be included in the subsequent results publication

IPD sharing plan summary
Other