

The effectiveness of care pathways in health and social care

Background

Care pathways, also known as clinical pathways, critical pathways, care paths, integrated care pathways, case management plans, clinical care pathways or care maps, are used to systematically plan and follow up a focused patient or client care programme.¹

Care pathways are a way of setting out a process of best practice to be followed in the treatment of a patient or client with a particular condition or with particular needs. They are a distillation of the best available expert opinion on the care process and should be evidence based.

Care pathways, which map out the care journey an individual can expect, should be multi-professional, crossing organisational boundaries; and can act as a prompt for care. They can also create a consistent standard of documentation which will provide the basis for ongoing audit.²

Integrated Care Pathways (ICP), are care pathways which, in addition, and uniquely to ICP's, record deviations from planned care in the form of 'variances'.

An Integrated Care Pathway is intended to act as a guide to treatment and an aid to documenting a patient/client's progress. Clinicians are free to exercise their own professional judgements as appropriate but any alteration to the practice identified within an ICP should be noted as a 'Variance'.³

A survey carried out by the European Pathway Association found that clinical pathways were predominantly viewed by their users as a multidisciplinary tool to improve the quality and efficiency of evidence-based care but are also used as a communication tool between professionals to manage and standardise outcome-oriented care.¹

Care pathways may be an attempt to 'level up' so that individual patients and clients all receive the best standard of care available but the counter-argument is that they are contrary to the concept of person-centred care, do not allow sufficiently for non-standard situations such as the presence of complex co-morbidities, and can become a tick-box exercise with 'too much pathway and too little care'.⁴

¹ European Pathway Association, <http://www.e-p-a.org/clinical---care-pathways/index.html>

² Centre for Policy on Ageing, Glossary of health and social care, <http://www.cpa.org.uk/glossary/glossary.html#Care08>

³ ICPUS (2007), *A Workbook for People Starting to Develop Integrated Care Pathways*

⁴ Neuberger et al (2013), *More care, less pathway: a review of the Liverpool care pathway*

The effectiveness of care pathways can be viewed in a number of ways. From the point of view of the patient or client, effectiveness will be seen in terms of improved clinical outcomes or improved levels of care and quality of life. A service administrator, while also seeking improved outcomes, may see effectiveness in terms of a reduction in costs and in the use of resources.

Summary and key findings

- Care pathways seek to document best practice in care for a well-defined group of patients or clients. They are an attempt to 'level up' so that individual patients and clients all receive the best standard of care available
- Care pathways are context-specific complex interventions so assessments of effectiveness may not be transferable
- Care pathways are most effective in contexts where the trajectory of care is predictable
- Clinical pathways are associated with reduced in-hospital errors/complications and improved documentation without impacting on length of stay and hospital costs
- In general, care pathways report a positive impact on clinical outcomes, cost reduction, patient satisfaction, teamwork and process outcomes but these positive findings are not universal
- Pathways have a significant impact on the organisation of care processes, however, pathway methodology does not have a significant impact on patient-focused organisation, communication with patients and family or collaboration with primary care
- Care pathways have the potential of enhancing cross-setting collaboration and rebalancing care between hospital and local community provision but there is very little evidence of the use of care pathways in the community
- End-of-life care is a special circumstance with important patient and relative outcomes that may not be easily incorporated into a care pathway. Implementation of the Liverpool Care Pathway, while having the good intention of setting end-of-life care standards has, on too many occasions, led to a withdrawal or reduction of care, a 'tick-box' mentality and actions which would appear to hasten the death of the patient.

The effectiveness of care pathways

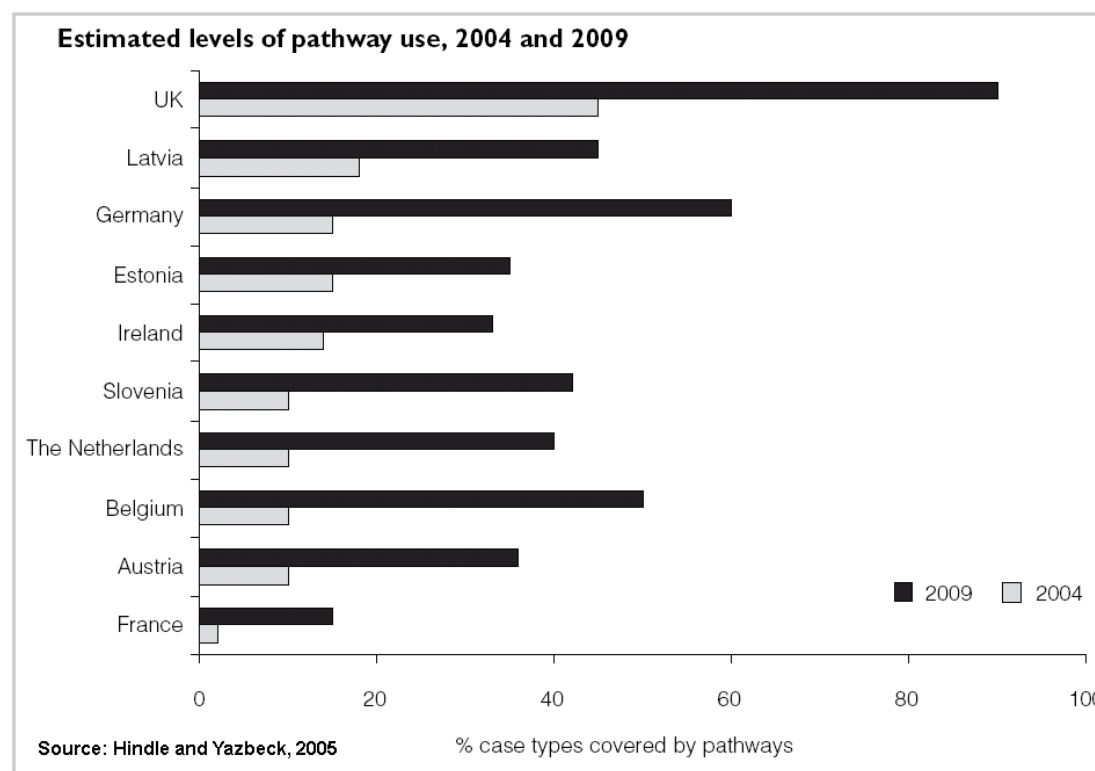
The development and use of care pathways pervades many areas of health and social care. Today, it would probably be difficult to find an area of health care in the UK for which a care pathway approach has not been attempted. A 2004 survey of health professionals in Europe⁵ found that the perceived level of present and future adoption of care pathways was highest in the UK.

Care pathways are often developed at the local level to meet local needs, circumstances and expectations and so, even for the same type of care, these, locally developed, care pathways are likely to differ from one another not only in their content but also in their effectiveness. A well designed care pathway will however include a framework for the evaluation and assessment of its own effectiveness.

A 2005 evaluation of the quality of integrated care pathway development in the UK National Health Service found that there was wide variability in the quality of the ICPs being developed, and the development of ICPs in many health-care organisations was inadequate.⁶ Variability of the ICPs being developed may have a direct impact on the quality of patient care, and potential improvements in care and service delivery may not be identified, implemented or reviewed.

Care pathways are complex⁷ and usually developed for a particular group of patients or clients with particular needs in particular circumstances. That means that the lessons learned about effectiveness in a particular context may not be transferrable.

They are most effective in circumstances where the trajectory of care is predictable⁸



⁵ Hindle and Yazbeck (2005), *Clinical pathways in 17 European Union countries: a purposive survey*

⁶ Croucher (2005), *An Evaluation of the Quality of Integrated Care Pathway Development in the UK National Health Service*

⁷ Allen, Gillen and Rixson (2009), *The effectiveness of integrated care pathways for adults and children in health care settings: a systematic review*

Clinical outcomes

The use of care pathways has been associated with reduced in-hospital complications⁹ and strong positive effects on safety and quality of care¹⁰. Van Herck et al¹¹ found that 65.5% of the included studies reported a positive effect on clinical outcomes, while 32% reported no effect and 2.4% a negative effect. Bandolier¹² reported on improved clinical outcomes for hip and knee replacements, fractured neck of femur, inpatient asthma management, community acquired pneumonia, heart failure, community acquired lower respiratory tract infections, bronchiolitis, and caesarean section. Hindle, Dowdeswell and Yasbeck¹³ list earlier studies that describe positive effects on quality of care and patient outcomes for geriatric patients with depression, patients undergoing regional anaesthesia for outpatient orthopaedic surgery, pain management, neonatal intensive care, peri-operative settings, amputation, elective infrarenal aortic reconstructions, urology patients, inpatient asthma care and hip and knee arthroplasty.

In contrast, Bryson & Browning¹⁴ found very little evidence of improved outcomes and Every et al¹⁶ reported no change in clinical outcome or readmission rate with just one of the six publications in that review reporting a decreased rate of nosocomial (hospital-acquired) infection.

Cost effectiveness

The goal of clinical pathways is to provide appropriate and effective health care and to reduce variation in practice. It is also considered as an effective means of reducing health care costs.¹⁵

There is however a real danger when care pathways are brought in from external sources and implemented on the basis of administrative attempts to reduce costs. Although cost savings can and should be evaluated with the care pathway, the goal of improving guideline compliance and overall quality of care should be the primary focus.¹⁶

In the review by Van Herck et al¹¹ 82.5% of the studies reported a positive effect on reducing costs, while 13.5% described no effect and 4% a negative effect. A 2013 study¹⁷ of the introduction of a clinical pathway in postoperative clinical care following major head and neck surgery found a 27% reduction in costs per patient and several other studies have identified reduced length of stay following pathway introduction.^{12,16,18,19}

⁸ Allen, Gillen and Rixson (2009), *Systematic review of the effectiveness of integrated care pathways: what works, for whom, in what circumstances?*

⁹ Rotter et al (2010), *Clinical pathways: effects on professional practice, patient outcomes, length of stay and hospital costs*

¹⁰ Mad et al (2008), *Clinical pathways: systematic review of outcome parameters and effectiveness*

¹¹ Van Herk (2004), *Effects of Clinical Pathways: do they work?*

¹² Bandolier Forum (2003), *On Care Pathways*

¹³ Hindle, Dowdeswell and Yasbeck (2004), *Report of a survey of clinical pathways and strategic asset planning in 17 EU countries*

¹⁴ Bryson and Browning (1999), *Clinical audit and quality using integrated pathways of care. Report No.: CA96/01*

¹⁵ Sermeus et al (2005), *An introduction to clinical pathways*

¹⁶ Every et al (2000), *Critical pathways: a review*

Patient and client satisfaction

In the review by Van Herck et al¹¹ 62.2% of the studies reviewed reported a positive effect on patient satisfaction while 29.7% reported no change and 8.1% a negative effect. Bandolier¹², Renholm¹⁸ and Bryson and Browning¹⁴ have all also reported improvements in patient satisfaction.

Teamwork

One of the potential benefits of care pathways is to improve communication between professionals. While one study²⁰ revealed that, although integrated care pathways led to improved outcomes for the health care trust, there was little evidence to suggest that inter-professional relationships and communication were enhanced, others have shown that, while there may not have been a measurable improvement in clinical outcomes, communication between professionals has improved.^{21,22} Interdisciplinary teamwork could be supported by clinical pathways in some areas, but not in others.¹⁰ A 2012 review²³ concluded that care pathways have the potential to support inter-professional teams in improving teamwork, but further research is still needed to clarify the contexts within which pathways can be effective, the mediating components required, and the aspects of teamwork that care pathways can be expected to have an effect on. Bryson and Browning¹⁴ found that clinical pathways were good educational tools for new staff, mainly for nurses and allied health professionals, however a strong disagreement was found between staff members about whether clinical pathways improved communication.

Process outcomes

Integrated Care Pathways can be effective in improving documentation of treatment goals, documentation of communication with patients, carers and health professionals but ICP documentation can introduce scope for new kinds of error.⁸ Other studies have also found that clinical pathways are associated with improved documentation.^{9,24} The review by Van Herck¹¹ et al found a positive effect on the process outcomes after the introduction of a clinical pathway in 86% of the included studies. No effect or negative effects were found in 7% of the studies respectively

End-of-life care

Developed from a model of care successfully used in hospices, the Liverpool Care Pathway for the Dying Patient (LCP) is a generic approach to care for the dying, intended to ensure that uniformly good care is given to everyone thought to be in the final stages before death.

¹⁷ Dautremont et al (2013), *Cost-effectiveness analysis of a postoperative clinical care pathway in head and neck surgery with microvascular reconstruction*

¹⁸ Renholm et al (2002), *Critical pathways. A systematic review*

¹⁹ Kul et al (2012), *Effects of care pathways on the in-hospital treatment of heart failure: a systematic review*

²⁰ Atwal and Caldwell (2002), *Do multidisciplinary integrated care pathways improve interprofessional collaboration?*

²¹ Sulch et al (2002), *Does an integrated care pathway improve processes of care in stroke rehabilitation? A randomized controlled trial*

²² Sulch et al (2000), *Randomized Controlled Trial of Integrated (Managed) Care Pathway for Stroke Rehabilitation*

²³ Deneckere et al (2012), *Care pathways lead to better teamwork: results of a systematic review*

²⁴ Kwan et al (2004), *Effects of introducing an integrated care pathway in an acute stroke unit*

A 2013 review of the pathway, by a panel chaired by Baroness Julia Neuberger⁴, found that when the LCP is used properly, patients die a peaceful and dignified death, but implementation of the LCP is sometimes associated with poor care.

The review noted that independent, prospective testing of the Liverpool Care Pathway had not yet been carried out after nearly 10 years of its dissemination.

The panel repeatedly heard stories of relatives or carers visiting a patient, only to discover that without any forewarning there had been a dramatic change in treatment. There now appeared to be no clinical care or palliative care, and the patient was unnecessarily or excessively sedated. Some people believe that to implement the LCP is a way of deliberately hastening someone's death, and the review heard about poor communication between clinicians and patients, their relatives and carers about what was happening during the dying process.

During this review, the panel heard of many instances where the commencement of the LCP had led to a withdrawal of care, in some cases with relatives and carers left to do the caring themselves as much as they could. Families repeatedly said that starting the LCP seemed to mean that proper clinical assessments of the need for medication ceased, instead of occurring every four hours as recommended in the LCP document; the LCP was then experienced as if it were a protocol, even a "tick-box" exercise, through which the next step was to stop food and fluids and give continuous infusions of strong opioids and sedatives without justification or explanation.

The review concluded that there was often too much pathway and too little care.

The usual pathway objectives of improved clinical outcomes and cost saving are not appropriate in the case of end-of-life care. A 2013 systematic review²⁵ of end-of-life care pathways said that recommendations for the use of end-of-life pathways in caring for the dying cannot be made but all health services using end-of-life care pathways are encouraged to have their use of the pathway, to date, independently audited. In future studies, outcome measures should include benefits or harms concerning the outcomes of interest ... in relation to patients, families, carers and health professionals.

²⁵ Chan and Webster (2013), *End-of-life care pathways for improving outcomes in caring for the dying*

A review of the literature

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Within each section, the reviewed literature is listed in reverse chronological order with the most recent publication first.

a) Reviews and overviews

Study	Findings
<p>Vanhaecht K, Ovretveit J, Elliott M J, Sermeus W, Ellershaw J and Panella M (2012) Have We Drawn the Wrong Conclusions About the Value of Care Pathways? Is a Cochrane Review Appropriate?, <i>Evaluation & the Health Professions</i> 35 (1) : 28-42</p>	<p>Expresses the view that, although care pathways are used increasingly worldwide to organize patient care, different views exist about their effectiveness. One of the reasons for this is that pathways are complex interventions. The authors note that a recent Cochrane review was published which reported positive results, but although the Cochrane team performed excellent work with an enormous commitment, the conclusions may be inappropriate. To fully understand the potential and problems of care pathways, it is important to define (a) exactly what we are talking about (b) whether the study methods are appropriate, and (c) whether we can properly define the outcomes.</p>
<p>Rotter T, Kinsman L, James E L, Machotta A, Gothe H, Willis J, Snow P and Kugler J (2010) Clinical pathways: effects on professional practice, patient outcomes, length of stay and hospital costs, <i>Cochrane Database of Systematic Reviews</i> 2010 (3)</p>	<p>A systematic review to assess the effect of clinical pathways on professional practice, patient outcomes, length of stay and hospital costs. Included were randomised controlled trials, controlled clinical trials, controlled before and after studies and interrupted time series studies comparing stand alone clinical pathways with usual care as well as clinical pathways as part of a multifaceted intervention with usual care.</p> <p>Twenty-seven studies involving 11,398 participants met the eligibility and study quality criteria for inclusion. Twenty studies compared stand alone clinical pathways with usual care. These studies indicated a reduction in in-hospital complications and improved documentation. There was no evidence of differences in readmission to hospital or in-hospital mortality. Length of stay was the most commonly employed outcome measure with most studies reporting significant reductions. A decrease in hospital costs/ charges was also observed, ranging from WMD +261 US\$ favouring usual care to WMD -4919 US\$ favouring clinical pathways (in US\$ dollar standardized to the year 2000). Considerable heterogeneity prevented meta-analysis of length of stay and hospital cost results. An assessment of whether lower hospital costs contributed to cost shifting to another health sector was not undertaken. Seven studies compared clinical pathways as part of a multifaceted intervention with usual care. No evidence of differences were found between intervention and control groups.</p> <p>Authors' conclusions: Clinical pathways are associated with reduced in-hospital complications and improved documentation without negatively impacting on length of stay and hospital costs.</p>

<p>Allen D A, Gillen E and Rixson L J (2009) Systematic review of the effectiveness of integrated care pathways: what works, for whom, in what circumstances?, <i>International Journal of Evidence-based Healthcare</i> 7 (2) : 61-74</p>	<p>A systematic review of high-quality randomised controlled trials published between 1980 and 2008, to identify the circumstances in which Integrated care pathways (ICP)s are effective.</p> <p>Findings:</p> <ol style="list-style-type: none"> 1.For relatively predictable trajectories of care ICPs can be effective in supporting proactive care management and ensuring that patients receive relevant clinical interventions and/or assessments in a timely manner. This can lead to improvements in service quality and service efficiency without adverse consequences for patients.; 2.ICPs are an effective mechanism for promoting adherence to guidelines or treatment protocols thereby reducing variation in practice.; 3.ICPs can be effective in improving documentation of treatment goals, documentation of communication with patients, carers and health professionals.; 4.ICPs can be effective in improving physician agreement about treatment options. 5.ICPs can be effective in supporting decision-making when they incorporate a decision-aide. ; 6.The evidence considered in this review indicates that ICPs may be particularly effective in changing professional behaviours in the desired direction, where there is scope for improvement or where roles are new.; 7.Even in contexts in which health professionals are already experienced with a particular pathway, ICP use brings additional beneficial effects in directing professional practice in the desired direction.; 8.ICPs may be less effective in bringing about service quality and efficiency gains in variable patient trajectories. ; 9.ICPs may be less effective in bringing about quality improvements in circumstances in which services are already based on best evidence and multidisciplinary working is well established.; 10.Depending on their purpose, the benefits of ICPs may be greater for certain patient subgroups than others.; 11.We do not know whether the costs of ICP development and implementation are justified by any of their reported benefits.; 12.ICPs may need supporting mechanisms to underpin their implementation and ensure their adoption in practice, particularly in circumstances in which ICP use is a significant change in organisational culture.; 13.ICP documentation can introduce scope for new kinds of error. <p>Conclusions: ICPs are most effective in contexts where patient care trajectories are predictable. Their value in settings in which recovery pathways are more variable is less clear. ICPs are most effective in bringing about behavioural changes where there are identified deficiencies in services; their value in contexts where inter-professional working is well established is less certain. None of the studies reviewed included an economic evaluation and thus it is not known whether their benefits justify the costs of their implementation.</p>
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<p>Allen D, Gillen E and Rixson L (2009) The effectiveness of integrated care pathways for adults and children in health care settings: a systematic review, <i>The JBI Database of Systematic Reviews and Implementation Reports</i> 7 (3)</p>	<p>Reviews of evidence of ICP effectiveness have focused on their use in specific patient populations. However, ICPs are ‘complex interventions’ and are increasingly being implemented for a variety of purposes in a range of organisational contexts. Identification of the circumstances in which ICPs are effective is the first step towards developing hypotheses about their active ingredients and the generative mechanisms by which they have their effects. This review was designed to address a slightly different set of questions to those that typify systematic reviews of ICP effectiveness. Rather than simply asking: ‘Are ICPs effective?’, the concern was to identify the circumstances in which ICPs are effective, for whom and in what contexts. In addition to identifying evidence of ICP effectiveness, the review therefore required attention to the contexts in which ICPs are utilised, the purposes to which they are put and the factors critical to their success. In framing the review in this way we are drawing on the insights afforded by Pawson and Tilley’s realistic evaluation methodology. The underlying rationale for this approach is that if we know and understand how different interventions produce varying effects in different circumstances, we are better able to decide what policies/services to implement in what conditions.</p>
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<p>Mad P, Johansson T, Guba B and Wild C (2008) <i>Clinical pathways: systematic review of outcome parameters and effectiveness [German with English summary]</i>., Vienna: Ludwig Boltzmann Institut fuer Health Technology Assessment (LBIHTA)</p>	<p>To help balance benefits and costs, this review aimed to search for options for measuring the outcome and effectiveness of clinical pathways. The review, therefore, identified general outcome criteria for estimating the effectiveness of clinical pathways. It also summarised the potential effects clinical pathways may achieve as well as factors influencing these effects.</p> <p>The systematic literature search identified 1961 potential articles. 218 of these were included in the review. 203 abstracts reported assessments of a specific clinical pathway and 15 articles reported general aspects concerning pathway outcomes. The total number of patients studied in the 203 abstracts was around 60,000.</p> <p>Outcomes regarding quality of care, safety and resource consumption were measured comparing pathway usage to standard care. A summary of the results of the reported outcomes shows that clinical pathways have strong positive effects on quality of care, safety and resource consumption.</p> <p>The 15 general articles give a more detailed picture of pathway effectiveness:</p> <p>Reducing length of hospital stay is influenced by several factors; positive effects may be alternatively explained by general trends in reducing length of hospital stay.</p> <p>Introducing clinical pathways to health care showed different effects depending on the individual situation. In some areas clinical pathways showed positive effects, in others they showed none.</p> <p>Variabilities in health care can be reduced by clinical pathways, but patients with complex diseases were more likely to be treated outside the pathway.</p> <p>Interdisciplinary teamwork could be supported by clinical pathways in some areas, but in other areas not.</p> <p>Unless health care professionals agree to work with clinical pathways, no effect can be achieved; therefore standardised implementation and continuous monitoring processes are needed.</p> <p>The decision on whether or not to introduce a clinical pathway always needs to be taken in context to the individual situation; if a pathway has achievable aims, a sound design, is well implemented and continually monitored, and is accepted by the people who work with it, it can be a useful tool to improve health care.</p>
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<p>Hunter B and Segrott J (2008) Re-mapping client journeys and professional identities: A review of the literature on clinical pathways., <i>International Journal of Nursing Studies</i> 45 (4) : 608-625</p>	<p>A literature review to explore the growing use of clinical pathways by nurses and midwives, their impact on client care, and the potential consequences of widespread pathway utilisation for the professional identity and knowledge base of nursing and midwifery.</p> <p>The review identified four main themes: the multiple aims of clinical pathways; the process of initial development; pathway implementation in practice, and the impacts of pathways on client care, professional identities, and the nature of written documentation. Clinical pathways have multiple aims, including standardising practice, leveraging external evidence into local health care work, and improving inter-professional co-ordination. The review found limited evidence of pathways' impact on client care, but the existing research suggests that they may be most suitable for predictable, routinised surgical procedures. Key concepts, such as variance and audit were found to be poorly defined. Clinical pathways appear to achieve many of their effects at the development stage and the reshaping of professional interactions.</p> <p>Conclusions: Given their widespread adoption and valorisation as tools of evidence-based practice, the dearth of evidence for clinical pathways should raise concerns. Clinical pathways may have significant impacts on nursing and midwifery as professions, both through redrawing professional identities and boundaries, and transforming the ways in which nurses and midwives document care. The impact of standardised pathways on professional ideologies which emphasise individualised care, and clinical autonomy will require long-term programmes of research.</p>
<p>Integrated Care Pathway Users Scotland (ICPUS) (2007) <i>A Workbook for People Starting to Develop Integrated Care Pathways</i>,</p>	<p>The aim of this workbook is to provide a knowledge and understanding of the skills and processes required to successfully develop the multidisciplinary, chronological, structured case records known as Integrated Care Pathways (ICPs).</p> <p>It is the distillation of lessons learned by a group of ICP facilitators belonging to ICPUS (Integrated Care Pathway Users in Scotland), a network of people from all over Scotland, who are interested in or using ICPs in many different areas and who meet with a view that ICPs can add something positive to patient/client care. In many instances it is likely that the ideas are not new and the workbook simply brings together in one place a lot of things that are already known.</p>

<p>El Baz N, Middel B, Van Dijk J P, Oosterhof A, Boonstra P W and Reijneveld S A (2007) Are the outcomes of clinical pathways evidence-based? A critical appraisal of clinical pathway evaluation research, <i>Journal of Evaluation in Clinical Practice</i> 13 : 920-929</p>	<p>A systematic review to evaluate the validity of study outcomes of published papers that report the effects of clinical pathways (CP).</p> <p>The study sample comprised of 115 publications. A total of 91.3% of the studies comprised of retrospective studies and 8.7% were randomized controlled studies. Using a quality-scoring assessment tool, 33% of the papers were classified as of good quality, whereas 67% were classified as of low quality. Of the studies, 10.4% controlled for confounding by matching and 59.1% adopted parametric statistical tests without testing variables on normal distribution. Differences in outcomes were not always statistically tested.</p> <p>Conclusion: Readers should be cautious when interpreting the results of clinical pathway evaluation studies because of the confounding factors and sources of contamination affecting the evidence-based validity of the outcomes.</p>
<p>Vanhaecht K, De Witte K, Panella M and Sermeus W (2007) <i>Do pathways lead to better organised care processes?</i>, Catholic University Leuven.</p>	<p>A medical doctor, a head nurse, an allied health professional, and a pathway facilitator evaluated the care process using the Care Process Self Evaluation Tool (CPSET).</p> <p>The use of clinical pathways had a significant effect on the overall CPSET score, and on the scores of the subscales coordination of the care process and follow-up of the care process. Although the relationship was not perfect, the odds ratio of 4.26 (95% CI: 1.40 to 13.61) indicates that having a clinical pathway led to a 4.3 times higher probability that the care process was well organised rather than weakly organised. The probability of having a well-organised care process was 1.8 times greater when the care process was supported by a clinical pathway.</p> <p>The likelihood and odds ratios emerging from this study led to the conclusion that pathways, as actually used in Belgium and The Netherlands, have a significant positive impact on the coordination of care, the follow-up of care, and the overall organisation of the care process. Although the relationship between clinical pathways and well-organised care processes is not perfect, pathways have a significant impact on the organisation of care processes. However, pathway methodology does not have a significant impact on patient-focused organisation, communication with patients and family, and collaboration with primary care. This does not necessarily mean that clinical pathways have no impact on these elements of well-organised care processes, but alternatively might mean that multidisciplinary teams and pathway facilitators do not actually focus enough on these three subscale areas to significantly change CPSET scores.</p>

<p>De Bleser L, Depreitere R, Waele K D, Vanhaecht K, Vlayen J and Sermeus W (2006) Defining pathways, <i>Journal of Nursing Management</i> 14 (7) : 553-563</p>	<p>The way in which clinical pathways have been developed in the United Kingdom differs from that in the USA. Besides the international differences in the purpose, many alternative names also can be found. These have led to confusion. There is no single, widely accepted definition of a clinical pathway. The aim of the study was to survey the definitions used in describing the concept and to derive key characteristics of clinical pathways.</p> <p>In 82 of the 263 eligible articles, the definition of pathway was given. In total 84 different definitions were found. Each definition was rephrased by taking into consideration the following three features inherent to pathways: naming word used (e.g. plan, document, algorithm, etc.), characteristics and aims, and outcomes. Every feature was further divided into categories.</p> <p>Conclusions: A clinical pathway is a method for the patient-care management of a well-defined group of patients during a well-defined period of time. A clinical pathway explicitly states the goals and key elements of care based on Evidence Based Medicine (EBM) guidelines, best practice and patient expectations by facilitating the communication, coordinating roles and sequencing the activities of the multidisciplinary care team, patients and their relatives; by documenting, monitoring and evaluating variances; and by providing the necessary resources and outcomes. The aim of a clinical pathway is to improve the quality of care, reduce risks, increase patient satisfaction and increase the efficiency in the use of resources.</p>
<p>Vanhaecht K, Bollmann M, Bower K, Gallagher C, Gardini A, Guezo J, Jansen U, Massoud R, Moody K, Sermeus W, Van Zelm R, Whittle C, Yazbeck A-M, Zander K and Panella M (2006) Prevalence and use of clinical pathways in 23 countries – an international survey by the European Pathway Association, <i>Journal of Integrated Care Pathways</i> 10 : 28-34</p>	<p>A cross-sectional descriptive study of European Pathway Association (E-P-A) contact persons in 23 countries to give an overview on the use and prevalence of clinical pathways.</p> <p>Clinical pathways, also known as critical pathways or integrated care pathways, have been used in health care for 20 years. Although clinical pathways are well established, little information exists on their use and dissemination around the world. The E-P-A has performed their first international survey on the use and dissemination of clinical pathways in 23 countries.</p> <p>At present, pathways are used with a minority of patients, mainly in acute hospital trusts. The survey showed that clinical pathways were predominantly viewed as a multidisciplinary tool to improve the quality and efficiency of evidence-based care. Pathways were also used as a communication tool between professionals to manage and standardize outcome-oriented care.</p> <p>Authors' conclusions: There is a future for the use of clinical pathways, but there is a need for international benchmarking and knowledge sharing with regard to their development, implementation and evaluation.</p>

<p>Sermeus W, De Bleser L, Depreitere R, De Waele K, Vanhaecht K and Vlayen J (2005) An introduction to clinical pathways. In: <i>Devriese S, Lambert M L, Eyssen M, Van De Sande S, Poelmans J, Van Brabandt H et al (eds), The use of clinical pathways,</i></p>	<p>Provides an introductory overview of clinical pathways including the origins and definitions of the concept, practice guidelines, a review of effectiveness and a means for calculating charges in private health care.</p> <p>In terms of effectiveness reports mixed results: <i>Several studies reported on the positive effects of clinical pathways on clinical outcome.</i> In general there is an improvement in clinical outcomes.(Van Herck 65% positive outcomes, but Bryson and Browning found very little evidence of improved outcomes and Every et al report no change in clinical outcome or readmission rates.) <i>Besides the effects on clinical outcome, clinical pathways are effective in reducing the costs of care.</i> In the review by Vanherck et al 82.5% of the studies reported a positive effect on reducing costs, while 13,5% described no effect and 4% a negative effect. Hindle and Yazbeck reported a decrease of costs for the following conditions: acute appendicitis, aortic aneurysm surgery, treatment of alcohol withdrawal syndrome, prostatectomy, colostomies and ileostomies, outpatient tonsillectomy and adenoidectomy, acute chest pain and low-risk myocardial ischemia, peri-operative care for knee replacement surgery, total colectomy and ileal pouch/anal anastomosis, severe traumatic brain injury, gastric bypass or laparoscopic adjustable gastric banding, total hip replacement, major thoracic procedures, renal transplantation, acute exacerbations of bronchial asthma, coronary artery bypass surgery, major vascular procedures, pneumonia and decubitus ulcers. <i>Clinical pathways also have positive effects on patient satisfaction.</i> In the review by Vanherck et al, 62.2% of the studies reported a positive effect on patient satisfaction, while 29.7% reported no change and 8.1% a negative effect. Bandolier reported an increased patient satisfaction concerning pain control after caesarean section. Renholm et al. reported an improvement in patient satisfaction and patient education for clinical pathways in ambulatory surgery. Bryson and Browning found a higher satisfaction, less anxiety and better understanding in patients cared for using clinical pathways. On the other hand, Kwan and Sandercock reported a significantly lower patient satisfaction in stroke patients. <i>Positive effects on teamwork</i> Van Herck et al. also reported on positive effects on teamwork after the implementation of the clinical pathway (83,3% of the studies). Hindle and Yazbeck reported a positive effect on stress and frustration, improved communication and improved briefing between nurses during the change of shifts. Also, an improvement in staff education <i>A positive effect on the process outcomes</i> A positive effect on the process outcomes after the introduction of a clinical pathway in 86% of the included studies is reported. No effect or negative effects were each found in 7% of the studies.</p>
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<p>Hindle D and Yazbeck A M (2005) Clinical pathways in 17 European Union countries: a purposive survey, <i>Australian Health Review</i> 29 (1) : 94-104</p>	<p>A survey of clinical pathways across the 25 European Union countries. Fiftyone questionnaires were completed by largely self-selected experts from 17 countries.</p> <p>Respondents reported that pathways were important and were becoming increasingly widely used (although the rate of progress was highly variable). One important constraint was reported to be a cultural aversion among doctors that arises at least in part from the implication that pathways require multidisciplinary teamwork which will prejudice medical autonomy. In other words, pathways challenge clinical professional sub-cultures.</p> <p>Other constraints included lack of encouragement by external parties, such as purchasers, with limited financial support for pathway development and implementation and service purchasing that did not reward care providers who use pathways.</p> <p>The obvious implication of the survey is that more needs to be done to achieve a common understanding of pathways. In spite of the large quantity of published papers, survey respondents reported that there are many health professionals who have only a superficial understanding at best.</p>
<p>Davis N, Sansom G, Jones S, Jenkins K, Roberts L, Doig-Evans D and Richards N (2005) <i>Integrated Care Pathways: A guide to good practice</i>, National Leadership and Innovation Agency for Healthcare; Asiantaeth Genedlaethol Arweiniad ac Arloesoldeb dros Ofal Iechyd</p>	<p>The purpose of The Integrated Care Pathways Guide to Good Practice is to assist clinical teams with the implementation of Integrated Care Pathways (ICPs) in Wales. This Guide is intended to ensure that there is equity in the development of ICPs across Wales and gives the reader helpful suggestions to develop and establish successful and sustainable ICPs.</p> <p>ICPs come under the umbrella of a set of tools known as ‘structured care methodologies’; tools that formalise known patterns of care processes, thus adding predictability and providing the transfer of knowledge.</p> <p>An ICP is a document that describes a process within Health and Social Care. ICPs are both a tool and a concept which embed guidelines, protocols and locally agreed, evidence-based, patient-centred, best practice into everyday use for the individual patient. Uniquely to ICPs they record variations from planned care in the form of ‘variances’.</p> <p>There is much evidence showing that ICPs have a positive effect on particular patient conditions. Further UK research is needed to provide evidence that ICPs make a difference in generic terms.</p>

<p>Devriese S, Lambert M L, Eyssen M, Van De Sande S, Poelmans J, Van Brabant H, Sermeus W, Vlayen J and Ramaekers D (2005) Prospectief bepalen van de honoraria van ziekenhuisartsen op basis van klinische paden en guidelines: makkelijker gezegd dan gedaan [The use of clinical pathways and guidelines to determine physicians' hospital fees prospectively: easier said than done.], Belgian Healthcare Knowledge Centre (KCE) <i>KCE Reports, Volume 18A</i></p>	<p>This report includes chapters on</p> <ol style="list-style-type: none"> (1) An introduction to clinical pathways including the origin and definition of clinical pathways and an overview of the results of evaluation studies of clinical pathways (2) The use of clinical pathways in Belgium (3) Pilot assessments of pathways and translation into financing (4) The use of clinical pathways and guidelines in the determination of prospective financing (5) A general discussion and conclusions <p>Chapter 1 is reviewed separately (see Sermeus et al, 2005 above)</p>
<p>Van Herck P, Vanhaecht K and Sermeus W (2004) Effects of Clinical Pathways: do they work?, <i>Journal of Integrated Care Pathways</i> 8 : 95-105</p>	<p>A review of literature published between 2000 and 2002 was carried out using the keywords 'clinical pathway', 'critical pathway', 'care map', 'care pathway' and 'integrated care pathway'. Articles were selected if they contained any form of evaluation, outcome or indicator concerning the use of clinical pathways. This included all types of research design and sample size. A total of 200 articles were selected. 34% of the articles on clinical pathways contained some form of evaluation concerning the effect of the implementation. Out of these articles, clinical outcome was emphasized in 65.5%, financial effects in 53% and process effects were investigated by 50% of the studies. Team and service effects were discussed less often (24% and 18.5%), respectively). For clinical outcome, team, process and financial effects a variety of indicators were recorded. Service effects were almost always measured as 'patient satisfaction'. The majority of the literature concluded that positive effects result from the implementation of clinical pathways.</p> <p>65.5% of the included studies reported a positive effect on clinical outcomes, while 32% reported no effect and 2.4% a negative effect.</p> <p>82,5% of the studies reported a positive effect on reducing costs, while 13,5% described no effect and 4% a negative effect.</p> <p>62,2% of the studies reported a positive effect on patient satisfaction, while 29,7% reported no change and 8,1% a negative effect.</p> <p>The review also reported a positive effects on teamwork after the implementation of the clinical pathway (83,3% of the studies) and a positive effect on the process outcomes after the introduction of a clinical pathway is reported in 86% of the included studies with no effect or a negative effects each found in 7% of the studies.</p>

<p>Hindle D, Dowdeswell B and Yasbeck A M (2004) <i>Report of a survey of clinical pathways and strategic asset planning in 17 EU countries</i>, EU Health</p>	<p>A self-selecting survey of European Pathway Association members and associates. The authors conclude that:</p> <p>There was a remarkably high degree of unanimity on the part of correspondents who participated in the study, backed up by the literature search:</p> <ul style="list-style-type: none"> • that clinical pathways are fundamental to clinical practice improvement • that they are an essential input to service delivery design • that high-quality service delivery models are an essential input to effective strategic asset planning, and • that over the next few years there will be a rapid and significant growth in patients coming within the ambit of care pathway-based protocols <p>Despite this endorsement of benefit the nature and scale of implementation of care pathway programmes remains somewhat patchy. Often is the local healthcare team rather than centrally determined policy direction that provides the momentum for change. Whilst it is not the purpose of this study to discuss care pathway strategies in depth it did identify confusion over language and interpretation.</p> <p>For some, primarily those working in the acute institutions, care pathways are about improving hospital-based clinical treatment; highlighting factors such as inter-departmental flow, 'healthy design' and frequency planning shaping capital infrastructure decisions - and professional practice organisation and standards influencing clinical outcomes.</p> <p>For others it is about cross-setting organisational planning, funding and delivery of care; an approach which is also increasingly blurring the boundaries between health and social care.</p> <p>The study is unequivocal in its findings – care pathways will have greatest impact in changing healthcare where and when applied across care settings. They provide the means of describing how patients will follow the trajectory of care between service providers, they identify the interaction and value the investments required. They provide the basis for a more strategic approach to asset planning and management as all the elements and interdependencies are clearly identified. Cross setting collaboration is one of the most important factors in rebalancing care between hospital and local community provision.</p>
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<p>Bandolier Forum (2003) <i>On Care Pathways</i>, http://www.medicine.ox.ac.uk/bandolier/Extraforbando/Forum2.pdf</p>	<p>This online article reviews a number of care pathways. It reports improved clinical outcomes for hip and knee replacements, fractured neck of femur, inpatient asthma management, community acquired pneumonia, heart failure, community acquired lower respiratory track infections, bronchiolitis, and caesarean section. It describes positive effects on length-of-stay and costs for different patient groups without compromise in patient outcomes. It reports increased patient satisfaction concerning pain control after caesarean section. It reports a reduction of the prescription of laboratory tests with 70% without an impairment of patient care.</p>
<p>Renholm M, Leino-Kilpi H and Suominen T (2002) Critical pathways. A systematic review, <i>Journal of Nursing Administration</i> 32 (4) : 196-202</p>	<p>The authors' review of the literature suggests the use of critical pathways reduces the cost of care and the length of patient stay in hospital. They also have a positive impact on outcomes, such as increased quality of care and patient satisfaction, improved continuity of information, and patient education. A systematic review of 53 clinical pathways reports positive effects on length-of-stay for short stay surgery, an improvement in patient satisfaction and patient education for clinical pathways in ambulatory surgery and an improvement in continuity of care and in continuity of information.</p>
<p>Bryson A and Browning J (1999) <i>Clinical audit and quality using integrated pathways of care. Report No.: CA96/01</i>, Edinburgh: CRAG, Clinical Resource and Audit</p>	<p>Bryson and Browning found very little evidence of improved clinical outcomes. They found a higher satisfaction, less anxiety and better understanding in patients cared for using clinical pathways. They found that clinical pathways were good educational tools for new staff, mainly for nurses and allied health professionals. However, a strong disagreement was found between staff members about the fact that clinical pathways improved communication. They reported an improved documentation in patient records and a reduction in the time spent on documentation. On the other hand, a number of health care workers in this study mentioned a reduction in the continuity of daily recording and in the detail of the record of nursing care. Strong evidence was also found for a decrease in duplication of documentation, leading to time benefits.</p>

<p>Campbell H, Hotchkiss R, Bradshaw N and Porteous M (1998) Integrated care pathways, <i>BMJ</i> 316 (133)</p>	<p>Provides an overview of integrated care pathways:</p> <p>Integrated care pathways—also known as coordinated care pathways, care maps, or anticipated recovery pathways—are task orientated care plans which detail essential steps.</p> <p>Integrated care pathways are structured multidisciplinary care plans which detail essential steps in the care of patients with a specific clinical problem. They have been proposed as a way of encouraging the translation of national guidelines into local protocols and their subsequent application to clinical practice. They are also a means of improving systematic collection and abstraction of clinical data for audit and of promoting change in practice. The degree to which they succeed in realising this potential for improving patient care is still uncertain, but enough evidence exists in their favour to justify more widespread evaluation of their impact. Here we describe integrated care pathways, show how to create and use them, and review the evidence of their effectiveness.</p> <p>Many initiatives have been introduced in the past two decades to improve clinical effectiveness and thereby patient care. Foremost among these have been clinical guidelines and clinical audit. Concern is regularly expressed, however, that the commitment and enthusiasm of the groups publishing their experience is a major determinant of their success. There are also related concerns about the opportunity costs of audit and guidelines projects.</p> <p>Guidelines development—literature review, critical appraisal, multidisciplinary consultation, and grading of recommendations by level of evidence—is labour intensive. Support is now available from several sources, but less attention and support is given to translating established guidelines into local management protocols and their subsequent implementation. Even though the impact of clinical guidelines in improving clinical practice will largely be determined by progress in these areas. Audit projects often fail to realise their potential because the improved practice identified by the audit is not implemented or, if implemented, its effect is not evaluated</p>
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b) Developing and auditing care pathways

Study	Findings
<p>Rooney E (2014) Developing care pathways – lessons from the Steele Review implementation in England, <i>Gerodontology</i> 31 (S1) : 52-59</p>	<p>This paper sets out to discuss the concept of care pathways, review their definition, features and implementation and using an example from the NHS dental system in England guide the development of an elder care pathway.</p> <p>Care pathways have developed from quality management approaches in industry and focus on a number of steps which are intended to lead to expected outcomes. The existing definition and descriptors of care pathways serve well, but miss the complex process underlying the development of pathways, their structure, implementation and evaluation.</p> <p>The literature identifies key features of clinical pathways and from the developing field of implementation science, the factors likely to support pathway implementation. Pathways must be generic enough to enable them to be applicable broadly, but specific enough for them to be locally relevant and population specific. The development of care pathways in the National Health Service (NHS) Dental Service in England is described and when compared with the implementation science literature exhibits features identified as positive factors for implementation. As a result a contribution to the pathway definition literature is offered.</p> <p>Conclusions: Learning from the literature and the practical experience described from England, the process for developing dental care pathways for dependent elders should begin with the creation of a high level pathway, which is cognisant of the clinical and implementation science evidence base</p>
<p>Pearce M (2011) <i>Guide to Carrying Out Clinical Audits on the Implementation of Care Pathways</i>, Healthcare Quality Quest</p>	<p>This guide is intended to help carry out clinical audits on care pathways including how to: identify what is important to audit for a care pathway; select the right focus for the clinical audit on a care pathway; develop the right standards to measure quality for a clinical audit on a care pathway; make decisions about how data will be collected for an audit on a care pathway; ensure that the right provisions for data protection and communication are in place for an audit on a care pathway; consider the right way to analyse the data for the clinical audit on a care pathway.</p>

<p>Vanhaecht K, De Witte K, Depreitere R and Sermeus W (2006) Clinical pathway audit tools: A systematic review, <i>Journal of Nursing Management</i> 14 (7) : 529-537</p>	<p>A systematic review to determine whether clinical/care pathway audit tools can identify the characteristics of well-organized care processes.</p> <p>Although pathways are used worldwide, confusion exists about the concept and impact. Seven of 15 clinical pathway audit tools were selected for this review. Through content analysis, the authors identified 17 characteristics and grouped them using the realistic evaluation paradigm. The Integrated Care Pathway Appraisal Tool is the most appropriate audit tool to assess clinical pathway documents.</p> <p>Authors' conclusions: It is astonishing that so little research on clinical pathway audit tools has been carried out, given the prevalent use of clinical pathways. Because the concept of clinical pathways remains unclear, a variety of audit tools are needed to help clarify the concept. Further research on the construct and criterion validity of pathway audit tools is necessary to fully understand why and under which circumstances pathways lead to improved care.</p> <p>The ICPAT seems to be the most appropriate clinical pathway audit tool, because it contains 15 of the 17 characteristics identified during the content analysis. A limitation of this tool, however, is that it mainly evaluates the written clinical pathway (i.e., pathway document), and less so the functioning clinical pathway. Moreover, the ICPAT does not contain questions on how the care process is organised and managed.</p>
<p>Croucher M (2005) An Evaluation of the Quality of Integrated Care Pathway Development in the UK National Health Service, <i>International Journal of Care Coordination</i> 9 (1) : 6-12</p>	<p>The objectives of the study were to identify the key elements within an ICP, to formulate a checklist utilizing the ICP key elements, and to evaluate ICPs available from the UK National electronic Library for Health (NeLH) against the checklist. An ICP key elements checklist was produced from a review of ICP literature.</p> <p>In all, 90% of the ICPs evaluated contained a plan of anticipated care along some form of timeline, including processes and outcomes. Also, 70% of the ICPs evaluated did not contain a variance-recording framework. In addition, 70% of the ICPs evaluated did not contain any evidence of evidence-based best practice.</p> <p>This study shows that there is wide variability in the quality of the ICPs being developed in the UK National Health Service (NHS), and that the development of ICPs in many health-care organizations is inadequate. Variability of the ICPs being developed will have a direct impact on the quality of patient care, and improvements in care and service delivery may not be identified, implemented or reviewed. It is recommended that a tool be produced, which would provide a standard framework for NHS staff to follow when developing ICPs.</p>

c) The use of technology

Study	Findings
<p>Dickinson R J and Kitney R I (2014) Information Driven Care Pathways and Procedures, <i>XIII Mediterranean Conference on Medical and Biological Engineering and Computing 2013 IFMBE Proceedings</i> 41 : 1322-1325</p>	<p>This paper addresses the issue of the implementation of care pathways in electronic form. Within the National Health Service (NHS) of England, Care Pathways are becoming increasingly important. These are typically provided by the Department of Health. The Pathways provided are in the form of paper-based schema. They either have to be implemented via paper forms or, as presented here, in electronic form. In addition, care pathways must be seen in the context of the T-Model of health care which comprises the care continuum and the biological continuum.</p> <p>The two care pathways which had been chosen as exemplars are myocardial infarction and stroke. However, the objective of the paper is not to discuss the specific care pathways in detail, but, rather, to describe technology which has been developed for their electronic implementation.</p> <p>The result of this implementation is that all the data and information acquired from the implementation of the care pathway is stored in a single clinical information system (CIS), which has incorporated in it the SQL database.</p> <p>Another important element of the system which has been developed is the ability to display data and information in terms of two dashboards (i.e. single screens which show the most important information). The two dashboards display clinical information (the point of care dashboard) and management information (the management dashboard).</p>

d) The effect on professional development

Study	Findings
<p>Deneckere S, Euwema M, Van Herck P, Lodewijckx C, Panella M, Sermeus W and Vanhaecht K (2012) Care pathways lead to better teamwork: results of a systematic review, <i>Social Science and Medicine</i> 75 (2) : 264-268</p>	<p>Evaluating complex interventions, such as the implementation of care pathways, widely used as a quality improvement strategy, requires an understanding of how and in what circumstances they work. One way in which care pathways may produce beneficial effects is by improving teamwork. This study aims to specifically focus on how care pathways affect teamwork by examining the effect of care pathways on team indicators and, identifying the conditions needed in order for care pathways to be successful.</p> <p>Twenty team indicators of teamwork were reported in the 26 studies included in the review. Seventeen of the indicators were positively associated with the implementation of care pathways, although the level of evidence was generally low, and sometimes conflicting. The overall conclusion is that care pathways have the potential to support inter-professional teams in improving teamwork, but further research is still needed to clarify the contexts within which pathways can be effective, the mediating components required, and the aspects of teamwork that care pathways can be expected to have an effect on.</p>

<p>Ilott I, Booth A, Rick J and Patterson M (2010) How do nurses, midwives and health visitors contribute to protocol-based care? A synthesis of the UK literature, <i>International Journal of Nursing Studies</i> 47 (6) : 770-780</p>	<p>To explore how nurses, midwives and health visitors contribute to the development, implementation and audit of protocol-based care. Protocol-based care refers to the use of documents that set standards for clinical care processes with the intent of reducing unacceptable variations in practice. Documents such as protocols, clinical guidelines and care pathways underpin evidence-based practice throughout the world.</p> <p>Most papers were descriptive, offering practitioner knowledge and positive findings about a locally developed and owned protocol-based care. The majority were instigated in response to clinical need or service re-design. Development of protocol-based care was a non-linear, idiosyncratic process, with steps omitted, repeated or completed in a different order. The context and the multiple purposes of protocol-based care influenced the development process. Implementation and sustainability were rarely mentioned, or theorised as a change.</p> <p>The roles and activities of nurses were so understated as to be almost invisible.</p> <p>There were notable gaps in the literature about the resource use costs, the engagement of patients in the decision-making process, leadership and the impact of formalisation and new roles on inter-professional relations.</p> <p>Conclusions: Documents that standardise clinical care are part of the history of nursing as well as contemporary evidence-based care and expanded roles. Considering the proliferation and contested nature of protocol-based care, the dearth of literature about the contribution, experience and outcomes for nurses, midwives and health visitors is noteworthy.</p>
<p>Atwal A and Caldwell K (2002) Do multidisciplinary integrated care pathways improve interprofessional collaboration?, <i>Scandinavian Journal of Caring Sciences</i> 16 (4) : 360-367</p>	<p>This paper evaluates the implementation of an integrated care pathway with fractured neck of femurs in one London teaching hospital. The emphasis is on understanding whether integrated care pathways enhance and develop inter-professional collaboration and enable effective information access and flow across the professions and the organization.</p> <p>The criteria for evaluation, forming the hypotheses of the study, were that interprofessional nonverbal and verbal communication would be enhanced and that inter-professional collaboration would increase. Methods of evaluation used were: (i) stakeholder interviews, (ii) inter-professional audit and (iii) analysis of the variances from the integrated care pathway.</p> <p>The evaluation revealed that although integrated care pathways led to improved outcomes for the health care trust there was little evidence to suggest that inter-professional relationships and communication were enhanced. Furthermore, key factors in discharge delays appeared to be organisational rather than professional.</p>

e) Cost effectiveness

Study	Findings
<p>Dautremont J F, Rudmik L R, Yeung J, Asante T, Nakoneshny S C, Hoy M, Lui A, Chandarana S P, Matthews T W, Schrag C and Dort J C (2013) Cost-effectiveness analysis of a postoperative clinical care pathway in head and neck surgery with microvascular reconstruction, <i>Journal of Otolaryngology - Head and Neck Surgery</i> 42 (59)</p>	<p>A study to evaluate the cost-effectiveness of a postoperative clinical care pathway for patients undergoing major head and neck oncologic surgery with microvascular reconstruction.</p> <p>The study made a comparative trial of a prospective treatment group managed on a postoperative clinical care pathway and a historical group managed prior to pathway implementation. Effectiveness outcomes evaluated were total hospital days, return to OR, readmission to ICU and rate of pulmonary complications. Costing perspective was from the government payer.</p> <p>118 patients were included in the study. All outcomes demonstrated that the postoperative pathway group was both more effective and less costly, and is therefore a dominant clinical intervention. The overall mean pre- and post-pathway costs are \$22,733 and \$16,564 per patient, respectively. The incremental cost reduction associated with the postoperative pathway was \$6,169 per patient.</p> <p>Conclusion: Implementing the postoperative clinical care pathway in patients undergoing head and neck oncologic surgery with reconstruction resulted in improved clinical outcomes and reduced costs.</p>
<p>Olsson L E, Hansson E, Ekman I and Karlsson J (2009) A cost-effectiveness study of a patient-centred integrated care pathway, <i>Journal of Advanced Nursing</i> 65 (8) : 1626-1635</p>	<p>The aim of the study was to compare costs and consequences for an integrated care pathway intervention group with those of a usual care group for patients admitted with hip fracture.</p> <p>A consecutive sample of 112 independently living participants, aged 65 years or older and admitted to hospital with a hip fracture, were included in the study. Data were collected over an 18-month period in 2003–2005. A cost-effectiveness analysis was performed to compare an integrated care pathway intervention (treatment A) with usual care (treatment B).</p> <p>There was a 40% reduction for each participant in the average total cost of treatment A of €9685 vs. €15,984 for treatment B. Moreover, clinical effectiveness was much improved. The cost-effectiveness ratio for treatment A was €14,840 vs. €31,908 for treatment B. In addition, 75% of the participants in treatment A were successfully rehabilitated vs. 55% in treatment B.</p> <p>Conclusions. The application of an integrated care pathway with individualized care appears to enhance both rehabilitation outcomes and cost-effectiveness.</p>

The effectiveness of care pathways in particular circumstances

f) Cardiovascular disease and heart failure

Study	Findings
<p>Kul S, Vanhaecht K, Savas E, Öztürk Z A, Parker R A and Panella M (2013) Modeling of in-hospital treatment outcomes for elderly patients with heart failure: Care pathway versus usual care, <i>European Geriatric Medicine</i> 4 (2) : 86-90</p>	<p>This study evaluates the effect of care pathways on heart failure treatment outcomes by adjusting for possible risk factors in elderly patients.</p> <p>Data were collected from 14 Italian hospitals. The overall sample consisted of 332 geriatric heart failure patients (174 receiving care pathway, 158 usual care) older than 75 years. We performed two-level mixed-effects logistic regression model to determine the effect of care pathways on the most important outcomes of heart failure treatment for elderly patients.</p> <p>The results showed that care pathways have a significant positive effect on mortality rate (OR = 0.157, 95%CI [0.056–0.437]) and unscheduled readmission rate (OR = 0.217, 95%CI [0.084–0.563]).</p> <p>Conclusion: The study shows that through using care pathways for elderly heart failure patients, reduced mortality and readmission rates can be achieved without increasing hospitalization costs.</p>
<p>Kul S, Barbieri A, Milan E, Montag I, Vanhaecht K and Panella M (2012) <i>Effects of care pathways on the in-hospital treatment of heart failure: a systematic review</i>, 12 (81)</p>	<p>A disease specific systematic review to determine how care pathways in the hospital treatment of heart failure affect in-hospital mortality, length of in-hospital stay, readmission rate and hospitalisation cost when compared with standard care.</p> <p>Seven studies met the study inclusion criteria and were included in the systematic review with a total sample of 3,690 patients. The combined overall results showed that care pathways have a significant positive effect on mortality and readmission rate. A shorter length of hospital stay was also observed compared with the standard care group. No significant difference was found in the hospitalisation costs. More positive results were observed in controlled trials compared to randomized controlled trials.</p> <p>Conclusion: By combining all possible results, it can be concluded that care pathways for the treatment of heart failure decrease mortality rates and length of hospital stay, but no statistically significant difference was observed in the readmission rates and hospitalisation costs.</p>

<p>Every N R, Hochman J, Becker R, Kopecky S and Cannon C P (2000) Critical Pathways: a Review, <i>Circulation</i> 101 (4) : 461-465</p>	<p>Critical pathways are being implemented in a broad range of patients with cardiovascular disease. This review found no change in clinical outcome or readmission rate but decreased length-of-stay and costs. One of the six publications in the review reported a decreased rate of nosocomial pneumonia. The review concludes that clinical protocols can and should be used to decrease variation in care, improve guideline compliance, and potentially improve overall quality of care in patients with cardiovascular disease.</p> <p>There is a real danger when critical pathways are brought in from external sources and implemented on the basis of administrative attempts to reduce costs.</p> <p>Although cost savings can and should be evaluated with the critical pathway, the goal of improving guideline compliance and overall quality of care should be the primary focus</p> <p>The real impact of critical pathways and appropriateness protocols is their use as tools for collection of information..</p>
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g) Dental care (Oral health)

Study	Findings
<p>Pretty I A, Ellwood R P, Lo E C M, MacEntee M I, Müller F, Rooney E, Thomson W M, Van der Putten G-J, Ghezzi E M, Walls A and Wolff M S (2014) The Seattle Care Pathway for securing oral health in older patients, <i>Gerodontology Special Issue: Developing Pathways for Oral Care in Elders</i> 31 (S1) : 77-87</p>	<p>This article describes the development of the Seattle Care Pathway based upon a workshop held in 2013. An overview is provided on the key issues of older persons’ dental care including the demography shift, the concept of frailty, the need for effective prevention and treatment to be linked to levels of dependency and the need for a varied and well educated work force. The pathway is presented in tabular form and further illustrated by the examples in the form of clinical scenarios. The pathway is an evidence based, pragmatic approach to care designed to be globally applicable but flexible enough to be adapted for local needs and circumstances.</p>

h) End of life care

Study	Findings
<p>Chan R J and Webster J (2013) End-of-life care pathways for improving outcomes in caring for the dying, <i>Cochrane Database of Systematic Reviews Issue 11. Art. No: CD008006.</i></p>	<p>In many clinical areas, integrated care pathways are utilised as structured multidisciplinary care plans that detail essential steps in caring for patients with specific clinical problems. In particular, care pathways for the dying have been developed as a model to improve care of patients who are in the last days of life. There have been sustained concerns about the safety of implementing end-of-life care pathways, particularly in the UK.</p> <p>This review aims to assess the effects of end-of-life care pathways, compared with usual care (no pathway) or with care guided by another end-of-life care pathway across all healthcare settings (e.g. hospitals, residential aged care facilities, community). In particular, it aims to assess the effects on symptom severity and quality of life of people who are dying; those related to the care such as families, carers and health professionals; or a combination of these.</p> <p>The study looked at all randomised controlled trials (RCTs), quasi-randomised trial or high-quality controlled before-and-after studies comparing use versus non-use of an end-of-life care pathway in caring for the dying.</p> <p>Authors' conclusions: With sustained concerns about the safety of the pathway implementation and the lack of available evidence on important patient and relative outcomes, recommendations for the use of end-of-life pathways in caring for the dying cannot be made.</p> <p>All health services using end-of-life care pathways are encouraged to have their use of the pathway, to date, independently audited. Any subsequent use should be based on carefully documented evaluations. In future studies, outcome measures should include benefits or harms concerning the outcomes of interest in this review in relation to patients, families, carers and health professionals.</p>

<p>Dekkers A, Raijmakers N, Galesloot C and Heide A van der (2013) Liverpool Care Pathway: evaluation of a nationwide implementation program in the Netherlands, <i>European Journal of Palliative Care</i> : 172-173</p>	<p>The Dutch version of the Liverpool Care Pathway for the dying patient (LCP), Zorgpad Stervensfase, is a quality instrument for the care of dying people in the Netherlands. Since 2009 this pathway has been implemented nationwide in hospitals, nursing homes, hospices and homecare settings.</p> <p>27 stakeholders were interviewed: 7 employees of the regional Comprehensive Cancer Centres (CCC), 8 palliative care network coordinators and 12 project leaders of successful implementation projects. Subsequently, a focus group with the interviewees was organised to discuss facilitators and barriers of implementation of the Dutch LCP.</p> <p>Main reasons for institutions to implement Dutch LCP were to improve quality in end of life care, and to create a clear and uniform care plan at the end of life. Also extrinsic motivation was present, e.g. by financial incentives of insurance companies. Different successful strategies have been used for implementation of the LCP. Seven CCC's trained local project leaders and supported them in different ways. Network coordinators especially played a role in informing institutions within their regions about the advantages of the Dutch LCP.</p>
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<p>Neuberger Baroness J (chair), Guthrie Lord C, Aaronovitch D, Hameed Lord K, Bonser T, Harries of Pentregarth Prof Lord, Charlesworth-Smith D, Jackson Prof E, Cox Dr D and Waller S (2013) <i>More Care, Less Pathway: A review of the Liverpool Care Pathway</i>,</p>	<p>Developed from a model of care successfully used in hospices, the Liverpool Care Pathway for the Dying Patient (LCP) is a generic approach to care for the dying, intended to ensure that uniformly good care is given to everyone thought to be dying within hours or within two or three days, whether they are in hospitals, nursing homes, or in their own homes.</p> <p>A rapid evidence review of integrated care ‘pathways’ for end of life showed there are specific gaps in evidence on the LCP, not least that independent, prospective testing of the LCP has not yet been carried out after nearly 10 years of its dissemination. Fully independent assessments of end of life care in England are required, focusing on the outcomes and experience of care, as reported by patients, their relatives and carers, as well as the quality of dying. Further research into the biology and experience of dying is needed.</p> <p>Approaches like the LCP have made a valuable contribution to improve the timeliness and quality of clinical decisions in the care of dying patients, and plenty of evidence received by the Review shows that, when the LCP is used properly, patients die a peaceful and dignified death. But implementation of the LCP is sometimes associated with poor care.</p> <p>The Review panel heard many instances of both good and bad decision-making. Repeatedly, they heard stories of relatives or carers visiting a patient, only to discover that without any forewarning there had been a dramatic change in treatment. There now appeared to be no clinical care or palliative care, and the patient was unnecessarily or excessively sedated.</p> <p>Some people believe that to implement the LCP is a way of deliberately hastening someone’s death, and this is understandable, given what the Review heard about poor communication between clinicians and patients, their relatives and carers about what was happening during the dying process. The Review panel is content, however, that the LCP entirely reflects the ethical principles that should provide the basis of good quality care in the last days and hours of a person’s life. Any attempt deliberately to shorten a person’s life is illegal, but there is no obligation, moral or legal, to preserve life at all costs. The Review considered the issue of local financial incentives being applied per patient on the LCP, and concluded that this sort of incentive must cease in relation to any approach to care of the dying. Not only has it given rise to fears about hastening death for financial gain, but there is a very real risk that providing a payment for each patient implemented on the LCP, or equivalent approach, looks like an incentive to do so, rather than a means of providing sufficient resources for good quality and compassionate care to be provided.</p> <p>During this Review, the panel heard of far too many instances where the commencement of the LCP has led to a withdrawal of care, in some cases with relatives and carers left to do the caring themselves as much as they could. Caring with compassion for people at the end of their lives should be the aim of all doctors, nurses and healthcare staff. Good care for the dying is as important as good care at any other time of life.</p> <p>A repeated observation by families was that starting the LCP seemed to mean that proper clinical assessments of the need for medication ceased, instead of occurring every four hours as recommended in the LCP document; the LCP was then experienced as if it were a protocol, even a “tick-box” exercise, through which the next step was to stop food and fluids and give continuous infusions of strong opioids and sedatives without justification or explanation.</p>
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<p>Jones D A (2012) <i>Comment on the Liverpool Care Pathway (2012)</i>, Anscombe Bioethics Centre</p>	<p>The main principles behind the Liverpool Care Pathway are those of good palliative care and are fully in accordance with Catholic moral theology and with a Catholic understanding of a good death. Nevertheless, in practice it is clear that there is scope for patients to suffer if the LCP is misunderstood and used inappropriately, and the LCP may need to be improved in order to reduce the scope for such misunderstandings. There are a number of pressures that might subvert the proper implementation of the LCP. These might include:</p> <ul style="list-style-type: none"> •the subjective character of judgments about how soon someone is going to die, and the lack of explicit evidence-based criteria for this judgment in the case of the imminently dying; •the fact that the LCP may be initiated by people who are not senior clinicians, or are not familiar with the individual patient’s case, or who have not consulted with palliative care physicians; •the influence of managerial pressures to reduce bed occupancy or meet targets of one kind or another; •reluctance to face the problems of continuing care of certain difficult patients; •the euthanasiast outlook of some clinicians; •the possibility of doctors or nurses regarding the LCP as a set of “tick boxes” (which is part of a larger cultural problem in the health service); •that rather than assessing, and regularly re-assessing, the needs of the patient, fluids might be withdrawn automatically, where they could, for example, have been useful in alleviating thirst, (in some cases patients have been deprived even of sips of water or of the moistening of their dry mouth); •Other NHS organizational/ staffing procedures or constraints that may prevent an essential step or dimension of the LCP from being properly applied. •Lack of discussion with patients (if they are competent) and relatives or carers. <p>The hospice movement, which is widely admired and supported, is often successful in meeting the needs of dying people for adequate symptom relief, for human support, and for spiritual care. However, most of us in Great Britain and Ireland do not die in a hospice, nor do most of us die at home. We die in hospitals which have as their main aim to get people better, to cure, or at least improve people’s state of health. In the context of a system that focuses on cure it is difficult both for clinicians and for relatives to admit that a patient is dying and might need care appropriate to the dying. Research shows that care of the dying is poorest in the hospital setting</p>
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<p>Mars A P J E (2012) <i>Tailored implementation strategy for the intervention Liverpool Care Pathway for the Dying</i>, Faculty of Medicine Theses, University Of Utrecht</p>	<p>The intermediate effectiveness of a tailored implementation strategy for the multidisciplinary intervention LCP on an internal medicine ward of a general medical hospital was partially successful. The implementation effectiveness scores were modest on group- and patient level. The evolution strategy didn't result in a complete fit between the organization and the innovation, only a fit on rule-orientation. However the scores indicate implementation effectiveness on individual level. The documentation of patient care is significantly improved on several topics. The results of the process evaluation showed that more often facilitators were mentioned than barriers.</p>
<p>Costantini M, Ottonelli S, Canavacci L, Pellegrini F, Beccaro M and the LCP Randomised Italian Cluster Trial Study Group (2011) The effectiveness of the Liverpool care pathway in improving end of life care for dying cancer patients in hospital. A cluster randomised trial, <i>BMC Health Services Research</i> 11 (13)</p>	<p>Most cancer patients still die in hospital, mainly in medical wards. Many studies in different countries have shown the poor quality of end-of-life care delivery in hospitals. The Program "Liverpool Care Pathway for the dying patient" (LCP), developed in the UK to transfer the hospice model of care into hospitals and other care settings, is a complex intervention to improve the quality of end-of-life care. The results from qualitative and quantitative studies suggest that the LCP Program can improve significantly the quality of end-of-life care delivery in hospitals, but no randomised trial has been conducted.</p> <p>This article describes the protocol for a planned RCT. No results are yet available.</p>
<p>Veerbeek L, van Zuylen L, Swart S J, van der Maas P J, de Vogel-Voogt E, van der Rijt C C-D and van der Heide A (2008) The effect of the Liverpool Care Pathway for the dying: a multi-centre study, <i>Palliative Medicine</i> 22 (2) : 145-151</p>	<p>The effect of the Liverpool Care Pathway (LCP) on the documentation of care, symptom burden and communication was studied in three health care settings. Between November 2003 and February 2005 (baseline period), the care was provided as usual. Between February 2005 and February 2006 (intervention period), the LCP was used for all patients for whom the dying phase had started. After death of the patient, a nurse and a relative filled in a questionnaire. In the baseline period, 219 nurses and 130 relatives filled in a questionnaire for 220 deceased patients. In the intervention period, 253 nurses and 139 relatives filled in a questionnaire for 255 deceased patients. The LCP was used for 197 of them.</p> <p>In the intervention period, the documentation of care was significantly more comprehensive compared with the baseline period, whereas the average total symptom burden was significantly lower in the intervention period. LCP use contributes to the quality of documentation and symptom control.</p>

i) Hip fracture

Study	Findings
<p>Roberts H C, Pickering R M, Onslow E, Clancy M, Powell J, Roberts A, Hughes K, Coulson D and Bray J (2004) The effectiveness of implementing a care pathway for femoral neck fracture in older people: a prospective controlled before and after study, <i>Age and Ageing</i> 33 (2) : 178-184</p>	<p>A prospective study of patients admitted 12 months before and after implementation of a care pathway for the management of femoral neck fracture to investigate whether a care pathway for older hip fracture patients can reduce length of stay while maintaining the quality of clinical care. Audit data for corresponding time periods from nearby orthopaedic units was used to control for secular trends.</p> <p>Subjects: patients aged 65 years and over with a femoral neck fracture. Exclusion criteria: multiple fractures, fractures due to malignancy, re-fracture, total hip replacement, previously entered into the study, operation performed elsewhere. Three-hundred and ninety-five (99%) and 369 (97%) case records were available for full analysis.</p> <p>Main outcome measures: primary outcome: length of stay on the orthopaedic unit. Secondary outcomes: ambulation at discharge, discharge destination, in-hospital complications, 30 day mortality, readmission within 30 days of discharge, post-operative days the patient first sat out of bed and walked.</p> <p>Results: mean length of stay increased by 6.5 days (95% confidence interval 3.5–9.5 days, $P < 0.0005$) in the second period with a significant improvement in ambulation on discharge (odds ratio 1.6, 95% confidence interval 1.0–2.6, $P = 0.033$) and a trend towards reduction in admission to long term care (odds ratio 0.6, 95% confidence interval 0.3–1.0, $P = 0.058$).</p> <p>Conclusions: this care pathway was associated with longer hospital stay and improved clinical outcomes. Care pathways for hip fracture patients can be a useful tool for raising care standards but may require additional resources.</p>

j) Integrating health and social care

Study	Findings
<p>Age UK Cornwall & Isles of Scilly (2013) <i>People, Place, Purpose: Shaping services around people and communities through the Newquay Pathfinder</i></p>	<p>This outcomes and performance framework has been developed as a social impact bond model to improve the quality of life for older people in Newquay by helping them identify ways to build their self-confidence and self-reliance, providing practical support to help them achieve their aspirations. This reduces dependency on health and social care, including hospital admissions.</p> <p>The service</p> <ul style="list-style-type: none"> • Targeted wrap around support motivating ‘at-risk’ older people to achieve their aspirations through a ‘guided conversation’ • Individuals are supported by an Age UK worker to identify their goals and to co-ordinate a management plan that is delivered by coordinating statutory and community services and support • The support using volunteers aims to build peoples social networks, making them better connected to their community and more resilient • Age UK worker is part of a multi-disciplinary team which includes GP, district nurse, matron and social workers <p>The benefits</p> <ul style="list-style-type: none"> • 23% improvement in peoples self reported wellbeing • 87% of practitioners say integration is working very well and their work is meaningful • 30% reduction in non-elective admission cost • 40% drop in acute admissions for long term conditions • 5% cost reduction and reduction in demand for adult social care

<p>The Institute of Public Care for Oxfordshire County Council (2010) <i>Care Pathway Study for Older People admitted to Care</i></p>	<p>The aim of this study, prepared by the Institute of Public Care for Oxfordshire County Council, was to analyse the life circumstances and events that precede older people being admitted to care homes, in order that the local authority can improve services targeted at preventing or delaying those admissions and enabling people to remain in their own homes longer.</p> <p>The study is built on an audit of case files for people admitted to care in the local authority area in 2008-2009, plus interviews with older people, care managers and informal carers to provide a picture of their 'care pathway' to the point of admission. The study draws up a profile of those admitted, their needs and the services accessed, broken down according to key variables including age, gender and prior living arrangements, especially whether they had been living alone or with family.</p> <p>A survey of the most common predisposing health conditions is performed, including incontinence, dementia, depression, stroke and susceptibility to falls, supported by illustrative excerpts from interviews. The study reviews mainstream and specialist services available to older people, including social care at home, and primary and acute healthcare, and reports the views of older people and carers of their effectiveness.</p> <p>Overall, the study reports complex care pathways, and especially high representation among women, over-85s and those previously living alone, with a high proportion admitted following a prolonged hospital stay. Key findings include that half the people admitted had not been receiving an intensive home care package, specialist provision such as Falls services was underused, there was insufficient follow-up to early problems such as stroke, and an holistic approach to people's varied and overlapping health conditions was lacking.</p>
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<p>Brown L, Tucker C and Domokos T (2003) Evaluating the impact of integrated health and social care teams on older people living in the community, <i>Health & Social Care in the Community</i> 11 (2) : 85-94</p>	<p>Although it is perceived wisdom that joint working must be beneficial, there is, even at this stage, little evidence to support that notion. The present study is an evaluation of two integrated co-located health and social care teams which were established in a rural county to meet the needs of older people and their carers.</p> <p>This study does identify that patients from the 'integrated teams' may self-refer more and are assessed more quickly. This might indicate that the 'one-stop shop' approach is having an impact on the process of service delivery. The findings also suggest that, in the integrated teams, the initial stages of the process of seeking help and being assessed for a service may have improved through better communication, understanding and exchange of information amongst different professional groups. However, the degree of 'integration' seen within these co-located health and social care teams does not appear to be sufficiently well developed to have had an impact upon the clinical outcomes for the patients/service users. It appears unlikely from the available evidence that measures such as co-location go far enough to produce changes in outcomes for older people.</p> <p>If the Department of Health wishes to see benefits in process progress to benefits to service users, then more major structural changes will be required. The process of changing organisational structures can be enhanced where there is evidence that such changes will produce better outcomes. At present, this evidence does not exist, although the present study does suggest that benefits might be forthcoming if greater integration can be achieved. Nevertheless, until the social services and National Health Service trusts develop more efficient and compatible information systems, it will be impossible to evaluate what impact any further steps towards integration might have on older people without significant external resources.</p>
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k) Mental health

Study	Findings
Devapriam J, Alexander R, Gumber R, Pither J and Gangadharan S (2014) Impact of care pathway-based approach on outcomes in a specialist intellectual disability inpatient unit, <i>Journal of Intellectual Disabilities</i> May	<p>Specialist intellectual disability inpatient units have come under increased scrutiny, leading to questions about the quality of service provision in this sector. A care pathway-based approach was implemented in such a unit and its impact on outcome variables was measured.</p> <p>The care pathway-based approach resulted in the turnover of more patients, increased capacity for admissions to the unit, reduced lengths of stay in hospital, timely assessments and treatments, which resulted in better outcomes in patients. Care pathway-based approach to service provision provides not only better outcomes in patients but also a reliable way of ensuring true multi-agency working and accountability. If used widely, it can reduce the variability in the quality of current service provision.</p>

<p>Wilson P and Chambers D; Centre for Reviews and Dissemination, University of York (2011) <i>Evidence briefing on integrated care pathways in mental health settings</i></p>	<p>Evidence base for effectiveness - Systematic reviews</p> <p>This study found no systematic reviews of the effectiveness of ICPs specifically in mental health care. However, two recent reviews (both reported in two publications) have assessed ICPs in general: a Cochrane review and a review by Allen et al. from the Wales Centre for Evidence Based Care. The Cochrane and Allen et al. reviews differed in their objectives, inclusion criteria and methods. Allen et al. aimed to identify the circumstances in which ICPs are more or less effective, for whom and in what contexts. Rotter et al. had the more traditional objective of assessing the effects of ICPs on professional practice, patient outcomes, length of hospital stay and costs. Allen et al.'s review was restricted to 'high-quality' randomised trials (RCTs) whereas the Cochrane review included a wider range of study designs*. Most studies included in the reviews compared treatment guided by an ICP with 'usual care'.</p> <p>These differences between the reviews are reflected in differences in their results and conclusions. Allen et al. included seven studies (nine publications) in their review. They attempted to synthesise the studies using a narrative approach to answer their research questions. The main conclusions of the review were that:</p> <ul style="list-style-type: none"> • ICPs are most effective in contexts where patient care is predictable but their value is less clear in settings where recovery is more variable • ICPs are most effective in bringing about behaviour change where there are identified deficiencies in services • The value of ICPs in contexts where multidisciplinary working is well established is less certain. <p>None of the trials included in this review included an economic evaluation, so the authors could not comment on cost-effectiveness issues</p> <p>This type of literature is highly susceptible to 'publication bias'. In general, studies showing negative or uncertain results for a new intervention are more likely to remain unpublished than those showing positive results.</p> <p>The systematic reviews provide good evidence that ICPs can improve some outcomes and reduce costs compared with usual care in hospital settings.</p>
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<p>Rigby L, Hannah J, Haworth K, Molloy L and Scutts K (2007) An audit of an integrated care pathways for a crisis resolution/home treatment team., <i>The British Journal of Occupational Therapy</i> 70 (12) : 527-533</p>	<p>The development of crisis resolution/home treatment (CRHT) teams was outlined as a requirement in the National Health Service Plan (Department of Health 2000) and reiterated in the recent guidelines to have an impact on the provision of mental health care (Care Services Improvement Partnership [CSIP] 2006). The Home Option Service in Central Manchester, one of the first CRHT teams in the United Kingdom, provides support and a range of interventions, 24 hours a day, 7 days a week, for those service users experiencing a crisis in their mental health, as an alternative to hospital admission. The need for team working is explicit in the guidance statement to ensure fidelity and best practice for crisis services and it urges teams to provide clarity regarding their roles and responsibilities within the team approach (CSIP 2006).</p> <p>This paper illustrates a model for occupational therapists working within a crisis team in order to ensure that service users have access to occupational therapy when admitted to crisis care. Specific standards, in accordance with those outlined in the research and development strategic vision for occupational therapists in mental health (Association of Occupational Therapists in Mental Health 2006), have been identified to instigate a clear pathway for the stakeholders of crisis teams. A description of the development, implementation and evaluation of an integrated care pathway is provided, alongside a subsequent audit to measure the effectiveness of this model.</p>
<p>Brett W and Schofield J (2002) Integrated care pathways for patients with complex needs., <i>Nursing Standard</i> 16 (46) : 36-40</p>	<p>This article describes a process to improve documentation for older, severely mentally ill, patients on a continuing assessment unit, the initial problems encountered and the eventual benefits.</p>

I) Primary Care

Study	Findings
<p>Rotter T, Kinsman L, Machotta A, Zhao F L, van der Weijden T, Ronellenfitsch U and Scott S D (2013) <i>Clinical pathways for primary care: effects on professional practice, patient outcomes, and costs (Protocol)</i>, The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.</p>	<p>Protocol for a planned review.</p> <p>CPWs are document-based tools that provide a link between the best available evidence and multidisciplinary clinical practice in health care. They are used to translate clinical guidelines into local protocols and clinical practice). They provide recommendations, processes (including referrals) and timeframes for the management of people with specific conditions or undergoing specific interventions, and are increasingly being used as computer-based documents. In contrast to clinical guidelines which provide generic recommendations, CPWs are specifically tailored to the local structures, systems and time-frames used. The many terms used to refer to CPWs, include 'integrated care pathways', 'critical pathways', 'care plans', 'checklists' and 'protocols'. CPWs are well established in health care and are being increasingly promoted and used, especially in Canada, Australia, and the United Kingdom.</p>

m) Stroke

Study	Findings
<p>Allen D and Rixson L (2008) How has the impact of 'care pathway technologies' on service integration in stroke care been measured and what is the strength of the evidence to support their effectiveness in this respect?, <i>International Journal of Evidence Based Healthcare</i> 6 : 78-110</p>	<p>A systematic review all high-quality studies which have evaluated the impact of care pathway technologies on 'service integration' and its derivatives in stroke care. Findings:</p> <ol style="list-style-type: none"> 1. ICPs can be effective in ensuring that patients receive relevant clinical interventions and/or assessments in a timely manner, although these improvements may reflect better documentation rather than actual changes in practice. 2. ICPs can be effective in improving the documentation of rehabilitation goals, of communication with patients, carers (diagnosis, prognosis and follow-up arrangements) and documentation of notification of primary care physicians of discharge. However, this can create additional burdens of work for staff. 3. Early studies of ICP-managed care in the acute stroke context have demonstrated reduced length of stay without any associated adverse effects on discharge destination, morbidity or mortality. These effects do not reach statistical significance, however, and may reflect wider changes in service provision and a general trend towards reduced length of hospital stay. While later studies in the acute and rehabilitation contexts do not reveal any significant reduction in length of stay, they do report greater documented use of certain clinical interventions and assessments, suggesting that ICPs can be effective in mobilising hospital resources around the patient. 4. ICPs implemented in the context of acute stroke care can be effective in reducing the occurrence of urinary tract infections, although we do not know whether this can be attributed to improved service integration. 5. ICP management in stroke rehab may not be flexible enough to meet diverse patient needs and can result in insufficient attention to higher-level functioning and carer needs influencing perceptions of quality of life. 6. ICP management may assist in clarifying role boundaries and a shared understanding of the work, but this can result in some members of the disciplinary team perceiving that their contribution is not appropriately reflected in the documentation. 7. There is some evidence that ICPs may be effective in changing professional behaviours in the desired direction where there is scope for improvement, but in situations in which multidisciplinary working is effective, their positive effects may be limited. Furthermore, it is far from clear what the active ingredients of ICPs actually are. Kwan et al. suggest that it was the process of ICP development that had most impact on behaviours rather than the use of the artefact per se. 8 None of the studies assessed the balance of costs and benefits of ICP use. Therefore, we do not know whether the costs of ICP development and implementation are justified by any of the reported benefits.

<p>Kwan J, Hand P, Dennis M and Sandercock P (2004) Effects of introducing an integrated care pathway in an acute stroke unit, <i>Age and Ageing</i> 33 (4) : 362-367</p>	<p>A before-and-after study. The ‘before’ (control) group comprised 154 consecutive stroke patients admitted to the acute stroke unit over a 9-month period. The ‘after’ (intervention) group comprised 197 consecutive patients admitted to the same unit over a 9-month period in the year after the introduction of the integrated care pathway. Effectiveness was assessed with a variety of measures: quality of documentation; process of care; occurrence of complications; death and discharge destination. Results were adjusted for case mix using a validated model.</p> <p>The baseline characteristics of the two groups were similar, although there were more total anterior circulation strokes (29% versus 18%, $P = 0.005$) and fewer partial anterior circulation strokes (30% versus 42% $P = 0.04$) in the intervention group. In the intervention group, we found that urinary tract infections were significantly less frequent (OR 0.37, CI 0.15–10.91) and the quality of several aspects of care (e.g. CT scanning < 48 hours) and documentation were significantly better. However, there were no significant differences in deaths, discharge destination, or length of stay between the two groups.</p> <p>Conclusion: this before-and-after study has provided further evidence that introducing an integrated care pathway for acute stroke may improve the quality of documentation and process of care, and reduce the risk of certain post-stroke complications.</p>
<p>Sulch D, Evans A, Melbourn A and Kalra L (2002) Does an integrated care pathway improve processes of care in stroke rehabilitation? A randomized controlled trial, <i>Age and Ageing</i> 31 (3) : 175-179</p>	<p>A comparison of processes of care data collected in a randomized controlled trial to evaluate whether integrated care pathways improve the processes of care in stroke rehabilitation.</p> <p>Participants: acute stroke patients undergoing rehabilitation randomized to receive integrated care pathways management (n=76) or conventional multidisciplinary care (n=76).</p> <p>Measurements: proportion of patients meeting recommended standards for processes of care using a validated stroke audit tool.</p> <p>Results: integrated care pathways methodology was associated with higher frequency of stroke specific assessments, notably testing for inattention (84% versus 60%; $P=0.015$) and nutritional assessment (74% versus 22%, $P<0.001$). Documentation of provision of certain information to patients/carers (89% versus 70%; $P=0.024$) and early discharge notification to general practitioners (80% versus 45%; $P<0.001$) were also more common in this group. There were no significant differences in the processes of interdisciplinary co-ordination and patient management between the integrated care pathways group and the control group.</p> <p>Conclusion: integrated care pathways may improve assessment and communication, even in specialist stroke settings.</p>

<p>Sulch D, Perez I, Melbourn A and Kalra L (2000) Randomized Controlled Trial of Integrated (Managed) Care Pathway for Stroke Rehabilitation, <i>Stroke</i> 33 : 1929-1934</p>	<p>An ICP for stroke rehabilitation based on evidence of best practice, professional standards, and existing infrastructure was developed. Its effectiveness was tested in 152 stroke patients undergoing rehabilitation who were randomized to receive ICP care coordinated by an experienced nurse (n=76) or conventional multidisciplinary care (n=76).</p> <p>Results: The age, sex, pre-morbid functional ability, and stroke characteristics of the 2 groups were comparable. There were no differences in mortality rates (10 [13%] versus 6 [8%]), institutionalization (10 [13%] versus 16 [21%]), or length of hospital stay (50±19 versus 45±23 days) between patients receiving ICP or multidisciplinary care. Patients receiving conventional multidisciplinary care improved significantly faster between 4 and 12 weeks (median change in Barthel Activities of Daily Living Index 6 versus 2; P<0.01) and had higher Quality of Life scores at 12 weeks (65 versus 59; P=0.07) and 6 months (72 versus 63; P<0.005). There were no significant differences in the mean duration of physiotherapy (42.8±41.2 versus 39.4±36.4 hours) or occupational therapy (8.5±7.5 versus 8.0±7.5 hours) received between the 2 groups.</p> <p>Conclusions: ICP management offered no benefit over conventional multidisciplinary care on a stroke rehabilitation unit. Functional recovery was faster and Quality of Life outcomes better in patients receiving conventional multidisciplinary care.</p>
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n) Surgery

Study	Findings
<p>Loftus T, Agee C, Jaffe R, Tao J and Jacofsky D J (2014) A Simplified Pathway for Total Knee Arthroplasty Improves Outcomes, <i>Journal of Knee Surgery</i> 27 (03) : 221-228</p>	<p>Care pathways for total knee arthroplasty (TKA) demonstrate improved quality and utilization outcomes. Standardizing these processes over large systems is difficult due to the variability of practice patterns and the complexity of multistep pathways.</p> <p>A simplified approach to this process focusing on early activity and avoidance of continuous urinary catheters was performed to overcome these perceived barriers for implementing a system-wide care pathway. Data were collected from a total of 6,154 consecutive patients during the time period of 1 year before and 1 year after implementation of a pathway focusing on two key drivers: early activity and continuous urinary catheter avoidance. Patients included were adults admitted for elective primary TKA. A composite score was calculated based on the successful completion of the two key drivers. Outcome measures were tracked before and after implementation. Following implementation of a simplified TKA care pathway, there was a significant increase in the composite score with increases attributable to both increased early activity ($p < 0.0001$) and continuous urinary catheter avoidance ($p < 0.0001$). This improvement in composite score was associated with a significant decrease in hospital length of stay (HLOS) ($p < 0.0001$), costs ($p < 0.0001$), complications ($p < 0.0001$), and 30-day readmissions ($p < 0.0106$). A fixed-effect model analysis demonstrated early activity was associated with improvements in HLOS ($p < 0.0001$), complications ($p = 0.0240$), and 30-day readmissions ($p = 0.0046$). Avoidance of a continuous urinary catheter was associated with improvements in HLOS ($p = 0.0001$), costs ($p < 0.0001$), complications ($p = 0.0006$), and 30-day readmissions ($p = 0.0008$).</p> <p>Conclusion: A simplified care pathway for TKA focusing on early activity and continuous urinary catheter avoidance is associated with improved complications, costs, HLOS, and 30-day readmissions.</p>

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