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# International Journal of Therapy and Rehabilitation

## 'A Hybrid Adaptation of the RE-AIM Framework in Data Analysis to Evaluate the Impact of a Multi-Agency Patient Care Transfer Pathway'

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<b>Abstract:</b>	<p><b>Background</b></p> <p>The RE-AIM (Reach, Effectiveness, Adoption, Implementation, and Maintenance) framework is methodological approach recognised for its reliably effective assessment of the impact of practice based healthcare service interventions. Despite this there has been limited published dissemination of the way that the RE-AIM Framework can be adapted to evaluate implementation interventions in the context of multi-agency healthcare settings. This paper aims primarily to provide an insight into how the methodology was adapted as a hybrid model in an evaluation of the implementation of the Hospital Transfer Pathway (HTP) product across the North East and North Cumbria, UK.</p> <p><b>Methods</b></p> <p>A range of data collection methods were used to access, understand and capture the different levels in which a wide range of individuals in organisations relate as the 'Red Bag' (the HTP product) is used in practice. The data analysis was guided by the principles of the RE-AIM framework, which is a recognised tool for understanding impact of an intervention in establishing a newly adapted hybrid model of implementation.</p> <p><b>Results</b></p> <p>Findings revealed considerable variance in practice, ranging from implementation strategies, processes across organisations e.g. paperwork, what went in the Red Bag, type of Red Bag and other documentation which accompanied it in practice. Findings were broken down into the three organisational constituents of the HTP and then mapped against the hybrid REAIM framework.</p> <p><b>Conclusions</b></p> <p>The hybrid RE-AIM Framework enabled multi-agency findings to be aligned with its core principles, providing an opportunity for the emergence of shared perceptions and as a consequence key recommendations for multi-agency healthcare practitioners operationalising HTPs in practice.</p>

# 'A Hybrid Adaptation of the RE-AIM Framework in Data Analysis to Evaluate the Impact of a Multi-Agency Patient Care Transfer Pathway'

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## Abstract

**Background:** The RE-AIM (Reach, Effectiveness, Adoption, Implementation, and Maintenance) framework is methodological approach recognised for its reliably effective assessment of the impact of practice based healthcare service interventions. Despite this there has been limited published dissemination of the way that the RE-AIM Framework can be adapted to evaluate implementation interventions in the context of multi-agency healthcare settings. This paper aims primarily to provide an insight into how the methodology was adapted as a hybrid model in an evaluation of the implementation of the Hospital Transfer Pathway (HTP) product across the North East and North Cumbria, UK.

**Methods:** A range of data collection methods were used to access, understand and capture the different levels in which a wide range of individuals in organisations relate as the 'Red Bag' (the HTP product) is used in practice. The data analysis was guided by the principles of the RE-AIM framework, which is a recognised tool for understanding impact of an intervention in establishing a newly adapted hybrid model of implementation.

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## 'A Hybrid Adaptation of the RE-AIM Framework in Data Analysis to Evaluate the Impact of a Multi-Agency Patient Care Transfer Pathway'

### Contextual Backdrop

'RE-AIM' has been repeatedly recognised for its optimal capacity of providing an evaluative research framework for in the context of practice based disciplines, which necessitate pragmatic outcomes that can drive reflection on current practice and enable critically reflexive responses. Most importantly it is straightforward to implement in the context of healthcare practice. As an acronym RE-AIM acts to abbreviate five key terms, Reach, Effectiveness, Adoption, Implementation, and Maintenance.

This methodological framework provides a pragmatic starting point for establishing the degree of impact certain interventions in healthcare may have had by assessing each multi-disciplinary professional group's engagement with the intervention, in this study, the patient care transfer pathway.

As a framework RE-AIM is undertaken over five key areas, namely

**Reach (R)**, which provides an insight into the uptake of a particular scheme of intervention, their evaluation of the process and any issues for address, in this case, 'Red Bags'

**Effectiveness (E)**, which in this study operationally defined the most salient positive and negative perceptions of the Red Bag implementation across the North East and North Cumbria, UK

**Adoption (A)**, which was functionally aligned to the percentage of possible uptake of the scheme relative to the organisation numbers invited to do so

**Implementation (I)**, which gave an insight into the extent to which the Red Bag scheme had been implemented as it was originally intended and finally

**Maintenance (M)**, which provided an insight into how sustainable the implementation the intervention might actually be, beyond an initial implementation phase of twelve months.

To date, implementation of RE-AIM has been widely reported in evaluative practice, although few of these have been specifically focused on multi-agency level, collaborative organisational partnerships.

Ours is therefore one of the first multi-faceted initiative to incorporate an implementation geared at multi-disciplinary partnership working in the ANONYMISED regions of the UK. As an integral part of translational research evaluation, then, RE-AIM, is a valuable methodological approach for appropriating the most relevant approaches to real world interventions.

The 'Red Bag' is predominantly a quality improvement scheme designed to ensure that patient records are transferred to and from secondary care settings in such a manner that medical documentation can be transferred from one healthcare context to another in an optimal manner. Whilst this study focused specifically on the implementation phase, it is also possible for the methodology to focus on specific aspects identified by the RE-AIM acronym, such as reach or sustainability (maintenance).

The overall purpose of the present report is to investigate the usefulness of RE-AIM as a methodological approach for the capture of the implementation phase of the Red Bag scheme in

practice, between residential care home settings, paramedic practice and secondary care settings in regional hospitals across the **ANONYMISED REGION**.

In 2015, the National Institute for Health and Care Excellence introduced guidance on the transfer of patients with social care needs from care homes and community settings to hospital (1). Transfer Pathway, is designed to support care homes, ambulance services and the local hospitals to meet the recommendations of the NICE guideline NG27 'Transition between inpatient hospital settings and community or care homes'.

The Hospital Transfer Pathway which incorporated the Red Bag, was introduced by Sutton Clinical Commissioning Group in 2016 to improve the handover process between care homes and ambulance staff when a resident is admitted to hospital in Sutton. The aim of the Hospital Transfer Pathway was to improve communication and minimise delays in transfers whilst paperwork was collated, loss or lack of personal belongings not going with the resident to hospital and medical teams not having baseline information on the residents' health, medications, or specific needs, which can result in unnecessary delays and lack of communication (2).

The principles of the Hospital Transfer Pathway were adopted by NHS England with a launch across localities in the **ANONYMISED REGION** in early 2018. The process involves cross organisational collaboration across the care continuum, with NHS, local authority, and the private sector working together.

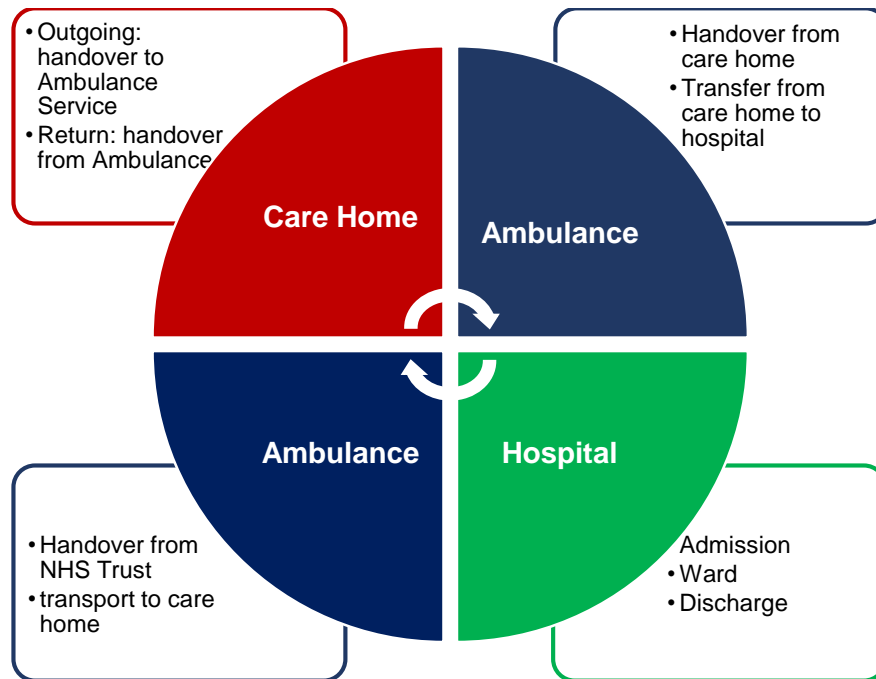
### **Aims and Objectives of the Evaluation**

The overall aim of the evaluation using the RE-AIM methodology to in the alignment of the data analysis phase, was to examine the processes of the implementation and adoption of the Red Bag Scheme in the Hospital Transfer Pathway across the **ANONYMISED REGION**, to establish the relative degree of effectiveness of this in practice. Aligned with this overall aim, the objectives of the evaluation were specifically designed to:

- Understand the experiences of a range of users of the scheme which, depending on locally situated contexts included Care Home Managers, Clinical Commissioning Groups, Hospital Staff, Paramedics, and Local Authority staff.
- Identify areas of best practice and subsequently share these with NHS England regional colleagues for wider dissemination and adoption, where contextually appropriate.
- Identify gaps in the pathway, understand how and why these are occurring and recommend strategies for improvement, accounting for different care home settings and other variances such as geography.
- Evaluate the identified indicators of potential success for the scheme within the Hospital Transfer Pathway:
  - Reduction in avoidable resident hospital admissions
  - Improvement in expedited transfers of care
  - Facilitation of communication in Care Home Managers visits to Hospitals (24-28 hours) to organise review of care, to prepare for hospital discharge and avoiding the '48 hour' association
- Improvement in rates of early discharge and return to care home

The HTP relies on communication between multi-agency NHS organisations during handover periods. This is where key communication and processes occur and a visual representation is shown to give context to the evaluation (see Figure 1, below).

**Figure 1 The Hospital Transfer Pathway: Key times for the initiation of communication and transfer of responsibility**



### Geographical localities

The geographical localities incorporated into the evaluation process were 17 ANONYMISED LOCALITIES

### The Influence of Structure and Agency of Organisational Hierarchies

In order to account for the structure and agency of organisational hierarchies and the situated nature of the organisations involved in the transfer of care home residents, critical realism was implemented as a philosophical framework in the evaluation. Key tenets of critical realism posit that the social world is complex and can be stratified into distinctive and delineated layers, e.g. individuals, groups and institutions, with explanation being guided by structures and mechanisms as opposed to phenomena and events (3). It incorporates the perspectives of participants, the consequent plethora of explanatory possibilities, the potential for some to be mistaken, and the acknowledgement that lay thoughts and actions ought to be critically examined (4). This was an entirely pragmatic approach to the evaluative process given the diverse range of processes, organisations and people involved in the HTP

### Methodology

A mixed methods approach was used for the evaluation. The incorporation of qualitative and quantitative methods ensured both tangible and illuminating aspects of the HTP could be effectively captured at source. Qualitative approaches facilitated the capture of the more nuanced elements of the organisational hierarchies involved, the intersectionality between the private sector, local



authority and the NHS, in diversely situated contexts of care. A thematic analytic approach was used to provide a robust, structured analysis of the qualitative data. Quantitative methods were employed to provide numerical data which evidenced the prevalence of the identified themes.

### **Data Collection**

Owing to the broad geographical area, complexity, and diverse range of organisations over which the evaluation was conducted, a bricolage approach to data collection was adopted. Bricolage is a broad concept, but for the purposes of this work was operationally defined as the researchers bringing together different representations of a complex situation from the data collected, through flexibly collecting, using and adapting tools to make meaning and understand the phenomena under investigation (5). The research team was also cognisant that organisations were at different stages of implementation of the Red Bag HTP, of existing evaluation and data collection at individual organisational levels.

To more fully understand the socio-dynamics of the red bag implementation 'in situ', the researchers attended as many formal and informal meetings across the NHS, local authority and care home settings as was feasibly possible. This allowed engagement with potential participants in their natural working environments, where the dynamics of interprofessional working discourse could be fully observed and contextualised.

Three surveys which were specifically designed for each organisation involved in the process of transferring of patients in relation to their individual delineating characteristics and features transcending the disciplinary expertise across the broad range of care settings. Each survey was pilot-tested with a representative sample of participants, to ensure questions were both understood and that they were reflective of the current context of practice. This ensured that the responses would provide purposive information which could potentially inform the future sustainability of the Red Bag HTP scheme.

The surveys were administered via a range of purposive and snowball sampling mechanisms to ensure effectively targeted and wide distribution of potential data capture. Care Home surveys were sent out by a Quality Nurse in the community who had existing relationships with Local Authority and Clinical Commissioning Group contacts; this person was known to others and was aware of the regional contacts and the subtleties of individual locality variance. Three separate reminder emails were issued. Surveys were sent out between the months of November 2018 – February 2019.

### **Early Engagement Work**

Early engagement work to map a typical process in an NHS Trust revealed that care home residents admitted to hospital progressed through a variety of people, places and processes and variables such as gender, health condition influenced how and where each person was treated. Initially, the link to the survey was piloted on the Intranet in the reference Trust, but despite repeated efforts to highlight this, there were no responses. One Trust suggested using hospital volunteers to go onto the wards, but this was impractical as the method could not be replicated across the localities, and seasonal pressures meant that staff could not take time to respond during their shifts. After discussion and feedback from NHS colleagues, the decision was made to email Directors of Nursing with the rationale for the evaluation, the link to the survey, and enlist their support to have the link cascaded to staff on elderly care wards. There were positive responses from four of the Trusts, who confirmed that the survey had been duly distributed to staff. Surveys were sent between October 2018 – March 2019.

In order to triangulate data findings between care homes and NHS Trusts, understand gaps in survey data and provide a wider perspective on regional practices, the **ANONYMOUS Ambulance Service** was subcontracted to advise on this phase of the evaluation and collect data from paramedics. A research paramedic worked with the research team to provide insight into the specific disciplinary role of paramedics within the Hospital Transfer Pathway, develop and pilot test the survey questions, and advise on the best methods of recruiting participants, as the nature of paramedic work meant that there were only limited times to collect data, and that participants would be more receptive to participating if a peer was collecting the data. Both the research team and **ANONYMOUS Ambulance Service** agreed that the paramedic data should be collected towards the end of the evaluation, given that localities had implemented the Red Bag across a wide timeframe, and it was important to maximise the opportunities for paramedics to observe the Red Bag in practice across the region in order to provide meaningful perspectives on practice. This has been an iterative cycle and is currently continuing.

Further data was collected via individual and face to face meetings, telephone calls and locality reports from across the organisations. This was undertaken on a voluntary basis, and there was a need to be cognisant of encouraging participation, but not coercing potential participants in localities who did not respond to specific survey or meeting requests. People who did choose to participate in these meetings were assured that their participation would be confidential, however some were comfortable with being identified and sharing best practice. Permission was given to the researchers prior to any identifiable 'in vivo' quotes being used in this report.

For every member of personnel in each organisation asked to participate in the survey, it was made explicit that participation was entirely voluntary, and that any data would be treated confidentially and anonymised to protect the potential identification of participants. Owing to the nature of the sampling techniques, it was not possible to know the exact number of respondents, however the surveys were used to achieve 'reach' and were consequently supplemented by other data sources in line with the bricolage approach to the evaluation.

### **Data Analysis**

Data sets were analysed using a thematic analytic approach. This involved the inductive identification of words and actions of interest which were found in the data and generating codes from these (3). Codes were discussed with the research team and grouped into themes in the context of the relevance to the research questions, interpretation of the social processes in the organisations.

A constant comparative framework was implemented, where data was sequentially compared with other collated data, which facilitated the identification of tacit meanings and actions underlying specific processes (6). A consensus on the final confirmed set of themes was collectively agreed between research team members.

The most salient themes were then mapped against a hybrid version of the RE-AIM Framework, which the researchers developed for the purposes of this 'real life' research context.

### **Overview of the principles of the Hybrid RE-AIM Framework for the evaluation**

The implementation and adoption of the Red Bag was mapped out and guided by the principles of the RE-AIM framework (see Table 1) in the implementation of a consequently hybrid version of the methodology. The hybrid framework consists of five dimensions (reach, effectiveness, adoption, implementation, maintenance) which can be used to illuminate more than just traditional outcomes

e.g. effectiveness, but capturing the tacit processes and areas which may be perceived as tangential, but are critical to producing and achieving impact (7).

**Table 1: Hybrid RE-AIM Mapping Framework**

RE-Aim Dimension	Addresses
<b>Reach</b>	Define participants across the organisations involved
<b>Effectiveness</b>	Define benefits that are trying to be achieved and identify any negative consequences
<b>Adoption</b>	Where is the pathway being applied and who is applying it?
<b>Implementation</b>	How consistently is the Red Bag scheme being applied, what are the barriers and enablers and, how will best practice be shared?
<b>Maintenance</b>	When did the Red Bag scheme become operational in each locality and what can be shared to inform development of sustainability?

These dimensions occur at multiple levels, e.g. service users, surgeries, organisations and communities (8) which need to be taken into account when evaluating the success of the locality interventions. The principles of the framework have been used for this evaluation, rather than using it as a prescriptive tool, in line with other evaluations which have used this method (9), as we sought to be guided by induction as is congruent with qualitative methodology to allow a wide range of possibilities when evaluating the Red Bag HTP scheme in practice (10).

**Reflections on Using the RE-AIM Methodology as an Integral Part of Data Analysis.**

Being able to balance a pragmatic practice based approach with the rigour of a scientific approach to evaluation in practice, necessitated using available data that was readily accessible, had minimal or no impact on the patients for whom the work was being undertaken and a due regard for the potential pragmatic sustainability of the scheme in the context of ‘real world practice’.

**Discussion**

The overall aim of the evaluation using the hybrid RE-AIM methodology to in the alignment of the data analysis phase, was to. The overall aim of this paper was to provide an insight into how successful the research team involved in evaluating the processes of the implementation and adoption of the Red Bag Scheme, had found using the hybrid RE-AIM in the data analysis phase of the evaluation. By using the HTP as an example, we have effectively demonstrated the usefulness of the hybrid RE-AIM in the alignment of emergent themes from the evaluation. As a secondary objective, the results of our hybrid RE-AIM analysis of the Red Bag implementation provide data regarding the collaborative working between secondary care settings, residential care settings and paramedic services.

This project highlighted the usefulness of being able to use specific facets of the hybrid RE-AIM methodology in the context of multi-agency working where there are numerous interprofessional and collaborative working relationships that impact on the dynamics of everyday patient care. The fact that this could be applied in a real world setting, illuminated the potential of the hybrid RE-AIM framework adaptation to be both pragmatic and systematically robust. This has potentially wider

pedagogic implications for incorporation of the hybrid RE-AIM framework into taught doctoral programmes, where mid-career professionals often seek to undertake work based research, which is both purposive and straightforward to execute in the context of the workplace. As such it has the potential to become another tool in the armoury of systematic yet pragmatic doctoral research approaches.

The study has a wider relevance to the gaps in both implementation science and the general extant literature base surrounding hybrid RE-AIM methodological applications in practice. This study provides evidence that could potentially inform other large multi-agency methodological approaches to systematic data collection and analysis.

The hybrid RE-AIM Framework approach enabled the analysis phase of this research to delineate between complex multi-factorial operations that take place within and between disparate healthcare professional disciplines in practice.

The hybrid model itself also facilitated and strengthened the willingness of multi-agency staff from different professional backgrounds to work together in truly patient centred care. It opened avenues of opportunity for interprofessional awareness raising, in relation to the scope of practice of healthcare practitioners, relative to their own professional backgrounds. The strong collaborative relationships forged between the University and the multi-agencies involved was another positive outcome as a consequence of the implementation of the RE-AIM methodology in practice. Most importantly though, the approach ensured that the outcome of the research could be most beneficial to the end-users, the patients. Many of these are vulnerable older adults, whose capacity for communication may be diminished by medical illness. Our approach to increasing the effectiveness of interprofessional and multi-disciplinary working relationships via the implementation of this adapted version of the RE-AIM Methodology serves to identify a potential means of undertaking further pragmatically centred work, in which there can be a move towards tokenism in integrating all members of these teams so they can contribute to truly patient centred care, equitably and with maximal effectiveness in their communication within and between professional disciplines.

### **Future Applications of the Operational Adaptation (Hybrid Model) of RE-AIM**

The implementation of our hybrid model of the RE-AIM Methodology has several implications for practice that we are eager to disseminate. This is of particular relevance to the potential of multi-professional research that transcends hierarchical structures in patient centred care, namely:

1. We advocate the use of RE-AIM methodology in the strategic co-constructed scoping and design of collaborative research.
2. We recommend using RE-AIM methodological principles in initial scoping exercises where there may have been interprofessional dissonance or simply a lack of understanding of the scope of practice for interdisciplinary professional working contexts, 'in situ'.
3. We recommend not applying the RE-AIM methodology in a legalistic fashion but maintaining enough of the parameters implementation to ensure robust data collection and consequently systematic analysis of qualitative data.

### **Conclusion**

The hybrid model implementation of the RE-AIM methodological framework has facilitated the development of viable and sustainable relationships between the multi-agencies involved in the **ANONYMISED REGION**. As a consequence the research undertaken has an implication for potential

use of the framework in future research evaluation projects. Most significantly the approach is potentially transferrable to other 'in situ' or 'real world' settings, where organisational hierarchies and sociocultural dynamics can impact on the potential for purposeful evaluation to be executed in practice.

### **Acknowledgements**

The authors would like to acknowledge the original research of the 'Red Bag' Hospital Transfer Pathway scheme was generously funded by Health Education England (HEE).

Secondly, we would like to acknowledge the support of staff from those organisations who participated in the evaluation, where the hybrid RE-AIM methodological framework was implemented. The knowledge and expertise shared from an array of multi-disciplinary healthcare professions was invaluable. In particular we would like to acknowledge the active contribution of the following people from these organisations, who have given their permission to be identified in any dissemination of the research evaluation; **ANONYMISED NAMES**

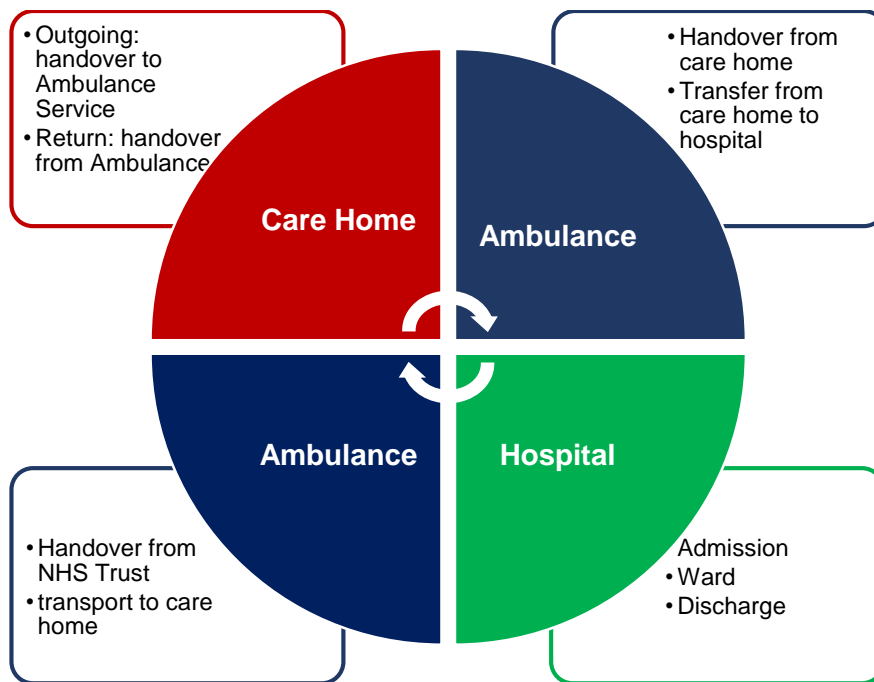
We acknowledge and encourage the need for wider active academic and pedagogic debate around the purposive nature of qualitative research design and methodology in real world contexts and settings. In relation to this, we warmly welcome those who may wish to contact us directly about the potential of this hybrid RE-AIM framework adaptation, to do so.

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**Figure 1: The Hospital Transfer Pathway: Key times for the initiation of communication and transfer of responsibility**



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