



# THE IMPACT OF NURSING ON PATIENT CLINICAL OUTCOMES

developing quality indicators  
to improve care



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# contents

<b>Foreword by the Chair</b>	<b>5</b>
<b>Executive Summary</b>	<b>7</b>
<b>1. Introduction</b>	<b>17</b>
1.1 Performance measurement	19
1.2 Background to this report	19
1.3 The role of the Scottish Executive Health Department (SEHD), NHS QIS and the Directors of Nursing group in this pilot study.	21
1.4 Benefits of developing Quality Indicators for Nursing	21
<b>2. Defining Indicators</b>	<b>23</b>
2.1 Definition	23
2.2 Types of Indicator	24
2.3 Using comparative data to improve quality of care.	24
2.4. Complexity and specificity of nursing	25
<b>3. Gathering the evidence</b>	<b>27</b>
3.1 Searching the literature	27
3.2 What did we learn from the literature?	29
3.3 Key issues and points to arise from the literature	30
3.4 Gaps in the literature – what this project might add	31
3.5 What other steps did we take to make sure we were getting a range of evidence on this topic?	33
3.5.1 Patient opinion	33
3.5.2 Patient Focus Groups	33
3.5.3 Project Steering Group	34
3.5.4 Expert Practitioner Group	35

<b>4.</b>	<b>Determining how and what to pilot</b>	<b>37</b>
4.1	How did we select the indicators?	37
4.2	What indicators did we select?	39
4.2.1	Process versus outcome?	40
4.3	Why are these indicators important?	41
4.3.1	Indicator 1 – Incidence of healthcare associated pressure ulcers	41
4.3.2	Indicator 2 – The provision of nutritional screening and care planning	41
4.3.3	Indicator 3 - Incidence of healthcare associated CAUTI	42
4.3.4	Indicator 4 - Patients’ experience of pain management	42
4.3.5	Indicator 5 - Patients experience of the provision of educational information	43
4.3.6	Healthcare Associated Infection (HAI) rate	43
<b>5.</b>	<b>The pilot project</b>	<b>45</b>
5.1	What we did	45
5.2	How we did it	46
5.2.1	Indicator 1 - Incidence of healthcare associated pressure sores	47
5.2.2	Indicator 2 – The provision of nutritional screening and care planning	47
5.2.3	Indicator 3 - Incidence of healthcare associated CAUTI	47
5.2.4	Indicator 4 – Patients’ experience of pain management	47
5.2.5	Indicator 5 – Patients’ experience of the provision of Educational Information	48
<b>6.</b>	<b>What we found</b>	<b>49</b>
<b>7.</b>	<b>Lessons learned</b>	<b>57</b>
7.1	The experience of staff at the pilot sites	57
7.2	Lessons learned across the pilot	58
<b>8.</b>	<b>What needs to happen now?</b>	
	<b>Conclusions and recommendations</b>	<b>59</b>
8.1	Conclusions	59
8.2	Recommendations	60
	<b>Acknowledgements</b>	<b>64</b>
	<b>References</b>	<b>65</b>
	<b>Glossary</b>	<b>69</b>

# AN IMPORTANT STEP IN THE RIGHT DIRECTION

## forward

### Foreword by the Chair

The importance of this work should be self-evident for individual patients and their family, professional nurses and other members of the healthcare team and for decision makers who determine policy and the level of resources for the nursing care of patients. The quality of care in general and the result of that care are crucial to all. The work described in this report is an important step in the right direction of a vision that makes explicit the objectives and outcomes of nursing care and which is used to constantly review and raise standards.

This work arose from the requirement to address a recommendation of Audit Scotland's study into ward nursing. However, the implications of this work is much wider and when further phases of development have taken place it should play a full part in determining:

- safe and effective nursing care of patients
- making explicit the aims of nursing care with greater clarity of whether they have been achieved
- matching training to desired outcomes of care
- providing information to professional nurses on their practice so they can reflect in what ways their practice can be improved
- better targeting of research and audit activity
- the most effective use of resources – time as well as the public purse

When we started this work we knew that little had been done previously and that there would be significant inconsistency in approaches to practice and data collection and analysis. There has been much concern about which clinical indicators nurses have predominant influence over. In reality, no single individual or profession solely determines the quality of care that patients receive. Nurses must therefore have an interest in, and accountability for, influencing a wide range of indicators but some will be more important than others because whether and how they are carried out is largely determined by nurses.

Modern healthcare should now be firmly multi-professional in nature and clinical indicators are no exception to this. But within this, there is a need for each profession to be clear about its responsibility and accountability for its own practice. The future development of clinical indicators in

nursing, particularly outcomes, cannot continue to be ignored as it has been in the past.

Future development, with a strong focus on outcomes, will be challenging. Some will say it is too difficult and there are too many variables influencing clinical outcomes in nursing. Similar views were expressed over other areas of healthcare practice, such as cancer. Now, none would seriously argue that we should put the clock back and be blind to the results of practice. Early development requires strong leadership that is why we look to the Chief Nursing Officer, as the head of the profession in Scotland, to take this development forward.

**Paul Wilson**

# NURSING IS CENTRAL TO THE SUCCESS OF THE NHS

## executive summary

### Introduction

The quality of nursing is central to the success of the NHS. Nursing is the profession that is closest to patients, providing care 24 hours a day, seven days a week. At its best, nursing is a complex mix of technical skill, personal care and human compassion.

Nurses have a key role to play in improving outcomes and experiences for patients. However, work on measuring the impact that nursing interventions have on patient care is still in its infancy. Without this knowledge, nursing activity cannot be planned and developed to the best effect.

This summary report explains the background to this issue and how a pilot project commissioned by the Scottish Executive Health Department (SEHD) and hosted by NHS Quality Improvement Scotland (NHS QIS) sought to identify a way forward. It concludes with a series of recommendations based on the lessons that have been learned.

### The need for action

In December 2002, Audit Scotland published a report entitled: Planning ward nursing – legacy or design. The report noted that: ‘Despite high numbers of nursing and midwifery staff and their importance to NHSScotland, limited information is available at a national level. This makes it difficult to compare nurse numbers, costs or quality among Trusts. Little is known about how Trusts plan their nursing workforce needs or how they set staffing establishments at ward level. As a result of these factors there may be significant variation in the staffing of Scottish wards, the associated costs and the impact on patient care’ (Audit Scotland, 2002, p12).

The report recommended that NHSScotland should develop and agree quality of care measures that focus on continuous improvement and measure these consistently. Standards that can demonstrate that quality of care is being provided also need to be developed and agreed.

This was the starting point for the pilot study. It set out to address Audit Scotland’s first recommendation of ‘developing and agreeing quality of care measures that focus on continuous quality improvement and

measure them consistently' by defining, developing and piloting quality indicators for use across NHSScotland. Similar to the Audit Scotland report, the scope of the pilot was nursing which excluded midwifery services and concentrated on acute services.

## **The potential benefits**

The main benefit of developing quality indicators for nursing lies in finding a way of determining whether the level of care is of an acceptable standard. This can be both in relative terms, ie the standard of care given by ward team or hospital 'A', when compared to ward team or hospital 'B', or in absolute terms, how close to the desired standard is this care? Having such information available will allow good practice to be shared and improvements made to the benefit of patients across Scotland.

Other potential benefits may follow from:

- involving patients, carers and practitioners in determining what the desired standard should be and which areas of care should have greater priority than others
- assessing the impact of organisational or workforce developments on quality of care
- being able to demonstrate where and how nursing is providing a value for money service
- developing workforce planning in relation to quality of care.

## **The complexities**

Measuring the quality of nursing care is not easy. That is one of the main reasons why so little work has been done in this area to date. The Audit Scotland report acknowledged that this is a complex area and many confounding factors exist that make it difficult to isolate and clearly identify the impact made by nurses.

There are difficulties in:

- establishing a cause and effect relationship between nursing actions (or lack of them) and the outcome for the patient
- determining if the outcome is principally influenced by nursing actions or other factors such as the actions of the patient, other healthcare professionals (most notably, but not exclusively, doctors), or the way in which the hospital or health centre is organised.

Added to these problems is the historical lack of organised and concerted effort to increase knowledge and understanding of nursing outcomes.



## The pilot project

Despite these difficulties, it was agreed that the possibility of developing quality indicators for nursing should be pursued. Accordingly, a year-long pilot project was established to define, develop and test agreed clinical quality indicators for nursing.

### Gathering the evidence

A literature review was conducted to find out what developments have already taken place worldwide and to learn from these experiences. It found 119 relevant publications, which were further refined to produce 17 'core' papers.

The literature review shows that attempts to define quality indicators for nursing and to measure them in a systematic and consistent way across whole health systems have been few and far between. The best-developed system that could be identified has come from the American Nurses Association. Nothing similar has been produced within the NHS.K

Key issues and points to arise from the literature review:

- There are issues around defining the word 'indicator.' This relates to what should be measured, who says it is important and whether outcome indicators are always possible or desirable. An associated issue is whether or not indicators should be capable of being assessed by external observers.
- There is a challenge for nursing in working towards developing multidisciplinary and cross-boundary indicators without losing sight of the need to define and understand the contribution of nursing.
- There is a challenge in determining indicator thresholds (the rate at which should something be happening and what level is acceptable).
- There is a need to ensure that data collection for indicator work has to become part of routine data collection and be incorporated into wider systems.

A key element of planning the pilot project was to determine the issues that patients see as important. To that end, a series of focus groups was organised and the information gathered from patients was fed in to project planning and development. A project steering group was appointed to develop the pilot and, in turn, its work was informed by an expert practitioner group.

The steering group decided to develop a pilot that:

- had been 'locally' agreed
- was seen to be relevant to Scottish patients and staff
- took account of evidence where available
- would provide enough information over a relatively short period of time to determine whether it should be progressed to a second phase with a much wider scale.

### **Selecting the indicators**

The initial aim was to select pilot indicators for the purpose of the 12-month pilot phase of this project and, secondly, to generate a list of potential indicators that could be further developed and refined as the project evolved.

The steering and reference groups were asked to generate any topics they considered might be important indicators of nurses' impact on patient outcomes. These were then combined with indicators arising from the literature review and patient focus groups. Some were ruled out as being too broad or non-specific, too close to other suggestions as to be almost duplicates or outwith the scope of this immediate study.

The selection process involved judging the suitability of the suggested pilot indicators against 19 key factors or questions. These included:

- the number of patients it might apply to
- the potential for improvement
- the strength of the cause and effect relationship between nursing care and patient outcome
- the existence of evidence about the importance of the topic
- the ability to collect data on the indicator.

This scoring system was applied to 22 potential indicators and five that scored highest were chosen for piloting. Time and resource constraints meant that the project had to be limited to testing a small number of indicators over three to four sites.

The five indicators that were chosen were:

- 1 Incidence of healthcare associated pressure ulcers - the number of patients who develop pressure sores following inpatient admission
- 2 Provision of nutritional screening and care planning - the process of nutritional assessment on inpatient admission and adherence to care planning. It includes body mass index (BMI), usual and recent food and fluid intake and the likelihood of difficulties in relation to nutritional status

- 3 Incidence of healthcare associated Catheter Associated Urinary Tract Infection (CAUTI) - the number of individuals with a urinary catheter in place who develop a urinary tract infection
- 4 Patients' experience of pain management
- 5 Patients' experience of the provision of educational information

A sixth indicator relating to the rate of Healthcare Associated Infection (HAI) was originally selected. However, this was later excluded from the pilot after Health Protection Scotland (HPS) advised that this was not a good indicator of the quality of a nursing service because of the high number of potential variables.

### **Testing the indicators**

Four sites agreed to pilot the indicators – NHS Borders, NHS Highland, NHS Grampian and NHS Lanarkshire. NHS Tayside agreed to join the pilot at short notice to collect data on patients' experience of the provision of educational information and pain management when it appeared that one of the other sites may not be able to participate. In the event, that did not happen and, consequently, more data were collected on these indicators than originally intended. NHS Grampian collected data on the incidence of healthcare associated pressure sores only; Borders, Highland and Lanarkshire collected data on all five indicators.

The timescale that needed to be followed was extremely tight. The pilot was organised to be able to give a response to Audit Scotland within 12 months of the initial consultation. This put a great deal of pressure on the project team, the pilot sites and the project co-ordinators.

Local surveillance co-ordinators were nominated at each site by their Director of Nursing to assist with collection and submission of data, and to encourage local support and compliance. Training was provided by Health Protection Scotland (HPS) on the gathering of data on the incidence of catheter related urinary tract infection including the use of hand held computers. The Picker Institute, which has international experience in analysing patient satisfaction, collected data on the two indicators that sought to measure patient experiences.

### **Indicator 1 - Incidence of healthcare associated pressure ulcers**

Data collection was based on a system developed in NHS Grampian. Pilot sites extracted information manually from case records on the incidence and prevalence of pressure ulcers, and entered this information on the forms provided. They were submitted weekly to the team at NHS QIS. All sites gathered data for a period of six weeks with the exception of NHS Lanarkshire, which collected data for a period of two weeks between January and February 2005.

## **Indicator 2 –Provision of nutritional screening and care planning**

This used an audit tool that was developed by the former Highland primary care trust. Data was collected against a series of 46 questions organised under five standard statements. Data was collected over two to six weeks

## **Indicator 3 - Incidence of healthcare associated CAUTI**

One speciality within each site was selected for data collection, including urology and general surgery. Data was transferred direct to Health Protection Scotland, where it was processed and quality checked. The data collection period was six weeks.

## **Indicator 4 – Patients’ experience of pain management**

Postal questionnaires were sent to 4200 adult inpatients that had been discharged from the four NHS Boards taking part in the study. Data was collected and analysed by Picker UK, who also made helpline support available to any patients with queries about the questionnaire or project.

## **Indicator 5 – Patients’ experience of the provision of educational information**

Pilot sites and methodology were the same as indicator 4.

## **Analysing the findings**

Variations in the data collection process affected the results. It meant that the data collected on the incidence of healthcare associated pressure ulcers, and nutritional screening and care planning are of dubious validity. However, there are full comparative results for the indicators relating to patient experiences and useful results from the CAUTI study.

Data collection problems included:

- Different perceptions of each tool, and responses to individual questions within them. This, together with ‘drop-out’ rates due to the perceived difficulties in collecting data limit any conclusions that the project may have been able to draw.
- Different sites used different sub-specialties in which to pilot the indicators, which may also affect the comparability of results.

A breakdown of the findings and a summary of feedback from the pilot sites are contained in the full report.

The CAUTI pilot showed that the electronic data collection tool worked well and was well received by the participating site. CAUTI surveillance is not resource intensive, especially with the option of collecting data electronically. However even the minimal staff and time required is not available within resource stretched infection control teams.

The patients' experience of pain management and provision of education information pilot compared the four Scottish sites with results already recorded in English hospitals. It found that all four Scottish sites lie within the middle 60% or top 20% of English Trusts for nearly all questions. Two Scottish sites show consistently high results and there is an opportunity for other sites to learn from their experience to improve outcomes for patients across Scotland.

Some of this data provides a clear baseline for the NHS Boards involved to measure improvement against. It can also be used as a benchmark for measuring the performance of all other NHS Boards.

## Lessons learned

A number of key messages have emerged from the pilot project. These include:

- It cannot be assumed that all staff participating in data collection will feel competent in using electronic data collection systems. This may have an impact on the time required to complete the task.
- Differences in interpretation of ethical issues may arise, for example in relation to Caldicott guidelines. Sufficient time should be allowed for resolution of these issues.
- Asking sites to use a data collection tool whose design they had not been involved in may result in its unsuitability for that site or individual ward area. There may also be resistance to the imposition of an externally designed tool where a local one is perceived to be 'better.'
- There may be time constraints on staff who 'backfill' that agreement alone cannot resolve. For example, offering to pay staff replacement costs for a nurse involved in extensive data collection may not resolve staffing issues, as replacements may not be available or suitable.
- Local co-ordinators require considerable time and support to filter information about the project down to ward and individual level, and to gain local understanding and co-operation.
- The completeness of local clinical record keeping is clearly still an issue of concern.

- It is not always possible to measure the impact of hospital-based interventions during hospital stay and any future project should consider 'patient pathway' approaches to measurement.
- Scotland does not have a system similar to England where mortality data are picked up and available through the NHS Strategic Tracking Service; instead we are dependant on the information making its way back into individual Boards' systems.

## Conclusions and recommendations

Measuring the impact of nursing interventions on patient outcomes is neither simple nor straightforward. However the limited evidence that is available, together with the findings of this pilot project, show that it can be possible to develop indicators that can be used to measure quality of care.

It is essential that this project should continue its work to build on the progress that has already been made. This has the potential to:

- improve patient care
- allow meaningful comparisons to be made between teams of nurses and multidisciplinary teams, both within and between NHS Board areas
- provide decision makers with the kind of information they need to make sound decisions about the future design and resourcing of health services for patients and their families.

### Recommendation 1

This project should now be taken forward to its next stage of development. This will involve:

- further refinement of the indicators selected for the pilot project
- further develop a set of indicators to identify those that are fit for purpose and can be rolled out nationally requiring refinement of the data collection tools, statistical analysis and systems
- implementing a set of selected indicators throughout all of Scotland's NHS Boards to enable understanding and practice to develop in the selection and use of quality/ outcome indicators in nursing
- further development of the methodology that allows prioritisation of indicator development in other areas at both national and local level
- Chief Nursing Officer (CNO) in collaboration with NHS Boards refine the methodology through further testing, endorsement and validation to support local and national indicator development.

### Recommendation 2

- CNO to explore with Information Statistics Division (ISD) how further phases of work to develop indicators for nursing are integrated with other work on developing health indicators, and published as part of the annual reporting of these. All NHS Boards will require a sustained programme of development, refinement, piloting and measurement of indicators over a number of years

- The Scottish Executive, E-Health Board and ISD together with Scotland's Directors of Nursing, should develop systems for care planning and recording, that support local and national collection of nursing outcomes data in a staged approach.

### **Recommendation 3**

- research aimed at the identification of clinical outcomes is grounded in the patient's experience
- current developments in this field are disseminated effectively and that the nursing and midwifery research community seek to build on the existing research base.

### **Recommendation 4**

- CNO should work with directors of nursing and chief executives to explore suitable models for the further development of quality indicators one model being designated Boards as centres of responsibility (CORs)
- nurse directors should implement an agreed set of nursing outcomes and other nursing quality indicators, and account for them annually as part of each NHS Board's annual report, and health and clinical governance report.

### **Recommendation 5**

- all NHS Board chief executives and directors of nursing progress towards a benchmarking project for quality improvement in nursing care based on the outputs of this project
- that individual NHS Board results in relation to indicators developed to be included within performance monitoring systems employed by the SEHD. Boards should also be required to report on progress with implementing local benchmarking systems through the NHS QIS Clinical Governance standards

### **Recommendation 6**

- The Scottish Executive, directors of nursing and the soon to be appointed Regional Workload advisors in collaboration with professional organisations and unions, explore further the cause and effect relationship between nursing workforce numbers and nursing quality indicators.



### 1. Introduction

The quality of care provided by nurses is a central component in the success of the NHS. Nurses play a leading role in meeting the needs of patients being cared for at home, in the community and in hospital. Sometimes these needs will be for critical or life-saving care, such as resuscitation after a cardiac arrest, or in intensive care or high dependency units. Sometimes it will involve helping patients living with long-term illness such as diabetes or kidney failure. At other times, it will be about the care of sick children, frail elderly people, people who are homeless or who suffer severe mental illness. In all cases, nurses must combine skilled technical care with compassion and caring.

Because of the breadth of nursing and its impact on people, the public has a vested interest in ensuring the care received from nurses is effective. One of the ways of judging that effectiveness is to develop quality measures to assess if the nursing intervention has achieved what it intended to do and has produced improvement – this is what outcomes are all about.

The nursing services of the NHS in Scotland also represent a huge resource:

- More than 30,000 professional nurses are employed by the NHS and they are supported by 20,000 support workers.
- Figures from the NHS's Information and Statistics Division show that it cost NHSScotland almost £1.38 billion in 2003-04 to provide nursing staff to cover all 17 Trusts and NHS Boards.
- Nurses provide care to people from the cradle to the grave; there were 1.3 million discharges and day cases recorded in Scottish hospitals in 2004 and all of these patients received care from many nurses during their stay. This amounts to a vast amount of individual contacts.

Given the importance of nursing to the NHS, it is right that the public, taxpayers, elected representatives and senior staff within the NHS are able to judge the effectiveness of the nursing service across Scotland and locally. One way to do that is to develop a system for measuring the impact of nursing on improving outcomes and experiences for patients.

However, there are challenges in developing quality measures for nursing care. Not unique to nursing, nor are they surprising, they include:

- establishing a cause and effect relationship between nursing actions (or lack of them) and the outcome for the patient
- determining if the outcome is principally influenced by nursing actions or other factors such as the actions of the patient, other healthcare professionals (most notably, but not exclusively, doctors), or the way in which the hospital or health centre is organised
- the historical lack of organised and concerted effort to increase knowledge and understanding of nursing outcomes.

Nursing shares these challenges with other professions, some of whom have made progress within their own sub-specialties; for example the Scottish Audit of Surgical Mortality provides data on the outcome for patients following surgery across multiple Scottish sites.

Nursing has, at times, been at the forefront of work to address quality of care issues. Florence Nightingale, for instance, was the first healthcare professional to recognise the power of clinical audit. Other landmarks have included the development of the Dynamic Standard Setting System in the 1970s (Royal College of Nursing, 1990) and the advent of Clinical Governance in the NHS. Clinical Governance is a system that nurses were quick to embrace and for which Directors of Nursing often have lead responsibility, along with medical director colleagues. However, much of the work to date has concentrated on issues relating to structure and process. In the absence of valid outcome indicators, these issues are of value, particularly where they are explicitly linked with the objectives sought from nursing interventions. There must, however, be a much greater effort to define and measure outcomes.

Outcomes are what matter in the health service. The absolute test of clinical practice lies in whether patients' well being is maintained or indeed improved, whether this well-being is adversely affected by the presence or absence of nursing intervention. The aim of this year-long study was to develop and pilot agreed quality indicators for nursing for use across NHSScotland.

## 1.1 Performance measurement

Recent years have witnessed an upsurge in measuring and reporting the performance of healthcare systems - there is now a bewildering assortment of approaches to performance measurement worldwide (WHO, 2000; Mannion & Davies, 2002; Mannion & Goddard, 2003; Marshall et al., 2003; Loeb, 2004). A common method that has been developed to improve both quality and accountability is using data to compare different healthcare providers. In many cases, the results have been reported publicly. Yet, while performance measurement of health (and other public) services is now widespread, it remains controversial (Royal Statistical Society, 2003).

There is no doubt that Scotland has excelled in developing initiatives that produce national comparative data on clinical performance/outcomes. For example, a series of clinical outcome indicators, first published by the Clinical Resource & Audit Group (CRAG), has now been produced for a decade (CRAG, 1992; CRAG, 2002; NHS QIS, 2003) - and the Information & Statistics Division of NHSScotland hosts a suite of well established national audit projects ([www.isdscotland.org](http://www.isdscotland.org)).

What is less clear, however, is whether these initiatives have led to demonstrable improvements in the quality of care provided for patients (CRAG, 2002; Mannion & Goddard, 2001). Scotland is not alone in this regard. In reviewing the experience across the Atlantic, Mannion & Davies (2002) conclude 'the greatest challenge is posed by the desire to make comparative performance data more influential in leveraging performance improvement'. Simply collecting, processing, analysing and disseminating comparative data is an enormous logistical and resource-intensive task, yet it is insufficient. Any national strategy emphasising comparative data must grapple with how to engage the serious attention of those individuals and organisations to whom change is to be delivered. Ultimately the responsibility for NHS Quality Improvement Scotland (NHS QIS) in collecting and using this data is the desired outcome of demonstrable improvement in the quality of care delivered. This can only be achieved if the proper data is collected and more importantly used to inform nursing practice.

## 1.2 Background to this report

In December 2002, Audit Scotland published the results of a performance audit on behalf of the Auditor General, entitled: Planning ward nursing – legacy or design. The report noted that: 'Despite high numbers of nursing and midwifery staff and their importance to NHSScotland, limited information is available at a national level. This makes it difficult to compare nurse numbers, costs or quality among Trusts. Little is known about how Trusts plan their nursing workforce needs or how they set staffing establishments at ward level.'

As a result of these factors there may be significant variation in the staffing of Scottish wards, the associated costs and the impact on patient care' (Audit Scotland, 2002, p12).

The report recommended that:

- NHSScotland should develop and agree quality of care measures that focus on continuous improvement and measure these consistently.
- NHS boards should ensure that Trusts review quality indicators and take action where problems arise.
- More work is needed on developing and agreeing standards, which demonstrate that quality of care is being provided, rather than merely indicating the number of reported adverse incidents.
- As a minimum...information should be available at Trust and ward level and regularly reviewed (on) agreed measures for the quality of care provided by nursing staff.
- ISD should ...enhance national data sets based on (among other things) agreed measures for quality of care ...provided by nursing staff to allow benchmarking at ward and Trust level.

The report acknowledged that measuring quality of nursing care is difficult, not least because the majority of care delivered by nursing staff is done in conjunction with other members of the healthcare team. It is self-evident that this is as true for doctors and allied health professionals as it is for nurses. The Audit Scotland team could not identify a single validated measure of quality and outcome of nursing care, and instead adopted 'proxy' measures of quality for the purpose of the audit. Those measures were:

1. Incidence/prevalence of pressure sores
2. Incidence of urinary tract infection
3. Total accidents to patients including slips, trips and falls
4. Total accidents to nursing staff including manual handling and needlestick injuries
5. Violence and aggression against nursing staff
6. Clinical risk incidents

However, Audit Scotland were unable to collect data on the first two indicators because they found they were not measured consistently in the wards examined for the report; they also found marked and unexplained variation across wards and sites in relation to indicators 3 to 6.

This pilot study set out to address the first of the three recommendations made by Audit Scotland, by defining, developing and piloting quality indicators for nursing for use across NHSScotland and subsequently to make recommendations on the other recommendations based on our findings.

The scope of the Audit Scotland report was nursing and therefore excluded midwifery services. For the purpose of this project, and in response to limited timescales of pilot, the project focussed on nursing in acute care. This was only intended for the pilot and any future work on development of clinical quality indicators would include all areas of nursing and midwifery.

### **1.3 The role of the Scottish Executive Health Department (SEHD), NHS QIS and the Directors of Nursing group in this pilot study.**

Directors of Nursing are ultimately responsible for leading and directing nurses and nursing care in local organisations. Efforts to monitor and improve quality of care must be driven, encouraged and supported by them. Their sponsorship and support for national and local initiatives on quality of care is essential.

The NHSScotland Directors of Nursing were asked to participate in a consultation exercise on the recommendations from the Audit Scotland report by the Chief Nursing Officer. They subsequently agreed to work together with the Scottish Executive to address those recommendations. This resulted in the development of this one-year project to define, develop and pilot agreed quality indicators for nursing, for use across NHSScotland.

The project was commissioned by the SEHD in collaboration with NHSScotland. Initial funding was secured by the SEHD via the Scottish Health Quality Forum with additional funding provided by NHS QIS. It was agreed that the project would be based within NHS QIS and supported by the Directors of Nursing group.

### **1.4 Benefits of developing Quality Indicators for Nursing**

The main benefit of developing quality indicators for nursing lies in finding a way of determining whether the level of care is of an acceptable standard. This can be both in relative terms, ie the standard of care given by ward team or hospital 'A', when compared to ward team or hospital 'B', or in absolute terms, how close to the desired standard is this care? To achieve this, issues of data quality, consistency, validity and reliability require to be addressed prior to any like for like comparisons being drawn, and indeed it may require examining data about process rather than outcome. However, if this can be determined, then steps can be taken to share good practice or improve practice to the benefit of patients across Scotland.

Other benefits might derive from:

- involving patients, carers and practitioners in determining what the desired standard should be and which areas of care should have greater priority than others
- including more information about nursing care within existing reporting frameworks, such as the national Performance Assessment Framework and the standards developed by NHS QIS
- the opportunity to assess the impact of organisational or workforce developments on quality of care
- the opportunity to demonstrate where and how nursing is providing a value for money (VFM) service and where and how we are working to improve VFM
- the opportunity to impact on workforce planning in relation to quality of care

## 2. Defining Indicators

### 2.1 Definition

The Joint Council for the Accreditation of Healthcare Organisations (JCAHO) is a USA-based organisation and one of the world's leading organisations for indicator development in healthcare, particularly outcome indicators. Their definition of an indicator is:

'a valid and reliable quantitative process or outcome measure related to one or more dimensions of performance such as effectiveness and appropriateness and a statistical value that provides an indication of the condition or direction over time of an organisation's performance of a specific outcome'.

Marek (1989) offered an alternative definition that defined 'outcome' as a measurable change in patient health, related to the receipt of nursing care. This change is measured by outcome indicators that attempt to capture the essence of nursing intervention and its impact on patient care. The difficulty is that valid and reliable outcome measures are difficult to identify within general healthcare due to issues of complexity. Specific measures related to individual disciplines such as nursing are even more problematic and Marek recommended that further testing of these measures is required if 'the effectiveness of nursing care is to be accurately reflected in the measurement of outcome'. These findings and a need for further research were echoed by French (1997) in an analysis of the content and use of patient outcome measurement in British nursing between 1990 and 1994.

The use of indicators, however, should not be considered as a definitive measure of the quality of care. Rather they are:

'a measurement tool, screen or flag, that is a guide to monitor, evaluate and improve the quality of client care, clinical, support services and organisational functions that affect client outcomes' Canadian Council on Health Services Accreditation (1996).

In this way they can be used to highlight areas of good practice and potential quality concerns, identify areas that need further study and investigation as well as to track changes over time.

## **2.2 Types of Indicator**

There are in general two types of indicator referred to in the literature: 'sentinel event' and 'rate based' indicators. The JCAHO define sentinel event indicators as:

'indicators that measure a serious, undesirable and often avoidable process or outcome. They may also express a performance measure that identifies an individual event that should always trigger further analysis and investigation' (JCAHO, 1993).

Rate based indicators are defined as those that:

'Measure patient care events for which a certain rate of occurrence is acceptable, or aggregate data in which the value of each measurement is expressed as a proportion or ratio'.

The important distinction is in the setting of thresholds for each type of indicator, in that sentinel event indicators offer no margin for error, where a single occurrence requires further analysis and investigation, eg sudden death of a non-emergency case in Accident and Emergency.

## **2.3 Using comparative data to improve quality of care.**

In Europe, Scotland has led the way in the publication of clinical indicators with the first set of health indicators published in 1993. When the Scottish indicators were first published, one of the key aims was to raise awareness of the availability of such information and of the ways in which it could be used. This remit has certainly been fulfilled, however the key challenge remains to ensure that these indicators lead to improvements in the quality of care provided for patients.

Whilst the Scottish indicators have led to changes in the way services are provided, there is still some way to go to maximize their impact, (NHS QIS, 2004). To do this, NHS Quality Improvement Scotland continue to work closely with the health service to find out what data are needed to support quality improvement and encourage and support the health service in collecting and using this information to guide decisions at all levels. The approach, whilst tailored for Scotland, is also informed by the best evidence available from others' expertise and experience in this area.

Despite this, there is limited evidence to date of the benefits to patient care of systematic, system-wide measurement of indicators. Evidence from the United States and from the most recent study conducted in the UK concluded, '... clinical indicators are rarely used to stimulate



improvement or share good practice' (Mannion and Goddard 2001, p2). Mannion and Goddard's study considered the impact of the annual indicators report published in Scotland by the CRAG, the European leaders in terms of public disclosure of healthcare outcomes (NHS QIS, 2003). They suggested there were several reasons for the failure of indicators to stimulate improvement, including:

- a lack of professional belief in indicators due to perceived problems around quality of data and the time lag between data collection and presentation
- limited dissemination
- weak incentives for change
- a tendency to concentrate on process rather than outcome

It could be argued, of course, that these are all potentially surmountable hurdles. There have also been very few attempts to promote change of this nature across whole health systems in medicine or in nursing.

#### **2.4. Complexity and specificity of nursing**

The Directors of Nursing Group in Scotland recognised that nurses contribute to patient care as members of the multidisciplinary team and that outcomes may be affected by the actions and interactions of the various members of that team. However they also considered that we should investigate the possibility of developing 'nurse-sensitive' indicators, which would allow us to demonstrate and improve the quality of care nurses give patients. This work has the potential to be informed by similar indicator developments within other health professions as nursing care can be influenced by indicator development from other professions.

This is a complex exercise and one that has already been addressed by the American Nurses Association (ANA). They began work in the mid 1990s to develop nurse-sensitive indicators for the USA healthcare system because of what they saw as the lack of focus on nurse-sensitive measures within the JCAHO indicators. They attributed this to:

- a lack of information on the contribution that specific inputs make to patient outcomes
- the limited amount of patient outcome research that included nursing care as an explanatory variable
- difficulties encountered when trying to isolate and measure the impact of specific nursing interventions on observed differences in patient status.

It should be noted that the ANA have been working in this field for 11 years and have had constantly to revise and refine their methodologies for defining and measuring indicators. After 11 years, their system is only in use in 15% of USA hospitals. The USA is, of course, complex in population, geographical and 'systems' terms and, arguably, they have to operate within a much more complex economy than exists in Scotland.



# COMPARISON BETWEEN HEALTHCARE PROVIDERS

## gathering the evidence

### 3. Gathering the evidence

The collection, analysis and publication of data as clinical indicators allowing comparison between different healthcare providers, has become a widely accepted method of improving both quality and accountability, (NHS QIS, 2004). The Clinical Outcomes Group was set up in 1992 as a committee of the Clinical Resource and Audit Group (CRAG) (now part of NHS QIS) to produce comparative clinical indicators for the health service in Scotland. This information is published in annual reports, which include a range of different measures covering a wide spectrum of health and healthcare related topics. Steering group representation from the Health Indicators group was sought and agreed, due to their expertise in this field.

The need to embrace evidence in its broadest sense has always been acknowledged by NHS QIS. In doing so, it represents a unique synthesis of research evidence, evidence complemented by audit, patient surveys and evidence derived from expert opinion, professional consensus and patient/public experience. Crucially, a reliable review of the literature provides a dependable baseline to allow this work to develop.

#### 3.1 Searching the literature

In order to build on lessons learned from any earlier work on quality indicators and to avoid unnecessary duplication, we conducted a search of relevant literature. The search strategy was devised by the project manager and the NHS QIS Knowledge Services Team and the resulting search was carried out by the Knowledge Services Team.

The search strategy retrieved records that included the terms 'indicator' and 'nurse' (including variant forms) with 'quality', 'performance', 'clinical', 'outcome' or 'standard'. The following databases were searched: Medline, Medline In Progress, Embase and Cinahl. No date limitation was applied, but results were restricted to the English language. Additionally, experts within the field and on the project group were asked to identify important publications. Reference lists of key published papers were checked for articles potentially missed by the search. Every department of academic practice in Scotland was contacted to identify potentially relevant academic theses.

These searches revealed a total of 458 citations from electronic databases, and 11 from additional sources (grey literature) and papers submitted independently by group members and others. All citations were reviewed (titles, and abstracts, where available) to establish relevance to the project, according to the following inclusion/exclusion criteria:

#### Inclusions

- Related to nursing (eg not pharmaceutical)
- Related to quality of care (eg not staffing level)

#### Exclusions

- Maternity care
- Repetition (eg implementation of specific indicator project in different regions)
- Generic quality assurance programmes
- Quality assurance of nurse educators/tutors/education programmes/colleges
- Editorial, opinion piece

Papers that matched the above criteria were then examined in detail. Papers were not excluded due to methodological type or quality. The selection process resulted in 119 publications including journal articles, policy documents, theses and other publications. These were read by three members of the project team and have been used to inform the text throughout this report; they may also be relevant to any continuation of the project.

Of these 119 publications, 17 'core' papers provided relevant information for this pilot project and these are described in more detail in the following section and Appendix 1, tables 1 to 3. The other 102 articles of indirect relevance have not been cited since they:

- offered nothing that one of the 'core' articles did not also provide
- were 'second-hand' comments or accounts of other projects
- were about the 'concept' of indicators as opposed to describing any aspect of the definition, implementation of monitoring of indicators
- were very specific to one sector or topic, eg nursing homes, without offering any generalisable findings, observations or lessons.

### 3.2 What did we learn from the literature?

Summary information from the 17 core papers is presented in Appendix 1, including the setting in which they were carried out, their purpose and findings. They have been sub-divided into those conducted in the UK (see table 1), those conducted in the USA (table 2) and those conducted elsewhere (table 3). An overview of the information is provided here.

The relationship between nursing and quality improvement stretches back 35 years and more and has been well documented. Indeed many consider that nursing has led the whole quality movement in healthcare and continues to be at the forefront of initiatives to improve quality. The search to identify nurse-sensitive indicators began in the 1980s and continued with serious intent throughout the 1990s, mostly in the United States, with the most notable project being that developed by the American Nurses Association (ANA, 1995).

Efforts to introduce indicators in the UK and elsewhere have been more limited and tend to involve single sites or 'one-off' initiatives; although in the Netherlands and Belgium this may have been subsumed within the development of a Nursing Minimum Data Set (NMDS)

Among the UK publications, there were reports on four distinct outcome indicator projects (in hospital, primary care and long term care settings) and one literature review. A range of success was reported among these projects including one which identified a set of indicators but which were not then implemented. Another paper described a project in which indicators had been implemented and, by their third year, were demonstrating improvements in all areas, although this was only on one hospital site. A literature review conducted in 2004, considered the existence of an empirical link between nursing care and patient outcome. It concluded that the area was still understudied.

The USA based studies include three in nursing homes and four in hospitals. The remaining project examined if the measures that nurses and patients think are important are the same as those that have traditionally been studied. The nursing home studies were useful because they demonstrated the possibility of designing 'observable' indicators that can be measured by external people, perhaps something akin to the present system used by NHS QIS. These studies also highlighted the need to define what desirable outcome rates might look like. The USA hospital-based studies were mixed in terms of the focus they took. One study concluded that indicators should be set and measured locally. The argument could be made that if indicators and particularly indicator rates are evidence-based then that should be possible. This would, in theory, produce indicators that are broadly similar across multiple sites while having the advantage of being locally owned. There was also one USA study that used a very similar method to the one we employed in developing a scoring matrix for potential indicators. However, it did not progress to using the indicators. Almost all of the work to develop

indicators in nursing in the USA seems to be done now under the auspices of the ANA.

Studies carried out in other parts of the world include four carried out in hospitals and one in a nursing home. The hospital-based studies included one that investigated nurses' beliefs about important indicators. It concluded that none could be separated from staff numbers and skill mix, although this was not tried or demonstrated in reality. Another study concluded that the future lies in developing multidisciplinary indicators. However, it said that nurses still need to be able to define their contribution to the team effort and there is currently little common understanding within and between groups around terminology relating to indicators/outcomes. One interesting study demonstrated reduced incidence of pressure ulcers over three years after an indicator was introduced.

The issue of minimum data sets for nursing merits some mention in relation to quality/outcome indicators. The move to establish nursing minimum data sets occurred over a short period in the 1990s in several countries including the USA, Belgium, the Netherlands, Sweden, Switzerland, Australia and Canada. This was sparked by the fact that nursing data was (and still is) absent from systematic collections of healthcare data (Goosen et al., 1998). This is a situation common across healthcare systems globally. However, NMDS seem to be concerned more with data items concerning structure, such as health insurance details, correct administration/patient details and nursing resource utilisation, than with quality or outcome data per se, although quality or outcome indicators could presumably form a sub-set of this data set. However, it would seem that in their present form, NMDS may make clear how nursing is structured but not what nurses do and, crucially, not what happens to patients as a result.

### **3.3 Key issues and points to arise from the literature**

- There are issues around defining the word 'indicator' relating to what should be measured, who says it is important and whether outcome indicators are always possible or desirable; aligned to this is the question of whether we should have a set of 'observable' indicators, ie those that can be seen by external observers.
- There is a challenge for nursing in working towards developing multidisciplinary and cross-boundary indicators without losing sight of the need to define and understand the contribution of nursing.
- Determining indicator thresholds, ie what rate should something be happening at and what is acceptable, is a further step in defining the indicator.
- Data collection for indicator work has to become part of routine data collection and be incorporated into wider data collection and analysis systems.

Attempts to define quality indicators for nursing and to measure them in a systematic and consistent way across whole health systems have been few and far between; certainly there has been no attempt to do this in the NHS to date. As previously noted, the best-developed system we could identify was that of the American Nurses Association.

### **3.4 Gaps in the literature – what this project might add**

We could find nothing in the literature to indicate that a project such as the one we were developing had been tried in the UK health system at any time. As indicated at several points throughout this report, the most comprehensive and well-established nursing related quality indicators programme in the world is the one devised by the American Nurses Association and used extensively across the USA. In 2001, they published a report on the lessons learned so far from their experience of data collection and usefully included what their baseline expectations of the process had been. These included that the indicators should:

- provide standardised definitions for nursing care quality outcomes that would allow comparison across sites
- be easy to retrieve, be neither costly, nor time-consuming and require no additional staff
- be acceptable to clinicians, managers and patients
- be measurable
- have a demonstrated link to nursing care.

What they have found is that:

- Standardisation is difficult when comparison is the aim. Different lengths of stay, clinical specialties and types of patients included and excluded can affect comparability, although different sites may wish to measure any and all of these differently and for their own purposes. Interestingly, the greatest difficulties in this area were not related to patient outcome but to structural issues such as staff numbers and skill mix. The lack of validated patient satisfaction measurement instruments led to inconsistencies, while the lack of standard data collection techniques also made direct comparison difficult.
- Data retrieval is dependant on the extent to which databases are in place to capture the data and any requirement for labour-intensive chart abstraction.
- The inability to track patients post-discharge affects the overall relevance of findings for some indicators; this becomes increasingly relevant when average length of stay is falling. The relevance of using nosocomial infection rates as a nurse indicator is questioned when there are so many potential influences on infection rates that are not attributable to nursing or nurses.

- Measurability issues were mostly around patient satisfaction/reported experience, although it should be noted that subsequent research sponsored by the UK Department of Health has validated the use of the Picker methodology, which is also in use in many USA settings.
- Particular difficulty was found in making an explicit link between some of the process indicators used by the ANA such as nurse satisfaction and patient outcome

Despite learning valuable lessons from the experience in the United States, we could not simply 'import' the system into NHSScotland because:

- Few projects are transferable in their entirety from one health system to another.
- 'Local' ownership, which involves playing a part in determining the parameters and progress of projects, enhances acceptability.
- The American work has not yet yielded widespread demonstrable improvements in quality of care and has only been adopted in a limited number of hospitals.
- The American work has been carried out within a system where one of the main drivers is cost-effectiveness as determined by insurance companies.
- Our project focus was to be around quality and improvement rather than cost, staffing, skill-mix or 'failure' (although we accept that measuring and comparing indicators between sites will allow for all of those, if local enquiry is required to determine the reasons for relative underperformance).

Because of these findings and observations, we wanted to pilot a system that:

- had been 'locally' agreed
- was seen to be relevant to Scottish patients and staff
- took account of evidence where available
- would give us enough information over a relatively short period of time to determine whether the project should be progressed to a second stage of widespread pilot across a full range of sectors and specialties.



### **3.5 What other steps did we take to make sure we were getting a range of evidence on this topic?**

#### **3.5.1 Patient opinion**

Quality in healthcare has two distinct dimensions. One is quality of care from the perspective of professional and technical competency and standards; the second concerns quality of care from the perspective of patients. Understanding the way patients experience the care they receive is essential to a complete assessment of the quality of healthcare, and this understanding can only be gained through dialogue with patients. It is important to adopt systematic, appropriate and effective ways to ask patients about their experiences and to use this information to shape and improve the way healthcare is delivered.

#### **3.5.2 Patient Focus Groups**

In order to gain a sample of patient opinion about important issues in hospital care, a total of three patient focus groups were commissioned from an independent external agency. While the sample size of the focus groups does not necessarily allow for the generalisation of the individuals' views, it was felt none the less to be a worthwhile exercise. In an attempt to capture any geographical variation in experience, the focus groups were carried out across three sites covering North, Central and South of Scotland, with socio-economic groupings including B, C1, C2, D and E; four male and four female respondents were selected for each final group.

A semi-structured discussion guide was devised by the agency and the project manager (Appendix 2). The primary inclusion criterion was that individuals had to have been discharged from an acute hospital within the last month, including mental health services. As the pilot indicators hadn't been selected at this stage no services were excluded other than the original exclusions. The discussion guide for the focus groups covered elements of specific aspects of care such as admission, care planning, contact with nurses, pain control, discharge planning, hygiene/nutrition and adverse incidents. A thematic analysis of patient responses to the discussion guide provided the following responses:

- All patients and family members should receive adequate information about their admission to prevent confusion and unnecessary worry.
- Patients prefer hearing from the doctor exactly what their treatment will involve and its timescale.
- More trained nurses are needed on wards. Respondents felt that although the nurses were pleasant, they were overworked and under a lot of stress; they also felt there should be fewer auxiliary nurses and that care suffered when there was not adequate nursing staff available.
- Every ward needs a 'Matron' or head nurse to allow patients to see a figure of authority in control.

- Progress should be monitored daily and not just when nurses have enough time to do so; respondents said they sometimes had to ask to find out how they were progressing.
- Medication for discharge should be prepared the evening before to prevent unnecessary delays to discharge.
- Food was generally adequate but respondents would like to see a healthier menu available.
- Respondents would like a full time cleaner on every ward as they feel cleaning once a day is not adequate; they felt that a cleaner should be available as and where needed.

The final and full report is included in the appendices (Appendix 3)

### **3.5.3 Project Steering Group**

A Project Steering Group was established, membership of which included:

- Patient/public representatives
- Directors of Nursing group
- Clinical Governance representation
- Allied Health Professional representation
- Heads of Academic Practice
- Representation from the Nursing Directorate of the SEHD
- Head of Practice Development at NHS QIS
- Royal College of Nursing representation
- A representative from the Care Commission
- Information and Statistics Division (ISD) representation
- Information Management and Technology (IM&T) representation

The group met on five occasions with a remit to define:

- the project aim
- objectives
- project deliverables
- involvement with stakeholders
- interface with NHSScotland

The group was also expected to:

- contribute to and advise on the ongoing development of the project
- act as two-way communication conduit for the organisations / group they were representative of
- comment on relevant project drafts etc.

(see Appendix 4 for membership details)

### **3.5.4 Expert Practitioner Group**

In addition to the steering group, an Expert Practitioner Group was established. The role of this group was to provide clinical expertise to the project and to help us determine how to progress the pilot indicators within organisations at a local level. This group brought an awareness of potential difficulties encountered within clinical environments, highlighted relevant issues, identified evidence (papers and data) and commented on the draft consultation report and final reports. Directors of Nursing from each health board area were approached and asked to nominate a representative. The group met on three occasions.

(see Appendix 5 for membership details)



# INDICATORS OF NURSES' IMPACT ON PATIENT OUTCOMES

## determining how & what to pilot

### 4. Determining how and what to pilot

#### 4.1 How did we select the indicators?

The initial aim was to select pilot indicators for the purpose of the 12-month pilot phase of this project and, secondly, to generate a list of potential indicators that could be further developed and refined as the project evolved.

The steering and reference groups were asked to generate any topics they considered might be important indicators of nurses' impact on patient outcomes. These were then combined with indicators arising from the literature review and patient focus groups. Some were ruled out as being too broad or non-specific, too close to other suggestions as to be almost duplicates or outwith the scope of this immediate study.

The steering group and expert clinical reference group devised a matrix (Appendix 6) of 19 factors or questions, against which all suggested indicators might be judged. The questions were determined by use of nominal group technique with the steering group and included such factors as:

- number of patients it might apply to
- includes the potential for improvement
- strength of the cause and effect relationship between nursing care and patient outcome
- existence of evidence about the importance of the topic
- ability to collect data on the indicator.

We were left with a list of 22 potential indicators (Appendix 6) and the list was then circulated to the steering and reference groups for 'marking' against the matrix.

There were several reasons why some of the indicator topics initially suggested by patients, staff or the literature were judged not suitable for this project. For example:

- 'Time nurses spend with patients' was deemed not feasible to collect in this pilot
- 'Deep venous thrombosis' – there was an inability to isolate the nursing component within the time scales of this project
- 'Documentation' was considered too broad in scope for this project

There is, of course, no reason why any or all of these may not be considered as indicators in any future work.

We accept that the method adopted lacked true scientific rigour and have not attempted to validate it on a wider scale. However, in the absence of any identifiable validated selection and scoring method and, given the time restrictions for this project, we feel it was a reasonable way to proceed. Perhaps the best test of the suitability of the indicators is the lack of surprise expressed at what we chose to include and omit. They also closely match those selected by other groups involved in similar work in other countries.

Following the end of the pilot study, a workshop was arranged with the purpose of reflection on the methodology developed and its use in the selection of indicators for the pilot project. A key learning point from the workshop was that 'a clear definition of and purpose of quality indicators for nursing should be provided. This should include the anticipated implications for national, local and clinical delivery level. The relevance/relationship to local and national practice development, best practice statements, etc, should also be included'. This was based on a perceived lack of clarity regarding the purpose of the quality indicators and their role in determining specific patient outcomes whilst linking to other available evidence such as clinical standards and guidelines.

Overall the group felt that the pilot work to date represented:

- significant progress in developing a framework to support the identification of appropriate and relevant nursing quality indicators, progress that should be built on and continue to be taken forward
- a genuine desire to introduce an open and transparent system
- a commitment to adopting a systematic approach
- the inclusion of criteria that are relevant to nursing in an acute setting
- the opportunity to reflect on the approach taken and make recommendations for future consideration

The group also identified that:

- To increase their validity and wider relevance, the choice of indicators should be made by a process that represents a triangulation of the views of patients/carers and the profession together with a systematic critique of the evidence available from the widest of sources.
- There is a need for a more systematic approach relating to the presentation of evidence in its broadest respect.
- The criteria should be reviewed and refined in light of comments received and the advocated triangulation approach as outlined above utilised.
- The scoring system should be reviewed and the value of its continued use questioned.
- The weighting system should be reviewed and clear guidance issued for its future inclusion, ie where does the locus of control lie, locally or nationally or is there a place for both?
- There could be benefits in linking with other agencies concerned with QIs, ie RCN, GMS. NHS QIS.

The resulting responses from the workshop will feed into the required further refinement and development of pilot indicators and the methodology for identification and selection of further indicators.

#### **4.2 What indicators did we select?**

The process described above allowed us to identify six potential indicators for piloting. The project steering group made the decision to limit the pilot to five to six indicators across three to four sites as that was considered to be manageable within the time and resource limitations for the project. The indicators identified were:

1. Incidence of healthcare associated pressure ulcers - the number of patients that develop pressure sores following admission to an inpatient setting
2. Provision of nutritional screening and care planning - the process by which individuals are assessed on admission to an inpatient setting and to what degree their nutrition care plan is adhered to. It includes their body mass index (BMI), usual and recent food and fluid intake and the likelihood of difficulties in relation to nutritional status
3. Incidence of healthcare associated Catheter Associated Urinary Tract Infection (CAUTI) - the number of individuals with a urinary catheter in place who develop a urinary tract infection
4. Patients' experience of pain management
5. Patients' experience of the provision of educational information
6. Healthcare Associated Infection (HAI) rate - the number of individuals who develop any infection while in an inpatient setting

Indicators 1, 3, 4, 5 and 6 feature commonly in other attempts to define, pilot and measure indicators, although CAUTI (indicator 3) tends to be captured within a broader category of nosocomial (healthcare associated) infection. Attempts to define or measure an indicator around nutrition have not featured so prominently. That may be due to the difficulties of finding outcomes that are nurse-sensitive enough; our indicator is concerned with process.

#### 4.2.1 Process versus outcome?

Of the indicators we selected 1, 3 and 4 might be described as outcome indicators and 2 as a process indicator, while 5 and 6 stand alone as patient experience indicators. Outcome indicators might instinctively seem to be the ones we should measure because they are about what actually happens to patients. However, there are numerous inherent difficulties involved in their measurement. These include:

- problems with reliability and validity
- the confounding effect of case-mix and other factors
- chance variability
- the need for a greater volume of outcome data than of process data
- greater difficulty in interpretation
- delays between treatment and eventual outcome.

Powell et al. concluded that:

‘... if quality assessment in healthcare is to mature, the enthusiasm for outcomes data will need to be tempered by due recognition of the complementary benefits of process data.’ (Powell et al pp29-56)

In a paper for the Department of Health NHS Performance Team, Professor Richard Thomson from the UK Quality Improvement Programme argued that whilst the ultimate measure of quality of care is that of patient outcomes, this obscures practical and philosophical difficulties when using outcomes to support performance management or quality improvement, and indeed describes recent trends of moving away from outcome and movement towards process measures.

Professor Thomson highlighted the advantages and disadvantages of using process and outcome measures specifically within the context of quality improvement and performance management excluding population health outcomes or status measures.

Professor Thomson concurred with the view that called for a combined approach to process and outcomes indicators within the context of quality improvement Thomson (2002).



### **4.3 Why are these indicators important?**

#### **4.3.1 Indicator 1 – Incidence of healthcare associated pressure ulcers**

Recent studies in the UK and abroad have suggested that healthcare associated pressure ulcers in hospital affects between 5-15 % of all patients (Halboom 1997, Amlung, 2001, Clark and Watts 1994)

The prevention and treatment of pressure ulcers is a costly business for the healthcare system, with treatment estimated at 1-6% of the total healthcare budget (Severens 2002) The treatment of one grade IV pressure ulcer\* was estimated to be £40,000 in 1999 prices (Collier 1999). Length of stay in hospital because of pressure ulcer can more than double and the incidence and costs of pressure ulcer related litigation have been rising in the UK.

Although many factors can impact on the development of a pressure ulcer, this has traditionally been viewed as a nursing issue. Failure or success in their prevention and management is often viewed as a measure of the quality of nursing care. The high level of nursing input to, and control over, pressure ulcers made this a reasonable subject for this pilot study.

#### **4.3.2 Indicator 2 – The provision of nutritional screening and care planning**

Recent studies of under-nutrition in Scottish/UK patients suggest that at least 14% and up to 20% of patients are under-nourished when they are admitted to hospital (ref). We also know that malnutrition in hospital patients – particularly in older people - is associated with greater mortality, delayed recovery and higher rates of eventual care home use.

Nurses are responsible for measuring patients' height and weight on admission to hospital, for carrying out an initial assessment of nutritional status and for making appropriate referrals to other members of the multidisciplinary team. Crucially, they also monitor the intake of and offer assistance with food and fluid on a day-to-day basis to patients known to be at risk.

There are inherent difficulties in measuring the nutritional status of patients including:

- many members of the multidisciplinary team have a part to play in patient nutrition
- the average length of stay in hospital is 5.2 days and it is unlikely that any change in nutritional status could be measured over a period of less than 10 days.

Measuring whether nurses are making an initial assessment of nutritional status, referring appropriately and monitoring food and fluid intake for those at risk therefore seemed a reasonable topic area for this pilot.

#### **4.3.3 Indicator 3 - Incidence of healthcare associated CAUTI**

The project steering group proposed three healthcare associated infection indicators – HAI, MRSA (Methicillin-Resistant Staphylococcus Aureus) and CAUTI. Following discussion between the Scottish Surveillance of Healthcare Associated Infection Programme (SSHAIP) and the NHS QIS project manager, it was agreed that HAI and MRSA were too crude to be related to nursing specifically. Given the complexity of HAI, it was concluded that device associated HAI had greater potential as a nursing indicator. Of the three suggested indicators, this left CAUTI as a possibility for the pilot.

Urinary tract infections (UTI) are the most common infections acquired in hospital, affecting 2-3 patients per 100 admissions (Plowman et al., 1999). The major pre-disposing risk factor for healthcare associated UTI is the presence of an indwelling urinary catheter. Between 75- 80% of all healthcare associated UTI follows the insertion of a catheter (Bryan and Reynolds 1984) and around 26% of all patients have a catheter inserted during their stay in hospital (Glynn et al., 1997).

The cost to the individual of having a CAUTI is considerable. There is an increased risk of bacteraemia, which is associated with increased mortality or complicated infections of the urinary tract (Bryan and Reynolds 1984). On average, treating such infections results in an increased length of stay of 5-6 days. Costs have been estimated at £1,327 per case or a total of £125 million a year for the NHS in 1999 (Plowman Report).

Nurses carry out many catheterisations and almost all, if not all, catheter care. The extent to which nurses' actions or inactions affect patient outcomes is of obvious significance and an important indicator.

#### **4.3.4 Indicator 4 - Patients' experience of pain management**

A 1997 study involving over 3,000 patients recently discharged from UK hospitals found that most had experienced severe to moderate pain while in hospital. For a third of these patients, pain had been present all or most of the time (McQuay et al.). The subjective nature of pain makes definition difficult. The most appropriate definition is probably the one that says pain is, 'whatever the experiencing person says it is, whenever the person says it does' (McCaffrey and Pasero, 1999). The widespread impact of pain makes the investigation of patients' experience of pain and pain management imperative.

#### **4.3.5 Indicator 5 - Patients experience of the provision of educational information**

Poor communication is at the core of a substantial number of complaints made by service users to the NHS. Provision of educational information prior to admission, throughout a hospital stay, and prior to discharge is a significant part of the whole communication package. Educational information was defined as all verbal, written or printed information given to the patient or their family on their condition or treatment, about the hospital, ward routines, consistency of information across staff, recovery and convalescence, medication effects and side effects prior to admission until discharge. Although nurses are not solely responsible for such communication, they have always accepted and taken pride in their role as the profession 'closest' to patients, the only discipline that is with patients 24 hours a day, 7 days a week. Nursing cannot claim this unique advocacy/communicator role without also accepting responsibility for failings when the service users' experience is not as good as it could and should be. Patients' perception of the information they receive is the ultimate test of its suitability and comprehensiveness and asking patients about their experience seemed a reasonable way to test that out.

#### **4.3.6 Healthcare Associated Infection (HAI) rate**

After initially selecting this through the process described, we were advised by Health Protection Scotland, that this was not a good indicator of the quality of a nursing service. This is because of the lack of specificity involved in an area where the potential variables are so numerous. The SEHD HAI Task Force established a multidisciplinary working group in 2004 to develop an additional performance indicator for HAI to be used as part of the performance assessment framework. The working group recognised that monitoring outcomes can be difficult and expensive. If outcomes cannot be measured, the order of preference would be to measure processes or inputs. Outcome data is currently measured by the Scottish Surveillance of HAI Programme. Performance against compliance with the NHS QIS HAI infection control standards is monitored by QIS (eg second review completed in 2004). A further process indicator - the number of staff completing the cleanliness champions prevention and control of infection educational programme - has now been selected for inclusion in the Performance Assessment Framework.



# BORDERS HIGHLAND GRAMPIAN TAYSIDE LANARKSHIRE

## the pilot project

### 5. The pilot project

#### 5.1 What we did

The timescales for the pilot phase and, indeed the entire project, were largely determined by the planned response to Audit Scotland set for within the 12-months of the initial consultation. This not only put a great deal of pressure on the project team but ultimately the pilot sites and co-ordinators. By virtue of this, the indicator pilot phase was to span a six-week period for data collection. Three pilot sites agreed to pilot all five indicators, one agreed to pilot one of the indicators and a fourth site was later invited to and agreed to pilot two of the indicators. The selected sites were more of a pragmatic choice of those that were willing and able to pilot the indicator methodology within a very tight time scale, as opposed to gathering comparative clinical data capable of being used across the sites.

The four sites were initially selected for data collection in relation to the selected indicators. Those sites were:

- NHS Borders
- NHS Highland
- NHS Grampian
- NHS Lanarkshire

NHS Tayside agreed to join the pilot at short notice to collect data on patients' experience of the provision of educational information and pain management when it appeared that data protection issues might preclude one site from participating. In the event, that did not happen and, consequently, more data was collected on this indicator than originally intended. NHS Grampian collected data on the incidence of healthcare associated pressure sores only; all other pilot sites collected data on all five indicators.

Local surveillance co-ordinators were nominated at each site by their Director of Nursing to assist with collection and submission of data, encouraging local support and compliance. The co-ordinators met with the project manager prior to the start of the pilot and were provided with Guidance Packs (Appendix 7) including data collection forms. Training was provided by Health Protection Scotland (HPS) on the gathering of data via hand-held computers for the incidence of catheter related urinary tract infection.

The sample size for the non-Picker indicators was discussed and agreed between the project manager and local surveillance co-ordinators following consultation of discharge data from every speciality within every health board supplied by ISD at the request of the project manager. The specialities chosen for data collection were based on the best available evidence and the perceived areas of highest risk or incidence whilst gaining breadth of sample by selecting different specialities across pilot sites.

Data was submitted to the project team at NHS QIS on a weekly basis via the local surveillance co-ordinators, or to HPS for the indicator on CAUTI. Picker collected data from the information submitted from each pilot site for the patient questionnaires.

## 5.2 How we did it

Indicator	NHS Boards	No of Specialties	Methodology
Incidence of healthcare associated pressure sores	NHS Grampian NHS Highland NHS Lanarkshire NHS Borders	9	Data collection tool developed by NHS Grampian
Provision of nutritional screening and care planning	NHS Highland NHS Lanarkshire NHS Borders	3 plus retrospective audit of 50 discharged patient records	Data collection tool developed by NHS Highland (Former Primary Care Trust)
Incidence of healthcare associated CAUTI	NHS Highland NHS Lanarkshire NHS Borders	3	Data collection tool and methodology developed by HPS (Formerly SCIEH)
Patients' experience of pain management	NHS Highland NHS Lanarkshire NHS Borders NHS Tayside	Initial sample of 1,050 (4,200 in total)	Data collection tool and methodology developed by Picker UK (part of Picker Europe)
Patients' experience of the provision of educational information	NHS Highland NHS Lanarkshire NHS Borders NHS Tayside	Initial sample of 1,050 (4,200 in total)	Data collection tool and methodology developed by Picker UK

### **5.2.1 Indicator 1 - Incidence of healthcare associated pressure sores**

NHS Grampian has a well-established Tissue Viability service that routinely gathers data on the incidence and prevalence of pressure sores across the entire site. Data is collected on written forms and sent to a central database that generates reports on the incidence and prevalence of pressure ulcers. Pilot sites extracted information manually from case records, entered on the forms provided and submitted weekly to the team at NHS QIS. All sites gathered data for a period of six weeks with the exception of NHS Lanarkshire, which collected data for a period of two weeks between January and February 2005.

### **5.2.2 Indicator 2 – The provision of nutritional screening and care planning**

An audit tool was used that was developed by the former Highland primary care trust. It was designed to allow them to measure performance against the NHS QIS standards for Food, Fluid and Nutritional Care. Data was collected against a series of 46 questions organised under five standard statements, although the number of questions that required to be completed could have been as low as 15, depending on the individual patient and the actions taken by staff. Data was collected over two to six weeks

### **5.2.3 Indicator 3 - Incidence of healthcare associated CAUTI**

One speciality within each site was selected for data collection, including urology and general surgery; hand-held PCs were supplied to the sites for data collection. Data was transferred direct to HPS who processed and quality checked data. The data collection period was six weeks.

### **5.2.4 Indicator 4 – Patients' experience of pain management**

This is the first of the two indicators on which the Picker Institute Europe collected data on our behalf. The Picker Institute's origins lie in the Picker/Commonwealth Patient-Centred Care Program established by the James Picker Foundation and the Commonwealth Fund of New York in 1986. The Boston-based Picker Institute developed innovative ways of obtaining feedback from patients about their experience of healthcare. In 1994 they began working with partner organisations in Europe and Picker Institute Europe was established as a UK registered charity in July 2000 and is an approved survey contractor for the NHS patient and staff surveys in England

The Picker Institute Europe has extensive experience of working with healthcare providers throughout Europe to evaluate the quality of their services 'through the patient's eyes'. Picker Institute Europe organise surveys and other forms of patient feedback (focus groups, interviews, telephone surveys) for healthcare organisations in Scotland, Wales,

Northern Ireland and the Channel Islands and for other organisations such as professional bodies, private hospitals, government bodies and voluntary organisations.

Picker Institute Europe is the leading provider of patient and staff surveys to the NHS. In 2004 they:

- carried out over 630 surveys
- worked for over 300 trusts

With the following types of survey have been undertaken:

- primary care - 100 NHS Trusts
- outpatient - 98 NHS Trusts
- inpatient - 96 NHS Trusts
- emergency - 88 NHS Trusts
- young people - 84 NHS Trusts
- mental health - 18 NHS Trusts
- staff - 148 NHS Trusts

Additionally, patient surveys were carried out on cancer, maternity, diabetes, patient choice, ambulance users and care of the elderly.

For the purpose of this study, postal questionnaires were sent to adult inpatients who were discharged from the four NHS Boards that took part in this section of the study. There were 1,050 patients in each Board giving a total sample size of 4,200. Data was collected and analysed by Picker UK who also made helpline support available to any patients with queries about the questionnaire or project.

### **5.2.5 Indicator 5 – Patients' Experience of the Provision of Educational Information**

Pilot sites and methodology were as for indicator 4.



# COMPARATIVE RESULTS FOR THE AREAS INVESTIGATED

## what we found

### 6. What we found

There are full comparative results for the areas investigated by Picker and useful results from the CAUTI study, although these are not as robust as the Picker data. However, data collection on healthcare associated pressure sores and nutritional screening and care planning are of dubious validity. Responses from the pilot sites indicated that:

- There were different perceptions of each tool and responses to individual questions within them. This, together with 'drop-out' rates due to the perceived difficulties in collecting data, invalidate any conclusions we may have been able to draw.
- Different sites used different sub-specialties in which to pilot the indicators, which may also affect the comparability of results.

In addition, flaws in the data collection in relation to pressure ulcers made the data less than useful. A summary of feedback from the sites concerning all of these issues is included in the table at section 8.1.

#### **Indicator 1 - Incidence of healthcare associated pressure sores**

The aim of this indicator was to collect data on the incidence of healthcare associated pressure sores across four sites. The adoption of the NHS Grampian methodology appeared to provide the ability to calculate both incidence and prevalence.

Prevalence is the proportion of individuals in a population who have pressure ulcers at a specific point in time. The number of patients with pressure ulcers is the numerator, and the total population at risk (ie all patients, with or without pressure ulcers) is the denominator.

Incidence relates to the development of new cases of pressure ulcers in a defined population over a specified period of time. Incidence can be expressed as cumulative incidence or as incidence rate. In both instances, the numerator is the number of new cases (ie patients with pressure ulcers) that accumulate during a specified time. To calculate cumulative incidence, the denominator used is the number of persons in the population at risk. In a dynamic population, the denominator is the average size of the population, often the estimated population at the

mid-period. For incidence rate, the denominator is calculated by measuring the period of time during which each patient is at risk (or, in some cases, the period of time during which each patient is observed), and then adding all of these periods of time together to quantify the total period at risk by all patients. This denominator is presented in person-time units, eg 1,000 patient bed-days.

In the pressure ulcer pilot study, it was not possible to calculate incidence or prevalence from the information that was collected. This was due to the fact that, in general, information was collected only on those patients who actually had pressure ulcers, and not on those patients who were 'at risk'. This meant that the denominators for the calculations could not be determined. In addition, information was recorded on a 'week beginning' rather than a daily basis, which meant that it was not possible to get a picture of the number of patients with a pressure ulcer on a particular ward at a particular point in time. Some patients would have been present only at the beginning of the week, some only at the end of the week, and therefore the total number recorded for that week would be more than the number of patients in the ward at any particular point in time. Finally, when patient information was anonymised, it was not clear that each patient had been given a unique identifier that was used consistently, from one week to the next, every time information about that patient was recorded. This is necessary to ensure that the same person is not counted twice.

Finally, the NHS Grampian methodology adopted for the pilot extracts information from the electronic patient information system to provide accurate figures of patients at risk. This enables the tissue viability service to calculate incidence and prevalence figure. The absence of this data and facility within the pilot sites resulted in the inability to offer accurate analysis on the data collected. This, of course, poses further challenges with regards IM&T and local IT structures to support the electronic collection of nurse-sensitive data.

## **Indicator 2 – The provision of nutritional screening and care planning**

A sample of results from the nutritional assessment data collection are presented in the appendix. The variance in data is perhaps a reflection of pilot sites experience and application of the audit tool and is expanded upon within section 8. This illustrates the kind of variance in data we found and may still find if the data collection tool was refined and accepted for use across multiple sites.

## **Indicator 3 - Incidence of healthcare associated CAUTI**

Over the six-week surveillance period, only one CAUTI was identified. The surveillance period was shorter than the minimum recommended by HPS by virtue of the pilot phase of the project being six weeks. An offer was made to continue surveillance for the recommended 12 weeks but none of the pilot sites chose to take up this option. As such, the value of

this infection rate is questionable. Only 40% of catheters were inserted by nursing staff, suggesting that catheter associated urinary tract infections may not be a useful performance indicator for nursing. Medical staff inserted around two-thirds of male catheters and this is likely to reflect competency and training issues within each Division regarding male catheterisation.

Feedback from participants indicates that the data definitions appeared to be robust and were easy to apply. The electronic data collection tool worked well and was well received by the participating site. The QIS pilot study demonstrated that CAUTI surveillance is not resource intensive, especially with the option of collecting data electronically. However even the minimal staff and time required is not available within resource stretched infection control teams.

An audit tool to accompany the new Best Practice Statement for urinary catheterisation has been developed. This will allow Divisions, which carry out surveillance to audit practice should they wish to reduce rates through changes in practice, or to audit practice where they find that few 'new' catheters are being used. It is also anticipated that this tool will be used when sites identify higher than expected CAUTI rates through the surveillance programme. Although there has been interest in this tool, to date none of the QIS pilot sites have used it to audit practice. This again raises the important issue of outcome not always being the most appropriate measurement. In certain circumstances, audit of process may produce more useful and meaningful results.

Future actions:

The SSHAIP team will continue to promote CAUTI surveillance in both acute and primary care and will continue to approach sites to pilot the audit tool for urinary catheterisation and catheter care.

A number of challenges were apparent during the pilot, including time scales. Results would have more relevance given a lengthier surveillance period and longer time scales for establishing the surveillance within the pilot sites. Similarly, local clinical record keeping was not adequate for the dataset requirements and there are resource implications in providing the necessary IT support to assist data collection staff.

#### **Indicators 4 and 5 – Patients' experience of pain management and the provision of educational information**

The questionnaire was based on the inpatient questionnaire used in the English NHS national patient survey programme. It has been widely tested with patients and it covers the issues that are known to be of the greatest importance to patients. It has been used extensively in Scotland, Wales and England. Details of the development of the core questionnaire, the question bank and survey methodology can be found at: <http://www.nhssurveys.org/categories.asp?parent=144>.

For this project, the questionnaire was the original Core Inpatient questionnaire used in England but it included an expanded set of questions from the validated question bank. The additional questions cover pain relief, nursing care and patient information, since these are the issues of particular interest to this project. Ethical approval for the inpatient survey was granted by the North West Multi-Centre Research Ethics Committee on 29/9/03 (MREC 01/8/90) for use in the NHS national patient survey programme in England. In order to extend the cover to Scotland the Research & Development Department at each participating Board was informed of the survey.

To comply with the Data Protection Act, all Boards agreed to allow two nominated Picker Institute staff to organise the mailing of questionnaires by working under an honorary contract.

Results presented (Appendix 9) compare the results of the four Boards that took part in this survey along with the 2004 English inpatient survey. The English inpatient results are taken from 89 Trusts that were surveyed by Picker Institute Europe in 2004 (using a similar methodology), as part of English NHS Patient Survey Programme. This data set is made up of 45,239 patients' responses, where the response rate was 60%.

During this project, a total of 2,350 patients returned completed questionnaires, a response rate of 63%. This is just above the response rate achieved by Picker trusts in the English national inpatient survey. The response rates for each NHS Board and a combined Scottish total are shown below.

**Table 1 - Response rates**

<b>Outcome of sending questionnaire</b>	<b>Site 4</b>	<b>Site 3</b>	<b>Site 2</b>	<b>Site 1</b>	<b>Total</b>
Completed useable questionnaire	683	564	616	487	2350
Returned undelivered or patient moved house	8	16	24	34	82
Deceased	3	32	27	36	98
Patient too ill, opted out or returned blank questionnaire	53	58	47	68	226
Patient not eligible to fill in questionnaire	10	1	1	7	19
Questionnaire not returned	232	329	285	272	1,118
Sum	989	1,000	1,000	904	3,893
Adjusted denominator*	978	952	949	834	3,713
Adjusted response rate	70%	60%	65%	58%	63%

\*The adjusted denominator excludes deceased patients and those whose questionnaire was returned undelivered.

**Table 2 – Demographics of responders**

	Site 4 (%)	Site 3 (%)	Site 2 (%)	Site 1 (%)	Average of 4 Boards (%)	English Trusts average (%)
<b>Gender</b>						
Male	41	50	52	48	48	46
Female	59	50	48	52	52	54
<b>Age group</b>						
16-35	8	6	7	9	7	11
36-50	20	15	13	16	16	17
51-65	28	27	26	23	26	26
66 years and over	43	51	54	52	50	47
<b>Ethnicity</b>						
White	100	99	100	99	100	95
Asian or Asian British	0	0	0	1	0	2
Black or Black British	0	0	0	0	0	2
Chinese, Mixed, or Other Ethnic Group	0	0	0	0	0	1

NB. Gender and age was taken from responder information but, if missing, this was taken from sample information given by Board/Trust. Ethnicity was obtained just from responder information.

## Benchmark charts

The benchmark charts compare (for selected questions only) the four Scottish Boards' inpatient survey results and the 2004 English inpatient survey results using a scored scale (Appendix 9).

## Summary of benchmark reports

The results for the four Scottish Boards lay within the middle 60% or top 20% of English Trusts for nearly all questions. Site 4 and site 2 more often appear in the top 20% and this provides the opportunity to understand their practices and share these to improve patients' experiences across Scotland.

## Patients' experience of pain management

Results for the three questions asked of patients who said they were in pain in hospital show that:

- Site 2 provides the best response to patient requests for pain medicine (question F5) and is indeed at the top performing level of all English trusts. The results for the other Boards are within the top 20% of all English trusts when confidence intervals are considered.
- Again site 2 has the highest result for patients responding that staff did everything they could to help control pain (question F6). The site 4 result is also within the top 20% of English trusts.
- In terms of patients receiving the right amount of pain medicine (question F7), the results for site 3 are below the others and also close to the worst 20% of English trusts. The percentage differences are small here; all the results lie between 84% and 98%.

We did not attempt in this pilot project to suggest what the desirable rates or outcome for any indicator should be. If the project continues, the possibility of doing so, on a case-by-case basis for each indicator selected will have to be investigated. It may be possible to set absolute limits that we want to reach for some indicators. For others, we may wish to ensure that all sites are performing or working towards the level of the best in Scotland and we may also wish to compare ourselves to the best available internationally. For example, we can compare results from our sites to those from English trusts for most of the questions asked through Picker. However, even when 'our' results are good by comparison, we cannot automatically accept that they are good enough.

Importantly, the Picker and HPS data provides a clear baseline for the Boards involved to measure improvement and against which all other Scottish Boards could benchmark their own performance. The aim is to get the measurement of pressure ulcer and nutrition-related data to a stage where similar comparisons can be made.





# PILOT SITES' LOGS OF THEIR EXPERIENCES

## lessons learned

### 7. Lessons learned

#### 7.1 The experience of staff at the pilot sites

Staff members working at the pilot sites were asked to keep a log of their experiences and to use this information to provide feedback.

##### Generic

All sites would have liked more time for the pilot for the following reasons:

- to allow the data collection co-ordinators to prepare
- to prepare other parts of the local system, ie medical records
- but chiefly to inform staff and gain their co-operation and understanding.

One site considered that the topics, especially nutrition, should have been pre-piloted before being used.

##### Specific Comments

Comments specific to the indicators are provided in Appendix 1 table 4. These are summarised below.

##### Incidence of Healthcare Associated Pressure Ulcers

Respondents said that the data collection tool for this indicator was generally easy to use, eg it had clear questions but data collection became difficult when patients moved. It was noted that omissions in the forms increased over time. One site stated that the information was not seen as useful to the staff completing the forms. There was some debate over the use of prevalence versus incidence data.

##### Provision of Nutritional Screening and Care Planning

All sites noted that this tool was too time consuming. Some questions were described as ambiguous and the tool was not user friendly, although one site reported that the questions were clear and the form easy to complete (this may reflect that they also reported good staff involvement). It was noted that some questions were not applicable to certain wards or to patients and some specific suggestions were made for clarification or improvement. Omissions were said

to increase over time in one site and there was a suggestion that more training prior to the pilot would have been helpful.

### **Incidence of Healthcare Associated CAUTI**

The tool was reported to be easy to use but time consuming. The training prior to the pilot was said to be very good, but more time to inform staff and gain their co-operation was required. The short length of stay in this group of patients was noted, and that the six weeks period was too short to obtain useful information.

### **Patients' Experience of Pain Management/Provision of Educational Information**

One site found the Picker staff to be very efficient and helpful in dealing with issues as they arose; another noted that lack of information about the organisation led to initial problems with patient confidentiality issues. It was noted that more time to organise this part of the pilot would have been preferable.

## **7.2 Lessons learned across the pilot**

- We cannot assume that all staff participating in data collection will feel competent to use IT for this purpose and this may have an impact on the time required to complete the task.
- Differences in interpretation of ethical issues may arise for example, in relation to Caldicott guidelines. Sufficient time should be allowed for resolution of these issues.
- Asking sites to use a data collection tool whose design they had not been involved in may result in its lack of suitability for that site or individual ward area; there may also be resistance to the imposition of an externally designed tool where a local one is perceived to be 'better.'
- There may be time constraints on staff who 'backfill' that agreement alone cannot resolve. For example, offering to pay staff replacement costs for a nurse involved in extensive data collection may not resolve staffing issues, as replacements may not be available or suitable.
- Local co-ordinators require considerable time and support to filter information about the project down to ward and individual level and to gain local understanding and co-operation.
- The completeness of local clinical record keeping is clearly still an issue of concern.
- It is not always possible to measure the impact of hospital-based interventions during hospital stay and any future project should consider 'patient pathway' approaches to measurement.
- Scotland does not have a system similar to that of England where mortality data is picked up and available through the NHS Strategic Tracking Service; instead we are dependant on the information making its way back into individual Boards' systems.

# WHAT NEEDS TO HAPPEN NOW?

## conclusions & recommendations

### 8. What needs to happen now? Conclusions and recommendations

#### 8.1 Conclusions

Measuring the impact of nursing interventions on patient outcomes is not simple and straightforward. The literature on this subject and the experience gained through this project shows that it is complex due to several factors:

- Nurses are part of a much wider multidisciplinary team, all of whose individual and group actions and interactions may affect patient outcomes.
- Hospital care (which was the focus of the project) is for most people a very short episode in what may be a more protracted and complex course of treatment or care. Nursing care may be delivered in a community, care home or other care setting before, after or independent of hospital care.
- The adage holds true that 'not everything that counts can be counted and not everything that can be counted counts', (Einstein). Things that are easy to measure may not tell us anything useful and things we need to know about may not be easy to measure.
- Sometimes individual patients get better despite poor care and, sometimes, they do not achieve the desired outcome, despite the appropriate care being given. It is also true however, that at a population level, giving the best care possible will usually bring the best outcome.

The way forward for measuring outcomes of care undoubtedly lies in every member of the multidisciplinary team being responsible for the part they play in what happens to patients. They also need to understand the impact their action or inaction will have on eventual patient outcomes. Crucially, they must appreciate that what they do has the potential to support or negate the actions of colleagues. This will ensure that every member takes responsibility for examining their performance within the multidisciplinary team and that each individual profession recognises and addresses their own specific issues.

Nurses must then find a way to define the part they play, however major or

minor, in outcomes for patients. We must be able to describe the structure and processes through which we will ensure that these outcomes are achieved. We must be willing to open our results for comparison with colleagues from other NHS Board areas and we must be willing to take responsibility for examining and changing our structures and processes to achieve uniformly high standards of outcome. This report makes a series of recommendations that can help us start to deliver on these objectives.

## **8.2 Recommendations**

Audit Scotland posed three challenges in relation to the measurement of indicators of quality in nursing which this project set out to address and inform.

- NHSScotland should develop and agree quality of care measures that focus on continuous improvement and measure these consistently.
- NHS Boards should ensure that Trusts review quality indicators and take action where problems arise.
- More work is needed on developing and agreeing standards, which demonstrate that quality of care is being provided, rather than merely indicating the number of reported adverse incidents.

In particular, we wanted to address audit Scotland's first recommendation of 'developing and agreeing quality of care measures that focus on continuous quality improvement and measure them consistently' by defining, developing and piloting quality indicators for use across NHSScotland.

Recommendations on further development work and recommendations for action on the part of NHS Boards and other stakeholders follow on from what we have discovered from this pilot project.

### **Recommendation 1**

It is essential that the project should continue its work if our recommendations are to be realised. There are several vital actions that need to be taken to achieve the following benefits:

- improvements in patient care
- meaningful comparisons between teams of nurses and multidisciplinary teams, both within and between Board areas
- provide decision makers with the kind of information they need to make sound decisions about the future design and resourcing of health services for patients and their families

We recommend that this project should now be taken forward to its next stage of development. This will involve:

- Further refinement of the indicators selected for the pilot project
- Further develop a set of indicators to identify those that are fit for purpose and can be rolled out nationally requiring refinement of the data collection tools, statistical analysis and systems.
- Implementing a set of selected indicators throughout all of Scotland's NHS Boards to enable understanding and practice to develop in the selection and use of quality/ outcome indicators in nursing
- Further development of the methodology that allows prioritisation of indicator development in other areas at both national and local level
- CNO in collaboration with NHS Boards refine the methodology through further testing, endorsement and validation to support local and national indicator development

## **Recommendation 2**

Experience in the United States suggests that the development of quality indicators for nursing is a process that requires sustained effort and commitment over a number of years. Scotland is ahead of the rest of the UK and many in the international field in developing indicators in healthcare, as evidenced by the Scottish Audit of Surgical Mortality (SASM) and the work now based in NHS QIS. We are also fortunate to have one body responsible for the majority of the work on quality, standards and monitoring in healthcare. The development of Quality Indicators for Nursing and Midwifery must become part of other health indicator development so that it is truly multidisciplinary and reflects the reality of modern healthcare – complex care delivered by teams of healthcare professionals.

Similarly, the perceived burden of data collection on frontline staff needs to be addressed. There is no doubt that data collection can be a burdensome activity for clinical staff who often believe that they do not see any improvement in their working practice or patient care as a result. There is an obvious need to agree what data should be collected and then work with the ISD, IM&T and others to ensure that automated systems are in place to collect it. The development of a single data collection tool is absolutely vital, but wide input should be obtained to agree its design. Adequate training and ongoing support also need to be provided to answer data collection queries.

We recommend that:

- CNO explore with ISD how further phases of work to develop indicators for nursing are integrated with other work on developing health indicators, and published as part of the annual reporting of these. All Health Boards will require a sustained programme of development, refinement, pilot and measurement of indicators over a number of years.
- The Scottish Executive, E-Health Board and ISD together with Scotland's Directors of Nursing, should develop systems for care planning and recording that support local and national collection of nursing outcomes data in a staged approach.

### **Recommendation 3**

The measurement of clinical outcome is a long and complex endeavour for healthcare professionals. Our literature search highlighted a paucity of validated information on nursing outcomes and the experience gained from the pilot project strongly indicate the need for the nursing and midwifery research community to strongly reinforce the growing emphasis on outcomes as defined by patients.

We recommend that:

- Research aimed at the identification of clinical outcomes is grounded in the patient's experience.
- Current developments in this field are disseminated effectively and that the nursing and midwifery research community seek to build on the existing research base.

### **Recommendation 4**

Nurses will recognise the importance and potential for improving patient care that lies within defining and measuring outcome indicators. There is, however, a need to develop a culture where they welcome and actively participate in work to define, develop and pilot indicators for their own area.

We note that the ANA have been working in this field for 11 years with only limited success to date. Success in NHSScotland will depend on having the highest possible profile and support for this work. This will involve the stakeholders named below becoming committed champions for this work and acting as advocates for its future development.

We recommend that:

- CNO should work with Directors of Nursing and Chief Executives to explore suitable models for the further development of quality indicators one model being designated Boards as centres of responsibility (CORs)
- Nurse Directors should implement an agreed set of nursing outcomes and other nursing quality indicators and account for them annually as part of each NHS Board's annual report and health and clinical governance report

### **Recommendation 5**

The real potential for improvement lies in the ability to compare performance and, ultimately, practice between different Board areas, different sites and different teams. Equally important is the sharing of best practice that will result from this process so that all nurses in Scotland can learn from the best. This potential can only be realised if all Scottish Boards agree to benchmark results within their own area and across the country.

We recommend that:

- All Board Chief Executives and Directors of Nursing progress towards a benchmarking project for quality improvement in nursing care based on the outputs of this project.
- That individual Board results in relation to indicators developed be included within performance monitoring systems employed by the SEHD. Boards should also be required to report on progress with implementing local benchmarking systems through the NHS QIS Clinical Governance standards.

### **Recommendation 6**

A crucial part of the delivery of quality nursing care that is not within the scope of this project is the level of nursing resources available to care for patients. There is, however, a clear opportunity to develop the findings of this pilot project and link them with relevant projects and initiatives.

We recommend that:

- The Scottish Executive, Directors of Nursing and the soon to be appointed Regional Workload advisors explore further the cause and effect relationship between nursing workforce numbers and nursing quality indicators.

# acknowledgements

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## Glossary

Term	Definition
AHP	See allied health professions.
allied health professions (AHPs)	Healthcare professionals directly involved in the provision of primary and secondary healthcare. Includes several groups such as physiotherapists, occupational therapists, dieticians, etc. Formerly known as professions allied to medicine (PAMs).
ANA	American Nurses Association
audit	Systematic review of the procedures used for: diagnosis, care, treatment, rehabilitation, examining how associated resources are used and investigating the effect care has on the outcome and quality of life for the patient.
Audit Scotland	Audit Scotland was set up on 1 April 2000 to provide services to the Accounts Commission and the Auditor General for Scotland. Together they help to ensure that the Scottish Executive and public sector bodies in Scotland are held to account for the proper, efficient and effective use of public funds. Website: <a href="http://www.audit-scotland.gov.uk">www.audit-scotland.gov.uk</a>
best practice statements	Statements of best practice focus on specific aspects of care. They are usually developed after wide consultation, taking into account a broad range of views from health professionals.
BMI	See body mass index.
body mass index (BMI)	A measurement of weight in relation to height.
Caldicott Guardian	The person in each NHS Board responsible for ensuring that patient identifiable information is kept confidential.
catheter	A hollow tube used to transport fluids to or from the body.
CAUTI	Catheter Associated Urinary Tract Infection

Clinical Resource and Audit Group (CRAG)	CRAG was the lead body within the Scottish Executive Health Department promoting clinical effectiveness in Scotland. The main committee, together with its subcommittees provided advice to the Health Department, acted as a national forum to support and facilitate the implementation of the clinical effectiveness agenda, and funded a number of clinical effectiveness programmes and projects. On 1 January 2003, CRAG was merged with four other clinical effectiveness bodies to create NHS Quality Improvement Scotland. See NHS Quality Improvement Scotland.
CRAG	See Clinical Resource and Audit Group.
GP	General Practitioner.
grey literature	That which is produced on all levels of government, academics, business and industry in print and electronic formats, not controlled by commercial publishers.
healthcare associated infection (HAI)	Infection acquired in the hospital or other healthcare setting.
healthcare professional	A person qualified in a health discipline.
HPS	Health Protection Scotland (formerly SCIEH)
IM&T	Information management and technology.
indicator	Measure chosen to monitor change.
Information and Statistics Division (ISD)	The Information and Statistics Division is part of National Services Scotland. Health service activity, manpower and finance data are collected, validated, interpreted and disseminated by the Division. This data is received from NHS Boards, NHS Trusts and general practices. Website: <a href="http://www.isdscotland.org">www.isdscotland.org</a>
ISD	See Information and Statistics Division.
IT	Information Technology
JCAHO	Joint Council for the Accreditation of Healthcare Organisations
MRSA	Methicillin-Resistant Staphylococcus Aureus
multidisciplinary team	A group of people from different disciplines (both healthcare and non-healthcare) who work together to provide care for patients with a particular condition. The composition of multidisciplinary teams will vary according to many factors. These include: the specific condition, the scale of the service being provided and geographical/socio-economic factors in the local area.
NHS Board	NHS Boards are responsible for the strategic planning, service delivery, performance management and governance of each of Scotland's 15 local health systems.

NHS QIS	See NHS Quality Improvement Scotland.
NHS Quality Improvement Scotland (NHS QIS)	NHS Quality Improvement Scotland is a statutory body, established as a Special Health Board in January 2003. Its role is to focus on improving the quality of patient care and the health of patients. It has a particular emphasis on the quality of care and the patient journey for vulnerable groups. Website: <a href="http://www.nhshealthquality.org">www.nhshealthquality.org</a>
NHS Trust	NHS Trusts were organisations responsible for providing a group of healthcare services for the local population. An Acute Trust provided hospital services. A Primary Care Trust provided primary care/community health services. Mental health services (both hospital and community-based) were usually provided by Primary Care Trusts. From 2001, Trusts operated within an overall framework drawn up by their NHS Board. Trusts were dissolved on 31 March 2004, becoming operating divisions of the NHS Board. See NHS Board and NHS operating division.
NHSScotland	The National Health Service in Scotland.
NMDS	Nursing Minimum Data Set
nosocomial	Pertaining to or originating in the hospital
outcome	The end result of care and treatment and/or rehabilitation. In other words, the change in health, functional ability, symptoms or situation of a person, which can be used to measure the effectiveness of care and treatment, and/or rehabilitation.
PCT	Primary Care Trust. See NHS Trust, NHS operating division, and primary care.
pilot	A practical advance testing of the suitability of a process, standard, or object for the job it is intended to do. Depending on the outcome, refinements may be made.
pressure ulcer	A break in skin or mucous membrane with loss of surface tissue, disintegration and necrosis of epithelial tissue, and often pus.
primary care	The first point of contact between a patient and the NHS. This is the component of care delivered to patients outside hospitals and is typically, though by no means exclusively, delivered through general practices. Primary care services are the most frequently used of all services provided by the NHS. Primary care encompasses a range of family health services provided by family doctors, dentists, pharmacists, optometrists and ophthalmic medical practitioners.
SASM	Scottish Audit of Surgical Mortality.
SCIEH	See Scottish Centre for Infection and Environmental Health.

Scottish Centre for Infection and Environmental Health (SCIEH)	Responsible for the national monitoring and surveillance of communicable diseases and environmental health hazards as well as providing expert advice and operational support to Health Boards and local authorities. Website: <a href="http://www.show.scot.nhs.uk/scieh/">www.show.scot.nhs.uk/scieh/</a>
Scottish Executive Health Department (SEHD)	The Scottish Executive Health Department is responsible for health policy and the administration of NHSScotland. Website: <a href="http://www.show.scot.nhs.uk/sehd">www.show.scot.nhs.uk/sehd</a>
secondary care	Care provided in an acute sector setting. See acute sector.
SEHD	See Scottish Executive Health Department.
skill mix	The variety of skills offered by an individual or team. Most tasks need a certain skill mix if they are to be done effectively, and the multidisciplinary team approach is an example of this.
SSHAIP	Scottish Surveillance of Healthcare Associated Infection Programme
standard	Agreed level of performance.









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