How Can Clinicians Use **Data** to Improve Rehabilitation and Services in Practice

Dr Alexander Harrison

Dr Alex Harrison – Who am I?

- Research Fellow at the University of York, UK
- Research fellow and statistician for the National Audit of Cardiac Rehabilitation (**NACR**)
- Affiliated with the research unit PROgrez at Næstved-Slagelse-Ringsted Hospital and the University of Southern Denmark
- Background in Biology and Health Research
- Since being at York in 2014, published over **30 primary research articles** on Cardiac Rehabilitation.

Headline Finding

"Through the **increased importance of data** that clinicians entered in the UK, there has been a service quality improvement of **30%**"

- This presentation will outline **how** this has been achieved

- Also showcase the **lessons** that can be learned

What this talk will cover

- What are Registries and why is it important?
- Cardiac Rehabilitation and International comparisons
- Introduce the National Audit and how clinicians participate and benefit from involvement
- Demonstrate how a mutualistic relationship between clinicians and audit benefits all
  - National Certification Programme
  - Collaborative business case
  - Ownership of data and key data metrics
  - NHS Long Term Plan funding

What are Registries and why is it important?

'A patient registry is an organized system that uses **observational study methods** to collect uniform data (clinical and other) to **evaluate specified outcomes** for a population…' NCBI 2022

- Useful to asses real world implementation
- Success is reliant on clinician support and supply of quality data
- Continual monitoring drives continuous improvements

Cardiac Rehabilitation (CR)

- What is Cardiac Rehab?

'the sum of activities required to influence favorably the underlying cause of the disease, as well as the best possible, physical, mental and social conditions, so that they (people) may, by their own efforts preserve or resume when lost, as normal a place as possible in the community'.

WHO 2011

Cardiac Rehabilitation (CR)

- Well evidenced and highly established secondary prevention intervention globally
- Global Survey indicating **54.7%** of countries provide CR worldwide[1]
- **Two Major Systematic reviews** show clinical benefit for Coronary Heart Disease patients[1] along with Heart Failure patients[2]

  Systematic Review is a research method that collates trials to make one large body of evidence, this way researchers and governing bodies can conclude on findings that are as robust as possible

[1]Dibben, et al., (2021) Exercise-based rehabilitation for coronary heart disease, Cochrane Database of Systematic Reviews

[2]Long, et al., (2019) Exercise-based cardiac rehabilitation for heart failure, Cochrane Database of Systematic Reviews

Cardiac Rehabilitation (CR)

- **Class 1** recommendation in the American Heart Association
- Listed in the European Cardiovascular Society guidelines
- Within the UK, the British Association of Cardiovascular Prevention and Rehabilitation (**BACPR**) train, inform and support clinicians
- In the UK, over **60,000** patients participate each year
- Uptake internationally is ~50%

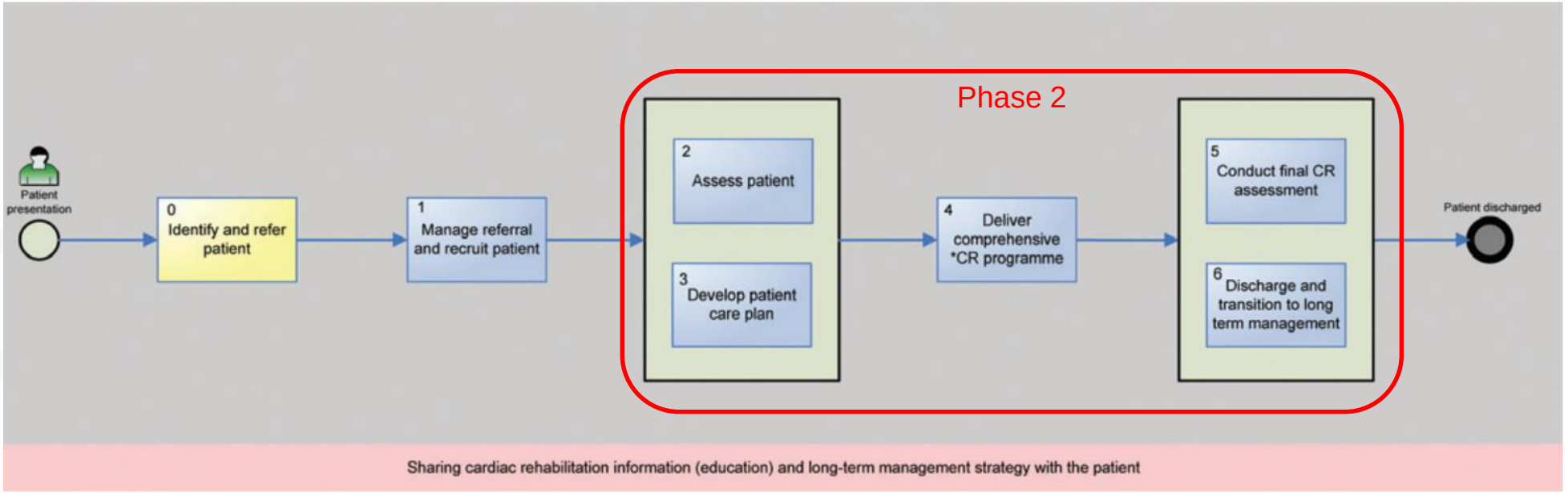
National Audit of Cardiac Rehabilitation (NACR)

- **Charity Funded** (British Heart Foundation)
- **Clinician lead** by physiotherapist Prof Patrick Doherty
- Data collection started in **2005**, first annual report in **2007**
- Aims to **record, report and promote** service delivery and quality
- Data from over **200** programmes on services and patient level information

NACR Coverage

- At present **NACR** covers England, Northern Ireland and Wales
  - There are **229** programmes
  - Currently **80%** of programmes are registered for electronic data capture
  - Mixture of Hospital and Community teams along with combination services
  - Electronic data shows ~**100,000** unique records entered per year
  - Over **1,000,000** patients records to date

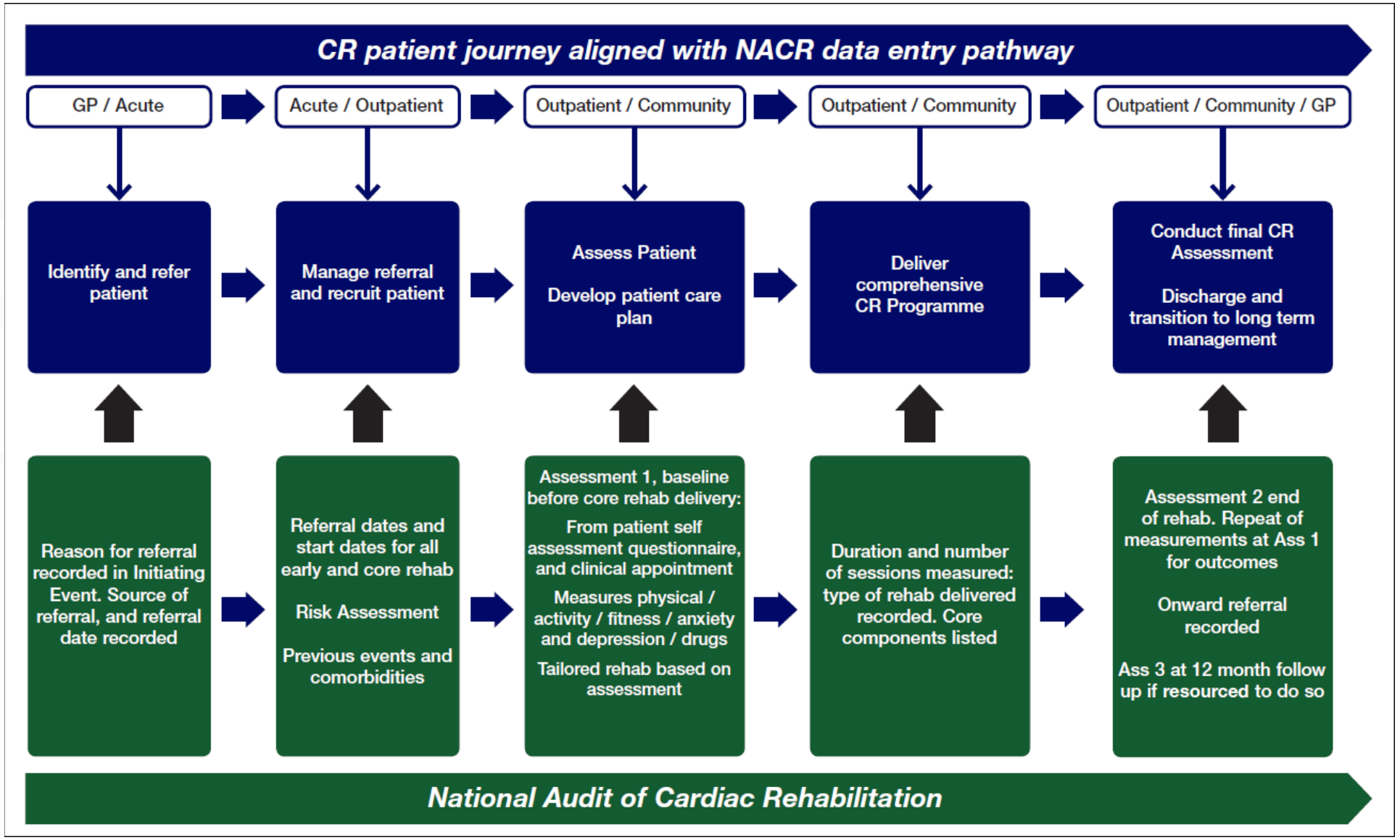
CR Pathway



- The CR pathway is a complex **multi-stage** intervention

- Main focus often **Phase 2**, used for uptake and outcome analysis

CR Pathway and NACR Data



Who Delivers CR?

- Staff compliment extremely **diverse**

National overall staffing profile for CR programmes

	England		Northern Ireland		Wales		UK total	
	N	%	N	%	N	%	N	%
Counsellor	16	8.3	0	0.0	4	23.5	20	9.0
Dietitian	89	46.1	7	58.3	10	58.8	107	48.0
Doctor	18	9.3	2	16.7	0	0.0	20	9.0
Exercise Specialist	108	56.0	3	25.0	10	58.8	121	54.3
Healthcare Assistant	27	14.0	4	33.3	2	11.8	33	14.8
Nurse	186	96.4	12	100.0	17	100.0	216	96.9
Occupational Therapist	40	20.7	4	33.3	10	58.8	55	24.7
Pharmacist	58	30.1	8	66.7	9	52.9	76	34.1
Physiotherapist	118	61.1	10	83.3	14	82.4	143	64.1
Physiotherapy Assistant	53	27.5	3	25.0	6	35.3	62	27.8
Psychologist	44	22.8	3	25.0	3	17.6	50	22.4
Secretarial/Clerical Administrator	131	67.9	5	41.7	13	76.5	149	66.8

Numbers differ from other tables as staffing data is derived from email survey carried out each year.

England N=193, Northern Ireland N=12, Wales N=17.

Who Delivers CR?

- Service should be provided by a **multidisciplinary team (MDT)** - 3 or more staff types
- Five year average (2015-2019) 84.6% of programmes had **MDT**, in 2020 90% **an increase of 5.4%.**
- Data entry - anyone can enter!

Patient Profile

- Varied diagnosis and treatment groups

Number and type of patients starting CR

				Number of patients
	England	Northern Ireland	Wales	Other
MI	10,902	280	688	14
MI+PCI	24,763	1,195	1,788	82
MI+CABG	2,541	77	135	18
CABG	9,649	311	526	30
PCI	13,572	747	574	36
Arrhythmia/Cardiac Arrest	393	<10	36	<10
Angina	2,725	73	336	10
Valve Disease/Surgery	5,854	201	463	38
MI with HF	308	35	21	<10
HF or Cardiomyopathy	5,568	220	341	<10
CVD Device	1,833	27	126	12
Peripheral Arterial Disease (PAD)	234	<10	<10	-
High CVD Risk	357	16	39	-
Other CVD No Treatment	2,168	30	154	<10
Total	80,867	3,216	5,230	260

Based on data from NACR electronic data entry and the NACR annual survey of programmes.

Patient Profile

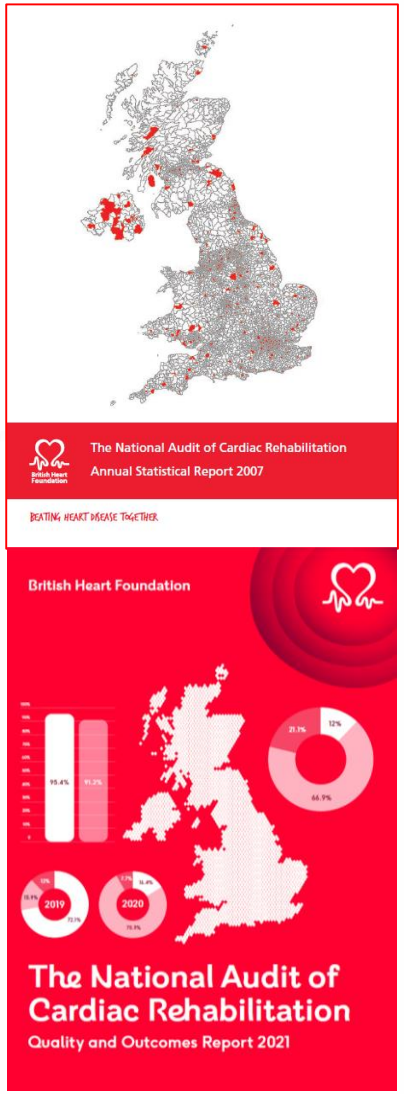
- **Elderly population** (Male average 66yrs, females 70yrs)
  - Younger in RCT evidence by 10 years
- **Male dominant** split (males 70% by proportion)
- **Multimorbidity** highly prevalent, more than **50%** of patients receiving CR have **two or more** additional conditions
  - Such as Angina, Arthritis, Cancer, Diabetes, Osteoporosis, COPD, Anxiety and Depression
- **Diverse demographics** including employment status, martial status and ethnicity

NACR Reporting and working

- Quality and Outcomes report Annually
  - Supplementary material published online at named local level
- Programme Finder and reported quality
- National Certification Report
- Bespoke reports on request for programmes

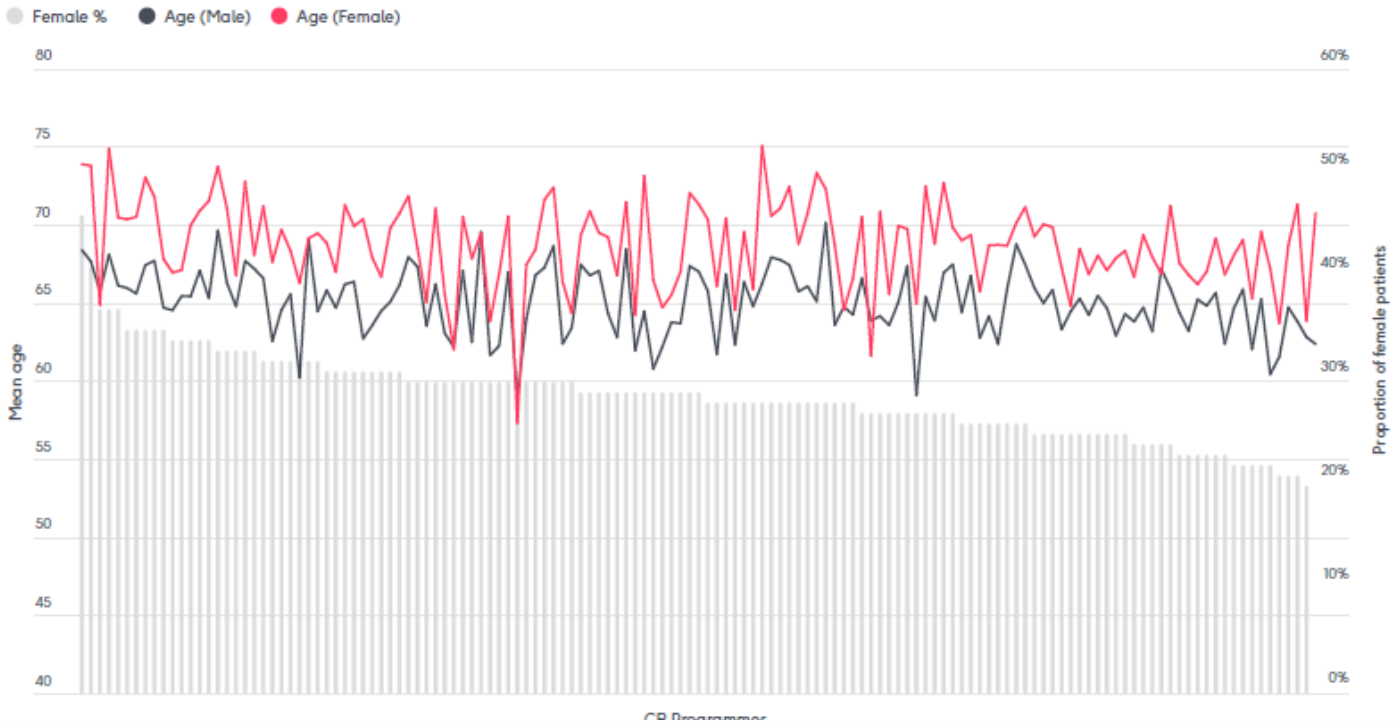
Annual Reports

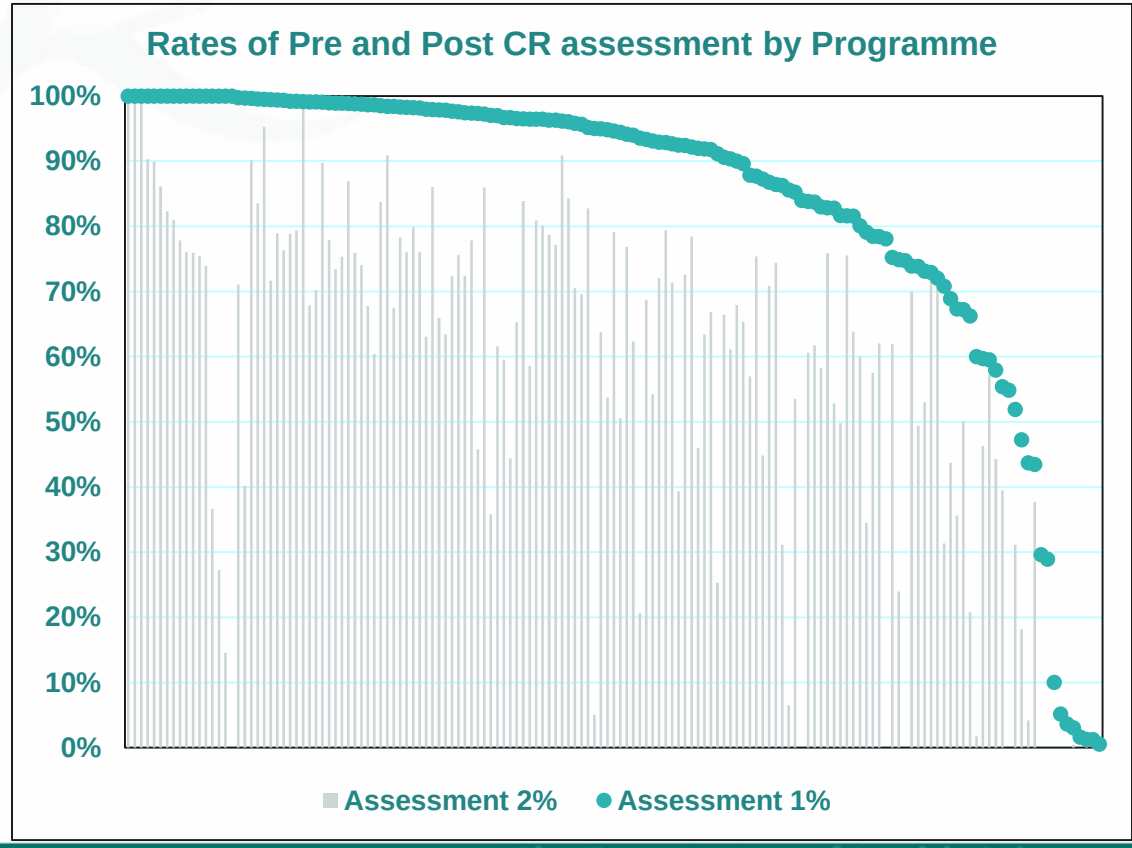
- **14 years of NACR** detailed Annual reports on the patient profile, service quality and staffing in routine CR
- Since 2017, **supplemented with programme level data** on all aspects of the pathway helping to inform and increase ownership of clinicians data
- Report contains the published **UK uptake** figures for traditional group CR patients



Diversity

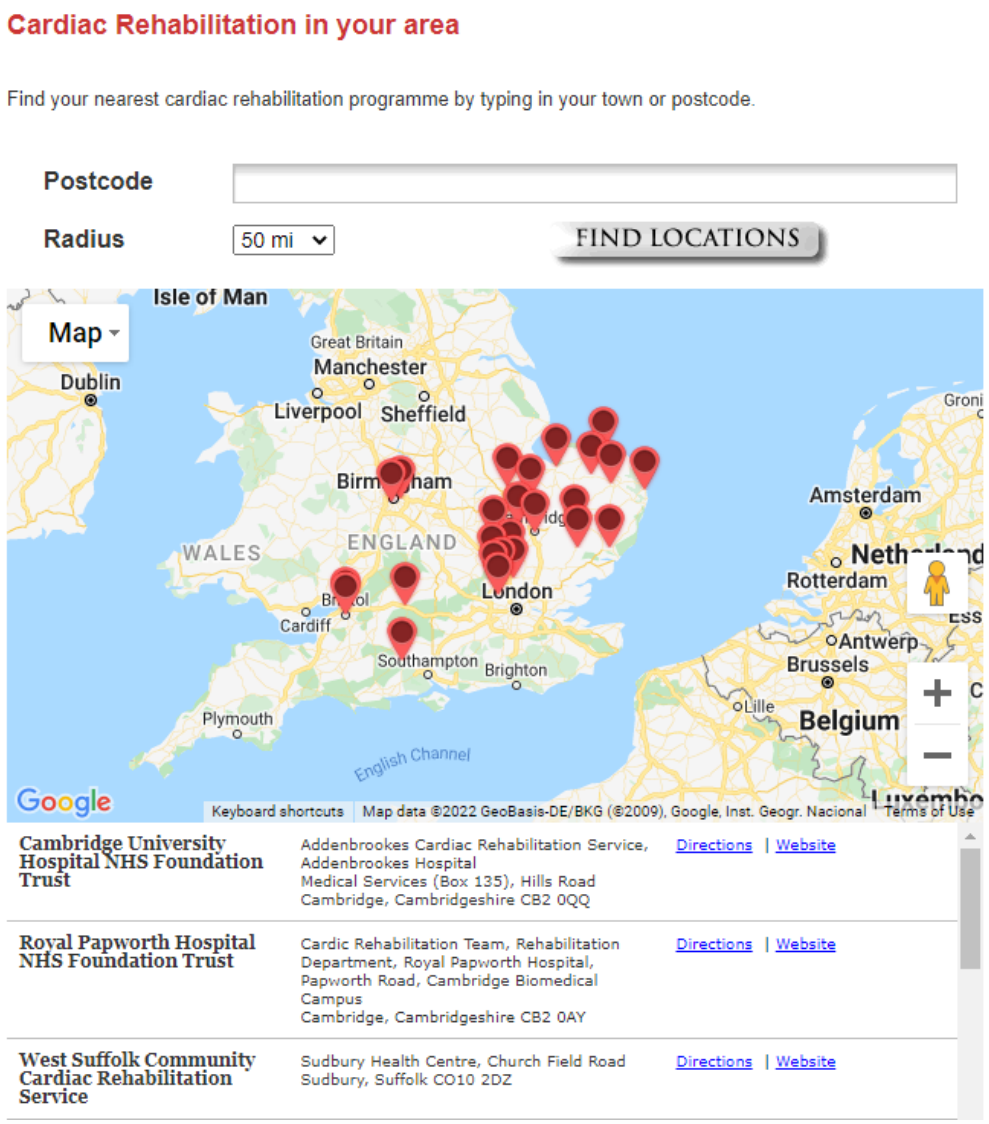
Fig. 1a. England





Programme Finder

- As part of **'patient choice'** anyone can access programme finder
- Based on location generate nearest programmes as well as contact details and service quality
- Programmes on their **'website'** include transport options or modes offered etc.



How audits can benefit service

- National Certification Programme
- Business cases
- Ownership of data
- NHS Long term Plan funding

National Certification Programme

- Long term collaboration with BACPR
- Published standards and core components has led to understanding in routine practice of quality service provision
- In **2017,** implement the National Certification programme for Cardiac Rehabilitation (NCP_CR) which awarded service quality

National Certification Programme

- National Certification Programme is reported annually on all services operating in the UK

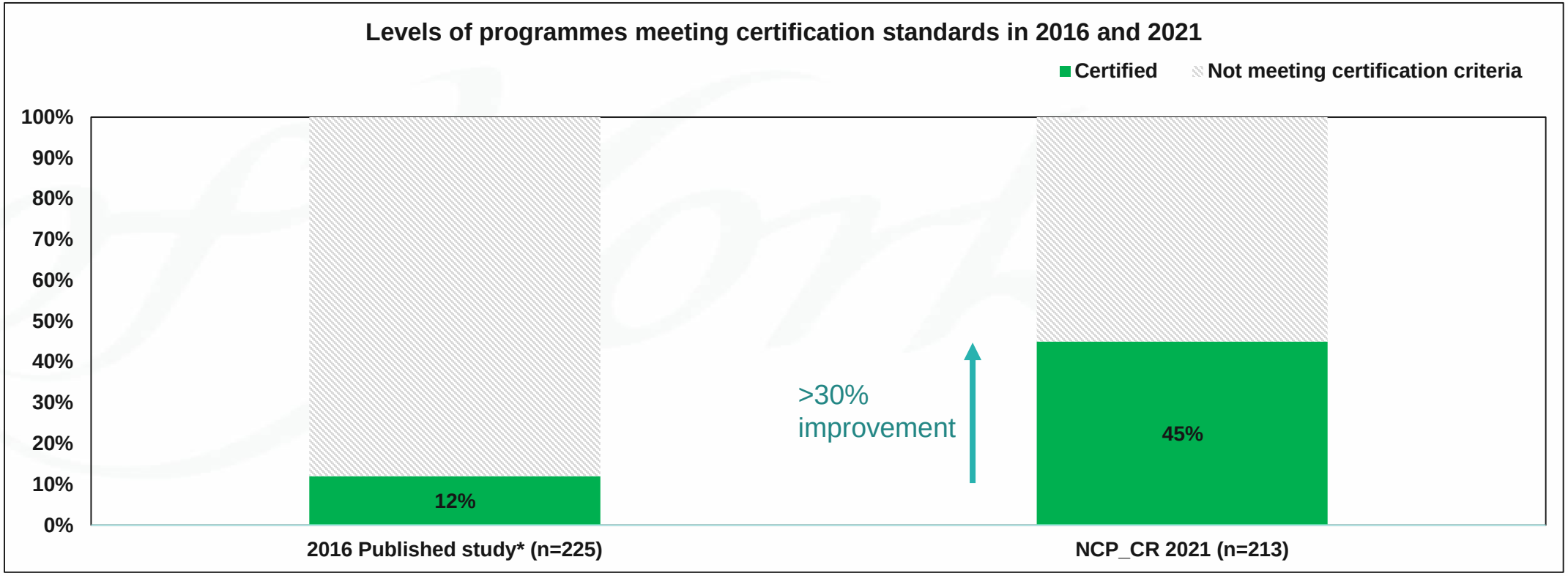
Certification Grade	Standard Met
Fail	0
Red	1-3
Amber	4-6
Green/Certified	7

National Certification Programme

- **Certification** shows how local programmes and regions are doing in terms of meeting **minimum standards**. This has been a good incentive for programmes to **engage.**

Standard	
Standard 1 - MDT	Three or more different staff types
Standard 2 – Priority Groups	Deliver to all five groups
Standard 3 - Duration	Minimum of 8 week average phase 2
Standard 4 – Assessment 1	Above National average e.g. >80% England
Standard 5 - CABG Wait time	Below National average e.g. 46 days England
Standard 6 – MI/PCI Wait time	Below National average e.g. 33 days England
Standard 7 – Assessment 2	Above National average e.g. >57% England

National Certification Programme



- This shows a system level shift towards meeting the key performance indicators such as reducing waiting times, known to influence patient outcomes

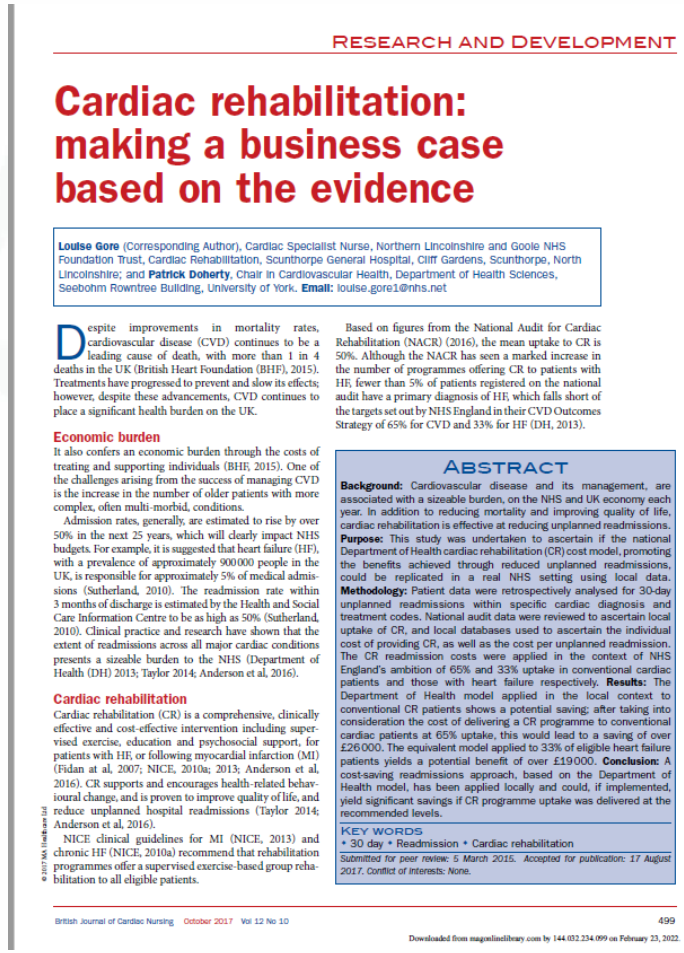
*Doherty, P., et al (2016) Does cardiac rehabilitation meet minimum standards: An observational study using UK national audit? Open Heart

Collaborative Business Case

- To gain more funding business cases are presented to mangers

Example – Scunthorpe Hospital

- Using systematic reviews, clinicians built a business case estimated saving due to CR
- Estimates showed increasing uptake to **65%,** could save the Hospital **£26,000 per year**
- Allocated funding to implement service improvement



RESEARCH AND DEVELOPMENT

Cardiac rehabilitation: making a business case based on the evidence

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Despite improvements in mortality rates, cardiovascular disease (CVD) continues to be a leading cause of death, with more than 1 in 4 deaths in the UK (British Heart Foundation (BHF), 2015). Treatments have progressed to prevent and slow its effects; however, despite these advancements, CVD continues to place a significant health burden on the UK.

Economic burden

It also confers an economic burden through the costs of treating and supporting individuals (BHF, 2015). One of the challenges arising from the success of managing CVD is the increase in the number of older patients with more complex, often multi-morbid, conditions.

Admission rates, generally, are estimated to rise by over 50% in the next 25 years, which will clearly impact NHS budgets. For example, it is suggested that heart failure (HF), with a prevalence of approximately 900 000 people in the UK, is responsible for approximately 5% of medical admissions (Sutherland, 2010). The readmission rate within 3 months of discharge is estimated by the Health and Social Care Information Centre to be as high as 50% (Sutherland, 2010). Clinical practice and research have shown that the extent of readmissions across all major cardiac conditions presents a sizeable burden to the NHS (Department of Health (DH) 2013; Taylor 2014; Anderson et al, 2016).

Cardiac rehabilitation

Cardiac rehabilitation (CR) is a comprehensive, clinically effective and cost-effective intervention including supervised exercise, education and psychosocial support, for patients with HF, or following myocardial infarction (MI) (Fidan at al, 2007; NICE, 2010a; 2013; Anderson et al, 2016). CR supports and encourages health-related behavioural change, and is proven to improve quality of life, and reduce unplanned hospital readmissions (Taylor 2014; Anderson et al, 2016).

NICE clinical guidelines for MI (NICE, 2013) and chronic HF (NICE, 2010a) recommend that rehabilitation programmes offer a supervised exercise-based group rehabilitation to all eligible patients.

Based on figures from the National Audit for Cardiac Rehabilitation (NACR) (2016), the mean uptake to CR is 50%. Although the NACR has seen a marked increase in the number of programmes offering CR to patients with HF, fewer than 5% of patients registered on the national audit have a primary diagnosis of HF, which falls short of the targets set out by NHS England in their CVD Outcomes Strategy of 65% for CVD and 33% for HF (DH, 2013).

ABSTRACT

Background: Cardiovascular disease and its management, are associated with a sizeable burden, on the NHS and UK economy each year. In addition to reducing mortality and improving quality of life, cardiac rehabilitation is effective at reducing unplanned readmissions. **Purpose:** This study was undertaken to ascertain if the national Department of Health cardiac rehabilitation (CR) cost model, promoting the benefits achieved through reduced unplanned readmissions, could be replicated in a real NHS setting using local data. **Methodology:** Patient data were retrospectively analysed for 30-day unplanned readmissions within specific cardiac diagnosis and treatment codes. National audit data were reviewed to ascertain local uptake of CR, and local databases used to ascertain the individual cost of providing CR, as well as the cost per unplanned readmission. The CR readmission costs were applied in the context of NHS England's ambition of 65% and 33% uptake in conventional cardiac patients and those with heart failure respectively. **Results:** The Department of Health model applied in the local context to conventional CR patients shows a potential saving; after taking into consideration the cost of delivering a CR programme to conventional cardiac patients at 65% uptake, this would lead to a saving of over £26 000. The equivalent model applied to 33% of eligible heart failure patients yields a potential benefit of over £19 000. **Conclusion:** A cost-saving readmissions approach, based on the Department of Health model, has been applied locally and could, if implemented, yield significant savings if CR programme uptake was delivered at the recommended levels.

KEY WORDS
• 30 day • Readmission • Cardiac rehabilitation

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Ownership of Data and Key Data Metrics

- A study comparing registries in England and Denmark found that many aspects of registries that can **support** *or* **hinder** implementation [1]
- Identified **clinician ownership** of the data and seeing it as a true representation of *their* service as a factor which influences the **quality of data**.
- The audit has found that reporting at a named level has **increased pressure** but *also* **pride** in services

- [1] Egholm, CL., et al., (2021) "Struggling with Practices" – A qualitative study of factors influencing the implementation of clinical quality registries for Cardiac Rehabilitation in England and Denmark, BMC Health Services Research

Egholm *et al. BMC Health Services Research* (2019) 19:102
https://doi.org/10.1186/s12913-019-3940-5

BMC Health Services Research

RESEARCH ARTICLE Open Access

"Struggling with practices" – a qualitative study of factors influencing the implementation of clinical quality registries for cardiac rehabilitation in England and Denmark

Cecilie Lindström Egholm[1,2*], Charlotte Helmark[3], Patrick Doherty[4], Per Nilsen[5], Ann-Dorthe Zwisler[1] and Gitte Bunkenborg[6]

Abstract

Background: The use of clinical quality registries as means for data driven improvement in healthcare seem promising. However, their use has been shown to be challenged by a number of aspects, and we suggest some may be related to poor implementation. There is a paucity of literature regarding barriers and facilitators for registry implementation, in particular aspects related to data collection and entry. We aimed to illuminate this by exploring how staff perceive the implementation process related to the registries within the field of cardiac rehabilitation in England and Denmark.

Methods: A qualitative, interview-based study with staff involved in collecting and/or entering data into the two case registries (England $N = 12$, Denmark $N = 12$). Interviews were analysed using content analysis. The Consolidated Framework for Implementation Research was used to guide interviews and the interpretation of results.

Results: The analysis identified both similarities and differences within and between the studied registries, and resulted in clarification of staffs' experiences in an overarching theme: 'Struggling with practices' and five categories; the data entry process, registry quality, resources and management support, quality improvement and the wider healthcare context. Overall, implementation received little focused attention. There was a lack of active support from management, and staff may experience a struggle of fitting use of a registry into a busy and complex everyday practice.

Conclusion: The study highlights factors that may be important to consider when planning and implementing a new clinical quality registry within the field of cardiac rehabilitation, and is possibly transferrable to other fields. The results may thus be useful for policy makers, administrators and managers within the field and beyond. Targeting barriers and utilizing knowledge of facilitating factors is vital in order to improve the process of registry implementation, hence helping to achieve the intended improvement of care processes and outcomes.

Keywords: Clinical quality registry, Clinical audit, Quality improvement, Implementation, Data entry, Cardiac rehabilitation

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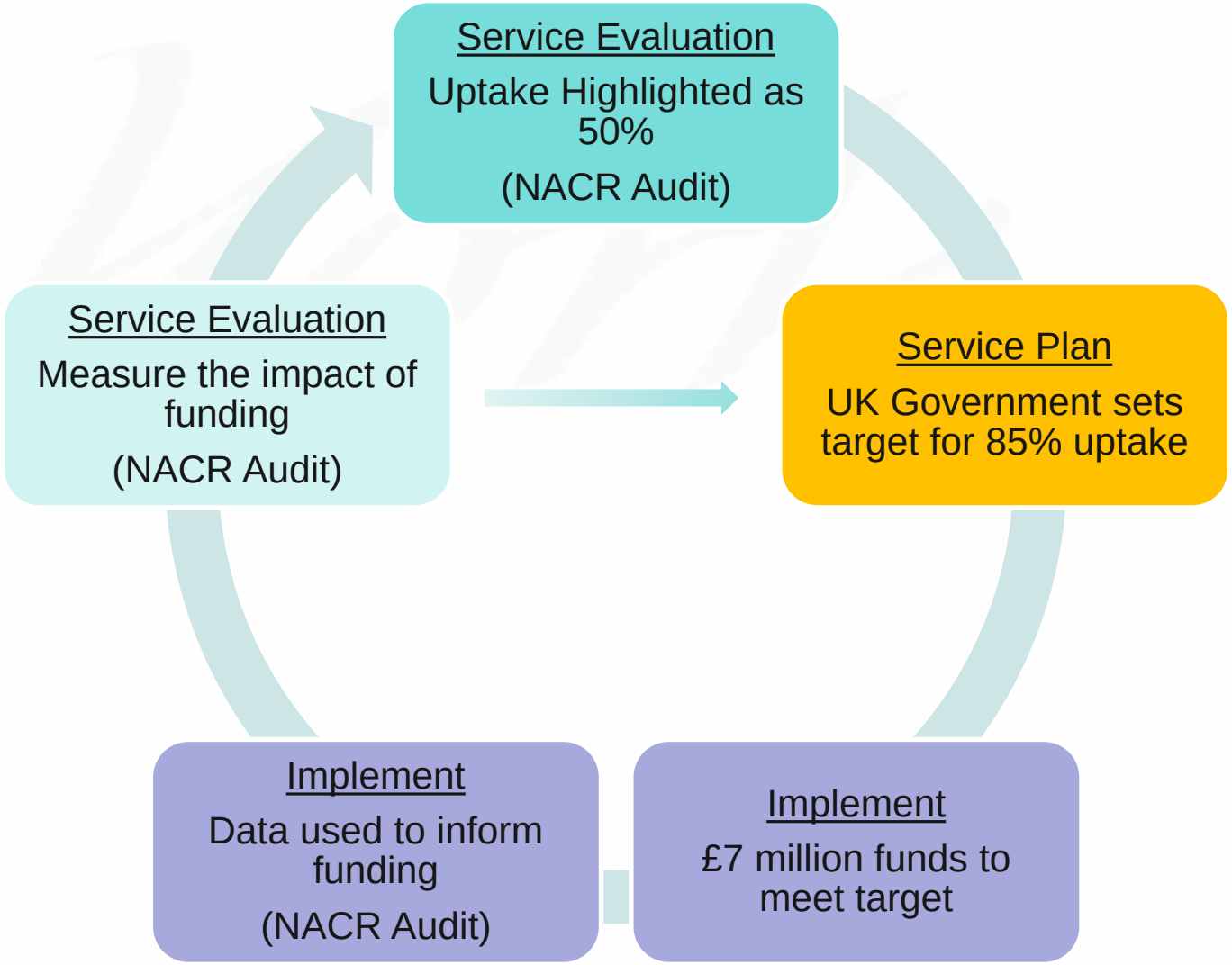
NHS Long Term Plan funding 2022

- Uptake remains low at **50%**
- UK set out targets of **85% in 2019** with dedicated focus and funding. This is referred to as the **Long Term Plan**
- Presently there is an **evaluation cycle** that may be the pinnacle of audit and service improvement

NHS Long Term Plan funding 2022



What Next? What Can You Do?

- **Engage with registries/authorities** to drive functional reporting, e.g. certification
- **Promote data** entry among all staff
- **Identify gaps** in data capture **participate in co-design** of registries to best capture services

Thank you for listening

Any Questions

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