



Clinical Effectiveness:

Annual Report of the Area Office, 2004-5

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The strengths of an area-wide perspective to evaluating clinical effectiveness

This annual report describes the work of the Area Clinical Effectiveness Office (ACEO) and how it relates to five central themes of NHS Greater Glasgow:

- improving health and reducing inequalities
- securing better access and higher standards of care
- encouraging local clinical priority setting while maintaining central governance
- strategic priorities – including the Local Health Plan, and Patient Focus Public Involvement
- the Board's future roles in governance, monitoring, and evaluation of services

We show that sustained improvements in clinical care have been achieved through the work of this team. All audits have been developed directly with clinical colleagues, ensuring that any recommendations for improvements in health services are implemented.

An area-level perspective to measuring clinical effectiveness has several advantages. As well as crossing geographical boundaries, the team can work freely across the primary/secondary care interface. Thus the ACEO can show that improvements in health care are being achieved while reducing inequalities across the whole NHSGG area. Any holistic assessment of the quality of health care needs to include not just how each part of the service is working individually, but also whether there are barriers between them. The ACEO has developed particular skills in the sensitive area of bringing together clinicians from different sites and taking a non-partisan approach to evaluating variations in clinical standards between them.

The Board's health priorities of coronary heart disease, stroke, and cancer are important parts of the ACEO's work programme. The substantial programme of obstetrics and gynaecology work has evolved from two clinician-led area-wide clinical effectiveness groups. These programmes demonstrate success in reducing inequalities between sites and repeat audits provide evidence of improved quality of care. However, the ACEO is managed so that it has flexibility in its work. It can thus offer *ad hoc* assistance with evaluating clinical effectiveness issues as they arise, particularly where work covers the entire NHS Greater Glasgow area.

The ACEO applies a range of techniques to evaluating clinical effectiveness, which include:

- co-ordinating consistent local clinical audits across different sites
- analysing and reporting on large databases
- audit cycles using evidence-based standards
- providing patient information materials
- qualitative methods to understanding patients' and carers' experiences

This Annual Report does not attempt to provide comprehensive results from each project, but to illustrate how the work of the ACEO has provided practical help in improving the quality of NHS Greater Glasgow services. Full reports and further information can be obtained by contacting the authors of each piece of work.

Future programme of work

The Area Clinical Effectiveness Office will need to change to best serve the re-organised NHS Greater Glasgow structure. We anticipate that our future programme of work will place greater emphasis on heart disease, stroke, cancer, and mental health. We will favour projects that evaluate clinical effectiveness across the primary/secondary care interface, and between the NHS and other care providers. We will also provide support to the Board as its roles in accountability and governance become more clearly defined.

David Morrison
Consultant in Public Health Medicine

Heart failure liaison service

Summary

- Heart failure affects nearly 1% of the whole population and increases with age. 7% of people over 74 years old suffer from it.¹
- It is an important element of the Local Health Plan Coronary Heart Disease priority area.
- The Heart Failure Liaison Service is a citywide evidence-based service provided by nurse specialists operating out of the 5 acute hospitals in Glasgow. They provide home-based, multidisciplinary interventions to help reduce avoidable hospital admissions and improve the quality of life for patients with chronic heart failure.
- The ACEO assists the HFLS by analysing and interpreting qualitative and quantitative information on patient satisfaction and service delivery. Our work supports a service that bridges an important part of the primary/secondary care interface.
- We have described improvements in prescribing practice and reductions in hospital use as a result of the Heart Failure Liaison Service.

The Heart Failure Liaison Service

The Heart Failure Liaison Service (HFLS) was established in 2000 following a randomised controlled trial at the Western Infirmary² that showed significantly improved results for patients who received home-based, specialist nurse intervention in addition to conventional care. The service provides effective management for heart failure patients by working seamlessly across primary and secondary care to reduce the level of unnecessary hospital admissions, initiate appropriate pharmacological regimens, and improve quality of life via education, advice and support.

As chronic heart failure is the only major cardiovascular disease with an increasing incidence (new cases) and prevalence^{3,4} (existing cases) NHS Greater Glasgow funded the HFLS in 2000 using SIGN Guidelines as a basis for their Medical and Nursing protocols.⁵

Evidence of improved quality of care

Information on patients' care and treatment is recorded independently at each of the 5 acute hospitals on a commercial Access database called "ATHENA". The ACEO independently collates and analyses these data to describe patterns of health and health care activity that guide future planning of the Heart Failure Liaison Service.

Since July 2000, a total of 1728 patients have been recruited to the service of which 728 are still being actively followed-up. Patient contact is high - the average number of contacts is 9 per year and the range of contacts per person for 2004 was 1 - 51 for all forms of contact (clinics, home visits, phone calls and dialogue with other health professionals)

Reduced hospital resource use

Compared with the first full year of operation (“baseline” in 2002), patients receiving the HFLS had fewer hospital bed-days and shorter lengths of stay - Table 1.

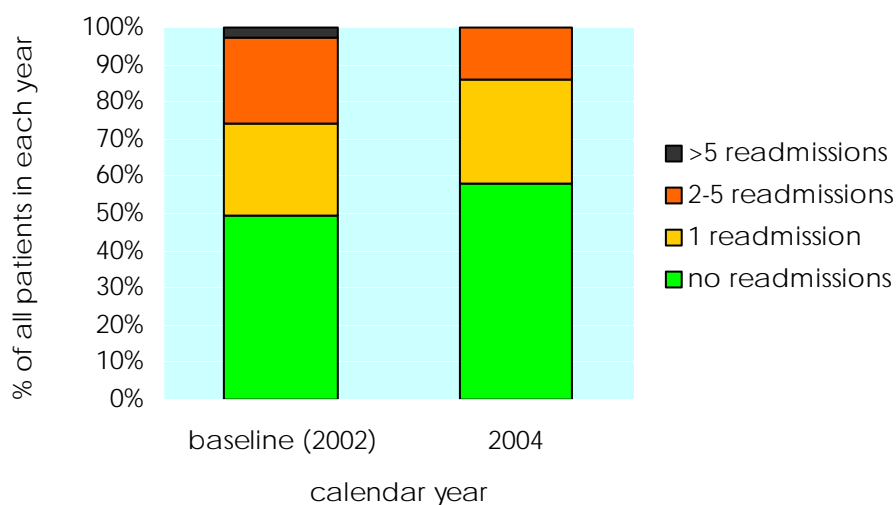
Table 1. Hospital activity at baseline (first year of city-wide HFLS activity) and in calendar year 2004 for Heart Failure Liaison Service patients.

	baseline (2002)	2004
total bed days	13 362	10 279
median length of stay (days)	10	8
range (days)	1-249	1-128

Reduced hospital readmissions

The risk of readmission to hospital has been reduced. Figure 1 shows that of all patients at baseline (2002) and in 2004, the proportion who were not readmitted within 12 months has increased. By the calendar year 2004, no patients were readmitted more than 5 times, and fewer were admitted more than once.

Figure 1. 12-month hospital readmissions for all causes at baseline (first year of city-wide HFLS activity) and in 2004.



Improved prescribing practices

Table 2 indicates that drug treatment of heart failure has changed to reflect best prescribing practice and regimens that optimise all therapeutic options.

Table 2. Major drug types used in treatment of heart failure at baseline (2002) and in calendar year 2004, with interpretation of changing patterns.

drug type	baseline	2004	interpretation
ACE inhibitor	83%	79%	} probable shift from ACE inhibitors to ARBs, which have therapeutic advantages
ARBs	11%	16%	
spironolactone	39%	30%	} reduction may be due to associated risks of affecting kidney function
beta blockers	49%	63%	} improved rate of prescribing effective treatments
loop diuretics	92%	96%	
thiazides	7%	14%	

Recent improvements in the HFLS that have been facilitated by the ACEO include

- improved palliative care access in the last year (a recommendation from the previous report) although city-wide inequities remain
- greater pharmacy involvement following appointment of a specialist pharmacist in heart failure at the Victoria Infirmary
- an education programme for nursing home staff and GP practice nurses to help them deal with heart failure and improve discharge of stable patients back to routine primary care.

The future programme of work

In addition to achieving previously set standards for care, it has been agreed that advances should be made in the following areas during 2005:

- Enhanced collaboration with Nursing and Care Homes
- Development of a programme of appropriate exercise regimes
- Patients' Quality of Life should be evaluated using validated scoring methods.

The ACEO will take an increasingly active role in ensuring these programmes are delivered to a high standard.

Alison Freeman

Glasgow Anticoagulation Service

Summary

- Anticoagulants are mainly used to treat deep-vein thrombosis and heart conditions that produce blood clots. This work therefore makes an important contribution to the Board's Local Health Plan priorities of Coronary Heart Disease and Stroke.
- Glasgow Anticoagulation Service (GAS) is the single area-wide anticoagulant provider, operating in both primary and secondary care sites
- The ACEO reviewed the GAS's clinical effectiveness needs and began by leading 2 projects:
 - a patient satisfaction questionnaire
 - detailed proposals to improve the quality of data that are recorded so that the service can be evaluated
- We will produce a baseline report on the activity of the GAS once we have improved the quality of its database.

Glasgow Anticoagulation Service

In 1996-7, an audit in Glasgow found that existing anticoagulant services were overcrowded, under-resourced and at full capacity. Patients who should have been receiving anticoagulants were not being treated. New services needed to be accessible, quality-controlled and auditable, with the capacity for growth. This ideal model would integrate primary and secondary care and provide both community and domiciliary control by a dedicated, specifically-trained multidisciplinary team supported by the secondary sector.

Following the introduction of national guidelines⁶ in 1999 an integrated hospital, outreach, and domiciliary service began in April 2002.

Measuring the effectiveness of Glasgow Anticoagulation Service

Development of an Audit Programme

The Service uses a commercial data recording system that provides area-wide reports and compares them with 61 units across the UK who also use the system. Because data are collated city-wide, comparisons between sites have been difficult.

Having previously received no statistical or analytical support, an approach was made to the Area Clinical Effectiveness Office to assist in measuring the service workload, capacity and performance on a range of issues.

Coronary heart disease and stroke

After some investigation, we recommended that the service would benefit from a structured form of local audit:

- Clinical Performance
- Quality Control
- Patient Satisfaction
- Monitoring the adherence to, and effectiveness of, GAS policies

Our first 2 main projects were:

1. to develop, administer, and report on a patient satisfaction questionnaire
2. to provide a baseline report outlining what had taken place since the inception of the Service, how it had performed, and what needed addressed for the future.

Patient satisfaction with Glasgow Anticoagulation Service

The Area Clinical Effectiveness Office conducted an independent survey to supply valuable feedback both on performance and areas where it was felt that improvements were necessary.

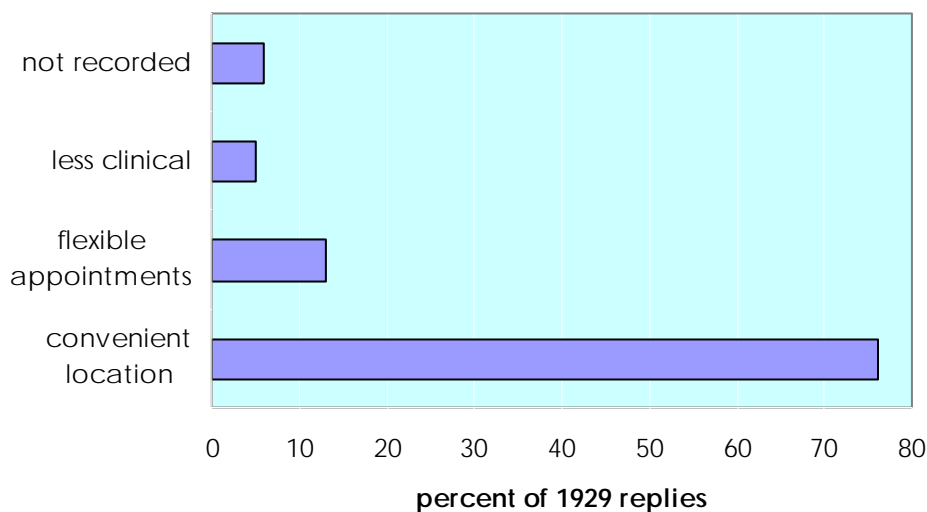
We developed a questionnaire in conjunction with the Lead Nurses for both North and South Glasgow Divisions and the Chair of the GAS Steering Group. It was split into 3 main sections:

- Patient Demographics
- System Monitoring
- Service Opinions

The questionnaire received an excellent response rate of 78%. 96% of patients reported that they were happy with current service levels and that the GAS team delivered good quality care. Some questionnaires were returned undelivered, raising a question over the quality of patient data. This is discussed further in the *Baseline Report* section.

55% of patients are still being seen within the hospital clinics, yet the majority of patients preferred the convenience of local outreach clinics – see Figure 2. Although "Convenient Location" was the most recorded option for this question, many patients recorded that all of the reasons we listed were helpful and some reference was made to the fact that they felt that staff were making special efforts to see them at outreach clinics which made them appreciate this kind of support all the more.

Figure 2. Glasgow Anticoagulant Service patient survey. What do you find most useful about this service? Percent of 1929 questionnaires returned.



62% of patients said that they had attended previous types of anticoagulant clinics either in hospital or via their GP and only 2% felt that this system was not as good.

Sustainability of both the hospital and outreach settings is an issue that will need closer consideration as pressure on the Service increases. An increasing majority of patients have been attending for over 1 year. As such, the sustainability of this kind of intensive monitoring will need frequent review.

Hospital clinics came in for some more criticism than those at outreach sites and there were 2 common elements to the problems in this area which relate to:

- **Parking issues.** Not only do patients feel that parking can be difficult, some also commented that when clinics run late, they often incur additional parking costs.
- **Clinic surroundings.** Many patients felt that clinic space was often cramped, crowded and dismal whilst the location of clinics can also be difficult to access. In addition, comment was also made about the difficulties experienced in large, open waiting areas where it was not always easy to hear their names being called.

In general, feedback has been very positive with regards to staff and the overall service provided. However there have been some concerns raised about the lack of a doctor at clinics and it has been suggested that additional ancillary staff would be useful.

The full report has been forwarded to the GAS Steering Group to be used in facilitating service change and delivery where appropriate.

Baseline Report

We identified several important weaknesses in the quality of the GAS's database. The GAS Steering Group agreed in May 2005 to put the Baseline Report on hold until there has been some "tidy-up" and this is being progressed. In addition, the data recording system is being updated to an Access database that will involve many changes to current recording methods. We await these developments, which we hope will ensure more valid data. The ACEO has contributed to producing more sensible database codes for the new version.

We hope to have a full baseline report completed at the end of the next financial year. This will represent the first of an ongoing series of annual reports for the service that the ACEO will produce.

Alison Freeman

Cardiac registers

Summary

- 3 Cardiac Registers produced by the ACEO provide information on the investigation, treatment and outcomes of coronary heart disease across Scotland
- We have recently explored 3 main questions posed by the Managed Clinical Networks for coronary heart disease
 - are we doing enough percutaneous intervention (PCI) and bypass surgery (revascularisation)?
 - is the ratio of PCI to bypass surgery (CABG) appropriate?
 - do areas of high deprivation receive appropriate rates of treatment?
- Analysis has identified geographical inequalities in treatment rates that need further investigation to explain them.

The 3 cardiac registers

Coronary heart disease is among the most common causes of illness and death in the NHS Greater Glasgow area, and the Local Health Plan commits the Board to significant investment in its investigation and treatment.

Two effective interventional treatments (rather than medicines) involve opening up narrowed blood vessels by passing a balloon along a vein into the heart and using a small metal 'scaffold' or stent to keep the artery patent (PCI) or open heart surgery to replace a blocked blood vessel with a leg vein or thoracic artery (CABG). In order to confirm a diagnosis of CHD and plan treatment x-ray images of the heart blood vessels need to be carried out - coronary angiography.

The ACEO manages three registers to measure how much of each of these activities occurs, and to consider other issues about the quality of care and health needs. These include questions about whether access to treatment is equitably distributed, whether clinical outcomes are satisfactory, and what might influence the need for treatment.

Two steering committees guide this work, comprising consultant representatives from the 12 hospitals where these procedures are carried out. In the financial year 2003/04, Glasgow Royal Infirmary, the Western Infirmary and Golden Jubilee Hospitals contributed 43% of the revascularisations performed across Scotland. Data on cardiac surgery in the private sector, at Ross Hall, has been included for the first time in latest reports.

The registers use prospectively collected clinical data subsequently linked to death records and the Scottish SMR, patient linked hospital episode,

database.

Main findings

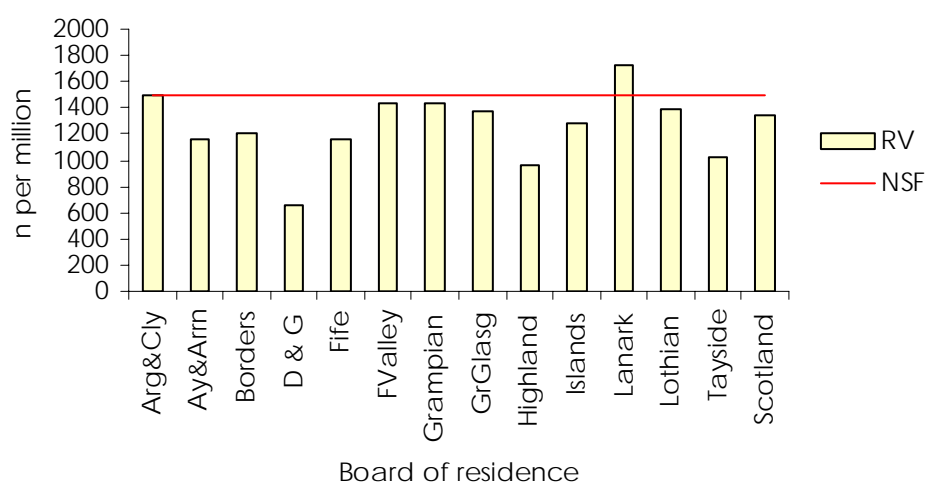
A report in February 2004 showed that there have been changes in the severity and complexity of illness ("casemix"), and improved survival rates for bypass grafting.⁷

Our work responds to the needs of the Managed Clinical Networks by presenting analyses by Health Board of residence, socio-economic characteristics of where patients live, and age. Three current questions they have asked us to explore are i) are we doing enough revascularisation (PCI or CABG), ii) is the ratio of less invasive to more invasive treatment appropriate? and iii) do areas of high deprivation receive appropriate rates of treatment?

Are we doing enough revascularization?

The National Service Framework for CHD 2000 proposed a target of 1500 coronary revascularisations per million people. We compared each of the participating Health Board's rates per head of population with this target and the results are shown in Figure 3. NHS Greater Glasgow was below the NSF recommendation and only Lanarkshire Health Board exceeded the NSF rate. However, there are various explanations for these differences. Crude rates take no account of the prevalence or severity of disease in a Board's population, nor of the age and sex characteristics that influence them. Further analyses, standardising for age, sex and using death from coronary heart disease as a measure of need demonstrated continued inequalities between Boards.

Figure 3 Revascularisation - crude rates per head of population in 13 Health Boards and all Scotland in 2002/3. RV, revascularisation; NSF - National Service Framework recommended rate of 1500 per million.

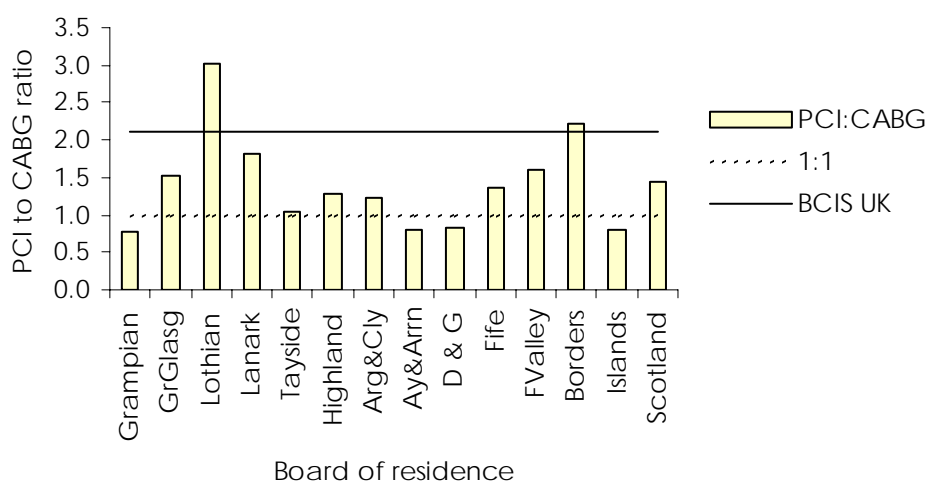


Is the ratio of less invasive to more invasive treatment appropriate?

There are advantages and disadvantages of different types of intervention. Percutaneous interventions (PCIs) involves passing a catheter through a vein into the heart to open up narrowed blood vessels. There are a variety of percutaneous procedures. These procedures are less "invasive", take less time, and normally do not require more than one or two nights in hospital. As a result, they are much less expensive than open heart surgery to bypass narrowed blood vessels (CABG) and carry less risk of serious complication such as death. However, long term improvement in symptom control and prolonged survival depends on many factors and careful evaluation of casemix, risk and availability of services is necessary to compare the costs and benefits of the two procedures. A greater proportion of patients having PCI will undergo further revascularisation within a year, compared to those undergoing CABG.

The British Cardiovascular Intervention Society (BCIS) collects and reports on all UK PCI data. Across the UK, just over twice as many percutaneous interventions are performed, compared to bypass surgery. Scotland as a whole demonstrates a smaller ratio of PCI to CABG (Figure 4). There are also large inequalities between Health Boards, with NHS Greater Glasgow occupying a middle position relative to the rest of Scotland.

Figure 4. Ratio of PCI to CABG by Health Board in 2002/3. British Cardiovascular Intervention Society (BCIS) average for the whole of the UK shown by unbroken line.



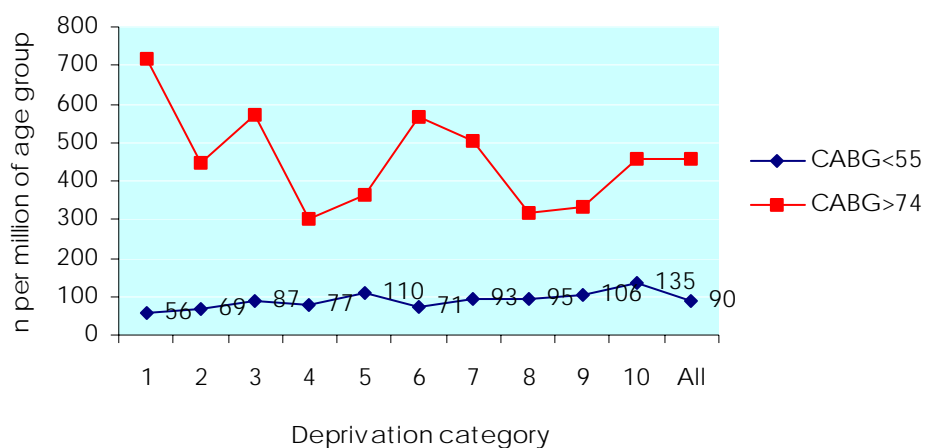
Do areas of high deprivation receive appropriate rates of treatment?

The high levels of socio-economic deprivation in Glasgow might be expected to do two conflicting things to rates of heart bypass surgery. The first is that the need for treatment might be high because heart disease is more common in less affluent areas. The second is that often access to health care is poorer in more deprived areas and therefore elective surgery rates are inappropriately low. An additional finding from other conditions is that outcomes - including survival - are often poorer in patients from more

deprived areas.

In fact, survival rates and repeat operations are similar across patients from different socio-economic circumstances. Figure 5 shows coronary artery bypass grafting rates in two age-groups - people under 55, and people over 74 years old. The Deprivation Category divides areas into a scale from 1 (most affluent) to 10 (most deprived). Surgery rates are higher in the older group in all socio-economic circumstances. In younger patients, surgery rates are progressively higher with increasing deprivation. This may reflect greater illness at a younger age among people in more deprived circumstances. Immediately post procedure the most deprived survive as well as the more affluent. Two years after surgery, crude outcomes begin to diverge slightly as might be expected with the increasing impact of confounding life circumstances.

Figure 5. First elective coronary artery bypass graft rates, 2002-3, by deprivation category (1 - most affluent, to 10 - most deprived) in two selected age groups (under 55 and over 74).



Rachel Slack

Greater Glasgow NHS Palliative Care Health Needs Assessment

Summary

- Palliative care is important for all people with chronic, life-threatening illnesses, including (but not limited to) cancer
- The Palliative Care Health Needs Assessment will provide new information on which to plan better quality services throughout the Health Board area
- The ACEO has contributed a range of specialist quantitative and qualitative methods towards this needs assessment, working in primary and secondary care and outwith the NHS
- We have represented the views of patients, their carers, and care professionals, contributing to the Board's Patient Focus Public Involvement work

The major health problems of the Glasgow population - heart disease, stroke, chronic lung diseases, and cancer - often include long periods of failing health towards the end of life. Palliative care rather than active treatment becomes the most important contribution that the NHS can make to patients' quality of life during this time.

The Scottish Cancer Plan⁸ required all Health Boards to produce a needs assessment for palliative care for all chronic life-threatening illnesses, not just cancer.

The ACEO has brought specialist skills in quantitative and qualitative methods to this work, including

- Design of the symptom-control study. Using the standards set out in the SIGN 44 guideline⁹, case-note reviews and structured questionnaires were carried out by skilled interviewers. Participating patients had a variety of illnesses and were being cared for in acute hospitals, hospices, and the community. Data processing, and quantitative and qualitative analyses of results, plus drafting the associated report
- Providing training and advice on the conduct of focus groups with a wide range of professionals (including social workers, doctors, nurses, pharmacists, and allied health professionals) and one-to-one interviews with patients and their carers
- Analysis of qualitative data
- Advising and editing of the final needs assessment

The Palliative Care Needs Assessment is due to be published in November 2005. It will identify gaps in clinical care and service provision, and represent the views of patients, their carers, and NHS and other care professionals. Needs for better education, training, and resources will be described, with requirements for a cycle of audit to ensure that the quality of care is improved as a result.

Sue Williams

Provision of information for people diagnosed with cancer

Summary

- The ACEO identified weaknesses in patient information given to women with gynaecological cancers¹⁰
- The ACEO has assisted 8 regional cancer Managed Clinical Networks in the 5 West of Scotland Health Boards to produce better information materials
- This work reflects Patient Focus Public Involvement national guidance
- We have developed a variety of written and audio materials, a website, and arranged for an interpreting service
- A rolling audit programme to evaluate the quality of these materials is being co-ordinated by the ACEO

Background to producing information materials

Good quality patient information is an important part of cancer services. Since 2003, the ACEO has worked with 8 regional Managed Clinical Networks in the West of Scotland towards providing evidence-based, user-friendly information materials for patients and their carers. The programme of work is supported by Big Lottery Funding and cancer slippage money.

Qualitative methods

The ACEO brings specialist skills in qualitative research in this field (on women with gynaecological cancers¹⁰) and guidance on Patient Focus Public Involvement initiatives.¹¹ This emphasises the importance of working with patients and carers, as well as health care professionals, in producing and refining information materials.

The range of information materials

We have developed information materials for use across the West of Scotland for lung, breast, colorectal, gynaecological, head and neck, and skin (malignant melanoma) cancers.

The material provides psycho-social information as well as more pragmatic information on procedures and treatment. The add-on and multi-format nature of the material (written, audio, website) makes the information appropriate for a range of patients' demands. The website provides information for patients and health care professionals in primary and secondary care.

Cancer and palliative care

A general information magazine in the Women Talking series has been produced on women's cancers. This has been available throughout the region since Autumn 2004.

The Managed Clinical Networks for upper gastrointestinal and prostate cancers are at a late stage of producing patient information materials. All material should be completed by early 2006 ready for a press launch in March 2006.

Audit

The ACEO is co-ordinating a rolling audit of the information materials to identify their strengths and any improvements that are needed. The audit includes both patients and their carers, as well as health care professionals.

Sue Williams

Cancer information materials produced by the ACEO



Hip Protector Audit

Summary

- Padded hip protectors reduce the risk of hip fracture among people at risk of falling
- The Hip Protector Programme has operated throughout Care Homes across Glasgow for 2 years
- The ACEO was asked to audit the programme and identify any problems that needed to be resolved
- We found that half of eligible care home residents did not wear hip protectors and they are rarely worn at night when they should be
- Our recommendations to improve the quality of this service include providing written guidance, staff training, and a review of the evidence supporting hip protectors' continued use

The Hip Protector Programme

Hip protectors are elasticated underpants with heavy padding over each hip. There is good research evidence that hip protectors reduce hip fractures among at-risk populations.¹² Around 2 years ago NHS Greater Glasgow established and funded a programme to provide hip protectors to Care Home residents at high risk of sustaining a hip fracture, in consultation with Glasgow City Council Social Work Department.

The Hip Protector Programme has an annual budget of £0.3m, with per capita costs of between £120 and £140. Glasgow is the only major Health Board to directly supply hip protectors.

Our audit questions

The ACEO was asked to find out

- are Care Home residents routinely screened for being at high risk of hip fracture (in line with NHSGG guidance)?
- are residents who have been identified as needing hip protectors actually wearing them?
- what needs to be done to ensure that all residents who need hip protectors are wearing them?

Care Home visits

We randomly selected 20 care homes from across the NHS Greater Glasgow area. These included private sector and NHS/private partnership homes. We visited each care home twice. The first visit was to identify if residents were wearing hip protectors and the location of hip protectors that were not in use.

This visit was unannounced. At the end of this visit, the auditor arranged a follow-up visit to review residents' notes for completion of at-risk screening paperwork and to discuss the use of hip protectors with care home staff. In total, 164 residents were reviewed during the first round of visits, plus a further 150 during the second phase.

What we found

Are Care Home residents routinely screened for being at high risk of hip fracture in line with NHSGG guidance?

Overall, around half of cases reviewed contained the appropriate paperwork. Some homes completed paperwork for all residents and others only for those deemed to be "at risk" in the view of care home workers.

Are residents who have been identified as needing hip protectors actually wearing them?

About half of residents (52%) who were prescribed hip protectors were wearing them when the auditor visited. Nearly all of them had at least one further pair of hip protectors in their room or being laundered. The commonest reasons for not wearing them was being immobile or bed-ridden (40%) and resident choice (28%). Care home staff were unable to give a reason for over a quarter (26%) of their eligible residents not wearing hip protectors. About half of these residents' hip protectors could not be found and had presumably been disposed of.

Hip protectors are rarely worn at night. Indeed, many staff were surprised to hear that 24-hour wear is recommended for maximum protection.

What needs to be done to ensure that all residents who need hip protectors are wearing them?

Our audit of the Hip Protector Programme identified that more comprehensive screening and use of hip protectors is needed for care home residents in Glasgow. We suggested that staff training should be provided at Eastbank Resource Centre, and written guidance should be updated and distributed to care home staff.

A recent national review¹³ of hip protectors concluded that the evidence to support the use of hip protectors is becoming increasingly ambivalent, though it continued to support their use in institutional settings such as care homes.

Because of the changing evidence to support hip protectors¹⁴, we recommend that the literature is reviewed again in 2-3 years so that planning is based on the best evidence of effective practice.

Isobel Baxter

The Care Home Providers' Perspective Study

Summary

- The ACEO is assisting the Nursing Homes Medical Practice and Health Care Support to Care Homes Team to understand how quality of care can be improved
- A questionnaire survey has been conducted of professional carers in care homes
- Questions cover the type of care offered, the problems associated with providing care (including staffing, health service support, provision of aids and equipment) and monitoring the quality of care
- The report will be presented in November 2005 to the Health Care Support to Care Homes team and the Elderly Persons Planning and Implementation Group.

Sue Williams

Pressure ulcer/complex wound management

Summary

- Pressure ulcers are a serious but preventable complication of immobility
- We have produced a patient-transfer communication form and guidelines on the management of pressure ulcers and other wounds
- We will audit the effectiveness of these materials in improving wound care

Pressure ulcers

Pressure ulcers are a relatively common but serious complication of chronic ill health and immobility. They are often very painful and if they become infected they may endanger a patient's life. With good nursing practice and communication between clinicians when patients are transferred, ulcers can be prevented or their treatment improved. An Area Working Group on pressure ulcers, to which the ACEO contributes, has existed for several years.

In 2004/5, the ACEO began working on:

- a communication form to be used when patients are transferred between care settings (within and outwith the NHS), and
- supporting guidelines on assessment and management of pressure ulcers

An easy to complete communication form, accompanied by supporting guidelines, was developed and piloted in 2004.¹⁵ Its aim was to ensure that essential information is communicated in a consistent manner and that people receive the continuity of care necessary to maintain wound healing and minimise pain and discomfort.

The forms were in carbonised sets in tear-off pads, so that one copy could be sent with the person being discharged or transferred, another sent to their GP, the third filed with their records, and the fourth kept in the pad for audit and reference purposes.

Progress to date

Only minor changes to the pilot form have been needed to allow it to be used for all types of wound and not just pressure ulcers or complex wounds. As well as paper copies, computerised version have been produced for all NHS hospitals, Ross Hall, Care Homes, and community nurses.

The ACEO has worked closely with the Health Care Support to Care Homes Team, its partnership Social Work Departments, and the Area Working Group on pressure ulcers. We have recognised that computing or photocopying facilities may not be available in some areas and we are responding by

continuing to supply carbon-copy pads where they are the best option.

Future work

We propose the following 3 main pieces of work for the coming year:

- A Glasgow-wide strategic overview for tissue viability should be developed. This should include a common referral pathway.
- The Scottish Executive Health Department's Best Practice Statement on Pressure Ulcer Prevention should be promoted and replace the 2000 NHS Greater Glasgow guidelines.
- Audits should be undertaken or facilitated to ensure continuous improvement in pressure ulcer care. The success of the communication form in different care settings needs to be evaluated. An audit on the choice and upkeep of wound dressings is also needed.

Sue Williams

Incidence of fracture at all skeletal sites is highest among the socio-economically deprived

Summary

- The Fracture Liaison Service offers assessment and treatment for patients over 50 after they have broken a bone
- To make sure the service is reaching all patients in Glasgow equitably, it is important first to understand how common bone fractures are in people from different socio-economic circumstances
- Take-up of the liaison service may also be affected by socio-economic status: this may suggest that changes are needed in the type of service offered to different patients
- The ACEO has found that people in more deprived areas are more likely to suffer from fractures but less likely to accept assessment by the Fracture Liaison Service

The Fracture Liaison Service

The Fracture Liaison Service in Glasgow takes all patients over 50 who have had a new fracture, and assesses them for osteoporosis. The aim is to optimise treatment of osteoporosis and therefore reduce the risk of subsequent fractures.¹⁶ Since 2002, the Fracture Liaison Service has provided a unified service across Glasgow.

Purposes of audit

The Fracture Liaison Service should be providing an equitable service to all eligible patients, irrespective of their socio-economic status.¹⁷

The purpose of this study was to describe the relationship between socio-economic status and the incidence of fractures at different skeletal sites, and to assess if deprivation is a barrier to uptake of secondary preventive services for osteoporosis.

Method

The entire cohort of 4659 women and men over 50 years of age presenting with fractures to NHS Greater Glasgow in 2002 was analysed. Socio-economic status was classified according to the DEPCAT score.¹⁸ This places all areas on a scale of 1 (most affluent) to 7 (most deprived) using 4 Census variables - proportion of unemployed men, proportion of adults in social classes IV and V, car ownership, and overcrowding.

Results were adjusted to take into account differences in the size, age, and

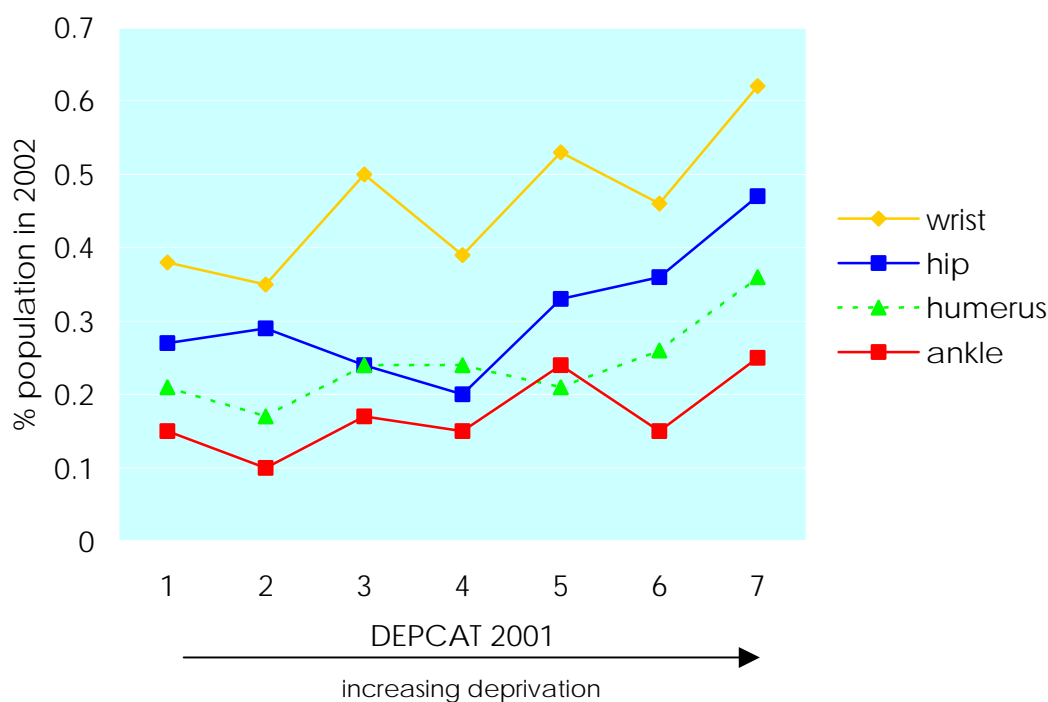
sex structure of different areas, so that these would not be responsible for any observed differences between areas.

Fractures and socio-economic status

Figure 6 shows the percentage of the NHS Greater Glasgow population who sustained a new fracture in 2002. For each type of fracture, the risk increases with greater deprivation (moving from DEPCAT 1 to DEPCAT 7).

People from the most deprived groups (DEPCATs 6 and 7) have higher rates of fractures at all skeletal sites compared with those in the most affluent areas (DEPCATs 1 and 2). The increased risk of fractures between most deprived and most affluent areas ranged from 26% in hand and foot fractures, to 47% in the upper arm (humerus).

Figure 6. Annual percentage of NHS GG population over 50 years old sustaining fracture by skeletal site and DEPCAT of residence in calendar year 2002. DEPCAT 1 – most affluent, DEPCAT 7 – most deprived.



Socio-economic status and Fracture Liaison Service uptake

Socio-economic status also affects whether patients accept the offer of assessment by the Fracture Liaison Service. For all fracture sites other than the hip, there is a substantially higher refusal rate (30%) in patients from the most deprived areas compared with those in the most affluent areas (19%). In contrast, 92% of patients accept assessment by the Fracture Liaison Service after hip fracture irrespective of socio-economic status. This may be due to a combination of the severity of the fracture itself and the greater opportunity for the Liaison Service to reach inpatients.

One caution to interpreting work using DEPCATs is that socio-economic status is based on the characteristics of the area in which patients live, not on each individual patient. And while, generally, poorer areas will tend to have more poor people, it is not always correct to assume that any given individual will be typical of their area. For practical purposes, the question is whether there are differences in the way that the Fracture Liaison Service is provided in more deprived areas, rather than just differences in the people themselves, that makes them less likely to take up the service.

Further work and recommendations

The ACEO has identified a greater need for the Fracture Liaison Service in areas of greater deprivation, exacerbated by a poorer uptake rate in these areas.

Attempts should be made to increase uptake of the Liaison Service by exploring ways of making it more available, appropriate, and acceptable to patients from areas of greater socio-economic deprivation.

This audit should be repeated to monitor any changes made to the Fracture Liaison Service to improve its uptake in more socio-economically deprived areas.

Isobel Baxter

Greater Glasgow Pulmonary Rehabilitation Service

Summary

- The Pulmonary Rehabilitation Service provides exercise courses for patients with chronic respiratory diseases
- We evaluated how the service recruits and assesses patients, and course completion rates
- Our recommendations include improving the database, and providing information materials for patients and referrers.

The Greater Glasgow Pulmonary Rehabilitation Service (PRS)

This Glasgow-wide physiotherapy led service was started in 2001. It aims to support patients with chronic breathing problems (e.g. chronic obstructive airways disease) in the community. Support is mainly in the form of a 16 week rehabilitation course of exercise classes provided by specialised pulmonary rehabilitation physiotherapists in a community based setting (e.g. leisure centre).

Referrals are accepted from hospital, GP, and other practice based staff. Patients are initially invited to attend assessment at one of the Glasgow hospitals. Home visits can be arranged for patients unable to attend hospital for assessment. Following assessment patients are offered a place on the 16 week rehabilitation course.

The task for the ACEO

The ACEO was asked by the Pulmonary Rehabilitation Service steering group to evaluate service uptake by GPs, course completion rates, and the length of time patients were taking to complete the course.

Methods

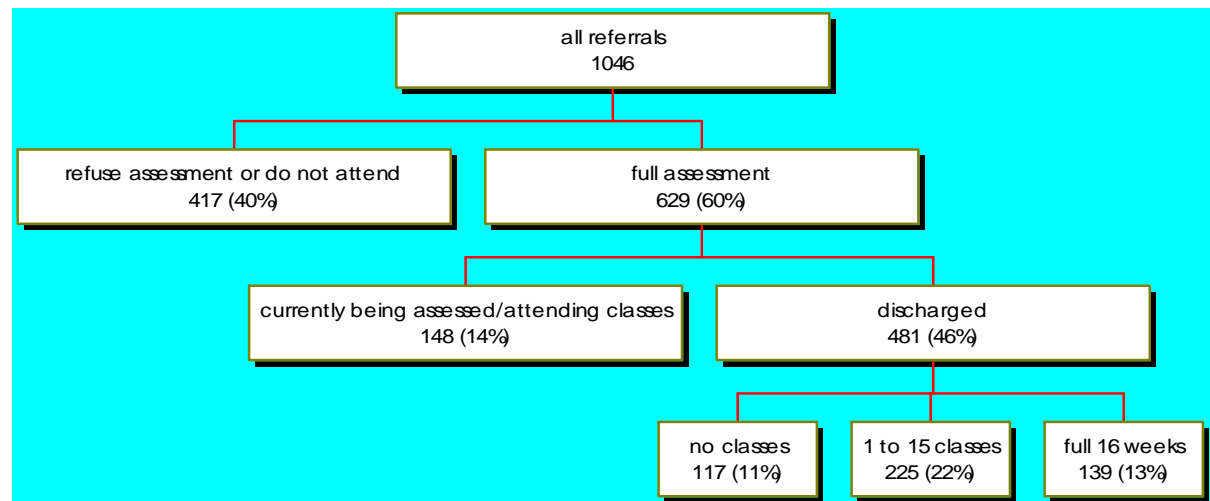
While the database that the PRS uses might potentially contain accessible information for completing this analysis, it transpired to be of poor quality. An extensive clean-up of the data was required before they could be analysed. Most of the problems with the database were basic design flaws, and are considered in the Recommendations, below. The audit included all patients referred to the service from its beginning in late 2001 to April 2004.

Results

Figure 7 shows that around half of the patients referred never get as far as attending a class and only 1 in 8 go on to attend the full 16-week course. Of

this group, 62% completed the course within a calendar period of 16 weeks.

Figure 7 Greater Glasgow Pulmonary Rehabilitation Service 2001-4 referrals and outcomes.



Recommendations

The ACEO recommended the following actions to improve the quality of the Pulmonary Rehabilitation Service:

- commission a new database and establish an ongoing audit/reporting programme
- develop referral guidelines to include an assessment of the patient's motivation levels and ensure that patients "sign-up" to the referral
- maintain a dialogue with referring bodies, in particular GPs/practice based staff, to assess the scope of the service and how it is delivered – for example
 - review literature sent to patients
 - selective use of home visit prior to assessment for patients who are reluctant to attend
 - establish a progressive domiciliary-to-class service (e.g. where, if necessary, the physiotherapist visits and works with the patient in their own home for a few sessions to prepare and motivate the patient to then attend the community based classes).
- provide a programme of PRS awareness sessions for GPs and practice nurses
- invite all referrers to visit the classes themselves.

Patient experience of the Greater Glasgow Back Pain Service

Summary

- Low back pain is a highly prevalent cause of chronic ill health and incapacity
- The Greater Glasgow Back Pain Service has operated throughout the Health Board area since 2002
- It provides patients with self-managed rehabilitation strategies
- The ACEO evaluated patients' satisfaction and views on how the service should be developed
- This work contributes to the Board's PFPI agenda and new Rehabilitation and Assessment Service
- The major future challenge for the service is to evolve, in partnership with patients, strategies for maintaining patient confidence for day to day and work activities after discharge.

About the Greater Glasgow Back Pain Service

The Greater Glasgow Back Pain Service (GGBPS) was launched city wide in September, 2002. The service is physiotherapy led and aims to provide an evidence-based and patient-centred approach to the management of low back pain. Core to this is a biopsychosocial approach, developing self managed rehabilitation strategies that patients can maintain after discharge.

The service is open access (i.e. patients can self refer) though GP referrals are accepted. The service bridges the primary/acute sector with physiotherapists making direct referrals for MRI scanning and to spinal surgeons.

This service is a first for Glasgow and has generated a great deal of interest from across the UK.

Purposes of audit

To assess patient satisfaction with the service and to give patients the opportunity to contribute to the ongoing development of the service.

Method

The ACEO conducted a questionnaire survey of patients at key points in their journey through the service: after their first appointment, at discharge, and 6 to 8 weeks after discharge. Questionnaires were anonymous and returned directly to the ACEO by post. We also held two patient focus groups to gather ideas and concerns that might not be covered by the questionnaires.

Results

In total 1592 questionnaires were given to patients. 896 completed questionnaires were returned to the ACEO office - a response rate of 56%. This is a good response rate for a postal survey where rates of around 30% are the norm.

Overall, the results were very positive

- Patients expressed very high levels of satisfaction with the service with 90% rating it as excellent. 95% of patients would be happy to use the service again in the future or recommend it to others.
- Waiting times for accessing the service were low with 80% of patients waiting less than 2 weeks for their first appointment.
- 95% of patients felt that the service had met their needs and that they were experiencing less pain.

The main issue identified was that after discharge from the service, patients felt they lacked support and levels of confidence for day to day and work activities fell slightly. Psychosocial factors and fear avoidance are well documented as predictors of chronicity.^{19:20} This is an area that, if addressed within the GGBPS, will have significant impact on recurrence rates of low back pain and work loss as a result of low back pain within Glasgow.

Recommendations

The major challenge facing the GGBPS is to work with patients to find ways that their confidence for daily and work activities can be maintained after discharge. The full report incorporates a number of recommendations that will assist with achieving this objective and most are already being put into practice. These include:

- Patient information leaflets (in 'Frequently Asked Questions' format) describing the GGBPS and what to expect should be produced and widely distributed in Physiotherapy clinics and possibly GP surgeries / Health Centres.
- Ensure "The Back Book"²¹ is given to all eligible patients. The service has been asked to provide costs for this.
- Development of a series of patient information sheets showing the most commonly recommended exercises and stretches.
- Develop written preventative information to be given to patients at discharge.

However, this is a long term objective and the service will need to continue working directly with patients to evolve suitable methods and strategies.

Isobel Baxter

Review of teenage termination of pregnancy

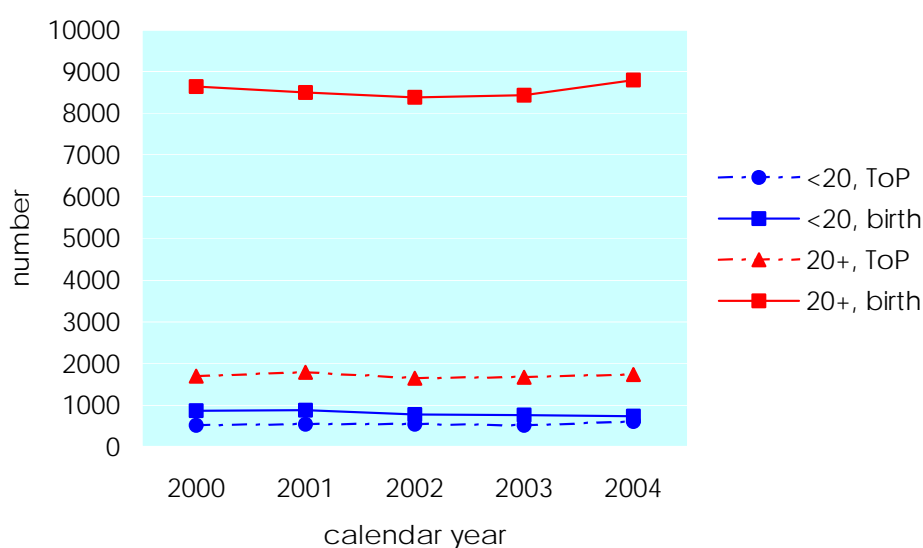
Summary

- Younger teenage pregnancy is often associated with negative social and psychological consequences²²
- Our assessment contributes to the Board's Local Health Plan proposals on reducing teenage pregnancy
- The ACEO carried out a case-note review to explore patterns of teenage pregnancy and terminations of pregnancy in Glasgow
- Teenagers have a much higher rate of unwanted pregnancy than older women
- Teenage terminations of pregnancy largely occur in the most socio-economically deprived areas of Glasgow

Overview

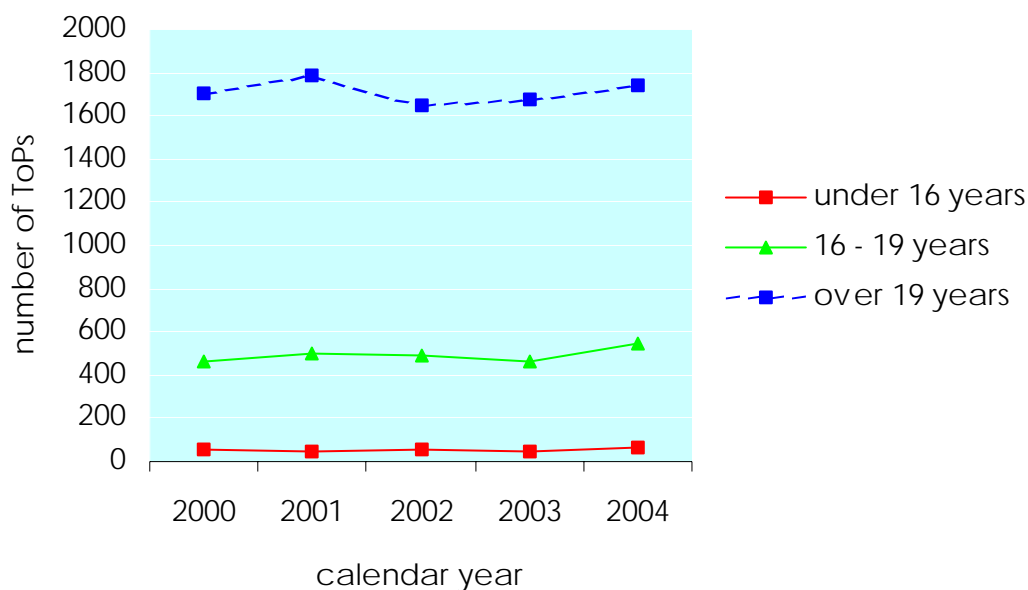
The great majority of births in Glasgow occur in women who are 20 or older - Figure 8. There is a striking difference in the ratio of terminations of pregnancy to births. In women aged 20 or older, there are about 5 times more births than terminations. But in teenagers, there is much less difference, with only about 1.5 times as many births as terminations of pregnancy. In short, it appears that a much greater number of teenage conceptions are unwanted, compared with those in older women.

Figure 8. Terminations of pregnancy (ToP) and live births by age and calendar year, NHS Greater Glasgow 2000-4. Data: Information and Statistics Division.



More detailed analysis of terminations of pregnancy indicates that the number of younger teenage terminations has remained at about 50 for several years - Figure 9.

Figure 9. Terminations of pregnancy in NHS Greater Glasgow, 2000-4, by age. Data source: Information and Statistics Division.



Casenote review

The ACEO carried out a retrospective casenote review of patients who had terminations of pregnancy in Glasgow in 2003. The TOP Implementation Group and Teenage Pregnancy Co-ordinator requested the work. Data were collected using forms based on the Scottish Programme for Clinical Effectiveness in Reproductive Health's IMPACT study.

Selected results and discussion

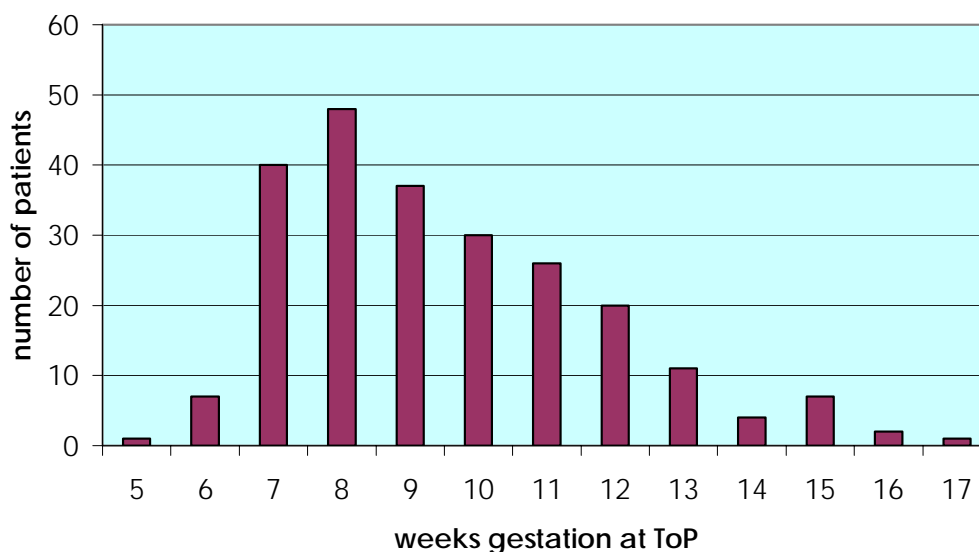
Just under half of the casenotes (46%) were successfully obtained. 16 patients (7%) were under 16 years old.

Women from the most deprived areas of Glasgow accounted for over two thirds (69%) of teenage terminations of pregnancy. This raises a number of important questions for the NHS

- are contraceptive services appropriate and available for women in areas of greater deprivation?
- what capacity is there to reduce terminations of pregnancy through health promotion (particularly education and confidence-building)?
- are teenagers from more affluent areas using non-NHS facilities, masking the problem in routine statistics?

Earlier termination of pregnancy is physically and psychologically less traumatic for patients. Figure 10 shows that the most common gestation at termination was 8 weeks, with 95% of patients having a termination within 14 weeks gestation.

Figure 10. Estimated gestation at termination of pregnancy, women <20 years old. N=234



Hospital issue of contraception is often poorly recorded within the casenotes and of the 234 histories we reviewed for this exercise, 182 (78%) had a definitive prescription of contraceptive supplies, whilst 22% remained unrecorded. From comments within the files, we were able to ascertain that a total of 22 patients (9%) were intending to approach either their GP or family planning clinics after discharge to initiate contraceptive care.

The Implementation Group is already aware of the difficulties in prescribing Implanon, particularly within North Glasgow and there are 12 recorded episodes (5%) where patients wished to pursue this method of contraception but needed to make alternative arrangements.

A total of 11 patients undergoing TOP within this study had already given birth and had other children at home which was partly why they felt they would be unable to cope with another baby. Of these, 4 had given birth aged 16, 5 aged 17, and 2 aged 18. It also emerged that 3 others had subsequently given birth - 1 aged 15, 1 aged 16, and 1 aged 19.

It became clear that perhaps there is a need for better education illustrated by these quotations:

"Patient had child aged 16 and underwent STOP several months later, aged 17 in August 2003. By April 2005, she had had a further 2 terminations"

"Had child at 17 years which is now aged 8 months. Had STOP 22nd September 2003 and then unprotected sex 25th September 2003. She also took Levonelle the following day."

Several recurring themes around social circumstances also developed as we analysed the comments. They fell into 5 main categories:

Rehabilitation, chronic diseases, *ad hoc* requests

- Addictions - relating to both patient and family members
- Partner intimidation and violence
- Existing psychological problems
- Learning difficulties
- Instances where care workers and/or social workers were already involved

Recommendations

Adherence to Fraser Guidelines²³ is difficult to trace, but one of the under 16s did admit to consensual sex in an ongoing relationship. Although only noted occasionally, partner age ranges from 13 - 31.

- Suggestion: That a check box for adherence to guidelines be added to the ICP

There are obviously many issues which need to be addressed with a more specific slant on termination amongst the under 20s. In particular, further information on lifestyle, social circumstance and educational needs would be extremely helpful in planning future direction for the TOP service.

- Suggestion: That a small study of prospective audit be carried out over a given period using a specially-designed proforma to provide a lot of the "soft" data which is often covered by clinicians and patients but not always recorded on file. Ideally, this could be completed by nursing staff as they interact with the patient and may even be a useful addition to the ICP data.

Alison Freeman

Dementia – guidelines for managing challenging behaviour

Summary

- People with dementia may develop difficult to manage problems with aggression and inappropriate behaviour
- The ACEO assisted the Area Working Group on Dementia in defining what support professional carers for dementia patients need
- We have produced guidelines, behavioural monitoring charts, care plans, diaries, and evaluation forms for professional carers.
- We will develop an audit programme to evaluate the effectiveness of these materials and thus to inform future supportive materials for dementia carers.

The need for support for professional carers

Dementia – global mental impairment that affects all higher functions of the brain – is becoming increasingly common as the population ages. Professional NHS carers indicated that SIGN guidelines on dementia,²⁴ despite their title, provided limited guidance on the day-to-day management of the difficult behavioural problems associated with the condition. Such “challenging behaviour” includes:

- physical or verbal aggression
- inappropriate social behaviour (including disinhibited and sexually explicit behaviour), and
- non co-operation and behaviour that harms patients themselves and others.

Professional carers described the stress associated with caring for people with challenging behaviour and the lack of guidance and skills they had in dealing with threatening incidents. This was becoming more relevant due to the increase in size of the elderly population being cared for in institutional settings that are not dedicated to providing specialist care. Family and friends of people with dementia also described their anxieties about the quality of care available. Medical and nursing specialists described their anxieties about inappropriate use of drugs and physical restraint to control people displaying challenging behaviour.

Our remit was to improve the care of people with challenging behaviour, improve the morale of professional carers, and reassure family and friends about the standard of care available. We addressed these issues by

- collecting information on what professional carers, in different settings, view as challenging behaviour
- reviewing the evidence on best practice initiatives and management of challenging behaviour
- producing guidelines and supporting documentation for use in the NHS and Care Homes

Mental health

The supporting documentation comprised behavioural monitoring charts, care plans, and evaluation forms. The content of personal profile forms was agreed by the Area Working Group on Dementia. These personal profile forms outlined the characteristics of the patient – their likes and dislikes, important aspects of their past and present life, and important people and places.

The Group also recommended more in-depth personal diaries for all people diagnosed with dementia, which can be completed by them or their carers and accompany them during any form of care or treatment. A “carer” booklet for professional carers has also been produced by Alzheimer Scotland. We plan to pilot this work in 2005-6.

The Group has been liaising with the Health Care Support to Care Homes Team (an NHSGG planning group) and representatives from Alzheimer Scotland and their Carer Panel are full and active members of the Area Working Group. NHS Greater Glasgow funded Alzheimer Scotland (under the auspices of the Area Working Group) to develop and evaluate a training pack, based on a working guide produced by the Dementia Services Development Centre.²⁵ This development and evaluation was funded by NHS Greater Glasgow in 2002.

Future work

A comprehensive pack of guidelines and supporting materials for dementia carers will be ready for piloting in Spring 2006. We will seek funding from the Health Board for packs (containing summary algorithms and in-depth guidelines, tear-off documentation pads, and patients' profiles). We will also seek funding from the Board for personal diaries, professional carer booklets, and expansion of the professional training programme throughout Glasgow.

We will implement a programme of audit to encompass the use of these guidelines, documentation, and personal diaries. This will evaluate their impact, together with the training programme, on the management of challenging behaviour in institutionalised care settings.

Sue Williams

Overview of the Area Perinatal Effectiveness Committee

The ACEO has been integral to the Area Perinatal Effectiveness Committee (APEC) from its inception in 1992. The APEC was formed from consultant obstetricians representing all Glasgow obstetric sites, a consultant perinatal pathologist, and a consultant neonatologist.

The area-wide approach to evaluating the effectiveness of perinatal services has a number of advantages, all of which reflect the special strengths of the Area Clinical Effectiveness Office approach:

- **Consistency of standards.** Recommendations and standards to be set which ease the changeover for rotational staff.
- **Inequalities.** The service is considered as a whole thus addressing any inequities or inequalities in care found across the city.
- **Economy of scale.** Studies to be carried out on relatively small sub-groups. Often these groups are specific high-risk groups such as diabetic pregnant women and babies born at 27/28 weeks gestation. Therefore citywide work enables relatively short-term projects with meaningful results over a much shorter period than would be necessary if looking at individual trusts.
- **Collaboration with clinicians.** Topics are chosen by consultant clinicians. Sharing of information across trusts enables clinical staff to see where improvements in care can be made. This dialogue is imperative to the service.

These features have allowed a diverse range of work to be carried out, such as

- Scottish projects – caesarean section
- Projects involving patient groups – antenatal serum screening
- Projects which have led into community care – infant feeding

Topic Advisory Groups

Most projects have a Topic Advisory Group (TAG), which consists of a Clinical Effectiveness Facilitator from the ACEO who has experience in working in this area, a lead clinician, and at least one representative from each of the three maternity trusts. These personnel may be medical, midwifery or from professions allied to medicine. In addition, depending on the project, a representative from a patient group may be invited.

Each TAG meets at least 4 times during one audit cycle where methodology and project design are decided. Preliminary results are discussed and a report written. Each member of this group has influence over every aspect of this work. This is necessary to facilitate resulting recommendations becoming practice.

Improving clinical practice

The results of projects are used in a variety of ways to improve the quality of clinical care:

- APEC and TAG members reporting back to their hospital.
- Reports are submitted for presentation at Scottish conferences.
- Annual citywide meetings where results are presented.
- Mailing all reports to consultants/middle grade obstetricians in Glasgow, and where appropriate, Neonatologists, Paediatricians, Midwifery managers and obstetric/labour ward managers in Glasgow.
- Results have also been published in peer-reviewed journals.
- Summary reports are available to the public on the APEC website (www.nhsgg.org.uk/pec), which has allowed the work carried out by the committee to be accessed by other health care workers internationally.

Management of caesarean section

Summary

- Caesarean sections are increasingly common and now account for 1 in 5 live births.
- While there are good clinical reasons for performing a caesarean section, the procedure may have greater risks and is more expensive than normal delivery. It is therefore important that unnecessary caesarean sections are not being performed.
- The ACEO, in collaboration with the area perinatal effectiveness committee, therefore audited the management of caesarean sections using UK national guidelines.²⁶

Increasing rates of caesarean sections

There has been public health concern for over 30 years about the increasing rate of caesarean sections performed. In Scotland the rates have risen from 5% in 1970 to almost 20% of all births in 1999.²⁷ This has cost implications for the NHS as well as increasing maternal morbidity.

Caesarean section rates increase with maternal age and the most common reasons reported for this procedure²⁸ are:

- failure to progress in labour
- fetal compromise
- breech presentation
- maternal request in primigravid women
- previous caesarean section in multiparous women

Maternal request alone is not an indication for caesarean section. Most women who were reported to have requested a caesarean section had a previously complicated birth or had an increased obstetric risk during the current pregnancy.²⁹ If there are no specific reasons for this procedure, then the overall benefits and risks of both caesarean section and vaginal birth should be discussed with the mother.²⁶

The audit

This report provides information on an audit recently carried out into the management of caesarean section across all Glasgow hospitals. We used the standards described in the National Institute for Clinical Excellence (NICE) guideline (No 13).³⁰

We had the following aims:

- to describe the number of caesarean sections performed in Glasgow
- to describe the elective/emergency split
- to establish the indications for carrying out these procedures
- to improve the quality of care given for mothers delivering by caesarean section

Methods

Data were gathered over a 2-week period by specialist registrars on all women in Glasgow who delivered by caesarean section. The ACEO independently analysed and reported the results.

Results

118 women were included in the study. About half were elective and half emergency caesarean sections (47% and 53% respectively).

The most common reason for elective caesarean section was previous elective caesarean (48%). The two most reasons for emergency caesarean section were abnormal CTG (37%) and failure to progress (35%).

Table 3 summarises some of the main NICE guidance, the benefits to patients, and the results of the audit.

Table 3. Management of caesarean section. NICE guidelines, their health benefits, and audit results.

NICE guidance	Benefit	audit
4-hour partograph	reduces need for caesarean	37%
Consultant decision to operate	reduces need for caesarean	89%
Regional anaesthetic	reduces illness in mother & baby	91%
Prophylactic antibiotics	reduces risk of infection after surgery	96%

These results have recently been circulated to the APEC for review and a full report with recommendations for improvement in the service will be circulated to all Consultant/Middle Grade Obstetricians, Midwifery managers and Obstetric Ward managers in due course. A summarised copy will also be available to the public on the PEC website (www.nhsgg.org.uk/pec).

It is envisaged that recommendations will be agreed to improve the service provided.

A re-audit of this study will be carried out in order to close the audit loop in approximately 12 months.

Jackie Welsh

Epilepsy in pregnancy

Summary

- Poorly controlled epilepsy in pregnant women can lead to seizures that endanger the health of the unborn child
- Anti-epileptic drugs may need to be changed during pregnancy and some can cause neural tube defects (eg spina bifida)
- The ACEO is facilitating an audit of the quality of health care for pregnant women with epilepsy, using national guidelines
- This work will contribute to better quality, more consistent care for women with epilepsy across the NHS Greater Glasgow area

Epilepsy and pregnancy

Seizure control is essential during pregnancy as women with epilepsy are at a higher risk of fetal loss - which is probably more likely to be because of maternal seizures than from anti-epileptic drugs.^{31:32} Pregnancy also affects susceptibility to seizures while anti-epileptic medication can affect reproductive health.³³

An audit against national standards

The ACEO is currently undertaking an audit of epilepsy care in pregnancy with the Perinatal Effectiveness Committee. Standards are being measured against guidelines produced by Scottish Obstetric Guidelines and Audit Project (SOGAP) and Scottish Intercollegiate Guidelines Network (SIGN). The Topic Advisory Group includes a Consultant Neurophysiologist and Specialist Epilepsy Nurses.

The audit aims to ensure an effective service for all women with epilepsy who are cared for by the maternity services in Glasgow. The standards we are monitoring practice against are:

- Anticonvulsant dosage should only be altered on clinical grounds. We will describe prescribing patterns and changes in dosing.
- Neural tube defects (such as spina bifida) are more common in women on anti-epileptic drugs but folic acid is effective in reducing the risk. We will describe patterns of folic acid prescribing at each Glasgow maternity hospital.
- Women with epilepsy should be offered the routine 16 weeks gestation antenatal scan plus a detailed anomaly scan at 18-22 weeks. We will identify to what extent these are offered and performed.
- Mothers should be treated with vitamin K from 36 weeks gestation, and all neonates should receive vitamin K to prevent haemorrhagic disease. We will monitor adherence to this guidance.

- Steroids are more quickly broken-down by people taking anti-epileptic drugs. Women who need antenatal steroids (because they are at risk of pre-term delivery) should therefore receive a higher dose so that they are effective in preventing respiratory distress of the newborn. Data collection will enable us to establish if the woman was given antenatal steroids, and if so, what dose was administered.
- Shared antenatal care is recommended for women who suffer from epilepsy. This care should be led by a consultant with a particular interest in this condition. We will be looking to see if any other specialists were involved in the mothers' care.
- We will determine the type of delivery and length of gestation. If the woman had any seizures during/after labour and if the usual drug regimen was continued. Labour is a time of increased risk for both the mother and baby. Seizures are likely to occur during labour, which can endanger the fetus due to lack of oxygen. It is suggested that the woman's usual anticonvulsant regime is maintained during labour. There is no reason why the woman should not have a normal vaginal delivery and thus elective caesarean sections should not be higher than normal.
- Epilepsy and anti-epileptic drugs should not be a barrier to breastfeeding. All women should be encouraged to breastfeed and be offered support to do so. Women should be given advice on minimising the danger to the infant should a seizure occur. Advice should also be given before discharge on appropriate contraception. We hope to determine the method of feeding on discharge and to determine what, if any, advice was given to the woman regarding contraception and infant care.

Results

The results of this audit will indicate the strengths and weaknesses of current care for pregnant women with epilepsy throughout the NHS Greater Glasgow area. The report will be disseminated to all Consultant/Middle Grade Obstetricians, Consultant Neonatologists and Paediatricians, Specialist Epilepsy Nurses, Midwifery Managers and Obstetric Ward Managers across Glasgow by October 2005.

Practical recommendations will be made to remedy any shortcomings if they are identified and a re-audit will take place within a year in order to ensure that improvements have been successfully achieved.

Jackie Welsh

Antenatal corticosteroid prescribing for premature births: a complete audit cycle

Summary

- Premature babies are at risk of respiratory distress syndrome (hyaline membrane disease) because their lungs are immature.
- Antenatal maternal corticosteroids reduce the risk of respiratory distress syndrome by 40%-60%, with the greatest benefit when they are given between 24 hours and 7 days before birth.³⁴
- This report completes an audit cycle describing the use of antenatal corticosteroids, using the RCOG guideline,³⁵ in the three Glasgow maternity units. The initial audit in 2002 resulted in a number of recommendations that were disseminated to all middle grade and consultant obstetricians in Glasgow. A re-audit was carried out in 2004.
- The quality of decision-making and prescribing for antenatal steroids has improved as a result of this audit cycle, but further improvements and audit may be useful.

Purpose of this audit

The purpose of this audit was to ensure effective steroid prescribing for the prevention of respiratory distress syndrome in premature births. Specific standards measured were:

- The greatest benefit from steroids is obtained when they are given between 24 hours and 7 days before birth.
- Every effort should be made to initiate antenatal corticosteroids therapy in women between 24 and 34 weeks of gestation with any of the following
 - Threatened pre-term labour
 - Antepartum haemorrhage
 - Pre-term rupture of membranes
 - Any condition requiring elective pre-term delivery.
 - Consider antenatal steroid use in any of these conditions on women of 35 to 36 weeks gestation.
- If repeat courses of antenatal corticosteroids are contemplated then senior opinion should be sought as, at present, there is lack of evidence to show significant benefit

Methods

Data was collected for a twelve-week period in both studies. Clinicians completed these forms at the time of administration of steroids. The ACEO collated and analysed the results independently for all Glasgow maternity hospitals.

Results

111 women were included in the first audit and 188 were included in the re-audit. Results are summarised in Table 3, below.

Table 1. Antenatal steroid prescribing to prevent respiratory distress syndrome in NHS Greater Glasgow hospitals. Results of first and second audit cycles using RCOG guideline 7.³⁵

	1st Audit (2002)	Re-audit (2004)
Steroid courses/deliveries between 24-36 weeks gestation	0.63 courses per delivery	1.18 courses per delivery
Repeat course of steroids	5%	1%
No of women who delivered >24hrs and <7 days from receiving steroids	25%	38%
Women who received full course of steroids	85%	78%
Gestation at which most women received a potentially effective course of steroids	35 weeks	35 weeks
Most frequent indication for steroid administration	Threatened preterm labour	Threatened preterm labour

In general, the results of the re-audit were encouraging. The number of repeat prescriptions has reduced and overall the number of potentially effective courses rose from 24% in the initial audit to 35% in the re-audit.

Continuing education on the appropriate prescription of antenatal corticosteroids is necessary to maintain and further improve the findings of this study. A further re-audit may be appropriate to monitor these changes.

The results of the initial audit were presented at the 6th Scottish Programme for Clinical Effectiveness in Reproductive Health forum, and were published in the Scottish Medical Journal. A full copy of the report was circulated to all consultant/middle grade obstetricians in Glasgow.

Jackie Welsh

Current knowledge of perinatal postmortem examination

Summary

- Perinatal postmortem examination improves the quality of diagnosis and genetic counselling.
- Glasgow perinatal postmortem rates fell to 40% in 2001 but the national target is 75%.
- We assessed why NHS staff might not ask parents for permission to carry out a postmortem and found that lack of knowledge was an important issue.
- We responded by producing an educational booklet for maternity staff, and educational seminars.
- In 2006 we will re-audit the effectiveness of these interventions in improving perinatal postmortem rates.

Perinatal postmortem examination

Perinatal postmortem examination (examination after stillbirth or death in the first week of life) has a number of potential benefits:

- confirming the clinical diagnosis
- providing a cause of death
- identifying structural abnormalities (some may be minor but important for genetic counselling)
- providing an estimate of time of death (intra-uterine deaths)
- identifying presence of chronic intra-uterine disease
- giving information on complications of treatment

It is a form of medical audit³⁶ and nearly half of perinatal postmortem examinations significantly alter the clinical diagnosis.³⁷

In Glasgow perinatal postmortem examination rates fell from 66 % in 1996 to 40% in 2001. This falls below the minimum target of 75% set by a joint working party of the Royal College of Pathologists and Royal College of Obstetricians and Gynaecologists.³⁸

A contributing factor to the decline in perinatal postmortem examination rates may be a lack of staff awareness and confidence to approach bereaved parents to request this procedure.

Purpose of this audit

Our aim was to increase the perinatal postmortem examination rate in Glasgow by ensuring professionals who care for bereaved parents have as full an understanding of the postmortem examination procedure as possible.

We therefore surveyed clinical staff across all Glasgow maternity sites to evaluate their current knowledge and training regarding postmortem examination. A Topic Advisory Group (TAG) was led by a Consultant Paediatric & Perinatal Pathologist from Yorkhill Hospital.

Methods

An anonymised questionnaire survey was performed was sent out to all midwives and obstetricians in Glasgow's three maternity units. The ACEO collated and analysed the results independently.

Results

We received an excellent response rate of 62% (427/693). 90% were completed by midwives and 10% by obstetricians.

Knowledge of perinatal postmortems

In total only 13% had received formal training in the role of postmortem examinations. Only 6% had witnessed an examination carried out on a child, yet 71% said they have had to discuss postmortem examination with parents.

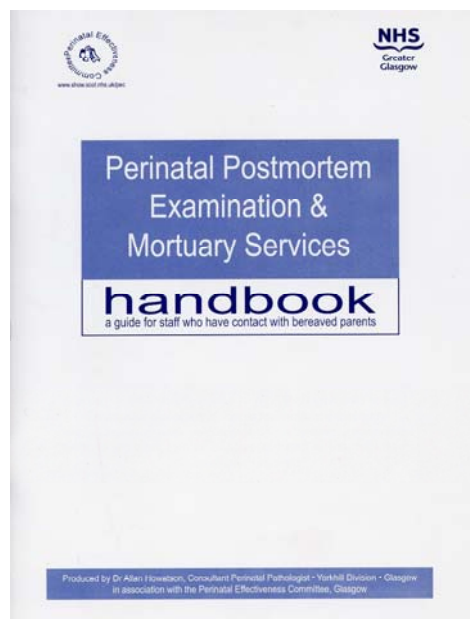
Knowledge about postmortem procedures was not consistent and none of the procedures routinely undertaken were reported by all of the staff. 17% of staff thought that retention of organs is routinely carried out and another 34% thought that organs would routinely be retained for research purposes. Organ retention is not routinely carried out. Only 81% realised written consent should be obtained for all postmortems, this included 8% who said it was all cases except fiscal.

51% stated that they would feel uncomfortable or very uncomfortable about presenting the body to parents following a postmortem examination. Some of these were worried about visible scars and leakage. It was encouraging, however, to see that 87% of the responders felt that postmortem examination was a beneficial exercise and that 69% realised that the results of a postmortem examination would benefit parents.

The results shown here are a snap-shot of the results from this study, but indicate the lack of knowledge of what procedures are actually carried out during a postmortem examination. They also highlight the personal views staff expressed regarding not only the procedure itself, but the personal contact with parents.

Response to the results

Following the results of this study an educational booklet 'Perinatal Postmortem Examination & Mortuary Services Handbook' was produced. This booklet has been distributed to all Consultant/Middle Grade Obstetricians, Neonatologists, Paediatricians and Midwives working in Glasgow. Any comments received from staff members following the distribution of this booklet have been very positive. Copies have also been given to the obstetric departments in Dumfries, Paisley, Stirling and Wishaw. The consultant perinatal pathologist will deliver Educational seminars throughout Glasgow between September and December 2005. These are currently in the planning stages at present.



A re-audit of this study is planned for March 2006. We anticipate that staff knowledge of the procedures carried out during the examination will increase and that any uncomfortable feelings staff had had in the past regarding handling a baby following a postmortem/approaching bereaved parents with this sensitive issue will be allayed, thus showing a future increase in the uptake of this examination.

Jackie Welsh

Management of third & fourth degree tears

Summary

- Severe perineal tears can occur during childbirth and cause distressing long term morbidity if not correctly managed.
- We examined the quality of care for women with 3rd and 4th degree tears against national RCOG guidelines
- Clinical practice varied at different hospital sites, particularly in choice of anaesthetic, consultant supervision of surgery, and antibiotic use
- We responded by producing a proforma for the management of perineal tears to be used at all Glasgow maternity hospitals
- We will re-audit this topic in late 2005 to evaluate the effectiveness of the new guidance.

Perineal tears

Damage to the anal sphincter mechanism is common following vaginal delivery and may lead to incontinence later in life. Injury is most likely to occur during first childbirth, and nerve damage may increase with successive deliveries³⁹, although symptoms for both of these injuries may not appear until menopause.⁴⁰ Third degree tears are defined as those involving the external anal sphincter muscle (EAS) and fourth degree tears involve the rectal mucosa.⁴¹ A tear involving the anal sphincter during delivery has a great bearing on a woman's future continence,⁴² with 20-50% suffering from faecal incontinence following rupture during delivery.⁴³

The study

We audited the management of women who sustained a third/fourth degree tear following delivery in each of the three maternity hospitals in Glasgow against the recommendations published in the RCOG guideline 29.⁴⁴

By managing the treatment in accordance with the guidelines, complications of severe perineal tears should be minimised, inequalities in medical practice reduced, and future NHS Greater Glasgow expenditure also reduced.

Methods

Data were collected over 6 months and the ACEO then independently collated and analysed them.

1. specific instruction about the repair of third and fourth degree tears - *Assessment of competence in repairing third/fourth degree tears is difficult to assess. The most we could audit was the most senior person present at the time of the repair.*

2. The use of broad-spectrum antibiotics intra-operatively and in the postoperative period is associated with less post-operative infection and wound dehiscence. The use of postoperative laxatives is associated with less postoperative wound dehiscence
3. All women who have had a third and fourth tear repaired should be offered a planned follow-up at 6-12 months by a gynaecologist with an interest in anorectal dysfunction or a colorectal surgeon. If symptomatic, they should be offered endoanal ultrasonography and anorectal manometry and referred to a colorectal surgeon for consideration of secondary sphincter repair

Results

66 women were included in the audit. The overall incidence of third/fourth degree tears during this study period was 1.61% of all vaginal deliveries.

Table 4. Summary of results on the management of third & fourth degree perineal tears against RCOG guidelines. Percentages of all births at each hospital site.

	Hosp 1	Hosp 2	Hosp 3	Total
How many women had overlap repair	63%	68%	44%	62%
Repair carried out in theatre	95%	95%	78%	92%
*Type of anaesthesia administered				
Regional	95%	89%	89%	92%
General	0%	5%	0%	2%
Consultant/SpR present at time of repair	100%	89%	67%	93%
Intra-operative antibiotics administered	45%	79%	78%	59%
Post-operative antibiotics administered	97%	100%	89%	97%
**Follow-up appointment arranged with				
Obstetric Clinic	100%	95%	33%	89%
Colorectal surgeon	0%	0%	44%	6%

* , the remaining 11% of repairs were carried out under local anaesthetic

** , Only 5% of the women were listed as having a six-month follow-up appointment arranged with a gynaecologist or colorectal surgeon

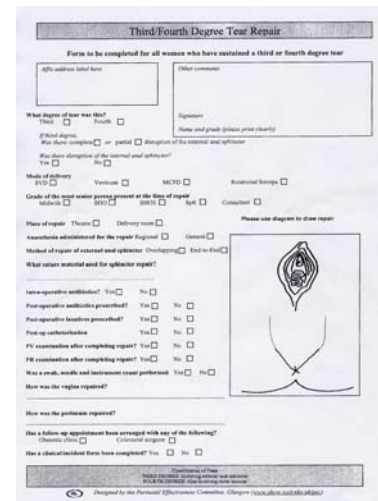
The follow-up of women sustaining a third/fourth degree tear is a contentious issue. As the numbers are small, consideration should be given to having one clinic in Glasgow run jointly by a Consultant in Obstetrics & Gynaecology with an interest in the pelvic floor and a Consultant Colorectal Surgeon.

Intervention

Competence is difficult to assess by audit. However, it was agreed that each unit should decide how they assess who is competent to repair these tears or whether it is recommended that a consultant is present for all these repairs. A course is now run in Glasgow on the repair of third/fourth degree tears and all juniors should be encouraged to attend this.

Area perinatal effectiveness committee

Following the results of this study a proforma was designed to be completed for every woman who sustains a third/fourth degree tear. This should ensure improvement in compliance with the RCOG guideline, and also that this procedure is consistent across Glasgow. The results were presented at the 7th Scottish Programme for Clinical Effectiveness in Reproductive Health (SPCERH) forum and also at the 1st Scottish Perinatal Audit and Research meeting. A full copy of the report was circulated to all consultant/middle grade obstetricians in Glasgow. A summarised copy is also available to the public on the PEC website (www.nhsgg.org.uk/pec).



The form is titled "Third/Fourth Degree Tear Repair" and is intended for use by all women who have sustained a third or fourth degree tear. It contains several sections for data entry:

- Header:** "Form to be completed for all women who have sustained a third or fourth degree tear".
- Left Column:** Includes fields for "What degree of tear was this?" (Third Fourth) and "If third degree: Was there complete or partial disruption of the external anal sphincter?" (Yes No).
- Right Column:** Includes a box for "Other comments" and a section for "Signatures" (Name and grade before prior repair).
- Diagnosis and Location:** "Grade of the tear external perineal present at the time of repair" with options for External Internal and "Site of tear" with options for Left Right Colostomy .
- Management:** "Place of repair" (Home Delivery room) and "Anesthetics administered for the repair" (General Spinal). It also asks for the "Method of repair of external anal sphincter" (Overlapping End-to-end) and "What suture material used for sphincter repair?".
- Post-operative Care:** A series of Yes/No questions regarding: "Intra-operative antibiotics?", "Post-operative antibiotics prescribed?", "Post-operative analgesia prescribed?", "Feed up carbohydrate", "PR examination after completing repair?", and "Was a rectal, anal, and haemorrhoid cream prescribed?".
- Follow-up:** "How was the postoperative repaired?" and "Has a follow up appointment been arranged with one of the following?" (Obstetric clinic Colorectal surgeon).
- Footer:** "Has a clinical audit been completed?" (Yes No) and "Designed by the Perinatal Effectiveness Committee, Glasgow (04/04/05) (04/04/05)".

A re-audit of this study is planned for November 2005. We hope to establish if any of the surgeons present at the time of the procedure have attended a course on the third/fourth degree tears and also if the proforma designed to ensure all standards are being implemented is indeed being completed in each hospital. This would hopefully demonstrate a 100% compliance with the guidelines.

Jackie Welsh

Management of neonates born to diabetic mothers

Summary

- Diabetes is the most common pre-existing medical disorder complicating pregnancy in Scotland. Gestational diabetes affects 2-4% of pregnancies.
- Complications can be reduced by ensuring relatively simple procedures are carried out in neonates of diabetic mothers.
- We audited the management of babies born to diabetic mothers against the evidence-based SIGN and CESDI guidelines.
- We found differences in approaches to this condition between each maternity hospital in Glasgow.
- We therefore produced a protocol to be used in all Glasgow hospitals.
- We will re-audit this topic in early 2006 to evaluate the effectiveness of the new protocol.

Diabetes in pregnancy

Neonates born to mothers with diabetes are at increased risk of congenital malformation, hypoglycaemia, respiratory distress syndrome, and jaundice. Obstetric complications are also more common.

Insulin dependant diabetes mellitus occurs in 3.5/1000 pregnancies and is the most common pre-existing medical disorder complicating pregnancy in Scotland. There are approximately 235 cases per year. Gestational diabetes affects around 2-4% of pregnancies and can lead to a variety of complications.⁴⁵

Successful breastfeeding is more likely if mothers and babies remain together⁴⁶ and the baby should remain with the mother and only be admitted to the neonatal intensive care unit if there is specific medical indication.⁴⁷ Babies with diabetic mothers should only be delivered in hospitals with neonatal intensive care facilities, and a paediatrician skilled in resuscitation should be present at delivery.⁴⁵

The audit

We audited the management of neonates born to diabetic mothers in the three maternity hospitals in Glasgow and measure the findings against the recommendations published in the Confidential Enquiry into Stillbirths and Deaths In Infancy (CESDI) standards of care⁴⁷ and also the Scottish Intercollegiate Guideline Network (SIGN) national clinical guideline 55.⁴⁵ A Topic Advisory Group consisting of a Consultant Obstetrician, Neonatologist, Paediatrician, and Specialist Nurse was formed to provide expert advice, led by a consultant neonatologist from North Glasgow.

Specific standards audited were:

1. The baby should remain with the mother and be admitted to the neonatal unit only if there is a specific medical indication
2. Babies should be given the opportunity to feed by the mother's chosen method soon after birth, to reduce the risk of neonatal hypoglycaemia
3. Breast-feeding is recommended, but all mothers should be supported in the feeding method of their choice
4. Babies of mothers with diabetes should have a test of blood glucose concentration by 4-6 hours of age, before a feed
5. The diagnosis of hypoglycaemia should be made using a ward-based glucose electrode or laboratory method, and not by reagent strip testing

Methods

A prospective audit was carried out over a year. Data forms were returned to the ACEO where they were independently collated and analysed.

Results

64 women were recruited to the study. Fetal compromise may result from a variety of complications and macrosomic babies (big babies) are particularly at a higher risk. The average birthweight of the babies born was 3487 grams, which is in the middle of the normal range.

Table 5. Management of babies born to diabetic mothers, by hospital, against SIGN and CESDI guidelines.

	Hosp 1	Hosp 2	Hosp 3	Total
Baby admitted to the neonatal unit	56%	70%	11%	48%
Of these how many were				
Routine	0%	53%	0%	32%
Based on clinical need	100%	47%	100%	68%
Proportion of babies who were breastfed	61%	74%	53%	64%
*Proportion of babies who fed >60 mins	72%	63%	50%	63%
Blood glucose measured by 4-6 hours of birth	100%	93%	95%	95%
Blood glucose measurement confirmed using reagent strip testing	31%	4%	0%	10%

*Numbers calculated on babies who breastfed only

Intervention

Each maternity unit had its own policy on the management of neonates with hypoglycaemia; however these policies had clear differences on the management of these babies.

Area perinatal effectiveness committee

Following the results of this study the TAG designed a protocol to be used in conjunction with the local policies, which would ensure that neonates born to diabetic mothers receive the same care across Glasgow. It is now standard that:

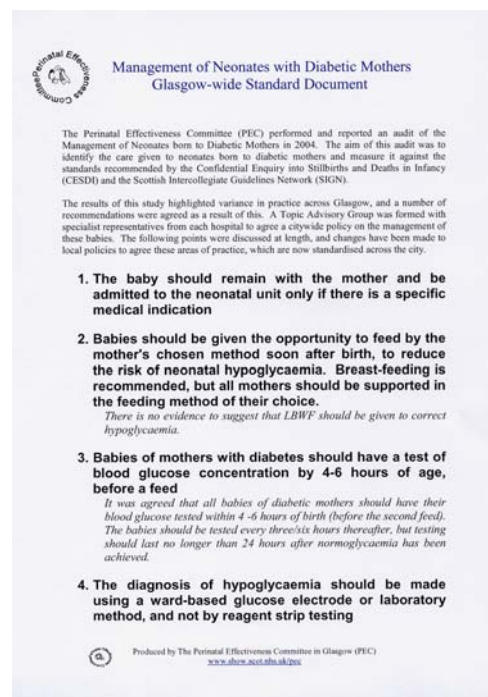
1. The baby should remain with the mother and be admitted to the neonatal unit only if there is a specific medical indication.
2. Babies should be given the opportunity to feed by the mother's chosen method soon after birth, to reduce the risk of neonatal hypoglycaemia. Breast-feeding is recommended, but all mothers should be supported in the feeding method of their choice. There is no evidence to suggest that Low Birth Weight Formula should be given to correct hypoglycaemia.
3. Babies of mothers with diabetes should have a test of blood glucose concentration by 4-6 hours of age, before a feed.

It was agreed that all babies of diabetic mothers should have their blood glucose tested within 4 -6 hours of birth (before the second feed). The babies should be tested every three/six hours thereafter, but testing should last no longer than 24 hours after normoglycaemia has been achieved.

4. The diagnosis of hypoglycaemia should be made using a ward-based glucose electrode or laboratory method, and not by reagent strip testing

The results of the study were presented at the 1st Scottish Perinatal Audit and Research Meeting in December 2004. A full copy of the report was circulated to all consultant/middle grade obstetricians, Neonatologists, Paediatricians, Midwifery Managers and obstetric/labour ward Managers in Glasgow. A summarised copy is also available to the public on the PEC website (www.show.scot.nhs.uk/pec).

A re-audit of this study is planned for February 2006. We envisage seeing an improvement/standardisation in practice across Glasgow as this protocol had been adopted by each of the maternity units.



Jackie Welsh

Management of placenta praevia

Summary

- Placenta praevia (low lying placenta) is a complication of pregnancy, when the placenta is in the lower segment of the uterus and covers part or all of the cervix. 3-6 out of every 1000 pregnant women are affected. The incidence is increasing partly because of the rising caesarean section rate.
- Consequences include bleeding (which may be life-threatening) and inability to deliver the baby vaginally.
- We are auditing the management of placenta praevia in all Glasgow maternity hospitals against evidence-based national guidelines.
- Our report will highlight both good practice and areas in which improvements in the quality of care are needed.
- As a result, the risk of life-threatening haemorrhage and variations in clinical management between maternity hospitals should be reduced throughout NHS Greater Glasgow area.

Background

Placenta praevia (low-lying placenta) can result in life-threatening haemorrhage and risks are much greater if it is encountered unexpectedly during examination or delivery. The condition is more likely to occur in women who have previously had a caesarean section – and these are increasingly being performed (see page 40).

Recent evidence-based RCOG Green Top Guidelines were produced on the best practice in diagnosis and management.⁴⁸

The audit and anticipated benefits for patients

The RCOG guidelines have important consequences for the management of placenta praevia. Substandard care remains a concern highlighted by the Confidential Enquiry into Maternal Deaths in most of the recent triennial reports. Specific auditable standards were suggested, many linked to the management of massive haemorrhage.

We looked specifically at the methods employed to diagnose and monitor placenta praevia and the ways in which haemorrhage is managed. A 1-year casenote review began in September 2004. The designated specialist registrar or midwife tracked the clinical course of patients diagnosed with placenta praevia by ultrasound scan. The ACEO is collating and analysing the results of the audit independently of acute divisions.

We anticipate that the risk of life-threatening haemorrhage and variations in clinical management between maternity hospitals should be reduced throughout NHS Greater Glasgow area as a result of this work. A re-audit will determine to what extent this has been achieved.

Hazel Moss

Management of babies born at 27-28 weeks' gestation

Summary

- Prematurity is a major cause of neonatal deaths.
- We are auditing a range of evidence-based aspects of good obstetric and neonatal care that increase the survival rate of premature infants.
- Our recommendations for improvements in the quality of care of premature infants will be presented as two reports – one relevant to clinical colleagues in all Glasgow maternity hospitals, and another relevant to NHS Greater Glasgow planning and commissioning managers.

Prematurity and its health impacts

A CESDI report recently found that babies born at 27-28 weeks' gestation had an 88% chance of surviving for 28 days.⁴⁹ While this was higher than anticipated, a set of standards was produced to increase the survival rate of 27/28-week infants.

Standards of good quality care for premature neonates

The CESDI recommendations for good practice⁴⁹ that we are using include:

Administration of steroids to the mother antenatally reduces the risk of both respiratory distress syndrome and neonatal mortality by a third.⁵⁰ However the optimum time between administration and delivery is >24 hours and <7 days.⁵⁰ (This is not always possible with unexpected and rapid deliveries).

Surfactant. 27/28 infants have immature lungs, which are deficient in surfactant.⁴⁹ Surfactant use is the single most important intervention after birth in reducing neonatal mortality rates.⁵¹ All intubated infants should have surfactant administered⁵² as soon as practical after birth.⁵³ Intratracheal administration of surfactant reduces both the mortality and the incidence of air leaks in the ventilated preterm newborn by about 40%.⁵² Regular blood gas measurement should be taken when the infant remains ventilated on CPAP or on supplementary oxygen.⁵³

Early thermal care is paramount and a national standard for infants on admission to the NNU of a body temperature above 36°C⁵³. Project 27/28 observed hypothermia on admission to NNU and deficiencies in early thermal care was more frequent in babies who died.⁴⁹

Resuscitation by skilled staff. Most infants born at 27/28 weeks require resuscitation by skilled staff due to their immature respiratory system.⁴⁹

Low blood pressure and low blood flow are associated with peri/intra-ventricular haemorrhage, ischaemic cerebral lesions, poor long-term neurodevelopmental outcome and mortality in the preterm infant.⁵¹

Good practice includes monitoring blood pressures and prompt treatment of hypotension when accompanied by poor perfusion.⁵³

An audit using CESDI standards

Our 1-year prospective audit began in August 2004 and we estimate obtaining 30-40 cases. A designated SpR is collecting citywide data and is working closely with the lead clinician. This member of staff is identifying cases via the Neonatal Intensive Care Units who were born during the one-year period, which commenced in August 2004, and completing the forms following discharge.

Due to the number of cases involved (estimated 40-50 cases) it is essential that this project be carried out on a citywide bases. Cases may also be transferred to other hospitals and in order to obtain the outcome data carrying out this work on a city-wide bases gives a clearer picture of the care provided for this high risk population.

All forms are being returned to the ACEO, where they were collated and analysed independently of the acute divisions.

Improving standards in care for premature neonates

Results will be analysed shortly after completion of data collection. The comparison against CESDI standards will identify any shortfalls in standards.

We will produce a set of appropriate recommendations, which may be on both a hospital and citywide basis. The lead clinician will direct all work in this area and we will approach all consultant neonatologist for comments. The results of this study will be available for commissioning. The results will guide future work in this area and will be re-audited as appropriate.

This project aims both to improve the survival rate of premature neonates and improve the longer term sequelae.

Hazel Moss

Management of small for gestational age fetus

Summary

- Small for gestational age fetuses are at greater risk of stillbirth and a variety of developmental problems that may affect them long into childhood and adult life.
- We are auditing current practice in the diagnosis and management of small for gestational age against national evidence-based guidelines.
- This work spans GPs, community-based midwives, and hospital clinicians to reflect all clinicians involved in antenatal care.
- We will facilitate a unified diagnostic and management approach across Glasgow through an education programme and re-audit practice to evaluate its effectiveness.

The risks for small for gestational age fetuses

Small for gestational age (SGA) fetuses are at greater risk of

- stillbirth^{54:55}
- birth hypoxia⁵⁵
- neonatal complications⁵⁵
- impaired neurodevelopment^{56:57} and
- type 2 (non-insulin dependent) diabetes and hypertension in adult life.⁵⁸⁻⁶⁰

Research also shows an increased risk of poor perinatal outcomes, which are likely to be due to the high incidence of true fetal growth restriction in this group.^{61:62}

Barker's hypothesis describes the long-term health implications for babies who are born small for gestational age^{60:63} or who have low growth rates in their first year of life. These include increased risk factors for coronary heart disease such as high blood pressure⁶³ and plasma concentrations of glucose, insulin,⁶⁴ fibrinogen,⁶⁵ factor VII,⁶⁵ and apolipoprotein B.⁶⁶ Thus the implications for the small for gestational age infant do not stop at birth but carry on into childhood and adult life.

Audit against RCOG standards

We are auditing practice on the diagnosis and management of small for gestational age fetuses across Glasgow, using the Royal College of Obstetricians and Gynaecologists' guidelines.⁶⁷

We are looking specifically at the methods employed to estimate gestational age and diagnose an SGA fetus. The monitoring tools used to assess the condition of the fetus both intrapartum and at the time of delivery were also investigated.

This audit has been split into two stages. The first stage is a postal questionnaire sent to all hospital clinicians, general practitioners and community midwives in Glasgow. It is important to understand the entire NHS contribution to antenatal care across both primary and secondary services.

The second stage comprises a 3-month case note review by a Practice Development Midwife and two junior obstetricians. 139 infants have been identified over the 3-month study period.

All data were collated and analysed independently by the ACEO.

Recommendations

The main implications of this study will be a unified diagnostic classification criterion and management for the diagnosis of the SGA fetus across Glasgow. This will improve consistency of approach for rotating junior medical staff.

Preliminary findings suggest that unnecessary repeat testing, which causes distress to patients and wastes NHS resources, is a problem. We will highlight awareness of the RCOG guideline 31⁶⁷ and facilitate the use of this guideline into routine practice via an education programme based on the findings of this study. The Area Perinatal Effectiveness Committee will carry out re-audit practice against these guidelines to evaluate the effectiveness of this educational programme.

Hazel Moss

Overview of the Effective Gynaecology in Glasgow Group

The Effective Gynaecology in Glasgow group was established in 2002 from Consultant Gynaecologists and Specialist Nurses from each of the NHS Greater Glasgow acute hospitals and the Sandyford Initiative. The ACEO is integral to the Group.

The Effective Gynaecology in Glasgow Group shares many of the strengths (and membership) of the Area Perinatal Effectiveness Committee (see page 38 for more detail), namely

- **consistency of standards** across all NHS Greater Glasgow gynaecology sites
- **inequalities** in quality of care are minimised by an area-wide perspective
- **economy of scale** is gained by gathering data from the entire Health Board area, a particular strength for less common conditions
- **collaboration with clinicians**, and responses to our recommendations, is assured because the topics are led by clinical staff.

The organisation of clinician-led Topic Advisory Groups is also similar to that of the APEC.

Improving clinical practice

The results of work by the EGGG are used to improve clinical care in a number of ways, including

- EGGG/TAG members reporting back to their hospitals.
- Reports are submitted for presentation at Scottish conferences.
- Mailing all reports to consultants/middle grade gynaecologists in Glasgow, and where appropriate, gynaecology ward managers in Glasgow.
- Results have also been published in peer-reviewed medical journals.
- A website is currently under construction, which will allow the work carried out by the group to be accessed by other health care workers locally, nationally, and internationally.

Early pregnancy bleeding and/or loss: a complete audit cycle

Summary

- NHS Greater Glasgow treats around 1200 miscarriage inpatients each year
- In 2002 we audited practice in all Glasgow hospitals against evidence-based national guidelines.⁶⁸
- After reporting to clinicians where improvements were needed in the quality of care for patients, we re-audited the same clinical standards in 2004.
- We found significant improvements in the quality of care for patients with early pregnancy bleeding and/or loss.
- A further cycle of clinical improvement and re-audit is indicated to ensure continuous improvement for this important group of patients.

Auditing the care of early pregnancy bleeding and/or loss

Miscarriage occurs in 10-20% of all pregnancies⁶⁹ and NHS Greater Glasgow treats about 1200 in-patients each year. Most women with early pregnancy bleeding are assessed in hospital and if miscarriage is diagnosed nearly 90% will undergo surgical uterine evacuation.⁷⁰

In 2002, we audited all maternity services in Glasgow against the RCOG's national guidelines for good practice in managing early pregnancy bleeding and/or loss.⁷¹ Our report highlighted areas where improvements were needed and this was circulated to all appropriate clinicians. In 2004, we re-audited standards of care.

Data were prospectively collected by a registrar for 4 weeks in both studies. The ACEO independently collated and analysed the results, and shared them with all clinical teams.

Results

306 women were included in the first audit and 288 in the re-audit. Overall, 147 of the women who presented (51%) did not have a viable pregnancy.

We found improvements in the quality of care had been made. These may be partly because our audit highlighted where improvements were needed, and partly because of the introduction of Early Pregnancy Assessment Service units in both the Princess Royal Maternity and the Queen Mother's Hospitals. The results of the two audits are summarised in Table 6, below.

Table 6. Management of early pregnancy bleeding and/or loss: summary of first and second audit results with difference in outcomes. ↑, increase.

Criterion	benefit	1 st audit	re-audit	difference
Suction curettage performed	reduced risk of infection & haemorrhage; safe & easier to perform	82%	100%	↑ 18%
Offered medical evacuation	faster recovery, less NHS resources	57%	96%	↑ 39%
Offered expectant management	less expensive, less bleeding but counselling needed	93%	96%	↑ 3%
Tissue retained for histological examination	more precise diagnosis of pregnancy; excludes ectopic pregnancy or gestational trophoblastic disease	57%	69%	↑ 12%
Screened for Chlamydia	reduce pelvic inflammatory disease, ectopic pregnancy, & tubal infertility	24%	43%	↑ 19%

All Rhesus negative women eligible for Anti D were given this treatment in 100% of cases, a rise of 43% in one category from the initial study.

A full copy of the report was circulated to all consultant/middle grade gynaecologists, EPAS units and gynaecology nurses involved in management of early pregnancy bleeding in Glasgow. A paper has been produced and submitted for publication in the *Journal of Obstetrics and Gynaecology*.

The results of the initial audit were presented at the Scottish Programme for Clinical Effectiveness in Reproductive Health (SPCERH) and published in the *Scottish Medical Journal*. It is hoped that the results of the complete audit are presented at the next SPCERH forum later in the year.

Jackie Welsh

Management of menorrhagia due to dysfunctional bleeding in premenopausal women undergoing hysterectomy

Summary

- Excessive menstrual loss (menorrhagia) accounts for over 10% of gynaecology outpatient referrals⁷²
- Hysterectomy often follows failed or ineffective medical intervention although there are less invasive alternatives⁷³
- We audited the management of menorrhagia at all acute hospital sites in Glasgow against RCOG guidelines.
- We found a mixture of good practice and sub-optimal treatment.
- Our recommendations will promote less invasive, better quality care, and a more consistent approach throughout the Health Board area
- We will re-audit practice later in 2005 to evaluate the extent of improvements in the quality of care for this condition.

Menorrhagia

Heavy menstrual blood loss (HMB or menorrhagia) is a significant cause of ill health in premenopausal women. It can reduce quality of life and cause anaemia.^{74:75} Excessive menstrual blood loss accounts for more than 10% of outpatient referrals to gynaecology consultants.⁷² Once referred to a gynaecologist, 1 in 5 women will undergo a hysterectomy before the age of 60, and for approximately half of these, heavy menstrual blood loss is the most common complaint.⁷⁶

Hysterectomy often follows failed or ineffective medical intervention. Patient satisfaction with hysterectomy is high but it is a major surgical procedure, which can have physical and emotional sequelae.^{74:77} Endometrial ablation has evolved to become an effective and less invasive surgical alternative to hysterectomy.⁷³

An audit against RCOG guidelines

This report provides information on a study carried out into management of women who underwent a hysterectomy due to dysfunctional uterine bleeding (DUB, one causes of menorrhagia) in Glasgow. We excluded women who were likely to be post-menopausal by using an age cut-off of 55 years. We used the recommendations set out in RCOG national evidence-based guidelines.^{73:76}

Data were collected over one year. A data co-ordinator (specialist nurse) identified locally at each hospital, collected the information required for the study on a proforma designed by the EGGG. These forms were then returned to the ACEO, where they were collated and analysed independently of the acute divisions.

Results

89 women between 29 and 53 years old were included in this study.

The results are summarised in Table 7, below. Compliance with RCOG guidelines was variable with some deficiencies noted. The utilisation of medical management could be increased including the wider use of the Mirena IUS. Endometrial ablation appears to be under utilised. However, the administration of prophylactic antibiotics and provision of thromboprophylaxis was very high.

Table 7. Management of menorrhagia due to dysfunctional bleeding: audit against RCOG guidelines in 4 NHS Greater Glasgow hospitals, 2004.

Area of good practice	benefit	Hosp 1	Hosp 2	Hosp 3	Hosp 4	All
Thromboprophylaxis	reduce perioperative thromboembolism	100%	100%	100%	100%	100%
Prophylactic antibiotics	reduce perioperative infections	95%	97%	100%	71%	93%
Full blood count performed*	improved assessment	71%	56%	94%	50%	66%
Tranexamic or mefenamic acid used as 1 st line	reduced blood loss	29%	54%	75%	79%	56%
Mirena IUS offered/previously used	reduced blood loss; reduced need for hysterectomy	43%	54%	82%	15%	51%
Endometrial ablation offered/previously performed	less invasive than hysterectomy	14%	39%	71%	29%	38%
Combined oral contraceptives used	reduced blood loss	10%	25%	29%	0%	18%

* 25% of casenotes do not record whether or not a full blood count was obtained (and 50% did not record it in hospital 4). It may have been carried out by not recorded.

A full copy of the report was circulated to all consultant/middle grade gynaecologists throughout Glasgow. We put particular emphasis on the importance of ensuring that a blood count should be obtained on all women who present at clinic with DUB (unless documented that this has previously performed by the General Practitioner). The promotion and application of medical management should, where applicable, be increased. In particular, more women should be offered a Mirena IUS as a treatment prior to surgical intervention. The use of endometrial ablation should be promoted as an effective treatment to reduce the incidence of hysterectomy for DUB.

The results of this study were presented at the 7th Scottish Programme for Clinical Effectiveness in Reproductive Health (SPCERH) forum.

Jackie Welsh

Diagnosis and management of ovarian cysts identified at ultrasound in postmenopausal women

Summary

- Ovarian cysts may be cancerous: the risk should be assessed according to national evidence-based guidelines
- We are auditing the quality of assessment and management of ovarian cysts across all NHS Greater Glasgow sites
- The work will identify any requirements for service improvements; after these have been made we will re-audit the service
- Earlier detection and best management of patients will improve their prognosis and may reduce future NHS resource use for more advanced disease

Ovarian cysts

Ovarian cysts are sometimes discovered via screening, during investigations performed for a specific pelvic mass, or as an incidental finding following investigations carried out for other reasons. They are more common in postmenopausal than premenopausal women.³⁰ There is a risk of malignancy when an ovarian mass is identified, although in 50% of cases cysts will resolve spontaneously.

Women identified with an ovarian cyst should be assessed using transvaginal ultrasound using a risk of malignancy index scoring system in order to ascertain whether they run a low, moderate or high risk of having cancer. This will subsequently indicate where and to whom they should be referred for treatment.³⁰

The audit

We are carrying out a 3-month prospective audit of the quality of diagnosis and management of ovarian cysts identified at ultrasound in postmenopausal women in Glasgow against the RCOG guideline (No. 34).³⁰ Our aim is to ensure that women are being offered the highest quality care, which will optimise their prognosis and may be more cost effective for NHS Greater Glasgow in the longer term. The lead clinician for this study is The Clinical Director for North Glasgow Obstetric and Gynaecology services.

We are specifically assessing:

- **Initial assessment.** It is recommended that ovarian cysts are assessed using serum CA125 measurement and transvaginal sonography
- **A risk of malignancy (RMI) index scoring system** should be used to categorise if the woman has a low, moderate or high risk of cancer. This would determine whether a general gynaecologist, a clinician with

an interest in gynaecological oncology or a sub-specialist in gynaecological oncology, should see her.

- **Follow-up.** What the interval between follow-up appointments are for women who are managed conservatively.
- **Type of surgery** undertaken in women who have been referred for surgical management (laparoscopic/laparotomy)

Methods

Data are currently being collected over a three-month period. A data co-ordinator (registrar) identified locally at each hospital will retrospectively collect the information require for audit purposes via casenote review. These forms will be returned to the ACEO, where they will be collated and analysed independently of the acute divisions.

Results

It is envisaged that we will publish the results of this audit by September/October 2005. We would hope to show that all women are being triaged and managed appropriately in Glasgow, however, if there is a lack of compliance with the RCOG guideline, appropriate action will be taken in order to remedy this.

Jackie Welsh

Investigation and treatment of couples with recurrent miscarriage

Summary

- “Recurrent miscarriage” describes the loss of three or more pregnancies and affects 1% of all women⁷⁸
- It is important that all women with recurrent miscarriages in the Health Board area receive consistent, evidence-based investigations and management
- We are auditing practice in all maternity hospitals in NHS Greater Glasgow

Recurrent miscarriage

Miscarriage is a distressing problem and occurs in 10-20% of all pregnancies.⁶⁹ “Recurrent miscarriage” describes the loss of three or more pregnancies and affects 1% of all women.⁷⁸ More than one contributory factor may be responsible, including chromosome abnormalities, cervical weakness and gene mutations.⁷⁹ An important factor for the clinical assessment of recurrent miscarriage is the woman’s past reproductive history.⁸⁰ Increasing maternal age affects ovarian function⁸¹ and is also associated with miscarriage.

This report provides brief information on a study currently being planned to audit the investigation and treatment of couples who experience recurrent miscarriage. The initial data collection for this study is due to commence in August 2005 and will be collected in each of the acute hospitals in Glasgow, the results of which will be measured against the recommendations in the RCOG guideline 17.⁷¹ A Topic Advisory Group has also been formed to provide expert opinion. The lead clinician for this study is a consultant obstetrician & gynaecologist from South Glasgow.

We will specifically be looking to determine if there were

- genetic factors identified (such as parental chromosome anomalies)
- use of pelvic ultrasound to assess uterine anatomy and morphology
- prevalence of cervical weakness
- patterns of endocrine disorders
- prevalence of antiphospholipid syndrome (27% of women with recurrent miscarriages have this autoimmune condition)
- use of immunotherapy,
- other screening carried out

It is envisaged that the results of this audit will be published July/August 2006. We will identify any inequalities in provision of evidence-based care for recurrent miscarriage, distribute recommendations to all relevant clinicians, and re-audit the service thereafter.

Jackie Welsh

Management of ectopic pregnancy

Summary

- Ectopic pregnancy occurs when the fertilised egg does not implant in the uterus but outside it (usually the uterine tubes).
- It occurs in about 1% of all pregnancies but accounts for 14% of all maternal deaths.⁸² Its incidence is increasing.
- We audited the diagnosis and management of ectopic pregnancy across the NHS Greater Glasgow area against national evidence-based standards.
- We identified several aspects of care that require improvement and a city-wide educational programme and protocols are being developed.
- We will re-audit practice to evaluate the effectiveness of our interventions in improving care for ectopic pregnancy in Glasgow.

Ectopic pregnancy

Ectopic pregnancy is an important cause of maternal morbidity and mortality. Between 1988 and 1990, it accounted for 10% of all maternal deaths in the UK,⁸³ and was the fourth most common cause of maternal death preceded only by pulmonary embolism, hypertensive disease and haemorrhage. The incidence of ectopic pregnancy is increasing, and has been estimated to occur in 1% of pregnancies.⁸⁴

This report provides information on a study carried out into the diagnosis and management of women who presented within the Glasgow setting with a confirmed ectopic pregnancy. The results of this audit were then compared to the recommendations of the RCOG Clinical Green Top Guideline (No. 21).⁸⁵ Data were collected in each of the acute hospitals. The lead clinician for this study was the Clinical Director for North Glasgow Obstetric and Gynaecology services.

Purpose of this audit

The purpose of this audit was to determine the effectiveness of the diagnosis and management of women who present in Glasgow with an ectopic pregnancy, to ensure best possible practice is being delivered.

Methods

Data were collected over 12 months. A data co-ordinator (specialist nurse) identified locally at each hospital, collected the information required for the study on a proforma designed by the EGGG. These forms were then returned

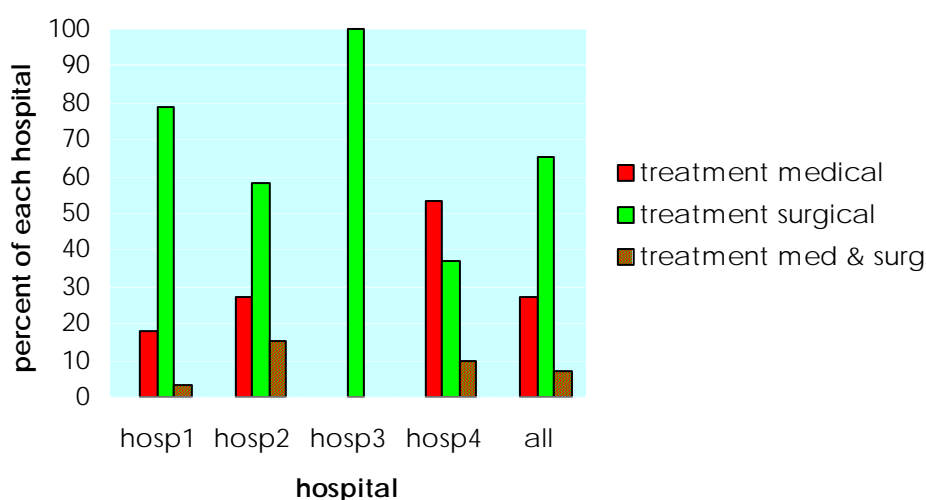
to the ACEO, where they were collated and analysed independently of the acute divisions.

Results

109 women were recruited to this study.

Surgical treatment is the preferred approach for most ectopic pregnancies. However, as Figure 11 shows, 3 hospitals used medical treatments in 18% to 53% of all cases.

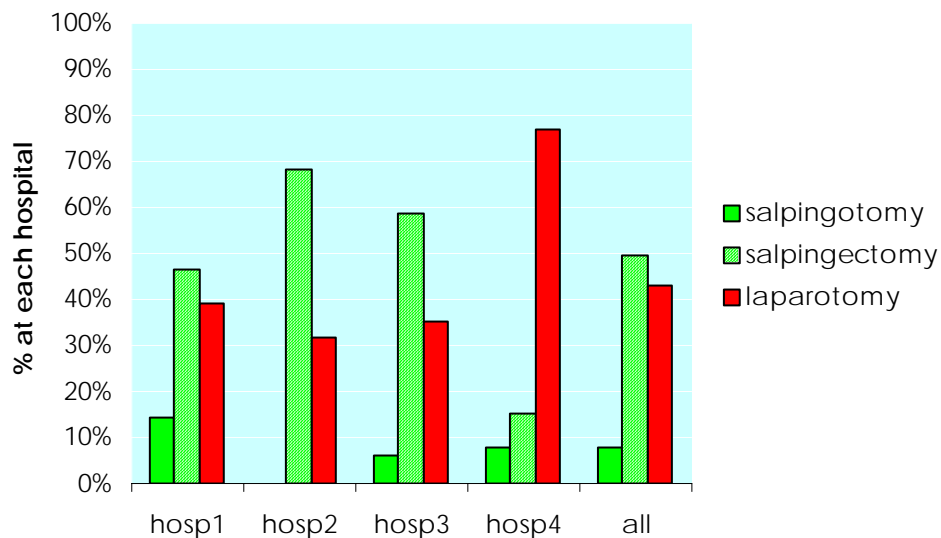
Figure 11. Management of ectopic pregnancy at 4 NHS Greater Glasgow hospitals. Surgical treatment is preferred for most cases. (Excludes 2 cases with hypovolaemic shock.)



Laparoscopy (keyhole surgery) is less invasive than laparotomy (open abdominal surgery), has a shorter recovery time, and better rates of avoiding ectopic pregnancy in the future. There are two laparoscopic techniques – salpingectomy (removing the uterine tube) and salpingotomy (opening the uterine tube to remove the conceptus but leaving the tube). Salpingectomy has better outcomes and is recommended.

Figure 12 summarises the findings on surgical techniques. Practice varies between hospitals, with the preferred technique of salpingectomy being performed on between 15% and 68% of patients. The more invasive open surgery (laparotomy) is performed on between 32% and 77% of patients. Caution is needed in interpreting these results, as choice of surgery has to be made on an individual basis, and the number of patients in each group is relatively small.

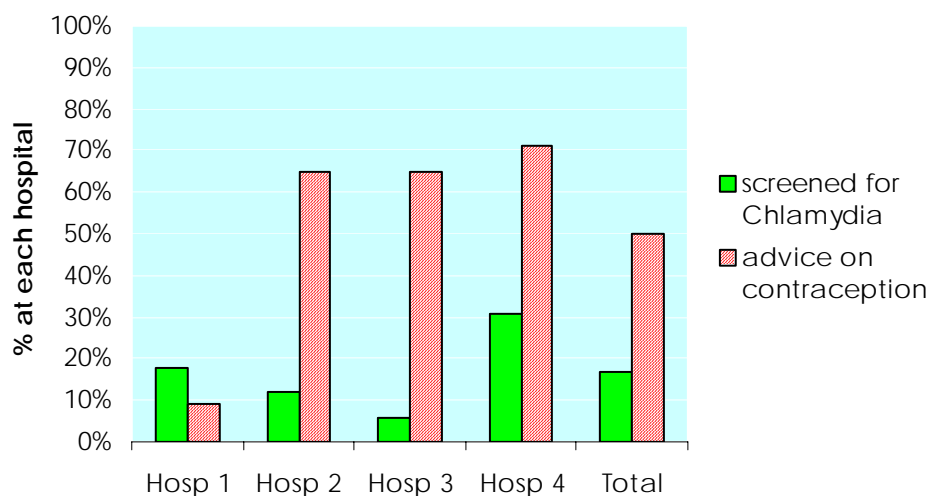
Figure 12. Surgical management of ectopic pregnancy at 4 maternity hospitals in Glasgow. Laparoscopy (salpingotomy or salpingectomy) or laparotomy. N=77.



Two further standards are shown, below. Presence of the sexually transmitted infection *Chlamydia trachomatis* can cause considerable short and long term morbidity with costs to both the individual and the NHS.⁸⁶ All women undergoing surgical evacuation should be screened for this infection. In addition, contraceptive advice should be given before hospital discharge.

Figure 13 shows considerable variation in practice between hospitals, with *Chlamydia* screening being performed on between 6% and 31% of patients. Pre-discharge contraceptive advice was recorded in between 9% and 71% of cases.

Figure 13. Percent of patients screened for *Chlamydia trachomatis*, and given advice on contraception prior to hospital discharge.



Effective gynaecology in Glasgow group

This audit has demonstrated variable practice across Glasgow. Comparing the results of the audit with the RCOG recommendations has highlighted deficiencies. Implementing the guidelines into daily practice would raise the standard of care given to women who experience an ectopic pregnancy. There are now 2 consolidated gynaecology services within Glasgow and at present there are 3 early pregnancy assessment services. Junior staff frequently rotate between the Glasgow services. The development of suitable educational material and a citywide protocol was suggested as an appropriate intervention. This protocol is currently in the development stage. It is envisaged that once this protocol is implemented, a re-audit of this study will be carried out (possibly January/February 2006).

A full copy of the report was circulated to all consultant/middle grade gynaecologists and ward managers (gynaecology) throughout Glasgow. The results of this study were presented at the 6th Scottish Programme for Clinical Effectiveness in Reproductive Health forum (SPCERH).

Jackie Welsh

Investigation of Women with Postmenopausal Bleeding

Summary

- Postmenopausal vaginal bleeding may be a symptom of endometrial cancer.
- We audited its investigation against evidence-based SIGN guidelines.⁸⁷
- We found that while much of current practice is consistent with SIGN guidelines, although there was some divergence from them.
- A repeat audit of this topic should be carried out after the EGGG implements improvements in management of postmenopausal bleeding.

Postmenopausal vaginal bleeding (PMB) is a frequent gynaecological complaint for which the main purpose of investigation is the exclusion of endometrial carcinoma (up to 10% of cases). Most women presenting with PMB will be found to have no significant pathology although cervical carcinoma, atrophic vaginitis and cervical and endometrial polyps are less common causes. We audited the investigation of women presenting with postmenopausal bleeding in NHSGG hospitals against appropriate SIGN guidelines.⁸⁷ We carried out a retrospective casenote review of 201 cases collected from October to November in all 6 GGHB hospitals that provide gynaecology services.

SIGN recommendations and Glasgow results

1. One-stop clinics should be used for the investigation of women with PMB. The audit showed that the one-stop clinics in GGHB were able to offer a first appointment sooner than the general gynaecology clinics (average 40 vs. 54 days) and were able to reduce the overall time to diagnosis (average 7 vs. 67 days).
2. Transvaginal ultrasound should be used as a first-line investigation in women not taking tamoxifen who experience post-menopausal bleeding. The audit showed found that 84% of the sample underwent this investigation but 16% did not.
3. Hysteroscopy with endometrial biopsy should be used as a first-line investigation in women taking tamoxifen who have PMB. Only 1 woman in our sample fell into this category, and her investigation complied with the recommendation.
4. No women should undergo dilation and curettage as a first-line investigation and we found no examples of this.
5. A transvaginal ultrasound (TVUS) cut-off of 3mm or less should indicate that no further action need be taken in women with PMB in certain treatment categories. Our sample included 181 women for whom this

recommendation applied. However, 34 of them underwent further investigation (endometrial sampling) and of this group, 30 had an eventual diagnosis of no significant pathology (the others being polyps or fibroids).

6. A TVUS cut-off of 5mm or less should indicate that no further action need be taken in women with PMB (not using tamoxifen) who are taking sequential combined HRT. Our sample included 16 women in this category, of whom 6 had an endometrial thickness of >5mm. Of these, 3 (50%) underwent endometrial biopsy and had an eventual diagnosis of no significant pathology.

The proportion of women with PMB who had an eventual diagnosis of endometrial carcinoma in our audit sample was 3%. The audit found instances of concordance with SIGN 61 in most areas together with some instances of divergence for which there may be good clinical or operational reasons.

Improving the quality of care

The EGGG will review the findings of this audit and develop a programme to improve compliance with the SIGN guidelines.⁸⁷

We recommend that a re-audit is carried out thereafter to ensure that the quality and equity of approach to investigating postmenopausal bleeding has improved as a result.

Margaret Morris

Finances

NHSGG Board Clinical effectiveness expenditure, 1st April 2004-31st March 2005

The ACEO comprises 10 staff on a mixture of full and part-time contracts. The overall budget for the financial year was £328 739, underspent by £13 688.

	Budget	Actual	Variance
Salaries	319 239	305 823	-13 416
Supplies	9 500	9 228	-272
NET	328 739	315 051	- 13 688

Appendices

Appendix 1. The NHS Greater Glasgow Area Clinical Effectiveness Office.

	special interests	email
Isobel Baxter	chronic diseases, <i>ad hoc</i> requests	isobel.baxter@gghb.scot.nhs.uk
Alison Freeman	heart failure, anticoagulation	allison.freeman@gghb.scot.nhs.uk
David McLure	senior administrator	david.mclure@gghb.scot.nhs.uk
Hazel Moss	perinatal effectiveness	hazel.moss@nhs.net
Jill Pell	coronary heart disease, genetic epidemiology	jill.pell@gghb.scot.nhs.uk
Rachel Slack	cardiac registers	rachel.slack@gghb.scot.nhs.uk
Lorraine Waddell	PA to Jill Pell, ACEO secretary	lorraine.waddell@gghb.scot.nhs.uk
Jackie Welsh	perinatal and gynaecology	jackie.welsh@gghb.scot.nhs.uk
Sue Williams	palliative care, cancer information, qualitative methods	sue.williams@gghb.scot.nhs.uk

For further information on any topic, the ACEO can be contacted at

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Dalian House
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Appendices

Appendix 2.

Cardiac surgery steering group

Arul Arangannal	Ross Hall Hospital
Geoff Berg	Western Infirmary, Glasgow
Robin Bhawal	Golden Jubilee National Hospital
Ian Colquhoun	Glasgow Royal Infirmary
Kenneth Davidson (resg.2004)	Golden Jubilee National Hospital
Hussein El-Shafei	Aberdeen Royal Infirmary
Alan Faichney	Western Infirmary, Glasgow
Mike Higgins	Glasgow Royal Infirmary
Andrew Murday	Glasgow Royal Infirmary
Jill Pell (Chairman)	Greater Glasgow NHS Board
Rachel Slack	Greater Glasgow NHS Board
Vipin Zamvar	Royal Infirmary, Edinburgh

Cardiac surgery IT support and data administrators

Eileen Anderson	Aberdeen Royal Infirmary
Andrew Deegan	Royal Infirmary, Edinburgh
Jackie Howlett	Royal Infirmary, Edinburgh
Margaret Kinnaird	Western Infirmary, Glasgow
Alison McOuat	Glasgow Royal Infirmary
Tanya Schofield (resg.2004)	Aberdeen Royal Infirmary

Percutaneous coronary intervention & angiography steering group

Kevin Jennings	Aberdeen Royal Infirmary
Simon Woldman	Ayr Hospital
Graham Tait	Dumfries and Galloway Royal Infirmary
Hany Eteiba	Glasgow Royal Infirmary
Jill Pell (Chairman)	Greater Glasgow NHS Board
Rachel Slack	Greater Glasgow NHS Board
Helen Papaconstantinou	Inverclyde Hospital, Greenock
Alastair Pell	Monklands Hospital, Airdrie
Stuart Pringle	Ninewells Hospital, Dundee
Stephen Cross(resg.2005)	Raigmore Hospital, Inverness
Andy Flapan	Royal Infirmary, Edinburgh
Robin Northcote	Victoria Infirmary, Glasgow
Ian Starkey	Western General Hospital, Edinburgh
Keith Oldroyd/Stewart Hillis	Western Infirmary, Glasgow

Percutaneous coronary intervention & angiography data administrators

Hilary Milne (resg.2005)	Aberdeen Royal Infirmary
Irene Anderson	Aberdeen Royal Infirmary
Tracy Smith (resg.2004)	Ayr Hospital
Clare Armstrong	Ayr Hospital
Heather Fitzpatrick	Dumfries and Galloway Royal Infirmary
Richard McManus	Glasgow Royal Infirmary
Mark Watts	Glasgow Royal Infirmary
Irene Crawford	Golden Jubilee Hospital, Glasgow
Jim Young	Hairmyres Hospital, Airdrie
Stephen McDowell	Inverclyde Hospital, Greenock
Ann Mackintosh (resg.2004)	Ninewells Hospital, Dundee
Carol Andrews	Ninewells Hospital, Dundee
Ingar-Marie Logie	Raigmore Hospital, Inverness
Andrew Deegan	Royal Infirmary, Edinburgh
John Zarecki	Royal Infirmary, Edinburgh

Appendices

Fiona Bett (resg.2004)
Jim Christie

Western General Hospital, Edinburgh
Western Infirmary, Glasgow

Appendices

Appendix 3 - Memberships of GAS, HFLS, TOP implementation group, PEC, EGGG

GAS implementation group

Dr Campbell Tait	Consultant Haematologist	(Chair)NGD
Teresa Carmichael	Lead Nurse	NGD
Margaret Jane Cartwright	Senior Biomedical Scientist	NGD
Dr Douglas Colville	General Practitioner (Chair of GP subgroup)	GGNHSB
Anne Marie Etherington	Lead Nurse	SGD
Bernadette Finlay	General Manager	NGD
Dr Ted Fitzsimons	Consultant Haematologist	NGD
Alison Freeman	Area Clinical Effectiveness Facilitator	GGNHSB
Anne Harkness	General Manager	SGD
Dr Mike Leach	Consultant Haematologist	NGD
Dr Ian McDonald	Consultant Haematologist	SGD
Dr Caroline Morrison	Consultant in Public Health Medicine	GGNHSB
Dr Patrick Tansey	Consultant Haematologist	SGD

Heart failure liaison group

Linda Blue	Service Co-ordinator (Chair)	WIG
Joan Anusas	Heart Failure Nurse Specialist	GRI
Alison Freeman	Area Clinical Effectiveness Facilitator	GGNHSB
Eric Gray	Heart Failure Nurse Specialist	WIG
Laura Mackintosh	Heart Failure Nurse Specialist	STB
Marian McAdam	Heart Failure Nurse Specialist	GRI
Linda McGinnis	Heart Failure Nurse Specialist	SGH
Yvonne Millerick	Heart Failure Nurse Specialist	GRI
Kirstie Mowat	Heart Failure Nurse Specialist	SGH
Bernadette More	Heart Failure Nurse Specialist	VIC
Katrina Mullen	Heart Failure Nurse Specialist	VIC
Kirstin Russell	Heart Failure Nurse Specialist	GRI
Eve Shannon	Heart Failure Nurse Specialist	WIG
Alice Stuart	Heart Failure Nurse Specialist	STB

TOP implementation group

Sue Laughlin	Director, Womens Health(Chair)	GGNHSB
Dr Alison Bigrigg	Clinical Director	SI
Dr Audrey Brown	Consultant	SI
Heather Dawes	Service Manager	NGD
Marie-Elaine Fitzpatrick	Clinical Nurse Manager	NGD
Dr Colin Forrest	Consultant Gynaecologist	NGD
Alison Freeman	Area Clinical Effectiveness Facilitator	GGNHSB
Dr Marco Gaudoin	Consultant Gynaecologist	SGH
Alan Gilmour	Manager - Surgical Directorate	SGD
Rosie Ilett	Associate Director	SI
Colin McCormack	Project Manager	PCD
Jackie Nicolson	Nurse Counsellor	fpa
Dr Judith Roberts	Consultant Gynaecologist	N&SGD
Dr Mary Rodger	Consultant Gynaecologist	NGD
Tim Street	Director	fpa
Lynn Wheeler	Director	BPAS
Lynn Wojciechowska	Nursing & Midwifery Manager	SGD

Appendices

Perinatal Effectiveness Committee (PEC)

Stein Björnsson	Consultant Obstetrician & Gynaecologist	PRMH
Janet Brennand	Consultant Obstetrician & Gynaecologist	QMH
Diana Clark	Practice Development Midwife	SGH
Chris Hardwick	Consultant Obstetrician & Gynaecologist	SGH
Valerie Hood	Consultant Obstetrician & Gynaecologist	SGH
Allan Howatson	Consultant Paediatric & Perinatal Pathologist	Yorkhill Hospital
Margaret Young	Specialist Midwife	PRMH
Lena Macara	Consultant Obstetrician & Gynaecologist	QMH
Alan Mathers	Consultant Obstetrician & Gynaecologist	PRMH
Fiona McKenzie	Consultant Obstetrician & Gynaecologist	PRMH
David Morrison	Consultant in Public Health Medicine	GGNHSB
Hazel Moss	Area Clinical Effectiveness Facilitator	GGNHSB
Phil Owen (chairman)	Consultant Obstetrician & Gynaecologist	PRMH
Andrew Powls	Consultant Neonatologist	PRMH
Lucy Powls	Practice Development Midwife	QMH
Jackie Welsh	Area Clinical Effectiveness Facilitator	GGNHSB
Linda Wolfson	Specialist Midwife	QMH

Effective Gynaecology in Glasgow Group (EGGG)

Stein Björnsson	Consultant Obstetrician & Gynaecologist	VIC
Chris Hardwick	Consultant Obstetrician & Gynaecologist	SGH
Alan Mathers	Consultant Obstetrician & Gynaecologist	GRI
Kay McAllister	Consultant Gynaecologist	Sandyford Initiative
Rosie McCluskie	Specialist Nurse	SGH
David Morrison	Consultant in Public Health Medicine	GGNHSB
Phil Owen (chairman)	Consultant Obstetrician & Gynaecologist	PRMH
Bridie Paterson	Specialist Nurse	WIG
Judith Roberts	Consultant Gynaecologist	WIG
John Tierney	Consultant Gynaecologist	SGH
Jackie Welsh	Area Clinical Effectiveness Facilitator	GGNHSB
Carol Wilson	Specialist Nurse	GRI

References

1. Morbidity Statistics from General Practice. Fourth national study 1991-1992. Royal College of General Practitioners, the Office of Population Censuses and Surveys, and the Department of Health, 2005.
2. Blue L, Lang E, McMurray JJ, Davie AP, McDonagh TA, Murdoch DR *et al*. Randomised controlled trial of specialist nurse intervention in heart failure. *BMJ* 2001;**323**:715-8.
3. McMurray JJ, Stewart S. Epidemiology, aetiology, and prognosis of heart failure. *Heart* 2000;**83**:596-602.
4. McDonagh TA, Morrison CE, Lawrence A, Ford I, Tunstall-Pedoe H, McMurray JJ *et al*. Symptomatic and asymptomatic left-ventricular systolic dysfunction in an urban population. *Lancet* 1997;**350**:829-33.
5. Scottish Intercollegiate Guidelines Network. Diagnosis and Treatment of Heart Failure due to Left Ventricular Systolic Dysfunction. Guideline 35. Edinburgh, SIGN, 1999.
6. Scottish Intercollegiate Guidelines Network. Antithrombotic Therapy. Guideline 36. Edinburgh, SIGN, 1999.
7. Pell J, Slack R. The Scottish Coronary Revascularisation Group Report on Time Trends 1997-2003. Glasgow, NHS Greater Glasgow, 2004.
8. Scottish Executive. *The Scottish Cancer Plan*. Edinburgh, The Stationery Office, 2001.
9. Scottish Intercollegiate Guidelines Network. Control of Pain in Patients with Cancer. Guideline 44. Edinburgh, SIGN, 2000.
10. Williams S. Women's experiences of gynaecological cancers in the West of Scotland. West of Scotland Managed clinical Network for Gynaecological Cancers, 2003.
11. Scottish Executive Health Department. Patient Focus and Public Involvement. Edinburgh, SEHD, 2000.
12. Gillespie LD, Gillespie WJ, Robertson MC, Lamb SE, Cumming RG, Rowe BH. Interventions for preventing falls in elderly people. *Cochrane Database Syst Rev* (4), 2003.
13. Parker MJ, Gillespie WJ, Gillespie LD. Hip protectors for preventing hip fractures in older people (Cochrane Review). Chichester, UK: John Wiley & Sons, Ltd. All rights reserved, *The Cochrane Library*. Issue 3, 2005.
14. O'Halloran PD, Cran GW, Beringer TR, Kernohan G, O'Neill C, Orr J, Dunlop L, Murray LJ. A cluster randomised controlled trial to evaluate a policy of making hip protectors available to residents of nursing homes. *Age Ageing* 2004;**33**(6):582-8.

References

15. GGHB Area working Group on Tissue Viability. Complex Wounds. Area Clinical Effectiveness Office Report 2003-2004.
16. McLellan AR, Gallacher SJ, Fraser M, McQuillan C. The fracture liaison service: success of a program for the evaluation and management of patients with osteoporotic fracture. *Osteoporos Int* 2003;**14**(12):1028-34.
17. Jones SJ, Johansen A, Brennan J, Butler J, Lyons RA. The effect of socioeconomic deprivation on fracture incidence in the United Kingdom. *Osteoporos Int* 2004;**15**(7):520-524.
18. Carstairs V, Morris R. Deprivation and health in Scotland. Scotland, Aberdeen University Press, 1991.
19. Kendall N, Linton S, Main C. Guide to assessing psychosocial yellow flags in acute low back pain: risk factors for long term disability and work loss. Accident Rehabilitation & Compensation Insurance Commission of New Zealand and the National Health Committee, Wellington, New Zealand, 1997.
20. Waddell G. The Back Pain Revolution. London, Churchill Livingstone, 1998.
21. Burton AK, Waddell G, Tillotson KM, Summerton N. Information and advice to patients with back pain can have a positive effect. A randomized controlled trial of a novel educational booklet in primary care. *Spine* 1999;**24**(23):2484-91.
22. Healthy Respect and Responsibility: Strategy and Action Plan for Improving Sexual Health. Edinburgh, Scottish Executive, 2005.
23. Gillick v West Norfolk and Wisbech Area Health Authority [1985] 3 All ER 402 (HL).
24. Scottish Intercollegiate Guidelines Network. Interventions in the management of behavioural and psychological aspects of dementia. Guideline 22. Edinburgh, SIGN, 1998.
25. Chapman A, Jackson G, McDonald C. What behaviour? Whose problem? Stirling, Dementia Services Centre, University of Stirling, 1999.
26. National Collaborating Centre for Women's and Children's Health. CG 13 - Caesarean Section. London, NICE, 2004.
27. Expert Advisory Group in Caesarean Section in Scotland. Report and recommendations to the CMO of the Scottish Executive Health Department. Edinburgh, Scottish Executive Health Department, 2001.
28. Thomas J, Paranjothy S. Royal College of Obstetricians and Gynaecologists Clinical Effectiveness Support Unit. National Sentinel Caesarean Section Audit Report. London, RCOG Press, 2001.
29. Gamble JA, Creedy DK. Women's request for a caesarean section: a critique of the literature. *Birth* 2000;**27**:256-63.

References

30. Royal College of Obstetricians and Gynaecologists. Ovarian cysts in postmenopausal women. London, RCOG, 2003.
31. Schupf N, Ottman R. Reproduction among individuals with idiopathic/cryptogenic epilepsy: risk factors for spontaneous abortion. *Epilepsia* 1997;**38**:824-9.
32. Steegers-Theunissen RP, Renier WO, Borm GF, Thomas CM, Merkus HM, Op de Coul DA *et al.* Factors influencing the risk of abnormal pregnancy outcome in epileptic women: a multi-centre prospective study. *Epilepsy Res* 1994;**18**:261-9.
33. Pack AM, Morrell MJ. Treatment of women with epilepsy. *Semin Neurol* 2002;**22**:289-98.
34. Crowther CA, Alfiere Z In Enkin MW Keirse MJ Renfrew MJ Neilson JP. Pregnancy and childbirth module. Cochrane database of systematic reviews. Cochrane update software disk issue 1: Oxford, 1994.
35. Royal College of Obstetricians and Gynaecologists. Antenatal corticosteroids to prevent respiratory distress syndrome. Guideline 7. London, RCOG, 2004.
36. The Fetal and Infant Postmortem. The Confidential Enquiry into Stillbirths and Death in Infancy (CESDI). Maternal and Child Health Research Consortium, 2005
37. Saller DN Jr, Lesser KB, Harrel U, Rogers BB, Oyer CE. The clinical utility of the perinatal autopsy. *JAMA* 1995;**273**:663-5.
38. Report on fetal and perinatal pathology. Joint Working Party of the Royal College of Obstetricians and Gynaecologists and the Royal College of Pathologists. London, RCOG, 1988.
39. Donnelly V, Fynes M, Campbell D, Johnson H, O'Connell PR, O'Herlihy C. Obstetric events leading to anal sphincter damage. *Obstet Gynecol* 1998;**92**:955-61.
40. Scottish Intercollegiate Guidelines Network. Management of diabetes in pregnancy. Guideline No 9 (Superseded by 55). Edinburgh, SIGN, 1996.
41. Donnelly V, O'Connell PR, O'Herlihy C. The influence of oestrogen replacement on faecal incontinence in postmenopausal women. *Br J Obstet Gynaecol* 1997;**104**:311-5.
42. Sultan AH, Kamm MA, Hudson CN, Bartram CI. Third degree obstetric anal sphincter tears: risk factors and outcome of primary repair. *BMJ* 1994;**308**:887-91.
43. Sultan AH, Monga AK, Kumar D, Stanton SL. Primary repair of obstetric anal sphincter rupture using the overlap technique. *Br J Obstet Gynaecol* 1999;**106**:318-23.

References

44. Adams EJ for Royal College of Obstetricians and Gynaecologists. Management of third- and fourth-degree perineal tears following vaginal delivery. Guideline 29. London, RCOG, 2001.
45. Scottish Intercollegiate Guidelines Network. Management of Diabetes. Guideline 55. Edinburgh, SIGN, 2001.
46. Yamauchi Y, Yamanouchi I. The relationship between rooming-in/not rooming-in and breast-feeding variables. *Acta Paediatr Scand* 1990;**79**:1017-22.
47. Confidential Enquiry into Maternal and Child Health. Confidential Enquiry into Stillbirths and Deaths in Infancy: Standards of care for the Diabetes Enquiry Programme. London, CEMACH, 2002.
48. Royal College of Obstetricians and Gynaecologists. Placenta praevia: diagnosis and management. Guideline 27. London, RCOG, 2001.
49. CESDI Project 27/28. An enquiry into quality of care and its effect on the survival of babies born at 27/28 weeks. The Confidential Enquiry into Stillbirths and Deaths in Infancy (CESDI)[from April 2003 part of Confidential Enquiry into Maternal and Child Health (CEMACH)]. Project 27-28 - An Enquiry into the Quality of Care and its Effect on the Survival of Babies Born at 27-28 weeks. Executive Summary. Norwich, The Stationery Office, 2003.
50. Crowley P. Prophylactic corticosteroids for preterm birth. *Cochrane Database Syst Rev* 2000;CD000065.
51. Curley AE, Halliday HL. The present status of exogenous surfactant for the newborn. *Early Hum Dev* 2001;**61**:67-83.
52. Soll RF, Morley CJ. Prophylactic versus selective use of surfactant in preventing morbidity and mortality in preterm infants (Cochrane Review). Chichester, UK: John Wiley & Sons, Ltd., The Cochrane Library. Issue 2, 2005.
53. BAPM. Guidelines for good practice in the management of neonatal respiratory distress syndrome. British Association of Perinatal Medicine, 1999.
54. Cnattingius S, Haglund B, Kramer MS. Differences in late fetal death rates in association with determinants of small for gestational age fetuses: population based cohort study. *BMJ* 1998;**316**:1483-7.
55. McIntire DD, Bloom SL, Casey BM, Leveno KJ. Birth weight in relation to morbidity and mortality among newborn infants. *N Eng J Med* 1999;**340**:1234-8.
56. Taylor DJ, Howie PW. Fetal growth achievement and neurodevelopmental disability. *Br J Obstet Gynaecol* 1989;**96**:789-94.
57. Roth S, Chang TC, Robson S, Spencer JA, Wyatt JS, Stewart AL. The neurodevelopmental outcome of term infants with different intrauterine growth characteristics. *Early Hum Dev* 1999;**55**:39-50.

References

58. Barker DJ, Gluckman PD, Godfrey KM, Harding JE, Owens JA, Robinson JS. Fetal nutrition and cardiovascular disease in adult life. *Lancet* 1993;**341**:938-41.
59. Barker DJ. The long-term outcome of retarded fetal growth. *Clin Obstet Gynecol* 1997;**40**:853-63.
60. Barker DJ, Osmond C, Simmonds SJ, Wield GA. The relation of small head circumference and thinness at birth to death from cardiovascular disease in adult life. *BMJ* 1993;**306**:422-6.
61. Beattie RB, Johnson P. Practical assessment of neonatal nutrition status beyond birthweight: an imperative for the 1990s. *Br J Obstet Gynaecol* 1994;**101**:842-6.
62. Gardosi J, Mul T, Mongelli M, Fagan D. Analysis of birthweight and gestational age in antepartum stillbirths. *Br J Obstet Gynaecol* 1998;**105**:524-30.
63. Barker DJ, Bull AR, Osmond C, Simmonds SJ. Fetal and placental size and risk of hypertension in adult life. *BMJ* 1990;**301**:259-62.
64. Hales CN, Barker DJ, Clark PM, Cox LJ, Fall C, Osmond C *et al*. Fetal and infant growth and impaired glucose tolerance at age 64. *BMJ* 1991;**303**:1019-22.
65. Barker DJ, Meade TW, Fall CH, Lee A, Osmond C, Phipps K *et al*. Relation of fetal and infant growth to plasma fibrinogen and factor VII concentrations in adult life. *BMJ* 1992;**304**:148-52.
66. Fall CH, Barker DJ, Osmond C, Winter PD, Clark PM, Hales CN. Relation of infant feeding to adult serum cholesterol concentration and death from ischaemic heart disease. *BMJ* 1992;**304**:801-5.
67. Royal College of Obstetricians and Gynaecologists. The investigation and management of the small-for-gestational-age fetus. Guideline No. 31. London, RCOG, 2002.
68. Royal College of Obstetricians and Gynaecologists. The management of early pregnancy loss. Guideline 31. London, RCOG, 2002.
69. Alberman E. Spontaneous abortion: epidemiology. In: Stabile S, Grudzinkas G, Chard T, editors. Spontaneous abortion: diagnosis and treatment. pp 9-20. Springer-Verlag, 1992.
70. Hemminki E. Treatment of miscarriage: current practice and rationale. *Obstet Gynecol* 1998;**91**:247-53.
71. Royal College of Obstetricians and Gynaecologists. The investigation and treatment of couples with recurrent miscarriage. Guideline 17. London, RCOG, 2003.

References

72. Coulter A, Bradlow J, Agass M, Martin-Bates C, Tulloch A. Outcomes of referrals to gynaecology outpatient clinics for menstrual problems: an audit of general practice records. *Br J Obstet Gynaecol* 1991;**98**:789-96.
73. Magos AL. Management of menorrhagia. *BMJ* 1990;**300**(6739):1537-8.
74. Lethaby A, Hickey M. Endometrial destruction techniques for heavy menstrual bleeding: a Cochrane review. *Hum Reprod* 2002;**17**:2795-806.
75. Lethaby A, Irvine G, Cameron I. Cyclical progestogens for heavy menstrual bleeding. *Cochrane Database Syst Rev* 2000;CD001016.
76. Royal College of Obstetricians and Gynaecologists. The management of menorrhagia in secondary care. National Evidence-Based Clinical Guidelines. London, RCOG, 1999.
77. Lethaby A, Shepperd S, Cooke I, Farquhar C. Endometrial resection and ablation versus hysterectomy for heavy menstrual bleeding. *Cochrane Database Syst Rev* 2000;CD000329.
78. Stirrat GM. Recurrent miscarriage. *Lancet* 1990;**336**:673-5.
79. Stirrat GM. Recurrent miscarriage. II: Clinical associations, causes, and management. *Lancet* 1990;**336**:728-33.
80. Regan L, Braude PR, Trembath PL. Influence of past reproductive performance on risk of spontaneous abortion. *BMJ* 1989;**299**:541-5.
81. Nybo Andersen AM, Wohlfahrt J, Christens P, Olsen J, Melbye M. Maternal age and fetal loss: population based register linkage study. *BMJ* 2000;**320**:1708-12.
82. Report on Confidential Enquiries into Maternal Deaths in the United Kingdom 1988-90. London, HMSO, 1994.
83. Clark JTM, Nicholls J, Cooper M, Bates SA, Frappell JM, Byrne DL. An evaluation of a laparoscopic ectopic simulation by trainees. *Gynaecological Endoscopy* 2001;**10**: 309.
84. Ling FW, Stoval TG. Update on the diagnosis and management of ectopic pregnancy. *Advances in Obstetrics and Gynaecology* 1994;**55**-83.
85. Royal College of Obstetricians and Gynaecologists. The Management Of Tubal Pregnancy. Guideline No. 21. London, RCOG, 2004.
86. Scottish Intercollegiate Guidelines Network. Management of genital *Chlamydia trachomatis* infection. Guideline No 42. Edinburgh, SIGN, 2000.
87. Scottish Intercollegiate Guidelines Network. Investigation of post-menopausal bleeding. Edinburgh, SIGN, 2002.