

# BEYOND CLINICAL GUIDELINES: HOW CARE PATHWAYS AND QUALITY-IMPROVEMENT METHODS CAN SUPPORT BETTER ALLERGY CARE

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## ABSTRACT

The increasing prevalence of allergic disease has resulted in the recognition of allergy as a global public health concern. Yet health services worldwide appear to be ill-equipped to deliver high-quality allergy care. Clinical guidelines have been developed to describe what high-quality care looks like for most allergic diseases. However, allergy guidelines do not describe how the delivery of such care is organised across clinicians and provider organisations with varying degrees of access to allergy expertise and clinical resources. In this article, we describe how care pathways can be used to improve the organisation and delivery of allergy care in accordance with the characteristics of allergic disease and local constraints in the health service. We then describe how quality-improvement methods can support the successful realisation of allergy care pathways in practice. Realising care pathways involves a highly complex process of changing the way care is practised and organised. This could involve developing a new service, clinical training or other interventions. Quality-improvement methods were developed as a guide to navigate and support the process of change and improvement.

Keywords: clinical guidelines, care pathways, allergy, asthma, quality improvement, integrated care

## INTRODUCTION

Health services worldwide are struggling to deliver best practice care to people with allergies. Allergic diseases such as asthma, rhinitis, eczema and food, drug or insect-venom allergy have become increasingly prevalent, to the point of being recognised as a global public health concern.<sup>1,2</sup> The impact allergies have on people and society tends to be underrated, while the development of allergy as a more recent medical specialty is reflected in a lack of allergy specialists and allergy knowledge across health services. As a result, the diagnosis and management of patients often fail to respond adequately to the immune-pathological mechanisms that cause symptoms across multiple organs and organ systems. Moreover, inadequate management tends to be costly, with medications and health services being used inappropriately and inefficiently while preventing patients from maximising their long-term health and well-being.<sup>1-3</sup>

Clinical guidelines aim to support clinicians in diagnosing and managing allergic diseases by evaluating and summarising best practice and evidence-based care. Many guidelines have been developed to support the management of allergic diseases.<sup>4-8</sup> However, the practical implications of clinical guidelines are not the same for all clinicians: healthcare delivery is distributed

across organisations with differential access to medical equipment and resources, and across clinicians with different roles and responsibilities depending on their professional identity and clinical expertise. Accordingly, the implementation of clinical guidelines is diversely distributed, with different clinicians being responsible for the delivery of different (parts of the) guidelines. Care pathways and quality improvement are important tools with which to realise the implementation of clinical guidelines and improve the delivery of allergy care in a clinical team, organisation or health service.

## ALLERGY CARE PATHWAYS

Care pathways describe the organisation and coordination of care as a means of improving healthcare delivery and consequently health outcomes. Care pathways are defined as 'complex intervention[s] for the mutual decision making and organisation of care processes for a well-defined group of patients during a well-defined period'.<sup>9</sup> They specify a care process by defining its goal and the evidence-based and/or best-practice care activities required to be performed. These activities are subsequently ordered and assigned to specific professional roles, teams or organisations, which means that care pathways differ from clinical guidelines. Care pathways

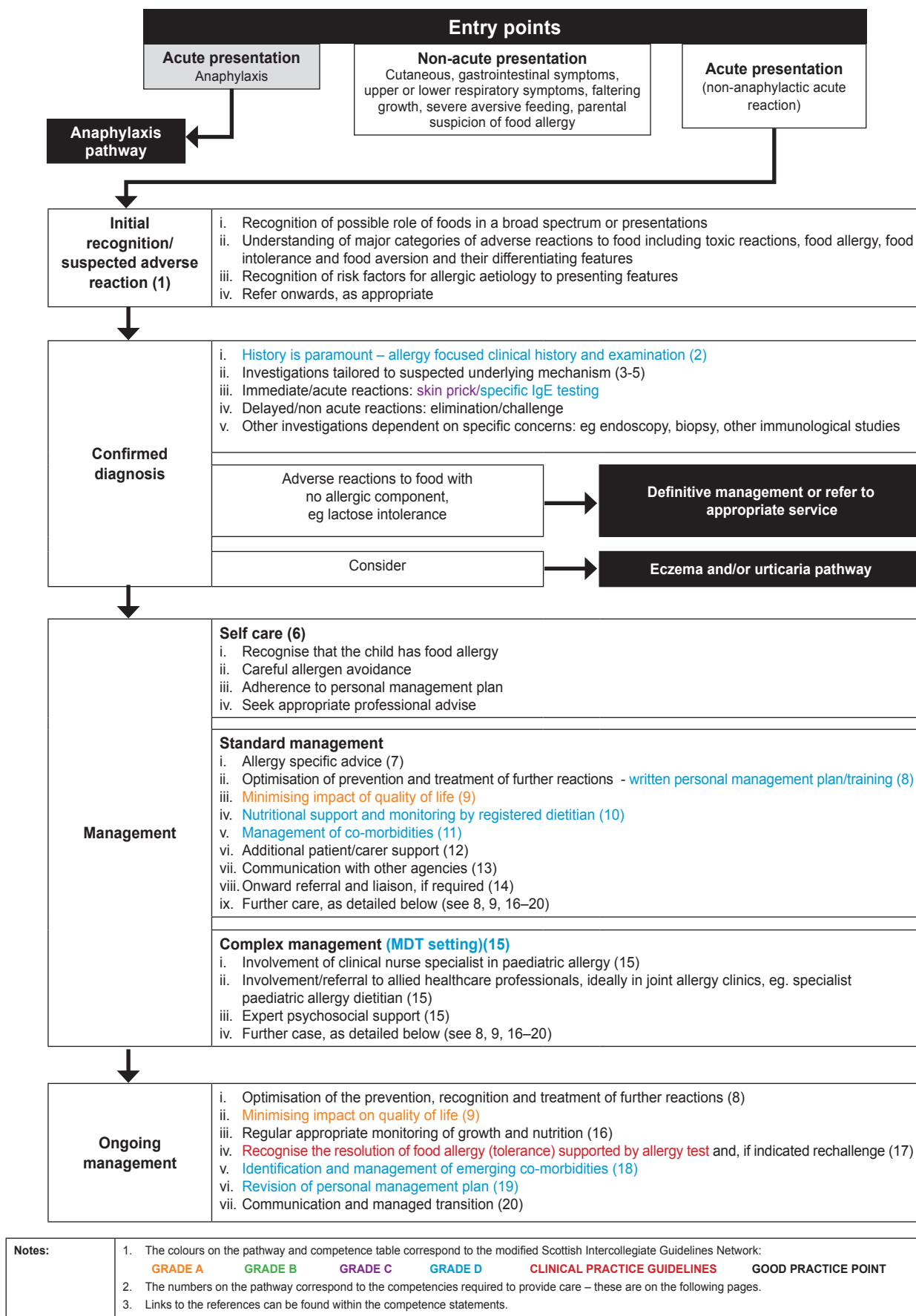


Figure 1: Algorithm of the RCPCH integrated care pathway for food allergies<sup>14</sup>

visualise the organisation and coordination of care across health professionals and services. They can be used as a tool to communicate about care in a multidisciplinary team or with patients. And they can be designed to document the completion of clinical activities so as to monitor and evaluate healthcare delivery for a specific group of patients.

However, allergy patients are not a well-defined group, which makes the use of care pathways more complicated. This is reflected in a lack of studies on the use of care pathways to improve the delivery of eczema and allergy services.<sup>10</sup> The care for allergy patients is not easily mapped, because allergy patients are highly diverse, with different disease expressions and long-term healthcare needs and outcomes. It becomes easier to define allergy care processes when specific patient groups and disease phases are considered separately and each process is tailored accordingly. This explains why care pathways are more commonly employed to improve asthma care in hospital settings.<sup>11</sup> The asthma care delivered in emergency and inpatient hospital departments focuses predominantly on stabilising patients with an acute asthma exacerbation. For this reason, emergency and inpatient care pathways are developed specifically for asthma patients in the acute phase of their disease. The care of this sub-group of patients is fairly predictable and it can be defined without much difficulty. However, the reality of disease management for these patients is more complicated. Asthma patients will also need support to manage the chronic nature of their condition, to identify which addressable factors caused the exacerbation and to manage any allergic comorbidities they might have.

The Royal College of Paediatrics and Child Health (RCPCH) has published a collection of allergy care pathways as a comprehensive general overview of allergy care processes. This collection can be used to develop more specific care pathways for local use, comprising as it does the eight most common allergic diseases: anaphylaxis; food allergy; asthma and rhinitis; eczema; urticaria, angio-oedema and mastocytosis; and drug, venom and latex allergy.<sup>12–18</sup> The care pathways map an algorithm of the different stages of care for each of these conditions from the first presentation of allergy symptoms to ongoing management. Each stage lists a set of core care activities linked to a separate document with the clinical competences and resources needed to perform the activities appropriately. The care pathways include internal references to support the management of allergic comorbidities.

The RCPCH care pathways describe allergy care for different allergic diseases at different stages of each disease and they specify what competences and resources are needed to deliver good care. They do not specify the setting, organisation or person responsible for the delivery of certain elements of care. This gives local decision-makers the flexibility to deliver high-quality allergy care by developing creative solutions and services which build on the skills and resources that are already available. The RCPCH care pathways algorithm for food allergy is illustrated in Figure 1.

The general processes of allergy care in the RCPCH care pathways can be translated into specific care pathways for

local use. They can be used at a regional level to define the way allergy care should be organised and distributed across different services. Regional care pathways describe the healthcare responsibilities for each service and the referral pathways across services. The RCPCH care pathways can also be used by specific services, organisations, departments or teams to define the care that should be provided to the allergy patients under their responsibility, including considerations for referral and discharge to other services, departments or teams. For example, an asthma care pathway for an emergency department will describe the clinical activities that should be performed to assess, treat and monitor a patient with an asthma exacerbation. It describes the order of the activities and most likely whether these should be performed by a nurse, a doctor or another professional. At the end of the pathway are the criteria for discharging the patient or for referring them to further specialist care. Finally, the RCPCH care pathways could also be used to specify the care for a specific patient: they can be used to develop a care plan that outlines the planned assessments, treatments and management strategies for them.<sup>19</sup> Region-, organisation- and patient-level care pathways are nested and can be used simultaneously.<sup>20</sup>

## QUALITY IMPROVEMENT

Care pathways are used to design healthcare services and processes that reflect the delivery of high-quality allergy care in line with evidence-based clinical guidelines. However, the realisation of care pathway designs relies on clinical and organisational changes in practice that are not easy to achieve:

- a new service might need to be developed;
- clinicians might need to learn new allergy competences;
- staff recruitment might be needed for a new role;
- the purchase of new equipment might be needed if tests are to be performed in a non-specialist setting;
- clinicians might need to change their routine clinical or administrative practices; and
- referral processes might be changed.

These examples demonstrate the ways in which the care pathways themselves are only part of the change that needs to be implemented to improve allergy services. This notion is confirmed in the literature on integrated and chronic care, which has identified care pathways as a key component in effective chronic and integrated care interventions. However, there are other components to implement such as 'training and education', 'interdisciplinary teamwork', 'self-management support and patient education', 'structured follow-up and case management', and 'a viable funding in UK model'.<sup>21–23</sup> The improvement of allergy services therefore requires a comprehensive solution with a multi-faceted intervention, of which care pathways are an important part.<sup>24</sup>

Quality improvement methods can support the development and implementation of complex allergy interventions aimed at redressing local quality problems. Quality improvement in healthcare is defined as 'better patient experience and outcomes achieved through changing provider behaviour and organisation through using a systematic change method and strategies'; it is powerful as a method for introducing systemic

**TABLE I: NIHR CLAHRC FOR NORTHWEST LONDON QUALITY-IMPROVEMENT METHODS. UPDATED FROM HOWE ET AL (2013)<sup>30</sup>**

METHODS	PURPOSE OF USING THE METHOD	KEY RELATED REFERENCES
Process mapping	To reveal the current working practices for all those affected by the multidisciplinary care or data processes. To support process design.	(40–42)
NHS III Sustainability Model	To identify and collectively deal with the factors that may affect long-term success.	(41,43,44)
Action-Effect-Method (based on driver diagrams)	To clarify and agree on the aim and scope of the work and identify the ideas for action (intervention) in the context of their anticipated effects.	(45)
Model for Improvement including Plan-Do-Study-Act (PDSA) rapid-cycle testing of change ideas	To establish and agree on what is intended to be accomplished, how to demonstrate that the change is an improvement and to generate ideas for what those changes might be. To undertake systematic rapid iterative cycles of change.	(27,34,41,46)
Measurement for improvement	To determine operational definitions of process and outcome measures to ensure that these are consistently used and understood in the work, with routine weekly use of the data to inform the project implementation.	(31,41,47–49)
Stakeholder engagement	To identify and engage effectively with all key stakeholders and groups.	(50,51)
Patient and public involvement	To engage with patients and the public to ensure the voice of the customer is clear in the work.	(41,52–54)
Dissemination of learning	To share and disseminate the experience and learning generated in the project both internally and externally, including through peer-reviewed journals.	(55)

change.<sup>25</sup> Complex allergy intervention comprises the changes in behaviour and organisation of providers. Quality improvement methods have been adopted from industry, where they were first developed to improve the quality of motor vehicles and other industrial goods as a strategy for ensuring competitive advantage and business survival.<sup>26</sup> These methods were first popularised by the US Institute of Healthcare Improvement (IHI) before being adopted elsewhere.<sup>27–29</sup> They include methods such as Plan-Do-Study-Act (PDSA) cycles as part of the model for improvement, Statistical Process Control (SPC), Six Sigma, lean, Total Quality Management (TQM), the theory of constraints, mass customisation, business process re-engineering and experience-based co-design.<sup>30–32</sup>

Systematic quality-improvement approaches have been developed as methodological roadmaps that support teams to achieve the benefits of using multiple complementary methods. Some methods are unique to specific quality-improvement approaches; however, most methods are included across several approaches but are applied in unique ways.<sup>33</sup> Following a systematic quality-improvement approach as prescribed is encouraged as a way of achieving its full benefits. However, improvement methods can also be used flexibly as long as the methodological principles are adhered to.<sup>26,34,35</sup> For example, the PDSA method is based on five core principles that should be implemented to achieve the full benefits of the method: iterative cycles, initial small-scale testing, prediction-based testing, the use of data over time and process documentation.<sup>34</sup> The National Institute for Health Research (NIHR) in the United Kingdom funded a programme known as the Collaboration for Leadership in Applied Health Research and Care (CLAHRC). The Northwest London CLAHRC developed a systematic approach (see Table I) which was used previously as a roadmap to improve allergy services in London.<sup>30,36</sup> For most team members it was their first experience with the practical application of quality-improvement methods. Accordingly, they received training and facilitation in

the use of the methods. This was done in the context of a quality-improvement collaborative, where multiple teams come together to share experiences and learn from each other over the course of their independent improvement projects.<sup>37–39</sup> The teams in the collaborative demonstrated varying degrees of engagement with the improvement methods.<sup>30</sup>

Successful quality-improvement initiatives tend to operate in accordance with important improvement principles. Systematic quality-improvement approaches and improvement methods can be applied to implement these principles and overcome challenges to improvement. All the teams involved in healthcare improvement will experience challenges:

- people might be too busy to attend team meetings and to work on the improvement initiative;
- team members might disagree about the interventions that should be implemented;
- the financial resources available to implement the agreed intervention may be insufficient;
- people with the authority to assign resources to the improvement project might not be interested in the project;
- the intervention that is being implemented is not demonstrating the desired outcomes;
- people who have been trained to deliver better care are leaving their posts, and so forth.<sup>56,57</sup>

A large-scale study investigated how improvement teams navigate such challenges. The study identified three principles and 12 strategies for healthcare improvement that transgress the use of improvement methods (see Table II).<sup>58,59</sup> They overlap with other improvement principles that have been found to underpin the effective use of quality-improvement methods.<sup>31,32,60</sup> These findings suggest that effective quality improvement tends to operate through a limited number of improvement principles.

Quality-improvement methods can be used strategically to enact improvement principles. For example, stakeholder

**TABLE II: PRINCIPLES AND STRATEGIES FOR QI IN HEALTHCARE. ADAPTED FROM REED ET AL (2018)<sup>58</sup>**

FIRST PRINCIPLE: ACT SCIENTIFICALLY AND PRAGMATICALLY
<ol style="list-style-type: none"> <li>1. Understand the problem and opportunities</li> <li>2. Identify, test and iteratively develop potential solutions</li> <li>3. Assess whether improvement is achieved; capture and share learning</li> <li>4. Invest in continual improvement</li> </ol>
SECOND PRINCIPLE: EMBRACE COMPLEXITY OF THE SETTING IN WHICH CHANGE TAKES PLACE
<ol style="list-style-type: none"> <li>5. Understand practices and processes of care</li> <li>6. Understand types and sources of variation</li> <li>7. Identify systemic issues</li> <li>8. Seek political, strategic and financial alignment</li> </ol>
THIRD PRINCIPLE: ENGAGE AND EMPOWER THOSE RESPONSIBLE FOR AND AFFECTED BY THE CHANGE
<ol style="list-style-type: none"> <li>9. Actively engage those responsible for overcoming challenges</li> <li>10. Facilitate dialogue</li> <li>11. Build a culture of willingness to learn and freedom to act</li> <li>12. Provide headroom, resources, training and support</li> </ol>

mapping can be used as a method to engage and empower those responsible for and affected by the change – the third quality-improvement principle in Table II. Stakeholder mapping encourages the identification of people and parties with an interest in the improvement of local allergy services. This includes stakeholders, such as patients, who are most affected by the improvements and who will probably be highly committed. However, they will have less power to influence the improvement efforts than other stakeholder groups, such as clinicians and healthcare commissioners. Stakeholder mapping can support the development of effective teams which have good relationships with their local decision-makers, good relationships being extremely important if allergy services are to be improved with success. The development of such relationships, however, takes time and effort, neither of which should not be underestimated.

Stakeholder mapping is only one method that can be used to engage and empower those responsible for and affected by such change. Other methods or approaches can also be used to implement this improvement principle. Likewise, there are different methods and ways to enact each of the other improvement principles in Table II or described elsewhere.<sup>31,32,60</sup>

The quality-improvement principles, strategies and methods support teams in developing allergy care pathways and complex allergy interventions that will probably be beneficial and acceptable in their local context. For example, process mapping can be used to understand the current practices and processes of care and the systemic issues that are present. This can be used to start a dialogue with the clinicians and local decision-makers responsible for delivering allergy care and also with allergy patients affected by their local health services. Together they can investigate the changes that could be implemented to improve local practices and processes and to agree on them. For example, a local dietitian might indicate that she sees many babies with cow's milk protein allergy (CMPA). However, she

does not always feel confident to manage these babies, who are then referred to the allergy specialist. Consequently, the allergy specialist might see an opportunity to set up a shared clinic where they can train the dietitian to manage babies with simple CMPA and then support her to take over the clinic and run it independently. Such ideas could be developed into a local care pathway and implemented as a complex allergy intervention.

When the implementation of the agreed changes starts small, there is space to improve the interventions and care pathways iteratively until they can be moved confidently into routine practice on a larger scale. The measurement of healthcare processes and patient outcomes can be used to evaluate whether an intervention is having its desired effects. Such measurements and evaluations are also necessary to convince local decision-makers that a financial investment in the improvement project will be worthwhile.

## CONCLUSION

Allergy patients worldwide are struggling to access the care they need to manage their allergic comorbidities effectively throughout the different stages of their disease. However, allergies are increasingly being recognised as an important health condition and there are growing pockets of clinical expertise in this area. But the expertise and resources available in the health system need to be used strategically to improve the delivery of allergy care over time. In this article, we argued that care pathways and quality improvement can be used to improve the delivery of allergy care locally.

Quality-improvement principles and methods aim to support teams to:

- learn more about their local services;
- understand what is working well and what can be improved;
- engage and collaborate with stakeholders to deliver the project and overcome challenges; and
- iteratively develop and evaluate ideas and interventions that aim to improve the care for allergy patients.

Quality improvement can support the development of care pathways and create more buy-in for their implementation.

Care pathways can be used by teams to define and communicate the local organisation of allergy services and the expectations of healthcare delivery within services, organisations and teams. Local care pathways should be developed with the aim of their being realised in practice. This requires the consolidation of evidence-based care activities and local requirements. The realisation of care pathways also requires the appropriate clinical and organisational changes (complex interventions) to be made, which can be supported by the quality-improvement process.

Quality improvement and care pathways are very useful tools that can be used to support the improvement of local allergy services. However, they will be effective only when they are embraced by a committed team of healthcare professionals, local decision-makers, patients and others. In the words of Donabedian:

A genuine, persistent, unshakable resolve to advance quality must come first. If that is present, almost any

reasonable method for advancing quality will succeed. If the commitment to quality is absent, even the most sophisticated methods will fail.<sup>61</sup>

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## CONFLICT OF INTEREST

The authors declare there to be no conflict of interest.

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