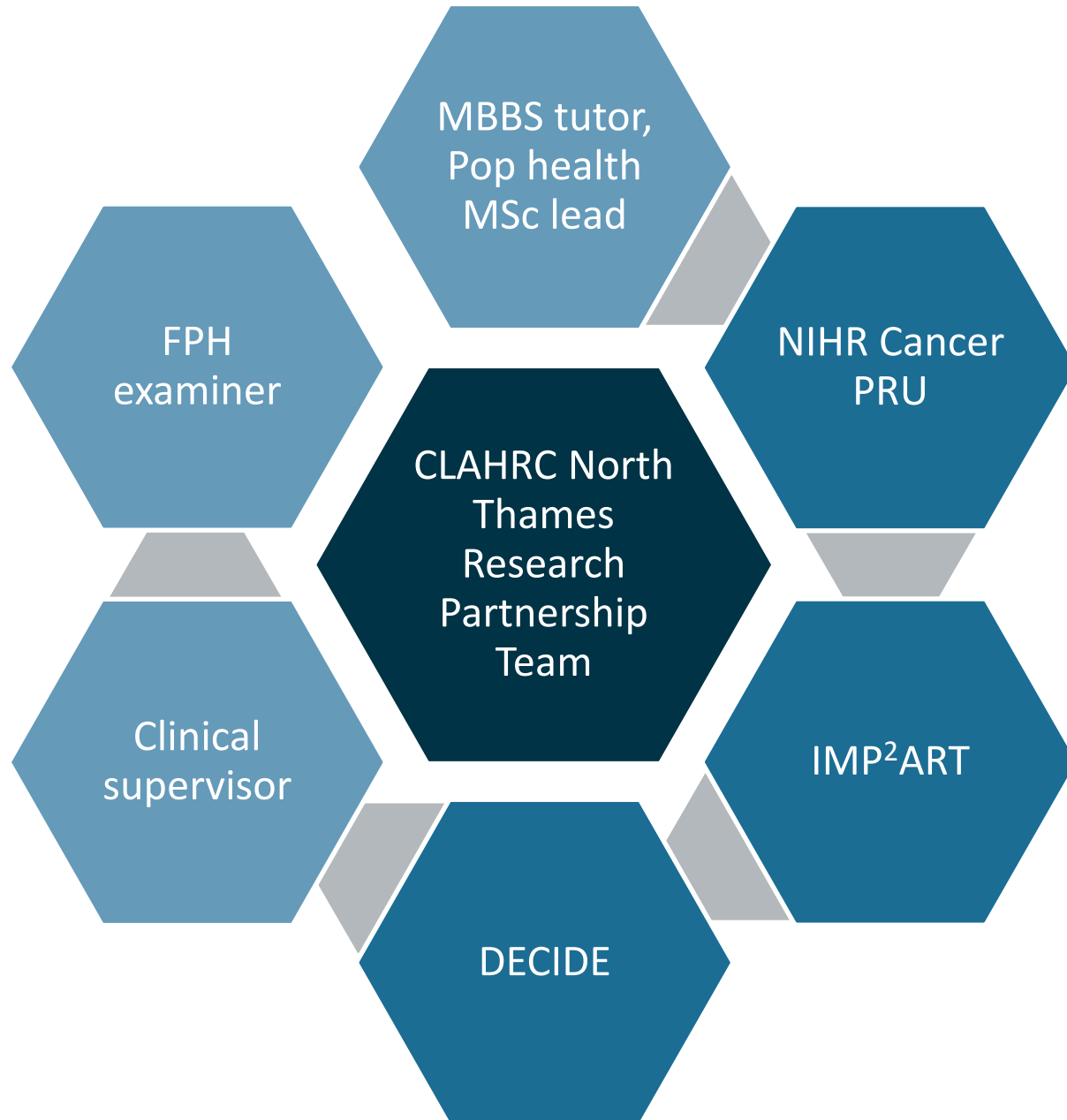


Mobilising knowledge from research in the university setting: case study of eCREST development & evaluation in medical education

Jessica Sheringham, on behalf of eCREST team:

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4 December 2018



IMP²ART programme of work



Programme Development Grant

Informed implementation strategy

Programme Grant

Develop and pilot strategies

UK-wide cluster RCT

Process evaluation



IMPLementing IMPRoved Asthma
self-management as ROUTine



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DECIDE

DEcisions in health Care to Introduce or Diffuse innovations using Evidence

 [Improvement research](#) / [Research project](#)

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DECIDE

Policy Research Unit in Cancer Awareness, Screening and Early Diagnosis



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Collaboration for Leadership in Applied Health Research and Care North Thames



Factorial vignettes study into GP decisions for possible lung cancer

Participants type in questions to find out further information

Drop-down menu of 34 examination results e.g. blood pressure, peak flow, weight, joints

Drop-down menu items include: Medical history (existing conditions, surgery, allergies) 'Demographics' (age, address, occupation, ethnicity) 'Lifestyle' (current smoking status, alcohol intake, BMI)

Patient videos: shown in response to participants' typed in questions

FINAL SCREEN LINK : participants enter free-text management plan

History: Notes of 3-4 previous consultations onscreen


Admin
Waiting room
Contact us

Patient Information
Jack JONES
58 (19-05-1954)
Male

Significant Medical History +
Demographics +
Medication History +
Lifestyle +

Ask questions
Write your question and click to "Ask"
What seems to be the trouble?
current symptom/topic: breathless

Examination
Select one:
choose

Replies
Media : 
Your note :

Historical notes

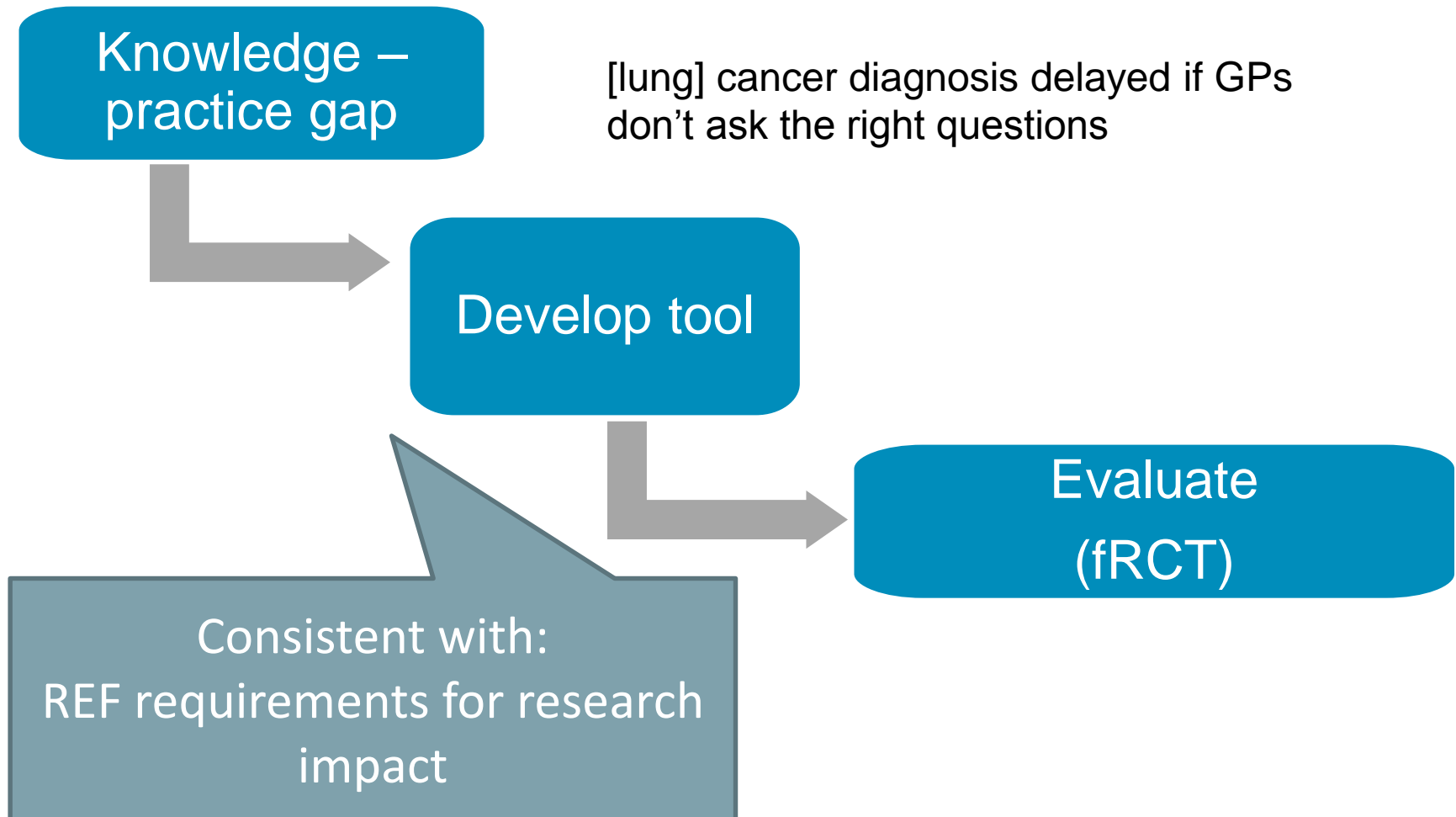
Date	Subject	Comment
17 August 2012	Diabetes review	Taking metformin 500mg bd, no problems.
12 December 2011	Cellulitis	Cellulitis left great toe (following cut). Adv. Advised to return if not resolving in 3 days.

penicillin (V) 250mg qds (7 day course).

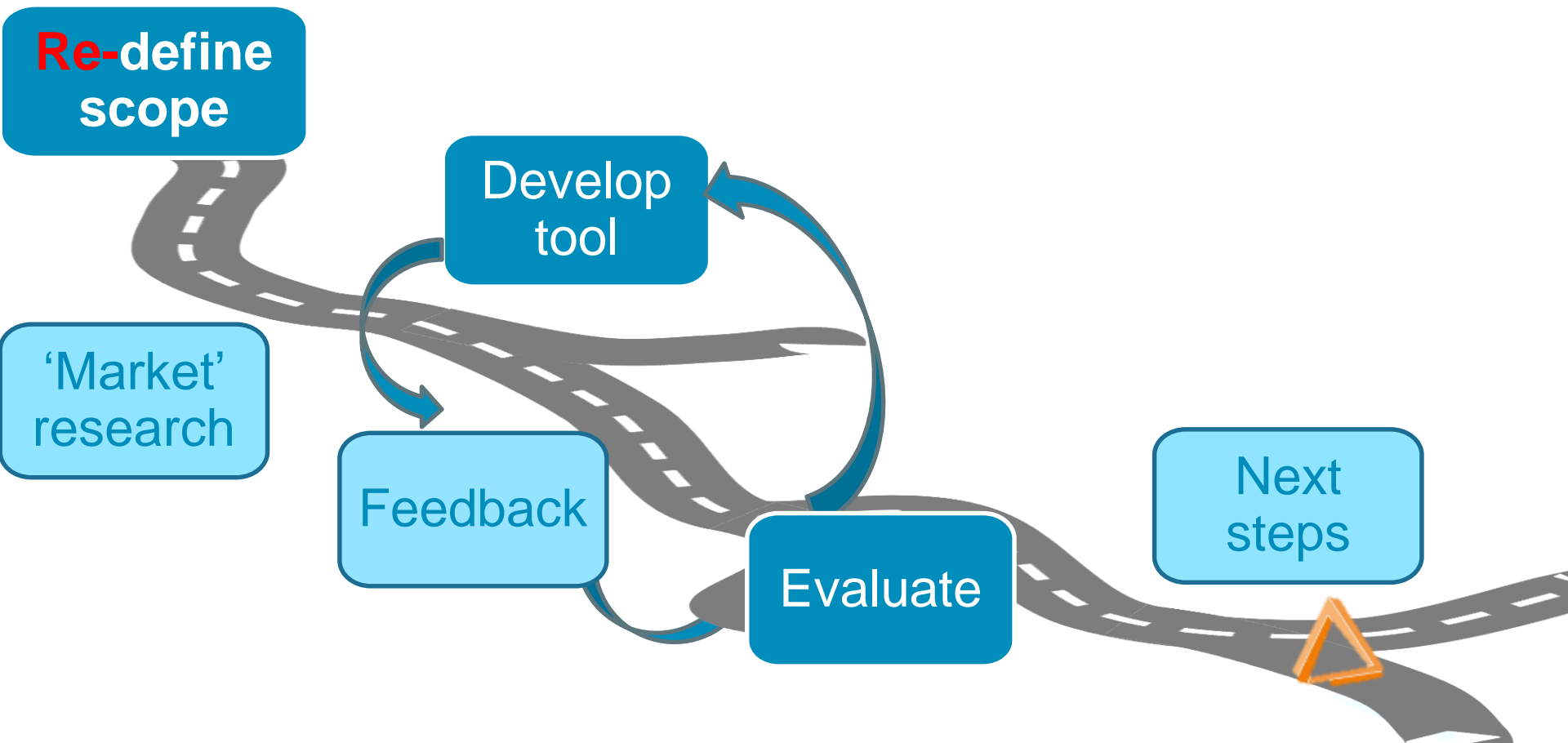
Study findings

- GPs decided to investigate lung cancer in 74% (1000/1348) of vignettes. Investigation likelihood did not increase with cancer risk.
- Investigations were more likely when GPs requested information on relevant symptoms that 'patients' had but did not volunteer. However GPs omitted to seek this information in 42% (570/1348) of cases.
- **Proposed an online tool that addressed the problems identified in the research study**

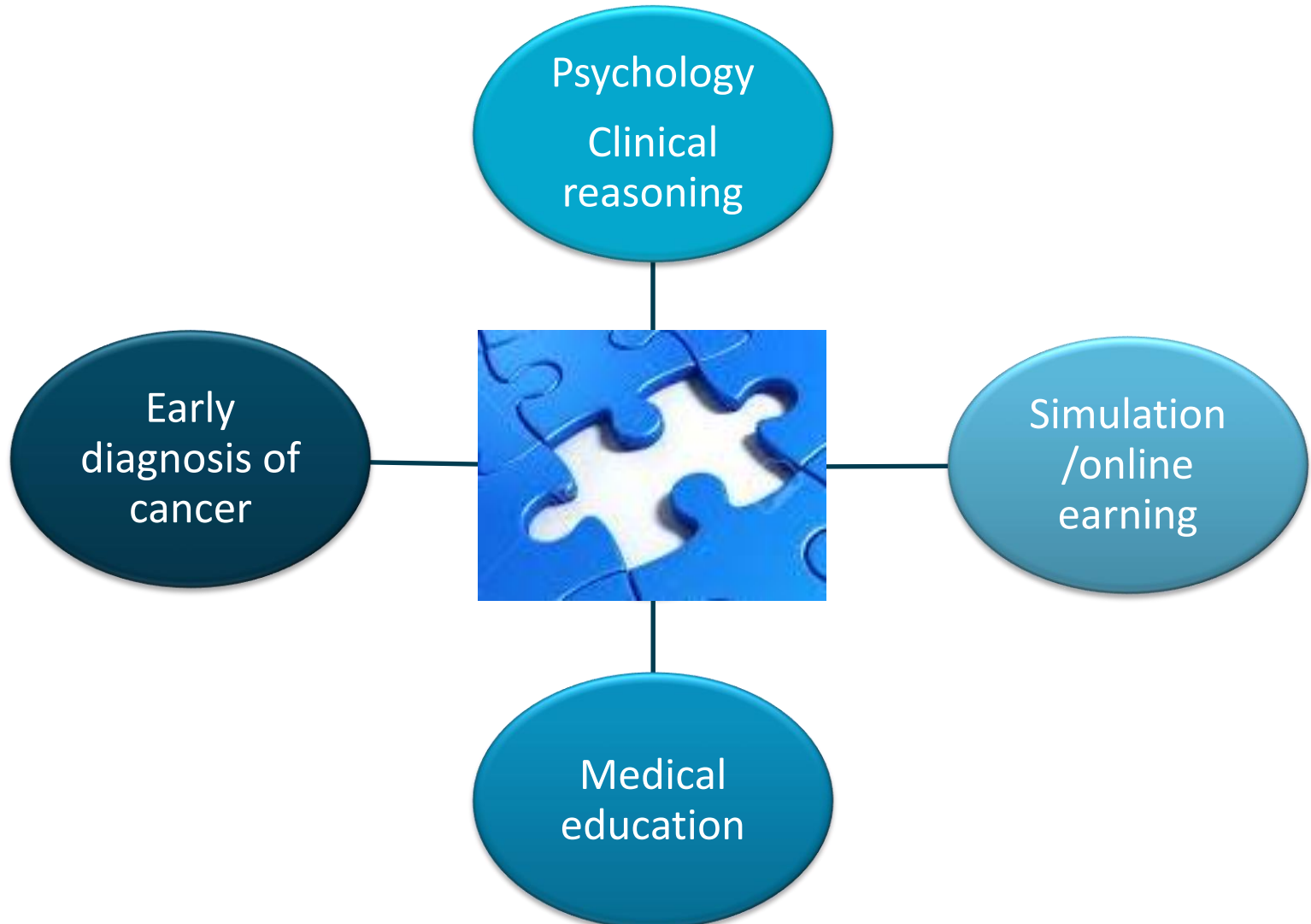
Linear process of translating findings to practice



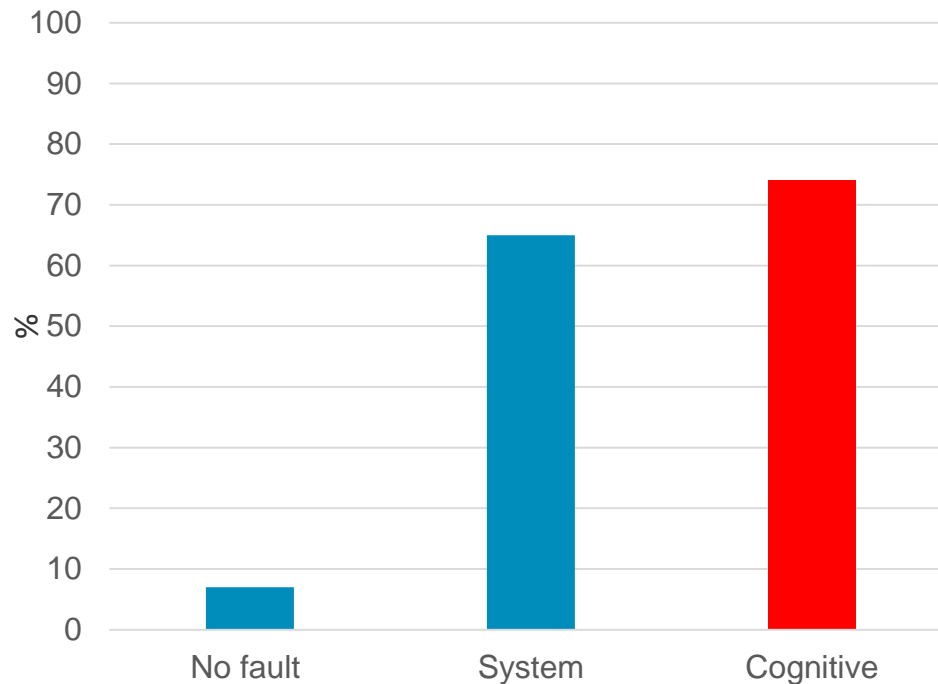
Actual process of mobilizing knowledge from research with practice, culture and experience



Further define 'knowledge to practice gap': study findings in multidisciplinary research context



Causes of diagnostic error (Graber et al., 2005)



No fault errors: e.g. patient delay presenting to health professional

System errors:
Technical failures,
organisational problems

Cognitive/ clinical reasoning errors:
knowledge, data gathering and interpretation

Definitions

- **Clinical decision-making:** “a contextual, continuous, and evolving process, where data are gathered, interpreted, and evaluated in order to select an evidence-based choice of action” (Tiffen et al., 2014).
- **Clinical reasoning** is part of the process of clinical decision-making: “cognitive processes and mental structures employed in diagnostic reasoning” (Higgs et al., 2008).

How to improve clinical reasoning?

- **Provide training** on clinical reasoning and how to apply these skills (Institute of Medicine, 2015)
- **Undergraduate medical students** currently need more explicit training on clinical reasoning (Higgs et al., 2008)
- Current teaching **face-to-face** methods include: problem-based learning, primary care clinical placements and communication skills training (Page et al. 2016)
- Increasing interest in **online patient simulation** to complement or replace **face-to-face** methods (Raupach et al. 2016)



Market research: knowledge gaps vs demand



GPs

Hard to engage

Uptake likely to be lowest in those with greatest need

Don't need another cancer learning tool

GP registrars

Some demand identified

Needs to be positioned/endorsed by trusted provider

Medical students

Need identified

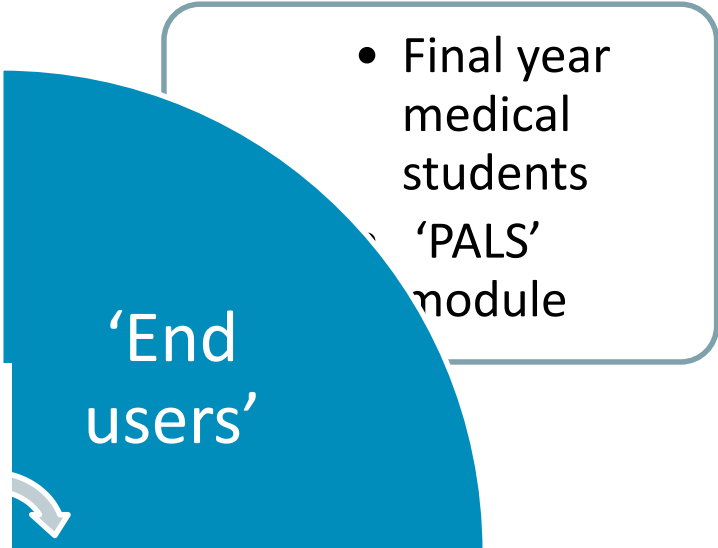
Align with agenda to raise profile of general practice in medical schools (Wass 2016)

University: knowledge generator or mobiliser?

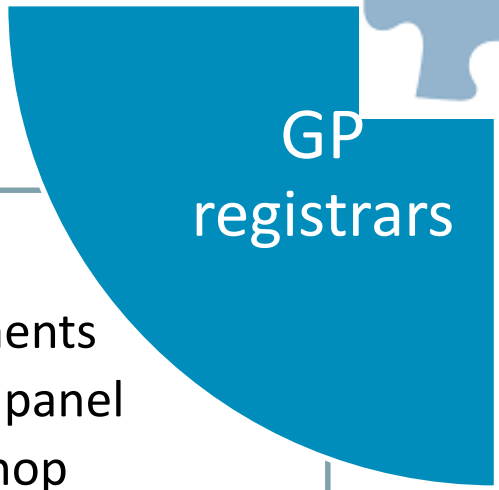


Coproduction opportunities

- Developed prototype
- Recruited & conducted Think Aloud interviews with other students



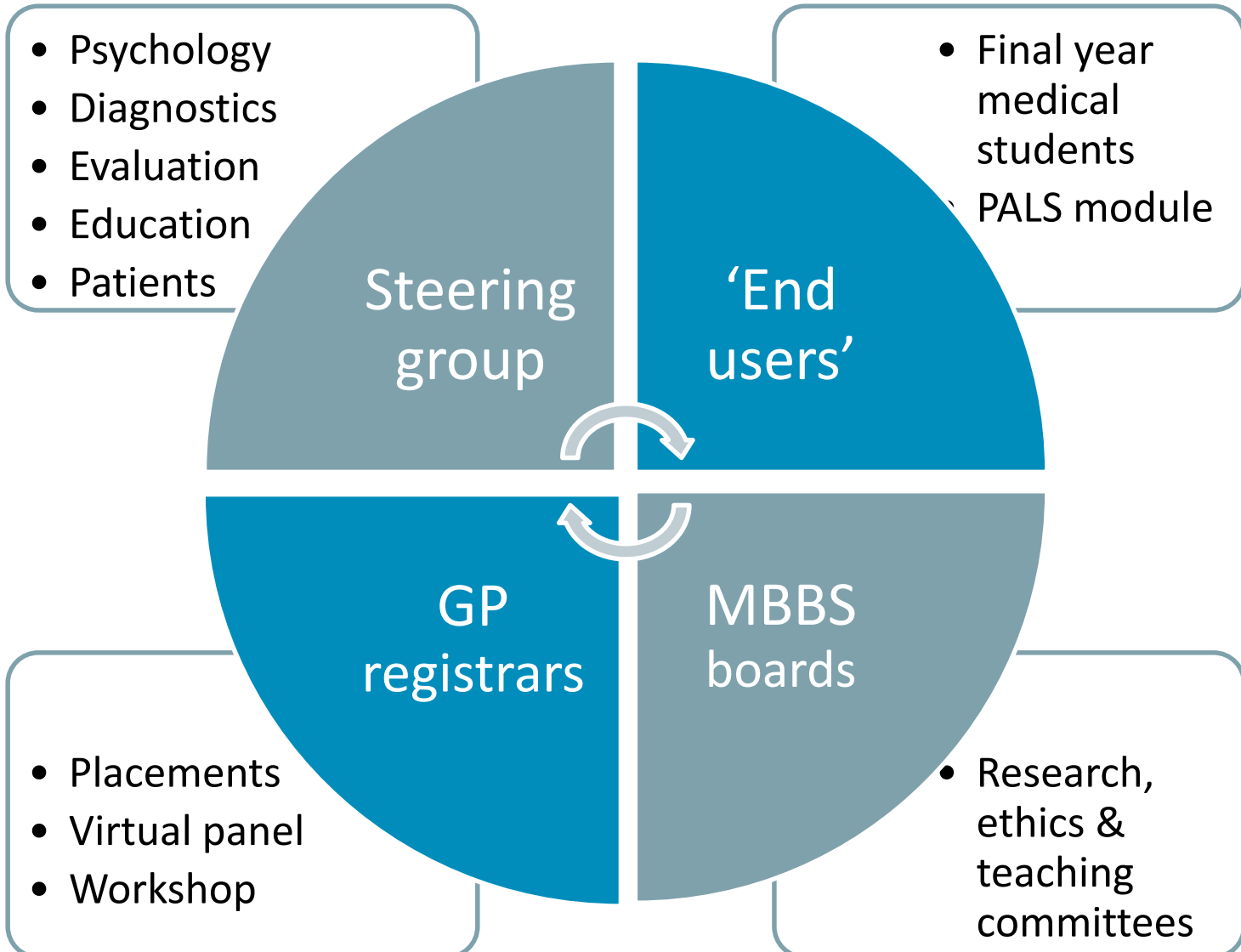
Coproduction opportunities



- Placements
- Virtual panel
- Workshop

- Devised cases
- Commented on tool iterations
- Developed evaluation approach

University as a knowledge mobilization setting?



eCREST

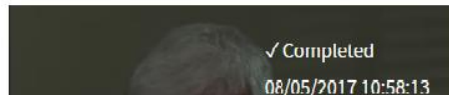
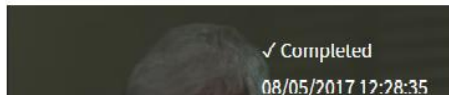
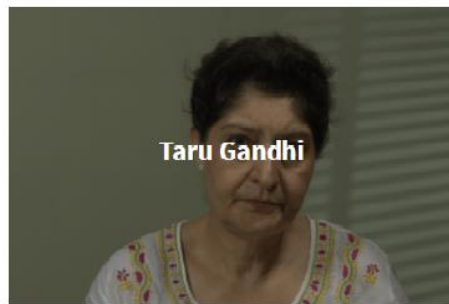
Cases completed: 4/4



The Waiting Room

You are a junior doctor on rotation in General Practice. Your patients are in the waiting room. When you click on a patient you will invite them in for their consultation. You may also view the electronic patient records for each patient.

The patients will first explain to you why they are here. You will then be able to ask them questions, think about differential diagnoses and decide on how to manage them. At the end of each consultation you will be provided with a record of the questions you asked, and feedback on your diagnosis and management plan. You will then be given an opportunity to reflect on your consultation, and some useful resources for further reading are provided.



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. After having asked 6 questions, you will be prompted to answer 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



History of Presenting Complaint

When did your cough start?

Can it be your cough?

Does your cough worsen on exercise?

Does your cough worsen on lying down?

Are you coughing anything up?

Have you coughed up blood?

Does your cough worsen on movement?

Notepad

Had cough for 3 we

eCREST

Cases completed: 4/4

Pre-learning quiz > Choose patient

Please select the first questions to ask as many questions as you like. You can ask questions yourself. These 6 can be asked of the patient. You can also access the patient's electronic patient records.

Electronic patient records

History of Presenting Complaint

Your previous top 5 choices:

- Asthma
- Bronchiectasis
- Lung cancer
- Upper airway cough syndrome (post-nasal drip syndrome)
- Pertussis

Has your top differential diagnosis changed? Yes No

What are your new differential diagnoses? (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. Heart failure -
- + 2. Asthma -
- + 3. Interstitial lung disease -
- + 4. COPD -
- + 5. Gastro-oesophageal reflux disease -

Select from list...

Why?

test

Continue

Reflection > Post-learning quiz

Review diagnosis

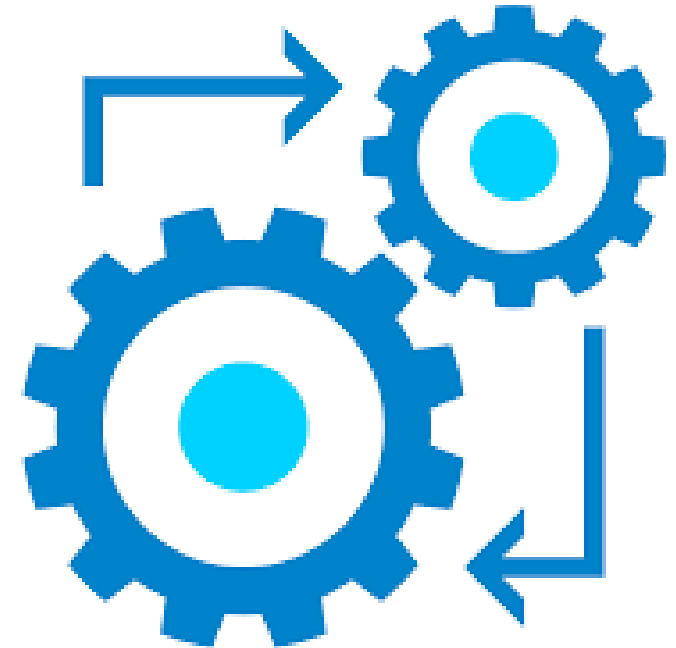
Background Information

Notepad

Had cough for 3 weeks

Importance of integration...

...logistically, with existing teaching
...conceptually, with clinical reality



Design and objectives

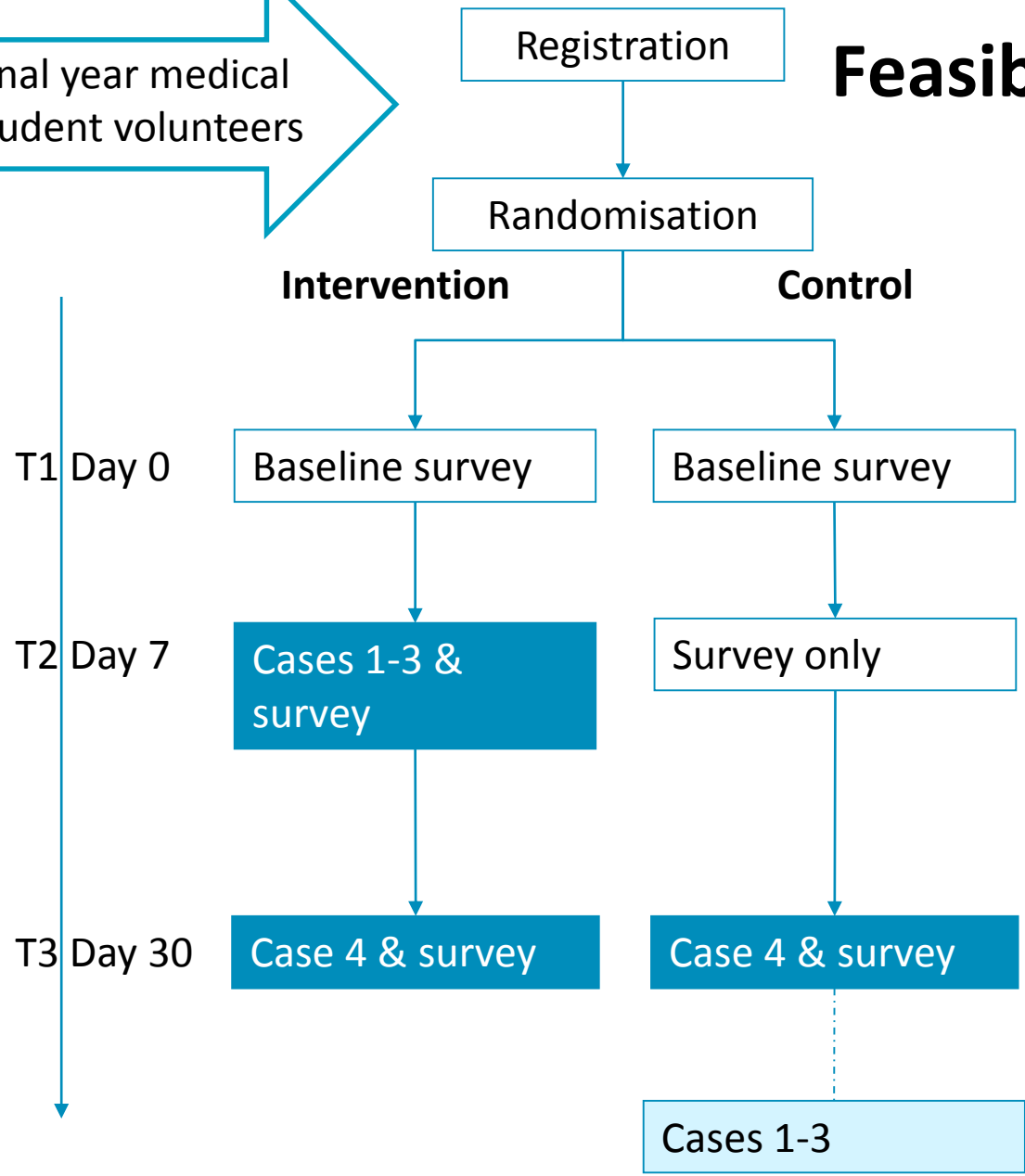
Conduct a feasibility randomised controlled trial to

- acceptability and feasibility of eCREST, **i.e. will students use it?**
- obtain an idea of **possible effectiveness** of eCREST: **i.e. what might effectiveness look like?**

Underpinned by a Think Aloud study to understand how students reason when using eCREST

Feasibility RCT flowchart

Final year medical student volunteers



Data collected

Knowledge quiz (MCQs)
Clinical reasoning (FIT)

Clinical reasoning (FIT),
acceptability & self-reported learning survey



Knowledge (MCQs),
clinical reasoning (FIT and data collected from case 4)

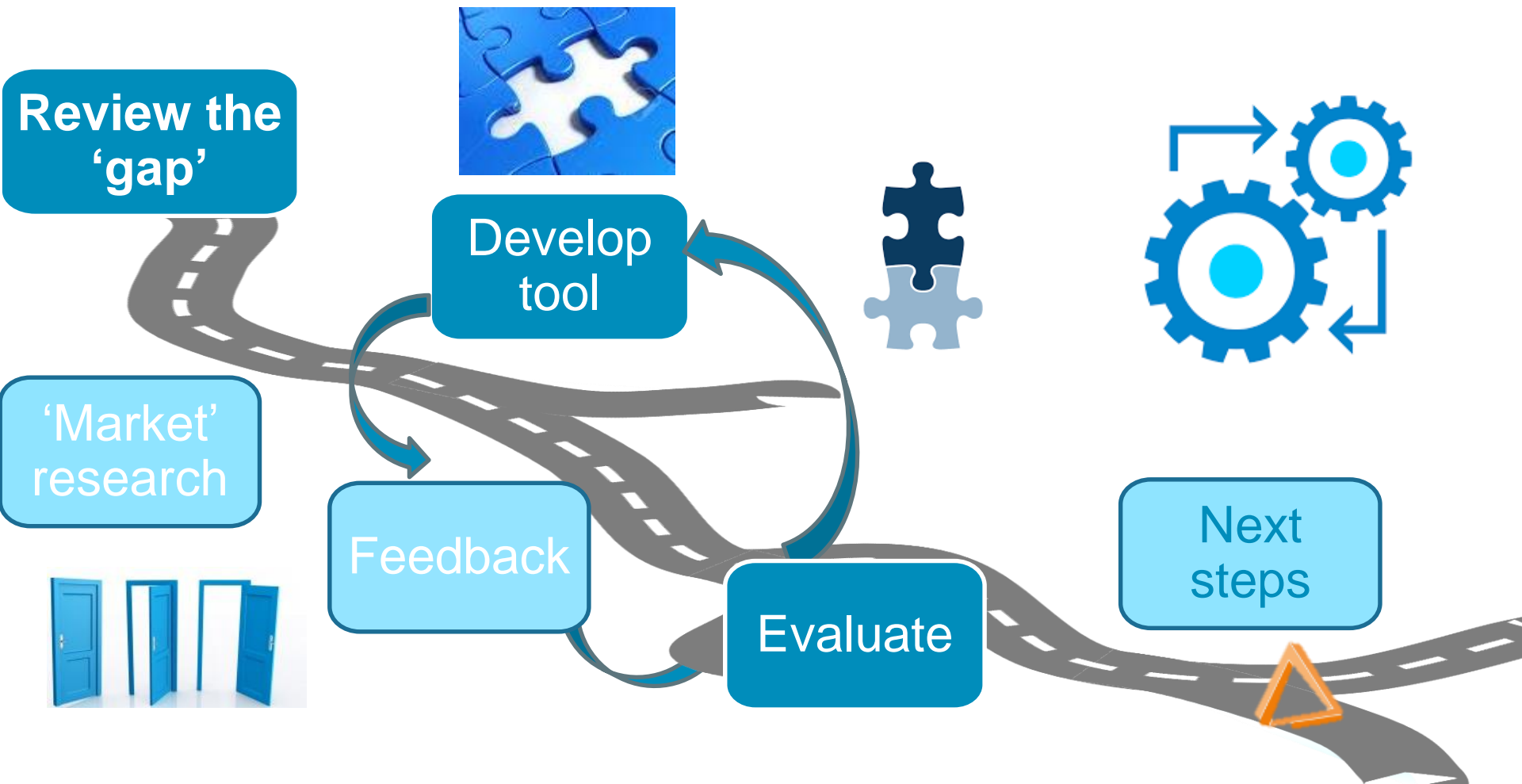


What does effectiveness look like?

- Tensions between different conceptualizations of knowledge: students' need for a 'right answer' vs. clinical experience (single definitive diagnosis rarely reached in general practice alone)
- Theory of change developed with registrars
- Focus on reasoning process & diagnostic ideas defined by registrars & trainers

eCREST evaluated on
1. Focused & relevant history
2. Gather necessary information
3. Adapt diagnosis according to new information

Actual process of mobilizing knowledge from research with practice, culture and experience



Next Steps



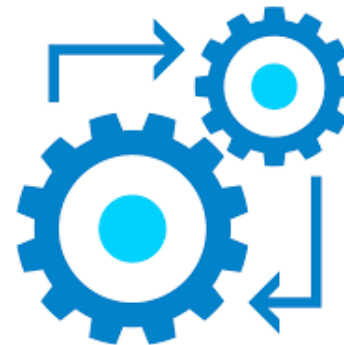
- Research
 - Learning needs survey
 - Observation of reasoning styles
 - RCT

- Development
 - New sites
 - New cases
 - New learners

Summary: from translation to mobilisation

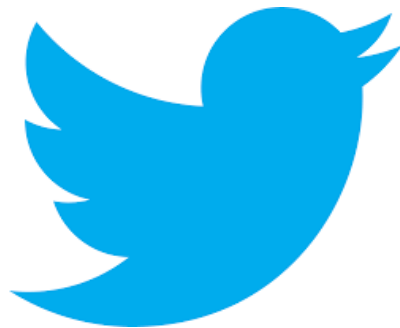
Process and outcomes of implementation tools shaped by

- Working with **opportunities and barriers**
- Generating (2-way) awareness of **knowledge gaps and demands**
- Commitment to **integration** with
 - Existing context
 - Clinical reality



Thank you

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