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Improving Information Management in Healthcare

A PRACTICAL GUIDE TO ACHIEVING CLINICAL EFFECTIVENESS

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INTRODUCTION TO THE GUIDE

Professor David Sackett has exhorted clinicians to engage in life-long self-directed learning so that they remain continually up-to-date with research evidence and offer their patients the best available practice, according to that evidence (Sackett DL, Rosenberg WMC. *Journal of the Royal Society of Medicine* 1995;88:620-4). We believe that clinical practice can be successfully evidence-based, only if clinicians work in teams to achieve consensus on best practice, based on evidence from rigorous research, combined with information on local need, resources and skills. This must be tempered by ethical, legal and cost-considerations, and be sympathetic to the need to accommodate individual preferences. This guide has been developed by the School of Postgraduate Studies in Medical and Health Care, as part of its range of clinical effectiveness publications, to assist multidisciplinary clinical teams aiming to develop health care delivery in line with best practice. It describes a generic methodology which can be used by an **individual** or a **team**, or used as the basis of a **course**, and aims to provide: an understanding of the background and benefits of becoming more clinically effective; an appreciation of the information, skills and people that need to be involved; and a practical methodology for the implementation of clinical effectiveness projects within NHS Trusts.

The Guide covers the totality of the processes involved in working together towards clinical effectiveness. It can also be used by those who do not wish to undertake a large-scale project for improvement of practice in a specific area, but are interested in a sub-set of the processes or skills, on a scale which would be adequate for their personal or local purposes.

By using this Guide, the reader will be able to:

- Increase their knowledge and professional development in their aim to become more clinically effective
- Identify the stages necessary to develop clinical effectiveness projects
- Define the specific skills required at each stage of the process
- Identify the stakeholders who need to be involved at each stage
- Design achievable, pragmatic plans for the introduction of clinical effectiveness projects, on a given topic
- Successfully manage the process of working towards clinical effectiveness on a given topic.

Please note that in this guide the word ‘clinician’ refers to **all** health professionals, including doctors, nurses, midwives, health visitors and the professions allied to medicine, who must all strive to become more clinically effective by whatever means possible.

The document is structured in four sections:

Section 1 - Introduction to clinical effectiveness

This section summaries the background to the Clinical Effectiveness Initiative in Wales and the expected benefits to patients and to health care providers.

Section 2 - Understanding the model

- Identifying the process - what stages are involved?
- Building the team - what skills are needed?
- Finding the players - who should be involved?
- Defining and finding the necessary information.

This section takes the model of developing clinical effectiveness, produced by the School of Postgraduate Studies, and decomposes it into a series of ten stages. Each stage is analysed and finds answers to the questions: Why is the stage necessary? What skills are needed to complete it successfully? What players need to be involved? What information is needed? The links between each stage are explored.

Section 3 - Making the methodology work

- Choosing a topic
- Bringing the players together - when and how should they meet?
- Seeing how it works - case study
- What are the issues?

In Section 3, the Guide discusses how a suitable topic can be identified. This is followed by a case study, using a familiar clinical indication, to build up a practical example of the methodology in use. The problems that may arise and the solutions that have to be found are highlighted. This section provides understanding of the practicalities of planning clinical effectiveness implementation, necessary to move on to Section 4.

Section 4 - Planning a clinical effectiveness implementation project

- Planning and organising - where to start
- Pitfalls and problems - how can they be avoided?

Section 4 takes the readers, now familiar with the background and theory of clinical effectiveness implementation, who have analysed the practical problems of a real life situation, to consider a set of simple planning tools which can be used to manage the process of implementation of clinical effectiveness in the workplace.

A good way to reinforce learning is to plan a clinical effectiveness project, related to the reader's particular environment. The plans would be expected to describe in detail the steps required for each stage in the process, what skills would be needed and who would provide them, what information is required and from where it would be obtained, who needs to be involved in the introduction of clinical effectiveness projects and when and where they should meet. An analysis of risks to the process should also be part of the plan, with major problems foreseen and solutions suggested.

SECTION 1

Introduction to Clinical Effectiveness

The Clinical Effectiveness Initiative in Wales was aimed at improving the effectiveness of clinical care and demonstrating that treatments are up to the best professional standards. The programme ran from 1995 to 2000, aiming to build on previous initiatives concerning quality, resource management, medical and clinical audit, and the NHS Wales Research and Development Strategy, in order to improve the quality of health care in Wales.

Clinical effectiveness benefits both patients and organisations. It involves providing patients with relevant information and consulting them, so that they are empowered to make informed choices, resulting in increased patient satisfaction and a reduction in unnecessary treatments. Organisations are enabled to provide a consistent service of high standard, with staff reviewing the effectiveness of their practice against latest evidence; with a reduction in ineffective treatments resulting in an increase in the health gain of the population served, within available resources.

The initiative in Wales was led and supported by the Clinical Effectiveness Group (CEG) and the Clinical Effectiveness Support Unit (CESU). National Demonstration Projects were established, which aimed to define how practice can be changed as a result of reviewing the evidence in the areas of schizophrenia, diabetes, pressure damage, emergency hospital admissions, and stroke care. Local clinical effectiveness groups were set up, and some Medical Audit Advisory Groups adapted their programmes with General Practitioners to reflect the initiative.

Academic teaching and research institutions, including the School of Postgraduate Studies in Swansea, targeted their work to support the initiative and offered courses to develop skills to support clinical effectiveness. The School has developed a Generic Methodology (defined as a scheme of classification, or simply the orderly arrangement of ideas) for implementing clinical effectiveness in clinical situations, where professionals from many disciplines work together, and need to achieve consensus on best practice. The methodology offers a systematic way of applying the relevant skills in a logical sequence. It is described in ten stages, from selecting the topic where clinical practice needs to be reviewed, to implementing change, monitoring and feedback.

SECTION 2

Understanding the Model

In this section you will find the answers to the following questions:

- **What are the stages of the model?**
- **What skills are needed to successfully complete each stage?**
- **Who needs to be involved in each stage?**
- **What information is needed for each stage?**

1 Overview of the Model

a) There are ten stages involved in implementing the model:

- **Stage 1** Selecting the topic
- **Stage 2** Finding and using the evidence
- **Stage 3** Critical appraisal
- **Stage 4** Obtaining local data on need, resources, activity, quality, cost
- **Stage 5** Identifying key stakeholders
- **Stage 6** Achieving consensus
- **Stage 7** Production of consensus documentation
- **Stage 8** Getting consensus into practice
- **Stage 9** Monitoring
- **Stage 10** Feedback

c) Definitions used

The following terms will be used in this document to describe the individuals and groups necessary for the clinical effectiveness methodology. These definitions apply to a full-scale Project, but need not be used by those who are using the Guide to help them through one or two of the Stages, appropriate to their local or personal needs.

- **A Clinical Effectiveness Project**

A Clinical Effectiveness Project consists of the implementation of the stages of the Generic Clinical Effectiveness Methodology, to achieve an evidence-based approach to health care.

- **A Clinical Effectiveness Agent**

A Clinical Effectiveness Agent is the person who leads the Clinical Effectiveness Project; who understands the principles of clinical effectiveness; who can plan the process of introducing clinical effectiveness for any given topic; and who can bring together those with the required skills and manage the process.

- **A Clinical Effectiveness Project Team**

A Clinical Effectiveness Project Team is a multidisciplinary group with skills and experience relating to the topic of the Project, who work with the Clinical Effectiveness Agent throughout the Project

- **A Consensus Group**

A Consensus Group consists of the Project Team plus other stakeholders, who will define and agree the new evidence-based approach to practice. This may require a wide range of professional and lay input, depending on the topic.

- **A Consensus Document**

A Consensus Document is a report of the conclusions of the Consensus Group, including the summarised evidence and local data, the agreed approach, audit criteria and outcome measures.

- **An Ownership Group**

An Ownership Group consists of the largest possible meeting of representatives from all the professional groups, who are tasked with implementing any changes and putting the agreed new approach into practice.

d) Supplementary questions

1. Who has the necessary skills and are they willing and able to help?
Can you persuade them?

2. Where will you find the necessary information, how easy is it to obtain, and how long will it take to find and assemble the information?

2 Stages of the Model

Stage 1: Selecting the topic

The first stage is to select the topic with clarity. Topics must be carefully selected and prioritised. The criteria for selection of a topic suitable for the application of the principles of evidence-based clinical practice will be the same as those used for clinical audit. These include:

- concern about current practice
- known variation in practice
- the feasibility of achieving agreement on best practice based on the latest evidence
- concern about costs
- the scale and seriousness of a health problem which affects many patients and professionals.

It is important that all concerned have a clear understanding of the topic under consideration. The scope and boundaries of the topic need careful definition, to enable meaningful discussion by all involved. Help will be required from clinicians, public health practitioners and managers.

The topic may have been decided by a Health Authority, Trust Executive, Clinical Directorate or Departmental team as being a priority for action, or may be identified by clinicians concerned about current practice. The Clinical Effectiveness Agent must bring together the appropriate Project Team.

<p style="text-align: center;">Skills required at this stage?</p> <ul style="list-style-type: none"> • Clinical experience • Ability to understand “population health status” • Ability to prioritise 	<p style="text-align: center;">Who needs to be involved at this stage?</p> <ul style="list-style-type: none"> • Clinicians • Public Health Depts • Medical Directors • Local Health Groups / Primary Care Groups • Senior Nurses and other clinical groups • Patient representatives 	<p style="text-align: center;">What information is required at this stage?</p> <ul style="list-style-type: none"> • Annual report of Director of Public Health on population health status • Complaints reports from Trusts • Advice or ideas from clinicians
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Stage 2: Finding the evidence

The second stage is to find all the appropriate evidence that gives guidance on the chosen topic. This is illustrated in Figure 2.

This evidence will come from many sources including original research papers, review articles, and guidelines from professional bodies. Skilled help from the library service will be required to find all material that may be relevant. If resources are scarce in the workplace, librarians may not be able to fulfill all requests for help with on-line searches from individual users. However, CD-ROMs are now easier to access and interrogate, and cheaper than on-line searches, and librarians offer training on how to use them and conduct a search.

Even using a careful search strategy, it is probable that much of the evidence will be found to be unhelpful and will need to be discarded, because it may be:

- Derived from atypical settings, not easily applicable in the local situation
- Conflicting
- Unclear for a given clinical setting
- Ignoring soft factors such as the placebo effect, social background, domestic circumstances
- Out of date.

<p>Skills required at this stage?</p> <ul style="list-style-type: none"> • Librarianship • Information science 	<p>Who needs to be involved at this stage?</p> <ul style="list-style-type: none"> • Librarian • Clinicians concerned with topic • Public health practitioner • Information Scientist 	<p>What information is required at this stage?</p> <ul style="list-style-type: none"> • Relevant published studies • Review articles • Grey literature • Relevant guidelines
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Review articles will be most helpful, but even ‘authoritative’ reviews may be out-of-date and reflect opinion rather than fact, and will need to be carefully appraised (Stage 3).

Many professional bodies and ‘experts’ have produced guidelines for the management of a multitude of clinical problems and processes. These guidelines rarely agree and are often presented in an inappropriate format, which fails to identify clearly the exact problem being addressed and the professionals at whom it is aimed. Care is needed to ensure that guidelines are properly based on valid evidence and they should be subjected to the same critical appraisal as review papers.

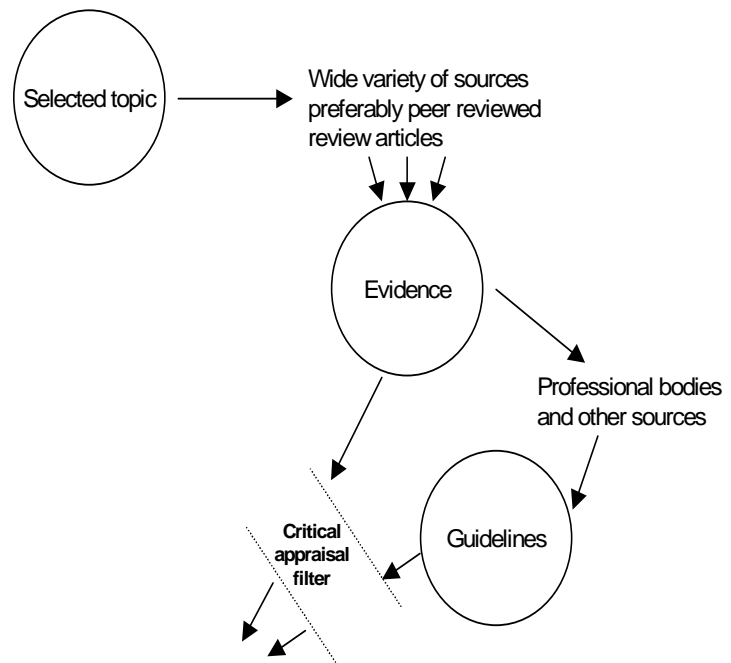
The definitions of the levels of strength of evidence and the grading of recommendations used in this Guide originate from the US Agency for Health Care Policy and Research, as set out in the following tables:

Level	Type of Evidence
Ia	Evidence obtained from meta-analysis of randomised controlled trials.
Ib	Evidence obtained from at least one randomised controlled trial.
IIa	Evidence obtained from at least one well-designed controlled study without randomisation.
IIb	Evidence obtained from at least one other type of well-designed quasi-experimental study.
III	Evidence obtained from well-designed, non-experimental descriptive studies, such as comparative studies, correlation studies and case control studies.
IV	Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities.

Grade of recommendation from the evidence	
A (Evidence Levels Ia,Ib)	Required - at least one randomised controlled trial as part of the body of literature of overall good quality and consistency addressing the specific recommendation.
B (Evidence Levels IIa, IIb, III)	Required - availability of well-conducted clinical studies without randomisation on the topic of recommendation.
C (Evidence Level IV)	Required - evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities. (Indicates absence of directly applicable clinical studies of good quality).

US Department of Health and Human Services. Public Health Service Agency for Health Care Policy and Research. Acute pain management: operative or medical procedures in trauma. Rockville: Public Health Service Agency for Health Care Policy and Research , 1992.

These definitions have been reviewed by the Scottish Intercollegiate Guidelines Network, and changes recommended. Grading Systems for Recommendations in Evidence-Based Clinical Guidelines. Scottish Intercollegiate Guidelines Network. March 2000.



Stage 3: Critical appraisal

Once the evidence has been identified, there will need to be critical appraisal of the results to confirm their validity and appropriateness for the local situation. Useful papers that describe how to do this are:

Oxman AD et al. Users Guides to the Medical Literature: I How to get started. JAMA 1993; 270 (17): 2093-95, and Oxman AD et al. vi How to use an overview. JAMA 1994; 272 (17): 1367-71.

How to get started gives the following guide for use in selecting articles that are most likely to give valid results:

PRIMARY STUDIES		INTEGRATIVE STUDIES	
Therapy	<p>Was the assignment of patients to treatments randomised?</p> <p>Were all of the patients who entered the trial properly accounted for and attributed at its conclusion?</p>	Overview	<p>Did the review address a clearly focused question?</p> <p>Were the criteria used to select articles for inclusion appropriate?</p>
Diagnosis	<p>Was there an independent blind comparison with a reference standard?</p> <p>Did the patient sample include an appropriate spectrum of the sort of patients to whom the diagnostic test will be applied in clinical practice?</p>	Guidelines	<p>Were the options and outcomes clearly specified?</p> <p>Did the guideline use an explicit process to identify, select and combine evidence?</p>
Harm	<p>Were there clearly identified comparison groups that were similar with respect to determinant of outcome (other than the one of interest)?</p> <p>Were outcomes and exposures measured in the same way in the groups being compared?</p>	Decision analysis	<p>Did the analysis faithfully model a clinically important decision?</p> <p>Was valid evidence used to develop the baseline probabilities and utilities?</p>
Prognosis	<p>Was there a representative patient sample at a well-defined point in the course of disease?</p> <p>Was follow-up sufficiently long and complete?</p>	Economic analysis	<p>Were two or more clearly described alternatives compared?</p> <p>Were the expected consequences of each alternative based on valid evidence?</p>

Using this approach to selecting articles, valid and relevant facts, appropriate to the chosen topic, can be assembled and presented in a form, which must facilitate easy assimilation, by those who take part in further discussions.

Skills required at this stage?	Who needs to be involved at this stage?	What information is required at this stage?
<ul style="list-style-type: none"> • Statistics and research • Ability to critically appraise evidence and select the most valid • Presentation of summaries and algorithms 	<ul style="list-style-type: none"> • Critical appraisal coordinator • Librarian • Relevant clinicians • Public health practitioner • Statistician • Research scientist 	<ul style="list-style-type: none"> • Available evidence and guidelines

Stage 4: Obtaining local data on need, resources, activity, quality & cost

In order to inform useful debate as to how best to implement the research evidence, knowledge of local circumstances will be needed. Typical questions may include:

- How common is the problem?
- How much ill health does it cause?
- What resources are available locally to deal with it?
- What is the number of cases seen?
- Who are the professionals involved?
- What services are available in primary, community and secondary care?
- What procedures/treatments are given?
- What is the variation in practice?
- What outcomes are achieved?
- What is the cost of care?

Answers to many of these questions will not be found easily, but this stage requires identification of the sources of relevant data and the means to extract it. Such sources might include:

- Medical, nursing or other records in paper or electronic form
- Clinical information systems (departmental, theatre, nursing, general practice)
- Prescribing data (held in the hospital pharmacy or by the health authority)
- Central data returns from discharge coding
- Contract data
- Patient and consumer information

It will be important to contact Trust information departments, the health authority's department of public health, business managers and clinicians, to help to identify sources and how to access them.

Skills required at this stage?

- Seeking out sources of data
- Accessing data
- Converting data into information
- Health economics

Who needs to be involved at this stage?

- Public health practitioner
- Librarian
- Clinicians
- Information departments

What information is required at this stage?

- Clinical data
- Activity data
- Population statistics
- Resource information
- Prescribing data
- Costs

Stage 5: Identifying key stakeholders

This stage will be partly informed by Stage 4, which will have identified those who are involved in commissioning and delivering care. If many are involved, key individuals from a variety of disciplines may need to be identified. It will be important to choose individuals who will be prepared to discuss the topic constructively, and who do not have immovable, fixed views. They will also have to be held in respect by their colleagues and able to speak for them.

Stakeholders who have an interest in the topic under discussion will include patients; carers; managers; public health professionals; those with a responsibility for commissioning services; providers of services; and those who can provide legal, ethical and economic views on the problem. Advice may need to be sought to identify the most appropriate representatives of these groups. Ideally, a minimum of 10 and a maximum of 20 individuals should be chosen to create a local forum or Consensus Group.

Skills required at this stage?

- Judgment on suitability of representatives
- Knowledge of subject area from all perspectives

Who needs to be involved at this stage?

- Clinicians with knowledge of subject from all perspectives

What information is required at this stage?

- As stage 4
- Knowledge of local information and people

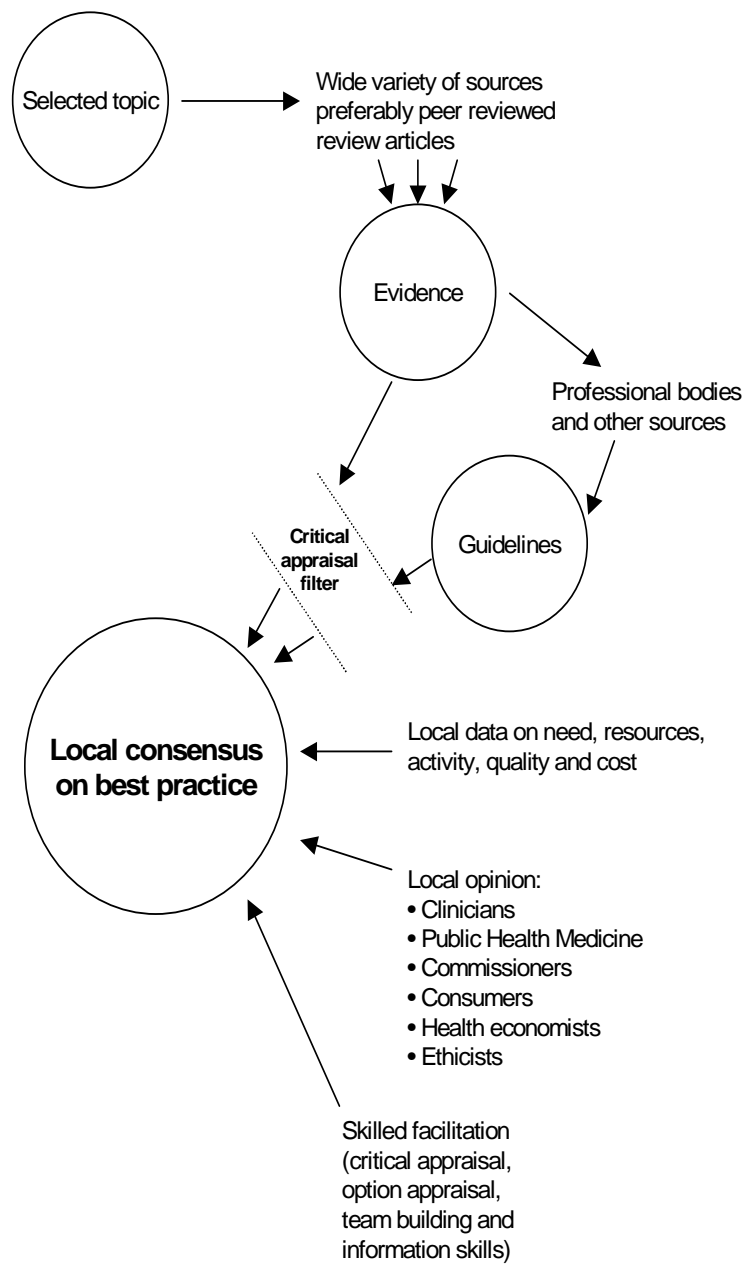
Stage 6: Achieving consensus

This stage is probably the most difficult and may require more than one meeting of the Consensus Group. The group requires not only access to the evidence, already critically appraised and carefully and clearly presented, but also local information on need, resources, activity, quality and cost, which have been similarly assembled in an easily digestible form. A neutral environment will be needed, in surroundings conducive to productive discussion, and with facilities for presentation of the data and recording of ideas and discussion on flip charts and white boards. Skilled facilitation will be essential and may require help from a senior and respected figure in the locality. The skills required will include an understanding of the topic under discussion, and familiarity with the evidence from the literature and local systems; a knowledge of critical appraisal; an ability to catalyse productive discussion, and to team build; and an understanding of the techniques of option appraisal and/or other consensus building approaches.

Figure 3 shows how this stage builds up the diagram.

A clear agenda for each meeting should be set beforehand, and a recorder identified to note the discussion and conclusions. The outcome of this stage will be notes which summarise the approach agreed at a local level.

Skills required at this stage?	Who needs to be involved at this stage?	What information is required at this stage?
<ul style="list-style-type: none"> • Facilitation & chairmanship • Clinical knowledge • Team building • Option appraisal • Minute taking 	<ul style="list-style-type: none"> • Patients and carers • Clinicians & managers • Public Health practitioners • Commissioners • Providers • Ethicists • Health Economists 	<ul style="list-style-type: none"> • Critically appraised evidence and guidelines • Local data needs (stage 4) • Role and views of local stakeholders



Stage 7: Production of consensus documentation

The documentation which records the agreed approach will include a detailed prose report which:

- Identifies the topic
- Summarises the evidence from the literature
- Records the local data about the problem
- Summarises the essential points of discussion in the consensus meeting
- Sets out the agreed approach on the way ahead.

The final Consensus Document can be shorter than the notes of the consensus meeting and include an algorithm, flowchart or decision tree diagram which summarises the approach in an easily understood way, using a common, accepted format. It must include summarised evidence and local data and the agreed approach, and identify key criteria and outcome measures which can be used as a basis for audit. The Consensus Document will need to be scrutinised and signed off by the Consensus Group members, before being disseminated more widely.

The evidence used and the recommendations made in the Consensus Document should be annotated to show the quality of the evidence used to reach a consensus decision, categorised as described in Stage 2.

<p style="text-align: center;">Skills required at this stage?</p> <ul style="list-style-type: none"> • Report writing • Flow chart, decision tree and algorithm diagrams • Topic knowledge • Clinical audit 	<p style="text-align: center;">Who needs to be involved at this stage?</p> <ul style="list-style-type: none"> • Project team • Facilitator • Stakeholders • Skilled report writer and analyst 	<p style="text-align: center;">What information is required at this stage?</p> <ul style="list-style-type: none"> • Minutes of Consensus Meeting
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Stage 8: Getting consensus into practice

The next stage is to promote widespread ownership and uptake of agreed best practice, which will involve a variety of techniques. The involvement of multiple approaches has been shown to be more effective in achieving change.

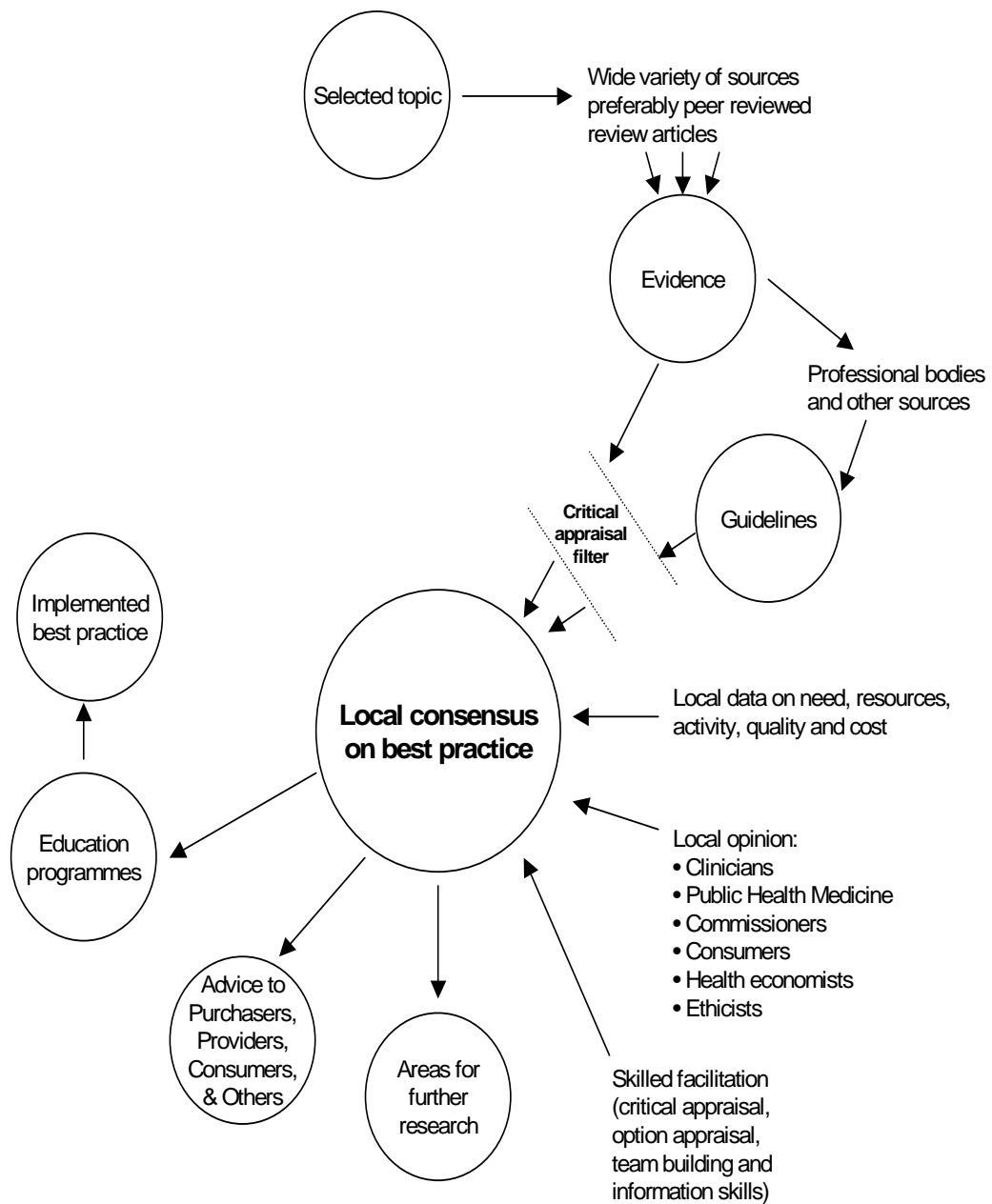
For health professionals, educational approaches could include interactive communication using new technologies, such as the NHS Net, to achieve improved access to information, decision support systems, guidelines and algorithms in the clinical situation; publications in professional journals; individual targeting of clinicians via mailings, or what are now known as educational outreach visits; dissemination of the opinions of leaders of the profession via formal and informal networks; and, most importantly, clinical audit, as described in Stages 9 and 10.

The provision of education and information for patients should be given priority, as it can enable them to make informed choices of treatment, and thus have a direct effect on clinical practice.

The aim of developing a sense of ownership of the agreed approach can also be achieved through interactive meetings of "Ownership Groups", which include all relevant health care professionals, as well as other stakeholders, including the public. Their discussions may well result in modifications to the agreed option.

This stage should also define advice for purchasers and providers, and the channels on which it can be given; and identify areas for further research, which can be communicated to local research and development committees. Figure 4 shows how this stage continues to build up the diagram.

<p>Skills required at this stage?</p> <ul style="list-style-type: none"> • Organisation of meetings • Facilitation • Information technology • Educational, including production of educational materials 	<p>Who needs to be involved at this stage?</p> <ul style="list-style-type: none"> • "Leaders" from within professions • Educationalists from professions • Managers • Clinical audit groups 	<p>What information is required at this stage?</p> <ul style="list-style-type: none"> • Consensus Document • Existing postgraduate education programmes • Local R&D groups • Ways of getting advice to purchasers and providers
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Stage 9: Monitoring

Monitoring of the implementation of the agreed changes will use conventional audit techniques, particularly criterion based audit, using criteria and standards identified in the consensus building process. Criteria should be clearly described as well as the data which will need to be collected, including the source. This should be set out in a way that will enable audit in different locations and at different times in a repeatable way. Contract monitoring will also contribute information.

The identified outcome measures may relate to individual patients or to populations and, if changes in health status can be monitored through existing information systems, mechanisms for continuous assessment should be put in place.

This stage will require skills in the development and execution of clinical audit.

Skills required at this stage?

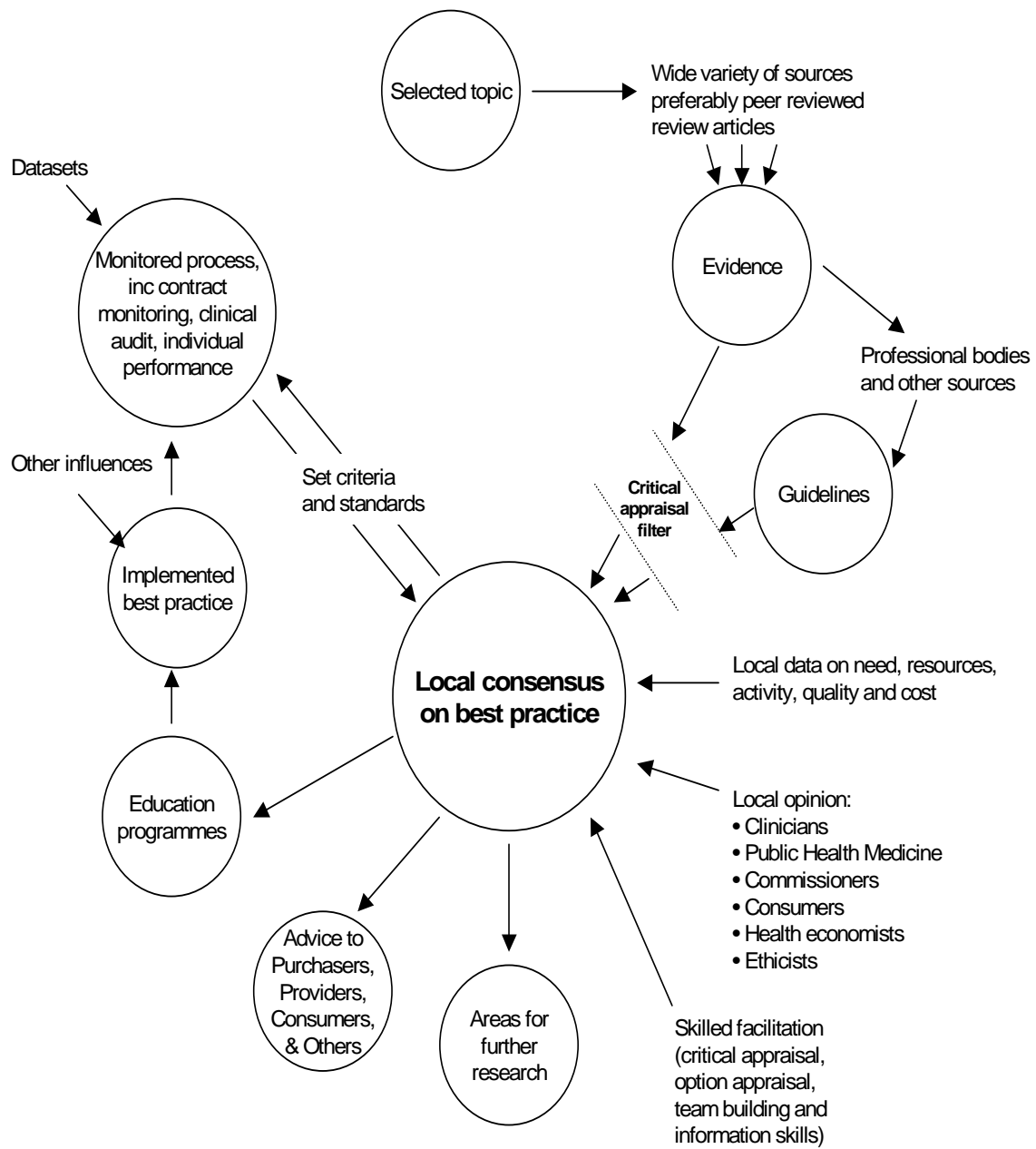
- Clinical Audit
- Monitoring
- Information science
- Database management

Who needs to be involved at this stage?

- Clinical audit specialist
- Professional representatives
- Clinicians involved

What information is required at this stage?

- Consensus Document
- Standards and criteria
- Health outcomes measures
- Local data on care delivery



Stage 10: Feedback

An essential part of the clinical effectiveness cycle will be feedback to health professionals regarding their performance, both in terms of process and outcomes. This may be given through regular, anonymised tables derived from routinely collected data, or may require further meetings at which one-off audits are presented. Such meetings should be used to discuss any new evidence that has emerged from the literature and to monitor any local changes of relevance to the topic under consideration.

Skills required at this stage?	Who needs to be involved at this stage?	What information is required at this stage?
<ul style="list-style-type: none">• Clinical Audit• Facilitation and chairmanship	<ul style="list-style-type: none">• Clinicians• Managers• Audit facilitators• Educationalists	<ul style="list-style-type: none">• Process• Outcome• Contract data• Audit study data• Information system data• New evidence• Educationalists

The clinical effectiveness cycle is now complete.

Conclusions of Section 2

The widespread and uniform achievement of health care based on the latest evidence will require a logical approach that involves all relevant stakeholders.

An understanding of the evidence is essential, but best practice will also be influenced by local circumstances, and option appraisal may be needed where clear evidence is lacking. Achievement of consensus will require considerable skill, and innovative methods will be needed for education, implementation and monitoring.

The resources needed to take this forward will include a neutral environment, embracing space and comfort with adequate facilities, including audiovisual, computing and communication equipment, that allows links to knowledge bases, databases and other professionals.

Diverse skills will also be needed, including clinical, library information, critical appraisal, information management and technology, health economics, consumer perspectives, option appraisal, consensus negotiation, education, dissemination, clinical audit, project management, research and development. Such skills will only be found when people and organisations are prepared to come together to work towards evidence based practice, but, if this can be achieved, the new philosophy and culture will take root.

SECTION 3

Making the methodology work: A clinical example

In this section you will find the answers to the following questions:

- **How is the methodology used in clinical practice?**
- **What problems were identified?**
- **What lessons can be learnt?**

Introduction

This section applies the principles and stages of the generic clinical effectiveness methodology to the management of dyspepsia and uses the example to identify some issues and problems. The example was developed in 1996. **Please note that the data are no longer current but the general principles demonstrated remain applicable.**

Background

Dyspepsia is common - 40% of a sample of the adult population in England, Wales and Scotland admitted to dyspeptic symptoms in the previous 12 months, when interviewed in 1994. About 50% of the adult population harbour *Helicobacter Pylori* (HP) in the stomach and the incidence rises with age. About 10% will suffer from peptic ulcer disease (benign gastric or duodenal ulceration) at some time in their lives, though this is characterised by spontaneous relapse and remission, and symptom relief and healing are helped by powerful acid suppressant therapy. Ninety-five percent of these ulcer patients will have HP in the stomach and there is clear evidence that eradication of the organism from the stomach will cure the ulcer disease. However, there is no accepted evidence that treatment of HP will help symptoms in patients with dyspepsia without peptic ulceration (non-ulcer dyspepsia).

The risk of cancer in patients presenting with dyspepsia is small but rises with age, and is more likely if HP infection is present. Ulcers and cancer can only be detected reliably by endoscopy, which can also be used to detect HP infection. HP can also be diagnosed by blood or breath tests, which have been shown to be as accurate as the more invasive endoscopic tests.

Application of the Generic Methodology to the management of dyspepsia

Stage 1: Selecting the topic

Dyspepsia is a good topic for applying the principles of evidence based medicine because:

- It is a common problem
- There is a wide variation in the way it is treated, both in primary care and in hospitals
- There is clear consensus on some aspects of treatment, such as the management of peptic ulcer
- There is concern about costs.

Issues to consider

- *Definition and scope*

*It is very important that a **definition** of dyspepsia is reached. This can come from the literature or by agreement with locally interested parties. In this case, it was agreed that gastro-oesophageal reflux (heartburn, regurgitation of acid into the mouth, and difficulty swallowing) should be excluded from the definition, but that **indigestion, bloating, upper abdominal pain, fullness, nausea and unexplained vomiting** be included, as this approach is supported by the literature.*

- 1 Jones R, Lydeard S. Prevalence of symptoms of dyspepsia in the community. *BMJ* 1989; 298: 30-32.
- 2 Grainger SL, Klass HJ, Rake MO, Williams JG. Prevalence of dyspepsia: the epidemiology of overlapping symptoms. *Postgraduate Medical Journal* 1994; 70: 154-61.
- 3 Talley NJ, Colin-Jones D, Koch KL, Koch M, Nyren O, Stanghellini V. Functional dyspepsia: a classification with guidelines for diagnosis and management. *Gastroenterol Int* 1991; 4: 145-60.

- *Lack of research evidence*
- *The best way to manage the new patient presenting with dyspepsia (as opposed to the patient with proven ulcer) is very unclear, as much of the research evidence needed is lacking.*

Stage 2: Finding the evidence

Finding the latest evidence requires an appropriate literature search strategy. To undertake this, the key words used for dyspepsia are as follows:

Dyspepsia; non-ulcer dyspepsia; functional dyspepsia; peptic ulcer disease; gastritis

An appropriate timescale for the search should be defined. The language scope of the search usually embraces the English literature but may need to include non-English papers as well.

An initial search covering 1990 - 1996 revealed the following:

Database	Number of papers identified	Access
Amed	2	on line
Assia	8	CD Rom
Biol	1522	on line
BMAP	3	on line
Cinahl	11	CD Rom
ClinPsyc	19	CD Rom
EMED	2180	on line
GPGP	254	on line
Medline	367	CD Rom

This is clearly too great a number to appraise. One hundred of these papers were abstracts, fifteen full articles, eighteen reviews and six were guidelines, including those for *Helicobacter*. Refining the list to include only those reviews directly relevant to the topic reduced it to twelve, as follows:

- 1 Talley NJ. Drug treatment of functional dyspepsia. *Scandinavian Journal of Gastroenterology - Supplement* 1991; 182: 47-60.
- 2 Talley NJ. Non-ulcer dyspepsia: myths and realities. *Aliment. Pharmacol. Therap.* 1991; 5 (1): 145-62.
- 3 Nyren O. Therapeutic trial in dyspepsia: its role in the primary care setting. *Scandinavian Journal of Gastroenterology- Supplement* 1991; 182: 61-9.
- 4 Bolin TD, Korman MG. Dyspepsia. *Medical Journal of Australia* 1992; 157(6): 367-9.
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- 8 Berstad A. Non-ulcer dyspepsia and gastritis: clinical aspects. *Journal of Physiology and Pharmacology* 1993; 44(3) Suppl 1: 41-59.
- 9 Locke GR, Talley NJ. Management of non-ulcer dyspepsia. *Journal of Gastroenterology and Hepatology* 1993; 8(3): 279-86.
- 10 Talley NJ. Non-ulcer dyspepsia: current approaches to diagnosis and management. *American Family Physician* 1993;47(6): 1407-16.
- 11 Loffeld RJLF, Arends JW. The role of *Helicobacter pylori* in non-ulcer dyspepsia and gastritis (review). *Netherlands Journal of Medicine* 1993; 42(1-2): 73-9.
- 12 Kreiss C, Fried M. Functional dyspepsia: old wine in new bottles? *J Suisse de Medicine* 1994; 124 (10): 391-401.

In addition to these published articles, many documents of relevance were found in the 'grey literature', with help from local specialists and the librarian. Some were encountered by chance, having been received unsolicited in the post. The documents included:

- 1 National Institutes of Health. *Helicobacter pylori* in peptic ulcer disease. *NIH Consensus Statement* 1994; 12(1): 1-22.
- 2 *Helicobacter pylori* review group: *management guide*. R R Assoc; 1995. (ISBN 09521985 33)
- 3 Moore RA. *Helicobacter pylori and peptic ulcer: a systematic review of effectiveness and an overview of economic benefits of implementing what is known to be effective*. Anglia and Oxford Regional Health Authority R&D Directorate.
- 4 British Society of Gastroenterology. *Dyspepsia Management Guidelines*. London: British Society of Gastroenterology; 1996.

The approach of the Welsh Protocol Enhancement Project is very helpful, and summarised in a paper from Jackie Barker at the Sir Herbert Duthie Library, UWCM, Cardiff. It describes how to define the parameters of the search, perform the search, grade the evidence, assign the evidence (i.e. relate it appropriately to the topic), review it internally and externally, and disseminate it.

Barker JA. A methodology for evidence based health policy making: The Welsh Protocol Enhancement Project. Cardiff: UWCM; 1996.

Issues to consider

- *There is inconsistency between guidelines. Many have come from self-styled expert groups but the evidence has not been properly appraised or attributed.*
- *There are clearly too many papers to use. Fortunately, many could be discarded as, although categorised as review papers, much remained as opinion rather than fact. Much of the evidence could also be discarded because it has been derived from atypical settings or is not strictly within the scope of the topic*
- *The evidence in crucial areas is lacking or inconclusive. Thus, it remains unclear exactly what the sequence of steps should be in the investigation and treatment of the new dyspeptic, but there is some agreement that, with increasing age, patients should be endoscoped. The perceived wisdom from authoritative bodies is that patients with helicobacter-positive, non-ulcer dyspepsia should **not** be given eradication therapy, though a recent meta-analysis suggests that this may be beneficial.*

Stage 3: Critical appraisal

Review of the literature, and critical appraisal of selected reviews, revealed the following. The evidence has been graded using the approach of the US Agency for Health care Policy and Research, as described in Section 2.

- Dyspepsia is common, affecting up to 40% of the population (III).
- A third of patients with dyspepsia who are endoscoped have no macroscopic abnormality of the stomach (III), but at least half of them have a significant finding. The commonest findings are oesophagitis, duodenal ulcer, gastric ulcer and gastro-oesophageal cancer (III).

- There is evidence that helicobacter pylori:
 - causes duodenal ulceration where this is not associated with non-steroidal anti-inflammatory drugs (Ia).
 - causes benign gastric ulceration (Ib).
 - does not cause oesophagitis (III).
 - may contribute to the development of gastric cancer in the long term (IV).
- The role of helicobacter in non-ulcer dyspepsia is unclear.
- Endoscopy is the investigation of choice for diagnosing the cause of dyspepsia (IIb).
- The risk of gastric cancer rises with age and becomes significant over the age of 45 (IV).
- From this evidence the following recommendations could be made:
 - Patients with proven duodenal ulceration should be given helicobacter eradication therapy, unless the presence of helicobacter pylori has been excluded (Grade A).
 - Patients with gastric ulceration should receive eradication therapy, after endoscopy and biopsy to exclude cancer (Grade A).
 - Eradication therapy is not indicated for non-ulcer dyspepsia (Grade C).
 - Eradication therapy is not indicated for oesophagitis (Grade C).
 - There is no clear consensus on the best regimen for eradication therapy but a commonly used, reasonably priced approach can be identified (Grade A).

Issues to consider:

- *Ethical considerations are now beginning to emerge*
 - How great is the risk of cancer (age related)?*
 - In view of this risk, is it ethical to withhold eradication therapy, even if the patient does not have an ulcer?*
- *There are also considerable cost implications*
 - If eradication therapy is extended to dyspepsia as well as peptic ulcer, and the need for endoscopy becomes greater.*
- *Certain aspects of investigation and treatment remain controversial and uncertain. These include the appropriate first investigation and how to deal with the patient who has helicobacter but no ulcer.*

- *The technique of option appraisal (vide infra in Stage 6) is necessary, to take into account the effects of ethical considerations and cost.*

Stage 4: Obtaining local data on need, resources, activity, quality and cost

Sources of data identified, and their strengths and weaknesses include:

- General practitioner data systems - these contain little analysable data, and there is no uniformity of data collection.
- Departmental systems, particularly endoscopy systems - these usually contain very comprehensive data on endoscopic procedures and findings, but give little information on clinical management.
- Pharmacy systems - these may give a global picture of prescribing rates, but do not relate these to individual patients and usually not to practitioners.
- Cancer Registry - this will identify the number of cases of cancer identified, but the data is retrospective and often two years out-of-date.
- Medical records - detailed information about the management of individual cases can be obtained from the medical record, but this is time consuming and records are not always available or complete.
- Local trust management - appropriate individuals will identify professionals who care for patients with dyspepsia. The local health authority will provide information on general practitioners.
- Information on the costs of drug treatment can be obtained from the local health authority or from the local pharmacy, but the cost of procedures and investigations is very difficult to obtain.
- Central returns such as the QS1 and Patient Episode Database Wales (PEDW) may provide high level, largely administrative data.

Issues to consider

- *There are problems with information systems at present. Paper systems (medical and nursing records) are the most comprehensive but cannot be aggregated, while electronic systems largely support clinical processes and remain poor as sources of aggregate information. The points above illustrate some of the strengths and weaknesses of the systems used. The most useful were departmental endoscopy systems and the health authority's pharmacy system.*

Stage 5: Identifying key stakeholders

Stakeholders in the management of dyspepsia include:

- General practitioners
- Gastroenterologists
- Patients
- Managers
- Pharmacists
- Public Health physicians
- Endoscopy nurses

Issues to consider

- *The main group of professionals involved in the management of dyspepsia is general practitioners. They first see patients, but were found to have widely differing perceptions of best practice and the resources available to help them in managing patients. It proved difficult to find one individual who could represent them all, which made it all the more important to ensure that the research evidence was watertight.*

Stage 6: Achieving consensus

The agenda for a meeting of the Consensus Group was as follows:

- 1 Welcome and introductions
- 2 Setting the scene - definition of dyspepsia and the problem it causes
- 3 Presentation of summary of:
 - 3.1 Searching the literature
 - 3.2 Appraisal of the evidence identified
 - 3.3 Local information from
 - Primary care
 - Secondary care
 - Prescribing
- 4 Discussion
- 5 Agreement on best practice
- 6 Summing up

The meeting was facilitated by a Gastroenterologist and took place in a neutral environment (not located in any one Trust) with good presentation facilities.

Issues to consider

- *The issues discussed in Stages 1 to 3 meant that the technique of **option appraisal** was required, to prepare a sensible approach. This required identification of possible options, setting out predicted costs and benefits, both clinical and financial, and using sophisticated techniques of discounting and sensitivity analysis to assess the best option. The debate required input from a health economist and from an ethicist, particularly in view of the problem of cancer. There was considerable debate about the relevant risk of cancer in a patient with dyspepsia and where it became imperative to investigate. This led to the following summary template which was discussed by the Consensus Group.*

Option Appraisal Table:

Assume 100 patients present with new dyspepsia. Ten are fast-tracked for worrying symptoms, and the remainder can be managed according to the following options:

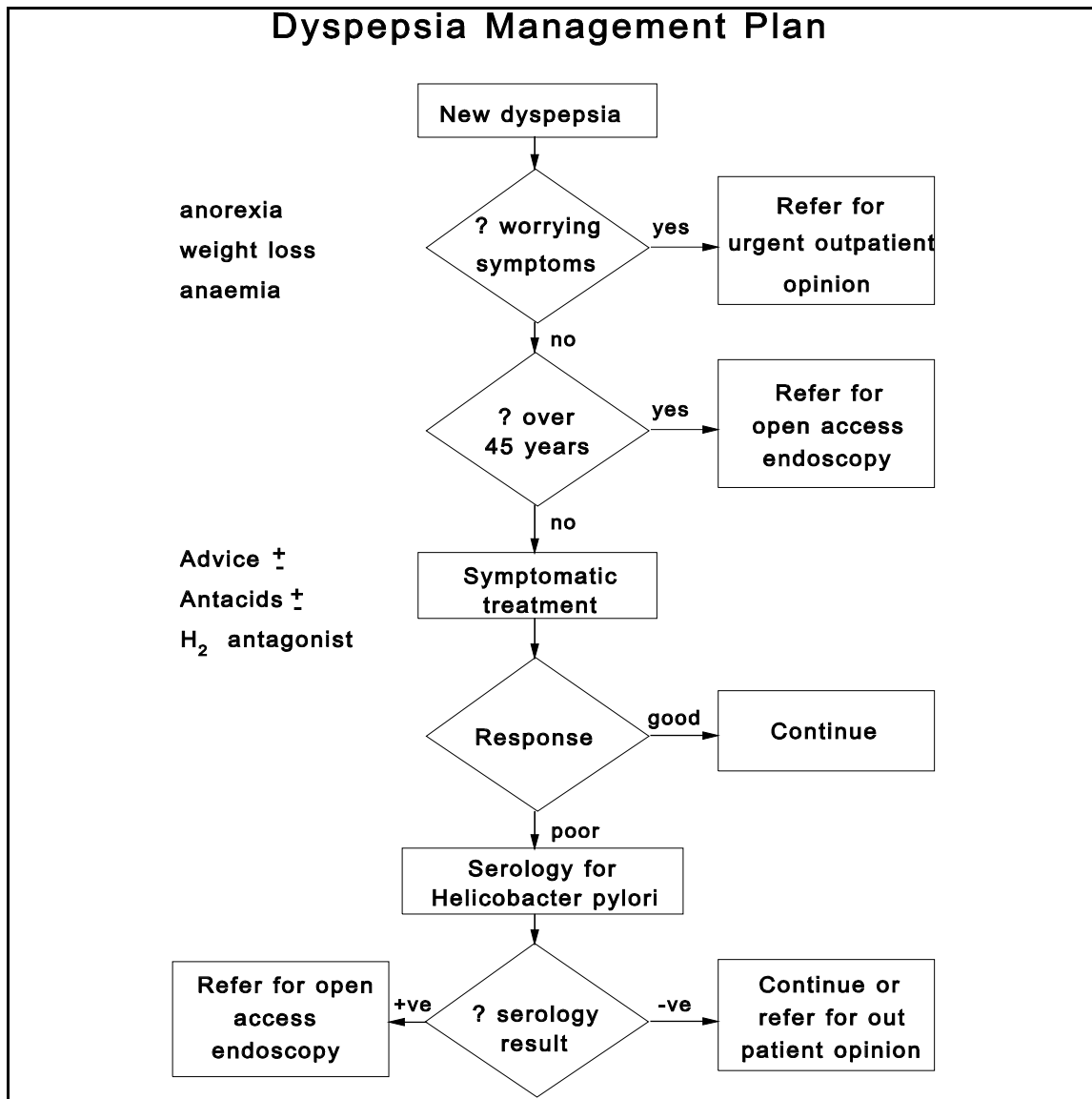
Option	OGD	Serology	Eradication Treatment	Cost £	Comment
1 Endoscope all, and treat only HP positive ulcers	90	0	10	18,400	Impossible endoscopic workload. Very expensive
2 Serology first, then endoscope the positives	48	90	10	10,315	Endoscopic workload high. High serology rate. Expensive
3 Serology first, then treat the positives and endoscope the non-responders	18	90	45	5,715	Very high rate of inappropriate treatment. High serology rate. Cheapest option
4 Give symptomatic treatment. Do serology first on failures, and endoscope the positives	22	45	10	6,375	Reasonable endoscopic serology, treatment rates and cost. Might miss early cancer
5 Endoscope all over 45. Give symptomatic treatment to the rest and endoscope failures	60	0	10	12,400	Endoscopic workload triples. Expensive. Should pick up most cancers.
6 Give symptomatic treatment to all. Endoscope failures over 45 and do serology in failures under 45	48	20	10	10,070	Doubles endoscopic workload. Expensive
7 Endoscope all new dyspeptics over 45 years. Give symptomatic treatment to the under 45s and do serology on those who fail to respond or sustain a response. Then endoscope the HP positives.	50	20	10	10,270	Expensive but logical. Should pick up early cancer and treat all ulcers. Preferred option.

OGD = Oesophago-Gastro-Duodenoscopy

The final option number 7 was agreed as the most appropriate, though No 3 would be very attractive if the desirability of widespread eradication of helicobacter became unequivocally supported by the evidence.

Stage 7: Production of consensus documentation

Minutes of Consensus Group meetings were recorded and enabled the Consensus Document to be written, which describes agreed best practice in the management of dyspepsia, a summary of local facilities, and an algorithm of optimum care. The following is an example of such an algorithm, using a standard convention:



Note: The level of evidence for this algorithm is IV, and the grade of recommendation is C. Similar algorithms were produced for duodenal and gastric ulcer.

Issues to consider

- *The management of dyspepsia is evolving very rapidly as new evidence emerges, and one of the problems with this process is that the situation is continually changing. This means that dating any documentation and recording version control is extremely important. In this case two reviews and a guideline were published after the consensus meetings, as follows:*

- 1 Penston JG. Review Article: clinical aspects of helicobacter pylori eradication therapy in peptic ulcer disease. *Alimentary Pharmacology and Therapeutics* 1996; 10 (4): 469-86.
- 2 Laheij RJF, Jansen JBMJ, van de Lisdonk EH et al. Review Article: symptom improvement through eradication of helicobacter pylori in patients with non-ulcer dyspepsia. *Alimentary Pharmacology and Therapeutics* 1996;10 (6): 843-50.
- 3 Scottish Intercollegiate Guidelines Network. *Helicobacter pylori eradication therapy in dyspeptic disease*. Edinburgh:Scottish Intercollegiate Guidelines Network, 1996.

Article number 2 indicates that HP eradication may be indicated in all patients with dyspepsia who harbour the organism and not only those who have a peptic ulcer. This article requires critical appraisal and debate but could radically alter consensus on best practice.

- *Further meetings will be necessary as such new evidence emerges.*

Stage 8: Getting consensus into practice

‘Ownership groups’ were formed with local gastroenterologists, endoscopy nurses, general practitioners and practice nurses, and meetings were held to discuss the agreed approach. A well respected general practitioner chaired interactive meetings with GPs, to develop a sense of ownership of the process and ensure that the agreed approach was maintained.

The agreed approach was also sent out to local GPs and consultants, and algorithms were distributed, not only for dyspepsia, but also for the management of peptic ulcer.

Issues to consider

- *Quite often a single, vociferous opinion leader can be disruptive in a meeting and this may require moves to gain support from such individuals before the meeting starts.*
- It remains difficult to find a medium for dissemination which will reach all practitioners.
- It is important to target all relevant health professionals, other than general practitioners, (eg consultants, junior staff, pharmacists and nurses)

Stage 9: Monitoring

It is now intended that the following will be monitored:

Primary care

- Prescribing
- Referral patterns
- Mortality

Secondary care

- Referral patterns
- Use of facilities
- Number of acute admissions with dyspeptic symptoms

Epidemiology

- Dyspepsia
- Peptic ulcer
- Helicobacter infection
- Carcinoma of the stomach

Patients' views

- Interviews
- Quality of life measures

Audits have been established, which include the following criteria, derived from the conclusions reached in Stage 6:

- 1 All patients with known peptic ulcer should be given eradication therapy
Standard 100%
Exceptions: Helicobacter negative
Patient declines treatment
- 2 All patients with active gastric ulceration should have endoscopic biopsies or cytology
Standard 100%
Exceptions: Ulcer diagnosed at surgery
Patient not fit for endoscopy
- 3 Patients with non-ulcer dyspepsia should not be given eradication therapy
Standard 100%
Exceptions: Patients unresponsive to six months symptomatic treatment

Issues to consider

- *Some of the outcome measures to be monitored have proved difficult to extract on a routine basis from information systems, and this is a weakness already referred to in Stage 4. It is hoped that in time this will improve.*
- *Similarly, it was hoped that the audits devised could progress on a regular basis, using*

routinely available data, but this has not proved possible due to the quality of information systems.

Stage 10: Feedback

Regular audit meetings are used to present and discuss progress. These meetings are also used to highlight new evidence from the literature.

Issues to consider

- *It is difficult to get all stakeholders together on a regular basis for such meetings and they have been held less frequently than had been intended. An intention to produce regular performance tables has not proved possible, because of paucity of valid information from electronic systems.*

SECTION 4

Planning a Clinical Effectiveness Implementation Project

In this section you will find the answers to the following questions:

- **What is project planning?**
- **How do I start planning and organising a project?**
- **What are the pitfalls and problems - how can I avoid them?**

Introduction

In this section, you will be shown some simple methods for organising and planning a Clinical Effectiveness Project. They are not the only way to approach the subject. If you have previous experience of project planning and management, you may wish to use your own techniques.

We have not used a formal project management method such as PRINCE, as it is quite complex and outside the scope of this Guide to teach its techniques. It would, however, be ideal for the purpose. If you are familiar with it, or any other structured method, feel free to use it.

The Generic Methodology has already reduced the process of implementing clinical effectiveness projects for a given subject into a series of simple, easy to follow stages. The most important factors to consider at each stage have been shown - what skills are needed; who should participate; and what information is needed? To plan a clinical effectiveness project of your own, all that is required is that you follow the method as described and build up a plan for your chosen topic.

It is important to bear in mind that all subjects are different, as are all the people who will be involved. This means that the Methodology must be used with care and considerable thought about each stage, and assessment of the topic's particular circumstances.

To help with the planning process, this section provides a brief overview of the principles of Project Management and some guidance notes to help you get started. Sample project planning tools and a set of checklists are available separately. Unfortunately, planning is not effortless, so you will need to work hard to ensure your plans are accurate and realistic!

Principles of project planning

What is a project?

A simple definition of a project is ‘a set of tasks, designed to achieve a set objective’.

A project also:

- Has a defined start and end
- Has a set of resources to use (people, places, equipment etc.)
- Assigns clear roles and responsibilities to those involved
- Is often split up into ‘stages’, to make it easier to handle
- Is sometimes made up of other projects

Why plan a project?

Planning is the process by which the tasks and products, which make up the project, are defined and set down, so that they can be used as the basis for estimating the duration (and sometimes cost) of the project. This, in turn, can be used as the baseline for monitoring the progress of the project.

Planning a project enables you to:

- Estimate the duration of the project
- Organise what people, places and equipment you will need and when
- Communicate what is expected of people and when
- Keep track of how the project is progressing and take steps if things are going wrong
- Look back at the project when it is completed and learn lessons for the future

What is project planning?

Many techniques are used to plan projects. They vary from a simple list, written down in chronological order (a “things-to-do” list), to extremely sophisticated, computer assisted planning tools for organising highly complex projects involving thousands of activities, people and products.

All planning has the same basis - to identify:

- What needs to be done?
- Who needs to do it?
- When it needs to be done?
- What is needed to do it?

- What results from all this effort?

The basic tools include the Gantt Chart and the PERT or Flow Chart, although many others can be used.

Planning your project

For each Stage in the Methodology:

- 1 Write down what needs to be done
- 2 Arrange them in a logical sequence
- 3 Decide which tasks can be tackled simultaneously and which have to be done in sequence
- 4 Produce Gantt and Flowcharts for the Stage

When this is done, summarise the information on each stage plan onto a single project plan to see how the overall project looks. Remember, some stages can be undertaken in parallel, while others must be in sequence. Think about your project and decide.

To assist you with planning each stage, we have devised a set of tools:

- Clinical Effectiveness Project Checklists
- Sample Clinical Effectiveness Project Tasklists
- Sample Clinical Effectiveness Project Flowcharts
- Sample Clinical Effectiveness Project Gantt Charts

None provide the complete solution but you should have the basis of a workable plans package if you use the Checklists to help think of what is required at each stage of the Clinical Effectiveness Methodology, compare it with the sample Tasklist, and then transfer this information into a Gantt and Flowchart of your own. This toolkit is available on request from the Clinical Effectiveness Support Unit (CESU - Wales), Roseway, Llandough Hospital, Penarth, Vale of Glamorgan CF64 2XX. Tel: 02920 716841.

A note about estimating

Estimating how long things are going to take is often the most worrying part for people new to project planning. Unfortunately, there are no easy solutions to estimating. Although techniques do exist, they are generally based on data gathered from similar previous projects. This is of little help to those who are new to planning or to a particular field. Experience, tempered with common sense, is the only reliable alternative to hard data, and this is what most people rely heavily upon.

The best advice is to be bold with your estimates, but to be realistic. If you do not know how long something will take, ask someone who is experienced in that area for their best guess. If they know their business, it is likely to be a reasonable estimate. Remember that unforeseen circumstances are bound to arise, so make allowances. However, do not be overly pessimistic, or your project timescale will be ridiculously long!

Monitoring and re-planning

One of the purposes of a project plan, no matter how inaccurately drawn up, is to keep a track on progress and take steps if things go awry. If, despite your best efforts at accurate planning, events start to drift away from your plan, then two options are open to you:

1 Remedy the situation

If it is possible, this is always the first choice. Find out what is causing things to go wrong and then fix it! However, this is not always possible so...

2 Re-plan the project

If things start to move substantially away from the plan and you can do nothing to alter the situation, then the plan must be altered to reflect reality. Remember, one of the primary functions of a plan is to communicate to others what is expected of them. If your colleagues all have an out-of-date plan, they will not be aware of how things have changed. Revise the plan and distribute it again. Make sure you mark and date it as a new version, so there is no confusion.

Projects rarely go entirely according to plan. However, using the Generic Clinical Effectiveness Methodology, the Clinical Effectiveness Methodology plans package and staying alert and aware, your project has every chance of success

Good luck!

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SOURCES OF CLINICAL EFFECTIVENESS INFORMATION

Databases

- AIDSLINE
- AMED (Complementary medicine)
- CANCERLIT
- CAREDATA
- CHILD DATA
- CINAHL (Cumulated Index to Nursing & Allied Health Literature)
- Cochrane Databases
 - The Cochrane Database of Systematic Reviews (CDSR)
 - The York Database of Abstracts of Reviews of Effectiveness (DARE)
 - The Cochrane Controlled Trials Register (CCTR)
 - The Cochrane Review Methodology Database (CRMD)
- DHSSData
- EMBASE
- GOOD PRACTICES IN MIDWIFERY
- HELMIS (Health Management & Planning)
- HELPBOX (Patient Information)
- MEDLINE
- PSYCLIT (Psychological Literature)
- RCN NURSEROM

Organisations

- Centre for Evidence Based Medicine
- Centre for Health Economics, York
- Clinical Resource and Audit Group (CRAG)
- Health Care Evaluation Unit, Bristol
- Kings Fund
- National Centre for R&D in Primary Health Care
- NHS Centre for Reviews and Dissemination (NHSCRD)
- NHS Health Technology Centre
- Relevant professional organisations and associations
- UK Clearing House for Health Outcomes
- UK Cochrane Centre

Publications

This is not an exhaustive list, but an indicator of key publications:

- ACP Journal Club
Contains single page “reviews” of individual articles in Internal Medicine, two thirds presentation of results, one third expert commentary.

- **Bandolier**
Anglia and Oxford Region Newsletter, reviews “hot topics” from journal articles and grey literature. Multidisciplinary interests, focus on practical implications.
- **Confidential Enquiry Reports (Stillbirths and Deaths in Infancy, Maternal Deaths, Perioperative and Operative Deaths, and Counselling for Genetic Disorders)**
- **Drug & Therapeutics Bulletin**
Product of the Consumers Association. Topic based, not article based.
- **Effective Health Care Bulletins**
Bulletins are based on a set of reviews on the effectiveness of health service interventions for decision makers, and are the result of work undertaken by the Nuffield Institute for Health, University of Leeds and the NHS Centre for Reviews and Dissemination, University of York.
- **Evidence Based Medicine**
Bi-monthly from BMJ Journals, format adopted from ACP Journal Club, but has broader subject focus.
- **Evidence Based Purchasing**
South & West Region Newsletter, alerting service rather than discursive or evaluative articles. Tailored to interests of purchasers.
- **PACE (King’s Fund Promoting Action on Clinical Effectiveness Bulletin)**