

## GERIATRIC MEDICINE\*

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### INTRODUCTION

This diverse symposium addressed some of the most common and challenging areas in geriatric medicine today. These sessions ranged from improving outcomes in heart disease to tackling the increasing burden of managing infections in our older patients. The meeting then focused on the detection and treatment of malnutrition, and some useful practical pointers were given for everyday clinical use. Finally and topically, in the current climate of guideline 'frenzy' an interactive session reviewed guidelines in frail older people, which provoked much thoughtful discussion about the relevance of guidelines in the frail older population and the challenge of implementing them.

### SESSION 1

#### IMPROVING OUTCOMES IN HEART DISEASE

*Chairman: Professor C Gray, Professor of Clinical Geriatrics and Associate Sub-Dean, University of Newcastle-upon-Tyne*

#### What's new in cardiac failure?

*Professor A Struthers, Professor of Cardiovascular Medicine and Therapeutics, Ninewells Hospital and Medical School, Dundee*

Heart failure can be defined as a clinical syndrome of dyspnoea, fatigue and fluid retention due to heart disease 'of some kind' or symptoms plus left ventricular (LV) abnormality.

Heart disease causing heart failure can be divided up into four groups:

1. Left ventricular systolic dysfunction (LVSD)
  - previous myocardial infarction (MI)
  - cardiomyopathies;
2. Left ventricular diastolic dysfunction
  - left ventricular hypertrophy;
3. Valve disease; and
4. Arrhythmias, e.g. fast atrial fibrillation (AF).

An overlap exists between all of these four sub-types.

Symptoms which suggest heart failure tend to be sensitive (dyspnoea), or specific (paroxysmal nocturnal dyspnoea, orthopnoea) but no symptom is both. Physical signs, which suggest heart failure, tend to be specific (elevated jugular venous pressure (JVP), gallop

rhythm) but none of them are sensitive.

Diagnosing heart failure in clinical practice should follow four stages:

- Stage 1 Full history and examination
- Stage 2 Investigations: chest X-ray, electrocardiogram (ECG), brain natriuretic peptide (BNP)
- Stage 3 Echocardiography (ECHO)
- Stage 4 Appropriate treatment guided by ECHO findings

The ECG has been shown that it is a useful pre-screen to select patients for ECHO but some cases of LVSD (2–27% in different reports) are missed by this approach. Brain natriuretic peptide is useful as a rule-out not a rule-in. It is thought to be useful in two situations:

1. Ability of a high BNP level to identify heart failure in symptomatic patients in primary care with a sensitivity of 97% and a specificity of 84%.<sup>1</sup>
2. Ability of BNP to identify LVSD in a cross section of the community with a sensitivity of 76% and a specificity of 87%.<sup>2</sup>

However, only small numbers of the symposium attenders had the use of BNP within their hospital practice.

Reassuringly, Professor Struthers confirmed that 'diastolic dysfunction' is a confusing concept in older people and is thought to be a 'rag-bag of diagnoses'. A current working definition is clinical heart failure with normal LV systolic function.

He then summarised the treatment of cardiac failure pertaining to left ventricular dysfunction only:

- Diuretics and angiotensin-converting enzyme (ACE) diuretics being used in New York Heart Association (NYHA) classes 2–4, ACE inhibitors 1–4.
- Beta-blockers are thought to be well tolerated after cardiac failure has been stabilised although the side-effects of beta-blockers in older people have not been classified (see Table 1).
- Spironolactone reduces mortality by 30% in NYHA 3–4 although the biggest side-effect is gynaecomastia (10% in males) and electrolyte disturbance.<sup>8</sup>
- Digoxin has been shown to be effective in NYHA 3–4.

\*This symposium was held on 28 May 2003 at the Royal College of Physicians of Edinburgh.

# SYMPOSIUM REPORTS

- Angiotensin blockers can be used as a substitute for ACE inhibitors but have shown to have excess mortality when added to ACE and beta-blockers.

**TABLE 1**  
**Beta blocker trials in cardiac failure.**

Trial	Patients	Effect
US Carvedilol <sup>3</sup>	2–3 congestive heart failure	Improves
CIBIS-2 <sup>4</sup>	2–3 congestive heart failure	Improves
MERIT <sup>5</sup>	2–3 congestive heart failure	Improves
COPERNICUS <sup>6</sup>	4 congestive heart failure	Improves
CAPRICORN <sup>7</sup>	Post myocardial infarction	Improves

Death in congestive cardiac failure (CCF) occurs in two ways either patients die of progressive cardiac failure or of sudden expected death. Sudden expected death can occur by two mechanisms but is likely to be a combination of acute coronary syndrome and ventricular arrhythmia.

This raises three potential treatments:

1. Anti-ischaemic therapy  
coronary artery bypass grafting (CABG), revascularising the myocardium (trial ongoing, UK heart);
2. Anti-thrombotic therapy  
warfarin and clopidogrel (trial is still ongoing); and
3. Anti-arrhythmic therapy
  - amiodarone is thought to be of dubious benefit
  - beta-blockers are well established in preventing sudden death
  - implantable defibrillator (the implantable cardioverter defibrillator (ICD) has been shown in the Multicenter Autonomic Defibrillator Implantation Trial 2 to reduce mortality by 31%. Patients were post MI with a LV ejection fraction of <30%. Those with prolonged QRS had the best results.<sup>9</sup>).

Cardiac re-synchronisation is the other recent development. Pacing is thought to produce better co-ordination of left/right ventricular asystole. The pacing lead is placed in the coronary sinus for LV pacing. This is the MIRACLE trial which is thought to improve symptoms but is, however, unpublished.

## Summary

Congestive heart failure (CHF) strategies include:

1. Neuroendocrine inhibition: ACE inhibitor good, beta-blockers good, aldosterone blockade good.

2. Ischaemia reversal: CABG and warfarin under investigation.
3. Arrhythmia treatment: amiodarone dubious, ICDs good.
4. Cardiac re-synchronisation.

## Clinical networks

*L Blue, Glasgow Heart Failure Liaison Nurse Service*

Cardiac failure occurs in 10–20% of older people. One-third of patients are re-admitted within one year of hospital discharge and this is costly, accounting for 1–2% of the NHS expenditure. The prognosis is worse than for many common cancers.

The barrier to optimum management in this patient group is multi-factorial including the physician, the patient, pharmacological agents and the healthcare system. Nurse-led community management programmes have been shown to lead to improved compliance, an increase of evidence-based therapy and a reduction in hospital admissions and in-patient stays.

Blue described the randomised control trial that was implemented at the Western Infirmary in Glasgow.<sup>10</sup> Sixty-five patients aged 51–93 with a mean age of 79, that had been admitted to hospital as an emergency with CHF due to LVSD were recruited over one year. The intervention comprised scheduled home visits and telephone contact over a period of up to one year after discharge. This led to a reduction in hospital re-admission and hospital bed days. The Glasgow Heart Failure Liaison Service (GHFLS) was commenced citywide in July 2000.

The aims of the GHFLS were to:

- reduce hospital re-admission;
- initiate appropriate pharmacological regimes;
- provide seamless care through secondary and primary sectors; and
- to impact patients' quality of life/impart information.

The inclusion criterion for the GHFLS was that patients were identified during a hospital admission due to deteriorating CHF and that heart failure must be due to LVSD determined by ECHO findings.

Exclusion criteria were: those with an immediate life-threatening illness, acute MI, those discharged to long-term care and those outwith the Greater Glasgow Health Board.

Patients are visited within one or two weeks of discharge and have subsequent telephone calls for three months. They are given education and advice about heart failure, adjustment and optimisation of therapy according to agreed guidelines and protocols and close monitoring of blood chemistry. Patients are enabled to self-manage where possible, are given advice on lifestyle and supported by this service with both their family and carers.

Preliminary audit shows there is a reduction in admissions – this has enabled an expansion of the service to take place. Suggestions for the future progression of the service would be: closer links with the discharge pathway to primary care; the need for education; up titration of therapy for newly diagnosed patients; and access to palliative care and exercise programmes.

## Treatment aims in older persons with cardiac failure

*Dr J Baxter, Consultant Geriatrician, Sunderland Royal Hospital*

Dr Baxter highlighted the incidence of cardiac failure. It is a 'malignant' condition with one-third of patients dying at three months and has a high symptom burden.<sup>11</sup> The patient experience in CHF as per Murray *et al.* is unpredictable.<sup>12</sup> Patients feel ill but are told that they are well, there is a poor understanding of the disease and prognosis, there is less access to benefits, significant comorbidity and no community specialist services. There are now many CHF guidelines, for example those produced by the Scottish Intercollegiate Guidelines Network (SIGN) and the National Institute for Clinical Excellence (NICE), however, it is important to focus on what patients want, and that is to live longer and feel better.

At diagnosis, 64% of patients had a preference for life-prolonging treatment while 36% said 'No' to it.<sup>13</sup> During the terminal phase of their illness patients returned the following preferences:

- three months prior to death 64% requested resuscitation; and
- one month prior to death 50% requested resuscitation.<sup>14</sup>

Those treatments that improve prognosis in cardiac failure are: beta-blockers, spironolactone, isosorbide mononitrate/hydralazine and ICD. Those treatments that improve symptoms are beta-blockers, loop diuretics, digoxin, coordinated approach and pacing.

Older people, however, are under represented in CHF trials with a mean age in ACE and CONSENSUS of 70 years.<sup>15</sup> Beta-blocker mean age ranges from 61–64 and the Rales study (spironolactone) 66 years. ACE inhibitors are well tolerated in older people – only 20% describing a cough and 2% having renal impairment – and they have a significant improvement in exercise capacity.<sup>16</sup>

There is, however, no evidence as yet of mortality benefit in those aged over 80 for beta-blockers. Tolerability and the impact of CHF symptoms has not been determined from large randomised control trials (RCTs). However, Baxter *et al.*<sup>17</sup> showed a 30% treatment failure rate in the older person (this is similar to the younger population). The maximum dose was

similar to trial patients (mean dose 7.5 mg of bisoprolol with a range of 1.25–10.0 mg). There was no evidence of negative symptom impact.

Lifestyle changes in CHF should be discussed with the patient including smoking cessation and alcohol consumption, salt restriction, fluid intake, immunisation and antibiotic prophylaxis, exercise regimens and social and psychological support.

Patient empowerment in older people is important.<sup>13</sup> There should be discussion with the patient and his or her carers regarding disease self-management including daily weights and flexible diuretic regimens.

## Summary

The treatment aims in CHF are:

1. Medicate
  - ACE inhibitor and diuretic
  - establish euvolaemia
  - add in beta-blockers
  - caution with spironolactone if betablocker intolerant;
2. Educate
  - coordinate multidisciplinary team (MDT) approach
  - improve compliance
  - improve CHF symptoms
  - reduce the re-admission rates; and
3. Palliate.

## SESSION 2

### BACTERIOLOGICAL CHALLENGES

#### Antibiotic resistance

*Professor P Davey, Professor in Pharmacoeconomics and Honorary Consultant Physician in Infectious Disease, Ninewells Hospital and Medical School, Dundee*

As you would imagine antibiotic exposure is highest in younger and older people. Penicillin resistance is still a huge problem and varies throughout the world. In penicillin-resistant *Streptococcal pneumoniae* which is increasing in incidence, there is an increased risk of death and hospitalisation.<sup>18</sup>

The UK prescribes half as many antibiotics as France, however, twice as many as the Netherlands. This, of course, does matter, as the rate of resistance is higher in those countries that prescribe more antibiotics. If prescribing is kept down, the problem can be contained. The use of antibiotics is an independent risk factor for resistance. There seems to be a time window of roughly six months after antibiotic exposure where resistance is higher. A two-way traffic exists between prescribing and resistance. Training, however, has been shown to reduce the amount of prescribing of antibiotics.<sup>19</sup>

# SYMPOSIUM REPORTS

To date the evidence of how we treat infections is poor. There have been only 58 reviews on the treatment of upper respiratory infections and urinary tract infections in older people and of those there is a mean quality of 1.9 (scale up to 9). Most referenced reviews do not include RCTs. Less than 25% quoted RCTs were conducted in older people.<sup>20</sup> Fortunately there have been increasing number of publications in the latter years.

Ongoing education is necessary for undergraduate doctors and this is taking place under the auspices of *Appropriate Antimicrobial Prescribing for Tomorrow's Doctors*; a need exists for all doctors to examine their own prescribing.

To join antibiotics anonymously there are three steps to rehabilitation:

1. antibiotics always harm the normal flora;
2. prescribing/consumption is part of the problem; and
3. what is the net benefit?

## MARJORIE ROBERTSON LECTURE

### **An evidence-based approach to preventing healthcare-associated infections in older people**

*Professor R Pratt, Professor of Nursing, Thames Valley University and President, Infection Control Nurses Association of the British Isles*

The EPIC initiative is an evidence-based approach to preventing healthcare-associated infections in older people and forms the evidence-base for infection prevention and control practice in acute, primary and community care services. It was commissioned by the Department of Health in England and NICE. This was on a background of clinical governance and national evidence-based guidelines. It was clear that healthcare associated infections in England cost £1 billion each year; they add 11 days to hospitalisation and increased waiting time for admission to hospital. They cause 5,000 deaths directly and contribute to a further 15,000 each year.

At least 15–30% of these infections are thought to be preventable. The study showed poor standards and wide variations in practice, variable quality of practice guidelines and lack of evidence of the application of critically appraised evidence to practice. There was also a loss of confidence in the service and potential litigation. Older people, in particular, are more vulnerable to these hospital-acquired infections, reasons for this include comorbidities, immobility, medical devices (e.g. catheters), and malnutrition and confusion.

Healthcare governance has come into play. Care and interventions must be planned, structured and based on best available research evidence. Uncertainty exists about how to ensure the correct type of evidence, at the right time and the right place; rigorously developed

national evidence-based guidelines are one way in which this may be achieved. Broad statements of best practice assist in decision-making in relation to preventing hospital-acquired infections. Multi-disciplinary teams have to become involved in the areas of infection control, microbiology and infectious diseases on systemic review and evidence of appraisal with representatives from various learned societies.

Guidelines in hospital have covered the following areas:

- standard principles;
- short-term indwelling urinary catheters;
- central venous catheters;
- hospital environmental hygiene;
- hand hygiene;
- personal protective equipment; and
- safe use and disposal of sharps.

In the community and primary care similar issues are covered but enteral feeding, and long-term urinary and central venous catheters have also been studied.

The development process has taken place with guideline reviews, focus groups and expert opinion. Other guideline publishers, including SIGN, were approached and a formal systematic review initiated. Evidence tables have been constructed and the guidelines thereafter drafted. The acute care guidelines have been published in the *Journal of Hospital Infection*.<sup>21</sup> The community and primary care guidelines were published by NICE in July 2003.

They have been implemented by passive dissemination of guidelines, active educational interventions and individual implementation strategies. The EPIC initiative will be continually updated.

Future plans include collaborative research to reduce the incidence of hospital-acquired MRSA colonisation and the review of international policy and practice preventing hospital-acquired infections. To identify opportunities to learn from others and to improve UK infection prevention and practice control.

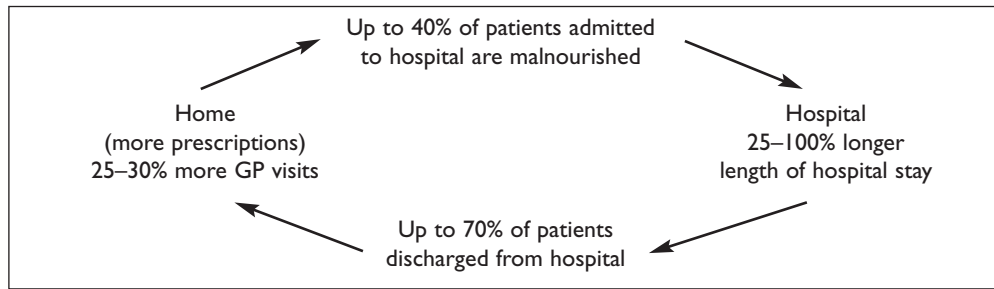
## SESSION 3

### **NUTRITIONAL MATTERS**

#### **Detection of malnutrition**

*Professor M Elia, Professor Clinical Nutritional and Metabolism, University of Southampton*

The distribution of those who are underweight is mostly localised in the community. However, it is a continuous carousel between hospital and community (see Figure 1). The incidence of those who are underweight varies in the UK. In Dundee, the percentage with a BMI <20 is 37.5%, while in Glasgow it is 18.0% (see also Table 2).<sup>22</sup> Worryingly, malnutrition is undetected and under-



**FIGURE 1**  
The malnutrition carousel.

treated in hospital patients. In hospital up to 70% of such patients are unrecognised, in hospital out-patients 45–100% of such patients are unrecognised<sup>22</sup> and in nursing homes almost 100% of such patients are unrecognised.<sup>23</sup> A plethora of reports including *Detection and Management of Malnutrition* indicate the need for nutritional screening.<sup>24</sup>

Nutritional screening and assessment are two separate things. Screening is a rapid, simple and general procedure used by nursing, medical and other staff as a first contact with the patient; assessment is more lengthy and specific with an in-depth evaluation of a patient's nutritional state by a nutrition specialist, i.e. a dietician. The malnutrition universal screening tool can be used in different care settings and by different healthcare professionals. It can be used to identify both under and over-nutrition or when height or weight can not be measured. A nutrition screening tool should be practical, reliable, valid and evidence based; it should also be linked to a care plan and used on all patients and in all healthcare settings.

International agencies have not agreed a cut-off for unintentional weight change, however, some professional organisations have provided such guidelines, typically 5–10% weight loss over 3–6 months.

The overall risk of undernutrition can be scored using the percentage weight loss and the BMI (see Table 3). The total score is the combined score. If a patient scores 0, no action need be taken; if they score 1 the patient needs to be observed; and with a score of 2 there is a high risk of under-nutrition and the patient

should be properly assessed and treated.

The key groups at risk of malnutrition are those with chronic diseases, those recently admitted and discharged from hospital, older people, and the poor and socially isolated. Those with a higher malnutrition risk have a significantly increased mortality and length of hospital stay.

#### Summary

- Malnutrition is common;
- it is often under-recognised and under-treated; and
- efficient screening using a reliable and valid tool is an important first step in the management of the problem.

#### Treatment of malnutrition

*Dr R Stratton, Research Fellow, Institute of Human Nutrition, University of Southampton*

Dr Stratton gave an eloquent overview of the effectiveness of oral nutritional supplementation (ONS) and enteral tube feeding (ETF). She covered the systematic review of 287 trials including 11,720 patients and discussed ONS and ETF in the hospital and community.<sup>25</sup> Four areas were examined in detail.

#### 1. Mortality

Both ONS and ETF lead to a 10% reduction of mortality. However, for ETF smaller analyses were looked at – 12 RCTs compared to 17 for ONS. There is, however, inadequate data of ONS and ETF in the community affecting mortality.

#### 2. Complication rates

Complications are multifactorial including sepsis, wound

**TABLE 2**  
BMI categories.

BMI	Weight category
<18.5	Underweight
18.5–20.0	Underweight
20.0–25.0	Desirable weight
25.0–30.0	Overweight
>30.0	Overweight

**TABLE 3**  
Risk of under nutrition scoring system.

% Weight loss	Score	BMI (kg/m <sup>2</sup> )	Score
<5%	0	>20	0
5–10%	1	18.5–20	1
>10%	2	<18.5	2

# SYMPOSIUM REPORTS

and urinary tract infections, pneumonia, pulmonary failure, wound dehiscence, anastomotic leaks, bowel obstruction and myocardial infarction. Oral nutritional supplementation has significantly been shown to reduce complication rates with an odds ratio of 0.29. Enteral tube feeding has done likewise, however, the most significant reduction being in the subgroup that had infections.

'In the community' data is unavailable for ONS and ETF affecting complication rates. However, ONS has been found to be beneficial in hospital surgical patients and ETF in those with liver disease and surgery, mostly GI and burns.

### 3. Body function

Improvements have been seen in both hospital and community with both ONS and ETF in the following areas:

- Obstructive pulmonary disease – improved respiratory function, increased hand-grip strength and increased walking distance;
- Older patients – reduced number of falls, increased activities of daily living and mobility, improved immune function and increased wellbeing;
- Liver disease – lower incidence of severe infections and improved liver function; and
- Surgical patients – greater wound healing, less fatigue and less loss of muscle strength.

### 4. Length of stay

There was a reduction of 13 days in those patients with ONS (27 vs 40 days). The difference was most significant in patients with a lower BMI (<20 kg/m<sup>2</sup>). In the patients that had ETF the reduction in length in hospital was a stay of one day (23 vs 24 days).

Stratton then postulated the potential pathway for these changes:

1. an increase in muscle mass and body weight; or
2. the correction of some critical nutrient.

Stratton *et al.*<sup>25</sup> have shown that supplements increase energy and nutrient intakes when added to food intake in older patients. They have also shown a significant weight change with those patients sustaining the weight change having the most significant functional benefit both in hospital and in the community.

#### Summary

- Use of ONS and ETF produces significant clinical and functional benefits in older patients.
- The benefits to outcome may be due to improved body weight and muscle mass or the critical supply of nutrients.
- The current evidence-base is still incomplete and needs to be regularly updated and developed.

### Refeeding syndrome in older people

*Dr N Reynolds, Consultant Gastroenterologist, Ninewells Hospital, Dundee*

Refeeding syndrome is a derangement in the serum electrolytes (phosphate, potassium, magnesium), vitamin deficiency and fluid as well as sodium retention occurring in malnourished patients after initiation of parenteral nutrition.<sup>26</sup>

It is thought that it goes unrecognised with 0.8–30% of hospital admissions and has degrees of severity with no real consistent picture.

It can be classified as:

- severe: serum phosphate <0.32 mmol/l; or
- moderate: 0.32–0.81 mmol/l.

Phosphate is responsible for the normal function of red and white blood cells and platelets. It is involved in oxygen release from haemoglobin, ATP synthesis and all cellular activity. For this to develop one needs starvation/katabolic illness with loss of fat and lean body mass. There needs to be a proportionate loss of whole body phosphate. With glucose-based nutritional regimen inorganic phosphate is required for phosphorylation of glucose, insulin secretion is stimulated and protein synthesis induced. There is a transcellular shift of glucose and phosphate, and hence a dramatic drop in the serum phosphate.

The consequences of this are as follows:

1. cardiovascular: arrhythmia, ventricular dysfunction, myocardial infarction and hypotension;
2. respiratory: diaphragmatic hypocontractility, pulmonary haemorrhage, apnoea and adult respiratory distress syndrome;
3. haematological: thrombocytopenia, leucopenia and disseminated intravascular coagulation;
4. CNS/PNS: gross muscular weakness, seizures, toxic encephalopathy and coma; and
5. secondary sepsis: high mortality once a full-blown syndrome is established.

Management is definitely by prevention, and one needs to screen for malnutrition. If the diagnosis of refeeding syndrome is made, it is then too late.

Basic principles should be:

- to initiate refeeding slowly with a hypocaloric feed;
- to monitor electrolytes daily for the first week (if a crisis is to start it is usually days two to seven post-initiation of feeding);
- to consider thiamine and micronutrients;
- to replace magnesium and potassium;
- to consider alternate IV Addiphos® (phosphate) guided by chemistry (62 mg/kg of daily phosphorus is what is required);
- enteral tube feeding contained a maintenance

- amount but is often not sufficient; and
- to slowly introduce protein (refeeding increases serum aminoacids).

#### Summary

- Full syndrome carries a high mortality.
- Identify at-risk groups.
- Careful monitoring and prevention is the key.

## SESSION 4

### QUESTION TIME: GUIDELINES AND FRAIL OLDER PEOPLE – HOW RELEVANT ARE THEY?

*Professor G Lowe, Professor of Vascular Medicine, University of Glasgow; Chair, SIGN*

Professor Lowe started with an introduction to the evolution of guidelines and the development of SIGN. The reason for guidelines is so that our management is not based purely on healthcare professionals' individual teaching and experience. Guidelines aim to improve outcomes for patients. In 1993, SIGN was established in order to develop clinical guidelines for Scotland to address the patients' journey of care using multiprofessional, patient-involved guideline development groups. The guidelines use a systematic grading of evidence for key questions with explicit linking of recommendations to the evidence.

Seventy-five per cent of the topics covered by SIGN guidelines deal with common, and important, conditions in the areas of national priority, e.g. heart disease and stroke, cancer and mental health. The guidelines are closely linked with standards and audit (NHS Quality Improvement Scotland).

Frailty, whether occurring in old or young age, or physical or mental disability at any age, should not be a barrier to optimal healthcare. It should also not be a barrier to research to provide evidence for guidelines, standards and audit to improve outcomes. However, frail older people are often excluded from studies. Extrapolation from these studies of less frail younger patients may weaken the level of evidence along with multiple pathology and medications that are common in older people. Application of guidelines requires clinical judgement. The SIGN guidelines have a disclaimer that the ultimate judgement of treatment must be made in light of the patient's clinical data and diagnostic and treatment options available. Significant departures from guidelines should be documented in the case notes. Guidelines produced by SIGN are not a standard of patient care.

*Professor DG Seymour, Professor of Medicine (Care of the Elderly), University of Aberdeen*

The frail older population do differ from their younger counterparts. They have altered physiology giving way to

altered clearance of drugs. They have multiple pathology, and given the multiple guidelines available, this may give rise to the possible temptation of polypharmacy, with the likelihood of drug interactions and poor compliance. There is a risk vs benefit balance with length of life and quality of life, problems with compliance and ascertaining patients' preferences if they are cognitively impaired and finally difficulties in estimating the risk in the frail individual.

A number of case histories were presented and discussed, in particular anti-coagulation in atrial fibrillation and also the management of a myocardial infarction in a variety of ages and degrees of frailty. There was at times a variance within the delegates about how invasive and how intensive the treatment options chosen should be. Professor Seymour then led us through the atrial fibrillation/anticoagulation guidelines and these appear to have hit home and initiated policy changes in the audience.

Conclusions from the afternoon were that old, frail people deserve evidence-based care assisted with guidelines but there are many practical problems involved in trying to deliver this including:

1. quality of data;
2. relevance of research data to date;
3. tailoring research data to the individual; and
4. establishing and cooperating patients' preferences.

Craft, art and science are all required.

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## FURTHER READING

[www.doh.gov.uk/hai](http://www.doh.gov.uk/hai)  
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