



eCREST tool guide

Welcome to the eCREST tool.

This interactive application replicates some aspects of a consultation. It interprets the doctor's questions and plays an appropriate video clip for the patient's response. In the end it provides useful feedback and a Certificate of Completion to students. This user guide gives some hints and tips to help you get the most from the system.

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Computer requirements

In order for the application to display and run correctly your computer will need:

All devices: An internet connection (standard ADSL/broadband as a minimum)
Flash player or an updated browser
Speakers/earphones (i.e. you can hear sound)

Internet Browser: Internet Explorer 9 or above
Mozilla Firefox 3.5 or above
Google Chrome
Apple Safari 5.1+
Opera 12.1+

The Study

There are 3 stages to this study

- a) 1st stage (starting when you register and lasting 4 days until you do all 3 patient cases)
- b) 2nd stage (completing a survey you will receive in your email 4 days after your teaching day)
- c) 3rd stage (completing a 4th case and a survey you will receive in your email 1 month after the 1st stage).

A) 1st STAGE OF STUDY

Getting started

Step1. Registration

Follow the instructions in the registration email and submit all necessary information. You will be asked to create a username and password.

Step 2. Logging on

Follow the link provided in your registration email. You should see this page:

Welcome to the electronic Clinical Reasoning Educational Simulation Tool

Policy Research Unit in Cancer Awareness, Screening and Early Diagnosis



Collaboration for Leadership in
Applied Health Research and Care
North Thames



Please use the form below to login. If you do not have an account, you can [register for one here](#).

Username

Password

Login

Forgotten your password?

[Reset Password](#)

Enter your username and password you selected at registration, and click the button to log into the application. If you have forgotten your password, you can click on the 'Reset Password' link below the login form, you will then need to enter your username and an email will be sent with further instructions. You can also click on 'contact support' (circled above) to get in touch with us, or email dahr.ecrest@ucl.ac.uk. You can also access this manual by clicking 'user manual', and further information about the study by clicking 'information sheet'.

Step 3. Information Sheet

The first time you login you will be able to read the information sheet and consent to participate in this study by clicking 'I agree'.

Information Sheet for UCL medical students in Research Studies

If you would like a copy of this information sheet, you can download a copy from this link - [Information Sheet](#). At any time you can also download a copy from the navigation bar link - [Information Sheet](#).

This study has been approved by the UCL Research Ethics Committee (Project ID Number): **9605/001**

We would like to invite medical students in their final year of study to participate in this research project.

Details of Study

What is the purpose of the study?

Diagnostic error is estimated to affect around 5% of patients and is thought to be mostly caused by errors in doctors' clinical reasoning skills. By clinical reasoning skills we mean the thought processes you use to make clinical decisions, such as making a diagnosis and a management plan. Previous research has suggested that online patient simulations could help to teach medical students clinical reasoning. Online patient simulations are a virtual technology that simulate a real clinical encounter between a patient and a doctor and requires the 'doctor' to manage that 'patient' as they would in real life. The aim of this study is to explore how feasible the online patient simulation tool we have developed is, and to see whether the tool can improve clinical reasoning skills, using a feasibility randomised controlled trial.

Step 4. Welcome page

The welcome page contains the learning objectives of the tool. Once you familiarize yourself with the objectives you will need to click the 'pre-learning survey' link at the bottom.

Cases completed: 0/3

Pre survey

Choose patient

Virtual case

Decision

Feedback

Reflection

Post survey

Welcome

Aim

The aim of this course is to improve your diagnostic ability in clinical practice by developing your clinical reasoning skills.

This module will guide you through a series of patient cases in a General Practice. By completing these cases, you will hopefully achieve the following learning objectives.

Objectives

After you have completed the cases in eCREST you should be able to:

1. Take a focused history of patients presenting with common respiratory symptoms in General Practice
2. Gather all necessary information from the patient in order to derive your differential diagnoses
3. List the red flag symptoms that needed to be elicited during these consultations
4. Prioritise your differential diagnoses and make a management plan based on clinical information gathered (medical records, history taking and examination)
5. Develop your initial differential diagnoses by adapting them in a flexible manner according to new information that comes to light as the consultation progresses
6. List common respiratory conditions encountered in general practice, investigations required, management of these and follow-up requirements

Before you start working on the cases please complete a short [Pre-Learning Survey](#)

Step 5. Pre-learning survey

Before being able to go through the online consultations you need to respond to a survey aiming to test your knowledge of respiratory and related symptoms and assess your clinical reasoning skills. Read the instructions and respond to a series of questions. Once

The consultation

Step 7. Patient introduction

Then you will listen to the patient explaining their problem (presenting complaint). Once you have clicked on the 'do case' you will start a simulated consultation with the patient.

The screenshot shows the eCREST interface with a 'Patient Introduction' window open. The window displays a video of an elderly man, John Roberts, and a list of patient information. The 'Do case' button is highlighted with a red box.

eCREST User manual Information Sheet Contact support Exit

Cases completed: 0/3

Pre survey Choose patient

Reflection Post survey

You are a junior doctor on rota and you have been asked to invite him in for a consultation.

The patients will first explain their problem (presenting complaint). Once you click on a patient you will start a simulated consultation with the patient.

After the consultation, you will be asked to provide differential diagnoses, think about differential diagnoses, and decide on how to manage the patient. You will have a record of the questions you asked, and feedback on your performance.

John Roberts

Taru Gandhi

Patient Introduction

Patient information

- Name: John Roberts
- Gender: Male
- Age: 83 (02/02/1934)
- Occupation: Accountant (retired)
- Ethnicity: White British

Medical history

Medication history

Lifestyle

Patient notes

Close **Do case**

You have several options to find out information about this patient. However, before you proceed with asking questions and performing examinations you will be required to rate how worried you are for the patient and why. Also you will need to provide a list of 5 differential diagnoses from a dropdown menu and this step will be repeated a number of times throughout the consultation. You can remove a differential by clicking the button on its right and you can reorder by clicking the differential and dragging it up or down.

Initial questions ×

a) From this information, how concerned are you about the case? (rank 1-5 from 'least concerned' to 'very concerned')

1 2 3 4 5

b) Why?

c) What do you think is wrong with John Roberts? (rank the top 5 from 'most likely' to 'least likely')

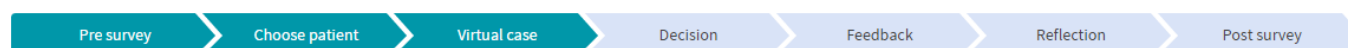
You can reorder and remove existing choices, and you can add new diagnoses using the dropdown below.

+	1. Asthma	↑	-
+	2. Acute Lower Respiratory Tract Infection/Pneumonia		-
+	3. Bronchiectasis	↓	-

Step 8. Asking questions

After providing your initial assessment you will be directed to the 'virtual case' screen. Here you will be able to consult with the patient in blocks of 6 questions after which you will be asked to provide your assessment and your 5 differential diagnoses and why they have changed or remained the same.

Cases completed: 0/3



Virtual Case

Please select the first questions that you would like to ask the patient from the squares below. You may ask as many questions as you like. Each time you ask 6 questions, you will be asked to respond to a few questions yourself. These 6 can come from any square. You may use the notepad at the bottom of the screen to take notes. When you have gathered enough information, please click on the 'Review diagnosis' button to examine the patient.

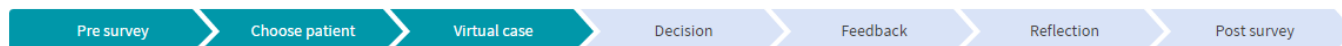
[Review diagnosis](#)

You can also access the patient's electronic records.

[Electronic patient records](#)[History of Presenting Complaint](#)[The Patient Perspective](#)[Background Information](#)

You are able to choose from a number of questions which are divided into three boxes: 'history of presenting complaint', 'the patient perspective' and 'background information'. When you click a box you will get a list of questions. You are also able to access the patients' electronic records and take notes by clicking the 'notepad' at the bottom of the screen to help you with your decision.

Cases completed: 0/3



Virtual Case

Please select the first questions that you would like to ask the patient from the squares below. You may ask as many questions as you like. Each time you ask 6 questions, you will be asked to respond to a few questions yourself. These 6 can come from any square. You may use the notepad at the bottom of the screen to take notes. When you have gathered enough information, please click on the 'Review diagnosis' button to examine the patient.

[Review diagnosis](#)

You can also access the patient's electronic records.

[Electronic patient records](#)
[History of Presenting Complaint](#)
[The Patient Perspective](#)
[Background Information](#)

The Patient Perspective

Are you concerned?

What do you think might be causing this?

[Open notepad](#)

Every time you ask a question that question is highlighted in blue and a short video will play. Some questions may enable follow up questions. These will appear directly under the asked question with arrows beside the question.

[Electronic patient records](#)
[History of Presenting Complaint](#)
[The Patient Perspective](#)
[Background Information](#)


Background Information

Do you or does anyone in your household smoke?

Does your home have stairs? Are you still able to walk up them?

Have your bowel habits changed?

Have you had any weight loss?

How is your appetite?

→ Has your appetite loss been gradual or rapid?

→ How much are you eating?

→ Is it every meal you are eating decreased amounts?

→ Have you been on a diet?

Have you noticed yourself to be more tired than usual?

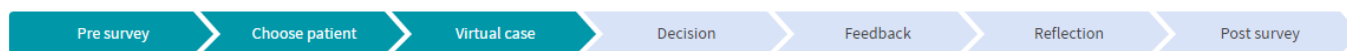
Notepad

Type your notes here...

Each time you reach the 6-questions limit the 'review diagnosis' button will become red and you will need to click it to see your previous differentials; you can make changes to

them if you wish to. You will then be able to ask further questions if you need or wish to. Remember that you don't need to reach the 6-questions limit.

Cases completed: 0/3



Virtual Case

Please select the first questions that you would like to ask the patient from the squares below. You may ask as many questions as you like. Each time you ask 6 questions, you will be asked to respond to a few questions yourself. These 6 can come from any square. You may use the notepad at the bottom of the screen to take notes. When you have gathered enough information, please click on the 'Review diagnosis' button to examine the patient.

Review diagnosis

You can also access the patient's electronic records.

Electronic patient records

History of Presenting Complaint

The Patient Perspective

Background Information

Diagnosis ×

Your previous top 5 choices:

- Asthma
- Acute Lower Respiratory Tract Infection/Pneumonia
- Bronchiectasis
- COPD
- Foreign body aspiration

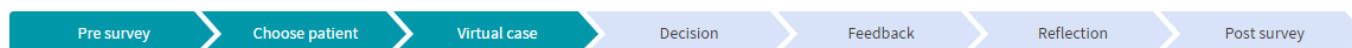
Has your top differential diagnosis changed? Yes No

Continue

Step 9. Examining the patient

When you finish with asking the patient questions you will be able to click on the 'No I don't want to ask any further questions' button and proceed with examining the patient. Here you will be able to select to see the results of various physical examinations of the patient or see some bedside test results. These will appear in red text next to your selection. You can select a maximum of 8 items.

Cases completed: 0/3

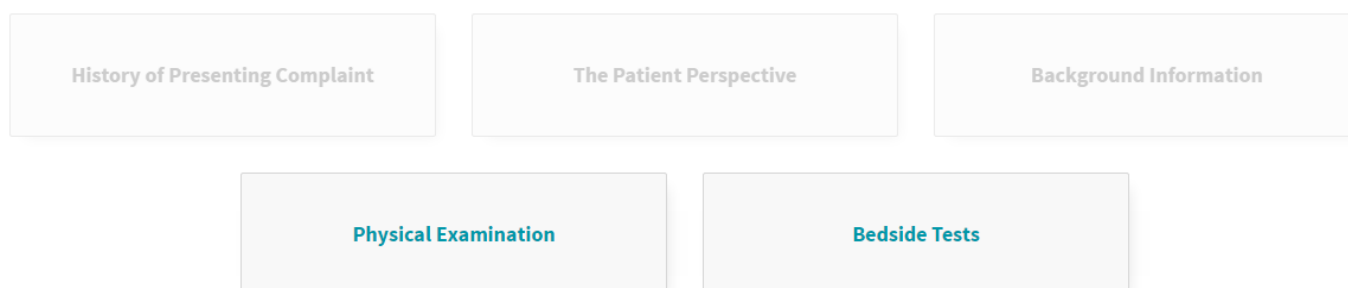


Virtual Case

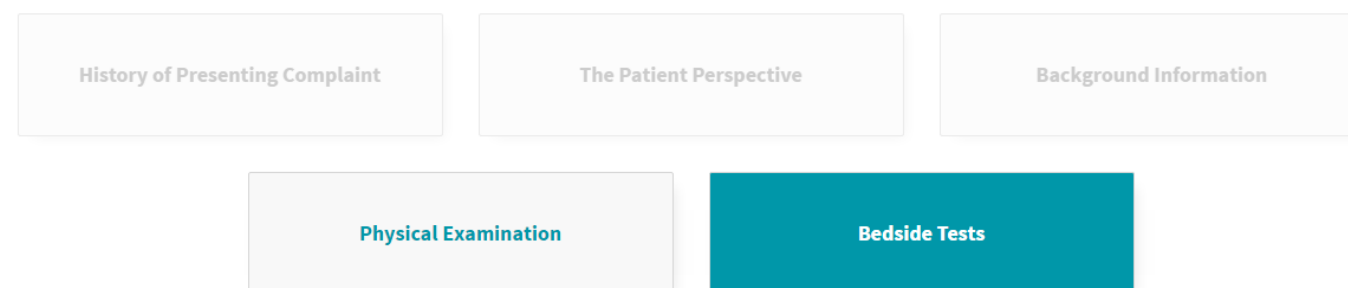
You may now proceed with the patient's examinations and bedside tests. You may select a maximum of 8 items. These 8 can come from either square.

[Review diagnosis](#)

Electronic patient records



If for example, you want to see the patient's blood pressure, you click on the bedside tests square and select 'blood pressure'. You will then see the results in red on the left.



130/80 mmHg

Bedside Tests

Blood glucose

Blood pressure

Cultures

Height

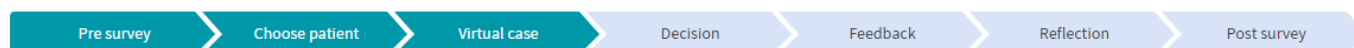
Peak flow

Temperature

Once you reach the 8-items limit the review diagnosis button will become red. Remember that you don't need to reach the 8-items limit.

Before you reach a final decision you are allowed to use a maximum of 2 items which can be a question, a physical examination or bedside test. Thus, in the next screen you make a selection from any of the 5 squares. You then click the 'proceed to clinical impression and management' button.

Cases completed: 0/3



Virtual Case

Is there any other information about the patient that you need? If so, you can use a maximum of 2 items. This can be a question to the patient, an examination or a bedside test. Please note that these will be your last questions, examinations or bedside tests.

Proceed to clinical impression and management

Electronic patient records

History of Presenting Complaint

The Patient Perspective

Background Information

Physical Examination

Bedside Tests

Consultation final note

Step 10. Giving your differential diagnosis

Enter your final impressions of the patient's diagnosis by viewing your latest list. You can reorder the list, remove, or add a differential. Then enter the reason why the list changed or remained the same in the open space box below. If you want to go back and check over any of the information you have gathered from the patient, you can go back to the virtual case by selecting the 'return to virtual case' button in top left corner of the screen. You will not be allowed to ask any new questions but you can review previously asked questions. Select the next button on the virtual case screen to return to the consultation final note page.

Pre survey

Choose patient

Virtual case

Decision

Feedback

Reflection

Post survey

Consultation Final Note

[← Return to virtual case](#)

Explanation and planning

a) What do you think is wrong with John Roberts (rank the top 5 from 'most likely' to 'least likely')?

You can reorder and remove existing choices, and you can add new diagnoses using the dropdown below.

- 1. Acute Lower Respiratory Tract Infection/Pneumonia -
- 2. Bronchiectasis -
- 3. Asthma -
- 4. Foreign body aspiration -
- 5. Gastro-oesophageal reflux disease -

b) Why has your top 5 differential diagnosis changed or remained the same?

Step 11. Making a management plan and closing the session

In the next box enter how you would propose to manage the patient. First, choose what test(s) you would like to arrange for the patient and provide a rationale in the box below. You can choose more than one test. If you choose certain tests like blood tests a follow-up question will ask you what blood tests you would like to order (see for example the photo below). Finally, indicate how you would like to arrange a follow-up using a dropdown menu.

Note that the case cannot be completed until you have given both a most likely diagnosis and a management plan. Once you completed all the fields click the 'finish' button to receive feedback.

c) What further test(s) would you like to arrange for John Roberts?

-

What blood test would you order?

Why have you chosen this/these test(s)?

Closing the session

d) How would you like to arrange a follow-up for John Roberts?

Step 12. Feedback

When you have successfully completed a case you will receive tailored feedback. First, you can download a PDF outlining all the decisions you have made (i.e. questions you asked) and how your differentials have changed and why.

Feedback

Now have a look at your actions when you were consulting this patient in the PDF below. You can save this to read later. You can also access relevant guidelines for further reading using the links below.

DOWNLOAD RESULTS

Video Feedback

Please click on the videos below to watch some feedback from a GP and GP trainee.



Introduction

Feedback for the differentials you selected

Feedback for the differentials these clinicians have prioritized but you did not select

Feedback for the other diagnoses

Closing remarks

The PDF will look like this:

Your Consultation



Name: John Roberts
Age: 83
Gender: Male
Ethnicity: White British
Occupation: Accountant (retired)

Initial Assessment

Concern: 3/5
Why?: csdas
Diagnoses: 1. Acute Lower Respiratory Tract Infection/Pneumonia
2. Bronchiectasis
3. Asthma
4. Foreign body aspiration
5. Gastro-oesophageal reflux disease

Step 1

Questions Asked:

The Patient Perspective

- Are you concerned?
- What are you expecting to happen?

History of Presenting Complaint

- Have you coughed up blood?
- Have you had a fever?

Background Information

- How is your appetite?
- Does your home have stairs? Are you still able to walk up them?

Diagnoses:

Diagnoses Changed?: No

Diagnoses: 1. Acute Lower Respiratory Tract Infection/Pneumonia
2. Bronchiectasis
3. Asthma
4. Foreign body aspiration
5. Gastro-oesophageal reflux disease

Also, as you can see in the photo at the top of this page, you will receive tailored feedback in the form of videos. An introductory video will provide an overview of the case by an expert GP. Then, you will get feedback videos by a GP trainee on the differentials you selected, the differentials these clinicians have prioritised but you did not select and on the rest of the differentials. Then, you can watch a summary video with closing remarks by the expert GP. When you click for example on a differential you will get the relevant video on the left and a 'take home' message underneath.

Please click on the videos below to watch some feedback from a GP and GP trainee.



Take-Home Message

Cough variant asthma is a possibility, but unlikely as a first presentation at this age.

Introduction

Feedback for the differentials you selected

Acute Lower Respiratory Tract Infection/Pneumonia

Asthma

Bronchiectasis

COPD

Foreign body aspiration

Feedback for the differentials these clinicians have prioritized but you did not select

Feedback for the other diagnoses

Closing remarks

When you have watched all the videos you need you can also see a list of further resources to read more about the evidence and guidelines behind each case. When you click 'go to waiting room' you will be taken back to the waiting room where you can see your next patient. By clicking on a completed case you can review your actions and feedback, as well as view the responses for all the questions you didn't ask. When you have completed your third and final case and get to the feedback page, you will see the button 'next' instead of 'go to waiting room' which will take you to the My Learning page.

Cough variant asthma is a possibility, but unlikely as a first presentation at this age.

Feedback for the other diagnoses

Closing remarks

Relevant Guidelines

- NICE CKS cough, June 2015. <http://cks.nice.org.uk/cough>
- NICE Suspected Cancer; recognition and referral, June 2015 <https://www.nice.org.uk/guidance/ng12?unlid=9874814692015129115552>
- BTS Guidelines Recommendations for the management of cough in adults, 2006 <https://www.brit-thoracic.org.uk/document-library/clinical-information/cough/cough-guidelines/recommendations-for-the-management-of-cough-in-adults/>
- Improve Diagnosis in Medicine's clinical reasoning toolkit: <http://www.improvediagnosis.org/page/ClinicalReasoning>
- Proposed General Checklist for Diagnosis (Ely, Graber and Croskerry, 2011; Quality Improvement)

NEXT

Step 13. My Learning page

One of the medical CPD requirements is to be reflective. The eCREST tool will help you to reflect on what you have learnt and what might you do differently. You will be able to respond to a number of questions in open-text boxes. Please note that this part is not mandatory and you can click the 'submit/next' button.

My Learning

In the boxes below please reflect on your personal learning objectives.

Please also keep in mind how and whether the tool helped you to achieve its proposed learning objectives:

1. Take a focused history of patients presenting with common respiratory symptoms in General Practice
2. Gather all necessary information from the patient in order to derive your differential diagnoses
3. List the red flag symptoms that needed to be elicited during these consultations
4. Prioritise your differential diagnoses and make a management plan based on clinical information gathered (medical records, history taking and examination)
5. Develop your initial differential diagnoses by adapting them in a flexible manner according to new information that comes to light as the consultation progresses
6. List common respiratory conditions encountered in general practice, investigations required, management of these and follow-up requirements

What do you think you did well when working through these clinical cases?

Has using eCREST highlighted any gaps in your knowledge/skills and if so how will you try and improve your knowledge/skills?

You will then have completed the first stage of the study. Please check your emails as you will very shortly receive an email with the next stage. You will be able to download your reflections on the Thank You page when you have completed all 3 stages of the study.

B) 2nd STAGE OF STUDY

After submitting your reflections in the My Learning page, you will shortly receive an email with the second part of eCREST. Please follow the link in the email and complete the survey which is similar to the one you did before completing the cases. This will help us to evaluate the use of the tool. The survey will contain questions on respiratory medicine, your clinical reasoning skills and a few questions to help us refine eCREST for the future. Please note that you will receive the correct responses to the knowledge questions at this

When you have done this, you will have completed the 2nd stage of the study.

C) 3rd STAGE OF STUDY

One month after completing the 1st stage of the study, you will be sent an email by eCREST. Please follow the link which will provide you with a 4th case. As a result you will need to go through **steps 2, 6-12** above. When you get to the feedback page and click 'next' you will be directed to the My Learning page and then to the post-learning survey. After submitting your responses you will be directed to the Thank You page. Here you will be able to download your reflections from the My Learning page to use for your CPD, as well as a Certificate of Completion with your name and University signed by the Department of Applied Health Research.

Trouble-shooting: frequently asked questions

I have forgotten my password.

Click on the 'Reset Password' link underneath the login form. On this page enter your username and you will receive an email with further instructions.

I don't know what my username is.

This is stated in your registration email. If you remain uncertain then contact us (by clicking 'contact support' or by emailing dahr.ecrest@ucl.ac.uk directly).

My screen does not look like the pictures in the help file or video.

eCREST will change depending on the size of your screen, but all elements needed to complete the cases will be accessible. As long as you are using a modern browser there shouldn't be anything more than small stylistic differences.

If there is a significant difference, please contact us at dahr.ecrest@ucl.ac.uk as soon as possible, mentioning the Internet browser and version you are using.

There are no patients in the waiting room.

You will perform three consultations in total at stage 1 and one consultation at stage 3. This will be over a 4 day period, starting with your teaching day. However if you can't do this by the defined timeframe, do contact us by clicking on the 'contact support' link or emailing dahr.ecrest@ucl.ac.uk directly.

The patient says they don't understand my question.

This may happen because the patient has no relevant information to give you.

I want to perform an examination/bedside test which is not available.

State this in your management plan on the 'final consultation note' page.

I cannot see the patient's recent consultation history.

Click on the electronic patient records – this is displayed under 'patient notes'.

I cannot submit my final note and complete the vignette.

Check that you have entered all your responses in the appropriate boxes as these answers are mandatory.

I need to leave a consultation part way through.

You can logout by clicking 'exit' at the top right of the screen for added security, but just closing your browser will log you out.

When you login again you will be redirected to the relevant section in order for you to continue what you were doing, any questions asked or notes taken during a consultation will be saved.

I have a question which is not answered here.

Do contact us at dahr.ecrest@ucl.ac.uk, or by using the 'contact support' link in the top right corner of the screen. Also, if you have any questions regarding the study or you would like to be further involved you can find the researcher's contact details in the information sheet.