

Introduction of the framework for developing, feasibility-testing, evaluating and implementing pharmacist's intervention

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為何？

是何？

如何？



Areas to be covered 內容大綱

This talk aimed to give an overview of the methodological framework to develop and evaluate the complex healthcare interventions that involved pharmacists.



- Why do we evaluate the complex pharmacy services?
- Why do we need a framework to evaluate the pharmacist-related services?
- What is the UK Medical Research Council (MRC) complex intervention framework?
- How does the UK MRC framework apply to develop and evaluate pharmacy services?

Why evaluate pharmacy services? 為何要評估藥事服務



- Pharmacy services are complex healthcare interventions.
- Poor design and development of the interventions will lead to research waste, ineffective / inefficient services, and potentially lead to harms.
- Pharmacy service is an expensive service for a health service to provide.
- If pharmacy cannot prove to be effective and cost effective, then it is less likely that scarce funds will be directed towards it.

專業服務品質及成效 (效益及成本效益)

Why do we need a framework? 為何需要評估架構

85%

Health research is literally wasted!

Chalmers and Glasziou, Lancet 2009

- Poor question selection
- Poor intervention description
- Insufficient attention to previous research results
- Inadequate reporting

To avoidable weakness in design, conduct and analysis

Complexity of interventions

- Number of interacting components
- Number and difficulty of behaviours involved

- Degree of flexibility or tailoring permitted

- Number of groups or organisational levels targeted

- Number and variability of outcomes



Pharmacists interventions

Implementation

Target population



Outcomes



- Good theoretical grasp of the change process

理論基礎

- Implementation vs. intervention failure

執行失敗或是
介入處置失敗

- Individual variation may reflect higher level processes
- Interventions may work better if adaptation to local context is permitted

個體差異，執行過程，組織環境因素

- A range of outcome measures

多樣的果效評估測量

Craig et al. 2008; MRC 2000, 2008



- Convergent data from mixed methods
需用不同的研究方法

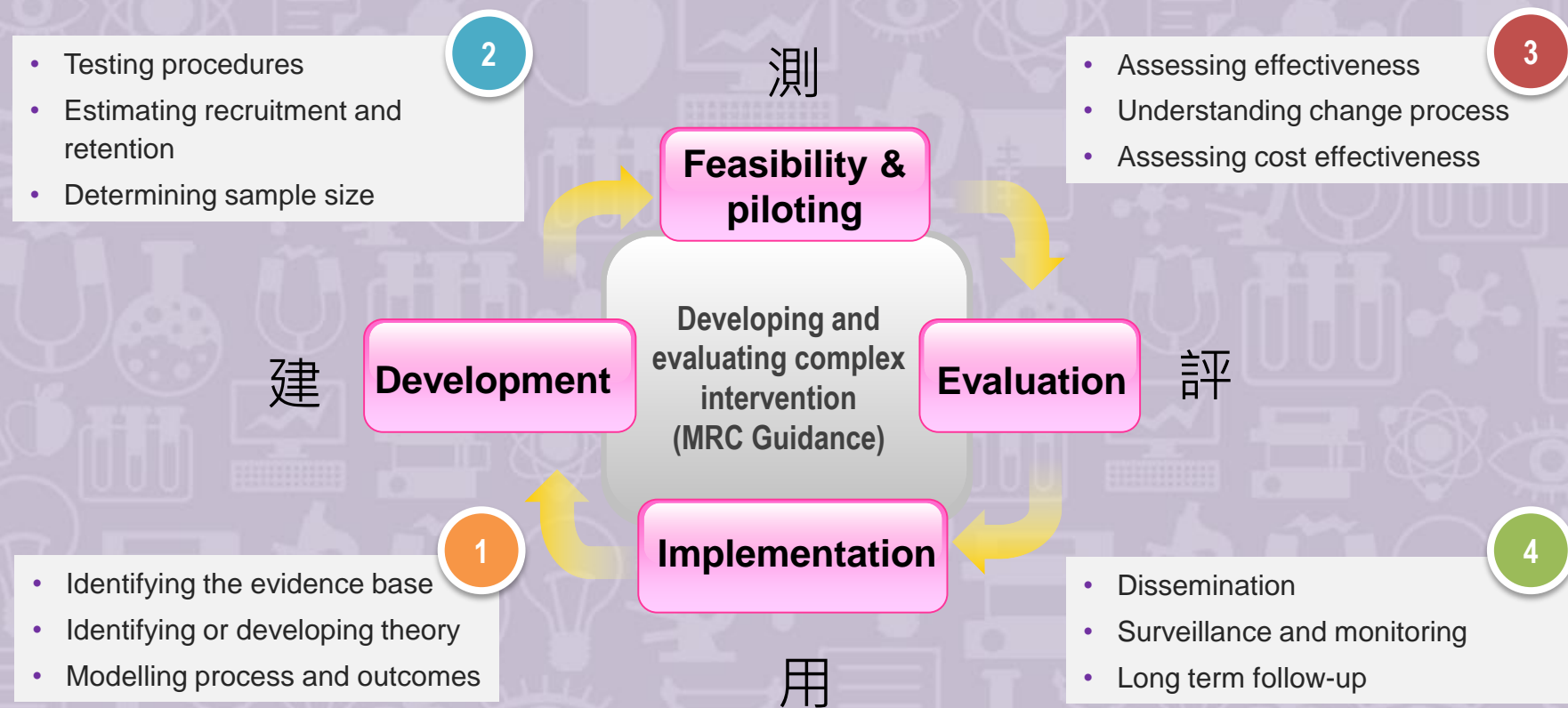


- Patient and Public Involvement (PPI)
- Participatory research and co-production

需有病患及公眾參與
研究評估的各個階段

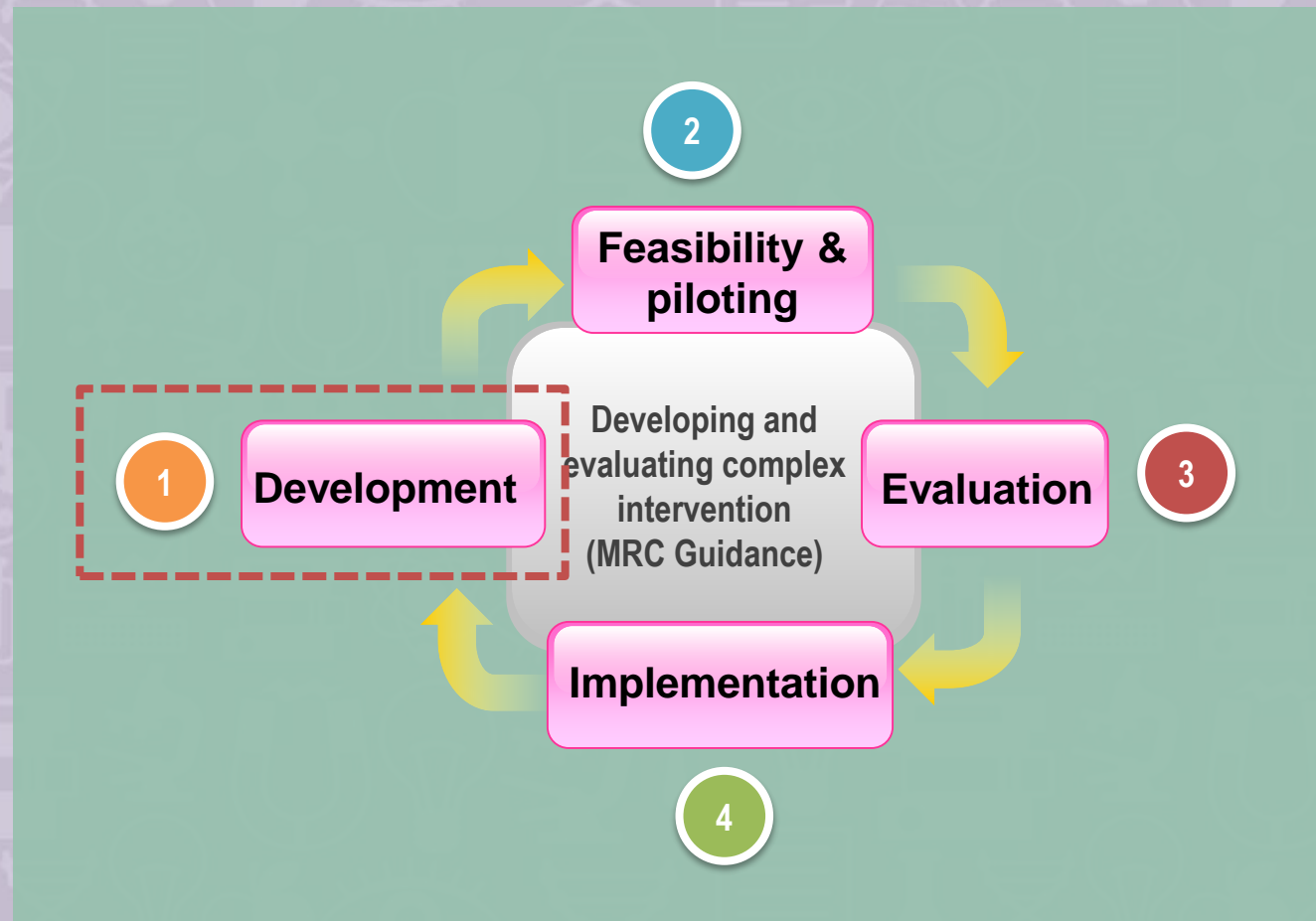
The UK Medical Research Council's Complex Intervention Framework

英國醫學研究委員會所提出的複雜性介入處置之評估架構（方法）





Development of complex interventions

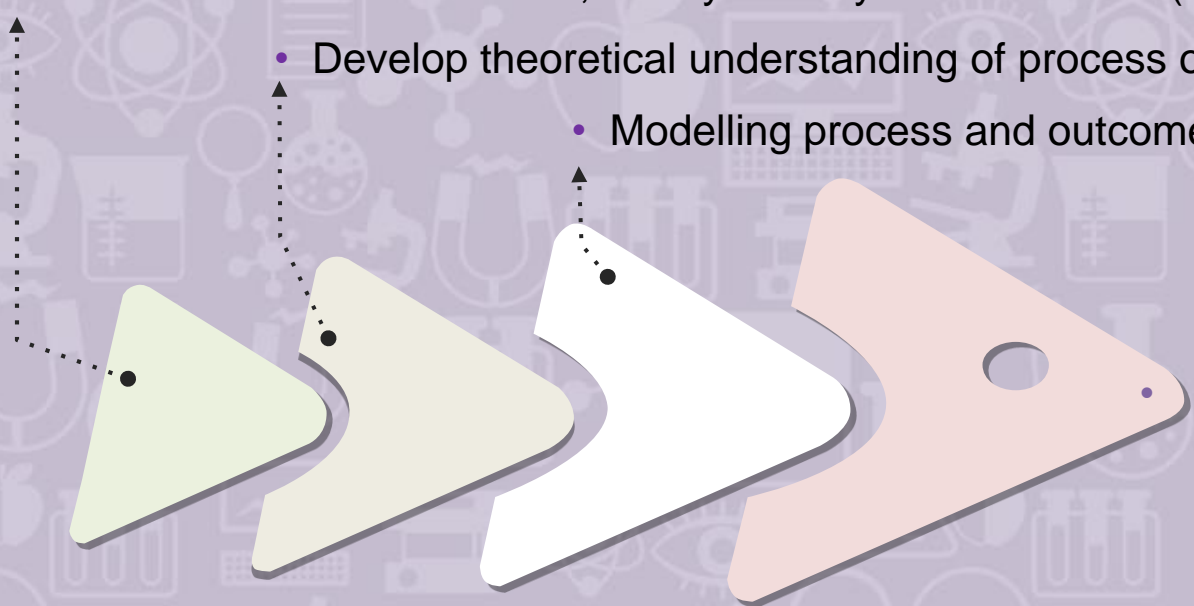


- 1 Define and understand the problem and its causes
- 2 Clarify which causal factors have greatest scope for change
- 3 Identify how to bring about change: what is the change mechanism?
- 4 Identify how to deliver change mechanism
- 5 Test and refine the intervention on a small scale
- 6 Collect sufficient evidence of effectiveness to justify rigorous evaluation/ implementation

Wight D et al. Six steps in quality intervention development (6SQulD). *Journal of Epidemiology and Community Health* 2015;0:1-6

Developing an intervention systematically

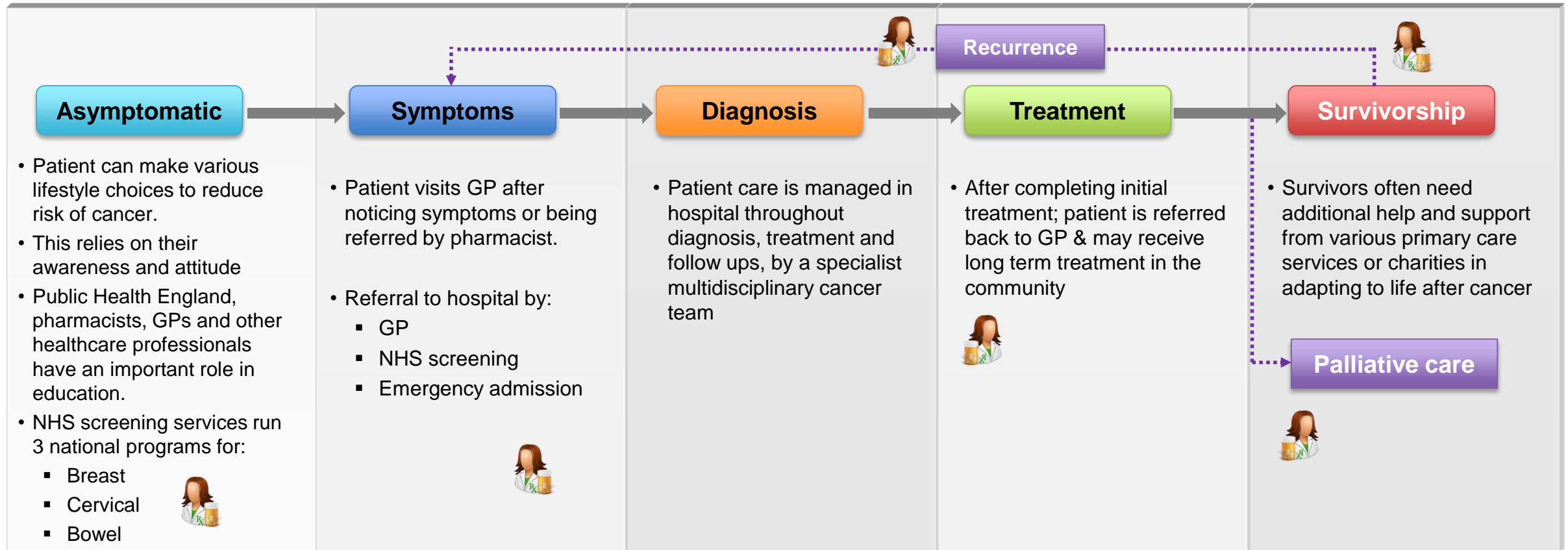
在設計(建立)介入處置的階段，該做些甚麼？

- Use best available evidence, ideally from systematic review(s) 系統性回顧
 - Develop theoretical understanding of process of change 改變的理論基礎
 - Modelling process and outcomes 模擬流程及成果
 - Developing an intervention
- 
- Implementation considerations should guide all phases
 - “Would it be possible to use this?” 是否可能用？
 - An iterative not a linear process
 - Maybe useful to follow a formal framework
 - 6SQulD breaks the intervention development process into 6 steps

Example of service development - Pharmacists' roles in post-cancer survivorship

【案例一】藥師對於癌後存活患者照護的角色為何？

- Mapping the trajectory of patients with cancer to find out pharmacists' roles. 癌症病患的治療歷程及藥師的角色



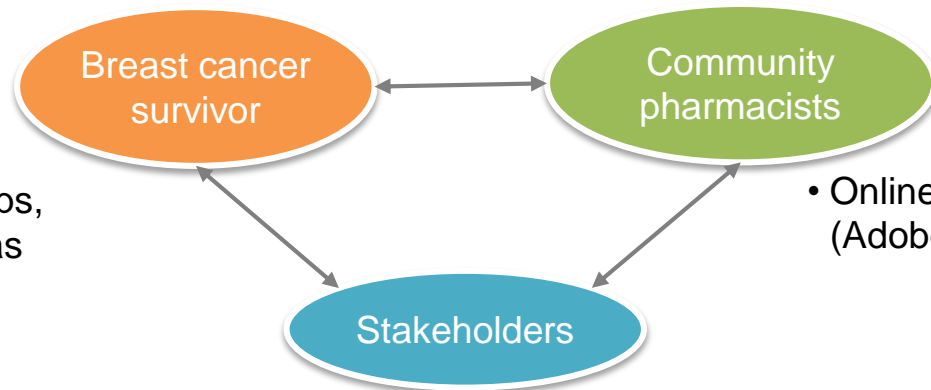
Exploring community pharmacists' roles in breast cancer services

探索社區藥局藥師對於乳癌後存活的患者可能提供的照護

- Mixed methods: exploratory sequential design



- Qualitative study:



- Focus groups, interviews as alternative

- Online focus group (AdobeConnect)

- Face to face presentation followed by discussion/workshop
- Telephone interviews as an alternative



Delivering cancer information and support to everyone who has a cancer diagnosis, their carers and loved ones

Specially trained to support you

If you or a loved one has cancer, having someone to turn to when you need help can make a real difference.

That's why many of our pharmacies now have Boots Macmillan Information Pharmacists, who are specially trained to support you if you're affected by cancer.

Side effects of treatment

If you're worried about how treatment may affect you, they can help you understand and deal with your symptoms.

Emotional support

If all you want is someone to talk to, our trained pharmacists are happy to listen.

Living with cancer

They can give you practical tips to help take control of your life again, such as taking gentle exercise to increase your energy.

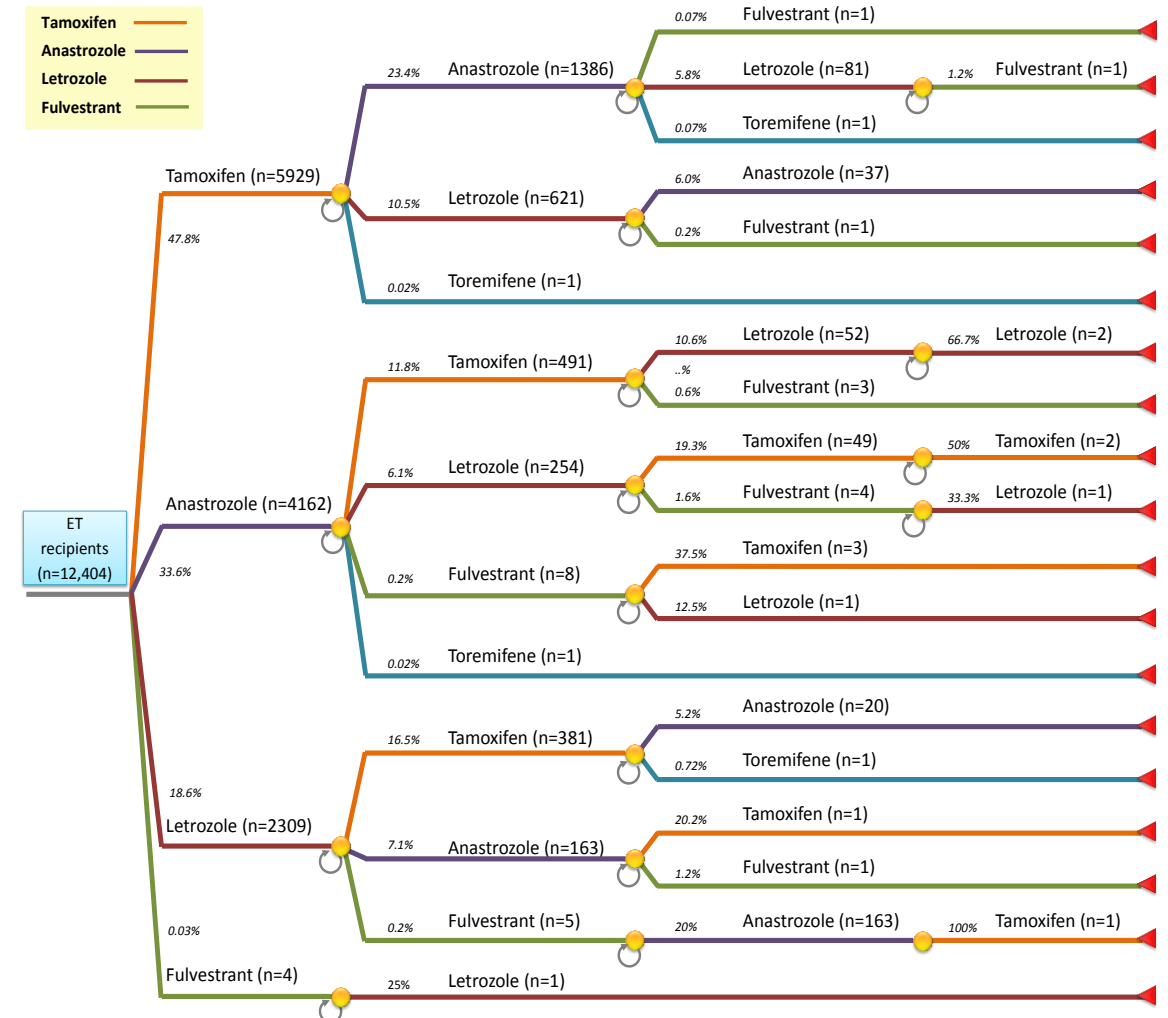
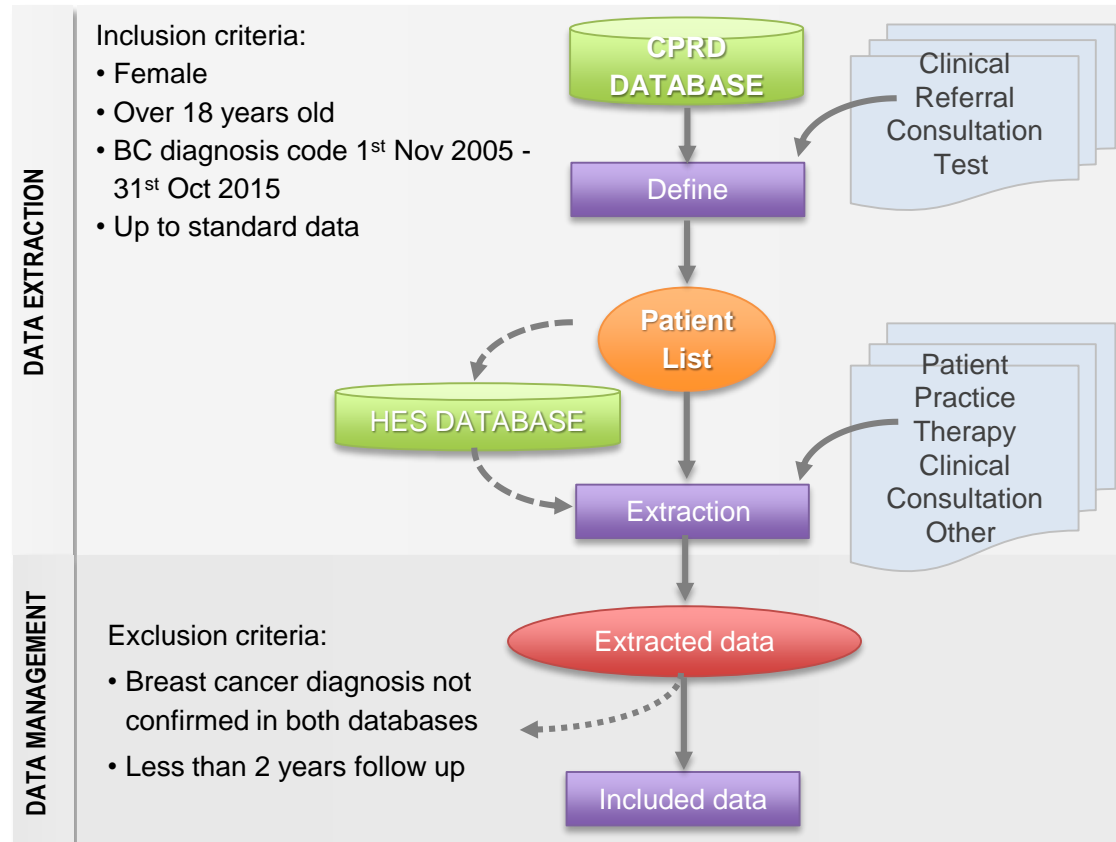
Finding further support

If you have worries about money or caring for your family, they can help you find support groups in your area.

Explore the medication-related problems in breast cancer survivors

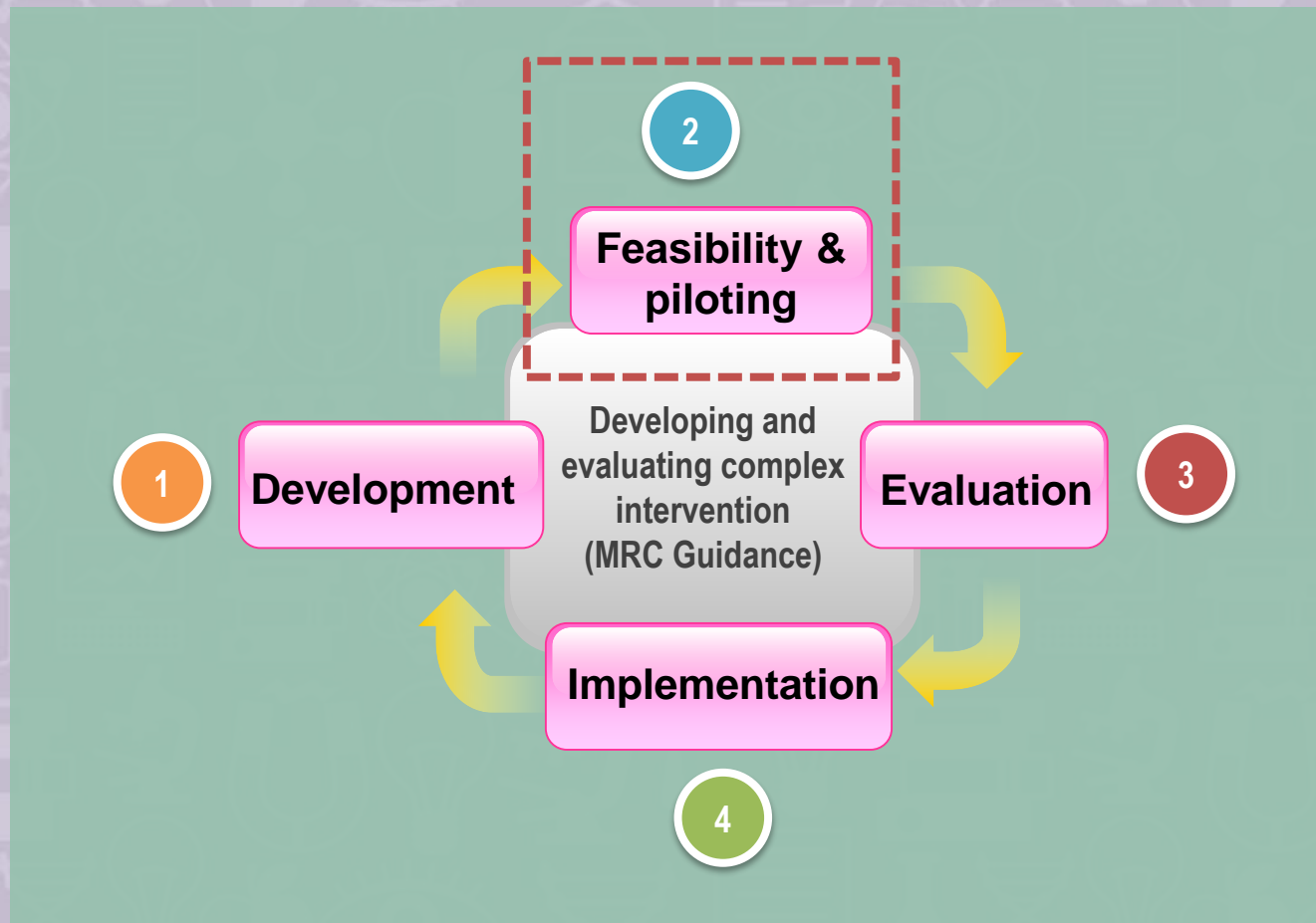
乳癌後存活的患者可能有的長期用藥相關問題

- Quantitative study: Mapped out treatment pathways of breast cancer survivors in primary care in England





Development of complex interventions



研究設計及流程

隨機分配，收案方法及
收案率，執行困難，測
量方法，追蹤時間



Feasibility and pilot studies

在可行性測試及預試驗的階段，該做些甚麼？



Feasibility study

可行性測試

- Pre-study research to gather pieces of information needed to formulate the plan for the main study.
- Questions around discrete aspects of the study processes or design.



• **Main study** 主研究是否可行？

- Research done before a main study
- To answer the question “**Can this study be done?**”
- Inform the development and conduct of a planned research project.



Pilot study

預試驗

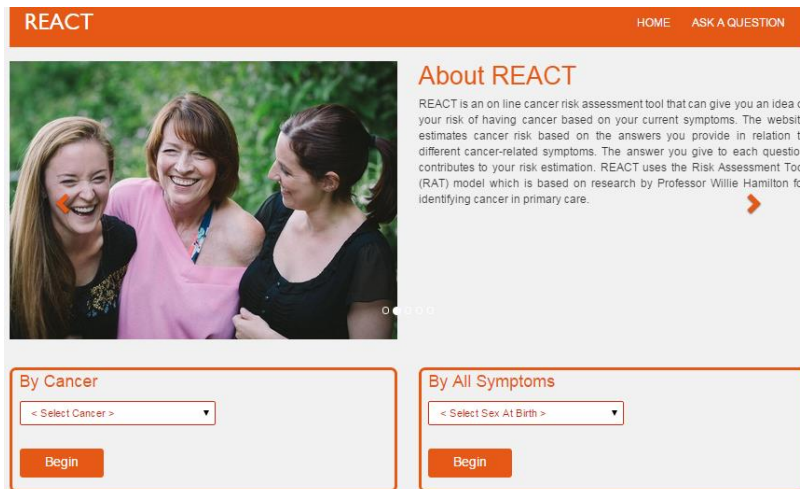
- A small-scale study or small smaller replica of a study to test study design or methodology.
- Use same protocol and assess same primary outcome similar to main trial.
- Test how well the main study will work together when the trial protocol is launched.

Example of feasibility study- Who is the best person to promote health literacy?

【案例二】社區藥師應用數位工具教育病患癌症自覺症狀的可行性？

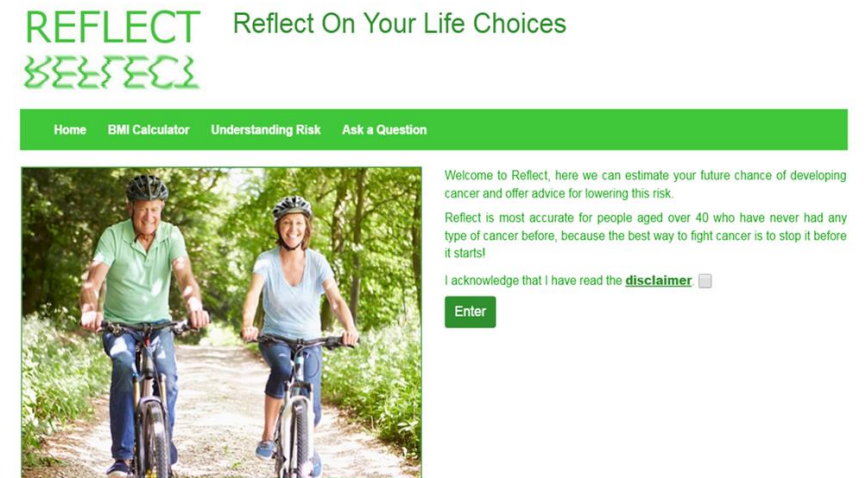
Risk Assessment Tool (RAT)

- Series of population based case control studies
- Clinical Practice Research Datalink (CPRD)
- No other risk factors
- Positive predictive values (PPVs) for symptoms of cancer
- No validation, use in clinical practice have been evaluated



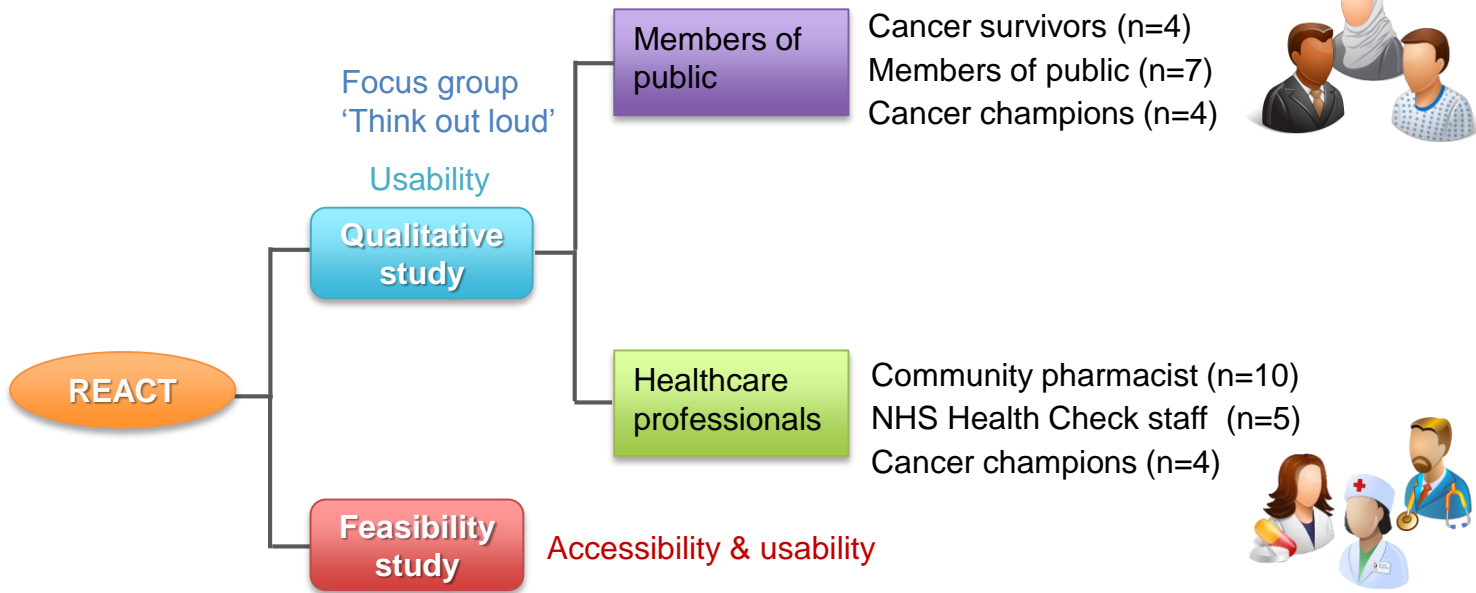
Q-cancer

- Series of cohort studies
- Q-Research database (754 practice in the UK)
- A range of other risk factors
- Absolute risk of cancer for a patient with potential symptoms
- Sub-cohort validation for some cancer, external validity



Risk Estimation for Additional Cancer Testing (REACT) 可行性測試

由誰來推廣（執行）最佳？



- Trial on recruiting from community pharmacists, NHS Health Check staff, health workers
- Collect user experiences collected by online survey after trying the tool

RAECT tool www.react-manchester.com

Evaluation for users

<https://apps.mhs.manchester.ac.uk/surveys/TakeSurvey.aspx?SurveyID=98314641>

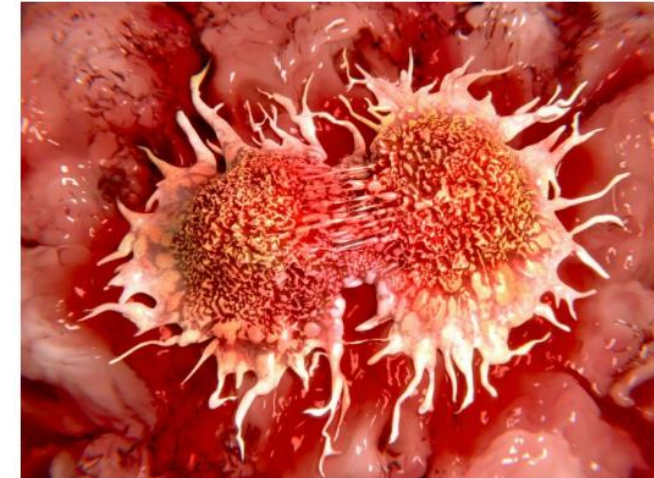
Evaluation for providers (Pharmacists and Cancer Champions)

<https://apps.mhs.manchester.ac.uk/surveys/TakeSurvey.aspx?SurveyID=96313p23>

NEWS

LLOYDSPHARMACY PILOTS CANCER RISK ASSESSMENT SERVICE IN TWO MANCHESTER BRANCHES

By Neil Trainis - January 8, 2018



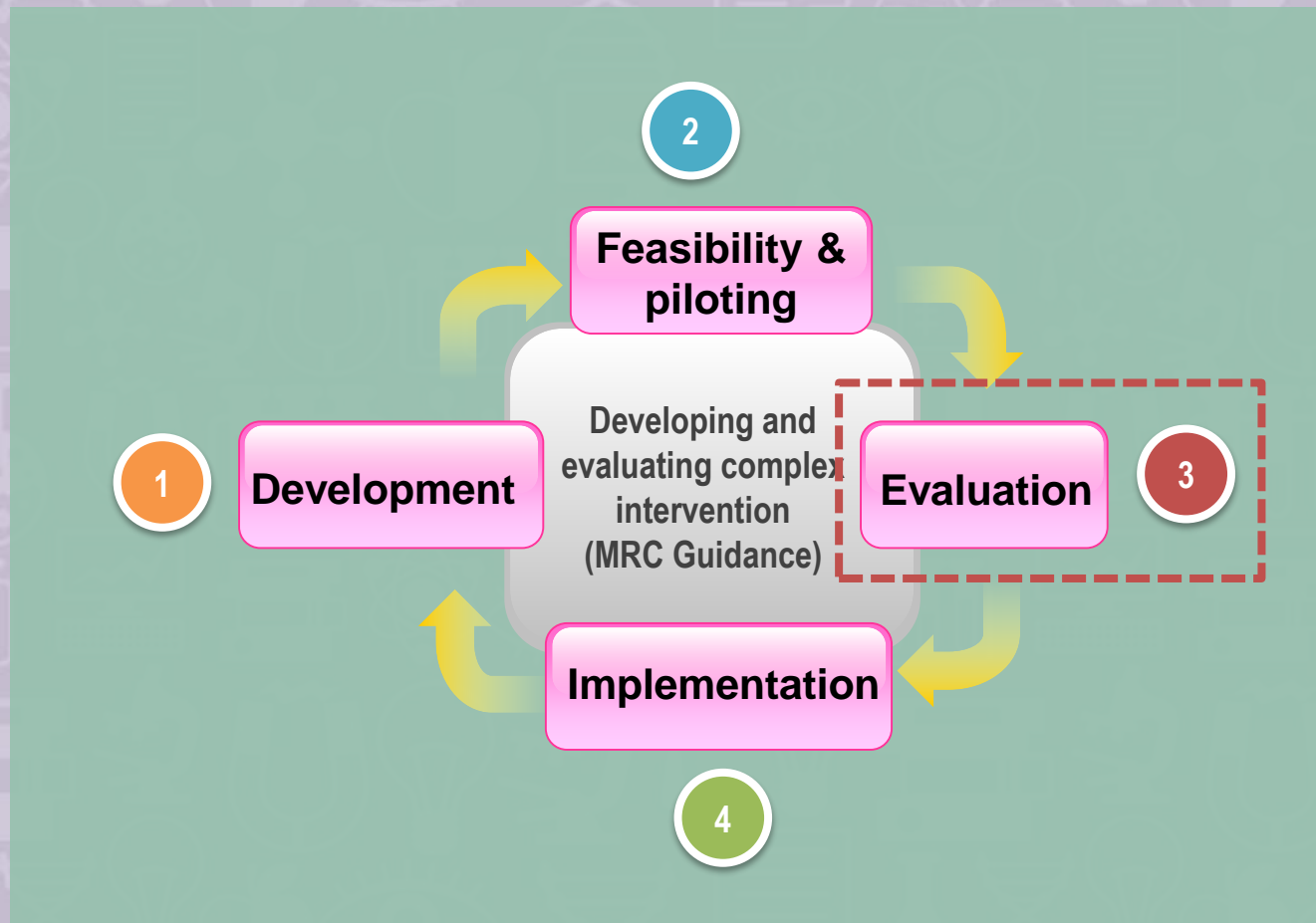
LloydsPharmacy is taking part in an initiative which is designed to encourage people to go to a community pharmacy to assess their risk of cancer.

The pharmacy chain has partnered with the University of Manchester and Greater Manchester Cancer Vanguard Innovation to set up a service that can spot signs of the disease at an early stage using an online symptom-checker tool. Two branches of LloydsPharmacy in Manchester are piloting the service.

Pharmacists from LloydsPharmacy will help patients complete a questionnaire, known as REACT (Risk Estimation for Additional Cancer Testing), during a private face-to-face consultation in the pharmacy.



Development of complex interventions



臨床果效

病患及照護者的經驗

過程

資源使用



Evaluation 在評估的階段，該做些甚麼？

- Evaluation is a process aims to determine value or worth.
- It must be designed to address any questions that stakeholders may want answered.
 - Assessing effectiveness
 - Understanding change process
 - Assessing cost effectiveness

該測量什麼？



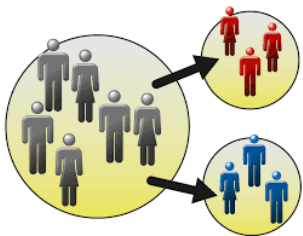
Assessing effectiveness and process 評估效益及過程的方法



評估執行過程

Process evaluation

- Identify relevant features of context, and how they interact with the intervention
- Provide insights into mechanisms of impact
- Explore intervention delivery: was it delivered as intended?



臨床試驗

Randomised trials

Effectiveness

自然實驗

Natural experiments

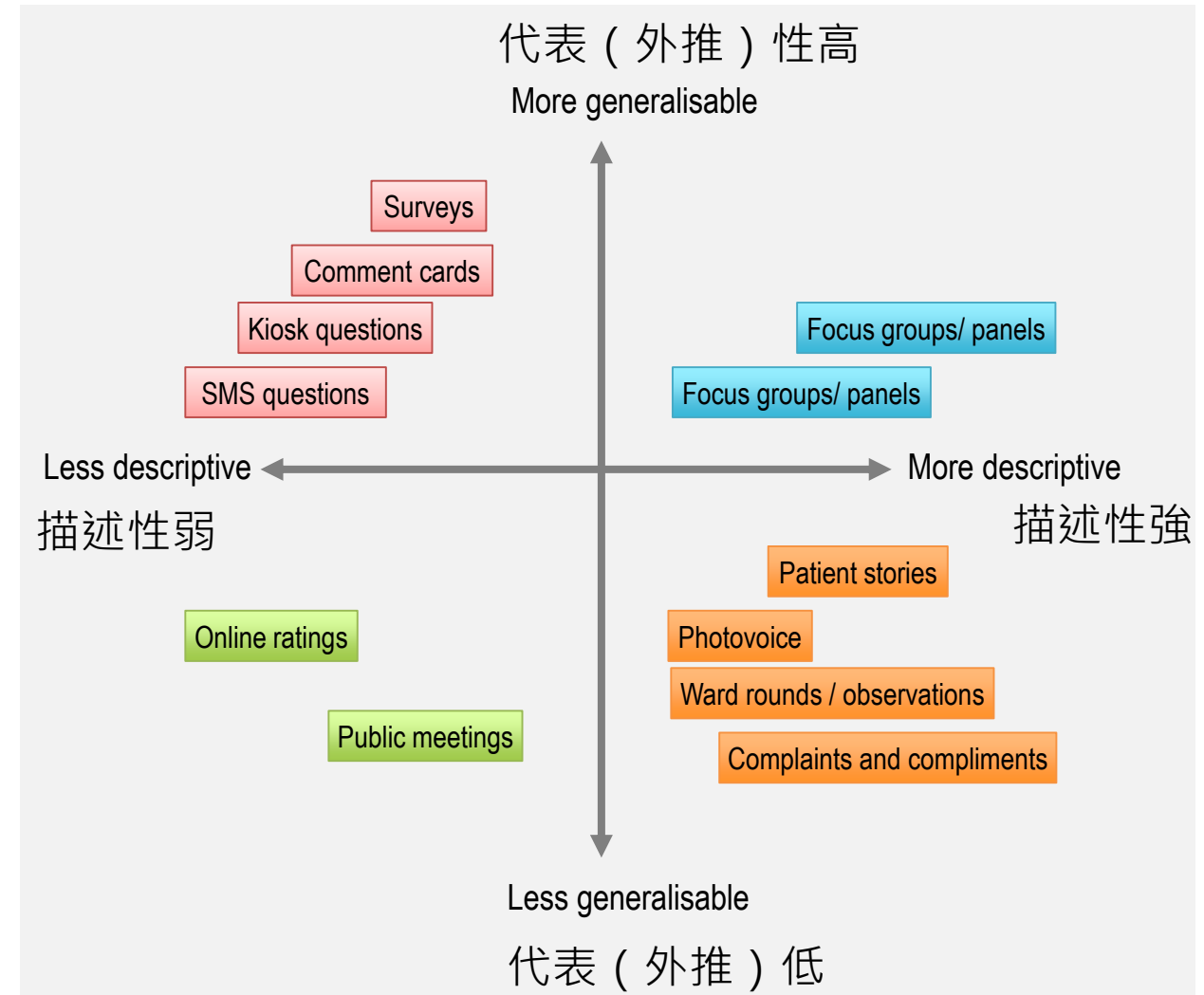


- Cluster randomization
- Stepped wedge designs
- Non-standard and preference (complete cohort) designs
- Randomised consent
- Single-subjects designs

- Before and after comparison
- Interrupted time series analysis design
- Comparison with external/national benchmarks
- Control group comparison

- More recently there has been an increased focus on patient stories as a strategy for improvement and other methods of eliciting patient experience.
- The depth and extent to which these are representative of the population varies depending on the method.
- Those methods that provide more in-depth information can often be more time consuming and may not be as generalisable.

Urban & Turner, 2002 Pharmaceutical Journal



Example of evaluation - Impacts of dedicated ward based pharmacy team in hospital

【案例三】病房專責藥師的成效？

- A service evaluation at the East Lancashire Hospital Trust

Qualitative study

Observation

Quantitative study

Interviews

- Staff/healthcare professionals
- Senior management

Work-sampling Time-and-motion techniques

Interrupted time-series analysis

- Medicines reconciliation
- Length of stay:
- Readmissions:
- Time of discharge:
- E-discharge letter completion rates
- Pharmacy interventions

Dedicated ward pharmacists make an impact

1 March, 2017 11:35 AM

The dedicated ward pharmacy initiative at Royal Blackburn Hospital in the UK has resulted in falls in readmission rates, savings on medicines, more efficient discharges and improved the patient experience

Alistair Gray BSc (Hons) MRPharmS Dip Clin Pharm
Clinical Services Lead Pharmacist
Joanna Wallett MPharm (Hons) MRPharmS Dip Clin Pharm IP
Senior Clinical Pharmacist (Cardiology)
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Clinical Director of Pharmacy
East Lancashire Hospitals NHS Trust, UK
Email: alistair.gray@elhnt.nhs.uk

Putting a pharmacist on a consultant-led ward round is nothing new,^{1,2} in fact, many of you reading this article will think, 'Well, we do that'. And there will be many centres where this happens – often at large teaching hospitals and tertiary centres.

The reality for many hospitals is that resources are limited and a pharmacist may be responsible for 'covering' two, three, four or more wards, with or without the support of a pharmacy technician. This is what pharmacy services were like in 2013 in East Lancashire Hospitals NHS Trust (ELHT) before a series of pilots led to the development and roll out of the Dedicated Ward Pharmacy project (DWP). This is the story of how we got there, what we did, what we found out – and of persistence and serendipity.



Ward pharmacist Sabeela Yasin with other members of the ward team (Image courtesy of East Lancashire Hospitals NHS Trust Communications Department)

Related articles

Researchers discover 40 genes involved in early development of myeloma

Children in Scotland first in the UK to be treated with teduglutide by the NHS

'One stop shops' for cancer aim to speed up diagnosis
NICE recommends new immunotherapy for advanced lung cancer patients

Chiesi Group receives European marketing authorisation for Lamzedo®

Related advertorial

CSTDs prevent microbial ingress

Tearing down walls to deliver a dedicated ward pharmacy service

The Pharmaceutical Journal | 13 DEC 2017 | By Alistair Gray, Clare Mackie, Susan Holgate, Jill Francis, John Eatough

How East Lancashire Hospitals NHS Trust introduced a pharmacy service that comprises one pharmacist delivering pharmaceutical care to one ward to help implement a range of innovations in the field.



Courtesy of Alistair Gary

Farhat Yasmin, specialist pharmacist, speaks with a patient on the respiratory ward at Royal Blackburn Teaching Hospital.

You may often hear at conferences, what would a hospital pharmacy service look like if all the many innovations developed in recent years were implemented at one site?^[1] Implementation may not be feasible for many local reasons, but, at East Lancashire Hospitals NHS Trust (ELHT), the pharmacy team has been given the opportunity to explore several possibilities with the introduction of the dedicated ward pharmacy (DWP) service.

<http://www.hospitalpharmacyeurope.com/featured-articles/dedicated-ward-pharmacists-make-impact>
<https://www.pharmaceutical-journal.com/opinion/comment/tearing-down-walls-to-deliver-a-dedicated-ward-pharmacy-service/20203927.article>

Hello- it's the pharmacist calling

【案例四】 評估藥師新藥服務成效

• Intervention

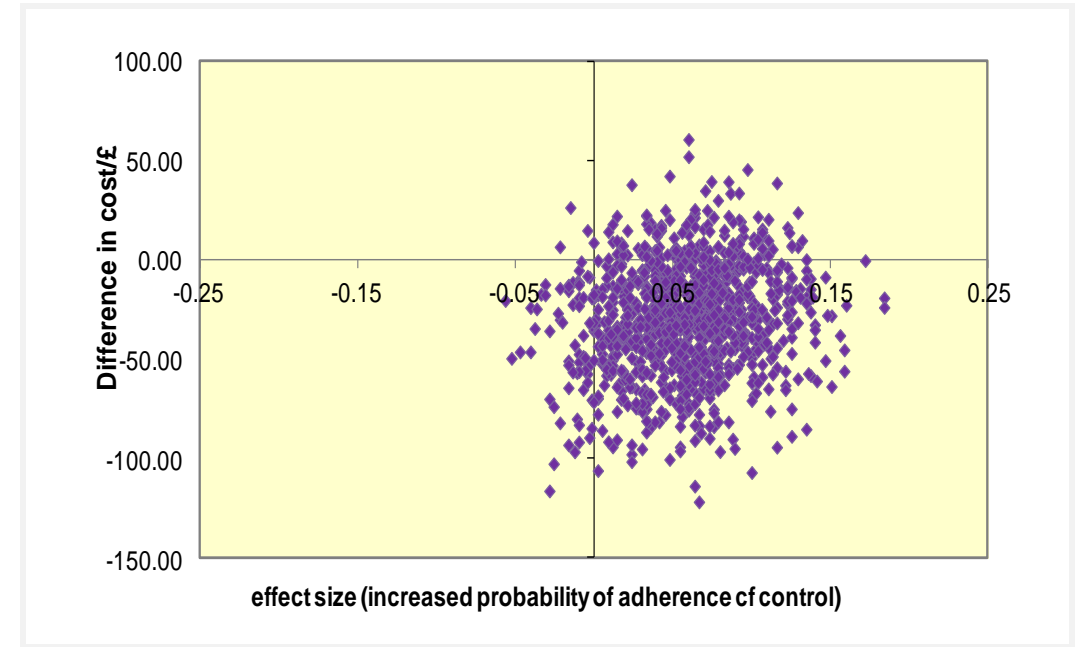
- Pharmacist telephoned 2 weeks after new Rx for chronic illness to discuss medication

• Patients

- Already on >3 medications: >74 or stroke, cardiovascular disease, asthma, diabetes, RAs

• Results: at 1 month follow-up

- Self-reported non-adherence: 8% versus 16% (p=0.030)
- Medication related problems: 23% versus 34% (p=0.019)
- Mean total patient costs (NHS): £77.8 versus £113.9 (p<0.05)



- The New Medicine Service (NMS) started in October 2011 and will run until March 2013 with funding of up to £55 million in 2011/12 and 2012/13.

*Clifford S, Barber N, Elliott RA, Hartley E, Horne, R. P.W.S. 2006; 28: 165-170
Elliott RA, Clifford S, Barber N, Hartley E, Horne R. P.W.S. 2008; 30: 17-23*

- NMS provides support by community pharmacists for people with long-term conditions who are newly prescribed a medicine.
- Apply professional discretion where a formulation change occurs.
- Follows the prescribing of a new medicine for: Asthma or COPD, Diabetes (Type 2), Antiplatelet / Anticoagulant therapy. Hypertension

https://www.cppe.ac.uk/e-learning/newmedicineservice/story_html5.html

Patient engagement (day 0)

Informed consent

Intervention (day 7-14)

Follow up (14-21 days after)

Outline service specification - New Medicine Service (NMS)

11 May 2011

The final service specification will be published by PSNC and NHS Employers following further work with stakeholders during implementation.

Introduction

In England, around 15 million people have a long term condition (LTC). LTCs are those conditions that cannot, at present, be cured, but can be controlled by medication and other therapies. Although it can be difficult for some people to adjust to life with a LTC, there is often a great deal that can be done to manage symptoms and maintain quality of life.

The prescription of a medicine is one of the most common interventions in healthcare. In England there were 813.3 million NHS prescriptions dispensed by community pharmacies in 2009-10. The optimal use of appropriately prescribed medicines is vital to the self-management of most LTCs, but reviews conducted across disease states and countries are consistent in estimating that between 30 and 50% of prescribed medicines are not taken as recommended. This represents a failure to translate the technological benefits of new medicines into health gain for individuals. Sub-optimal medicines use can lead to inadequate management of the LTC and a cost to the patient, the NHS and society.

It is therefore clear that non-adherence to appropriately prescribed medicines is a global health problem of major relevance to the NHS. It has been suggested that increasing the effectiveness of adherence interventions may have a far greater impact on the health of the population than any improvement in specific medical treatments.

Non-adherence is often a hidden problem: undisclosed by patients and unrecognised by prescribers. People make decisions about the medicines they are prescribed and whether they are going to take them very soon after being prescribed the new medicine.

Proof of concept research¹ has shown that pharmacists can successfully intervene when a medicine is newly prescribed, with repeated follow up in the short term, to increase effective medicine taking for the treatment of a long term condition.

Service description

This service will provide support to people newly prescribed a medicine to manage a long term condition through helping them to appropriately improve their medication adherence.

Aims and intended outcomes

The service should:

- help patients and carers manage newly prescribed medicines for a LTC and make shared decisions about their LTC

¹ Haynes R, McDonald H, Garg A, Montague P. (2002). Interventions for helping patients to follow prescriptions for medications: The Cochrane Database of Systematic Reviews, 2, CD000011.
² Clifford S, Sackett R, Elliott R, Martin E, Horne R. (2006). Patient-centred advice is effective in improving adherence to medicines. Pharm World Sci (2006) 28:165-170.



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Pharmacy Name

Address 1
Address 2
Address 3
Postcode



Consent to participate in the NHS New Medicine Service

Patient name	
Address	

I agree that the information obtained during the service can be shared with:

- my doctor (GP) to help them provide care to me
- the Primary Care Trust (PCT) – the local health authority) or successor organisation to allow them to make sure the service is being provided properly by the pharmacy
- the Primary Care Trust (PCT) or successor organisation, the NHS Business Services Authority (NHSBSA) and the Secretary of State for Health to make sure the pharmacy is being correctly paid by the NHS for the service they give me.

Signature	Date
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The NHS asks us to collect information on the ethnicity of people using this service.

What is your ethnic group? Please choose one section from A to E, then tick the appropriate box to indicate your ethnic group.

A - White <input type="checkbox"/> White - British <input type="checkbox"/> White - Irish <input type="checkbox"/> White - Any other White background	B - Mixed <input type="checkbox"/> Mixed - White and Black Caribbean <input type="checkbox"/> Mixed - White and Black African <input type="checkbox"/> Mixed - White and Asian <input type="checkbox"/> Mixed - Any other mixed background
C - Asian or Asian British <input type="checkbox"/> Asian or Asian British - Indian <input type="checkbox"/> Asian or Asian British - Pakistani <input type="checkbox"/> Asian or Asian British - Bangladeshi <input type="checkbox"/> Asian or Asian British - Any other Asian background	D - Black or Black British <input type="checkbox"/> Black or Black British - Caribbean <input type="checkbox"/> Black or Black British - African <input type="checkbox"/> Black or Black British - Any other Black background
E - Chinese or other ethnic group <input type="checkbox"/> Chinese <input type="checkbox"/> Any other ethnic group	

Contacting you about this service - please can we record a phone number to use should we need to contact you:

	Home / Work / Mobile (delete as applicable)
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New Medicine Service - record keeping requirements

Pharmacy records for the service will be maintained to support the delivery of the service and audit. Pharmacy contractors will need to maintain records of the following for each patient who receives the NMS:

- date and method of entry to service
 - patient referred from GP practice
 - patient identified in the pharmacy
- patient demographic details
 - name
 - address
 - gender
 - date of birth
 - NHS number (where available)
 - ethnicity
- registered GP practice
- condition(s) / therapy area(s) of new medicine
 - Asthma and COPD
 - Diabetes (Type 2)
 - Antiplatelet / Anticoagulant therapy
 - Hypertension
- name of new medicine(s)
- date and method of intervention and data and method of follow up
 - face to face in the pharmacy
 - telephone
- healthy living advice provided at each stage of the service (i.e. recruitment, intervention and follow up). This data may be collated using the following standard descriptors:
 - diet and nutrition
 - smoking
 - physical activity
 - alcohol
 - sexual health
 - weight management
- where appropriate, reason why a patient does not take part in the intervention phase of the service:
 - prescriber has stopped new medicine
 - patient has withdrawn consent for information sharing
 - patient has withdrawn consent to receive the service
 - patient could not be contacted
 - other
- matters identified during the discussion with the patient at the intervention. This data should be captured using the following standard descriptors:
 - patient reports using the medicine as prescribed
 - patient reports not using the medicine as prescribed
 - patient has not started using the medicine



Page 1 of 4



NHS New Medicine Service Feedback Form

02 September 2011

To: GP Practice Name

Re: Patient name DOB: NHS number:

This patient was recently enrolled on the NHS New Medicine Service following the prescribing of:

Medicine name

I am writing to inform you of a matter that has arisen during provision of the service which requires your consideration:

☐ Potential drug interaction(s)

☐ Potential side effects/adverse drug reaction preventing use of medicine

☐ Patient reports not using medicine any more

☐ Patient reports never having started using medicine

☐ Patient reports difficulty using the medicine – issue with device

☐ Patient reports difficulty using the medicine – issue with formulation

☐ Patient reports lack of efficacy

☐ Patient reports problem with dosage regimen

☐ Patient reports unresolved concern about the use of the medicine

☐ Other (see comments below)

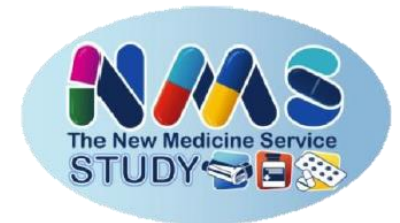
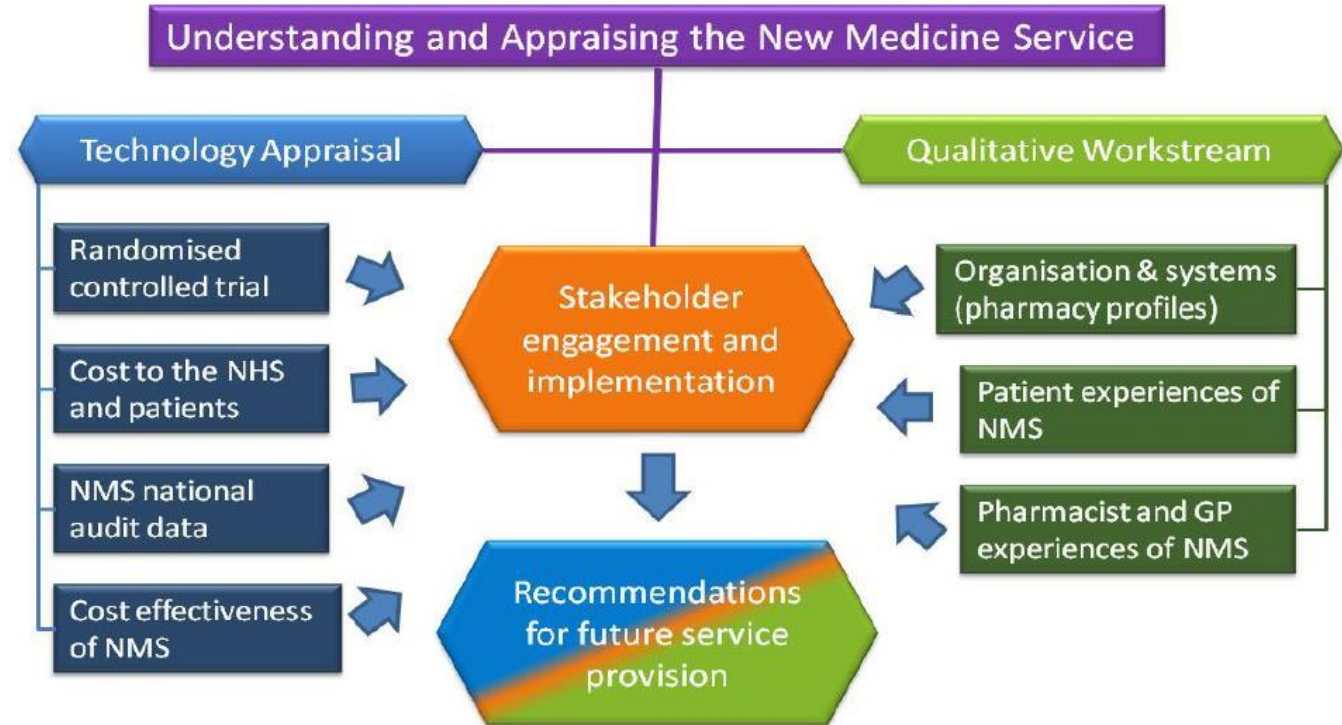
Further information / comments / possible action:

I have advised the patient that, where appropriate, the practice will contact them regarding this matter after considering the above information. Please provide any necessary feedback to me on the outcome.

Pharmacist Name	Telephone:
Pharmacy Name	
Address 1	
Address 2	
Address 3	
Postcode	

CONFIDENTIAL

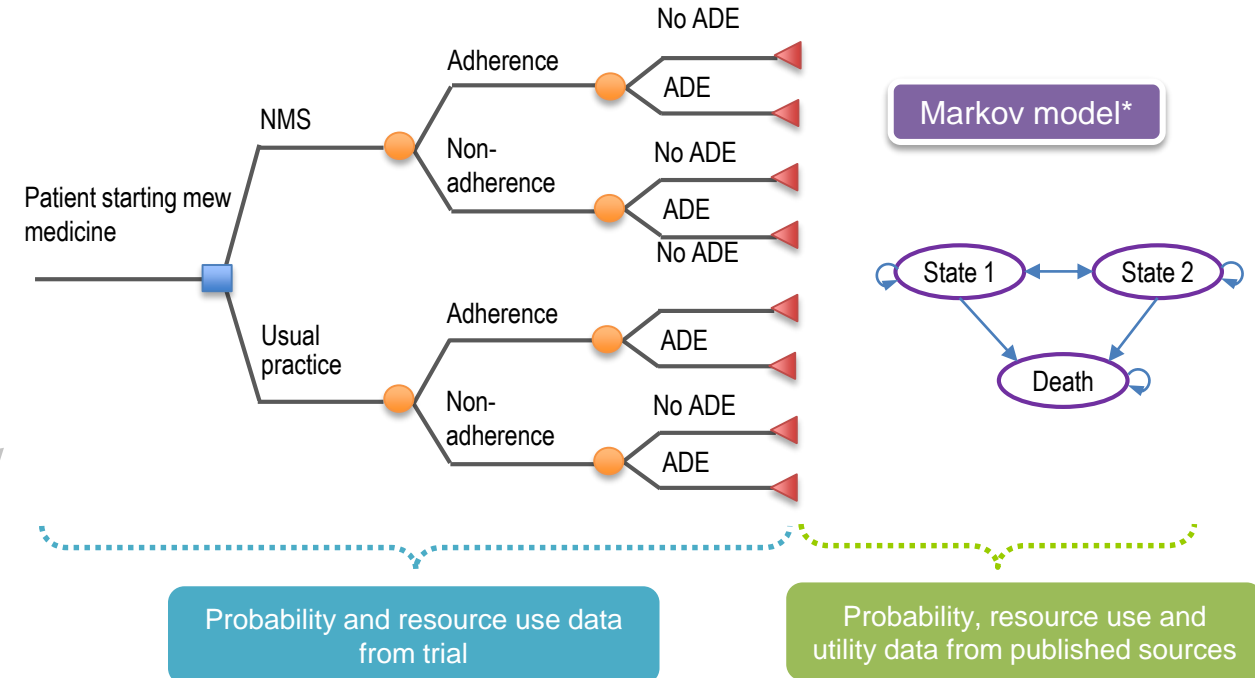
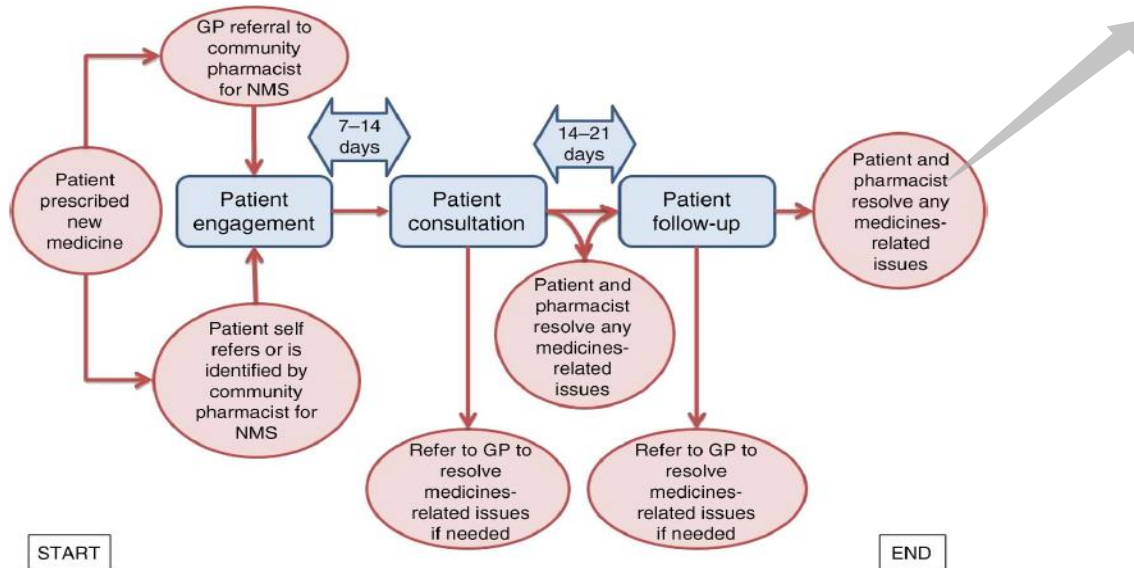
- Evaluate the impact of the NMS on patient medicines-taking behaviour, outcomes, and cost-effectiveness from an NHS perspective.
- Explore the operation of the NMS, the complexity and nature of resulting consultations in terms of patient engagement, advice-giving and support.
- Determine acceptability to stakeholders, reasons for success or lack of success, feasibility within the service delivery environment and generalisability and replicability across diseases and settings.



NMS trial framework and economic model

社區藥局藥師新藥服務之評估架構及經濟學模組

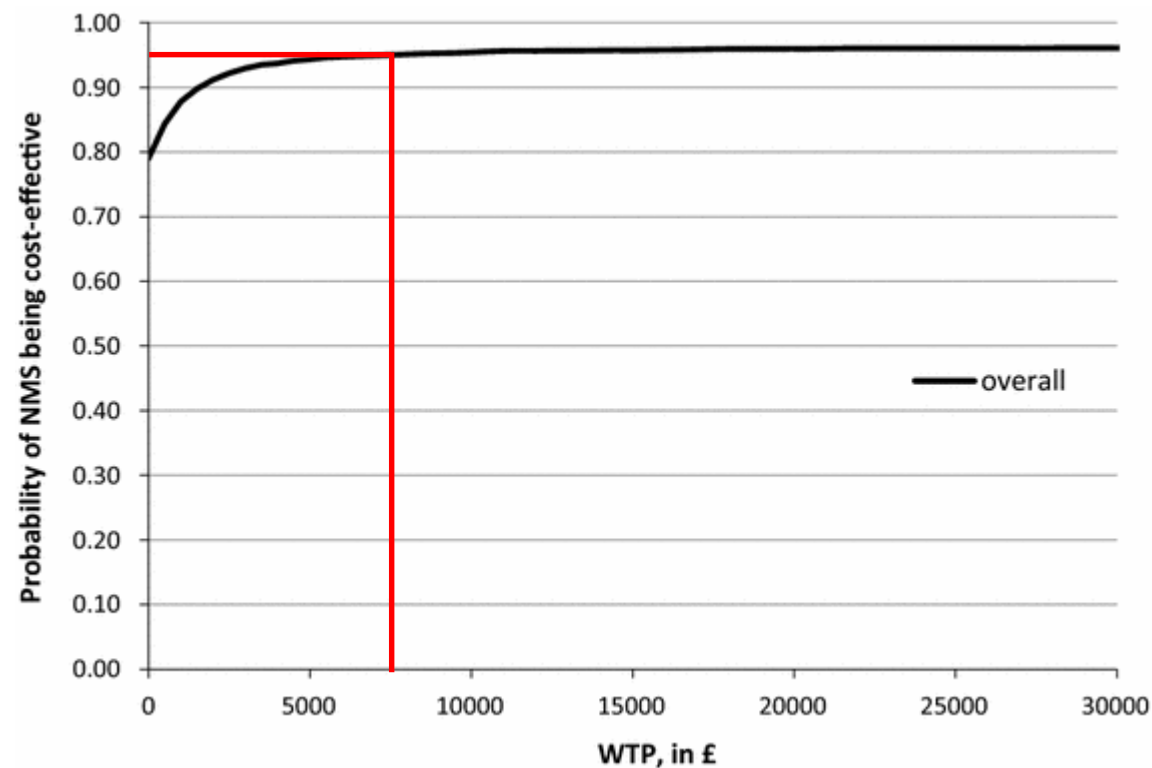
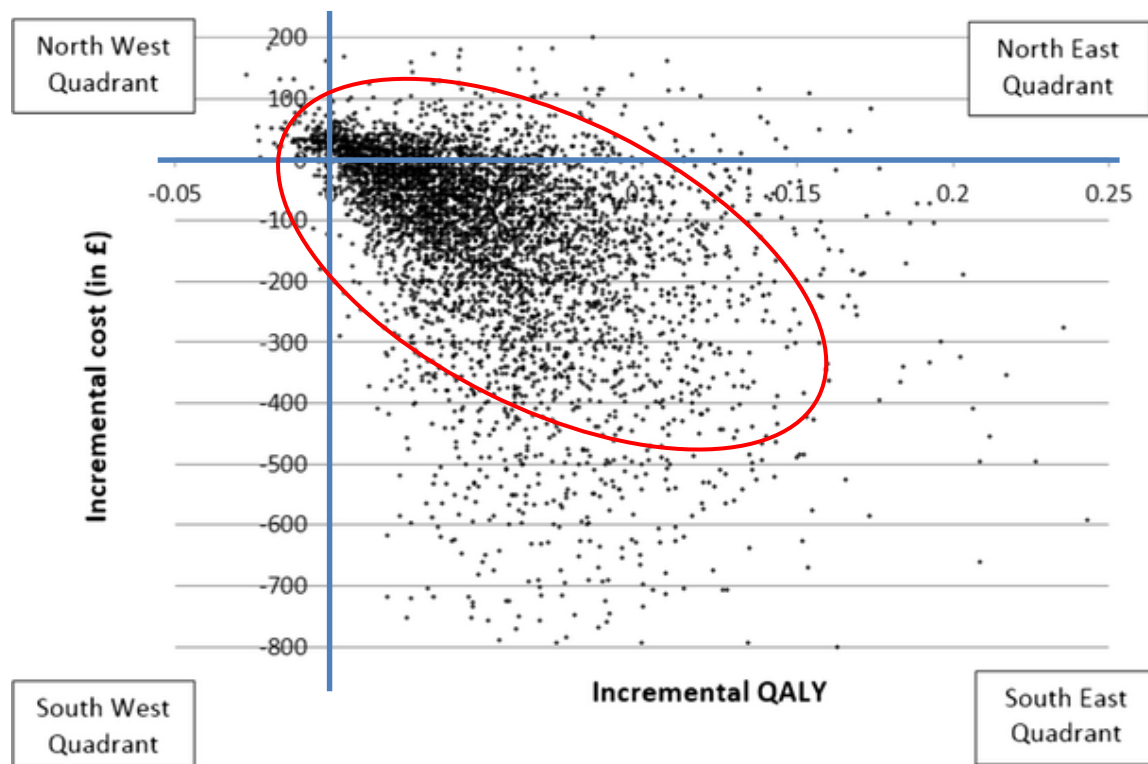
- Pragmatic patient-level parallel randomised controlled trial, in 46 community pharmacies in England.
- Patients 1:1 block randomisation stratified by drug/disease group within each pharmacy.



- Six Markov models were developed in TreeAge Pro (TreeAge Software Inc, One Bank Street, Williamstown, MA, 01267, USA).
- The most commonly prescribed medicine within the four NMS areas was used to inform a model representative of that disease group.

Cost-effectiveness of NMS

社區藥局藥師新藥服務之成本效用



Implications of New Medicine Service study

評估社區藥局藥師新藥服務之研究結果及其影響

NMS evaluation proves value

NMS proves effective

The New Medicine Service can significantly increase patients' adherence to their new medicines and will save the NHS money through better patient outcomes at overall reduced costs, an evaluation of the service has concluded. Research showed that NMS consultations increased adherence by around 10 per cent and increased the number of medicine problems identified compared to standard practice.

The evaluation, commissioned by the Department of Health and carried out by researchers from the University of Nottingham and University College London, recommended that the service could be improved by expanding the range of conditions covered, improving training and engagement with GPs, and giving pharmacies access to GP records. It also suggested some other changes, such as making the service more patient-focused and better integrating it into care pathways. The evaluation concluded that the service should be commissioned in the future.

Lead researcher Professor Rachel Elliott, from the University of Nottingham, said: "Evaluating real life health services is challenging, and it is difficult to fully predict the long-term outcomes of the NMS, but our research suggests that patients will ultimately be better off as a result of the NMS and patients who receive the service will cost the NHS less money in the long term."

Report finds new medicine service improves treatment adherence and saves NHS money

The Pharmaceutical Journal | 14 AUG 2014 | By Janna Lawrence 

The new medicine service is cost effective and increases the number of patients who are adherent to their medicines by around 10%.



Source: Photofusion / Rex Features

A consultation service provided by community pharmacists offering advice on new medicines has led to an increase in patient adherence

A service delivered by community pharmacists that helps patients take new medicines effectively has been found to increase the number of patients who are adherent to their treatment by about 10%.

Pharmacy service will save NHS £517.6m, finds study



A scheme launched by the Department of Health in 2011 to help patients stick to their drug regimens has been so successful, that in its first five years, it will save NHS England £517.6m in the long-term, a team of health economists has found.

Lead researcher [Professor Rachel Elliott](#) from The University of Manchester says the [New Medicine Service](#) – a free scheme where community pharmacists help patients take new medicines – has improved medicines adherence by 10%.

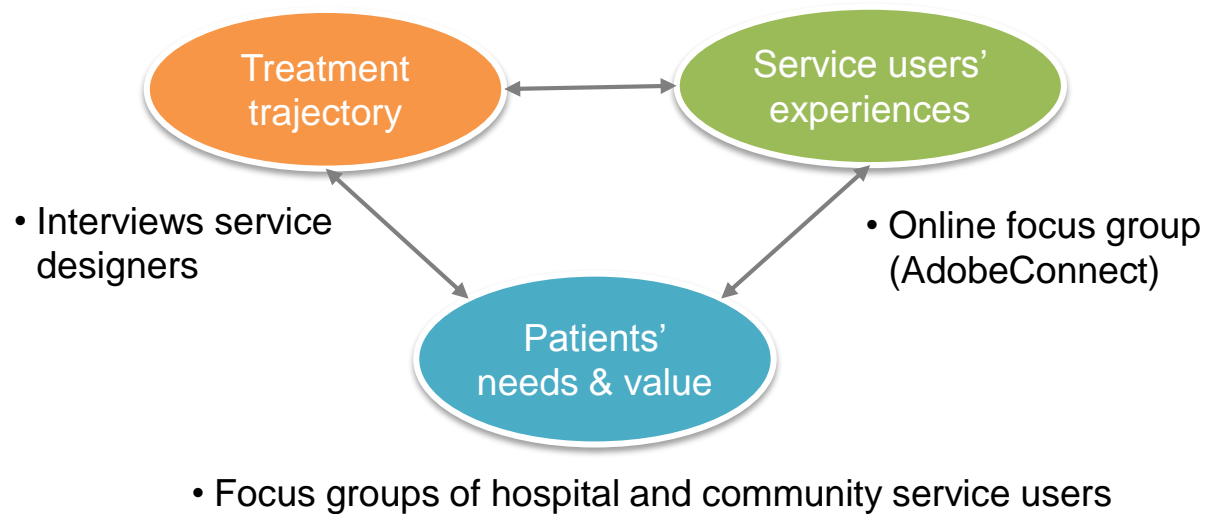
The study was conducted by experts at The Universities of Manchester, Nottingham, UCL and a Patient and Public Representative.

Even in the short term, say the team, the scheme –where pharmacists are paid £24.60 each time they look after a patient as part of NMS has saved the NHS £75.4m.

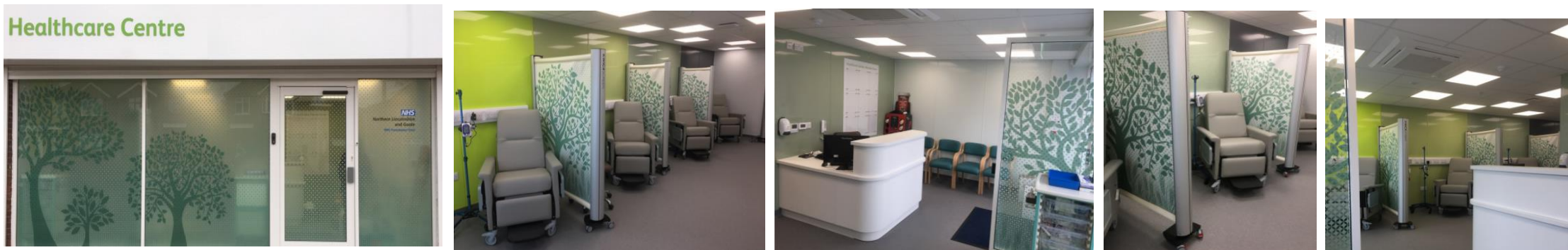
The team used self-reported adherence at 10 weeks, considered the minimum time required to demonstrate behavioural change in a sample of 503 patients

Community pharmacy injection treatment services

【案例五】評估病患對於社區注射治療的經驗及看法

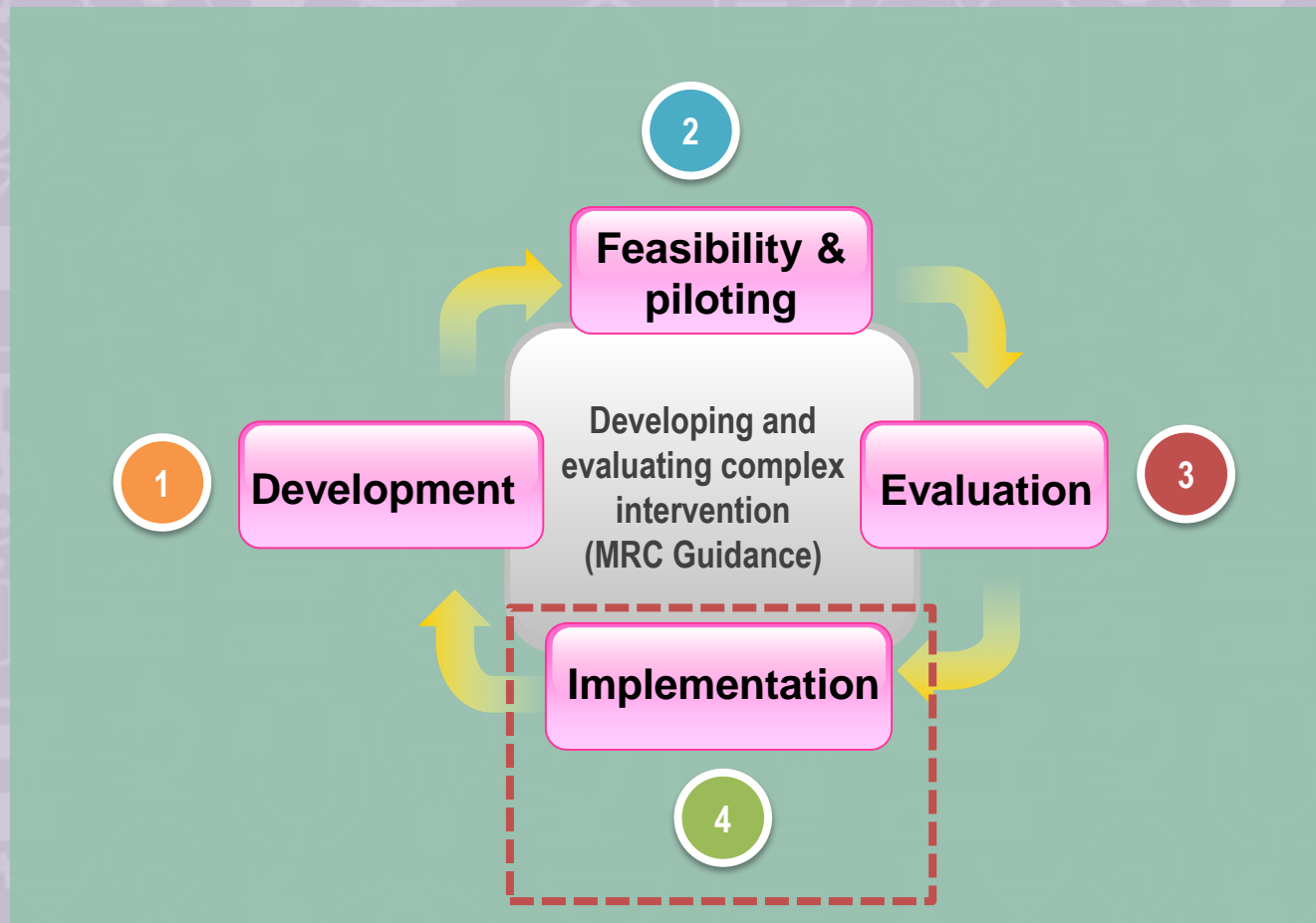


- A new model of care has been developed by North Lincolnshire and Goole in partnership with McKesson UK.
- The Lloyd's Infusion and Injection Clinic was first established in November 2018.
- The model has been designed in line with recent NHS initiatives including the Five Year Forward View and Long-Term Plan both with the ambition to reduce the number of visits patients make to the hospital setting.





Development of complex interventions



發表結果

執行服務

追蹤及調查

長期評估



Implementation

在執行的階段，該做些甚麼？

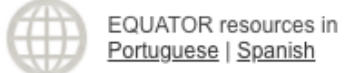
- Dissemination
- Surveillance and monitoring
- Long term follow-up
 - What should we be doing?
 - Are we doing it?
 - How can we improve?

- Full reporting is essential
- Important to include a detailed description of the intervention and the context
- Wide-ranging set of guidelines now available

Reporting strategies 成果報告



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The Library contains a comprehensive searchable database of reporting guidelines and also links to other resources relevant to research reporting.

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Reporting guidelines for main study types

Randomised trials	CONSORT	Extensions	Other
Observational studies	STROBE	Extensions	Other
Systematic reviews	PRISMA	Extensions	Other
Case reports	CARE	Extensions	Other
Qualitative research	SRQR	COREQ	Other
Diagnostic / prognostic studies	STARD	TRIPOD	Other
Quality improvement studies	SQUIRE		Other
Economic evaluations	CHEERS		Other
Animal pre-clinical studies	ARRIVE		Other
Study protocols	SPIRIT	PRISMA-P	Other
Clinical practice guidelines	AGREE	RIGHT	Other

[See all 398 reporting guidelines](#)

Possible strategies

Open data
Openly sharing results and the underlying data with other scientists.

Pre-registration
Publicly registering the protocol before a study is conducted.

Collaboration
Working with other research groups, both formally and informally.

Automation
Finding technological ways of standardising practice, thereby reducing the opportunity for human error.

Open methods
Publicly publishing the detail of a study protocol.

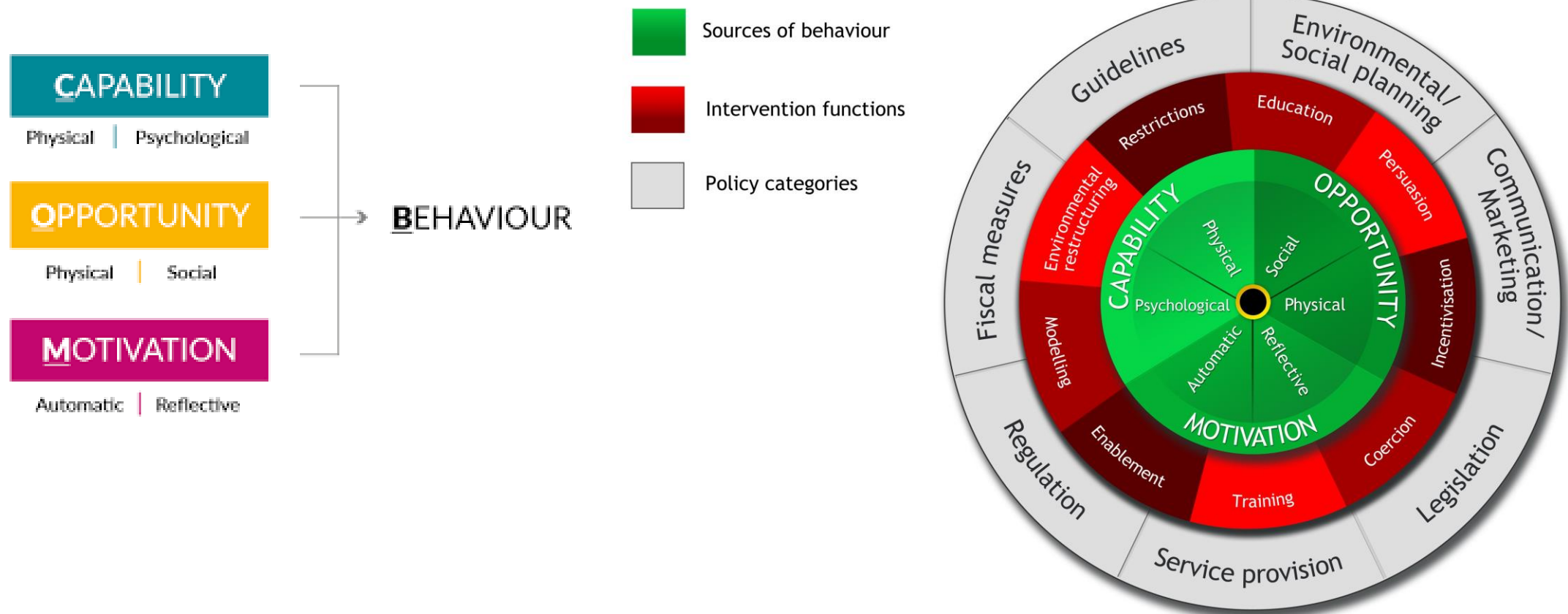
Post-publication review
Continuing discussion of a study in a public forum after it has been published (and any revision) before publication.

Reporting guidelines
Guidelines and templates that help researchers meet certain criteria when publishing studies.

Funders: reporting guidelines key for research reproducibility and reliability.

Implementation is a behavior change problem!

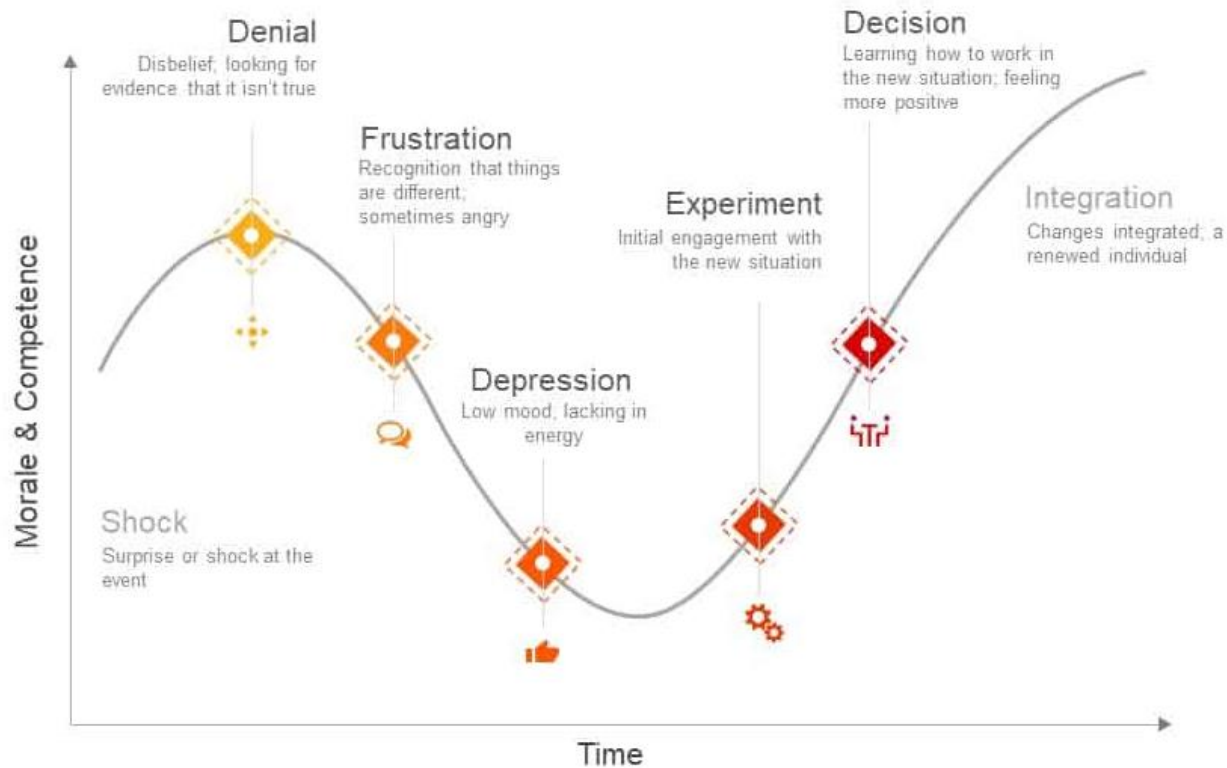
- Considering the COM-B wheel:



Michie S, van Stralen MM, West R. The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implement Sci.* 2011;6:42. Published 2011 Apr 23. doi:10.1186/1748-5908-6-42

Continuous service improvement cycle

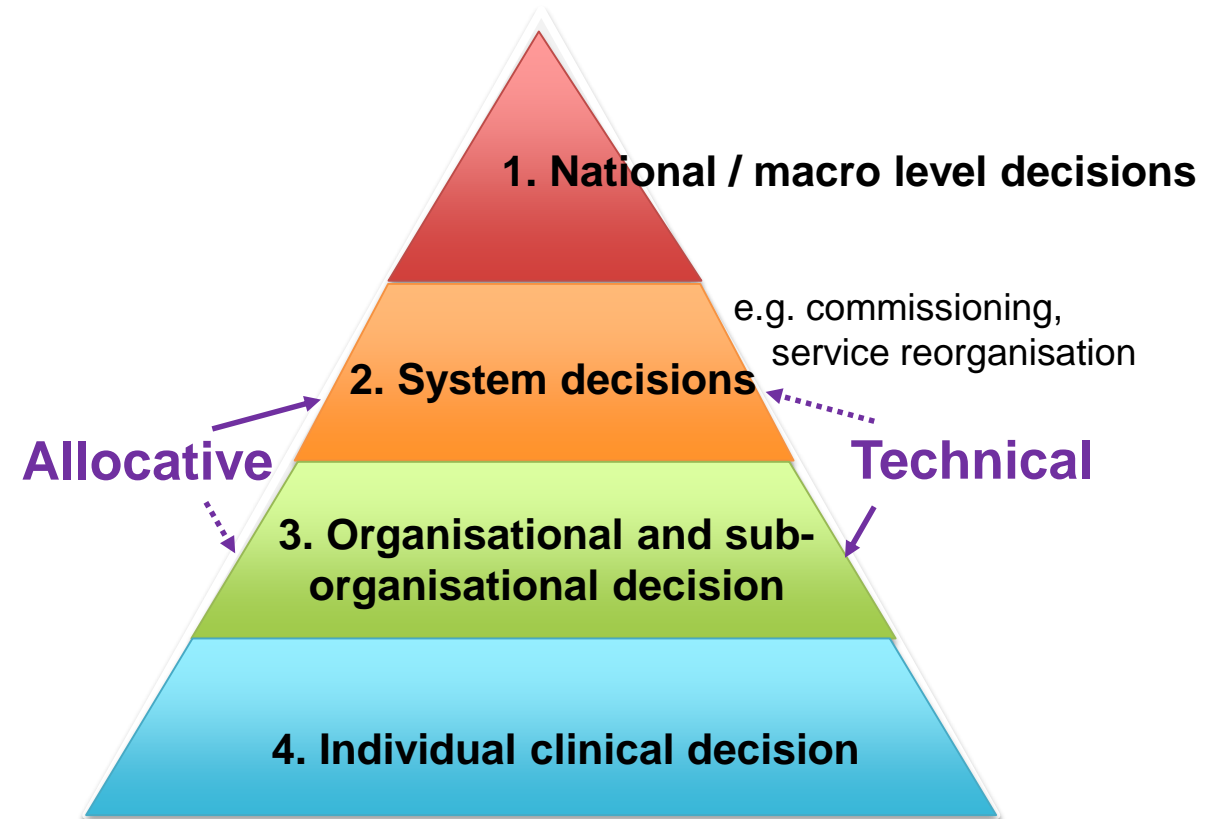
- Kubler Ross Change Curve



- Clinical audit for service quality

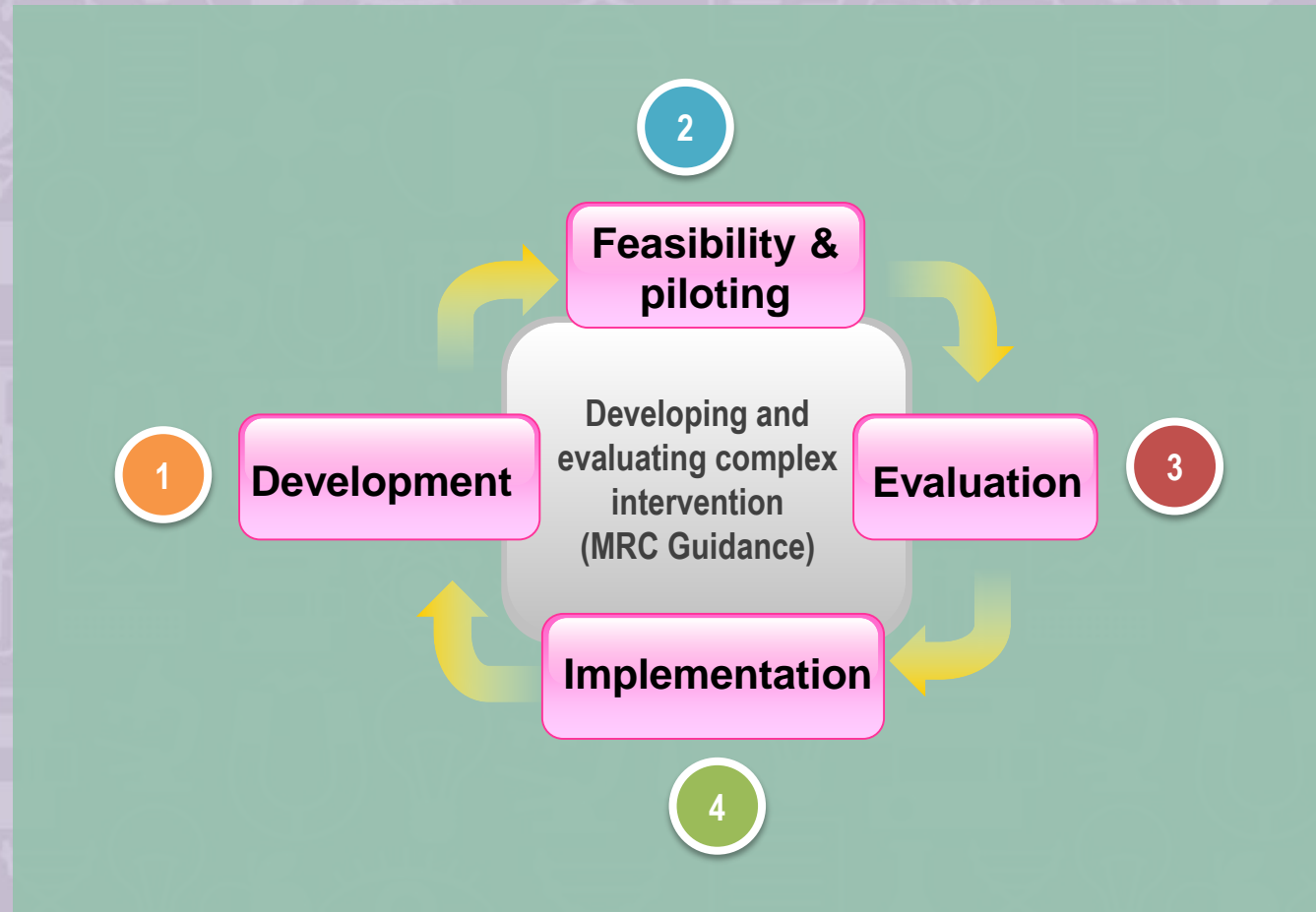


- Ask research questions that matter to patients, practitioners and policy-makers
- Involve stakeholders in planning and conducting the research
- Provide evidence in an integrated and graded way
- Identify the elements relevant to decision-making
- Make recommendations as specific as possible
- Take a multifaceted approach
- Exploit opportunities for long-term follow-up



- Why do we evaluate the complex pharmacy services?
- Why do we need a framework to evaluate the pharmacist-related services?
- What is the UK Medical Research Council (MRC) complex intervention framework?
- How does the UK MRC framework apply to develop and evaluate pharmacy services?

Re-cap: The development of complex interventions





Thank you for your listening!

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Any question?

