KNOWLEDGE AND PRACTICE: IMPROVING ASTHMA CARE

Launch of the updated SIGN/BTS British guideline on the Management of Asthma

Tuesday 10 May 2011
Royal College of Physicians of Edinburgh

ABPI Scottish Respiratory Industry Group (SRIG)*, SIGN and Asthma UK Scotland.

*(AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Napp, Novartis, MSD, Pfizer)
Session 1

Chair: Dr Kia Soong Tan, Consultant Physician, Wishaw General Hospital

10.30 Welcome and introduction
Dr Kia Soong Tan, Consultant Physician, Wishaw General Hospital

10.35 Patient’s perspective
Mr Mike McGregor, Lay representative

10.45 Introduction to the BTS/SIGN Guideline
Dr Bernard Higgins, Consultant Physician, Freeman Hospital, Newcastle upon Tyne

10.55 Monitoring and control
Dr Stephen Turner, Clinical Senior Lecturer, Royal Aberdeen Children's Hospital

11.05 Pharmacological management
Professor Neil Barnes, Consultant in Respiratory Medicine, London Chest Hospital

11.15 Asthma in adolescents
Dr James Paton, Reader in Developmental Medicine, University of Glasgow

11.25 Patient version of the guideline
Ms Cher Piddock, Clinical Lead, Asthma UK

11.35 Question and answer session

12.00 Lunch
Session 2

Chair: Dr Graham Douglas, Consultant Physician, Aberdeen Royal Infirmary

12.45  **Implementation of local clinical guidelines**

*Dr Christine Bucknall, Consultant Respiratory Physician, Stobhill General Hospital*

*Dr Duncan MacIntyre, Consultant Physician, Victoria Infirmary*

13.05  **Panel Discussion**

13.15  **Introduction to workshops: Implementation of BTS/SIGN Guideline: setting the scene**

*Dr Ali El-Ghorr, Implementation Adviser, SIGN*

13.30  **Parallel Workshops**

**Workshop 1  Monitoring and control**

*Dr Jakki Faccenda, Consultant Physician, Borders General Hospital*

**Workshop 2  Pharmacological management**

*Mrs Phyllis Murphie, Respiratory MCN Clinical Lead/Lead Respiratory Nurse, Dumfries and Galloway Royal Infirmary*

**Workshop 3  Asthma in adolescents**

*Mrs Sonya Crawford, ASL Nurse, NHS Lothian/City of Edinburgh*

**Workshop 4  Patient information**

*Dr Lorna Thompson, Programme Manager, SIGN and Ms Maureen Carroll, CHD and Respiratory Network Manager, Hairmyres Hospital*

15.00  **Coffee**
Session 3
Chair: Dr Charlie Clark, Public Health Consultant and Child Health Commissioner, NHS Lanarkshire

15.05 Implementation of the BTS/SIGN Guideline through MCNs
Ms Maureen Carroll

15.15 Feedback from workshops
Workshop 1 Monitoring and control Dr Jakki Faccenda
Workshop 2 Pharmacological management Mrs Phyllis Murphie
Workshop 3 Asthma in adolescents Mrs Sonya Crawford
Workshop 4 Patient information Dr Lorna Thompson and Ms Maureen Carroll

16.05 Question and answer session

16.15 Call for Action
Mr Gordon Brown, National Director of Asthma UK Scotland

16.30 Close of meeting
Dr Graham Douglas, Consultant Physician, Aberdeen Royal Infirmary
SIGN IMPLEMENTATION SUPPORT

Ali El-Ghorr
Vision

WORLD LEADERS IN IMPLEMENTATION SUPPORT
WHAT SHOULD SIGN DO?

- Guideline users
- NHS Board staff
- SIGN staff
- HIS colleagues
- Primary care
- Patient & lay representatives
- NICE implementation team
## IMPLEMENTATION STRATEGY

<table>
<thead>
<tr>
<th>Improved processes:</th>
<th>Awareness raising &amp; Education:</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Robust dissemination process</td>
<td>▪ Local clinical champions</td>
</tr>
<tr>
<td>▪ More interactive website</td>
<td>▪ Awareness raising activities</td>
</tr>
<tr>
<td></td>
<td>▪ Patients as champions for change</td>
</tr>
<tr>
<td></td>
<td>▪ Training modules linked to CPD</td>
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<table>
<thead>
<tr>
<th>Networking:</th>
<th>Implementation support resources:</th>
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<tbody>
<tr>
<td>▪ Linking with professional networks</td>
<td>▪ Algorithms &amp; Care Pathways</td>
</tr>
<tr>
<td>▪ Linking with national projects</td>
<td>▪ Resource implications calculator</td>
</tr>
<tr>
<td>▪ Meetings with NHS Boards</td>
<td>▪ Data sets</td>
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<td>▪ Electronic decision support tools</td>
</tr>
<tr>
<td></td>
<td>▪ Slide sets</td>
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</table>
EXAMPLES
AWARENESS RAISING
Diagnosis and pharmacological management of Parkinson’s disease: summary of SIGN guidelines

D G Grosset, consultant neurologist1, G J A Macphee, consultant in medicine for the elderly1, M Nairn, programme manager2, on behalf of the Guideline Development Group

1 Department of Neurology, Southern General Hospital, Glasgow G51 4TF, 2 Scottish Intercollegiate Guidelines Network, Edinburgh EH7 5EA

Correspondence to: M Nairn moray.nairn@nhs.net

Why read this summary?

Parkinson’s disease is a common neurodegenerative disease diagnosed in 1% of the population aged over 50 years and 1.6% of people aged over 80 years. It is associated with nigrostriatal dopaminergic cell loss in the substantia nigra. This results in a reduction in dopamine receptors and neurotransmission and a decrease in the ability to perform fast and accurate movements.

This summary is more complete than the abstract and should be read in full. It reviews the signs and symptoms of Parkinson’s disease and discusses the management of the condition. It is intended for a general audience to present an overview of the signs and symptoms, diagnosis, and management of the condition.
Action urged for psoriasis sufferers

Published Date: 29 October 2010

By Lyndsay Moss
Health Correspondent

DOCTORS must do more to help patients with a serious skin and joint condition to get access to treatments that work, say experts.

Psoriasis, a chronic inflammatory disease causing severe itching and pain, affects more than 100,000 people in Scotland, with a fifth also suffering psoriatic arthritis, which can have a serious effect on quality of life.

But in some cases experts and campaigners say, while effective treatments are available, patients are not always referred to specialists to receive these as quickly as they should.

New guidance, developed by the Scottish Intercollegiate Guidelines Network (SIGN), sets out advice about the care of patients with the condition.

Charity hails skin care help

Published Date: 03 November 2010

NEW guidelines in the care of a painful skin disease have been welcomed by a city charity that took on the main lobbying for the cause.

The organisation in charge of introducing drugs and treatments to Scottish hospitals has announced it wants medical professionals in different fields to work closer together.

Psoriasis Scotland Arthritis Link Volunteers (PSALV) said the main breakthrough was the link between psoriasis, the impact it had on skin and the link with joint and bone pain.

Director Janice Johnson said: "I am proud that our hard work has helped."

"PSALV has worked hard over the past few years urging the Scottish Parliament and health professionals to develop clinical guidelines on the diagnosis and treatment of psoriasis and psoriatic arthritis."
EDUCATION: SORE THROAT GUIDELINE:

• NES educational material
• Practice Based Small Group Learning
• CPD awarded
• Evaluation included
Management of diabetes
A national clinical guideline
March 2010
DIABETES GUIDELINE RESOURCES
DIABETES GUIDELINE RESOURCES

Management of diabetes

A clinical and resource impact assessment
May 2010
DIABETES GUIDELINE RESOURCES
GLYCAEMIC CONTROL ALGORITHM (TYPE 2)

REVIEW AND SET GLYCAEMIC TARGET: HbA1c <7% (53 mmol/mol) OR INDIVIDUALISED AS AGREED

1st LINE OPTIONS in addition to lifestyle measures; START ONE OF

- Metformin (MF)

  Review and if not reaching target move to 2nd line

2nd LINE OPTIONS in addition to lifestyle measures, adherence to medication and dose optimisation; ADD ONE OF

- Sulphonylurea* (SU)
  - If hypos a concern (eg driving, occupational hazards, at risk of falls) and
  - If no congestive heart failure

  Review and if not reaching target move to 3rd line

3rd LINE OPTIONS in addition to lifestyle measures, adherence to medication and dose optimisation; ADD OR SUBSTITUTE WITH ONE OF

ORAL (continue MF/SU if tolerated)

- Thiazolidinedione* If no congestive heart failure
- DPP-IV inhibitor* If weight gain a concern

INJECTABLE (if willing to self inject; continue MF/SU if tolerated)

- Insulin* (inject before bed)
  - If osmotic symptoms/rising HbA1c; NPH insulin initially
  - If hypos a concern, use basal analogue insulin as an alternative
  - Add prandial insulin with time if required

- GLP-1 agonists*
  - If BMI >30 kg/m²
  - If a desire to lose weight
  - Usually <10 years from diagnosis

Prescribers should refer to the British National Formulary (www.bnf.org) and the Scottish Medicines Consortium (www.scottishmedicines.org.uk) for updated guidance on licensed indications, full contraindications and monitoring requirements.

- Usual approach
- Alternative approach. Special considerations
  * Continue medication if EITHER individualised target achieved OR HbA1c falls >0.5% (5.5 mmol/mol) in 3-6 months
DIABETES GUIDELINE IMPLEMENTATION:

• Collaborating with Diabetes MCNs
• Scottish Government Diabetes Action Plan
• Raising awareness
• Partnering with Diabetes UK & ABPI to deliver local workshops
• Auditing key recommendations through the National Diabetes Audit
• Update posted on the SIGN website: www.sign.ac.uk
ASTHMA

- Electronic decision support tools
- BlueBay screen on GP system
CLINICAL ASSESSMENT

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<td>C/O - cough</td>
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<td></td>
<td>171..</td>
<td></td>
<td>Low</td>
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</table>

- If there is no significant reversibility, and treatment trial is not beneficial, consider tests for alternative conditions.

In children with an intermediate probability of asthma who can perform spirometry and have no evidence of airways obstruction:
- consider testing for atopic status, bronchodilator reversibility and if possible, bronchial hyper-responsiveness using methacholine, exercise or mannitol
- consider specialist referral.

In children with an intermediate probability of asthma who cannot perform spirometry, offer a trial of treatment for a specified period:
- if treatment is beneficial, treat as asthma and arrange a review
- if treatment is not beneficial, stop asthma treatment, and consider tests for alternative conditions and specialist referral.

In children with a high probability of asthma:
- start a trial of treatment
- review and assess response
- reserve further testing for those with a poor response.

Asthma diagnosis: No Data Recorded

Record the basis on which a diagnosis of asthma is suspected.

Copyright ©SIGN. This template is based on the published SIGN guidance and is intended for use by suitably qualified health professionals.
GP prompted to measure peak flow.

The assessment tools show that PFR is around 66% of predicted. Evidence of airways obstruction.

All information is correctly read coded back to the encounter.
Guideline is fully integrated with the underlying GP system.

Asthma management screen shows options available.
ANOTHER IMPLEMENTATION OPPORTUNITY: LINKING TO QUALITY OUTCOMES FRAMEWORK

• SIGN is now part of NHS Evidence
• Revision of QoF is now responsibility of NICE
• NHS Evidence is examined to identify evidence based QoF measures
IMPLEMENTATION WEB RESOURCES
EARLY MANAGEMENT OF PATIENTS WITH A HEAD INJURY

DOWNLOAD THE GUIDELINE

- Full guideline (4.03M)
- Quick reference guide adult (227K)
- Quick reference guide children (276K)
- Rocket adult (2.14M)
- Rocket children (1.45M)
- List of recommendations (360K)
- Information about Acrobat files
- Audit Tools available here

REMIT OF THE GUIDELINE

This guideline makes recommendations on the early management of adults and children with head injury.

The focus remains on the first 72 hours of care, but the growing recognition that this is just the first part of the patient’s pathway has led to a stronger emphasis on how to plan discharge and what advice to give about follow up.


SUPPORTING MATERIAL

- Example of head injury observation chart (255K)
- Neurological assessment using the Glasgow Coma Scale (785K)
- Sport Concussion Assessment Tool (SCAT) (511K)
- Example of a proforma for routine documentation of head injury in adult patients (210K)
- Example of a proforma for routine documentation of head injury in children over five years of age (224K)
- Example of a proforma for routine documentation of head injury in children under five years of age (223K)
- Example of a neurosurgical referral form (123K)

PATIENT INFORMATION

- Example advice leaflet for person taking a patient home from the ED (133K)
- Example advice leaflet for patient allowed home from the ED (117K)
- Example discharge advice leaflet for carers of children who have sustained a head injury (132K)
- Example advice leaflet for patients returning to sport after a head injury: a return to play protocol (121K)
- Example advice leaflet for patient discharged home after admission (117K)
SIGN Audit Tools are in Adobe PDF and require Acrobat Professional or Acrobat 7 Reader or higher for use of interactive form elements. Please complete the Audit Tools disclaimer form, print, sign and file with your training records.

<table>
<thead>
<tr>
<th>No.</th>
<th>Guideline Title</th>
<th>Publication Date</th>
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<tr>
<td>114</td>
<td>Non-pharmaceutical management of depression: Audit tool plus instructions</td>
<td>February 2011</td>
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<td>Non-pharmaceutical management of depression: Data upload form</td>
<td>February 2011</td>
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<tr>
<td>111</td>
<td>Management of hip fracture in older people: Audit tool plus instructions</td>
<td>February 2011</td>
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<td>Early management of patients with a head injury: Audit tool plus instructions</td>
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SIGN 84 • Management of breast cancer in women
Recommendations Online: Clinical Knowledge Evidence Translation

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<tr>
<th>Diagnosis and referral</th>
<th>Surgery</th>
<th>Systemic therapy</th>
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<tr>
<td>Investigation</td>
<td>Conservation surgery v. Mastectomy</td>
<td>Adjuvant chemotherapy</td>
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<tr>
<td>Follow up and palliative care</td>
<td>Surgical management of the axilla</td>
<td>Neoadjuvant chemotherapy</td>
</tr>
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<td>Psychological care</td>
<td>Management of ductal carcinoma in situ</td>
<td>Anthracycline and taxane therapy</td>
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<tr>
<td>The role of the breast care nurse</td>
<td>Timing of surgery and chemotherapy</td>
<td>Biological therapies</td>
</tr>
<tr>
<td>Identifying distress</td>
<td>Radiotherapy</td>
<td>Vinorelbine and capcitabine therapy</td>
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<td>Psychological support for women with breast cancer and their families</td>
<td>Adjuvant radiotherapy</td>
<td>Bisphosphonates</td>
</tr>
<tr>
<td>Communication methods</td>
<td>Tnm staging</td>
<td>Endocrine therapy</td>
</tr>
<tr>
<td></td>
<td>Abbreviations</td>
<td>Timing of surgery and chemotherapy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Management of menopausal symptoms</td>
</tr>
</tbody>
</table>
Women should be encouraged to become aware of the feel and shape of their breasts, so that they are familiar with what is normal for them.

Women should be encouraged to report any change from normal to their general practitioner.

Psychological support should be available to women diagnosed with breast cancer at the clinic.

Referral from primary to specialist care should be made in accordance with the Scottish Cancer Group referral guideline.

<table>
<thead>
<tr>
<th>Source of problem</th>
<th>Who to refer</th>
<th>Who to manage in primary care</th>
</tr>
</thead>
</table>
| LUMP              | women with any new discrete lump  
 | women with any new lump in pre-existing nodularity  
 | women with any new asymmetrical nodularity that persists at review after menstruation  
 | women with a non lactational abscess or mastitis which does not settle after one course of antibiotics  
 | abscess in patient >40 years even after settled (for mammogram)  
 | women with any cyst persistently refilling or recurrent cyst  
 | women with unilateral axillary lymph node lump  | young women < 35 years with longstanding tender, lumpy breasts  
 | older women with symmetrical nodularity if no localised abnormality  
 | young girls with tender developing breasts  
 | women with bilateral fatty gynaecomastia without focal abnormality  |
| PAIN              | post-menopausal women with unilateral persistent pain  
 | women with pain associated with a lump  
 | women with intractable pain that interferes with a patient’s lifestyle or sleep and which has failed to respond to reassurance or simple measures such as wearing a well-supporting bra and common drugs  | women with moderate degrees of breast pain no discrete palpable |
| NIPPLE SYMPTOM    | women < 50 years with persistent discharge, which is: bloodstained (dipstick for blood) or single duct | women < 50 years with nipple discharge from >1 duct, intermittent |
SIGN 84 • Management of breast cancer in women
Recommendations Online: Clinical Knowledge Evidence Translation

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<td></td>
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</table>
WEBSITE STATISTICS PER MONTH

• 1.5 million successful requests
• 50,000 downloads of recent guidelines
• 10-20k downloads of older guidelines
SIGN APPS
Management of Diabetes for Patients

MORE INFORMATION AND SUPPORT

Here are some national organisations that are specific to diabetes.

Diabetes UK (Scottish office)
The Venlaw Building, 349 Bath Street
Glasgow G2 4AA

Phone: 0141 245 6380
Email: scotland@diabetes.org.uk
Website: www.diabetes.org.uk

Diabetes UK provides a range of information on diabetes including leaflets, fact sheets and Diabetes UK’s magazine ‘Balance’. They provide advice on all parts of diabetes including diabetic care, diet, holidays and insurance.

Diabetes UK have a number of support groups in Scotland and you can contact Diabetes UK for details of their nearest local support group.
CONSIDER

• What implementation support do you think will support this guideline?
• How can we raise awareness with target groups?
• How can we get people to follow guideline?
British Asthma Guideline

Edinburgh May 10\textsuperscript{th} 2011
BTS Guideline
BTS Guideline

BMJ 1990
Thorax 1993
SIGN Asthma Guidelines

- SIGN 6 (hospital acute)
- SIGN 33 (primary care)
- SIGN 38 (acute)
<table>
<thead>
<tr>
<th>Date</th>
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<tr>
<td>1990</td>
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<td>1996</td>
<td>SIGN 6 (Hosp Acute)</td>
<td>29</td>
<td>59</td>
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<td>1998</td>
<td>SIGN 33 (Primary Care)</td>
<td>26</td>
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British Asthma Guideline

- Diagnosis & monitoring
- Non-pharmacological treatment
- Pharmacological treatment
- Inhaler devices

- Acute Asthma
- Special Situations (pregnancy, occupation, adolescence)
- Organisation of Care
- Education and self-management
British Asthma Guideline

• **Diagnosis**
  • Non-pharmacological treatment
  • Pharmacological treatment
  • Inhaler devices

• **Acute Asthma**
  • Special Situations (pregnancy, occupation, adolescence)

• Organisation of Care
  • Education and self-management
Asthma: accurate diagnosis
Presentation with suspected asthma in adults

Clinical assessment including spirometry (or PEF if spirometry not available)

HIGH PROBABILITY diagnosis of asthma likely

INTERMEDIATE PROBABILITY diagnosis uncertain

LOW PROBABILITY other diagnosis likely

FEV₁/FVC < 0.7
Trial of treatment

Yes
No

Yes
Continue treatment
No
Assess compliance and inhaler technique
Consider further investigation and/or referral

FEV₁/FVC > 0.7

Investigate/treat other condition

Response?

Yes
Consider referral
No
Further investigation

Response?

Yes
Continue treatment
No
British Asthma Guideline

- Diagnosis & monitoring
- Non-pharmacological treatment
- Pharmacological treatment
- Inhaler devices

- **Acute Asthma**
- Special Situations (pregnancy, occupation, adolescence)
- Organisation of Care
- Education and self-management
Management of acute severe asthma in adults in A&E

<table>
<thead>
<tr>
<th>Time</th>
<th>Measure peak expiratory flow and arterial saturations</th>
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<tr>
<td>5 mins</td>
<td>Give usual bronchodilator</td>
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<tr>
<td>15-30 mins</td>
<td>Clinically stable and PEF &gt;75%</td>
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<tr>
<td>60 mins</td>
<td>Repeat salbutamol 5 mg nebuliser</td>
</tr>
<tr>
<td>120 mins</td>
<td>Patient stable and PEF &gt;50%</td>
</tr>
</tbody>
</table>

Potential discharge:
- In all patients who received nebulised β₂ agonists prior to presentation, consider an extended observation period prior to discharge
- If PEF <30% on presentation, prescribe prednisolone 40-50 mg/day for 5 days
- In all patients ensure treatment supply of inhaled steroid and β₂ agonists and check inhaler technique
- Arrange GP follow up for 2 days post presentation
- Fax discharge letter to GP
- Refer to asthma liaison nurse/clinic

Immediate management:
- High concentration oxygen (>60% if possible)
- Give salbutamol 5 mg plus ipratropium 0.5 mg via oxygen-driven nebuliser
- And prednisolone 40-50 mg orally or IV hydrocortisone 100 mg

Measure arterial blood gases
Markers of severity:
- Normal or raised PaCO₂ (PaCO₂ >4.6 kPa, 35 mmHg)
- Severe hypoxia (PaO₂ <8 kPa, 60 mmHg)
- Low pH (or high H⁺)

- Give/repeat salbutamol 5 mg with ipratropium 0.5 mg by oxygen-driven nebuliser after 15 minutes
- Consider continuous salbutamol nebuliser 5-10 mg/h
- Consider IV magnesium sulphate 1-2 g over 20 minutes
- Correct fluid/electrolytes, especially K⁺ disturbances
- Chest x-ray

Peak expiratory flow in normal adults

![Graph showing peak expiratory flow in normal adults](image)
British Asthma Guideline

- Diagnosis & monitoring
- Non-pharmacological treatment
- **Pharmacological treatment**
- Inhaler devices

- Acute Asthma
- Special Situations (pregnancy, occupation, adolescence)
- Organisation of Care
- Education and self-management
Combination Inhalers

Improve Adherence

Safety
British Asthma Guideline

- Diagnosis & monitoring
- Non-pharmacological treatment
- Pharmacological treatment
- Inhaler devices
- Acute Asthma
- Special Situations (pregnancy, occupation, adolescence)
- Organisation of Care
- Education and self-management
Action Plans: Improve asthma control
Reduce hospitalisation
The future

- Pharmacology
- Organisation of Care
- Non-pharmacology

Immuno-therapy
Development of patient version of asthma guideline

Cher Piddock
Clinical Lead, Asthma UK
Aims of project

- SIGN group formed to translate clinical guideline into patient version
- Patient guideline to be based on the main guideline especially around recommendations
- Patient guideline is not intended to be general information leaflet
- Patient guideline will include:
  - Diagnosis
  - Assessment and monitoring
  - Medicines used to treat asthma including steps
  - Acute asthma
  - Adolescent asthma
  - Self-management
  - Signposting information
  - Glossary
Why have a patient version?

- To help support & empower patients to self-manage their asthma
- People want more information about asthma and how to manage it
- Feedback from Public Partnership Forum very positive
- Focus group
  - Identified lack of knowledge and understanding of treatment steps and want to know about it
- Asthma UK experience
Asthma UK

- Asthma Nurse Specialist Adviceline
  - 6000 clinical calls & 647 e-mails
- ‘Top Five’
  - Symptoms & diagnosis
  - Medicines information
  - Unhappy with advice received from health care professionals
  - Concerns about side effects
  - Device queries
- Supporter Care team - Health information requested
  - 11,421 calls & 1133 126 publications
- Web
  - Virtual nurse 8160 unique page views
  - All about asthma 1,354 075
  - Medicines and treatments 269,827
  - Inhaler demo 31, 321
  - Blogs, Facebook, Twitter
Membership:
- SIGN Patient Involvement Team
- Patient representatives
- Clinical Lead (Asthma UK)
- Policy Officer (Asthma UK)
- Health Information Officer (Asthma UK)
- GP
- Respiratory Paediatrician
- Primary Care Practice Nurse (Asthma Specialist)
Process

- Patient group version drafted by SIGN
  - Clinical explanations / ease of read
- Peer review from main group
- Consultation 4 weeks
- SIGN editorial group
- Crystal Mark Award
- Chief Editor SIGN
Deciding content

- Isolated recommendation points
- Formed a question
- Worded the answer
- Working out a logical order
- Removing any points too complicated for this format
- Adding more detail when needed
- Making language easier to understand
- Currently at draft stage
Challenges and considerations

- Health Literacy - the ability to make informed health decisions
  - Basic health knowledge
  - Reading, comprehending & evaluating health information
  - Verbal communication with health professionals
  - Health decision-making

- Hard format one document
  - Downloadable children and adult section

- Raising awareness of patient version when available
- How will you refer to it
- When to direct patients to it
- Evaluating usefulness
Asthma in Adolescents

Dr. James Y. Paton
Royal Hospital for Sick Children, Glasgow
# Contributors - Those Who did the work

<table>
<thead>
<tr>
<th>Name</th>
<th>City</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roberta James</td>
<td>Edinburgh</td>
<td>Scotland</td>
</tr>
<tr>
<td>James Paton</td>
<td>Glasgow</td>
<td>Scotland</td>
</tr>
<tr>
<td>Donald Payne</td>
<td>Perth</td>
<td>Australia</td>
</tr>
<tr>
<td>Mitesh Patel</td>
<td>Wellington</td>
<td>New Zealand</td>
</tr>
<tr>
<td>Cher Piddock</td>
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<td>England</td>
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<tr>
<td>Mike Shields</td>
<td>Belfast</td>
<td>Northern Ireland</td>
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<tr>
<td>Ann McMurray</td>
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</tr>
<tr>
<td>Iona Paterson</td>
<td>Glasgow</td>
<td>Scotland</td>
</tr>
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</table>

Peer Reviewers
Asthma in Adolescents

• Describe gaps in the evidence and recommendations for research

• Outline new evidence and recommendations

• Highlight the main take home messages

• Describe barriers to implementing the recommendation
Asthma in Adolescents - Gaps in Evidence

• Evidence base is limited
• Much recent work has focused on prevalence of asthma and ecological risk associations - ISAAC Studies
• Little evidence on research and diagnosis
• Treatment studies - a problem of analysis
  ‣ Paediatric Studies - up to 12 yrs
  ‣ Adult studies - from 12 yrs
Self-reported Prevalence of Wheeze in the Past year by Age and Sex

Asthma in Adolescents – Evidence, Recommendations, Highlights

• Definitions & Prevalence
• Diagnosis
  - Diagnostic difficulties
• Non-Pharmacological & Pharmacological management
• Organisation and Delivery of Care during Transition
7.1 Definitions

Adolescents - young people between the ages of 10 and 19 years - are often thought of as a healthy group. Nevertheless, many adolescents do die prematurely due to accidents, suicide, violence, pregnancy related complications and other illnesses that are either preventable or treatable. Many more suffer chronic ill-health and disability. In addition, many serious diseases in adulthood have their roots in adolescence. For example, tobacco use, sexually transmitted infections including HIV, poor eating and exercise habits, lead to illness or premature death later in life.

http://www.who.int/topics/adolescent_health/en/
Self-reported prevalence Western Europe Centres (n = 44)

Current wheeze 14.3%
Asthma ever 15.8%
Severe asthma 6.2%
Symptoms of severe asthma without asthma ever 15.2%
7.1.1 Prevalence

Clinicians seeing adolescents with any cardio-respiratory symptoms should ask about symptoms of asthma.
7.1.2 Diagnosis & Assessment
Diagnosing Asthma - Exercise Related Symptoms - Watch For:

- (Normal) Exercise Induced Dyspnea - No other features, no response to pre-B2
- Vocal cord dysfunction
  - Abrupt onset, rapid resolution, tracheal wheeze, normal expiratory function
  - Exercise-induced during competitive aerobic activities
- Hyperventilation syndrome
- Psychogenic cough
- Supraventricular tachycardia
Prevalence (%) of asthma and wheeze at age 16–17 years in relation to personal daily smoking and current maternal ETS exposure.

Hedman L et al. Thorax doi:10.1136/thx.2010.143800
## 7.1.8 Non-pharmacological management - Tobacco

<table>
<thead>
<tr>
<th></th>
<th>Adolescents with asthma (and their parents and carers) should be encouraged to avoid exposure to environmental tobacco smoke and should be informed about the risks and urged not to start smoking.</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔</td>
<td>Adolescents with asthma should be asked if they smoke personally. If they do and wish to stop, they should be offered advice on how to stop and encouraged to use local NHS smoking cessation services.</td>
</tr>
</tbody>
</table>
### 7.1.9 & .10 Pharmacological management & Devices

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
<td>Adolescent preference for inhaler device should be taken into consideration as a factor in improving adherence to treatment.</td>
</tr>
<tr>
<td>✓</td>
<td>As well as checking inhaler technique it is important to enquire about factors that may affect inhaler device use in real life settings such as school.</td>
</tr>
<tr>
<td>✓</td>
<td>Consider prescribing a more portable device (as an alternative to a pMDI with spacer) for delivering bronchodilators when away from home.</td>
</tr>
</tbody>
</table>
### 7.1.11 Organisation and Delivery of Care

<table>
<thead>
<tr>
<th></th>
<th>School based clinics may be considered for adolescents with asthma to improve attendance but.</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
<td>Integration of school based clinics with primary care services is essential.</td>
</tr>
<tr>
<td></td>
<td>Peer-led interventions for adolescents in the school setting should be considered.</td>
</tr>
</tbody>
</table>
Transition is a **Process over Time** and Not just the event of transfer

**Responsibility**

**Experience & Experimentation**

**Identity and Interaction**

**Activities of Daily Living**

Edgecombe et al Arch Dis Child online 2010.
doi:10.1136/adc.09.171579
Recommendations for Organising Transition Services

- Young people should be given the opportunity to be seen without their parents
- Transition services must address the needs of parents/carers
- Transition services must be multi-disciplinary and multi-agency
- Co-ordination of transitional care is critical (identified coordinator)
- Young people should be encouraged to take part in transition/support programmes
- The involvement of adult physicians prior to transfer supports attendance and adherence to treatment
- Transition services must undergo continued evaluation
Asthma in Adolescents - Key Messages (& Barriers)

• Seeing adolescents on their own for part of the consultation

• Discussing (or at least, being prepared to) confidentiality and its limitations
Local implementation of clinical guidelines

Christine E Bucknall
MD, MRCGP, FRCP(Glas)
Consultant Respiratory Physician, Glasgow & BTS Audit Programme Director
Implementing best practice

• Understand current situation
• Identify anything which needs fixing
• Understand how “the system” manages this aspect
• Work out how to change this for the better
• Monitor the impact
Choose something which needs fixing

• BTS national asthma audit, 2009
• Web based, provides local results with national summary statistics for benchmarking
• Results showed problems in 2 areas:
  – 29% of cases did not receive systemic steroids within 4 hours of arrival
  – 35% of cases were not followed up after discharge
Evidence: follow up

- In a small RCT follow-up care by a nurse specialist was as effective and safe as that given by a respiratory doctor.\textsuperscript{798} (1+)

- Follow up should be arranged prior to discharge with the patient’s GP or asthma nurse within two working days; and with a hospital specialist asthma nurse or respiratory physician at about one month after admission.
What we did

• Presented results at medical division meeting; invited senior nurses from all medical wards to attend

• Senior nurses identified that patients were not being referred to respiratory nurse specialists after transfer from acute ward;

• System changes:
  – Nurses registered patients transferred from acute ward to RNS answerphone
  – RNSs introduced new chart for documenting inhaler technique/medicines review/action plan
  – Created specific asthma review clinic slots with respiratory secretary acting as link, making sure that appointments were made and details sent to patients
Section 3 - Discharge from Hospital - Inhaler Technique Review

Period 1 - 21 Observations

No data / Not recorded
Yes

Period 2 - 17 Observations

No
Yes

41.18%
Section 4 - Follow-up - Review

Period 1: 21 Observations

- No Outpatient referrals
- Pediatric medicine COPD

Period 2: 17 Observations

- No Outpatient referrals
- Pediatric medicine COPD
Barriers/obstacles

• Difficulty in changing organisation/system

• Don Berwick: “current system perfectly designed to give current results”

• Lack of managerial/service development input – no-one’s job to change things

• Shifting sands of middle grade medical support
Final thoughts

• BTS audit system for monitoring hospital inpatient asthma care (& other topics)
• Growing expertise in quality improvement within NHS / Patient Safety Initiative
• Target energy at changing the system to enable good practice to be delivered in a consistent manner
Local Guidelines and the role of the MCN

Duncan Macintyre
Consultant Physician, Victoria Infirmary, Glasgow
Chair, GGC Respiratory MCN
Glasgow Southside Respiratory Group
Managed Clinical Network

- Cross-section of those involved in care
- Effective representation of patient interests
- Route into management

Support the development and implementation of appropriate strategies and guidelines which reflect national guidelines and take into consideration all aspects of the patient pathway
MCN – local role

Local Guideline
- Ownership
- Brief with specific emphasis
- Local contact detail
- Patient record
- Associated with……

Education and support
- Briefings
- Local meetings
- Training courses
- Role of practice nurses
**Diagnosis**

- Symptoms - breathlessness; wheeze, cough. Usually intermittent, nocturnal, exercise induced.
- Peak flow variability of 20% with minimum change of 60 l/min usually diagnostic.
- Spirometry 15% and at least 200ml change post-bronchodilator. Note: Normal spirometry does not exclude asthma.
- By home monitoring (diary card); response to treatment or induction by exercise.

**Assessing control**

Asthmatics under report symptoms; use a validated questionnaire.

**RCP 3 Questions**

- Have you had difficulty sleeping because of your asthma symptoms - including cough?
- Have you had your usual asthma symptoms during the day - cough, wheeze, chest tightness or breathlessness?
- Has your asthma interfered with your usual activities - housework, work, school etc?

---

**STEPWISE Management**

**STEP 1**

Add short-acting beta agonist as required.
Low threshold for stepping up if uncontrolled i.e. symptomatic or using reliever three times per week; exacerbation in last two years; waking one night per week.

**STEP 2**

Add inhaled steroid 200 - 800mcg/day beclomethasone or equivalent.
If symptoms uncontrolled at 400mcg, consider Step 3.

**STEP 3 A**

LABA Add long-acting beta agonist.
Use combination inhaler.

**STEP 3 B**

Continue LABA if some benefit.
Increase steroid to 800mcg daily, then addition of leukotriene antagonist or theophylline.

**STEP 4**

Consider trial of:
- Increase ICS to 2000mcg/ day beclomethasone or equivalent.
- Addition of fourth drug.

**STEP 5**

Refer.

**BEFORE stepping up:**

Check:
- Trigger e.g. smoking, occupation.
- Compliance.
- Inhaler technique.

**BEFORE stepping down:**

See 'Assessing control' left - asthmatics often under report symptoms.
Aim for minimum dose that provides good control as assessed by validated questionnaire.

To be reviewed in 2010
Compliance
Under use of preventive therapy common - audit prescriptions, address patient concerns regarding steroids.
Inhaler technique (where possible take into account patient preference).
Use Personal Action Plan as a tool.

Self-management – Personal Action Plans
- Grade A evidence: offer to all, but particularly those admitted to hospital.
- Written and personalised, focusing on individual needs and preferences.
- May be based on symptom control or PEFR - latter not essential. A process not an event.
- To include:
  - Nature of disease and treatment
  - Disease monitoring, including symptom recognition leading to early response to exacerbations
  - Allergen and trigger avoidance
  - Brief, simple education linked to patient goals likely to be most effective - “If we could make one thing better with your asthma, what would it be?”

Annual review
- Assess control.
- Review therapy including inhaler technique.
- Frequency of exacerbations / oral steroids / A&E, OOH contacts and acute admissions.
- Peak flow (percentage of best).
- Personal Action Plan.
- Smoking cessation.
- Consider steroid side effects including osteoporosis risk (see GGGH guidelines) particularly at doses of over 800mcg daily (BDP equivalent).

Complicating problems in asthma
- Rhinitis - control may improve asthma control.
- GORD - worth treating if present.
- Infection - confirm with culture if recurrent infection suspected - most asthma exacerbations do NOT require antibiotics.
- Obesity - may contribute to poor control.
- Smoking - associated with usual issues plus reduced effect of inhaled steroid.
- Dysfunctional breathing.
- Psychological morbidity - can be cause and result of poor control.

Hospital referral
- Diagnostic uncertainty:
  - Symptomatic response in PEFR or spirometry.
  - Poor response to treatment.
  - Possible causative agent, especially occupational.
- Poor control
  - Frequent exacerbations.
  - Persisting symptoms despite Step 4 treatment.

Dose equivalence of inhaled steroid
1000mcg beclomethasone (BDP) = 1000mcg budesonide = 500mcg fluticasone.
Different brands of beclomethasone CFC-free inhalers are not equipotent and should be prescribed by brand name – see BNF for full dosing information.

Checking Inhaler Technique
MDI:
- Preparation (shake inhaler, breathe out).
- Co-ordinate activation and inhalation.
- Breath-hold.
Spacer:
- Preparation.
- Breathe in immediately after activation.
- Breath-hold if possible.
Dry Powder:
- Fairly hard breath in.

Acute exacerbations

Resources
www.sign.ac.uk/index.html
www.asma.org.uk
www.gpiag.org
www.ginasthma.com
Southside Respiratory Group

• 1990s – initial asthma guidelines
• Education / discussion meetings
• Training programmes
• Newsletter
• Support – practice nurses
MCN – Local problems

- A and E attendance
- Non-attenders
- Difficult asthma protocol
- Pediatric- adult transition.
MCN – Service agreements

QOF
- Asthma register
- Measure of reversibility
- Smoking status in teenagers
- Review in last 15 months

Locally enhanced service [LES]

Medical Profile
- Asthma mortality rates
- Emergency admission rates
- Readmission rates
What is good asthma control?

- no (or minimal) daytime symptoms
- no nocturnal symptoms or awakenings
- no (or minimal) need for “rescue” treatment
- no limitations on activities
- (near) normal lung function
- no exacerbations
WHY AIM FOR CONTROL?

- Patient’s perspective
- Payer’s perspective
PATIENT PERSPECTIVE
What do you want to be better about your asthma?

Patients (%)

<table>
<thead>
<tr>
<th>Item</th>
<th>Patients (%)</th>
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</thead>
<tbody>
<tr>
<td>Work</td>
<td>0</td>
</tr>
<tr>
<td>Cope with triggers</td>
<td>10</td>
</tr>
<tr>
<td>Lung function</td>
<td>20</td>
</tr>
<tr>
<td>Daytime symptoms</td>
<td>30</td>
</tr>
<tr>
<td>Nocturnal symptoms</td>
<td>40</td>
</tr>
<tr>
<td>Exercise</td>
<td>50</td>
</tr>
<tr>
<td>β₂-agonist</td>
<td>60</td>
</tr>
<tr>
<td>Normal life</td>
<td>70</td>
</tr>
<tr>
<td>Exacerbations</td>
<td>70</td>
</tr>
</tbody>
</table>

Price & Pearson. ATS 1998
WHAT PREDICTS AN EXACERBATION?

- Database of over 1000 patients followed for one year in the TRUST study
- Comparison of regular and as required β2 agonists
- Primary outcome measure severe exacerbations
- Daily diary cards and PEF measurements

Dennis et al Clin & Exp Allergy 2005
EFFECT OF DAILY SYMPTOMS ON THE ORS OF STARTING A COURSE OF ORAL CORTICOSTEROIDS

Best predictor of an exacerbation is an increase in day-time symptoms.
Similar findings from the FACET database

GOAL STUDY: QUALITY OF LIFE AFTER ONE YEAR BY CONTROL STATUS

Control status at 52 weeks

Total Control (n = 253 / 144)
Well Controlled (n = 270 / 245)
Not controlled (n = 287 / 384)

Baseline

Better QoL
Worse QoL

AQLQ total score

p < 0.001

Bateman et al. ERJ 2007
POOR ASTHMA CONTROL IN EUROPE 2008

Uncontrolled patient: ACT score <20

PAYER'S PERSPECTIVE
ASTHMA IN FINLAND 1981 - 2003

Patients are being treated effectively outside the hospital

- 218 million € (1611 €/patient) in 1993
- 213.5 million € (1031 €/patient) in 2003

Breakdown of costs:

- Disability pension: 43% in 1993, 25% in 2003
- Hospital days: 21% in 1993, 10% in 2003
- Medication: 20% in 1993, 37% in 2003
- Doctor visits: 16% in 1993, 28% in 2003

Haahtela et al. Thorax 2006
Patients should start treatment at the step most appropriate to the initial severity of their asthma. Check concordance and reconsider diagnosis if response to treatment is unexpectedly poor.

**STEP 1**
Mild intermittent asthma

**STEP 2**
Initial add-on therapy
- Add inhaled steroid 200-800 mcg/day*
- 400 mcg is an appropriate starting dose for many patients
- Start at dose of inhaled steroid appropriate to severity of disease.

**STEP 3**
Persistent poor control
- 1. Add inhaled long-acting β₂ agonist (LABA)
- 2. Assess control of asthma:
  - good response to LABA - continue LABA
  - benefit from LABA but control still inadequate - continue LABA and increase inhaled steroid dose to 800 mcg/day* (if not already on this dose)
  - no response to LABA
  - stop LABA and increase inhaled steroid to 800 mcg/day.* If control still inadequate, institute trial of other therapies; leukotriene receptor antagonist or SR theophylline

**STEP 4**
Continuous or frequent use of oral steroids
Consider trials of:
- increasing inhaled steroid up to 2000 mcg/day*
- addition of a fourth drug e.g. leukotriene receptor antagonist, SR theophylline, β₂ agonist tablet

**STEP 5**
Use daily steroid tablet in lowest dose providing adequate control
Maintain high dose inhaled steroid at 2000 mcg/day*
Consider other treatments to minimise the use of steroid tablets
Refer patient for specialist care

* BDP or equivalent
Patients should start treatment at the step most appropriate to the initial severity of their asthma. Check concordance and reconsider diagnosis if response to treatment is unexpectedly poor.

**STEP 1**
Mild intermittent asthma

**STEP 2**
Initial add-on therapy

- Add inhaled steroid 200-400 mcg/day* (other preventer drug if inhaled steroid cannot be used) 200 mcg is an appropriate starting dose for many patients
- Start at dose of inhaled steroid appropriate to severity of disease.

**STEP 3**
Persistent poor control

- 1. Add inhaled long-acting β₂ agonist (LABA)
- 2. Assess control of asthma:
  - good response to LABA
    - continue LABA
  - benefit from LABA but control still inadequate
    - continue LABA and increase inhaled steroid dose to 400 mcg/day* (if not already on this dose)
  - no response to LABA
    - stop LABA and increase inhaled steroid to 400 mcg/day. *If control still inadequate, institute trial of other therapies, leukotriene receptor antagonist or SR theophylline

**STEP 4**
Continuous or frequent use of oral steroids

- Increase inhaled steroid up to 800 mcg/day*

**STEP 5**
Use daily steroid tablet in lowest dose providing adequate control
- Maintain high dose inhaled steroid at 800 mcg/day*
- Refer to respiratory paediatrician

* BDP or equivalent

Legend:
- **SYMPTOMS**
- **TREATMENT**

Figure 5: Summary of stepwise management in children aged 5-12 years
Badger – Study design

ICS 100 μg bd
n=182

ICS 250 μg bd

ICS/LABA 50/100μg bd

ICS 100μg bd /LTRA 5 or 10mg bd

2-8 weeks

16-weeks

Run-in
Randomisation

End of treatment

Triple cross over design
16 weeks per treatment

Primary endpoint: composite of exacerbations, asthma-control days and FEV₁ to assess whether differential response to step-up regimens >25%

n=182 children (6–17 years of age)

Results

- + LABA vs ↑ ICS
  - LABA better
  - Neutral
  - ICS better
  - p = 0.004

- + LABA vs + LTRA
  - LABA better
  - Neutral
  - LTRA better
  - p = 0.02

- ↑ ICS vs + LTRA
  - ICS better
  - Neutral
  - LTRA better
  - p = NS

BADGER study – conclusions

LABA step-up was significantly more likely to provide the best response than either ICS or LTRA step-up

However, there was a significant number of children who had a best response to ICS or LTRA step-up therapy

GPRD STUDY

- UK General Practice Research Database
- Funded by MHRA
- 507,966 patients
- 5,500,000 SABA
- 4,000,000 ICS
- 1,300,000 LABA

de Vries et al ERJ 2010
RELATIVE RATE OF MORTALITY

Deaths/100 pt-yrs

GINA Step

1 2 3 4 5

Step1  Step2  Step3  Step4  Step5

de Vries et al ERJ 2010
NEXT REVISION

- Tiotropium
- Immunotherapy
- `flu vaccination
- Pneumococcal vaccine
SMILE: Study design

12-month double-blind study: All patients received Bud/form 200/6 µg bid both during run-in and following randomisation.

- Bud/form 200/6 + Terb 0.4 mg as reliever n=1141
- Bud/form 200/6 + Form 6 µg as reliever n=1140
- Bud/form 200/6 as maintenance & reliever n=1113

Enrolled: n=3829
Randomised: n=3394

TIME TO FIRST SEVERE EXACERBATION

Patients with severe exacerbations (%)

Days since randomisation

TIME TO FIRST SEVERE EXACERBATION

‘SMART’ decreased risk by:
• 45% vs Bud/form + SABA

# PATIENT CHARACTERISTICS

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Bud/form bid + as needed:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Terb (n=1141)</td>
</tr>
<tr>
<td>Males, n (%)</td>
<td>450 (39)</td>
</tr>
<tr>
<td>Mean age, years (range)</td>
<td>43 (12–83)</td>
</tr>
<tr>
<td>Mean FEV$_1$, % predicted #</td>
<td>72</td>
</tr>
<tr>
<td>Mean reversibility in FEV$_1$, %</td>
<td>24</td>
</tr>
<tr>
<td>Mean ICS at entry, µg/day</td>
<td>751</td>
</tr>
<tr>
<td>Long-acting β$_2$-agonists, %</td>
<td>58</td>
</tr>
<tr>
<td>Mean SABA use, inh./day during run-in</td>
<td>1.9</td>
</tr>
<tr>
<td>Mean % nights with awakenings during run-in</td>
<td>30</td>
</tr>
</tbody>
</table>

# pre-bronchodilator

## PATIENT CHARACTERISTICS

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Terb (n=1141)</th>
<th>Form (n=1140)</th>
<th>Bud/form (n=1113)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males, n (%)</td>
<td>450 (39)</td>
<td>458 (40)</td>
<td>437 (39)</td>
</tr>
<tr>
<td>Mean age, years (range)</td>
<td>43 (12–83)</td>
<td>42 (12–81)</td>
<td>42 (12–89)</td>
</tr>
<tr>
<td>Mean FEV₁, % predicted #</td>
<td>72</td>
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<td>758</td>
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</tr>
<tr>
<td>Mean SABA use, inh./day during run-in</td>
<td>1.9</td>
<td>1.9</td>
<td>1.8</td>
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<tr>
<td>Mean % nights with awakenings during run-in</td>
<td>30</td>
<td>28</td>
<td>31</td>
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</tbody>
</table>

*# pre-bronchodilator*

SMART CONTROL OUTCOMES: COMPARED TO GINA GUIDELINE TARGETS

% Symptom Free Days

Figure 2-4. Levels of Asthma Control

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Controlled (All of the following)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daytime symptoms</td>
<td>Twice or less/week</td>
</tr>
<tr>
<td>Limitations of activities</td>
<td>None</td>
</tr>
<tr>
<td>Nocturnal symptoms/awakening</td>
<td>None</td>
</tr>
<tr>
<td>Need for reliever/rescue treatment</td>
<td>Twice or less/week</td>
</tr>
<tr>
<td>Lung function (PEF or FEV₁)</td>
<td>Normal</td>
</tr>
</tbody>
</table>
SMART CONTROL OUTCOMES: COMPARED TO GINA GUIDELINE TARGETS

Reliever Need (uses per day)
SMART CONTROL OUTCOMES: COMPARED TO GINA GUIDELINE TARGETS

% Reliever Free Days

Figure 2-4. Levels of Asthma Control

- **Characteristic**
  - Controlled (All of the following)
  - Daytime symptoms: Twice or less/week
  - Limitations of activities: None
  - Nocturnal symptoms/awakening: None
  - Need for reliever/rescue treatment: Twice or less/week
  - Lung function (PEF or FEV1): Normal
SMART CONTROL OUTCOMES: COMPARED TO GINA GUIDELINE TARGETS

% Nights with Awakenings

Figure 2-4. Levels of Asthma Control

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Controlled (All of the following)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daytime symptoms</td>
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</tr>
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</tr>
<tr>
<td>Need for reliever/rescue</td>
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</tr>
<tr>
<td>Lung function [PEF or FEV₁]</td>
<td>Normal</td>
</tr>
</tbody>
</table>
SMART CONTROL OUTCOMES: COMPARED TO GINA GUIDELINE TARGETS

Exacerbation Rate (events/yr)

Figure 2-4. Levels of Asthma Control

<table>
<thead>
<tr>
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</tr>
<tr>
<td>Lung function (PEF or FEV&lt;sub&gt;1&lt;/sub&gt;)&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Normal</td>
</tr>
</tbody>
</table>

SMART
**Figure 1.** Methodological quality summary: review authors' judgements about each methodological quality item for each included study.

<table>
<thead>
<tr>
<th>Study</th>
<th>Adequate sequence generation?</th>
<th>Allocation concealment?</th>
<th>Blinding?</th>
<th>Incomplete outcome data addressed?</th>
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</thead>
<tbody>
<tr>
<td>DE-SOLO</td>
<td>?</td>
<td>?</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>MONO</td>
<td>?</td>
<td>?</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>NCT00235911</td>
<td>?</td>
<td>?</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>SALTO</td>
<td>?</td>
<td>?</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>SOLO</td>
<td>?</td>
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<td>?</td>
<td>?</td>
</tr>
<tr>
<td>Sovani 2008</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>STAY - Adults</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>STAY - All ages</td>
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<td>STAY - Children</td>
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<td>STEAM</td>
<td>?</td>
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<td>+</td>
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<tr>
<td>STYLE</td>
<td>?</td>
<td>?</td>
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</tr>
</tbody>
</table>

Cates & Lasserson 2009
SMART vs HIGHER DOSE OF ICS
Rate of exacerbation

Cates & Lasserson 2009
SMART vs BEST CLINICAL PRACTICE
Rate of exacerbation

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Single inhaler therapy</th>
<th>Current best practice</th>
<th>Peto Odds Ratio</th>
<th>Peto Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Events</td>
<td>Total</td>
<td>Events</td>
<td>Total</td>
</tr>
<tr>
<td>MONO</td>
<td>5</td>
<td>921</td>
<td>7</td>
<td>914</td>
</tr>
<tr>
<td>NCT00235911</td>
<td>0</td>
<td>54</td>
<td>0</td>
<td>48</td>
</tr>
<tr>
<td>SALTO</td>
<td>2</td>
<td>450</td>
<td>1</td>
<td>458</td>
</tr>
<tr>
<td>SOLO</td>
<td>0</td>
<td>772</td>
<td>1</td>
<td>766</td>
</tr>
<tr>
<td>STYLE</td>
<td>0</td>
<td>497</td>
<td>3</td>
<td>498</td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td></td>
<td>2694</td>
<td></td>
<td>2684</td>
</tr>
<tr>
<td>Total events</td>
<td>7</td>
<td>12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Heterogeneity: $\chi^2 = 3.38$, df = 3 ($P = 0.34$); $I^2 = 11\%$

Test for overall effect: $Z = 1.15$ ($P = 0.25$)

Cates & Lasserson 2009
SMART vs BEST CLINICAL PRACTICE
Rate of hospitalisation

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Single inhaler therapy</th>
<th>Current best practice</th>
<th>Peto Odds Ratio Peto, Fixed, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>Events</td>
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<tr>
<td>Total events</td>
<td>7</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Heterogeneity: Chi² = 3.38, df = 3 (P = 0.34); I² = 11%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect: Z = 1.15 (P = 0.25)</td>
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</tbody>
</table>

Cates & Lasserson 2009
### SMART vs BEST CLINICAL PRACTICE

**Time to exacerbation**

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>log[Hazard Ratio]</th>
<th>SE</th>
<th>Single inhaler therapy</th>
<th>Current best practice</th>
<th>Hazard Ratio IV, Fixed, 95% CI</th>
<th>Hazard Ratio IV, Fixed, 95% CI</th>
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</thead>
<tbody>
<tr>
<td>MONO</td>
<td>-0.2357</td>
<td>0.18</td>
<td>921</td>
<td>914</td>
<td>0.79 [0.56, 1.12]</td>
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<tr>
<td>SALTO</td>
<td>-0.0212</td>
<td>0.066</td>
<td>450</td>
<td>458</td>
<td>0.98 [0.86, 1.11]</td>
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</tr>
<tr>
<td>SOLO</td>
<td>-0.01005</td>
<td>0.18</td>
<td>772</td>
<td>766</td>
<td>0.99 [0.70, 1.41]</td>
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</tr>
<tr>
<td>Total (95% CI)</td>
<td></td>
<td></td>
<td>2143</td>
<td>2138</td>
<td>0.96 [0.85, 1.07]</td>
<td></td>
</tr>
</tbody>
</table>

**Heterogeneity:** 
- $\chi^2 = 1.29$, df = 2 ($P = 0.53$); $I^2 = 0$
- Test for overall effect: $Z = 0.73$ ($P = 0.47$)

Cates & Lasserson 2009
OTHER RESULTS

- Morning PEF 1.00% ns
- Rescue medication 0.16 puffs/day NS
- ACQ score not evaluable
DISCUSSION

The run in for the trials.... was designed to select patients who became symptomatic when their maintenance treatment was reduced....
DISCUSSION

This implies the current evidence can only be applied to patients whose maintenance therapy is reduced.
Implications for practice  Single inhaler therapy can reduce the risk of asthma exacerbations needing oral corticosteroids in comparison with fixed dose maintenance inhaled corticosteroids. Guidelines and common best practice suggest the addition of regular long-acting beta$_2$-agonist to inhaled corticosteroids for uncontrolled asthma, and single inhaler therapy has not been demonstrated to significantly reduce exacerbations in comparison with current best practice.......
In adult patients at step 3 who are poorly controlled, the use of budesonide/formoterol in a single inhaler as rescue medication instead of a short acting beta2 agonist, in addition to its regular use as a controller treatment, has been shown to be an effective treatment option. This management technique has not been investigated with other combination inhalers. Before initiating this management careful patient education is required.
Monitoring and control

Steve Turner

10th May 2011
Summary

• Methodology
• Outline new evidence
• Describe gaps
• Barriers to implementation
• Take home messages
Asthma control

“The extent to which the manifestations of asthma have been reduced or removed by treatment”

- assessment of the current level of clinical control
- assessment of future risk to the patient

Taylor et al ERJ 2008;32: 545–554
Monitoring

• Measuring control
• No gold standard
• 4 settings
  – Maintenance
  – Step up treatment
  – Step down treatment
  – Stop preventer
Monitoring

- Symptoms
  - RCP3
  - ACQ
  - ACT/CACT
  - AQLQ/PAQLQ

- Biomarkers
  - PEF
  - FEV$_1$
  - BHR
  - Sputum eosinophilia
  - ENO
New section, new evidence

- 2009 guideline
  - in diagnosis (2.6)
  - limited to adults
  - 25 references

- 2010/1 guideline
  - includes children (12 references)
So what is the new evidence?

• No new evidence for adults
• In children, most evidence re maintenance
• Evidence that ENO may help in step down/cessation
So what is the new evidence?

- No new evidence for adults
- In children, most evidence re maintenance
- Evidence that ENO may help in step down/cessation

<table>
<thead>
<tr>
<th></th>
<th>Validated for maintenance?</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACQ/CACT/PAQLQ</td>
<td>Yes</td>
</tr>
<tr>
<td>PEF</td>
<td>Probably not</td>
</tr>
<tr>
<td>FEV$_1$</td>
<td>Unknown</td>
</tr>
<tr>
<td>BHR</td>
<td>No</td>
</tr>
<tr>
<td>ENO</td>
<td>No</td>
</tr>
</tbody>
</table>
Recommendations - adults

• Symptom-based generally adequate
• At risk group need closer monitoring
  – BHR, sputum eosinophilia
Recommendations - children

• Symptom-based generally adequate
• Awareness, current control + future exacerbation
• Currently, no evidence for biomarkers in maintenance
Gaps in knowledge

• Susceptible groups
  – Who are most at risk?
  – Biomarkers of greater use?

• Biomarkers
  – New biomarkers
  – Application in clinical settings
  – Application over clinically relevant periods
Barriers

• Lack of gold standard monitor
• Heterogeneity of asthma
• Lack of evidence to do asthma by numbers
Barriers

• Lack of gold standard monitor
• Heterogeneity of asthma
• Lack of evidence to do asthma by numbers

No barriers

• Clinicians used to grey areas
• Clinicians used to individualisation
• Already use symptom based approach
Take Home Points

- Symptom score is best measure of control
- Closed questions
- Little/no evidence for addition of biomarkers
Thanks to

- Ian Pavord
- Paul Seddon
- Andrew Bush
- Louise Fleming
- Roberta James
Monitoring & Control Workshop

Chair of workshop: Dr Jackie Faccenda
Scribe: Jim Honeyman
Education

• School nurses critically important – who is responsible for ensuring they are trained in asthma? (Depends on their employer eg Local authority or Health Board)

• Patients – through media / opportunist opps during consultations,
  • Use opp if accessing other parts of care eg in hosp for other reason / GP & or practice nurse. Engage using asthma action plans
  • A & E attenders priorities especially those receiving repeat rx for salbutamol

• QoF letters to help education what patient can expect

• Include ACT score q’nairre to reinforce levels of asthma control especially if low (would be worthwhile auditing)

• Telephone q’nairre less formal and can encourage patient attendance (texting service is very useful)

• Patient apathy to letter services

• Pharmacist role very important as patients have to access pharmacy to get medicines – may be only opp to teach patient but conditions must be well planned eg consulting room/ no queues for privacy etc

• Levels of education led by primary care team important – reinforce seriousness of asthma as a condition – shock tactics may work

• Multicultural versions / learning disabilitiy educational / minotiry group education

• Can we make it mandatory for GP’s to have an annual asthma update – keeping awareness of how busy GP’s are

• Educate variety of subjects to ensure engagement

Structured educational programmes

• Media – More use of Scotland based media to tackle complacency of asthma management in Scotland NOT David Beckham taking his inhaler

• Use positive reinforcement in messaging eg Paula Radcliffe and her achievements to illustrate what is possible if asthma is kept controlled

• Could storylines be seeded into popular soaps etc? Eg Chalmydia in Emmerdale

• Sunday post/ Local newspaper articles – Health journalists

• Must make sure messaging is correct eg confusion ref LTRA usage versus inhalers

• Self medication potentially brews issues eg excessive use of reliever inhalers – educate to help patient understand when they need to consult if taking too much of reliever

• Internet access and use of local initiatives to help direct patients to appropriate information

• Disposal of devices etc when patients move on through the school system – a lot of wastage of volumatics etc that are not used.
Monitoring

- Are systems being followed?
- Does double payment drive the right outcomes?
- Is there clarity about who should do what
- Standardised templates = easy to use
- Continuing standards after a LES is an ongoing challenge
- Campbells software = user friendly versus SPICE which does not provide consistently good data
- Minimal data entry preferred
- Aspire to x 1 National standard tool which would operate across variety of systems - would generate National data – could MCN’s drive this forward?
- Better clarity required in self management plans – green and red better but orange seems to be fudged – could be more explicit
- Consultant driven guidance patchy
- Doubling up dosing misunderstood – will this achieve any improvement in control?
Compliance

Patient knowledge and understanding of compliance important as part of educational message
- Help understand what each device is – patients don’t want to take inhalers
- Telephone consultations = convenient for patient and allows targeting in consultation
- Can we avoid medicalising patients if possible?
- Help understand process of disease
- Help understand importance of compliance
- Repeat as often as possible to increase adherence
- GP levels of knowledge poor versus other HCP’s
- At a glance understanding of devices and usage of meds important
- Pharmacy led interventions to encourage compliance eg
- Device/molecule switching done without consultation can create different issues eg patients not gaining control due to different generics from each pharmacy outlet due to cost/value to them
- Minimise swapping /changing especially in rural areas less of an issue
- Use of ACT – supports education of patients
**Control**

- GINA level control aim
- Target Step 1 patients who we are not picking up currently due to data showing death rates in this group which is a surprise
- Patients who are registered who have not picked up inhalers for a long time who suddenly appear in practice to collect rx – ensure awareness that they be flagged up across practice and local pharmacy outlets to work more as a team
Workshop Outputs

- This workshop suggests the three key areas to improve the care of patients with respiratory disease across Scotland are:

1. Education – ongoing priority for all HCP’s as well as patients

2. Standardised cross Scotland system for data collection – could MCN’s drive this?

3. Improve quality of communication amongst HCP’s and from HCP’s to patients
Barriers to implementation of guideline

• Time
• Screening during flu vaccination has helped (slightly longer appointment)
• Stepping up/down major barrier based on multiple pathology issues
• Patient engagement to adhere to message being given
• Asthma review – quality?
• Good communication in practice – eg asthma nurse feeding back to rest of practice – is this consistent?
• Copying discharge letters and access to them
• Treatment pathway cohesion and communication about patient/care/pathway when information/letters leave secondary care variable – electronic due to distribution lists and hard copy for variety of reasons
• Teamwork in secondary care to keep tabs on respiratory patients coming into hospital setting
• Could telehealth be used more effectively – little or no focus on asthma at present
• Skype?
• Convenience priority for patients hence adherence to what they are being told
• Standardised action plans that are understood and acted on!
• Links to youth clubs/schools for awareness raising -
 Outputs

• This workshop suggests the following to enable the implementation of the guidelines

4. Flexibility within system to accommodate patients needs within reason!
5. Engagement of HCP’s – hearts and minds to fight apathy
6. Simplify – embrace new technologies to facilitate interface with patients and HCP’s.
Pharmacological Management

Chair of workshop: Phyllis Murphie
Scribe: Lynne Brooks
Outputs

• This workshop suggests the three key areas to improve the care of patients with respiratory disease across Scotland are:

• 1 Education across the board

• 2 Use of IT
  • To improve clinics
  • GP systems
  • Phone apps
  • Texting
  • Education

• 3 Improvement for poorly managed patients
Outputs

- This workshop suggests the following to enable the implementation of the guidelines

1. Engage those not interested
   - HCP and patients

2. Better multidisciplinary working/communication

3. Access to service
Asthma in Adolescents

Chair of workshop: Mrs Sonya Crawford
Scribe: Karen Thomson
Outputs

• This workshop suggests the three key areas to improve the care of patients with respiratory disease across Scotland are:

• 1- Start early. Everyone to collaborate with this process of transition. This can be slow depending on the individual. Should be seen on their own as part of the consultation. Primary care has strong relationships and this can work well, it may not be the same in Secondary care.

• 2- Could apply technology (Apps) to motivate the adolescents to build their ownership and gain involvement in the process. Engagement is going to help drive ownership. Education across all stakeholders including things like schools.

• 3- Consistency in the ages is not standard across the Health Boards. Some of the kids don’t want to be in either service. Need to consider expectations of all involved, child, parent, clinician etc
Outputs

• This workshop suggests the following to enable the implementation of the guidelines

• 1- checklists to ensure nothing is overlooked. There are many available that can be adapted. Be aware of what is in the guidelines to support this.

• 2- Peer support - aligned education and mentorship. Use the P7 and S5/6 link and even already established pathways

• 3- Changing attitudes. Be realistic about future work and education on occupational advice.
Patient information

Chair of workshop: Maureen Carroll
Scribe: Gordon Thomson
What value will an evidence based patient information booklet offer to patients and their carers?

- Different patients have different needs
- The SIGN Booklet will serve a purpose for a specific group of patients &/or Carers
- Voluntary sector is vital in relation to mainstream information
- Some patients will feel reassured by this booklet under the SIGN banner
What are the key information needs of asthma patients and their carers?

• Asthma UKs top 5 reasons to call advice line
• What does good control look like?
• Need paediatric & adult versions both bridging adolescence
• Should not duplicate what is already out there
• Stress the need to take medication, to keep well
• Core Content
  – Diagnosis, with pictures
  – Non-pharma
  – Pharma
  – Devised
  – Treatment expectations and self management
  – Special: pregnancy, (occupation overview only)

• Would be good to evaluate usefulness and outcomes of anything that is produced
Where and when should patients information be given and by whom?

- Leaflets/apps/web based (social networking?)
- All are important to have available for different groups
- Foreign languages should be available, perhaps DVDs for some sections
- Quality control is important if accessing web